Economic costs, impacts and financing strategies for mental health in South Africa

Sumaiyah Docrat

Thesis presented for the Degree of

DOCTOR OF PHILOSOPHY

in the Department of Psychiatry and Mental Health

UNIVERSITY OF CAPE TOWN

June 2020

Supervisor: Prof Crick Lund

Co-supervisor: A/Prof Susan Cleary

This thesis is lovingly dedicated to my grandfathers,

the late Dawood Docrat

and

Ismail Omar,

both of whom never had the opportunity to attend university.

For their persevering belief in the education of women,

and their formidable sacrifices that have enabled the life I live today.

Declarations

I, Sumaiyah Docrat, present this thesis in fulfilment of the requirements for the degree of Doctor of Philosophy in the Department of Psychiatry and Mental Health, Faculty of Health Sciences, University of Cape Town. I hereby declare that this thesis is my original work and that neither the whole work nor any part of it has been, is being, or will be submitted for another degree in this or any other university. Ethical approval was obtained from Human Research Ethics Committee of the Faculty of Health Sciences at the University of Cape Town (HREC REF: 744/2017) (see Appendix A).

I confirm that I have been granted permission by the University of Cape Town's Doctoral Degrees Board to include the four publications listed below in my PhD thesis. Where co-authorships are involved, the co-authors have agreed that I may include the publications:

1. Docrat S, Besada D, Cleary S, Lund C. The impact of social, national and community-based health insurance on health care utilization for mental, neurological and substance-use disorders in low-and middle-income countries: a systematic review. Health Economics Review. 2020;10(1):1-23.
2. Docrat, S., Cleary, S., Chisholm, C., and Lund, C. 2019. The household economic costs associated with depression symptoms: a cross-sectional household study conducted in the North West province of South Africa. PLOS One, 14,11
3. Docrat, S., Besada, D., Cleary, S., Daviaud, E., Lund, C. 2019. Mental health system costs, resources and constraints in South Africa: a national survey. Health Policy and Planning. Advance article. Available at: https://academic.oup.com/heapol/advance-article/doi/10.1093/heapol/czz085/5572608
4. Docrat, S., Lund, C. & Chisholm, D. 2019. Sustainable financing options for mental health care in South Africa: findings from a situation analysis and key informant interviews. International Journal of Mental Health Systems, 13, 4.

Please see Appendix B for my letter of motivation to the Doctoral Degrees Board, which describes my contribution to each of the abovementioned publications. Please see Appendix C for the approval letter from the Doctoral Degrees Board to include each of the abovementioned publications in this thesis.

Note that the abstract for each publication has been modified slightly and used as a summary at the beginning of each related Chapter. Similarly, the layout, subheadings and wording of the abovementioned publications were modified slightly for the purpose of this thesis to ensure a consistent format throughout. Thus, not all Chapters are direct replicas of the publications listed above.

This thesis/dissertation has been submitted to the Turnitin module and I confirm that my supervisor has seen my report and any concerns revealed by such have been resolved with my supervisor.

SIGNATURE: Signed by candidate

DATE: 15 June 2020

STUDENT NAME: SUMAIYAH DOCRAT

STUDENT NUMBER: DCRSUM001

Abstract

Over the past decade, calls to address the increasing burden of mental, neurological and substance-use (MNS) disorders and to include mental health care as an essential component of universal health coverage (UHC) have attracted mounting interest from governments. With the inclusion of mental health in the 2015 Sustainable Development Goals (SDGs) there is now a global policy commitment to invest in mental health as a health, humanitarian and development priority. Low and middle-income countries (LMICs) such as South Africa, contemplating mental health system scale-up embedded into wider SDG- and UHC-related health-sector transformations, must address a number of key mental health financing policy considerations for attaining population-based improvements in mental health.

Despite ongoing transformations in the South African health sector, there has been an implicit neglect of the integration of mental health services into general health service development. This has been driven in part by a lack of locally-derived evidence in several areas, including: the economic basis for investing in mental health, the current resourcing of the mental health system, opportunities for improved efficiency and equity, and how reforms may be structured and paid for in light of the country's ongoing efforts to implement a National Health Insurance (NHI) scheme. This thesis therefore attempts to address these gaps and aims to generate new knowledge on the economic costs, impacts and financing strategies for mental health in South Africa. This aim is achieved by fulfilling the following research objectives:

1. To examine the impact of social, national and community-based health insurance on health care utilization for MNS disorders in low- and middle-income countries.
2. To examine the policy context, strategic needs, barriers and opportunities for sustainable financing for mental health in South Africa.
3. To quantify public health system expenditure on mental health services, by service level and province, and to document and evaluate the resources and constraints of the mental health system in South Africa.
4. To examine the household economic costs and levels of financial risk protection associated with depression symptoms in South Africa.

In the first part, the systematic review reports on the impact of social, national and community-based health insurance on health care utilization for MNS disorders in LMICs, published until October 2018. As a secondary goal, the systematic review identifies whether there are any

specific lessons that can be learnt from existing approaches to integrate mental health care into financing reforms towards universal health coverage. In the second part, a qualitative examination of the policy context, strategic needs, barriers and opportunities for sustainable financing for mental health in South Africa was conducted through a situational analysis that was complimented with a synthesis of key stakeholder consultations. The findings provide recommendations for how scaled-up mental health services can best be paid for in a way that is feasible, fair and appropriate within the fiscal constraints and structures of the country. In the third part, the thesis then empirically quantified public health system expenditure on mental health services, by service-level and province for the 2016/17 financial year, and documented and evaluated the resources and constraints of existing mental health investments in South Africa through a national survey; achieving one of the highest sample sizes of any costing study conducted for mental health in LMICs. In the fourth and final part, a household survey study was conducted to determine the level of financial protection for persons living with depression symptoms in the Dr. Kenneth Kaunda health district of South Africa, which is serving as a pilot site for the NHI. The household economic factors associated with increased depression symptom severity on a continuum are reported; and demonstrate that financial risk protection efforts are needed across this continuum.

The thesis concludes by synthesizing findings towards an improved understanding of the key lessons that can be learned from other LMICs toward sustainable financing for mental health; the economic burden of inadequate mental health care to households in South Africa; and the efficiency of existing mental health investments and inequities in resourcing and access. Through this lens, and borrowing from the experiences of other LMICs, recommendations for key priorities for health service and financing reforms towards the scaled-up delivery of mental health services in South Africa are generated. The thesis is presented as papers embedded in a narrative that includes an introduction and synthesis discussion. Four papers (3 published and 1 under review) form the basis of the results chapters.

Acknowledgements

This doctoral work would not have been possible without those who have opened doors for me, in particular, Crick Lund, my supervisor, Susan Cleary, my co-supervisor and Dan Chisholm.

Over the past five-years, Crick has engaged me in thoughtful discussions in a consistent push to make my work stronger and more relevant. Despite a few trials along the way, his intellectual energy, encouragement and patience has never wavered. This, in addition to granting me countless opportunities that I never felt I deserved, has truly strengthened not only my capacity as a researcher and mental health advocate but my own confidence and self-belief.

I owe an immense amount of gratitude to Susan Cleary, whom I've known now for ten years and is the reason I found a passion for the field of health economics. Thank you for your always positive, constructive and meticulous supervision which has enabled my growth in so many ways throughout both of my postgraduate experiences thus far. Knowing you were part of this process has been a great comfort to me.

To Dan Chisholm, for his sharp critiques and mentorship that has helped me to shape the entirety of this PhD. Thank you for being a constant reminder of my own capabilities, particularly at times of self-doubt. Working together on the Emerald project will forever remain as the highlight of my young career, thank you for showing me the – dare I say – *fun* that can come from collaboration and working in this field. I only hope I will have opportunities to learn from you again.

I have been blessed by having hugely supportive colleagues along the way. Thank you to Erica Breuer, Issabel Cooper, Thandi Davies, Emily Garman, Charlotte Hanlon, Gillian Hanslo, Marguerite Schneider, Rita Stockhowe and Claire Van Der Westhuizen– for sharing your daily care and support to me through this journey; it has never felt like a lonely one. I truly feel so lucky to come to work each day.

To my fortress of friends that have been my champions. First and foremost, Donela Besada, who walked this walk, among so many others, beside me. I would not have gotten through this process with my health and wellbeing intact were it not for you and your constant comfort, tireless support and friendship. To Emmanuelle Daviaud and Olivia McCarthy. You have

stepped-in to become my family, and have been the ultimate support-system. There are no meaningful ways to express this gratitude; that your brilliant energy surrounds me has allowed me to continue to believe that this PhD could become a reality.

Finally, to my family, my mother, Fatima, father, Cassim, and sisters, Raeesa, Yaara and Dahlia – there isn't a day that I take you for granted. You have supported me since the beginning of time, my time at least. Whilst we may be distributed across the continents, I sincerely hope that with each day you feel my love, and know that without you all, nothing would be possible for me.

Funding

Aspects of this PhD (Chapters 3 and 5) were conducted as part of a larger collaborative research project entitled the: “Emerging mental health systems in low- and middle-income countries” (Emerald) Project, funded by the European Commission under the 7th Framework Programme (Emerald grant agreement n° 305968).

Chapter 4 was conducted in response to a commissioned study by the National Department of Health for a cost-analysis to support their resource-mobilization efforts for the National Mental Health Policy Framework and Strategic Plan 2013-2020 and was funded by the Alan J Flisher Centre for Public Mental Health, University of Cape Town.

Additionally, this PhD was supported by the South African Medical Research Council through its Division of Research Capacity Development under the SAMRC Bongani Mayosi National Health Scholars Programme from funding received from the South African National Treasury.

The author alone is responsible for the views expressed in this thesis and they do not necessarily represent the decisions, policy or views of the University of Cape Town, the South African Medical Research Council, the European Commission or the South African National Treasury.

Table of Contents

List of Abbreviations

ACM	Anticholinergic Medication
AED	Antiepileptic Drug
AUGE	Regime of Explicit Health Guarantees
CBHI	Community Based Health Insurance
CDC	Community Day Centre
CHC	Community Health Centre
CHW	Community health workers
CSMBS	Civil Service Medical Benefits Scheme
DALY	Disability Adjusted Life Years
DHIS	District Health Information System
DOH	Department of Health
ECT	Electroconvulsive therapy
EMERALD	Emerging mental health systems in low- and middle-income countries
EML	Essential Medicines List
EPHPP	Effective Public Health Practice Project's Quality Assessment Tool for Quantitative studies
FY	Financial Year
FONASA	National Health Fund
GDP	Gross Domestic Product
GIS	Government Insurance System
HR	Human Resources
HREC	Human Research Ethics Committee
ISHP	Integrated School Health Policy
LMIC	Low- and Middle-Income Country
MCA	Multiple Correspondence Analysis
MHCA	Mental Health Care Act (2002)
MHCU	Mental Health Care User
MHIA	Mental Health Inpatient Admission
MHOV	Mental Health Outpatient Visit
MHPF	National Mental Health Policy Framework and Strategic Plan
MNS	Mental, Neurological and Substance-use
NCD	Non-communicable disease
NDOH	National Department of Health
NGO	Non- Governmental Organization
NCMS	New Rural Cooperative Medical scheme
NHI	National Health Insurance
NRA	Not Routinely Available
NT	National Treasury
OOP	Out-of-Pocket
PCA	Principal Components Analysis
PDOH	Provincial Departments of Health
PERSAL	Personnel and Salary System
PHC	Primary health care
PHRC	Provincial Health Research Committee
PHQ-9	Patient Health Questionnaire-9
PRIME	Programme for Improving Mental Health Care
SADAG	South African Depression and Anxiety Group

SAGE	Study on global AGEing and adult health
SD	Standard Deviation
SDG	Sustainable Development Goals
SHI	Social Health Insurance
SSS	Social Security Scheme
STATS-SA	Statistics South Africa
STG	Standard Treatment Guidelines
UE-BMI	Urban Employee Basic Medical Insurance
UHC	Universal Health Coverage
UR-BMI	Urban Residence Basic Medical Insurance
USD	United States Dollar
YLD	Years Lost due to Disability
WHO	World Health Organization
WHS	World Health Survey
ZAR	South African Rand

List of Figures

List of Tables

Chapter 1

Introduction

This introductory chapter reviews the global and South African literature pertaining to the burden of mental, neurological and substance-use disorders, the pursuit of mental health system strengthening as a global goal, the significance of the universal health coverage agenda to mental health systems and the context of reform for the South African mental health system. It then highlights the need for this PhD research to advance knowledge on the economic costs, impacts and financing strategies for mental health in South Africa and presents the problem statement and thesis aim and objectives. The chapter concludes by outlining the structure of the thesis.

Defining Mental, Neurological and Substance-use (MNS) disorders

Mental, neurological and substance-use (MNS) disorders encompass a range of conditions that are broadly characterized by the impairment of cognition, emotion and/or behaviour which is associated with distress, and disturbances in personal, familial, educational and occupational functioning (3-6). A number of classification systems exist which categorize discrete disorders based on similar symptoms, signs and observations, including the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) and the World Health Organization (WHO) International Classification of Disease (ICD-11) (4). The WHO defines depression, bipolar affective disorder, schizophrenia and other psychoses, dementia, intellectual disabilities and developmental disorders including autism as MNS disorders (7).

The present study adopts the broader definition used by Volume 4 of Disease Control Priorities, third edition (DCP3) (3), whereby MNS disorders encompass: Alcohol use disorders; Neurological disorders (Alzheimer's disease and other dementias, Epilepsy); Illicit drug use disorders (Amphetamine use disorders, Cannabis use disorders, Cocaine use disorders, Opioid use disorders, Other drug use disorders); Eating disorders (Anorexia nervosa, Bulimia nervosa); Mood disorders (Anxiety disorders, Dysthymia, Major depressive disorder, Bipolar disorder); Psychotic disorders (Schizophrenia); Autism spectrum disorders (Autism, Asperger syndrome); Behavioural disorders (Attention-deficit/hyperactivity disorder, Conduct

disorder); and Developmental disorders (Idiopathic developmental intellectual disability). Throughout this thesis, the terms MNS disorders and mental disorders are used interchangeably to refer to the abovementioned conditions. The inclusion of neurological disorders (epilepsy), developmental disorders (idiopathic developmental intellectual disability) and substance-use disorders arises because these disorders are commonly managed by mental health professionals in LMIC contexts (8). However, in line with the recent recommendations of the Lancet Commission on global mental health and sustainable development this study also adopts the perspective that there are opportunities for intervention at all stages, from well-being to different stages of disorder, i.e. from non-specific symptoms causing intermittent mental distress to clear syndromes causing increasingly severe functional impairment (4).

The impact of MNS disorders and the treatment gap

The global impact of MNS disorders is enormous and an important cause of disease burden. In 2017, 15.6% of the global population – or just over 1.1 billion people, were living with an MNS disorder, causing 8% of all Disability-Adjusted-Life-Years (DALYs) and 18.5% of all Years Lived with Disability (YLD) (

Table 1) (4, 9). The DALY measures health loss due to both fatal and non-fatal disease burden; one DALY can be thought of as one lost year of healthy life (10). After cardiovascular disease and neoplasms, MNS disorders represent the third highest contributor to global DALYs (9). The number of years that an individual lives with a functional impairment caused by a disease is reflected by the measure of YLD; MNS disorders represent the highest contributor to global YLD (9). These statistics are echoed in low- and middle-income country (LMIC) contexts where MNS disorders are the 5th highest contributor to DALYs and account for the highest proportion of overall YLD (9).

A large multi-country survey supported by the WHO showed that 76–85% of people with severe mental disorders (psychosis, bipolar disorder and suicide attempt) in low-income countries had not received any treatment in the previous 12 months; whilst the treatment gap for minimally adequate treatment for major depression and anxiety exceeds 80% (83.5% and 90.2%, respectively) in LMICs (11-13). By 2030, depression alone is expected to be the third leading cause of disease burden in low-income countries and the second highest cause of

Table 1 Impact of MNS Disorders

MNS Disorder	Global			Low- and Middle-Income Countries			South Africa		
	Prevalence Rate	Proportion of DALYs consumed by MNS Disorder	Proportion of YLD consumed by MNS Disorder	Prevalence Rate	Proportion of DALYs consumed by MNS Disorder	Proportion of YLD consumed by MNS Disorder	Prevalence Rate	Proportion of DALYs consumed by MNS Disorder	Proportion of YLD consumed by MNS Disorder
All MNS Disorders	**15.56%**	**8.07%**	**18.50%**	**14.53%**	**6.52%**	**18.00%**	**15.39%**	**5.60%**	**18.10%**
Alcohol use disorders	1.46%	0.70%	1.26%	1.23%	0.53%	1.16%	1.65%	0.46%	1.38%
Alzheimer's disease and other dementias	0.61%	1.22%	0.77%	0.34%	0.71%	0.48%	0.39%	0.58%	0.47%
Amphetamine use disorders	0.10%	0.05%	0.11%	0.07%	0.03%	0.09%	0.06%	0.02%	0.07%
Anorexia nervosa	0.05%	0.03%	0.08%	0.03%	0.02%	0.07%	0.05%	0.02%	0.08%
Anxiety disorders	3.86%	1.09%	3.18%	3.44%	0.92%	3.08%	4.05%	0.85%	3.24%
Attention-deficit/hyperactivity disorder	0.99%	0.04%	0.10%	0.98%	0.03%	0.11%	1.45%	0.04%	0.15%
Autism spectrum disorders	0.42%	0.19%	0.55%	0.39%	0.16%	0.55%	0.45%	0.15%	0.57%
Bipolar disorder	0.62%	0.37%	1.09%	0.57%	0.33%	1.10%	0.65%	0.29%	1.11%
Bulimia nervosa	0.17%	0.11%	0.31%	0.13%	0.08%	0.26%	0.19%	0.09%	0.34%
Cannabis use disorders	0.24%	0.02%	0.06%	0.19%	0.02%	0.05%	0.30%	0.02%	0.07%
Cocaine use disorders	0.07%	0.04%	0.08%	0.02%	0.01%	0.03%	0.07%	0.03%	0.07%
Conduct disorder	0.72%	0.26%	0.76%	0.85%	0.28%	0.93%	0.84%	0.22%	0.85%
Dysthymia	1.45%	0.41%	1.20%	1.22%	0.34%	1.13%	1.16%	0.24%	0.93%
Epilepsy	0.37%	0.59%	1.00%	0.38%	0.65%	1.19%	0.41%	0.45%	1.13%
Idiopathic developmental intellectual disability	1.36%	0.16%	0.47%	1.96%	0.20%	0.68%	0.30%	0.03%	0.10%
Major depressive disorder	2.21%	1.31%	3.85%	2.04%	1.14%	3.83%	2.61%	1.16%	4.41%
Opioid use disorders	0.55%	0.86%	1.97%	0.45%	0.60%	1.77%	0.58%	0.62%	2.02%
Other drug use disorders	0.03%	0.12%	0.15%	0.02%	0.06%	0.10%	0.02%	0.07%	0.11%
Schizophrenia	0.27%	0.51%	1.48%	0.22%	0.41%	1.39%	0.19%	0.26%	0.99%

DALY = Disability Adjusted Life Year ; YLD = Years Lived with Disability

Global Burden of Disease Study 2017 (GBD 2017) Results. Institute for Health Metrics and Evaluation (IHME). 2018 [cited November 2018]. Available from: http://ghdx.healthdata.org/gbd-results-tool.

disease burden in middle-income countries, collectively home to 85% of the world's population (14-16). Although the prevalence of severe mental disorder (schizophrenia, bipolar disorder, intellectual disabilities) is low by comparison, its early onset, long duration, and severe disability make it a leading contributor to the burden of disease in LMICs (17).

It is worth pointing out that treatment gaps for mental health are not limited to LMIC contexts. A partial explanation for the treatment gap globally is the historical division of physical and mental health care services. Since the mid-1900s, a process of deinstitutionalization from mental health care in specialist psychiatric institutions towards community-based mental health care began in high-income countries (HIC) (18). However, in most LMICs, the delivery of mental health care through specialist psychiatric institutions persists as the model of care; with many LMICs reluctant to replace investments in costly institutionalized care with community-care arrangements (19). According to the WHO the integration of mental health services into general primary health services helps overcome the acute shortage of mental health professionals, encourages the early identification of mental disorders and reduces the stigma associated with seeking care; integration of mental health services into general health services is the most viable strategy for extending mental health services to underserved populations (20).

There is an added contributing force to the treatment gap which exists in LMICs – that many do not seek treatment for mental disorders simply because they lack the knowledge and awareness of these conditions, or their explanatory model for their conditions differs from those of health professionals (21). A study published in 2017 found that among respondents with major depression across 21 countries, only 35.6% of respondents from low and lower middle-income countries and 52.2% of respondents from upper-middle income countries recognized that they needed treatment (11). Cultural and religious belief systems influence help-seeking-behaviour and further complicate access to services for mental health in LMICs (14). A survey conducted in South Africa reported that the general public perception was that mental illnesses are related to either stress or individuals lacking willpower, as opposed to medical causes (19, 22, 23). People believed that mental health problems should be addressed by discussion, rather than medical consultations (24).

Adverse consequences of this unmet need are wide-ranging, including the violation or abuse of human rights; long-term disability and ill-health; increased mortality (for example due to

suicide, or diseases caused by alcohol or drug abuse); high levels of disability and adverse infant growth and development outcomes in babies of mothers with mental disorders; diminished outcomes for other health conditions; and economic hardship, social disadvantage and reduced economic productivity (25-32).

Beyond the significance of mental health for the global health agenda, mental health has increasingly been featured as having a considerable role to play in global development. In 2016, a joint initiative of the World Bank and WHO reaffirmed this sentiment during a series of events which emphasized the need for a multi-sectoral, global response to mental health as a humanitarian and development priority (33). The event culminated with a global investment case for mental health, clearly outlining how equitable investments in mental health systems can lead to clear and definable health, economic and social benefits (33, 34).

The economic case for investing in mental health

It is well established that economics has an important part to play in the evaluation of health and health care interventions (35). The field of health economics provides a set of analytical techniques to assist decision-making, promote efficiency and equity and provide a way of planning for and managing health care resource use; introducing a thought process that recognises the concept of scarcity. In light of scarcity, choices will always present an opportunity cost, the value of a resource in its most favoured alternative use (35, 36). Ultimately, health economics is concerned with maximising social benefits obtained from constrained (scarce) health producing resources (35, 36). Equity is the 'fair' distribution of benefits across the population, while equality relates to the equal distribution of benefits across the population, so that every individual is given the same treatment regardless; equal distribution of benefits does not always result in equal gains (35, 36). The prioritisation of health care seeks to achieve efficiency-the maximisation of health benefits given limited resource, whilst not compromising equity (35, 36). Some market economists may argue that equity and efficiency are mutually exclusive, however this does not necessarily apply to health systems; the 2000 World Health Report identified both equity and efficiency as important measures of a good health system (37).

Economic evaluations allow for a "comparative analysis of alternative courses of action in terms of both their costs and consequences" pg. 86 (35, 36), options are evaluated in terms of both their costs and their benefits. Cost-effectiveness analysis represents a kind of economic

evaluation that compares two interventions according to their cost and effectiveness- whereby outcomes are measured in naturally occurring units, such as changes in blood pressure or mortality. Within a given budget, a lower cost effectiveness ratio is considered *better* as more health can be produced for the same or less cost. Where one intervention is both more expensive but also effective, an incremental ratio can be calculated that shows the extra cost per unit of outcome obtained (35). In this case, a value judgement will be required to assess whether the extra unit of outcome is worthwhile.

In order to enable for comparisons of interventions across different areas of health care, a common outcome measure is needed. The quality-adjusted life year (QALY) has been developed in order to capture the impact of a treatment on a patient's length of life and also the impact on their health-related quality of life and is widely used in health economics as a summary measure to inform healthcare resource allocation decisions (38). When QALYs are used as an outcome, the assessment is known as a cost-utility analysis (CUA) (35, 36, 38). The underlying assumptions of the QALY have come into question including the fact that QALYs may not take into account all dimensions of health benefits, the implicit assumption that QALY's are equal regardless of who benefits, which has been challenged on the grounds of equity and efficiency and debates around who should value health states. Alternatives to the QALY include the DALY, healthy years equivalent and willingness to pay approach. The DALY measures health loss due to both fatal and non-fatal disease burden; one DALY can be thought of as one lost year of healthy life (10).

Equity and financial protection

The very nature of the health inequalities which exist in the world today illustrates the importance of equity in health as a global concern. Health differentials are pervasive and often (though not exclusively) affect those that are already disadvantaged the most. There are weaker chances of survival, higher premature mortality rates, increased burdens and earlier onset of disease as well as increased disability among more disadvantaged groups, in all regions of the world, across all political and social systems (39, 40). Higher rates of mortality and morbidity are noted among poorer populations relative to their better off counterparts, yet despite their increased needs, these groups use health services less and frequently contribute a greater share of their income to gaining access to and paying for treatment than those who are less disadvantaged (41).

These inequities, coupled with the high and catastrophic costs to households of securing the health services they need, or indeed of being ill, are the fundamental concerns underlying the drive toward Universal Health Coverage (UHC) (42-44). Whilst the economic costs associated with physical illness in households in LMICs have been well documented, far less is known about the household economic costs associated with MNS disorders (45-47). A cross-sectional study conducted across six LMICs in 2014-15 found that despite some diversity across certain MNS disorder groups and countries, households with a member with an MNS disorder had generally lower levels of education; lower housing standards, household income, effective income and non-health consumption; less asset-based wealth; generally higher health care expenditure; and greater use of damaging financial coping strategies, when compared to households living with a member with a physical health complaint (45).

This is particularly important in the context of two hypothesized causal pathways that maintain the cycle of poverty and mental illness in LMICs: the social causation pathway, by which the conditions associated with poverty (such as increased stress, social exclusion, reduced social capital, malnutrition and increased violence, trauma and obstetric risks) increase the risk for mental illness; and the social selection or social drift pathway, by which people living with mental illness are at increased risk of drifting into or remaining in poverty as a result of increased health care expenditure, reduced productivity and job loss (48). Although there is a rather substantial body of evidence for this pattern in HICs, only recently has epidemiological data demonstrated similar trends within LMICs (26, 49, 50).

Individuals living in conditions of poverty are more at risk for mental disorders as evidenced by the incidence of the global impact of mental disorders in LMICs (51). On an affective level, studies show that the experience of poverty and scarcity leads to an increase in the body's production of the stress hormone cortisol (52). Secondly, on a cognitive level, when faced with conditions of poverty or scarcity, individuals display certain cognitive styles, particularly with respect to future discounting, reduced executive functioning and the tendency to have an external locus of control (52). In conditions of poverty, future discounting refers to the tendency for individuals to discount longer-term rewards in the future for more immediate rewards; while reduced executive functioning refers to a diminished ability to plan strategically and inhibit impulses (52). In conditions of scarcity, individuals are also more likely to attribute their circumstances to external forces thus diminishing the belief that they are in control of their own lives and futures (52). This relationship is worsened by the effects of psychosocial

stressors, such as violence, unemployment, and insecurity, increasing the risk of adult mental disorder (19). These dynamics indicate how the risk for mental disorder increases in conditions of poverty through the social causation hypotheses. Correspondingly, the presence of mental illness in a household represents an enormous financial burden on individuals, their families and society more broadly (53). The experience of untreated mental disorder significantly reduces the ability of the affected individual to secure and/or maintain employment. Those affected also face difficulties in schooling and the pursuit of educational achievement, further exacerbating the unemployment rates among these groups. Untreated mental disorder, particularly those disorders that are more severe in nature, often lead to increased risk of morbidity for physical health problems due to the impact on lifestyle and neglect on the part of health care workers who may only focus on mental health issues (53). Where treatment is available, households incur considerable expenditure to cover long-term, chronic medications, and considerable indirect and direct costs associated with institutionalized care in highly centralized mental health systems (53). Furthermore, the heightened risk for other physical health problems requires additional household expenditure to adequately monitor and treat these comorbid illnesses (53). Worsening these effects are the difficulties that are faced by those experiencing both treated or untreated mental illness, in integrating into their communities through the effects of stigma and discrimination. Taken together, these dynamics indicate how the risk of poverty increases where a household or individual is experiencing mental illness through the social drift or selection hypotheses.

The very nature of 'health shocks'—that the increases in health expenditure are unexpected and where the total expenditure needed to treat the illness is not known until after these costs have been incurred, forces households into the *medical poverty trap*, of which long-term impoverishment is a serious consequence (39, 47, 54-56). The sale of assets, such as livestock or land imposes a "vicious cycle of increased economic vulnerability" (47) as households relent on vital resources to their household's livelihood (47). Coping mechanisms often come at a dire cost; households face lifelong debt repayment, exacerbated by exorbitant interest rates (underwritten by private lenders who seek to capitalize on the vulnerability of these groups) and a reduction of the consumption of essential, basic goods such as food and education to meet health care costs; or the desperate decision to forgo health care altogether (39, 47, 54-56).

Need and access have a propensity to vary inversely – those with highest need: the poor, those who are least educated, women, young people and rural communities; have least access to care

(11, 19, 26). Where treatments are accessed by patients, they are often inappropriate and involve considerable out-of-pocket payments, leading to health expenditures that are economically catastrophic for affected individuals and their families (57-59). Analysis of the 2004 National Sample Survey Organization (NSSO) in India, for instance, found that out-of-pocket expenditures for psychiatric disorders amounted to nearly 7 billion rupees, with half of that coming from borrowing or loans, and a further 40% from household income or savings (58). The potentially 'catastrophic' impact of private, out-of-pocket payments on the economic welfare of households with a mentally ill member has rarely been assessed. One study carried out in the state of Goa in India found that 15% of women with a common mental disorder (major depression, anxiety disorders) spent more than 10% of household income on health-related expenditures (59). A recent cross-sectional study found higher proportions of households reporting catastrophic health expenditure among households affected by psychosis, depression and alcohol-use disorder in Ethiopia; households affected by depression in India and Nigeria, and; households affected by psychosis in Nepal; when compared to households affected by physical health complaints (45). These findings suggest current mental health financing arrangements for mental health in LMICs are regressive– penalizing the least able to afford care and thus warranting explicit inclusion in ongoing efforts towards UHC (43, 45).

Cost-effective solutions

In recent years, growing international research has identified promising, cost-effective options for reducing the contribution of mental disorders to the global burden of disease, particularly in LMICs (60). In brief, strategies include: the explicit recognition and inclusion of mental health in the UHC agenda; intensified investments in mental health systems; reducing inefficiencies in the use of resources through the redistribution of budgets from hospi-centric care to the community; task-shifting mental health care to non-specialist providers who receive ongoing specialist supervision; amplified training for all cadres of mental health professionals and specialists; the initiation of early interventions that are accessible to at risk populations; integration of mental health in broader primary health care; and the active engagement of those living with and effected by MNS disorders in the reform process (52, 60-67).

In 2005, the WHO-CHOICE project sought to generate cost-effectiveness evidence for the leading contributors of disease for diverse geographical settings across the globe (68). Responding to the dearth of completed mental health economic evaluations from both HICs

and LMICs (69); the project's mental health component demonstrated that the most efficient interventions for common mental disorders (depression and panic disorder) can be considered very cost-effective, while community-based interventions for more severe mental disorders using older antipsychotic and mood stabilising drugs meet the criteria for being cost-effective (68). Further, studies have demonstrated that well planned community-care arrangements that are adequately resourced to ensure appropriate accommodation are more cost-effective than asylums or institutionalized psychiatric care for people with long-term mental health problems (19, 70, 71). Estimates of the projected costs of scaling up the availability of community-based mental health services in LMIC settings, based on economic analyses of the comparative cost-effectiveness of a range of intervention strategies and packages have also been conducted (43, 72-76). For highly prioritized MNS disorders, the expected level of investment needed to deliver a core package of support is recommended at $2 per person per annum in low-income countries, $3-$4 in lower middle-income countries and up to $5 in upper middle-income countries (10, 72, 77). It should be noted that these estimates are based on data from a small set of twelve countries which may or may not reflect the resource needs in other LMICs. Differences in the costs reflect the current level of spending and coverage rates in these diverse settings, and as mentioned, only take into account highly prioritized conditions like depression, epilepsy, bipolar disorder and psychosis. Further, much of the evidence on the relative cost-effectiveness of options for reducing the contribution of mental disorders to the global burden of disease in LMICs has yet to be demonstrated through rigorous trials and/or real world conditions. Analytical modelling strategies applied to generate this evidence thus far has been limited in scope because of the paucity of reliable data of key input parameters such as the epidemiology of mental disorders, the efficacy of treatment and local data on treatment costs.

Nonetheless, there is strong international consensus that addressing the treatment gap for MNS disorders in LMICs requires the integration of mental health into primary care, including maternal health care (72). In 2010, the WHO mhGAP Intervention Guide (WHO 2010) was published and for the first time provided international best practice guidelines for evidence-based treatments by non-specialist health workers in routine care settings in LMICs (WHO 2010). The mhGAP programme has illustrated that despite common beliefs that mental health services can only be provided by specialized health care workers and technologies, most mental health disorders can be treated in primary health care settings, on the condition that the capacity of the primary health care system is increased by training, support and supervision (64).

The mhGAP Intervention Guide provides non-specialized health care workers with guidelines for developing mental health care interventions for primary health care settings in a way that allows for adaptation to local and country-specific contexts (64). The guidelines deliver a clear understanding of what needs to be done, and recently, evidence on how these specific interventions can be combined into integrated packages and delivered in routine primary health care and maternal health care settings has become available for a number of LMICs including South Africa, Nepal and Uganda as part of the Programme for Improving Mental Health Care (PRIME) (67, 78-80). In South Africa, strengthening the capacity of primary care nurses to identify, diagnose and review symptoms of Common Mental Disorders (CMDs), a term often used to refer to depression and anxiety disorders; and implementing a stepped-up referral system that included clinic-based psychosocial counsellors, doctors and mental health specialists, demonstrated that a task-shared collaborative stepped care model can improve detection of CMDs and reduce depressive symptoms among patients with chronic conditions under real world primary care conditions (78). In rural Uganda, the integration of mental health care into primary care through treatment delivered by trained primary care workers improved clinical and functioning outcomes for depression, psychosis and epilepsy (79). In a district in rural Nepal, a comprehensive mental health care plan at the district level was implemented and was found to increase the percentage of individuals in the community receiving treatment for depression (from 0% to 12%); alcohol-use disorder (from 0% to 8%), psychosis (from 3% to 53%) and for epilepsy (from 1% to 13%) (80).

Taken together, such evidence provides a key element of making the case for investment in mental health as part of national health system development (43, 77, 81). However, these analyses have not directly addressed the key question of who will pay for such service expansion and from what sources (43).

Return on investment

A return on investment (ROI) analysis provides a convenient and comparable measure of the efficiency of a series of investment choices, expressed in terms of the expected benefits resulting from particular investment of resources (82). It is therefore similar in objectives to other measures of efficiency that have been extensively used in the heath sector, notably cost-effectiveness analysis (CEA); whereas CEA typically measures only health-related benefits expressed in natural units such as lives saved or symptoms reduced, ROI extend beyond health

benefits alone and expresses all the benefits in monetary terms. A simple way of interpreting an ROI ratio is to think "for every 1 dollar invested, there are X dollars' worth of benefits" (82). This enables investors to easily compare different investment choices, not only within the health sector but also beyond it.

Globally speaking, current investments in mental health are extremely limited; current investments in mental health systems do not match the public health and economic burden that MNS disorders impose. As a result of the low level of current investment in public mental health, there is a vast gap between the need for treatment and its availability. Beyond the health and well-being of persons with mental disorders and their families; limited investments in mental health have far reaching consequences for employers and governments, as a result of diminished productivity at work, reduced rates of labour participation, foregone tax receipts and increased welfare payments. Estimation of the benefits and costs of scaled-up treatment for mental disorders can provide relevant information in support of greater investment in the future. While country-specific data is preferable, empirical evidence can be limited in LMIC and it may be necessary to use global values. As such current available evidence is often modelled with assumed intervention effects from other settings and studies, and limited by the feasibility of translating these into economic impacts (82).

At the more aggregate level of society, mental disorders are associated with high rates of unemployment and also under-performance while at work, which both exert a brake on labor participation and output (a critical component of economic growth); a study undertaken by the World Economic Forum estimated that the cumulative global impact of mental disorders in terms of lost economic output will amount to US$ 16 trillion by 2023 (83). There is emerging evidence from LMICs that mental health care for depression, psychosis and epilepsy can carry economic benefits for individuals and households (26). Such interventions are crucial in the context of the two aforementioned hypothesized causal pathways that maintain the cycle of poverty and mental illness in LMICs: the social causation hypothesis and the social selection or social drift hypothesis (48). Currently there is however more promising evidence for interventions that target the latter social drift hypothesis; providing mental health care improves social and economic functioning, and reduces caregiver burden and health care payments (26). As mentioned above, the cost of implementing a scaled-up package of cost-effective interventions for prioritized mental health disorders in LMICs is estimated at US$2-$5 per capita per year with returns on this investment estimated to be 2.3-3.0 times this amount when

considering economic benefits only and 3.3-5.7 times when considering both health and economic returns of investment (34, 84). It is important to note that these cost estimates are for the population in need rather than the entire population and therefore reflects lower budgetary implications.

A systematic review conducted in 2011 reporting on efforts to combat social causation through poverty alleviation interventions and cash transfer programs found that the mental health effect of poverty alleviation interventions was inconclusive, although some conditional cash transfer and asset promotion programmes had mental health benefits (26). Nonetheless, given the considerable interest in the links between social determinants and mental health outcomes, emerging evidence has shown that multilevel interventions addressing social inequalities such as access to educational and employment opportunities, healthy food, secure housing, and safe neighborhoods offer promising outcomes for those living with MNS disorders. There is evidence that interventions aimed at improving household and working life amongst those living with MNS disorders have found success in increasing housing stability, community functioning, perceived wellbeing and quality of life, and increased self-esteem (85). A recent meta-analysis of interventions targeting those with severe mental illness showed that Individual Placement and Support programs have been effective in improving employment rates, individual functioning and wellbeing (86). Furthermore, housing programmes have been found to lower rates of inpatient hospitalization and encourage more consistent use of health services for homeless individuals and those experiencing mental health challenges; however, these programs did not significantly reduce clinical symptoms (85, 87).

Despite the increased awareness globally, LMICs have faced particular difficulties in translating this consciousness into adequately resourced health-system reforms for mental health. This is due to a number of factors, including infectious and communicable disease burdens crippling their populations, and thus dominating the priorities of health agendas; ignorance about the burden of mental disorders; limited research evidence to guide decision-making; and the complexity of the field of mental health (88).

The current state of investment in mental health in low- and middle-income countries

Resources for mental health care in LMICs are highly constrained. Data collected as part of WHO's Mental Health Atlas project show that most countries (approximately 66%) allocate less than 2.82% of their health budget to the treatment and prevention of mental disorders; this

is not remotely proportionate to the burden they cause (57). Further, almost a third of countries (31%) do not have a specified public budget for mental health (19). In Africa and southeast Asia, the majority of countries spend less than 1% of their modest health budgets on mental health services: the poorest countries spending the smallest proportion on mental health (19, 57). In terms of official development assistance (ODA) for health, mental health attracted less than 1% of the estimated US$ 32 billion spent on ODA in 2015 (10, 89).

Although our understanding of mental health systems financing and ability to monitor progress toward the global mental health goals outlined in the SDGs has improved significantly since the WHO Mental Health Atlas (MHA) initiative commenced in 2001, significant gaps in the knowledge base remain among most LMICs (90-92). For example, among the 127 LMICs that were able to partially complete the WHO MHA (2017) questionnaire, only 40% (n=51) were able to report on total government expenditure on mental health (93). Service coverage estimates were reported by only 41% (n=52) of LMICs (93). Most information provided by countries relates to the country as a whole, overlooking important variability across regions, concerning the degree of policy implementation, availability of services and the existence of promotion and prevention campaigns for mental health (93). Further, among most LMICs that were able to specify spending on mental health, expenditure reported relates predominantly to expenditure at the psychiatric hospital level only, with no inclusion of estimates of mental health expenditure at other levels of the health system, nor any differentiation of inpatient and outpatient expenditures for mental health (10).

Without this information at hand, LMICs face difficulties in translating global calls for the scale-up of mental health care into well-resourced implementation plans. For example, in a 2016 report on investing in mental health in low-income countries (LICs), consultations with governments revealed that a key constraint has been a lack of awareness of the existing resources for mental health care and therefore of the precise funding shortfall that could or should be considered for mental health programming (77). Further, the report documents that the governments seemed not to know what such health programs could deliver in terms of returns to the broader economy and regained healthy life years; with international estimates lacking sensitivity to local priorities and health system characteristics (77).

The response to the burden of mental illness in LMICs is understandably complex. On the one hand, the upstream determinants of mental health: violence, inadequate housing,

unemployment, lack of basic amenities, poverty, poor education, experience of trauma and stigma; contribute significantly to the burden of mental illness (26, 84, 94). On the other, the global investment case focusses on the integration of interventions using psychotropic medication, cognitive behavioural therapy and/or interpersonal therapy into general health care using task-shifting or task-sharing approaches, which have proven to be cost-effective in LMICs (34, 95, 96). If investments into the latter are made, there may be a substantial opportunity cost through a reduced (fiscal) capacity for the government to deliver interventions that target the upstream determinants of mental health, where improved housing, sanitation and education could reduce the population-level risk of mental disorder (84). In addition, the proposed solutions, albeit cost-effective, will inherently require generalists to spend more time with single patients, significantly reducing their turnaround times and capacity to provide general health services (84). In contexts such as these, even extremely cost-effective interventions with low per capita implementation costs do not always represent affordability or the best use of resources. Trying to find balance between investments and their opportunity costs in highly constrained resource climates is indeed a difficult task.

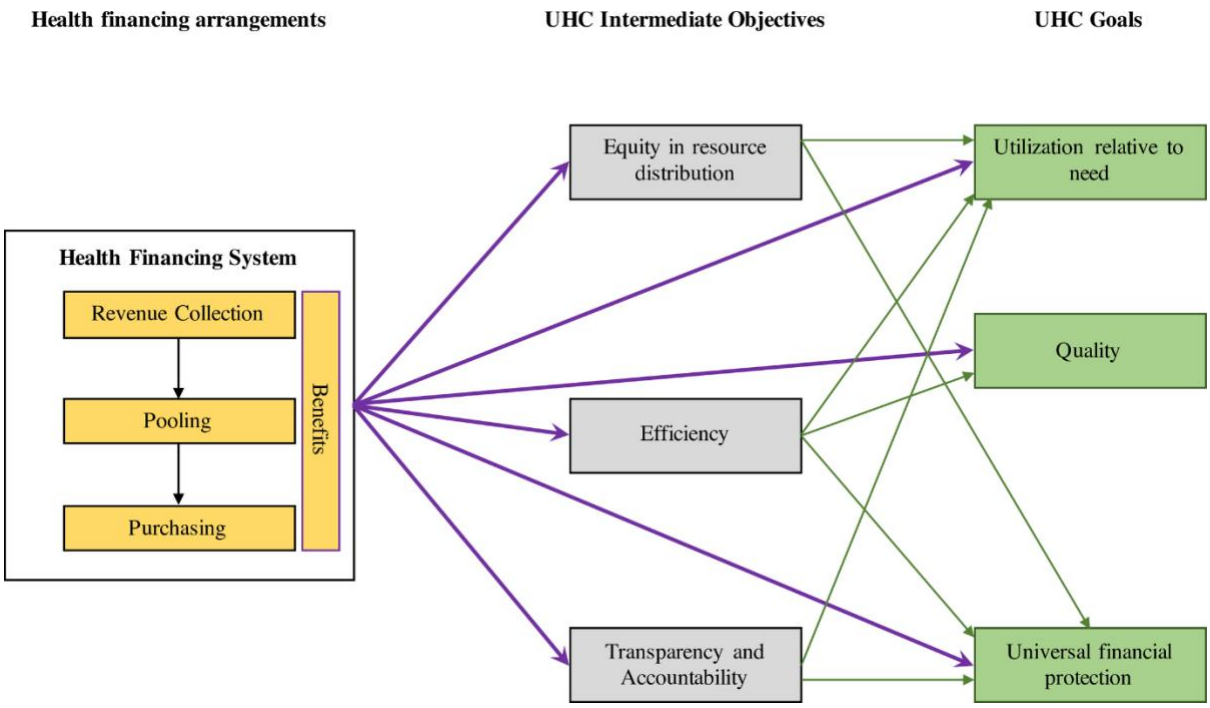
Universal health coverage and its significance to mental health systems

Universal health coverage (UHC) represents a number of specific health system goals and intermediate objectives which seek to improve equity in the use of health services, ensure service quality and guarantee financial protection for those who make use of services (42, 97). Its relevance to health systems globally is therefore clear; under UHC, all individuals in a society are able to access the promotive, preventive, curative, rehabilitative and palliative health services they need, of sufficient quality to be effective, without facing financial hardship (44, 98-100). The intermediate objectives of UHC encompass: equitable resource distribution, such that resources are distributed in line with the needs for health services across sociodemographic groups and geographical areas; efficiency, which refers to ensuring that resources are not wasted by pursuing the lowest cost combinations of service inputs to provide effective and good quality services; and transparency and accountability, which ensures that individuals are both aware of their health care entitlements and are empowered to make use of these services, and that the health system delivers on what is promised (97). In 2005, the World Health Assembly endorsed a resolution urging all its member states to work towards sustainable health financing with a view to achieving UHC (44, 98, 99).

A number of implications follow from such defined goals, including the need to specify what programmes and interventions are considered 'key' in a particular context, and the need to generate sufficient funds to ensure that these key interventions or services are made available and affordable to all (including to those with very limited ability to contribute funds themselves) at good quality. As expressed by Kutzin (2013), in its strictest sense, "UHC is a utopian ideal that no country can fully achieve" however the emphasis for all countries should be on translating UHC goals into component objectives with progress defined as progress towards these goals, rather than the full achievement of them (42).

There is widespread recognition that progress towards the achievement of the UHC goals and objectives will rely on radical reforms in the existing health financing environments for most LMICs if UHC is to be achieved according to the aforementioned dimensions (98, 99, 101-103). This recognition has been reflected in a seminal framework by Kutzin (2013) which outlines the goals and objectives of UHC that a health financing system can influence (Figure 1).

Figure 1 Goals and objectives of UHC that the health financing system can influence (42, 97)



A growing reliance on out-of-pocket payments and privately organized care has resulted in health care provided on the basis of ability-to-pay, which has disadvantaged lower-income socioeconomic groups in many LMICs (104). Thus, moving away from these trends means

overhauling health financing systems toward prepayment forms of health care financing, whereby individuals contribute regularly to the cost of health care through tax payments or health insurance contributions, providing greater financial protection to households than out-of-pocket spending (105).

There are two main mechanisms by which prepayment can be achieved – social health insurance (SHI) or national health insurance (NHI) systems for health financing. NHI is generally understood as a mandatory contribution scheme, with pooling of resources at the national level and a single purchaser model for purchasing a package of services for all citizens, regardless of whether they have contributed (42, 106, 107). In this system, mandatory prepayment is comprised of general revenues of the government (generally a combination of taxes levied on individuals and firms; taxes levied on consumption, such as value added tax and customs duties, and; revenues from government owned enterprises particularly among countries where natural resources represent a substantial amount of government revenues) (97). SHI includes mandatory contributions from certain groups; contributors may be all employed people, or defined groups in certain industries, and those who contribute are entitled to the benefits (97, 108).

The fundamental difference between SHI and tax-financed systems (NHI) is that SHI mechanisms raise revenue from earnings-related contributions of formal sector workers while tax-financed systems collect revenue from taxes and non-tax government revenues. These systems also differ in their delivery arrangements, where SHI systems traditionally contract with providers across the public and private systems while tax funded systems operate directly-managed facilities in the public sector. This separation within SHI systems is likely to entail additional costs related to selective contracting including costs associated with both the selection of providers and the drawing-up and enforcement of contracts, although some tax-financed purchasers have also started to contract selectively (109). On the other hand, the purchaser-provider split seen in SHI systems is believed to reduce health spending and as such has been a mechanism that tax-funded system are increasingly looking to adopt; whether it achieves this in practice is partly dependent on the payment mechanism used (109). The two common methods include fee-for-service (FFS), where providers are paid based on the number and types of services provided; and capitation, where providers are paid in advance based on the number of patients or population size entitled to a certain service (109).

Many SHI mechanism pay their providers on a fee-for-service (FFS) basis, which encourages the provision, and often overprovision, of services and has therefore been associated with high per capita health spending. By contrast, tax-financed systems have historically used payment mechanisms that are less likely to lead to high levels of per capita expenditure, and where FFS has been used, it has largely been in the context of paying primary care providers for providing specific preventive measures (109). Fairly recently, tax-financed systems have begun to use more high-powered incentives for hospitals such as diagnosis-related groups (109). In addition, most tax-financed systems operate a GP gatekeeper system in which individuals must first go to a primary health care facility for care and be referred upwards should it be required , whereas most SHI systems do not. This gatekeeping model is believed to contribute to better health outcomes by encouraging primary health care service provision which promotes preventive care, increased chance for early detection and treatment of illness, and a more coordinated and integrated approach to care.

In contrast to a NHI, coverage is not necessarily universal within SHI systems. Furthermore, often the groups not covered by the SHI program will be disadvantaged in terms of resources and there exists systematic variations in benefit packages and quality of care across subpopulations (109). In countries where multiple SHI schemes exist, they often compete with one another for members under what is known as a a risk-adjusted capitation system where some groups will prove less profitable (i.e the old and sick) and may be avoided by insurers and as a result underserved. Therefore, in a SHI model, universality can only be achieved if contributions are made on behalf of specific individuals in the population who are not able to afford contributions themselves. Thus, most countries that have adopted SHI reforms usually combine a number of different sources of funds, where government contributes on behalf of those that can't afford to pay themselves.

Voluntary Health Insurance (VHI) is a third prepaid pooling arrangement in which contributions are made on a voluntary basis, and as such the decision to obtain such coverage is made by individuals, households, or private companies, rather than mandated by Government (110). VHI as a financing mechanism in health systems only plays a marginal role in most countries; typically less than 10% of the population in LMICs belong to these mechanisms, with the exception of a few countries including South Africa . VHI as a share of total health expenditure is rising with the emergence of a middle class comprised of many

people who are able and willing to pay VHI premiums for what they perceive to be better quality or more convenient care in the private sector (110).

In practice, there is no one-size-fits-all solution to achieving UHC through health financing reforms; the mix of financing sources and provision arrangements within a universal coverage system, and the degree of equity sought and achieved, vary widely amongst countries (105, 106, 111). Nonetheless, there are key elements of the revenue collection, pooling and purchasing arrangements, known as the three functions of the health financing system, that make progress towards UHC more promising (106).

With respect to revenue collection, reliance on public financing is essential to UHC. Universal coverage cannot be achieved without compulsory contributions and cross-subsidization for the poor. Public funding can emanate from general government revenues, or compulsory contributions (payroll taxes) levied on those that are formally employed (106). Among LMICs with a large proportion of their populations outside of the formal employment sector, payroll or income taxes are difficult to enforce and implement (106). In contexts such as these, increasing the size of the compulsory prepaid pool requires transfers from general revenues (sourced predominantly from consumption taxes such as value added tax) (106). Thus, moving towards UHC in LMICs means moving away from a purely contributory basis for entitlement and coverage (106). The pace at which such significant reforms can be made is largely dependent on the existing characteristics of the health financing system, and a country's social, macro-economic and political context (105).

Following revenue collection, funds are accumulated or pooled on behalf of some or the entire population through entities such as health insurance funds, national health ministries or departments, or even local governments. The primary goal of pooling is to ensure risk is spread across individuals so that no one carries the full burden of paying for care; effectively the healthy subsidize the sick, the young subsidize the old, and the rich the poor (42, 97, 106). The fragmentation of pooling results from barriers to the redistribution and efficient use of the prepaid funds and represents a significant obstacle to progressing towards the key objectives of UHC – removing the financial barriers to services for all who need them, and protection against the financial risk of using health care (42, 97, 106). Pooling as a financing policy instrument must be recognized as an explicit target for policy reforms toward UHC (42, 97, 106). Fragmented pooling arrangements are a source of system-wide inefficiency, leading to

the duplication of administrative costs and limitations on the capacity of the financing system to employ strategic purchasing of services from providers (112). Fragmentation in health financing systems includes population segmentation, whereby revenues for the care of different population groups are held in separate pools; geographical fragmentation, whereby funds collected in a distinct administrative region (e.g. state or district) can only be used for services within that region, with no (or very limited) scope for redistribution of funds between regions, and; in settings which employ multiple competing insurers (97, 104, 105, 107, 112).

Population fragmentation can be found in many countries that have a compulsory insurance fund for contributors (typically formal sector workers) and results in significant equity consequences resulting from higher per capita funding amongst pools serving the richer in addition to reduced efficiency through overlapping pools (97, 104, 105, 107, 112). Similarly, geographic fragmentation results in efficiency problems due to decentralized regional pools serving relatively small populations, resulting in higher than necessary administrative costs for the system as a whole, in addition to equity concerns, particularly when the majority of health services are located in urban areas (97, 104, 105, 107, 112). In settings which rely on multiple competing insurers, equity is a concern because insurers have an incentive to select young and healthy persons for coverage, excluding those with greater health needs. VHI can have negative effects on health system performance as it relates to equity in service use, by creating or reinforcing a two-class system that disproportionately benefits people of higher incomes with lower health risks. Furthermore, in instances where governments pay the employer share of premiums for civil servants or where tax credits are granted in relation to VHI premium payments, public spending becomes more pro-rich. It therefore becomes necessary to use some form of financial equalization across pools to minimize the potentially harmful effects of this form of fragmentation (97, 104, 105, 107, 112). Lastly, fragmentation in funds may occur where funds for specific health programs and services are managed in separate pools and therefore render it challenging to organize efficient and integrated services (97, 104, 105, 107, 112).

Fragmentation exists to some extent in all countries and is a product of the historical or political development of a country's health financing system; in LMICs, with a relatively large informally employed population, the introduction of a compulsory social health insurance scheme poses a high risk of excluding people if it only serves contributors (97, 104, 105, 107, 112). As a means to address this, several countries have redirected general budget revenues

into the same pool as the Social Health Insurance contributions enabling the rapid scale-up of coverage. By recognizing the limits of contributory approaches, countries should in turn create an explicit role for general budget revenues in the financing system (97, 104, 105, 107, 112). This can occur by pooling general budget with contributory revenues as already stated, or by consolidating previously separate pools and creating a universal, budget-funded, non-contributory entitlement, as is the case with Thailand's Universal Coverage scheme (97, 104, 105, 107, 112).

Purchasing is the third critical function of the health financing system and reflects the mechanisms used to allocate prepaid resources to purchase services from providers. The design of purchasing mechanisms involves four critical areas: the services that will be purchased, the recipients of the services, the providers the services will be procured from and how those providers should be paid (113). A purchaser-provider split, as mentioned earlier, allows for a separation of the institutional and organisational bodies responsible for the purchasing and provision of health services; the purchaser is responsible for identifying population health needs and determining the most appropriate means to meet these needs, while providers are responsible for service provision and will be contracted by the purchaser to deliver these services (113, 114). In LMICs, out of pocket expenditure (OOP) for health services is one of the main mechanisms by which individuals access care; government subsidies for the provision of free health services for different segments of the population such as the poor or vulnerable are often provided to reduce OOP. Healthcare can be purchased from public and private service providers, including pharmacies or drug shops. Managing the public/private mix in health care can be challenging and requires strong regulatory mechanisms to ensure that government objectives are achieved. The identification of benefit entitlements take into account population needs, national health priorities and cost-effectiveness.(115). In contrast to passive approaches to purchasing, characterized by a pre-determined budget or payment for costs as they arise where providers receive payment independent of performance and without influence in the quantity or the quality of health services; strategic purchasing involves linking the transfer of funds to providers to their performance or the health needs of the population they serve (115). In addition to the goals of equity, efficiency and quality of service delivery, strategic purchasing serves to enhance transparency and accountability of providers and purchasers to the population.

Strategic purchasing requires the purchaser to engage actively in three main relationships: with Government (Ministries or Departments of Health), with healthcare providers, and with citizens (115). Key strategic purchasing actions by government include the development of clear frameworks and accountability for purchaser(s) and providers, ensuring adequate resources are mobilised to meet service entitlements and addressing service delivery infrastructure gaps (115). The service needs, preferences and values of the population need to be assessed and used to specify service entitlements/benefits, the population need to be informed of their entitlements and obligations and mechanisms must be put in place to ensure that the population can access their entitlements and avenues for feedback (115). There are a range of strategic purchasing actions with regards to providers, including identifying or accrediting providers according to their location and quality of services, establishing service agreements including provider payment methods to encourage efficiency and service quality and the ongoing monitoring of provider performance (115).

Identification of the health benefits package (HBP) is a crucial aspect of purchasing; discontinuity arising between aspirational health plans and available financial and other resources is the single most common failing of existing benefits plans in LMICs (116). An important characteristic of an explicit benefit package enables citizens to be aware of what services are available and enables the ongoing assessment of the resource requirements to deliver such a package (116). Explicit health benefit package specifications face political and practical difficulties due to the lack of analytic and administrative capacity to set a HBP, data needed to establish the HBP, service delivery constraints, and the potential for political tensions by alienating certain patient or provider interest groups (116). However, an explicit statement of funded and provided services has numerous benefits including: improved access to services for patients, whose access to services might otherwise be largely determined by clinical professionals; the identification of whether funds are being spent wisely, on services that create the maximum benefit for society; the facilitation of important resource allocation decisions, such as regional funding allocations, in order to reduce variations in care and outcomes and adherence to budget limits; a reduction in the risk that providers will require “informal” payments; and empowerment of poor and marginalized groups (116). With relevance to mental health care, a defined set of mental health conditions and interventions should be explicitly recognized and included in the essential list or package of health benefits offered to all citizens by governments, whether as part of the national tax-based health service or under the provisions of social or private insurance schemes .

A key issue for many LMICs is the low-priority afforded to mental health; indeed, if mental health priorities are not explicitly addressed in efforts to move countries towards UHC through health financing reforms, mental health is likely to continue to be relegated to the back-burner; the point being that the achievement of UHC or progress towards UHC does not in itself guarantee UHC for mental health care. This is in part the basis for the development of the field of global mental health, defined as "an area for study, research and practice that places a priority on improving [mental] health and achieving equity in [mental] health for all people worldwide" (117). Consequently, the last three decades have seen an intensifying interest in, and demand for, economic analysis of mental health care and policy (68, 118). With the inclusion of mental health in the 2015 Sustainable Development Goals (SDGs) there is now a global commitment to include mental health among the highest priorities for investment as a health, humanitarian and development priority. LMICs contemplating mental health system scale-up embedded into wider SDG- and UHC-related health-sector transformations must address a number of key mental health financing policy considerations for attaining population-based improvements in mental health if UHC is to be achieved, inclusive of care for mental health.

Context of reform for the South African mental health system

The constitution of South Africa requires that the government work towards the progressive realization of the right to health. However, 25 years after the democratization of the country, massive health inequities remain. The burden of illness, injury and mortality disproportionately falls upon certain groups (119, 120). Racially, prevalence of HIV among White South Africans, falls between 0.2% and 0.5%, among men and women, respectively, whereas the prevalence of HIV among Black South Africans has been found to be 16.6% and 24.1%, among men and women, respectively (121). Inequities across provinces are also evident: in 2019, the life expectancy at birth ranged from 54.6 years in the Free State province to 65.7 years in the Western Cape province, for males (122). Similarly, the life expectancy among females ranged from 61.3 years in the Free State to 71.1 years in the Western Cape (122). The marked differences in the rates of disease and mortality in South Africa can be seen between races, socio-economic groups, provinces and gender which reflect differences in access to basic household, living conditions and other determinants of health (120). South Africa's apartheid past continues to influence inequities in its health, services, and resources (123). Even with a host of policies directed at ensuring water, housing, electricity, sanitation

and health care is provided to all, these services have become highly unreliable and insufficient through poor implementation and management (120).

Though food, employment, education and housing - the conditions by which people live - will strongly affect health and must be prioritized by the State; access to health services is a critical component of addressing the ways in which individuals live and die (124). The agenda for post-Apartheid South Africa's health policy was born out of a need to address the highly fragmented health system which existed through colonialism and apartheid. By 1994, this system had been weakened by disempowerment, discrimination and underdevelopment whereby budgets were overspent, human and financial resources poorly distributed and large inequalities in infrastructure were evident between geographical regions (120).

Since then, the South African health sector has experienced significant restructuring. The fourteen health administrations of the pre-1994 state were consolidated into one national and nine provincial health departments (120). The National Department of Health provides a framework for health policy while Provincial health departments are responsible for developing their own respective policy within the confines of the national framework (120). Focus was shifted toward primary health care delivery through the demarcation of 52 health districts as an integrated, comprehensive approach to servicing the health needs of the country, particularly for those that were disadvantaged (120). The broad framework for planning and implementing this program was initially provided by the relevant articles of the 1995 African National Congress (ANC) National Health Plan, the 1996 National Drug Program, the 1997 White Paper for the Transformation of the Health System in South Africa and more recently by the National Health Act 61 of 2003. The National Health Act 61 (2003) provides the basis of the legislative mandate of the Department of Health in South Africa. There are 47 Acts which the National Department of Health must comply with; 20 of these Acts fall directly under the portfolio of the Minister of Health (125).

In 2011, the South African Department of Health released the Green Paper on National Health Insurance to highlight the inequalities that exist in South Africa's two tiered health system, based on economic status, and to explicitly commit to the phased implementation of a National Health Insurance (NHI) model to achieve universal health coverage (126). Broadly, the Green Paper proposed three *phases* of implementation over a fourteen year period (beginning in 2012): Phase 1, to take place over five years, was to create adequate conditions for the efficient

and equitable delivery of quality health care services by reengineering the primary health care system, transforming the structure and resourcing of hospitals and addressing infrastructure issues and management deficiencies. Phase 2, to take place over five years, was to focus on establishing efficient provider-purchaser mechanisms by establishing a National Health Fund, registering the population and prioritizing vulnerable groups, and establishing contracting mechanisms for private providers (126, 127). In the final Phase, to take place over a four year period, mandatory prepayment from eligible members was to be introduced, and the National Health Insurance Fund was to be fully functional (126, 127).

The release of the White Paper on National Health Insurance followed in 2015 and was a major event for the Country, receiving both praise and criticism from different stakeholders (128). The White Paper described the features of the National Health Insurance which included universal access, mandatory prepayment of health care, comprehensive services, financial risk protection and a single payer system (128). Some positive feedback included the proposal of more equitable access to health care regardless of socio-economic status while critics argued that the proposed policy failed to give clear guidelines on the implementation process, and the mechanisms by which the proposed system would be sustainably financed (127, 129).

The comment period on the White Paper for National Health Insurance closed in May 2016, and a revised version entitled *National Health Insurance for South Africa: Pathways to Universal Health Coverage* was officially gazetted in June 2017 (130, 131). The pursuit of UHC through the introduction of National Health Insurance continues to dominate the health policy space in South Africa. In 2019, the NHI Bill (132) was tabled in parliament and has thus far not provided sufficient details regarding the population to be covered, how decisions regarding the benefits package will be made, what the core entitlements to beneficiaries will be, how strategic purchasing will be operationalized and how transparency will be assured.

Health system organization in South Africa

South Africa's existing health system, headed by the Minister and the Director General, the National Department of Health, comprises a large public sector that serves about 80-85% of the population and a smaller private sector.

The Public Sector

The public health system is led by the National Department of Health which is responsible for overall health policy and co-ordination and is largely financed by general taxation at present. Implementation and delivery of health services is through the nine provinces and 52 health districts. The provinces provide mainly curative hospital services through specialized, central, tertiary, regional and district hospitals; with the primary health care system largely characterized by nurse-driven services at community health centers, primary care clinics and mobile health centers (120, 133).

Care in the public sector is rationed explicitly through the use of clinical guidelines for all levels of the public health care system: public hospitals; public clinics, community health centres; community-based services; and ambulatory services; in addition to implicitly through the use of waiting lists and queuing systems (133). A lack of implementation of ambitious clinical guidelines and policies as well as the limited integration of services into the primary health system has led to poorly managed chronic infectious and non-communicable diseases (NCDs). Given the relationship between poverty and NCDs, injury, trauma and infectious diseases risk – the public health system in South Africa is under pressure to respond. HIV testing is consistently available, but provision of health services for other health conditions varies widely across facilities, districts and provinces. The response to the HIV and TB co-epidemics has been almost entirely carried by the public sector, given that there is a relatively low prevalence of HIV among the medically insured (133). Considering that only 40% of the overall health budget in South Africa is funded by the state, and 84% of the population rely on this funding – the public health system is under extreme pressure to more effectively manage chronic, long-term care, while maintaining and improving the capacity of acute care services. Adding further to these pressures is the issue of medicines supply and the lack of a sufficient health workforce.

When compared to the private health care system, the South African public health system today faces lower human resourcing ratios, financial constraints and aging infrastructure– these issues have impacted the quality of care being provided through the public sector and consistently motivates South Africans to become members of medical insurance schemes or to pay out of pocket for private care (133). Although public hospitals in the country are entitled to levy user fees determined by means-tests, primary care is free at the point-of-service. The

inequities in access persist across racial and geographic lines; black South Africans are three times more likely to live more than 5km from a primary health care facility when compared to white South Africans (133).

The Private Sector

The private sector services the health care needs of 16% of South Africans who are covered by voluntary private health financing vehicles (medical schemes), an approximate 8.10 million people, through 70% of the health care facilities which exist in the country (134, 135). Medical aid membership, and thus access to the private sector, is concentrated to the top two income-quintiles of the South African population, and private facilities are generally located in urban, metropolitan areas (133). Primarily composed of general practitioners, medical specialists and private hospitals, funding is largely based on voluntary medical scheme membership (encompassing 66% of total private expenditure on health) and out-of-pocket payments (encompassing 29.7% of total private expenditure on health) (119). Since 1998, the proportion of South Africans belonging to a medical scheme has remained fairly constant at around 14-16% of the population (136, 137). Nonetheless, there has been a significant decline in the benefits paid by most medical schemes, which has led to higher out-of-pocket expenses for members seeking treatment in the private sector (136). The private hospital sector in South Africa has been criticized for being expensive based on international standards and has driven overall increases in health expenditure in South Africa over time. The majority of private hospital beds in South Africa are owned by three large private hospital groups (133)

The private sector is not anticipated to grow considerably unless the incomes of the general population grow (136). Low income earners in South Africa still find medical aid membership unaffordable. As an alternative mechanism for growth, the private sector has become involved in service delivery within the public sector through Public-Private Interactions (PPIs) (136); these interactions have notably included “contracts with both profit and non-profit providers supporting the delivery of tuberculosis, psychiatric and secondary level hospital care for public patients” (Wadee et al. 2004).

In light of the increasingly unaffordable private health care system, the Competitions Commission (CC) initiated the Health Market Inquiry (HMI) in November 2013 to investigate and provide explanations for the increases in price and expenditure (138). The overall conclusion of the HMI was that the private South African healthcare market suffers from

multiple market failures, from both provider and funder perspectives, with structural and regulatory problems that harm competition and undermine access to healthcare (138). The HMI recommends the implementation of a standardized package of benefits based on revised Prescribed Minimum Benefits, covering catastrophic expenditure and some level of out-of-hospital and primary care, with a view to encouraging reduced use of higher levels of care, with supplementary packages provided in a transparent manner (138). The HMI concludes that establishing an appropriate regulatory framework is necessary to facilitate alternative models of care that allow for interprofessional and interdisciplinary group practice to improve the provision of care and prevent revenue-maximizing behavior (138).

At a broader level, the HMI process and outcomes highlight the need for a review of policy development and co-ordination processes. The HMI recommendations need to be contextualized within the broader political context of health care policy and planning initiatives, especially the government's intention to address the inequities and failings of the two-tiered South African health care system through the proposed NHI. Moving forward, the demand for private health care financing under an NHI model is unclear; there are mixed messages from the Department of Health at this stage regarding the future role of medical aid schemes for the country.

Health system financing in South Africa

According to the WHO, health expenditure in South Africa constitutes 8.9% of the nation's GDP, a value which has modestly increased over the past decade (139). Between 2005 and 2006, general taxation accounted for approximately 40% of total health care funds, medical aid contributions contributed 45% and out-of-pocket payments contributed 14% (140). Despite the progressivity of South African health care financing, whereby "the richest 20% of the population contribut[e] about three times the proportion of personal income than the poorest 60% of the population" (136); the private sector is financed disproportionately when compared to the public sector which has a significant impact on the benefits of health services which are available to the users of each respective sector (136).

Between 2008 and 2009, expenditure per person in the private sector was about 5.4 times higher than public sector expenditure per person (137). Nonetheless, between 2002 and 2013, public health expenditure doubled in real terms driven by increased spending on the rollout of the

government's HIV/AIDS programme, personnel numbers which increased by over 80,000 human resources for health (an additional 27,842 nurses, 5,088 doctors and 6,597 pharmacists/pharmacist assistants), and exchange rate depreciation that impacted the costs of drugs, new vaccines, and; increases in primary care visits (141).

General government expenditure on health was 39.7% of the total expenditure on health whereas general private expenditure on health represented 60.3% of total expenditure on health (119). Evidently, there is a substantial difference in resource availability between public and private sectors particularly significant when one considers that the public sector has a far smaller resource base to serve a population approximately four times the size of the population served by the private sector. The burden of disease is much higher among the marginalized and poor who are largely dependent on the public system for health care; when the resources available to the public health sector is considered, it can be said that the distribution of benefit from health services is unfairly distorted toward wealthier groups and is inequitable (136).

The impact of the 2008 global economic recession was felt in South Africa by 2012/13 when economic growth and tax revenue slowed, and national deficits rose to 5% of GDP (141). Between 2008 and 2012, the government was able to sustain their levels of public health expenditure, growing by approximately 8.2% per year however, as economic growth did not recover quickly enough, the government was forced to reduce public-health expenditure growth realizing it had reached sensible deficit and borrowing limits, and since 2012 has only increased by an estimated 1.8% per year (141). This resulted in a slowing of health budget growth for the country, which had been on an upward trajectory since 2000 (141). Tabled provincial budgets for 2017/2018 have indicated that the slowing of health sector budgets is likely to continue at least until 2019/20 (141). This is concerning in the face of a growing population of uninsured South Africans who rely on the public health system – between 2008 and 2016, the uninsured population has risen by 1.52% per year (141). Furthermore, budget cuts have led to critical issues in hiring human resources for health, including doctors and nurses, as posts have been frozen. In one province of South Africa, 2017 saw a collapse of the department of oncology; the last oncologist in the KwaZulu Natal province left the public health service in 2017 and there are massive shortages in radiotherapy equipment (142).

As mentioned, the National Department of Health has initiated a process of establishing a National Health Insurance scheme to provide health care for all, irrespective of household

ability to pay and income band, which will be mandatory for all South Africans. Complete implementation of the NHI is set for 2025, and is set to be funded through general tax revenue, including shifting funds from the provincial equitable share and conditional grants; the reallocation of funding for medical tax credits that are currently paid to medical schemes, payroll taxes (employer and employee), surcharges on taxable income and possible increased VAT revenues (125, 127, 130, 136, 141, 143, 144). This policy envisages greater access and quality of care for all South Africans, however also represents an upward trajectory for health expenditure in the face of fiscal constraint (141). Yet, in October 2019, the Medium-Term Budget Policy Statement tabled in Parliament by Finance Minister Tito Mboweni stated that due to low growth and increasing budget deficits, the NHI costs as outlined in the Green and White papers are no longer affordable. The original NHI costs were projected to increase public health spending from 4% to 6% of GDP over 15 years, however the Medium-Term Budget Policy Statement indicated that domestic growth had been revised down from 1.5%, as stated in the February 2019 budget, to 0.5%. Furthermore, the consolidated budget deficit is projected at 5.9% in the current year.

Within the NHI, the benefits package is central to the success of the reform. The 2019 NHI Bill notes that the entitlements of the users of the NHI Fund have yet to be defined, however, these services will be free at the point of care, with referrals to other providers if the service is unavailable; where services are refused, written reasons must be submitted to the NHI Fund for this decision (144). The determination of the benefits according to the Bill will result from the establishment of a Benefits Advisory Committee by the Minister as well as an Office of Health Products Procurement within the NHI fund, with a number of potential areas of overlap. There is a concern about a lack of institutional capacity and human resources to support economic value assessment of services within the benefit package. International experience indicates that comprehensive health technology assessments toward the definition of HBF requires dedicated, stepwise strategies for institutional development and skills and knowledge capacity strengthening (138). To achieve equitable access to the health benefits package, the package must be affordable. A commitment to staying within budget remains absent in the NHI Bill.

<u>The impact of MNS disorders and the treatment gap in South Africa</u>

In the absence of nationally representative surveillance systems, the true extent of the burden of mental disorders in South Africa remains unknown and underestimated. In 2007, the first large scale population based study of common mental disorders estimated that 16.5% of adults have experienced a depressive, anxiety or substance use disorder in the previous twelve months, with an estimated 30.3% of South African adults experiencing one of these disorders during their lifetimes, based on data collected in 2002/03 (145, 146). Given the paucity of nationally representative prevalence estimates, the Global Burden of Disease study (2017) provides the most up-to-date data regarding the prevalence of MNS disorders in the country; showing that the 12-month prevalence for any MNS disorder in 2017 stands at 15.4%; above the prevalence estimates for LMICs (9).

In South Africa, MNS Disorders account for the fourth highest amount of DALYs (5.6%), after HIV/AIDS and sexually transmitted infections (31.4% of DALYs), respiratory infections and tuberculosis (7.4% of DALYs) and cardiovascular disease (7.0% of DALYs) (9). Consistent with global and LMIC trends, MNS disorders account for the highest contributor to YLD in South Africa (9).

The Global Burden of Disease report has revealed the scale of the contribution of depressive disorders and anxiety disorders, in particular, with 7.8% of South Africans living with anxiety, dysthymia or major depressive disorder in 2017; above the global and LMIC prevalence rates (9). Also particularly noteworthy is the burden of substance-use disorders, with approximately 2.7% of South Africa's population meeting the criteria for these disorders in 2017 (9). These estimates do not take into account co-morbid mental disorders, thus underestimating the true magnitude of the burden. Comorbidities between HIV/AIDS and common mental disorders (CMDs), a term often used to refer to depression and anxiety disorders, are well established: CMDs increase risk for poor adherence to antiretroviral treatment and depression and stressful life events are independently associated with accelerated HIV/AIDS disease progression. CMDs are the most frequently observed disorders in people living with HIV/AIDS, with depression being the most prevalent, followed by anxiety, post-traumatic stress disorder and alcohol abuse. Major depressive disorder prevalence rates among people living with HIV/AIDS in South Africa range from 11.1% to 34.9%, and South Africa currently is home to the highest number of individuals living with HIV/AIDS in the world (147).

A nationally representative household survey conducted in 2002/3 found that South Africa has a treatment gap of 75% for common mental disorders (148). The treatment gap for other mental disorders has not been assessed at the national level for South Africa. A study conducted by Burns et al (2014) reported a treatment gap of 80% for acute inpatient and ambulatory mental health care for schizophrenia and non-affective psychosis, and severe cases of bipolar disorder; major depressive disorder and anxiety disorders in the KwaZulu-Natal province (149). These estimates are in keeping with what is known regarding the treatment gap in LMICs, estimated at between 76–90.2% (11-13).

The reality of the significant treatment gap in South Africa, and in LMICs more broadly leads to the question of how people living with mental disorders in these settings are obtaining help, and indeed, how many of these individuals and their families are living with the impairment of cognition, emotion and/or behavioural control, distress, and disturbances in personal, familial, educational and occupational functioning, without any access to care (149).

Mental Health Service Availability & Access in South Africa

In South Africa, the entry level for accessing mental health services at present is mostly at an inappropriate level of care (tertiary and specialist psychiatric services) (96, 128). This has significantly contributed to the high costs of health care and the inefficiency of the health system (128). This has also meant that care-seeking typically occurs when patients experience very severe symptoms, largely as a result of untreated mental illness, and often require long-term institutionalized care. At the same time, the *revolving door phenomenon* has been used to characterize tertiary inpatient care in South Africa, whereby there is a high rate of re-admission due to poor adherence and treatment cessation once patients return to their communities; persistent substance abuse; and early discharges due to bed shortages (150). Further, quality of inpatient care at the tertiary and specialized care level has been found inadequate in addressing the psychosocial needs of inpatients, and reports of dehumanising experiences and human rights abuses within these facilities endure (150-153).

Estimates from 2007 have indicated that there were 41 psychiatric inpatient units within general hospitals (providing a total of 2.8 beds per 100,000) and 23 psychiatric hospitals (providing a total of 22.7 beds per 100,000); 1% of these beds were reserved for the care of children and adolescents (51, 154-156). The psychiatric hospitals are outdated and in

disrepair; there is an acute shortage of mental health professionals available to deliver this service; these facilities are unable to invest in the advancement of their scope of service (for example, child and adolescent psychiatry, neuropsychiatry and psychogeriatrics); and the undeveloped community mental health and psychosocial care service creates a situation in which approximately two thirds of discharged patients (from psychiatric facilities) are readmitted, and largely remain institutionalized without much potential of returning to their communities (157, 158). In terms of mental health and psychiatric services delivered in general Regional and Tertiary facilities, these hospitals frequently do not have the capacity to provide the care required and patients are refused care due to lack of space or forced to be admitted to general wards, without consideration of the safety implications to the mental health care users (MHCUs), other patients in the ward and the health workers, or the stigma that is experienced by the MHCUs (159).

A number of factors have weakened the provision of mental health services in South Africa, most critically the lack of human and financial resources to address treatment gaps and limited estimates of service coverage to target reforms (96, 160, 161). Despite the formulation of strong national policies and the provision of guidelines using best-practice approaches, the limited resources that exist are inefficiently concentrated in large psychiatric hospitals with a predominantly vertical model of care (96). With strong arguments for the integration of care into lower levels of the health system to address human resource shortages, task-shifting or task-sharing has been proposed as the most promising strategy to manage this shortfall in South Africa (95, 96). At the current time, however, these approaches have yet to be assessed at scale in the South African setting, and efforts to evaluate their feasibility are largely research-led (and financed) (96). Where the efficacy of these models of care can be demonstrated, there is still a very real concern that the public service will not have the required fiscal space to include these services in the package of benefits, the human resource capacity to ensure that task-shifted models of care receive adequate supervision and support and that health care workers may not be able to take on additional workload or have spare capacity to offer.

In LMICs, traditional healers are known to partially fill the treatment gap, forming a significant part of the mental health workforce worldwide, with estimates from South Africa suggesting that 39% of patients who were hospitalized with a first-episode psychosis sought care from traditional healers prior to seeking formal mental health services (162, 163). Consultation with traditional healers was associated with delays in accessing formal mental health care (162).

Although treatments used by traditional healers may fail to address common beliefs of humane care and human rights, a systematic review conducted in 2016 demonstrated that interventions delivered by traditional and faith healers might help to relieve distress and improve mild symptoms for depression and anxiety whilst little evidence exists to suggest that they change the course of severe mental illnesses such as bipolar and psychotic disorders (163). These findings reinforce the need to link traditional and formal health services (162-164).

Mental health financing

There is a lack of data available for mental health financing in South Africa. Government is the main source of funding for care of severe mental disorders in the country (156). Based on available data (for expenditure on psychiatric hospital level services *only*), in 2013, South Africa spent an estimated $59 million on mental health services (165). Presently, South Africa does not have a ring-fenced budget for mental health and funding for mental health falls under general health allocations. This means that provinces receive a set amount of funds from the national revenue, based on a provincial equitable share formula, and from this amount Provincial Executive Councils and Legislatures determine the amount of money that gets allocated to each sphere of their public service; resource allocations to health and to specific health programmes are therefore determined by the Province's own priorities.

While this approach to financing is consistent with global trends of decentralizing expenditure responsibilities, in South Africa, it has contributed to a situation in which increases in resourcing to Provinces, or increases allocated for a specific purpose do not guarantee use of these resources for their intended purpose, and these provincial decisions often redirect additional resources for health to other needs, both within or outside of the health sector. There is also a trend for provincial budgets to be based explicitly on historical budgeting and provinces are also not required to report on expenditure for specific health programmes paid for through the equitable share transfer, making it difficult to assess whether Provincial budget priorities are aligned to National priorities for health or mental health.

Mental Health Policy context

South Africa has a stand-alone law for mental health, called the Mental Health Care Act of 2002. The law scores 4 out of 5 on the WHO Atlas checklist for compliance of laws with

international human rights instruments. The law recognizes the human rights of those with mental illness, including access to care. The promulgation of the Act led to the establishment of Review Boards in each province which oversee inspection of compliance to human rights of persons with mental illnesses in mental health facilities (51). According to the WHO-AIMS and WHO Atlas assessment, the one dimension in which the law is not compliant with human rights is that it does not "promote the right of persons with mental disorders to exercise their legal capacity and to nominate a trusted person or network of people to support them in discussing issues and making decisions" (51, 156). Nonetheless, section(s) 26 - 31 of the Mental Health Care Act of 2002 (166) explicitly outline the process for nominating a partner, associate, parent, guardian of a mental health care user and/or a health provider, in cases where "mental health care users [are] incapable of making informed decisions" (166). Further, these Section(s) detail the process of recovery of capacity to make informed decisions by mental health users in South Africa (166).

The South African government has committed itself to transforming mental health services and ensuring that "quality mental health services are accessible, equitable, comprehensive and are integrated at all levels of the health system" (167). This commitment is reflected in the Mental Health Policy Framework for South Africa and the Strategic Plan 2013-2020 (MHPF), adopted by the National Health Council in July 2013. It is fully compliant (5 out of 5) with international human rights instruments (156). There are eight key objectives: "district-based mental health services and primary health care re-engineering; building institutional capacity; surveillance, research and innovation; building infrastructure and capacity of facilities; mental health technology, equipment and medicines; intersectoral collaboration; human resources for mental health; advocacy, mental health promotion and prevention of mental illness" (167).

The South African Mental Health Policy and Strategic Plan (2013) outlines key activities required to address the high prevalence of mental disorders, the social determinants of mental illness, the high comorbidity between mental disorders and other illnesses, the gap between the demand and supply of mental health services and the inequity in service delivery. Yet the health budgets and broader health system transformations do not reflect these commitments (167, 168). While the contents of the MHPF were said to be consistent with the ongoing efforts to re-engineer the primary health care system, implement national health insurance, and revitalize human resources and infrastructure for health – mental health, and the objectives of the Policy and Strategic Plan, have been notably absent from these activities.

Rationale for the thesis

Repeated calls to address the enormous and growing impact of MNS disorders through the implementation and scale-up of evidence-based treatment and prevention have been made over the past decade (43, 64, 72, 81, 169). Such efforts will require enhanced administration and governance arrangements, additional human resources, upgraded infrastructure, increased access to medicines and strengthened surveillance systems; placing significant new resource demands on the health systems of LMICs (43). In contexts of fiscal constraint, finding ways of paying for the budgetary consequences of these extra claims on the health system is an important policy consideration for countries seeking to move towards UHC for their populations, inclusive of access to care for MNS disorders and in keeping with the Sustainable Development Goals (4, 43, 90). Crucial is the provision of economic evidence on the economic impact of inadequate mental health care, the efficiency of existing mental health investments and inequities in resourcing and access. This information is needed to identify key priorities for health service and financing reforms towards the scaled-up delivery of mental health services, particularly for middle-income countries like South Africa. Having achieved the ability to deliver on basic health services, the government is increasingly turning its attention to achieving universal health coverage, financial protection and health systems efficiency, in particular through the adoption and phased implementation of a National Health Insurance financing system (170). There is concern that if mental health priorities are not explicitly defined and reflected in the financing policies and activities supporting the overall implementation of health financing reforms, a defined set of mental health conditions and interventions will not be explicitly recognized and included in the essential list or package of health benefits offered to all citizens by the NHI scheme and true UHC inclusive of mental health care will not be achievable.

Despite the burgeoning research on economic aspects of mental health in LMIC, there remain important gaps in our knowledge. Firstly, little is known regarding the effects of specific health financing policies and mechanisms on mental health care utilization in LMICs. Secondly, whilst international estimates point to the feasibility of incorporating mental health into ongoing health financing reforms towards UHC, these estimates lack the sensitivity to local priorities and health system characteristics. Thirdly, more economic evidence is needed using locally-derived data, not only regarding the key question of how the budgetary implications of scaled-up mental health care will be paid for, but also the extent and efficiency of existing

mental health investments and the inequities in resourcing and access that will form the baseline for targeted service reforms. Finally, little empirical evidence has examined the household-level burden of inadequate mental health care for depression symptoms – in light of depressive disorders being the second highest contributor to the burden of disease in middle income countries by 2030, it is essential that evidence of the lack of financial protection for affected individuals and their households is documented, so that financial protection efforts can be targeted in keeping with the SDG's mandate of "leaving no-one behind" and the goals of UHC.

Aims and objectives

The overall aim of this PhD is to generate new knowledge on the economic costs, impacts and financing strategies for mental health in South Africa. These aims will be achieved by fulfilling the following research objectives:

1. To examine the impact of social, national and community-based health insurance on mental health care utilization in low- and middle-income countries.
2. To examine the policy context, strategic needs, barriers and opportunities for sustainable financing for mental health in South Africa.
3. To quantify public health system expenditure on mental health services, by service-level and province, and to document and evaluate the resources and constraints of the mental health system in South Africa.
4. To examine the household economic costs and levels of financial risk protection associated with depression symptoms in South Africa.

Outline of this thesis

This thesis is divided into seven chapters. In the introduction (Chapter 1), I review the global and South African literature pertaining to the impact of MNS disorders, the pursuit of mental health system strengthening as a global goal, the significance of mental health systems to the universal health coverage agenda and the context of reform for the South African mental health system. Lastly, I present the rationale for this thesis and the aim and objectives of the thesis.

Chapters two, three, four and five of this thesis addresses each of the research objectives as separate studies, in turn. Each chapter justifies the research methods and describes how the

study was conducted. They contain the results of the primary or secondary data gathered by the author. The main findings of each study are discussed, in addition to limitations and potential areas for future research in relation to each objective.

In Chapter Two, I present a systematic review which I conducted in order to explore and critically evaluate the literature on the impact of social, national and community-based health insurance on health care utilization for MNS disorders in low- and middle-income countries, published until October 2018. As a secondary goal, the systematic review identifies whether there are any specific lessons that can be learnt from existing approaches to integrate mental health care into financing reforms towards universal health coverage.

In Chapter Three, I present a qualitative examination of the policy context, strategic needs, barriers and opportunities for sustainable financing for mental health in South Africa that was conducted through a situational analysis and a synthesis of key stakeholder consultations. The findings provide recommendations for how scaled-up mental health services can best be paid for in a way that is feasible, fair and appropriate within the fiscal constraints and structures of the country.

In Chapter Four of this thesis, I report on a national study that was conducted to empirically quantify public health system expenditure on mental health services, by service-level and province for the 2016/17 financial year. The chapter also documents and evaluates the resources and constraints of existing mental health investments in South Africa.

In Chapter Five, I report on a household survey which was conducted to determine the level of financial protection for persons living with depression symptoms in the Dr. Kenneth Kaunda health district of South Africa, which is serving as a pilot site for the NHI. The household economic factors associated with increased depression symptom severity on a continuum are reported; and demonstrate that financial risk protection efforts are needed across this continuum.

In Chapter Six, drawing on the accumulated evidence presented in in Chapters two, three, four and five; findings are synthesized towards an understanding of the economic impact of inadequate mental health care in South Africa, the efficiency of existing mental health investments and inequities in resourcing and access. Through this lens, and borrowing from the experiences of other LMICs, recommendations for key priorities for health service and

financing reforms towards UHC inclusive of mental health care in South Africa are generated. In addition, this Chapter reflects on the overall findings in terms of their implications for policy and future research and describes the overall limitations of this study.

In the concluding chapter (Chapter Seven), a brief overview of the overall contribution of this thesis in advancing knowledge on the economic costs, impacts and financing strategies for mental health in South Africa is presented.

Chapter 2

The impact of social, national and community-based health insurance on health care utilization for Mental, Neurological and Substance-use disorders in low- and middle-income countries: a systematic review

Authors: Sumaiyah Docrat [1*], Donela Besada[2], Susan Cleary[3] and Crick Lund[1,4]

1 Alan J. Flisher Centre for Public Mental Health, Department of Psychiatry and Mental Health, University of Cape Town, South Africa

2 Health Systems Research Unit, South Africa Medical Research Council, South Africa

3 Health Economics Unit, University of Cape Town, South Africa

4 Centre for Global Mental Health, Health Service and Population Research Department, Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom

Description of the contribution of candidate and co-authors

SD conceptualized the paper, developed and registered the systematic review protocol, conducted the systematic search for peer-reviewed articles in nine databases, screened articles against the inclusion and exclusion criteria, performed the data extraction and analysis, and drafted the article, under the guidance of CL and SC. DB contributed as an independent researcher to double-screen articles to be included in the systematic review against the inclusion and exclusion criteria. All authors reviewed the draft manuscript prior to submission.

Current status: Published in *BMC Health Economics Review*

Docrat S, Besada D, Cleary S, Lund C. The impact of social, national and community-based health insurance on health care utilization for mental, neurological and substance-use disorders in low-and middle-income countries: a systematic review. Health Economics Review. 2020;10(1):1-23.

Abstract

Background: Whilst several systematic reviews conducted in Low- and Middle-Income Countries (LMICs) have revealed that coverage under social, national and community-based health insurance has led to increased utilization of health care services, it remains unknown whether, and what aspects of, these shifts in financing result in improvements to mental health care utilization. The main aim of this review was to examine the impact of social, national and community-based health insurance enrollment on mental health care utilization in LMICs.

Methods: Systematic searches were performed in nine databases of peer-reviewed journal articles: Pubmed, Scopus, SciELO via Web of Science, Africa Wide, CINAHL, PsychInfo, Academic Search Premier, Health Source Nursing Academic and EconLit for studies published before October 2018. The quality of the studies was assessed using the Effective Public Health Practice Project quality assessment tool for quantitative studies. The systematic review was reported according to the PRISMA guidelines

Results: Eighteen studies were included in the review. Despite some heterogeneity across countries, the results demonstrated that enrollment in social, national and community-based health insurance schemes increased utilization of mental health care. This was consistent for the length of inpatient admissions, number of hospitalizations, outpatient use of rehabilitation services, having ever received treatment for diagnosed schizophrenia and depression, compliance with drug therapies and the prescriptions of more favorable medications and therapies, when compared to the uninsured. The majority of included studies did not describe the insurance schemes and their organizational details at length, with limited discussion of the links between these features and the outcomes. Given the complexity of mental health service utilization in these diverse contexts, it was difficult to draw overall judgements on whether the impact of insurance enrollment was positive or negative for mental health care outcomes.

Conclusions: Studies that explore the impact of social, national and community-based health insurance enrollment on mental health care utilization are limited both in number and scope. Despite the fact that many LMICs have been hailed for financing reforms towards universal health coverage, evidence on the positive impact of the reforms on mental health care utilization is only available for a small sub-set of these countries.

Introduction

In 2005, the World Health Assembly endorsed a resolution urging its member states to work towards sustainable health financing with a view to achieving universal health coverage (UHC) (44, 98, 99). UHC is a system in which all individuals in a society are able to access the promotive, preventive, curative, rehabilitative and palliative health services they need without facing financial hardship, and that these services are of sufficient quality to be effective (44, 98-100). There is widespread recognition that the achievement of such a goal will rely on radical reforms in the existing health financing environments for most low- and middle-income countries (LMICs) if UHC is to be achieved according to the aforementioned dimensions (98, 99, 101-103). In these contexts, increasing mandatory pre-payment funding is key to shifting away from high levels of out of pocket (OOP) payments for health care to protect individuals from the negative financial consequences of using health services and achieve equity in access (44, 98, 99).

Health financing reforms include changes in the way that revenues for health are generated and collected, how they are pooled to spread risks, the means by which the provision and purchasing of services are determined and how providers should be paid (101, 102). While financing reforms towards mandatory prepayment have been repeatedly called for, there remains a lack of consensus about how LMICs should structure reforms aimed at moving towards UHC (171). The WHO has advocated for social health insurance (SHI) and national health insurance (NHI) mandatory payment mechanisms as a priority to achieving equitable financing of health care and the achievement of UHC (44, 98, 99, 106).

Whilst in practice, the definition of these systems are often blurred; NHI is generally understood as a mandatory contribution scheme, with pooling of resources at the national level and a single purchaser model for purchasing a package of services for all citizens, regardless of whether they have contributed (42, 106, 107). In this system, mandatory prepayment is comprised of general revenues of the government (generally a combination of taxes levied on individuals and firms; taxes levied on consumption, such as value added tax and customs duties, and; revenues from government owned enterprises particularly among countries where natural resources represent a substantial amount of government revenues) (97). SHI includes mandatory contributions from certain groups; contributors may be all employed people, or defined groups in certain industries (97, 108). Therefore, in a SHI model, universality can only

be achieved if contributions are made on behalf of specific individuals in the population who are not able to afford contributions themselves. Thus, most countries that have adopted SHI reforms usually combine a number of different sources of funds, where government contributes on behalf of those that can't afford to pay themselves. Although the focus of this study was initially conceived to examine mandatory health insurance systems (i.e. social or national health insurance); there has been evidence that voluntary community-based health insurance (CBHI) may play a role in systems transitioning toward UHC (172), particularly where there is a large population that falls outside of formal sector employment.

There has already been remarkable success among several LMICs in that these countries are considered to have *almost* achieved universal coverage through health financing reforms. Countries include Cambodia, Chile, Colombia, Costa Rica, Estonia, the Kyrgyz Republic, Philippines, Sri Lanka, Thailand, Tunisia, and Vietnam (103, 173). Whilst no longer considered among the LMICs, China and South Korea have also been hailed as having health systems which have almost afforded UHC to their entire populations (103, 173). As governments consider ways in which UHC goals can be achieved within their context, there have been appeals for greater sharing of knowledge such that meaningful lessons from the experiences of other countries in reforming health financing systems can be gathered, specifically with regards to their funding sources, pooling arrangements, purchasing methods and policies on benefits and patient cost-sharing (99, 106).

A key concern amongst many LMICs is the low priority afforded to mental health. Despite the prevailing successes in LMICs transitioning toward sustainable mandatory health financing systems, the burden of mental disorders is increasing globally, with 1.1 billion people affected by a mental or substance use disorder, worldwide; and the treatment gaps for mental health care as high as 80% in China and India and crudely estimated at 92% in South Africa (4, 174). There is concern that if mental health priorities are not explicitly defined and reflected in the financing policies and activities supporting the overall implementation of health financing reforms, true UHC inclusive of mental health care will not be achievable in LMIC contexts (43, 175). A study on mental health financing challenges, opportunities and strategies for LMICs recently concluded that the inclusion of mental health in ongoing reforms to national insurance schemes represents one of the most promising avenues for sustainable mental health financing (43). As emphasized by the Lancet Commission on Global Mental Health and Sustainable Development, achieving UHC must involve the explicit inclusion of mental health

within reimbursement and mandatory insurance schemes as a standard, not as a complementary option (4). Mental health and the treatment of mental, neurological and substance-use (MNS) disorders represent a good example of conditions which are afforded low policy priority and are frequently excluded from national and social health insurance schemes, especially in LMIC – despite the burden of disease for MNS disorders.

Whilst several systematic reviews conducted in LMICs have revealed that coverage under social, national and community-based health insurance schemes has led to increased utilization of health care services, it remains unknown whether, and what aspects of, these shifts in financing result in improvements in mental health care utilization, thereby achieving the objectives of universalizing health care, inclusive of access to care for MNS disorders (172, 176, 177). This study therefore aims to examine the impact of social, national and community-based health insurance on mental health care utilization in LMICs; and to identify whether there are any specific lessons that can be learnt from existing approaches to integrate mental health care into financing reforms towards universal health coverage. Further, the study aims to deriving meaningful lessons from innovative reform experiences of how countries have altered their funding sources, pooling arrangements, purchasing methods, and policies on benefits and patient cost-sharing to achieve better mental health care utilization (106).

Methods

We developed a protocol for this review according to the PRISMA guidelines (178) and in 2018 we registered the protocol with PROSPERO, the International Prospective Register of Systematic Reviews (PROSPERO; 2018: CRD42018111576).

Eligibility Criteria

The inclusion and exclusion criteria are listed in Table 2. Studies were included if they: (i) adopted a quantitative research design or reported a quantification of mental health care utilization; (ii) examined the influence of national, social or community-based health insurance on mental health care utilization; (iii) were carried out in a low- or middle-income country either as per 1987 *or* 2017 definitions to allow for income changes over time; and (iv) were available in English. Studies were excluded if they were (i) qualitative descriptive studies, policy reviews, systematic reviews, opinion pieces, editorials, letters to the editor, book chapters, commentaries or conference abstracts; (ii) written in a non-English language, and;

(iii) were conducted in a high-income country as at 1987 *and* 2017. Studies whose primary outcome was not mental health care utilization but provided a secondary analysis with comparisons of mental health care utilization by insurance status were also included. Studies that explored the impact of private health insurance on mental health care utilization were excluded, unless they were included as a comparison group. The present study defines MNS disorders as encompassing: Alcohol use disorders; Neurological disorders (Alzheimer's disease and other dementias, Epilepsy); Illicit drug use disorders (Amphetamine use disorders, Cannabis use disorders, Cocaine use disorders, Opioid use disorders, Other drug use disorders); Eating disorders (Anorexia nervosa, Bulimia nervosa); Mood disorders (Anxiety disorders, Dysthymia, Major depressive disorder, Bipolar disorder); Psychotic disorders (Schizophrenia); Autism spectrum disorders (Autism, Asperger syndrome); Behavioural disorders (Attention-deficit/hyperactivity disorder, Conduct disorder); and Developmental disorders (Idiopathic developmental intellectual disability).

Table 2 Inclusion and exclusion criteria

Criteria	Inclusion Criteria	Exclusion Criteria
Study Design	Any quantitative study design	Qualitative studies unless they reported a quantification of mental health care utilization
Language	Available in the English Language	Unavailable in the English Language
Setting	Low- and Middle-Income counties either in 1987 or in 2017 to allow for income changes over time	High Income countries in 1987, that remained high income in 2017.
Publication	Peer-reviewed academic articles	Policy reviews, systematic reviews, opinion pieces, editorials, letters to the editor, book chapters, commentaries or conference abstracts
Topic	Studies the impact of community-based, national or social health insurance on mental health care utilization	Does not study the impact of community-based, national or social health insurance on mental health care utilization or, examines the impact of private health insurance on mental health care utilization.

Information Sources and Search Strategy

A systematic search for peer-reviewed articles published until October 1st, 2018 was conducted between 05 and 09 October 2018. We searched nine databases of peer-reviewed journal articles: Pubmed, Scopus, SciELO via Web of Science, Africa Wide, CINAHL, PsychInfo,

Academic Search Premier, Health Source Nursing Academic and EconLit. The search strategy included the use of a combination of free text, indexing terms, database-specific limits (e.g. humans, English-language) and database-specific subject headings/vocabulary (e.g. Medical Subject Headings (MeSH)). Multiple search terms for each of the following three concepts were developed: (1) social, national and community-based health insurance; (2) mental health care, and; (3) low- and middle-income countries (Additional File 1). Within each concept, search terms were combined using the Boolean term 'OR'. The three concepts were then combined using the Boolean term 'AND'. Mental health care utilization was conceptualized as the use or consumption of any health services for the purpose of preventing, treating or obtaining information about one's mental health problems or mental health status. Given the dearth of literature of this kind as well as varying opinions and definitions of utilization, we did not limit our search terms to publications that included the term "utilization". The database search strategy for the systematic review and the full Pubmed search is provided as an Appendix (see Appendix D). Minor adjustments were made to adapt the strategy to the various electronic databases searched, for example, MeSH terms were removed when searches were conducted for all databases excluding Pubmed. Searches were limited to human studies. There were no publication date restrictions however only articles published or available in English were included.

Screening and eligibility

Following the search of databases, the titles and abstracts of the search results were recorded and transferred into Endnote (179), where duplicates were identified and deleted. After irrelevant titles were excluded by one reviewer (SD), the titles and abstracts were double screened by SD and DB against the inclusion and exclusion criteria, tracking decisions using a pre-piloted form and dedicated table. Once the abstracts were screened, the full papers of the included abstracts, or of those for which more information was needed in order to include or exclude, were obtained and assessed for eligibility by both reviewers. Any full-text articles that could not be retrieved through the University of Cape Town Health Sciences Library electronic directory were sought via the inter-lending network in Southern Africa, or via electronic correspondence with authors. Differences between authors' opinions were resolved via discussion throughout the review process. Agreement between the two reviewers was calculated by the kappa statistic.

Data extraction and analysis

Data about and derived from the included papers were extracted by the first author (SD) onto a predesigned Excel-based data extraction form. The purposely designed, pre-piloted, spreadsheet of tables included: study source, design and participant characteristics, type and characteristics of the insurance mechanisms under examination including (where specified) revenue generation, pooling and purchasing arrangements as well as characteristics of the benefit package; the results for our primary outcome (mental health care utilization), other relevant secondary results, and the results of the study's quality assessment. Quality of these studies was assessed by the Effective Public Health Practice Project (EPHPP) quality assessment tool for quantitative studies (180). Once the assessment is fulfilled, eight components are examined and receive a mark ranging between "strong," "moderate," and "weak": study design, analysis, withdrawals and dropouts, data collection practices, selection bias, invention integrity, blinding and confounders (180). The global (overall) score is considered of the strongest methodological rigor when a publication receives no weak ratings; whereas these are seen as moderate when they receive one weak rating and of weak methodological rigor when they receive two or more weak ratings. Notably, by these assessment criteria, only randomized controlled trials and controlled clinical trials can receive a strong score for the study design component; and cross-sectional studies receive a weak rating. Quality criteria were not used in decisions regarding inclusion or exclusion of eligible studies. As the purpose of this review was to gain insight into the current state of the literature, including reporting styles, where data relating to our primary outcome (mental health utilization) was only presented in Figures, or no empirical data tables were included relating to our outcome of interest, corresponding authors were contacted once via electronic mail to obtain these data. No further efforts were made to contact authors for supplementary materials or clarifications outside of what was reported.

Given the heterogeneity of the study designs, the insurance mechanisms being examined, and the outcome measures of mental health care utilization reported in the identified studies, a meta-analysis was not conducted. Instead, a qualitative synthesis of findings is presented, which compares, evaluates and summarizes findings narratively in relation to the review questions. Descriptive statistics were calculated using STATA 13.

Before narratively synthesizing the impact of SHI, NHI or CBHI on mental health care utilization, given the lack of specific details regarding the particular financing mechanisms under examination in the included studies and to give context to the results, we have outlined the characteristics of the SHI, NHI and CBHI schemes that have been examined within the included papers, including their population coverage, revenue generation and pooling arrangements, benefits packages and provider payment mechanisms based on a review of secondary sources (see Table 3).

Results

Search results and study selection

A total of 2857 articles were identified from databases, of which 2426 abstracts were screened for eligibility (Figure 2). In total, 127 articles were selected for full-text review. Of these, 25% did not include any measure of mental health care utilization; 16% were review articles; and 13% did not explore the impact of community-based, social or national health insurance (i.e. focused on private health insurance only). English-language translations of articles written in other languages were not available for eight articles, whilst three articles could not be obtained from the inter-library lending facility of the University of Cape Town. Following the full-text review, we found twenty articles that met the inclusion criteria. Two full-texts were excluded at this stage as in one instance, our primary outcomes were presented graphically only (n=1) and in the second, findings were mentioned in the discussion with no empirical data outlined in the results (n=1); corresponding authors were contacted for access to these data and no responses were obtained. In total 18 studies were included in the final review. Reviewer agreement on selection of publications for final review was 94.2% (kappa=0.81).

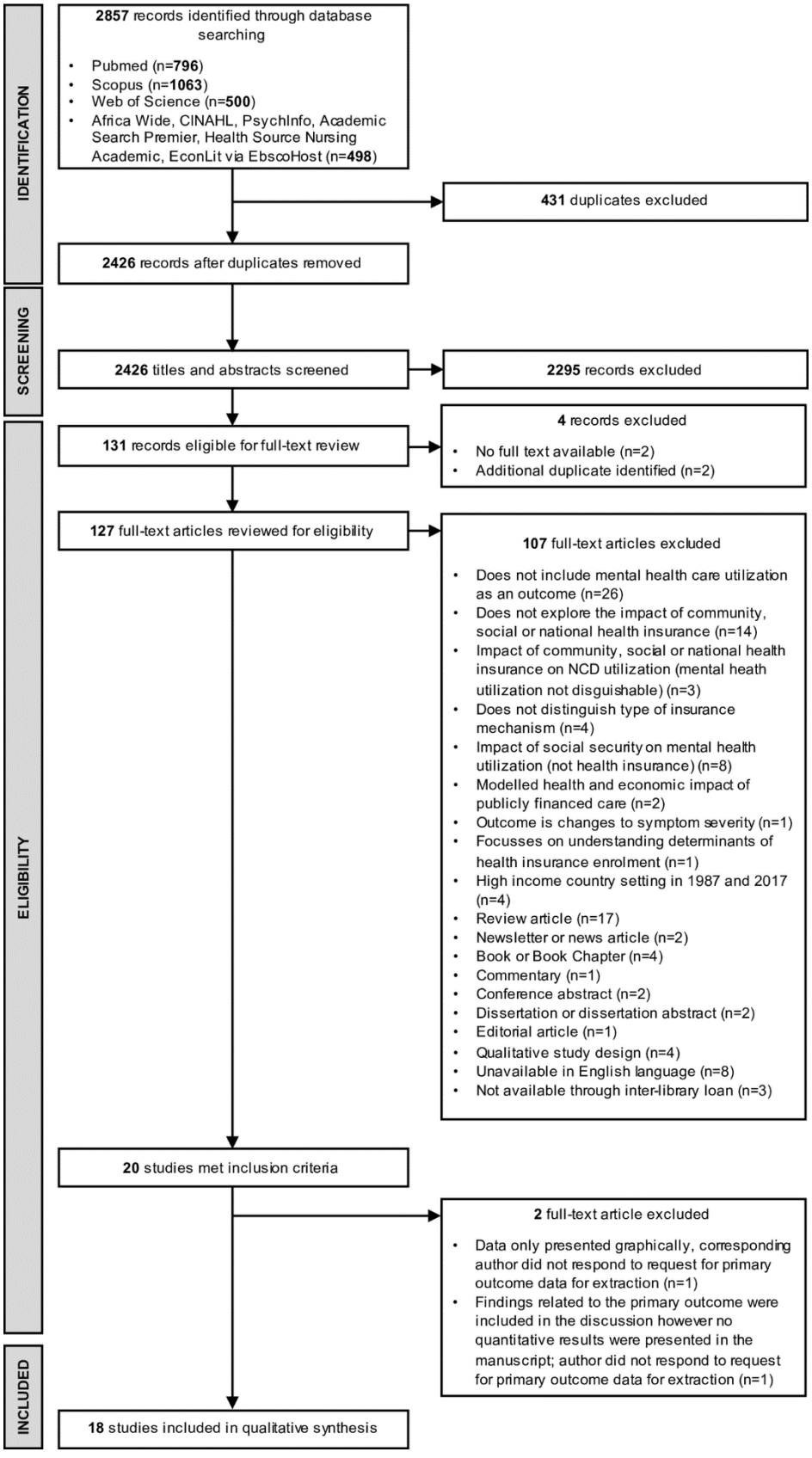
Table 3 Characteristics of the Health Insurance Mechanisms examined by the Included Studies

Location	Health Insurance Mechanism type	Health Insurance Mechanism Name	Year of scheme establishment	Target Beneficiaries and Coverage	Revenue Collection and Pooling	Benefits Packages Covered	Provider Payment Mechanism	Co-payments
Chile	SHI	National Health Fund (FONASA)	1979	Category A: the indigent, unemployed or inactive; Category B: very low income; Category C: lower-middle income and D: higher-middle earning group. Category C and D also have the option to use private health care; in 2005, coverage for FONASA was 70%	• Uniform compulsory health insurance contribution of 7% (ceiling of $2000) of salary comprising one third of public funding with the remainder coming from the state. • Between 32-40% of contributions of higher-income public beneficiaries cross-subsidize funding for poorer beneficiaries (progressive) (103). • Regime of Explicit Health Guarantees (AUGE) reforms implemented in 2002-03 to achieve universal health coverage.	• Users of categories A and B entitled only to services provided by public hospitals and clinics. • Lowest income groups entitled to free care directly from FONASA but only eligible for certain services and important exclusions exist. • Copayments for public health services are low for category C and D if they make use of public health care. • Groups C and D may opt to use private providers within FONASA agreement however the co-payments are much higher. • FONASA allocates health services using quantity rationing (lines and waiting lists) rather than price rationing	• Per capita	• Care provided by public institutions fully covered by insurance for A and B category; Category C 10% & D 15% copayment • C and tier D using private sector: 50% co-payment
	Private Health Insurance	ISAPRES (Instituciones de Salud Previsional), Armed Forces and Teachers Union	1981	Workers whereby their financial contributions match their health risk; in 2005, coverage was approximately 19%	• Main source of contributions (premiums) paid by members (93% between 1990 and 1997) equating to at least 7% of salary. Premiums are adjusted to match health risk to contribution, and beneficiaries are also able to purchase additional cover so premiums frequently exceed 7%. • 4% made up of sale of voluntary plans sold supplementary to plans those with compulsory contributions. • Premiums 7% but adjusted to match health risk to contribution - reviewed annually • Equity concern because insurers select young and healthy people; ISAPREs are able to decide whether to accept an individual as a beneficiary after gathering information about the person.	• All services provided under FONASA plus additional services that ae chosen by the beneficiaries based on plans purchased. • Since 2005, both private and public insurers were legally required to provide a similar benefit package covering certain legally defined health programs (including Schizophrenia; Depression in individuals over 15 years; Drug and alcohol dependence in adolescents from 10 to 19 years.	Not reported	• Insurance plans among individuals in the private cover- age group involved restrictions and variable copayments depending on the premiums paid.
Thailand	CBHI	Health Card Scheme	1983	Near poor and middle-income classes in rural areas; in 2000, coverage was approximately 30% of the Thai population	• Voluntary Health insurance card: Baht 1,000 or $40 per year per household of not more than 5 members (181). • Household contributes half and other half subsidized by general tax revenue through the Ministry of Public Health • Specific time for card sales: cycle is one year and sale depends on seasonal fluctuations in income. • Premium is collected when cash incomes are highest (e.g when crops are harvested) • This scheme covered the near-poor population group on a voluntary basis, so there were some problems of selection bias (103, 182). • Amalgamated into UHC scheme in 2002	• Beneficiaries must register and seek care at certain first-contact health facilities, either a health center or a hospital. Anyone who bypasses this system must pay out of pocket (103, 181).	• Per capita	• No copayment provided referral procedures are followed and public facilities are used.
	NHI	Universal Health Coverage scheme (previously 30 Baht Scheme)	2002	The rest of the population not covered by SSS and CSMBS; coverage 76.6% of the Thai population. The UHC Scheme replaced the Health Card Scheme in 2002.	• Entirely funded by government, mostly through general tax revenue. • Other contributions include those from local governments, fines from violating the UHC act, donations and interest on assets (103, 182).	• Comprehensive package with 15 conditions excluded. Excluded conditions are: Psychosis except acute attacks; Drug addiction; Long-term hospitalization (more than 180 days in a year) • Choice of provider limited and must register with first-line provider in vicinity of residence or workplace • No copayments unless non-emergency services used from non-registered facilities.	• Capitation + Diagnosis-Related Group (DRG)	• 30-baht co-payment abolished in 2006 • No copayment at registered hospitals (includes prescribed medicines) provided referral procedures.
	SHI	Social Security Scheme (SSS)	1992	Private sector employees (13% of the Thai population)	• Financed by equal contribution from employees, employers and the government • The scheme collects contributions from employees and employers equivalent to 1.5% of the salary of the employee. The government matches the contribution with 1.5% and resources are pooled at the national level (103, 182).	• Comprehensive package with nonwork related illnesses; 15 conditions excluded. Excluded conditions are: Psychosis except acute attacks; Drug addiction; Long-term hospitalization (more than 180 days in a year) • Moderate limitation in choice of provider, registration required with first-line providers, but with more choices. • Co-payments exist for maternity and emergency services if beyond a budget ceiling. • Includes medical care and cash benefits: 50% of wages 90 days at a time up to a maximum of 180 days/ for chronic cases	• Contract capitation system; use Diagnosis-Related Group in risk adjusted part	• No copayment at registered hospitals (includes prescribed medicines) provided referral procedures are followed
	SHI	Civil Service Medical Benefits Scheme (CSMBS)	1960s	Govt employees & dependents, retirees (7% of Thai population)	• Tax-revenue financed, resources are centrally pooled at the National level. • CSMCS is a government fringe benefit package financed by taxes	• Comprehensive package; no conditions excluded. • Almost unlimited provider choice and can go to • any public facility. • Co-payments exist for inpatient care at private hospitals.	• Fee-for-service for Outpatient, and Diagnosis-Related Group for Inpatient	• No copayment at registered hospitals (includes prescribed medicines) provided referral procedures are followed
South Korea	NHI	Korean national health insurance	1977 (full geographical coverage by 1989)	The population of Korea; 96.4% of the population is covered by the NHI	• Combination of NHI contributions and government taxes • Government subsidies to NHI at prescribed level of 20% of NHI revenues from contributions • NHI covers about 60% of medical expenditure incurred by their beneficiaries. • Two categories of NHI insures: (1) the employees (industrial workers, government employees and teachers): 5.08% of salaries for the EE insurees; with employer and employee each paying half; (2) self-employed (daily workers who are employed less than one month a year, military personnel and elected public officials without a monthly salary, or part time workers) • Household's total income is assessed, income types assessed at different weights: ~~₩~~50,513 per household or ~~₩~~21,594 per insured person; ~~₩~~2,000 minimum contribution • In 2000, all insurance schemes merged into single payer with uniform contribution schedule and benefits package (183)	• NHI benefits are provided for the prevention and treatment of disease and injury, for childbirth, and for health promotion and rehabilitation, but the focus is on curative care	• By law, all hospitals and clinics, whether public or private, as well as pharmacies, are obliged to subscribe as providers under the NHI and cannot opt out. • Fee-for-service rate fixed regardless of services psychiatric inpatients receive • DRGs are applied only to a limited number of diseases and the participation of facilities is voluntary. • Patients pay special treatment charges for being treated by doctors with a certain amount of work experience and special room charges for admissions to a better-equipped hospital room with fewer than five beds. This applies to psychotherapy where patients pay up to 50%; or 100% for long terms therapy.	• A 20% co-payment is required for inpatient care services included in the benefit package, but this ranges from 30% to 60% for outpatient care, depending on the level of provider • The poor are exempted from cost-sharing at the point of service, and vulnerable patient groups have access to discounted copayment rates. • Full payment for services not included in the benefits package
	Government subsidies for those who do not have economic capability, and cannot work	Medical Care Aid 1	1977	Those who do not have economic capability; the beneficiaries who are not capable of working are categorized as AID Type 1 (2.1% population coverage).	• Government covers 100% of medical expenditure incurred by AID Type 1 beneficiaries. • Medical Aid Program financed by general revenue of the central and local governments but administered (including payments to providers) through health insurance system. • Previously exempted both from paying contributions and cost-sharing. Since 2007, specific cost-sharing schedule in place for them. (183)	??	• For psychiatric inpatient care institutions are reimbursed for AID beneficiaries at per-diem rates	
	Government subsidies for those who do not have economic capability, and can work	Medical Care Aid 2	1977	Those who do not have economic capability; the beneficiaries who can work are AID Type 2 (1.6% population coverage)	• Government covers 85% of medical expenditure incurred by AID Type 2 beneficiaries (1.6% of population) • Cost-sharing higher than for type 1 members but lower than for regular NHI beneficiaries (183)	??	• For psychiatric inpatient care institutions are reimbursed for AID beneficiaries at per-diem rates	
	Government subsidies for Veterans	Veterans Health	1977	Veterans, coverage rate not reported	Not reported			

Location	Health Insurance Mechanism type	Health Insurance Mechanism Name	Year of scheme establishment	Target Beneficiaries and Coverage	Revenue Collection and Pooling	Benefits Packages Covered	Provider Payment Mechanism	Co-payments
China	SHI	Urban Employee Basic Medical Insurance (UE-BMI)	1998	UE-BMI targets formal sector workers on a mandatory basis; coverage for UE-BMI is 19% of the population.	• UEBMI mandatory and administrated at municipal level • Funds of UEBMI came from 8% of the employee's wage: 6% by employers and 2% by employee (rates vary by time and municipalities)	• UEBMI covers both outpatient and inpatient health services; no copayment. • Health care and drug packages covered by UEBMI more generous than the other schemes • UEBMI drug and health care package developed and implemented by the municipal cities which are the unit of fund pooling. • Approximately 2000 drugs covered by the Urban Schemes	• UE-BMI moved from patient reimbursement to capitation payment to designated providers for outpatient services • Providers paid standard 80 RMB per person per month from the risk-pooling fund for providing outpatient services. • UEBMI still reimburses members on a fee-for-service basis for acute inpatient admissions. • For long-term inpatients with specified serious conditions, it pays "fee for unit according to hospital level" 120 RMB/day (tertiary), 110 RMB/day(secondary) and 70 RMB/day (primary).	• No copayment
	SHI	Urban Residence Basic Medical Insurance (UR-BMI)	2007	UR-BMI targets children, the elderly, the disabled, and other non-working urban residents but varies by region. Enrollment is voluntary for households; coverage for UR-BMI is 19.5% of the population*	• URBMI is government-subsidized, household-level-voluntary medical insurance, administrated at municipal level. • Funds of URBMI mainly from individual contributions (245 yuan for adults), and government contributions (at least 80 yuan per capita) (184). • Additional government contributions given to undeveloped central and western regions and poor or disabled individuals	• URBMI covers inpatient care only; 35-55% copayment. • Approximately 2000 drugs covered by the Urban Schemes	• Fee-for-service	• 35-55% copayment
	SHI	New Rural Cooperative Medical scheme (NCMS)	2002	NCMS targets rural residents on a voluntary basis; coverage for NCMS is approximately 59.7% of the population *	• NCMS is a voluntary insurance scheme subsidized by the local and central government. • Administration and risk-pooling set at county level • Funds of NCMS provided by local and central government (for poorer regions) together	• NCMS covers both outpatient and inpatient care in about 70% of the NCMS counties, the other 30% offering coverage for inpatient care only. • Design and implementation of health care package and drug lists is mainly the responsibility of each of the NCMS counties that are the unit of fund pooling and management. • 400 drugs covered by the NCMS	• Fee-for-service	• NCMS covers expenses in all public health care facility levels (rate varies by regions and by type of facilities). •
	GHI	Government Insurance System	<1980	Not reported	Not reported	Not reported	Not reported	• GIS provides almost complete payments, very limited copayments.
22 low-income, 17 lower-middle, and 9 upper-middle countries (2003)	SHI or NHI	Countries where most or all health services, including primary care, are provided by the government (even if private or NGO sector services may exist in parallel and some out-of-pocket expenses may exist).	N/A	N/A	N/A	N/A	N/A	N/A
	Private health insurance	Countries with no or minimal services provided by the government, or where only limited health services were provided by the government (e.g., for maternal and child health, HIV/ AIDS care, vaccinations, or for special groups such as children, elderly, impoverished).	N/A	N/A	N/A	N/A	N/A	N/A

*In 2016, the urban resident and rural schemes merged to form the urban rural resident basic medical insurance (URRBMI) to improve administrative efficiency(185)

Figure 2 Results of database, abstract and full text screening



The majority of articles were published in Asia (n=16, 89%), including twelve in China (186-197), two in South Korea (198, 199) and two in Thailand (200, 201). One article was from Chile, South America (202) and one article reporting findings across twenty-two low-income, seventeen lower-middle, and nine upper-middle countries as at 2003 (203) (Table 4). Thirteen of the eighteen articles examined the impact of SHI on mental health care utilization (186-197, 202); whilst three examined the impact of NHI (198, 199, 201) and one article examined the impact of CBHI (200) on mental health care utilization. The remaining paper explored a range of financing mechanisms across forty-eight LMICs (203). Across the sample of studies, the approximate average duration between the establishment of the financing scheme and the data collection (i.e. period of examination) for the study was 10.9 years (range 1-24 years).

With respect to the MNS disorders for which utilization was examined, 33% (n=6) of the articles included mental health care utilization for schizophrenia (187, 192-194, 197, 198); 16.7% (n=3) included mental health care utilization for epilepsy (186, 200, 201); 11.1% (n=2) included mental health care utilization for depressive and anxiety disorders (199, 202); with one article examining utilization for intellectual disability (188). Of the remaining articles, three examined mental health care utilization for all F-code diagnoses (mental, behavioral and neurodevelopmental disorders) based on the ICD-10 code (191, 195, 196); whilst the remaining two articles focused on mental health care utilization for those living with schizophrenia, bipolar disorder, vascular dementia, mental and behavioural disorder due to use of alcohol, manic episode, depressive episode (189) and; schizophrenia-spectrum disorders; bipolar disorder and major depression (190), respectively.

Study quality

The study's quality ratings are reported in Table 5. In terms of quality, four studies were considered of strong methodological quality (188, 189, 191, 197), eleven were of moderate quality whilst the remaining three were considered of weak quality (Table 4). The primary reason for the majority of studies obtaining a moderate score was as a result of their cross-sectional study design, whilst those with a weak rating were scored low as a result of both a cross-sectional design and data collection based on the extraction of data from insurance claims databases.

Table 4 Overview of Included Studies

Author	Year	Continent	Country	Study Design	MNS Disorders	Period of Data Collection	Primary Health Insurance Scheme examined	Year of Scheme establishment	Approximate Duration between Establishment and Evaluation (years)
Asawavichienjinda, T., et al.	2003	Asia	Thailand	Cross-sectional study	Epilepsy	1997	CBHI	1983	14
Chung, W., et al.	2013	Asia	South Korea	Retrospective, cross-sectional study	Schizophrenia	2005 to 2006	NHI	1989	16
Hirunrassamee, S., et al.	2009	Asia	Thailand	Retrospective chart review	Epilepsy	2003 to 2005	NHI	2002	1
Hwang, J.E., et al.	2018	Asia	South Korea	Cross-sectional study	Depressive disorders and Anxiety Disorders	2013	NHI	1989	24
Araya, R., et al.	2006	South America	Chile	Cross-sectional study	Depressive disorders and Anxiety Disorders	1996 to 1998	SHI	1979	17
Ding, X., et al.	2018	Asia	China	Cross-sectional study	Epilepsy	2013 to 2014	SHI	1998, 2002, 2007	15
Feng, Y., et al.	2012	Asia	China	Retrospective Cross-sectional study	Schizophrenia	2010	SHI	1998, 2007	12
He, P., et al.	2017	Asia	China	Cohort study	Intellectual Disability	2007 to 2013	SHI	2002, 2007	5
Jian, W., et al.	2009	Asia	China	Difference in difference	Schizophrenia, Bipolar disorder, Vascular Dementia, Mental and behavioural disorder due to use of alcohol, Manic Episode or Depressive episode	2002 to 2006	SHI	1998, 2007	4
Wang, Z.-M., et al.	2015	Asia	China	Retrospective chart review	Schizophrenia-spectrum disorders; Bipolar disorder; Major depression	2007 to 2013	SHI	1998, 2002, 2007	9
Xu, J., et al.	2018	Asia	China	Retrospective chart review	Mental, Behavioral and Neurodevelopmental disorders (all F code diagnoses based on the ICD-10 code)	2005 to 2014	SHI	1998, 2002, 2007	7
Xue, Q., et al.	2014	Asia	China	Cross sectional study	Schizophrenia	2010	SHI	1998, 2007	12
Yu-tao, X., et al.	2007	Asia	China	Cross-sectional study	Schizophrenia	2005 to 2006	SHI	1998, 2007	7
Yu-Tao, X., et al.	2007	Asia	China	Cross-sectional study	Schizophrenia	2006	SHI	1998, 2007	8
Zhang, X.-Q., et al.	2015	Asia	China	Retrospective chart review	Mental, Behavioral and Neurodevelopmental disorders (all F code diagnoses based on the ICD-10 code)	2007 to 2013	SHI	1998, 2007	9
Zhou, Y., et al.	2017	Asia	China	Cohort study	Schizophrenia	2012 to 2014	SHI	1998, 2007	14
Zhou, Y., et al.	2014	Asia	China	Retrospective chart review	Mental, Behavioral and Neurodevelopmental disorders (all F code diagnoses based on the ICD-10 code)	2010 to 2013	SHI	1998, 2007	12
El-Sayed, A.M., et al.	2015	48 LMICs	22 low-income, 17 lower-middle, and 9 upper-middle countries (World Bank 2003)	Cross-sectional study	Depression and Schizophrenia	2002 to 2004	N/A	N/A	N/A

Table 5 Methodological Quality of the Included Studies

Author	Year	Design	Selection bias	Confounders	Blinding	Data collection	Withdrawal and drop outs	Intervention integrity	Analysis	Score
Araya, R., et al.	2006	3	1	1	2	1	N/A	N/A	1	MODERATE
Asawavichienjinda, T., et al.	2003	3	1	1	1	3	N/A	N/A	1	WEAK
Chung, W., et al.	2013	3	1	3	1	2	N/A	N/A	1	WEAK
Ding, X., et al.	2018	3	1	1	1	1	N/A	N/A	1	MODERATE
El-Sayed, A.M., et al.	2015	3	2	1	1	1	N/A	N/A	1	MODERATE
Feng, Y., et al.	2012	3	1	3	1	2	N/A	N/A	2	WEAK
He, P., et al.	2017	2	1	1	1	1	1	N/A	1	STRONG
Hirunrassamee, S., et al.	2009	3	1	2	2	2	N/A	N/A	2	MODERATE
Hwang, J.E., et al.	2018	3	1	1	2	2	N/A	N/A	1	MODERATE
Jian, W., et al.	2009	2	2	1	2	2	N/A	N/A	1	STRONG
Wang, Z.-M., et al.	2015	3	2	2	2	1	N/A	N/A	2	MODERATE
Xu, J., et al.	2018	2	2	1	2	1	N/A	N/A	1	STRONG
Xue, Q., et al.	2014	3	1	1	2	1	N/A	N/A	1	MODERATE
Yu-tao, X., et al.	2007	3	1	1	2	1	N/A	N/A	1	MODERATE
Yu-Tao, X., et al.	2007	3	1	1	2	1	N/A	N/A	1	MODERATE
Zhang, X.-Q., et al.	2015	3	2	1	2	1	N/A	N/A	1	MODERATE
Zhou, Y., et al.	2017	2	2	1	3	1	N/A	N/A	1	STRONG
Zhou, Y., et al.	2014	3	2	1	2	1	N/A	N/A	1	MODERATE
Papers were assessed using the Effective Public Health Practice Project's (EPHPP) Quality Assessment Tool for Quantitative studies (180) 1 = Strong; 2 = Moderate; 3 = Weak										

Table 6 Methodology and Main Findings of the Included Studies

Author, Year	Location	Study design	Data Source	Type of Mental Health Care Examined	Target Population	Overall Sample size	Health Insurance Mechanism type		Health Insurance Mechanism name	Sample Size	Mental Health Care Utilization Outcome of Interest	Measure of Impact	Secondary Outcomes of Interest	Measure of Impact
Araya, R., et al., 2006	Santiago, Chile	Cross-sectional study	Santiago Mental Disorders Survey; Psychiatric symptoms were assessed with the Revised Clinical Interview Schedule (CIS-R); 1996-1998	Outpatient Care	Adults aged 16 - 64 years living in private households in Santiago	3824 (51% female)	Group of interest	SHI	**National Health Fund (FONASA)**	1439	Frequency of Mental Health Consultation within the previous six months	15.1%		
							Comparison group (1)	Private Health Insurance	**ISAPRES (Instituciones de Salud Provisional), Armed Forces and Teachers Union**	1905		29.2%		
							Comparison group (2)	Uninsured	**No health insurance**	480		18%		
Asawavichienjinda, T., et al., 2003	Pak Thong Chai district, Nakhon Ratchasima province, Thailand	Cross-sectional study	All data for adult (>14 years) cases of epilepsy (two or more clinical afebrile seizures unrelated to acute metabolic derangements or to withdrawal from drugs or alcohol, or seizures occurring within a 24 hour period) registered in the Registry of Epileptics who had visited a sub-district health care office or community hospital in 1997 in the district of Pak Thong Chai were extracted; interviews also conducted with patients and their caregivers.	Inpatient and Outpatient Care	Adult epileptics aged over 14 years living in Nakhon Ratchasima Province of Thailand	72 (60% female)	Group of interest	CBHI	**Health Card Scheme**	57	Compliance with antiepileptic drug (AED) regiments over the past year; on time, without fail, without manipulating dosage 100% of the time	88%		
							Comparison group (1)	Uninsured	**No health insurance**	15		68%		
Chung, W., et al., 2013	National, South Korea	Retrospective, cross-sectional study	Claims and service use data extracted from the repositories for all National Health Insurance and Aid claims	Inpatient Care	South Koreans who received inpatient care for schizophrenia between 2005 and 2006	58287 (45% female)	Group of interest	NHI	**Korean national health insurance**	24301	Proportion of Long Stay inpatients (>6 months)	17%	Likelihood of Long Stay inpatients (>6 months) in psychiatric hospitals	Base
							Comparison group (1)	Government subsidies for those who do not have economic capability, and cannot work	**Medical Care Aid 1**	30241		61.06%; AID Type 1 beneficiaries were four times more likely than NHI beneficiaries to be long stay (OR 4.299, 95% CI: 4.024–4.593)		AID Type 1 beneficiaries showed an OR of 5.704 (95% CI: 4.877–6.671)
							Comparison group (2)	Government subsidies for those who do not have economic capability, and can work	**Medical Care Aid 2**	3745		48%		AID Type 2 beneficiaries an OR of 3.308 (95% CI: 2.713–4.034).
Ding, X., et al., 2018	Zhejiang, China	Cross-sectional study	Screening questionnaire was based on WHO screening questionnaires previously used in China and on the International Community-based Epilepsy Research Group (ICBERG) screening instrument followed by epilepsy specialists performing door-to-door investigations with a more specialized questionnaire in participants with suspected epilepsy from the first stage.	Inpatient and Outpatient care	Population of Zhejiang province	118 (58% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI); Urban Residence Basic Medical Insurance (UR-BMI), or New Rural Cooperative Medical scheme (NRCM)**	98	Treatment gap for active epilepsy; proportion not receiving any antiepileptic treatment (traditional medicine or antiepileptic drugs) for active epilepsy among those with active epilepsy	52%		
							Comparison group (1)	Uninsured	**No health insurance**	20		90%		
El-Sayed, A.M., et al., 2015	22 low-income, 17 lower-middle, and 9 upper-middle countries (World Bank 2003)	Cross-sectional study	World Health Survey (WHS) 2002-2004	Inpatient and Outpatient Care	Populations of LMICs with diagnosed depression and schizophrenia	10419 (Depression, n=8762; Schizophrenia, n=1657)	Group of interest	SHI or NHI	**Countries where most or all health services, including primary care, are provided by the government (even if private or NGO sector services may exist in parallel and some out-of-pocket expenses may exist).**	3797 Depression, n=3437; Schizophrenia, n=360	Receipt of treatment for depression or schizophrenia based on self-report	• Depression: 82.2% of those diagnosed with depression received treatment • Schizophrenia: 86.7% of those diagnosed with Schizophrenia received treatment	Attributable benefit defined as the degree to which insurance coverage mitigated treatment gaps relative to 100% for rural populations and for the poorest 50% of the sample	Among men, the attributable benefit of insurance among the poorest 50% was 53.1% for depression Among men, the attributable benefit of insurance among rural residents was 53.4% for depression, Among women, the attributable benefit of insurance among the poorest 50% was 24.7% for depression and 94.8% for schizophrenia.
							Comparison group (1)	Private health insurance	**Countries with no or minimal services provided by the government, or where only limited health services were provided by the government (e.g., for maternal and child health, HIV/ AIDS care, vaccinations, or for special groups such as children, elderly, impoverished).**	6622 Depression, n=5325; Schizophrenia, n=1297		• Depression: 37.1% of those diagnosed with depression received treatment • Schizophrenia : 53.3% of those diagnosed with Schizophrenia received treatment • In adjusted models among men, the uninsured had lower likelihood of treatment for depression (0.59, 95% CI 0.37–0.92). Among women, the uninsured were significantly less likely to receive treatment for schizophrenia (0.57, 95% CI 0.47–0.69); The poorest 50% were		

												significantly less likely to receive treatment for depression (0.81, 95% CI 0.72–0.92)		
Feng, Y., et al., 2012	Changsa, China	Retrospective Cross-sectional study	Claims and service use data extracted from the repositories of the social insurance agencies, in addition to qualitative interviews and a field survey of policy documents and implementation methods	Inpatient Care	Population of Changsha, China, diagnosed with schizophrenia who made use of inpatient care in 2010	527	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI)**	70	Average Length of Inpatient Stay	50.6 days	Utilization of antipsychotics; prescription of FGA and SGA	Those with UE-BMI coverage were rarely prescribed FGA alone (3%) and most inpatients received SGA alone (58%). Inpatients covered by UR-BMI faced the opposite situation with most inpatients receiving FGA alone (42.5%) and the proportion receiving SGA alone (32.8%) was far less than UE-BMI inpatients.
							Comparison group (1)	SHI	**Urban Residence Basic Medical Insurance (UR-BMI)**	457		187.1 days		
He, P., et al., 2017	National, China	Cohort study	Second National Sample Survey on Disability follow-up investigations from 2007-2013; Children aged 0-6 years: Those who were suspected of having IDs were then tested in the developmental quotient (DQ) by the Gesell Developmental Inventory for a definite diagnosis with IDs (DQ<76). Children aged 7-17 years were screened by interviewers using disability screening questionnaires at their homes. If the screening found that the subjects had an ID tendency, they would be referred to developmental paediatricians and psychiatrists to make the final diagnosis of IDs based on both intelligence quotient (IQ<70) and adaptive behaviour.	Rehabilitative care (occupational, physical, and speech or communication therapy)	Children (0-10) and adolescents (11-17 years) living with intellectual disabilities across the 31 provinces of China	744 (41% female)	Group of interest	SHI	**Urban Residence Basic Medical Insurance (UR-BMI), or New Rural Cooperative Medical scheme (NRCM)**	222	Likelihood of Rehabilitation service utilization defined as likelihood of individuals receiving at least one rehabilitation service (occupational, physical, and speech or communication therapy) in the past 12 months	• With the exception of the first year of follow-up (2007); the remaining years showed a significantly lower likelihood of service use among the uninsured participants (2008-2013). • OR ranged from 0.50 in 2008 to 0.55 in 2013 (OR range 0.50-0.63)		
							Comparison group (1)	Uninsured	**No health insurance**	522				
Hirunrassamee, S., et al., 2009	Bangkok and two Provinces in the northeastern region, Thailand	Retrospective chart review	Hospital electronic diagnosis and drug dispensing databases were used as data sources. The records were available on an individual patient level. Data from the entire patient populations of the three hospital from three fiscal years—October 1, 2002, to September 30, 2005—were retrieved for this study.	Inpatient Care	Population of Thailand diagnosed as having epilepsy who visited or were admitted to any of the three hospitals under study between October 1, 2002, and September 30, 2005; and were treated with anti-epileptic drugs for no less than 90 consecutive days (to qualify as suffering epilepsy as a chronic condition rather than an occasional one)	439	Group of interest	NHI	**Universal Health Coverage scheme (previously 30 Baht Scheme)**	89	Utilization of new drugs (anti-epileptics which render better control of seizures with fewer side effects: lamotrigine 100 mg)	13%	Average drug cost (Baht) per seizure free case	7318.29 Baht among UHC beneficiaries; SSS 14,416.76 Baht; CSMBS 6,623.55 Baht (the most cost-effective system for this disease condition)
							Comparison group (1)	Social Health Insurance	**Social Security Scheme (SSS)**	62		19%		
							Comparison group (2)	Social Health Insurance	**Civil Service Medical Benefits Scheme (CSMBS)**	288		31%		
Hwang, J.E., et al., 2018	National, South Korea	Cross-sectional study	Health Insurance Review and Assessment service (HIRA)-Aged Patient Sample database containing claim data on 1 million elderly patients, accounting for 20% of the elderly population in Korea. Data for Patients who were prescribed antidepressents in primary care settings between January and December 2013 were extracted.	Outpatient care	The elderly (>=65) population in South Korea who were prescribed antidepressents in 2013	132316 (67% female)	Group of interest	NHI	**Korean national health insurance**	119106	Utilization of tricyclic antidepressants (TCAs) among elderly Koreans in primary care settings measured as the proportion of antidepressants prescribed that were TCAs	49.70%		
							Comparison group (1)	Government subsidies for those who do not have economic capability, and can/cannot work	**Medical Care Aid**	13464		51.60%		
							Comparison group (2)	Government subsidies for Veterns	**Veterans Health**	178		54.5%; Patients with Veterans health coverage were 1.62 times more likely to be prescribed TCAs compared with those who had NHI		
Jian, W., et al., 2009	Beijing, China	Difference in difference	Data was extracted from the Hospital Information System (HIS).	Inpatient Care	Population of urban China hospitalized between 2002 and 2004 for Schizophrenia, Bipolar Affective Disorder, Vascular Dementia, Mental and behavioural disorders due to	1137	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI); Urban Residence Basic Medical Insurance (UR-BMI)**	396	Length of Inpatient Admission	120.66 days		
							Comparison group (1)	GHI	**Government Health Insurance Scheme (GIS)**	212		98.89 days		
							Comparison group (2)	Uninsured	**No health insurance**	529		60 days		

					alcohol, Manic episodes or Depressive episode.									
Wang, Z.-M., et al., 2015	Beijing, China	Retrospective chart review	An extensive chart review was carried out, collecting data from an electronic chart management system (ECMS) for discharged patients aged 18 to 59 years.	Inpatient care	Patients receiving inpatient care at Beijing Anding Hospital (aged 18-59) with a primary psychiatric diagnosis (F-code)	19982 (52% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI); Urban Residence Basic Medical Insurance (UR-BMI), or New Rural Cooperative Medical scheme (NRCM)**	9865	Likelihood of Electroconvulsive therapy (ECT) use known for high risk of significant cognitive impairments	44%		
							Comparison group (1)	Uninsured	**Uninsured, either not registered with any of China's health insurance schemes or living in a place of residence that is not their place of residence as registered**	10117		56% ECT use was independently associated with less health insurance OR: 0.7		
Xu, J., et al., 2018	Shadong province, China	Retrospective chart review	Hospitals' Electronic Health Records (EHR). The EHR data documents all inpatient expenses incurred during hospitalization in a detailed and itemized way.	Inpatient Care	Population of Shandong province with a primary psychiatric diagnosis (F-code)	9504 (53% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI); Urban Residence Basic Medical Insurance (UR-BMI), or New Rural Cooperative Medical scheme (NRCM)**	3215	Utilization rate measured by length of stay	70 days • UE-BMI: 137.52 days • UR-BMI: 63.70 days NCMS: 24.99 days	Utilization rate measured by frequency of hospitalizations	Frequency of hospitalization: 2 • UE-BMI: 3.96 • UR-BMI: 2.27 • NCMS: 1.91
							Comparison group (1)	Uninsured	**Uninsured, either not registered with any of China's health insurance schemes or living in a place of residence that is not their place of residence as registered**	6289		45 days		Uninsured: 1
Xue, Q., et al., 2014	Wuhan and Wuxi cities, China	Cross sectional study	Claim records of inpatients with at least one schizophrenia- relevant diagnosis (ICD-10 code F20) in the year 2010 were derived from the two cities' respective Urban Employees' Basic Medical Insurance (UE-BMI) and the Urban Residents' Basic Medical Insurance (UR-BMI) reimbursement databases in an anonymous form. G	Inpatient Care	Urban population of China with diagnosed schizophrenia (F20) receiving inpatient care and antipsychotic medication in 2010	2904 (45% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI)**	2728	Coverage of second-generation antipsychotic medication excluding clozapine (SGA);	SGA: 53%;	Coverage of first-generation antipsychotics)FGA) and coverage of clozapine (CL)	FGA: 22% CL: 25%
							Comparison group (1)	SHI	**Urban Residence Basic Medical Insurance (UR-BMI)**	176		SGA: 53%;		FGA: 35% CL: 12%
Yu-tao, X., et al., 2007	Hong Kong and Beijing, China	Cross sectional study	Interviews with subjects in Hong Kong were randomly selected from patients diagnosed with schizophrenia attending the outpatient clinic of a university-affiliated general hospital; their Beijing counterparts, matched according to sex, age, age at onset, and length of illness, were recruited from patients with schizophrenia attending the Adult psychiatric Outpatient Clinic at Beijing Anding Hospital. Case notes were also reviewed.	Outpatient care	Clinically stable outpatients with schizophrenia in Beijing and Hong Kong between 2005 and 2006	505 (52% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI); Urban Residence Basic Medical Insurance (UR-BMI), or Government Insurance Scheme (GIS)**	462	Treated with/prescribed Anticholinergic medication (ACM) known for a variety of side effects including the impairment of cognitive capacity	50%		
							Comparison group (1)	Uninsured	**Uninsured, either not registered with any of China's health insurance schemes or living in a place of residence that is not their place of residence as registered**	43		33%		
Yu-Tao, X., et al., 2007	Hong Kong and Beijing, China	Cross sectional study	Clinically stable outpatients with schizophrenia were randomly selected and interviewed in Hong Kong (HK) and Beijing (BJ). Assessment instruments included the Structured Clinical Interview for DSM-IV, Brief Psychiatric Rating Scale, Simpson and Angus Scale of Extrapyramidal Symptoms, Barnes Akathisia Rating Scale and the Hong Kong and Mainland China World Health Organization Quality of Life Schedule-Brief version.	Outpatient care	Clinically stable outpatients with schizophrenia in Beijing and Hong Kong between 2005 and 2006	398 (49% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI); Urban Residence Basic Medical Insurance (UR-BMI), or Government Insurance Scheme (GIS)**	359	Treated with/prescribed clozapine	13%		
							Comparison group (1)	Uninsured	**Uninsured, either not registered with any of China's health insurance schemes or living in a place of residence that is not their place of residence as registered**	39		36%		
Zhang, X.-Q., et al., 2015	Beijing, China	Retrospective chart review	Extensive chart review was carried out, collecting data from an electronic chart management system (ECMS) for discharged patients aged 60 years and above	Inpatient Care	Geriatric (aged 60 years and older) inpatients with an F-code diagnosis treated between 2007 and 2013 in Beijing	2339 (59% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI); Urban Residence Basic Medical Insurance (UR-BMI), or Government Insurance Scheme (GIS)**	1846	Proportion receiving Electroconvulsive therapy (ECT)	24.2%; Those with health insurance were significantly less likely to receive ECT, OR 0.6 (0.4-0.8)		
							Comparison group (1)	Uninsured	**Uninsured, either not registered with any of China's health insurance schemes or living in a place of residence that is not their place of residence as registered**	493		46%		
Zhou, Y., et al., 2017	Guangzhou, China	Cohort study	Survey upon discharge from Guangzhou Huiai Hospital (Positive and Negative Syndrome Scale (PANSS), for clinical symptoms, Insight and Treatment Attitudes Questionnaire (ITAQ) for insight and treatment attitudes, drug attitude inventory (DAI) and family experience interview schedule (FEIS)) and follow up call one year later to determine medication use post-discharge	Inpatient Care	Patients aged 16-60 years who have diagnosed schizophrenia living in Guangzhou, China; and their caregivers	236 (46% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI); Urban Residence Basic Medical Insurance (UR-BMI), or Government Insurance Scheme (GIS)**	105	Proportion discontinuing psychotropic medication one-year post-discharge	14%		
							Comparison group (1)	Uninsured	**Uninsured, either not registered with any of China's health insurance schemes or living in a place of residence that is not their place of residence as registered (i.e also those registered with NRCM)**	131		35%		
Zhou, Y., et al., 2014		Retrospective chart review		Inpatient Care	Patients with any F-code diagnoses	8478 (42% female)	Group of interest	SHI	**Urban Employee Basic Medical Insurance (UE-BMI);**	2055	Number of inpatient admissions	3.3	Likelihood of first, second or third hospitalization	GIS and BMI groups were 1.6 and 2 times more likely

	Guangdong province, China		Hospitals' Electronic Health Records (EHR) from Guangdong Psychiatric Hospital		living in Guangdong, China who were discharged between 2010 and 2013				**Urban Residence Basic Medical Insurance (UR-BMI)**					to be in a second hospitalization than others; 2.1 and 3 times more likely to be in a first hospitalisation, and; 5.3 and 4.8 times more likely to be in more than 3 hospitalizations
							Comparison group (1)	Government Insurance System (GIS)	**Government Insurance Scheme (GIS)**	276		4.1		
							Comparison group (2)	New Rural Cooperative Medical Scheme (NCMS)	**New Rural Cooperative Medical Scheme (NCMS) and *others***	4897		1.7		

Characteristics of the Included Studies

The majority of studies included in this review adopted a cross-sectional design (n=10) (186, 187, 192-194, 198-200, 202, 203); with two cohort studies (188, 197), one difference-in-difference study (189) and five studies using a retrospective chart review design (190, 191, 195, 201, 204) (Table 6). The publication dates of the papers ranged between 2003 and 2018. Substantial variation can be observed between the sample sizes among the included studies (range: 72 – 132,316). Most studies made use of data that was not specifically collected with the intention of evaluating the impact of health insurance on mental health care utilization (i.e. data were extracted retrospectively from claims databases, patient charts, and electronic hospital records) (187, 189-192, 195, 198, 199, 201, 204). As such, only five papers made use of prospective data collection (186, 193, 194, 197, 200); and three made use of data from systematic surveys (i.e. Santiago Mental Disorders Survey, World Health Survey, National Sample Survey on Disability in China) (188, 202, 203).

Measures and Types of Mental Health Care Utilization examined

Four of the included studies explored the impact of health insurance on outpatient mental health care utilization, exclusively (193, 194, 199, 202); with three publications exploring inpatient and outpatient mental health care utilization (186, 200, 203) and ten studies focusing on the impact of health insurance on inpatient mental health care utilization exclusively (187, 189-192, 195, 197, 198, 201, 204). Only one study explored the impact of health insurance on utilization of rehabilitative care (occupational, physical, and speech or communication therapy) (188) .

Our primary outcome of interest, mental health care utilization, was operationalized in a number of different ways across the included studies. The length of inpatient admissions was used as a measure of utilization in four of the included studies; three of which defined length of stay in terms of duration of inpatient admissions (187, 189, 191) and one of which defined length of stay in terms of the proportion of patients who were deemed long-stay indicating that their inpatient admission lasted longer than 180 days (198). Outpatient mental health consultations were used as an outcome in two of the included studies, one of which reported on the frequency of mental health consultations within the previous six months (202); and the second reporting the likelihood of children aged 0-17 years with intellectual disability receiving at least one rehabilitation service

(occupational, physical, and speech or communication therapy) in the past twelve months (188). The absolute number of inpatient admissions over a three year period was used as a primary measure of mental health care utilization in one of the included studies (204). Self-report of having ever received treatment for depression and schizophrenia among those diagnosed was used as a measure of utilization in one of the included studies (203).

Prescription of and compliance with medication was included as an outcome for eight studies included in this review. Compliance with medications was used as a measure of utilization in two of the included studies; one study reported on the rates of compliance with antiepileptic drug (AED) regimens over the past year defined as the number of patients that took their prescribed AEDs on time, without fail, without manipulating dosage, 100% of the time (200) whilst the second study reported on the proportion of patients that discontinued psychotropic medication for schizophrenia one-year post discharge from an inpatient facility (197). In terms of prescription of medications, studies could be differentiated by whether they were comparing the prescription of any medication for an MNS disorder, and those that compared the prescription of more- or less-favorable medications for MNS disorders. Among studies that compared the prescription of any medication for MNS disorders, one examined the proportion of individuals with active epilepsy that did not receive any anti-epileptic medication (either traditional medicine or AEDs) (186).

Studies comparing more- or less-favorable medications for MNS disorders included one study which examined the utilization of *new* AEDs (lamotrigine 100 mg), which are considered to render better control of seizures with fewer side effects (201). A second study examined the utilization of tricyclic antidepressants (TCAs) among elderly Koreans in primary care settings measured as the proportion of antidepressants prescribed that were TCAs (199); here the authors note that whilst TCAs show superior efficacy, they cause a number of side effects and thus newer classes of antidepressants are preferred among the elderly. A third study operationalized mental health care utilization as the number of outpatients diagnosed with schizophrenia that were prescribed Anticholinergic Medication (ACM) known for a variety of side effects including the impairment of cognitive capacity (194) whilst a fourth study examined the influence of insurance status on the prescription of clozapine, described by the author to have potentially fatal side effects, despite its high efficacy, among clinically stable outpatients with schizophrenia (193). A fifth study examined the impact of insurance enrollment on the prescription of first-generation, second-

generation antipsychotic medications (excluding clozapine), and clozapine among those receiving inpatient care for schizophrenia (192).

Finally, two studies examined the impact of insurance enrollment on the likelihood of and proportion receiving electroconvulsive therapy (ECT) in inpatient settings where the authors note that ECT is known for a high risk of cognitive impairment (190, 195).

Impact of SHI, NHI or CBHI on Mental Health Care Utilization

Length and Frequency of Inpatient Admissions

Of the included studies examining the impact of insurance enrollment on the length or frequency of inpatient admissions (187, 189, 191, 198, 204); four were conducted in China (187, 189, 191, 204) and one conducted in South Korea (198). By and large, studies from China explored the impact of enrollment in SHI schemes: the Urban Employee Basic Medical Insurance (UE-BMI), Urban Residence Basic Medical Insurance (UR-BMI), New Rural Cooperative Medical scheme (NCMS) and the Government Insurance System (GIS) on length of inpatient admissions. UE-BMI targets formal sector workers on a mandatory basis; coverage for UE-BMI is 19% of the population. UR-BMI targets children, the elderly, the disabled, and other non-working urban residents but varies by region. Enrollment is voluntary for households; coverage for UR-BMI is 19.5% of the population. NCMS targets rural residents on a voluntary basis; coverage for NCMS is approximately 59.7% of the population, GIS targets only those working in the government sector. Jian et al (2009) and Xu et al (2018) both found that those enrolled in at least one of these health insurance schemes had a significantly longer length of inpatient admission when compared to the uninsured (189, 191).

The length of inpatient admission among the uninsured urban population of China who were hospitalized between 2002 and 2004 for schizophrenia, bipolar affective disorder, vascular dementia, mental and behavioural disorders due to alcohol, manic episodes or depressive episodes was 60 days, compared with 120.7 days and 98.9 days for those enrollled in UE-BMI or UR-BMI schemes and those enrolled in the GIS, respectively (189). Similarly, the length of inpatient admissions among the uninsured population of Shadong province of China with a primary

psychiatric diagnosis between 2005 and 2014 was 45 days, compared to those insured under UE-BMI, UR-BMI and NCMS with an average length of inpatient admission across all three schemes was 70 days (137.5, 63.7 and 25.0 days, respectively) (191). As a secondary outcome, Xu et al (2018) also reported that frequency of hospitalizations between 2005 to 2014 were higher among the insured groups, whereby those enrolled in UE-BMI, UR-BMI and NCMS had an average of 2 hospitalizations (4.0, 2.3 and 1.9, respectively) during this period, compared to the uninsured group who had an average of 1 hospitalization during this period (191).

Feng et al (2012) examined the length of inpatient admissions among the population of Changsha, China diagnosed with schizophrenia who made use of inpatient care in 2010 (187). For those enrolled in the UR-BMI scheme, the length of stay was significantly longer than for those enrolled in the UE-BMI scheme, 187.6 days compared to 50.6 days, respectively (187). Nonetheless, the authors note that 81% of those enrolled in the UE-BMI scheme received treatment from a tertiary hospital compared with 73.3% of those enrolled in the UR-BMI scheme who received treatment from a secondary hospital (187). Further, 58% of those enrolled in the UE-BMI scheme received more expensive second generation antipsychotics, compared with 33% of those enrolled in UR-BMI (187).

Among patients with any psychiatric diagnoses discharged from Guangdong Psychiatric Hospital between 2010 and 2013, those enrolled in the NCMS scheme had on average the fewest number of inpatient admissions (1.7) when compared to those enrolled in the UE-BMI or UR-BMI schemes (3.3 hospitalizations) and those enrolled in the GIS scheme (4.1 hospitalizations). As secondary outcomes, the authors report that those enrolled in the GIS, UE-BMI or UR-BMI schemes were 1·6 and 2 times more likely to be hospitalized a second time; 3.1 and 3 times more likely to have a third hospitalization, and; 5.3 and 4.8 times more likely have more than 3 hospitalizations, when compared to those enrolled in the NCMS scheme.

In South Korea, Chung et al (2013) compared the proportion of patients who received inpatient care for schizophrenia between 2005 and 2006 that were hospitalized for longer than 180 days (i.e. were deemed *long-stay*) among those enrolled in the NHI scheme and those enrolled in either the Medical Care Aid 1 or Medical Care Aid 2 schemes (198). The NHI scheme in Korea covers approximately 96% of the population; a 20% co-payment is required for inpatient care services

included in the benefit package. Medical Care Aid schemes are those in which beneficiaries do not have the economic ability to make formal contributions to the NHI and their health care is subsidized fully (for Aid 1 beneficiaries) or for 85% of care (i.e. a 15% co-payment for Aid 2 beneficiaries) by government. The study found that among those enrolled in the NHI scheme, 17% were deemed long-stay, compared with 61% of those enrolled as Medical Care Aid 1 and 48% of those enrolled as Medical Care Aid 2 beneficiaries (198).

Outpatient mental health consultations

Of the included studies examining the impact of insurance enrollment on the outpatient mental health consultations; one was conducted in Santiago, Chile (202) whilst the second was conducted in China (188). Araya et al (2006) found that among those enrolled in the National Health Fund (FONASA), a social health insurance mechanism in Chile, 15.1% reported that they had received a mental health consultation within the previous six months, compared with 29·2% among those enrolled in private health insurance schemes and 18% among the uninsured population (202). The authors note that despite higher prevalence of mental disorders and increased severity of disorders being exhibited among those with social health insurance coverage, compared to those with private health insurance coverage, their rate of consultation for these disorders were the lowest (202). Health insurance exerted the strongest association with likelihood of consultations for mental disorders (OR=2.72; 95% CI = 1.6, 4.6), favoring private health insurance enrollment (202).

A study by He et al (2017) in China was the only identified study that examined the influence of insurance enrollment on the use of outpatient rehabilitation services (occupational, physical, and speech or communication therapy) (188). The authors found that uninsured children aged 0-17 years with confirmed intellectual disability, with the exception of the first year of follow-up, showed a significantly lower likelihood of service use (i.e. between 2008 and 2013) over the past twelve months when compared with those enrolled in either the UR-BMI or NCMS schemes (OR ranged from 0.50 in 2008 to 0.55 in 2013) (188).

Ever having received mental health treatment

A study exploring the influence of insurance enrollment across 48 low- and middle income countries conducted by El-Sayed et al (2015) examined the self-report of having ever received

treatment for depression and schizophrenia among those diagnosed (203). Among countries where most or all health services, including primary care, are provided by the government (defined as the *insured*, even if some private services and out-of-pocket expenses exist in parallel); 82.2% and 86.7% of those diagnosed with depression and schizophrenia, respectively, reported ever having received treatment (203). Among countries where no or minimal services are provided by the government, or where only very limited services were provided (i.e. defined as the *uninsured*), 37.1% and 53.3% of those diagnosed with depression and schizophrenia, respectively, reported ever having received treatment(203).

When disaggregated by biological sex, in adjusted models among men, the uninsured had a lower likelihood of treatment for depression (0.59, 95% CI 0.37–0.92) whilst amongst women, adjusted models demonstrated that the uninsured were significantly less likely to receive treatment for schizophrenia (0.57, 95% CI 0.47–0.69) (203). Further, the authors note that the poorest 50% of women were significantly less likely to receive treatment for depression (0.81, 95% CI 0.72–0.92) (203). As a secondary outcome, El-Sayed et al (2015) reported on the attributable benefit, defined as the degree to which insurance coverage mitigated treatment gaps relative to 100% for rural populations and for the poorest 50% of the sample (203). The findings showed that among men, the attributable benefit of insurance coverage among the poorest 50% of the sample was 53.1% for depression (203). Among women, the attributable benefit of insurance coverage among the poorest 50% of the sample was 24.7% for depression and 94.8% for schizophrenia. Among men, the attributable benefit of insurance among rural residents was 53.4% for depression (203).

Prescription of and compliance with medication

Asawavichienjinda et al (2003) compared the rates of compliance with antiepileptic drug (AED) regiments over the past year among those enrolled in the Thai Health Card Scheme, a CBHI mechanism, versus the uninsured (200). The study was based on data collected in 1997 in the Pak Thong Chai district of Thailand (200). For those enrolled in the Health Card Scheme, 88% reported that their AEDs were taken as prescribed, on time, without fail, without manipulating the dosage, 100% of the time compared with 68% among the uninsured. The authors found that health insurance was significantly associated with compliance among their sample (200). Similarly, a study conducted by Zhou et al (2017) assessed the proportion of patients discharged from

Guangzhou Huiai Hospital between 2012 and 2014 that discontinued use of psychotropic medications one-year post-discharge among those enrolled in the UE-BMI, UR-BMI or the government SHI schemes compared with the uninsured (197). Among those insured, 14% reported discontinuing the use of medications one year post-discharge, compared to 35% among the uninsured (197). The authors note that health insurance coverage was an independent predictor of compliance, reducing the financial burden of both medications and visits to prescribing physicians but also providing greater access to outpatient care and coverage for prescription drug costs (197).

With regards to the prescription of medications, Ding et al (2018) examined the proportion of individuals with active epilepsy in Zhejiang, China, that did not receive any anti-epileptic medication (either traditional medicine or AEDs) between 2013 and 2014 (186). The study compared those enrolled in the UE-BMI or UR-BMI SHI schemes with the uninsured; determining that 52% of the insured sample did not receive any anti-epileptic medication compared with 90% of the uninsured sample. In the same way, Yu-Tao et al (2007) examined the influence of insurance status on the prescription of clozapine, described by the author to have potentially fatal side effects, despite its high efficacy, among clinically stable outpatients with schizophrenia in Hong Kong and Beijing throughout 2006 (193). The study also compared those enrolled in the UE-BMI or UR-BMI SHI schemes with the uninsured; determining that 13% of the insured received clozapine, compared to 36% of the uninsured sample (193).

Another study comparing more- or less-favorable medications was conducted by Hirunrassamee et al (2009) which explored the influence of enrollment in Thailand's Universal Health Coverage scheme (a national health insurance mechanism), Social Security Scheme (SSS) and the Civil Service Medical Benefits Scheme (CSMBS) – the latter two mechanisms being considered social health insurance mechanisms (201). Between 2002 and 2005, the utilization of *new* AEDs, which are considered to render better control of seizures with fewer side effects (201) was highest among those enrolled in the CSMBS scheme (31%) (201). Among those enrolled in the NHI scheme, 13% received new AEDs whilst 19% of those enrolled in the SSS scheme received new AEDs (201). As a secondary outcome, the authors explored the average drug cost per seizure free case, determining that those enrolled in the CSMBS scheme had the lowest cost per seizure free case (Baht 6624) compared with the UHC scheme (Baht 7318) and the SSS scheme (Baht 14,416) (201).

The utilization of tricyclic antidepressants (TCAs) among elderly Koreans in primary care settings by enrollment in Korea's National Health Insurance scheme was examined by Hwang et al (2018) (199). The authors compared the proportion of antidepressants prescribed that were TCAs among those enrolled in the NHI scheme, those enrolled as Medical Care Aid beneficiaries (i.e. lacking economic capacity to contribute to NHI) and those enrolled in the Veterans Health Insurance scheme (199). As mentioned, whilst TCAs show superior efficacy, they cause a number of side effects and thus newer classes of antidepressants are preferred among the elderly (199). Among those aged 65 years and older in 2013 enrolled in the NHI scheme that were prescribed antidepressants, 49.7% were prescribed TCAs compared to 51.6% among the Medical Care Aid beneficiaries and 54.5% among the Veterans Health beneficiaries (199). Elderly patients enrolled in the Veterans health scheme were 1.6 times more likely to be prescribed TCAs when compared to those who were covered by NHI (199).

Yu-tao et al (2007) examined the number of outpatients diagnosed with schizophrenia that were prescribed Anticholinergic Medication (ACM), known for a variety of side effects including the impairment of cognitive capacity, among those enrolled in either UE-BMI, UR-BMI or GHI with the uninsured in Hong Kong and Beijing between 2005 and 2006 (194). Among those insured, ACMs were prescribed to 50% of the sample whilst among the uninsured, ACMs were prescribed to 33% of the sample (194). Finally, a study conducted by Xue et al (2014) examined the impact of insurance enrollment between UE-BMI and UR-BMI on the prescription of first-generation, second-generation antipsychotic medications (excluding clozapine) and clozapine among those receiving inpatient care for schizophrenia in 2010 in the cities of Wuhan and Wuxi, China (192). Coverage of second-generation antipsychotics (excluding clozapine) were equivalent among those enrolled in the UE-BMI and UR-BMI schemes (53% of each respective sample) (192). Coverage of first generation antipsychotics was higher among those enrolled in the UR-BMI scheme (35%) compared to the UE-BMI scheme (22%) whilst coverage of clozapine was higher among those enrolled in the UE-BMI scheme (25%) compared with those enrolled in the UR-BMI scheme (12%) (192).

Receipt of Electroconvulsive Therapy (ECT)

With regards to the receipt of specific inpatient therapies, both studies included examined the impact of insurance enrollment on the likelihood of and proportion receiving electroconvulsive therapy (ECT) in inpatient settings whereby, as mentioned, the authors note that ECT is known for a high risk of cognitive impairment, but associated with a shorter length of inpatient admission (190, 195). Wang et al (2015) found that among patients receiving inpatient care at Beijing Anding Hospital with a primary psychiatric diagnosis, 44% of those enrolled in the UE-BMI, UR-BMI or NCRM schemes received ECT compared to 56% of those uninsured (190). ECT use was independently associated with less health insurance (OR: 0.7).

Similarly, Zhang et al (2015) found that among geriatric (aged 60 years and above) inpatients with a primary psychiatric diagnosis, treated in Beijing between 2007 and 2013; 24.2% of those enrolled in either the UE-BMI, UR-BMI or GIS schemes received ECT compared to 46% among the uninsured group (195). Those with health insurance were significantly less likely to receive ECT (OR: 0.6 (0.4-0.8)) (195).

Discussion

This systematic review reports on the impact of social, national and community-based health insurance enrollment on health care utilization for MNS disorders in low- and middle-income countries. The small number of included studies resulting from the original search strategy (18 articles from 2426 abstracts reviewed) speaks to the limited nature of the current evidence base. Overall, findings demonstrated that enrollment in SHI or NHI schemes increased utilization of mental health care. This was consistent for the length of inpatient admissions, the number of hospitalizations, outpatient use of rehabilitation services, having ever received treatment for diagnosed schizophrenia and depression, compliance with drug therapies and the prescription of more favorable medications and therapies when compared to the uninsured. However, following the approach of other systematic reviews which explored the impact of insurance enrolment on health care utilization, it was difficult to draw overall judgements on whether the impact of insurance enrolment was positive or negative for mental health care outcomes, and reasons for improved medication compliance amongst users were not ascertained (103, 172, 173, 176, 177).

There were some notable exceptions to these overall trends. For example, in Chile, outpatient mental health consultations were less frequent among those enrolled in the SHI in comparison to the uninsured and those with private health insurance coverage, despite the prevalence of disorders and severity being higher among those enrolled in the SHI scheme. Since the study was conducted, Chile has embarked upon ambitious reforms towards universal health coverage, referred to as the Regime of Explicit Health Guarantees (AUGE), which provides an entitlement to a certain set of services for all members and was implemented in 2002-03. It remains unclear whether the AUGE reforms have impacted on these trends. Another notable exception was in South Korea, whereby NHI beneficiaries were less likely to be long-stay inpatients (i.e. admitted for longer than 180 days) when compared to Medical Care Aid beneficiaries, who are economically vulnerable and thus the majority, if not all, of their costs are covered by government subsidies. These findings may point to the influence of cost-sharing arrangements under NHI schemes – where a greater share of costs are carried by individuals (i.e. 20% for inpatient care under Korea's NHI); utilization may be lower - however where a greater share of costs are subsidized and individuals do not make direct contributions to their cost of care, their utilization (or length of stays) were longer (i.e. for medical aid beneficiaries who were totally or partially exempt from cost-sharing). Across all studies, when utilization was defined as the length of inpatient admissions, studies that demonstrated longer length of inpatient admissions for those enrolled in insurance mechanisms did not unpack whether these lengths of stay were warranted based on the severity of the condition, or whether these long lengths of stay indicated some form of inefficiency in the health system. Similarly, without data regarding the severity of conditions, findings that indicate shorter lengths of stay do not directly point to a lack of insurance coverage (and therefore greater out of pocket spending) as a reason for these trends.

Thus, whilst the review has demonstrated that enrollment in CBHI, SHI or NHI schemes increases utilization of mental health care compared to uninsured populations; the clinical complexity of mental health care, particularly for severe mental health disorders, compounded by cultural norms around medication use, was also revealed in this review. Other complexities included the implications of a lack of explicit treatment guidelines and mechanisms by which perverse provider incentives can be mitigated. Across studies from China, insurance coverage was associated with the increased prescription of ACM and anti-epileptic medication but the reduced provision of

Clozapine and ECT for Schizophrenia; although importantly, prescription for all these drugs across all insurance groups was higher than globally recommended (186, 190, 193, 195, 197, 200, 201). Each of these drugs is associated with negative side effects including the impairment of cognitive capacity, while clozapine is principally recommended for use with treatment resistant schizophrenia and is associated with increased cardiovascular risk and psychotic relapse and the potential for agranulocytosis (205). Clozapine is the only medication licensed for treatment-resistant schizophrenia, which affects about one-third of those suffering from the disorder. Currently, no consensus exists on whether clozapine should be prescribed in the early stages of psychosis; there has been increasing evidence in trying to redefine its role in the treatment of schizophrenia in view of its superior efficacy and safety, despite serious side-effects (206). A systematic review and meta-analysis focusing on the use of clozapine as a first or second line treatment in non-treatment resistant patients found that clozapine outperforms other antipsychotics as a first or second line treatment option for schizophrenia, including risperidone, the current first-line treatment option. However, the study was not designed to explore clozapine's overall tolerability, limiting its ability to recommend it as a first-line treatment (207).

Despite the evidence around the superior efficacy and recommendations for its use, the drug has been found to be severely underutilized (208). Major barriers to its use included mandatory blood testing, fear of serious side-effects and lack of adherence by the patients, difficulty in identifying suitable patients, service fragmentation, and inadequate training in or exposure to using clozapine (209). Ultimately, the decision to use clozapine requires a thorough consideration of both its risks and benefits, and a patient centered approach that facilitates safe and appropriate use.

There appears to be an improved alignment to global treatment recommendations amongst the insured, with the overprovision of unnecessary services to those paying out-of-pocket. Similarly, it was noted that ECT is associated with shorter length of inpatient stay, and therefore uninsured patients and/or their providers may be opting for it in greater frequency for earlier discharge however, ECT is recommended only for treatment resistant depression, and the rates of ECT in China in both arms (particularly the uninsured) seemed to be very high. The determination of adequate and appropriate care cannot be made without the assessment of patient outcomes; these have not been presented for any of the studies included.

In addition to the comparison of SHI, NHI, CBHI and uninsured health care, reimbursement mechanisms appear to play a critical role. Providers are reimbursed on a Fee for Service (FFS) basis in China, known to create a perverse incentive for excessive or expensive treatments. While FFS still prevails, province- and city-based reforms in China have explored capitation, pay-for-performance (PFP), and diagnosis-related groups (DRGs) for inpatient care (189, 210). Switching to PFP approaches alone or in combination with capitation was found to reduce spending on drugs but has not had an impact on drug prescriptions in larger contexts (211). The remainder of insurance mechanisms included in the review reimburse providers through a per capita or capitation-based mechanism, while a few also report a DRG payment mechanism adjusted for risk. Several studies note that private insurance members receive access to more expensive drugs than those enrolled in social health schemes, and authors call for reimbursement reforms as a key strategy within health insurance reform.

While the evidence may suggest that the uninsured are provided with unnecessary treatments in order to reduce their length of admission, the longer inpatient stays and increased numbers of hospitalizations amongst the insured may not necessarily be indicative of improved service quality or appropriate access. The large focus of the papers on inpatient mental health care utilization and severe mental health conditions may speak to a lack of developed outpatient and community based services; it may also point to the explicit inclusion of inpatient care as part of the benefits package without the explicit inclusion of outpatient services including rehabilitation and also potentially due to the fact that there is likely to be better data collected in hospital systems compared to primary healthcare services. Further, as revealed through our secondary review of the insurance mechanisms under evaluation in this study, differences in cost-sharing arrangements for inpatient and outpatient care may lead more mental health care users to opt for inpatient care where a larger proportion of costs are covered, compared to outpatient care where (if available) co-payments are far higher. In the case of South Korea, for example, NHI enrollees face a 20% co-payment for inpatient care whilst they face co-payments ranging from 30-60% for outpatient care depending on the level of provider. Prior to reforms in Chile, FONASA enrollees faced up to 15% co-payments for inpatient care provided by the government, with low income groups facing no co-payments – however these enrollees faced important exclusions in terms of the services they were able to access. These findings suggest that in countries pursuing SHI and NHI, inpatient benefits

may be more explicitly defined, when compared to entitlements for beneficiaries for outpatient care which may be covered under an umbrella of a primary health care package of services; thus subject to more provider rationing within capitation systems.

While countries implementing SHI mechanisms have made considerable progress in improving population health access, social assistance to cover vulnerable populations and cross-subsidization has been integral to achieving UHC (212). Countries explored in this review including China, South Korea, Thailand and Chile all reported pro-poor policies consisting of staggered copayments relating to income, the exclusion of poor-income households from mandatory contribution to the NHI or the creation of specific insurance schemes subsidized by government for low income and vulnerable populations. However many of the intermediate mutual health insurance and community-based schemes that were created have been hampered by adverse selection, poor regulation and inadequate administrative capacity (213). Furthermore, while such insurance schemes for poor income households have contributed to increased health access, the typically smaller benefit package, geographical fragmentation of services and reduced risk pooling associated with these schemes challenge the attainment of equity in service provision, and therefore Universal Health Coverage. For example, in China, mental health care utilization was routinely lower amongst those enrolled in the NCMS scheme which targets rural residents on a voluntary basis, and the UR-BMI scheme which targets children, the elderly, disabled and other non-working urban residents, when compared to the UE-BMI scheme for formal, salaried workers. Although SHI schemes hold potential to improve financial protection and improve utilization, in contexts such as China which began its transition to UHC by initially covering those with regular, salaried employment, these schemes have not evolved to include the rest of the population – and the emergence of additional schemes such as the NCMS and UR-BMI suggest that there are inequalities in the entitlements of beneficiaries across schemes, within countries (42). As a result, improvements in coverage and utilization gained through multiple SHI schemes largely manifest as more individuals belonging to an explicit insurance scheme, rather than greater financial access and utilization of comprehensive services across the entire population (42)

In Thailand, hailed to have achieved UHC, largely based on general taxation, disparities exist across its three different insurance schemes, which include the civil servants' medical benefit and social security scheme and the universal coverage scheme that includes 72% of the

population(214). The study from Thailand demonstrated that the utilization of *new* AEDs was highest among those enrolled in the CSMBS scheme (31%), with 19% and 13% of those enrolled in the SSS and NHI schemes respectively received new AEDs. Similarly, while 95% of China's citizens are reported to have basic insurance under one of their three major schemes, only the UE-BMI requires mandatory contributions whilst government subsidies account for 75-85% of the premiums of the other two (215). The lack of integration of the insurance programmes, both across regions and policies, has resulted in a fragmented risk pool and inequities in health access, particularly for rural populations who are not covered for service use in urban cities where the large psychiatric hospitals are located. South Korea has a combination of a National Health Insurance mechanism in place for 97% of the population funded through income tax and the remainder of the population within one of two public assistance programmes for low-income families. The reviewed study found that a larger proportion of the population belonging to the Medical Aid schemes were deemed long-stays. Medical Aid beneficiaries in Korea have been found to have poor health status and to receive insufficient health care services with the life expectancy difference between National Health Insurance beneficiaries and Medical Aid beneficiaries found to be 15.8 years for men and 8.9 years for women in 2017 (215). Prior to reform, Chile also implemented multiple insurance mechanisms with 75% of the population belonging to the public scheme and 18% belonging to private insurance. The system reflects segmentation, inefficiencies and inequalities, with the most vulnerable groups being largely affected (216); this study showed that two times as many people belonging to the private insurance scheme receiving mental health consultations, with NHI beneficiaries receiving even less than the uninsured population.

Given the highly stigmatized nature of mental health, amplified by the socioeconomic vulnerabilities experienced by many of those living with mental health disorders, explicitly outlining the inclusion of mental health within national and social health insurance benefit packages is key. Countries such as China and Thailand have made explicit inclusion of mental health during financial reforms including China's 686 Programme in 2004, named after the initial funding allocation of 6.86 million yuan (equivalent to US$1 million today) (217). Thailand produced its 2008 Mental Health Act resulting in mental health costs being absorbed under the country's universal health coverage scheme and requiring officials to monitor and measure

implementation (218), while Chile has now mandated that 56 priority diseases (219), including mental health, be offered across both insurance schemes. Defining the benefits package for mental health is however dependent on the availability of strong evidence related to the costs and benefits of treatments, heterogeneity of patient needs and preferences, the financing mechanisms being considered and the availability of infrastructure and services (220).

Despite some guidance by key actors on how countries can improve the design and functioning of their health systems to achieve UHC; countries on their path towards universal coverage are grappling with policy re-definition as well as cost containment, quality of care, equity, and regulatory considerations. The assessment of UHC within countries implementing NHI or SHI mechanisms is challenging given that the available evidence rarely explores the causal links between the design features of the schemes and the outcomes observed (173). In practice, this is indeed difficult to demonstrate given that there exist many confounders related to poorer populations having worse mental health, worse physical health, higher comorbidities, lower levels of education – all of which may serve as barriers to accessing health insurance entitlements. UHC monitoring challenges include sourcing reliable data on health service coverage and financial protection, being able to disaggregate it to expose coverage inequities and being able to measure effective coverage as it relates to the quality of service provision and its impact on mental health (221). The majority of papers included in the review did not describe the insurance schemes and their organizational details at length, nor did they define the explicit mental health entitlements for mental health care users, with limited discussion of the potential links between these features and the outcomes. As such, inferences were made by the authors of this paper based on the additional literature review. Despite the difficulty in establishing the impact of the individual financing functions of the insurance schemes on mental health utilization there is an association between increased mental health service utilization and increased insurance enrollment, likely largely because of the removal of financial barriers to access.

Other systematic reviews exploring the impacts of insurance mechanisms on health care utilization have run into similar issues. In 2012, the WHO undertook one of the earliest reviews on the impact of insurance mechanisms in African and Asian countries and found that the evidence base was incomplete; despite an increasing volume of studies, the knowledge generated at the time was described as patchy and of variable quality (172). This has not changed significantly in more

recent reviews. A systematic review of health insurance and its effects on the use and provision of maternal health services and on maternal and neonatal health outcomes in LMICs found relatively consistent evidence that health insurance was positively associated with the use of maternal health services; however only a subset of the included studies were able to establish a causal relationship (222). A number of the included studies suggested an overprovision of services in response to providers' payment incentives through insurance mechanisms. As identified in our review, few studies focused on the relationship between the health insurance mechanism and the quality of services delivered or health outcomes; it has therefore been recommended that more rigorous causal methods identify the extent to which the use of these services increases among the insured. Similar recommendations were echoed by authors of another systematic review exploring the impact of public health insurance on health care utilization, financial protection and health status in LMICs (223). While the review reported a general trend towards increased health care access and financial protection, the findings were not always consistent and further exploration around what drives the differences in the outcomes stemming from insurance reforms is critical to inform future implementation of nationally funded health insurance to achieve universal health coverage.

To the best of our knowledge, this systematic review is the first of its kind to systematically explore the effects of health insurance schemes on mental health service utilization in LMICs including South Africa. Further, it has facilitated a collection of supplementary data on health insurance schemes in countries of included studies. Despite some heterogeneity between countries, this review has demonstrated that the pursuit of NHI and SHI as a means of achieving UHC has the capacity to improve service utilization for MNS disorders.

This review has several limitations that are worthy of note. Firstly, only studies available in English were included. Secondly, the study did not examine whether improvements in utilization were pro-poor, nor did we take into account the mental health outcomes or severity of illness that may impact utilization as this information was not provided by the majority of included studies. Furthermore, given the cross-sectional nature of the majority of studies, only associations between insurance enrollment and mental health care utilization could be made, and causality could not be proved. Cross-sectional studies have a limited ability to assess temporal relationships. These studies did not follow individuals over time or account for the length of time the individuals were insured.

Insurance impacts were measures in the most recent environment, which may or may not represent the lifetime experience of individuals. The majority of the studies sampled were exploratory in nature and therefore reported on frequencies across different population groups rather than applying statistical tests to determine whether differences across groups were significant. The exception to this included El Sayed et al. (2015) who applied a regression analysis to measure the likelihood of treatment based on insurance status and measured the attributable benefit of insurance status on mitigating the treatment gap. He et al. (2017) and Hwang et al. (2018) reported on the likelihood to receive particular services, although the latter did not report any confidence intervals, while Wang et al. (2015) and Zhang et al. (2015) report on the odds of receiving ECT, although similarly, only Zhang et al reports on confidence intervals.

In addition, studies that depended on self-reporting stood the risk of recall and social desirability bias. Future research must include a wider documentation of the impact of mental health care utilization among all countries adopting reforms toward UHC, with an explicit focus on how countries have altered their funding sources, pooling arrangements, purchasing methods, and policies on benefits and patient cost-sharing to achieve better mental health care utilization.

Conclusions

Despite the fact that many LMICs have been hailed for financing reforms towards universal health coverage, it is surprising that evidence on the impact of the reforms on mental health care utilization is only available for a small sub-set of these countries, namely Thailand, China, South Korea and Chile. In addition there was very limited examination of the impact of enrollment on outpatient and community-based mental health care; LMICs transitioning to financing systems that pursue the goal of universalizing health care inclusive of mental health care do not yet have sufficient evidence to guide decision making on how to make the best use of available resources in order to achieve UHC, including considerations of the redistribution of resources from hospi-centric care to the community; task-shifting mental health care to non-specialist providers who receive ongoing specialist supervision; the initiation of early interventions that are accessible to at risk populations; integration of mental health in broader primary health care (52, 60-67). Further, defining explicit benefit packages within national and social health insurance schemes is recommended, particularly for outpatient care, given the potential for: empowerment of poor and

marginalized groups through explicit entitlements; improvements in efficiency and affordability; reductions in the risk of informal payments, and; guarantees of minimally adequate treatment irrespective of scheme enrollment.

Chapter 3

Sustainable financing options for mental health care in South Africa: findings from a situation analysis and key informant interviews

Authors: Sumaiyah Docrat [1*], Crick Lund[1,2], Dan Chisholm[3]

[1] Alan J. Flisher Centre for Public Mental Health, Department of Psychiatry and Mental Health, University of Cape Town, South Africa; 46 Sawkins Road, Rondebosch, Cape Town, Western Cape, South Africa 7700; +27.21.406.6129; s.docrat@uct.ac.za.

[2] Centre for Global Mental Health, Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom

[3] Department of Mental Health and Substance Abuse, World Health Organization, Switzerland

Description of the contribution of the candidate and co-authors

The data for this study was collected as part of Work Package 3 of the Emerald project, which was led by DC and CL. SD developed the qualitative study protocol and interview guide that was applied across the six Emerald countries, under the guidance of Dan Chisholm and Crick Lund. SD conceptualized the paper, under the guidance of DC and CL. SD conducted all aspects of the South African data collection, including the situational analysis desk-review and qualitative interviews, independently analyzed the qualitative data, and drafted the article. The paper was critically reviewed by CL in addition to DC, who approved the manuscript before submission.

Current status: Published in the *International Journal of Mental Health Systems*

Docrat, S., Lund, C. & Chisholm, D. 2019. Sustainable financing options for mental health care in South Africa: findings from a situation analysis and key informant interviews. International Journal of Mental Health Systems, 13, 4.

Abstract

Background: With the implicit neglect for the integration of mental health services into general health service development in South Africa, there is an urgent need for an understanding of the ways in which existing reforms may be leveraged to incorporate the objectives of the *National Mental Health Policy Framework and Strategic Plan* (MHPF) and the mechanisms by which these reforms can be structured and financed in the context of fiscal constraint.

Methods: A situational analysis guided by a newly developed analytical framework for sustainable mental health financing was conducted. The review was followed by qualitative, indepth interviews with a range of expert national stakeholders.

Results: Although the MHPF is said to be consistent with ongoing efforts toward the implemention of National Health Insurance (NHI), there is clear evidence of discordance between the MHPF and the NHI. The most promising strategies for sustainable mental health financing include: increased decentralization of resources to primary and community mental health services; active integration of mental health into ongoing NHI implementation including expanding the mandate of District hospitals and drawing on the private sector; submission of costed budget bids to support a mental health conditional grant and ensuring that explicit outcomes and deliverables are in place to monitor Provincial implementation.

Conclusion: This chapter has suggested several ways in which existing reforms may be leveraged to incorporate the objectives of the MHPF and achieve better mental health outcomes for South Africans, revealing critical opportunities for mental health service scale-up to be embedded in South Africa's future health delivery strategy. The realization of a conditional grant for mental health will require technical expertise to cost existing services towards the development of an investment case for mental health service scale-up nationally, projecting potential resource requirements and returns on investment of a strong service platform. In the longer-term, the NHI benefit package must be expanded to include comprehensive mental health services at all levels. Explicit results-based financing mechanisms within the NHI Fund must also be incorporated for mental health to incentivise quality of care. Private providers engaged by the NHI must commit to make use of evidence-based mental health interventions.

Introduction

Since a landmark publication by Prince et al (2007), the notion of "no health without mental health" has stimulated policy-makers in all countries to consider mental health and the treatment of mental disorders as a key priority in the pursuit of equity in health and health service access (117). This has become particularly pertinent in recent years with the emergence of universal health coverage goals and the need to provide broad-based, context- specific primary health care (PHC) (117, 224). In 2018, the Lancet Commission on Global Mental Health and Sustainable Development reaffirmed and expanded these sentiments, emphasizing that a global response to mental health necessitates "promoting mental health, preventing mental disorders, and including mental health care in universal coverage…agenda[s]" as a humanitarian and development priority, providing evidence that mental health is indeed at the centre of sustainable development(60). These goals have been embraced by the South African government through the adoption of the National Health Insurance Policy (2017) and the South African *National Mental Health Policy Framework and Strategic Plan 2013-2020* (MHPF) (167, 225). Despite compelling evidence supporting the case for investment in mental health systems and strong national policy commitments (146, 226), it is essential that the plans and policies developed to address the mental health burden in South Africa reflect an increased recognition that financing is a critical factor, not only in the realization of a viable mental health system but also for the long-term development prospects of the country.

Estimates from the Global Burden of Disease study (2016) have indicated that mental and substance-use disorders are the leading cause of Years Lost due to Disability (YLD) in South Africa. Estimates of Disability Adjusted Life Years (DALYs) and YLD attributable to Mental, Neurological and Substance Use (MNS) disorders represent 15.6% of all DALYs and 35% of YLDs due to Non-communicable diseases (NCDs) (227). South Africa's health system comprises a large public sector that serves about 80-85% of the population and a smaller private sector which is expanding rapidly. Considering that only 48% of the total health expenditure in South Africa is funded by the state, with the remainder being funded by the private sector, with 80-85% of the population relying on the state – the public health system is under extreme pressure to more effectively manage chronic, long-term care, while maintaining and improving the capacity of acute care services and addressing the challenges emanating from erratic medicines supply and sufficient

health workforce (228). Inequities in access to mental health care endure as a growing concern between Provinces, districts and among local communities. The limited resources that exist are inefficiently concentrated in large psychiatric hospitals, specializing in the treatment of severe mental disorder, with a predominantly vertical (disease focused, as opposed to integrated) model of care (96).

In 2011, the National Department of Health (NDOH) initiated a process of establishing a National Health Insurance (NHI) scheme to promote equity in health service delivery towards universal coverage (141, 225, 229-231). By design, the National Health Insurance model seeks to provide health care for all, irrespective of affordability and income band, and will be mandatory for all South Africans. Complete implementation of the NHI is set for 2025, and is set to be funded through payroll taxes, surcharges on taxable income and possible increased VAT revenues (141, 225, 232).

While the NHI efforts are ongoing, the NDOH has also made an explicit pledge to transform mental health services and ensure that "quality mental health services are accessible, equitable, comprehensive and are integrated at all levels of the health system" (167); this commitment is reflected in the South African *National Mental Health Policy Framework and Strategic Plan* (MHPF), adopted in July 2013 (167). The policy was intended to be fully realized by 2020 and envisages the complete integration of mental health care into general health services. As 2020 approaches, it has become apparent that there have been critical challenges in the implementation of the Plan, with no budgets dedicated to support its' implementation. There is concern that if the South African mental health priorities are not explicitly addressed and reflected in the policies and activities supporting the overall implementation of the NHI, mental health is likely to continue to be relegated to the 'backburner', making the MHPF difficult to implement and the future prospects for the South African mental health system very uncertain (96).

With the implicit neglect for the integration of mental health services into general health service development in South Africa, there is an urgent need for an understanding of the ways in which existing reforms may be leveraged to incorporate the objectives of the MHPF and achieve better mental health outcomes for South Africans and more specifically, the mechanisms by which these reforms can be structured and financed in the context of fiscal constraint. This chapter seeks to

present the results of a situational analysis of the policy context, strategic needs, barriers and opportunities for sustainable financing for mental health in South Africa that is complimented with a synthesis of key stakeholder consultations. The findings seek to provide recommendations for how scaled-up mental health services can best be paid for in a way that is feasible, fair and appropriate within the fiscal constraints and structures of the country.

Methods

Study Design

This study forms part of the Emerald (Emerging mental health systems in low- and middle-income countries) project (233), which was conducted across six low- and middle-income countries (Ethiopia, India, Nepal, Nigeria, South Africa and Uganda) and pursued a range of investigations into a number of mental health system strengthening components. Informed by similar frameworks developed for other disease priorities in the health sector, the Emerald project developed a new, stepped analytical framework for sustainable mental health financing (234). The framework is structured around six domains: (1) assessment of the public health consequences of mental disorders; (2) assessment of the private and public economic consequences of mental disorders; (3) assessment of projected resource needs for scaling-up mental health services; (4) assessment of the mental health and general health system; (5) assessment of the current and projected macro-fiscal situation, and; (6) assessment and selection of appropriate financing mechanisms (234).

The results of the first three domains of this framework for all six Emerald countries have been reported elsewhere (234, 235). This analysis therefore seeks to report on the three remaining domains for South Africa and was conducted in two parts. We first completed a situational analysis followed by a qualitative study involving in-depth, semi-structured interviews. The situational analysis served to address domain 4 and 5, specifically, whilst the in-depth interviews sought to compliment and validate the results of the document review and elicit responses linked to the all three domains (4, 5 and 6). These inputs were synthesized and fed into the development of financing recommendations for mental health service provision in South Africa in line with the health financing structure of the country and the policy directives of the NHI.

Data Collection

Situational Analysis

The situational analysis was conducted in 2017 and updated in 2018. Online and printed data, grey literature, and government documents and policies were searched and reviewed to understand disease burden, health policies and plans, macro-fiscal and political context, as well as health-system governance and management of mental health care services in South Africa. In order to complete the situational analysis, documents relevant to general health services delivery such as policy and strategic framework reports, peer-reviewed articles, and other grey literature were obtained from the Department of Health (DOH) websites, World Bank Database, and reports and articles using key term searches. Further documents were obtained and reviewed upon recommendations provided during stakeholder interviews.

Qualitative in-depth interviews

Semi-structured Mental Health Financing Diagnostic interview guides (Appendix E) were developed for each category of respondent to compliment the document review and elicit responses linked to the final three domains (236). The interview guides covered a range of topics that explored the current conditions of the health and public sector; priority given to mental health (domain 4); ongoing health financing efforts and future plans as well as the budgetary and efficiency implications for mental health service development (domain 5); the main perceived challenges to increased public health financing and options for change required for sustained resources for a scaled up mental health service in South Africa (domain 6).

The sampling of respondents for the qualitative interviews was purposive, with a view to ensuring that the perspectives of health, policy and financing experts were obtained and to facilitate a participatory, consensus-building approach towards the development of recommendations (234). Participants from a number of key sectors, including the NDOH and National Treasury (NT) were sampled, in addition to NGO respondents from the South African Depression and Anxiety Group (SADAG) and the South African Federation for Mental Health as well as a senior public sector researcher specializing in health financing at the University of Cape Town. The interviews were

conducted in-person or telephonically and lasted an average of one hour. Interviews were audio-recorded with informed consent from the respondent.

Data analysis

The audio recorded interviews were transcribed verbatim and a framework analysis approach was used to analyse the qualitative data using NVivo 11 (237). An *a priori* coding framework linked to the last three domains was developed to structure and summarize the responses (Appendix E) .

Results

Table 7 summarizes the number of stakeholder interviews that took place and the organizational affiliations of each respondent. Two interviewees were affiliated to the NGO sector, one was affiliated to the National Department(s) of Health, one from the National Treasury, with the last stakeholder affiliated to an academic institution with public health financing expertise.

Table 7 Stakeholder Interviewee Descriptions

Total Stakeholders Interviewed	Organization Affiliations
1	National Treasury
1	National Department of Health: Non-communicable Diseases
1	NGO Sector: South African Depression and Anxiety Group
1	NGO Sector: South African Federation for Mental Health
1	Academic Research Institution (Public Health Financing specialist)

Macro fiscal and Health-system context

Since 2012 public-health expenditure has only increased by an estimated 1.8% per year (141, 238), with expenditure on health currently at 13.5% of total government expenditure and unlikely to reach the Abuja target of 15% (141, 238). This is coupled with marginal economic growth of 1.3% in 2017 (239) and low growth projections forecasted until at least 2020. These figures are concerning in the face of a growing population of uninsured South Africans who rely on the public health system, rising by an estimated 1.52% per year (141). According to Statistics South Africa (STATS SA), 86% of the total spend on health care is spent by provincial governments, tasked to

manage the nation's public health care system, comprising of 422 hospitals and 3,841 clinics and health centers (240). The main expenditure items were hospital services (62%), public health family planning and disease detection (33%), and ambulance services (4%)(240). The in-depth interviews raised a number of concerns with respect to how the government has contained costs in the health sector following the economic recession, using strategies such as: limiting personnel numbers, centralised tendering for medicines and delays in major capital projects.

Further adding to this pressure is the implementation of *National Health Insurance for South Africa (*NHI) (131, 225) which represents an upward trajectory for health expenditure in the face of fiscal constraint (141). There is concern over the way in which the NHI pilots have been run and many stakeholders believe that it has been a wasted opportunity. As part of the planning process, the NHI bill makes provisions for the establishment of three Ministerial committees as well as other technical committees who would be responsible for the development of clinical guidelines and 'rationing criteria' for tertiary care; setting provider payments; and establishing an agency to decide on the health technologies to be provided under the NHI (241). Interest groups include the corporate private sector, technocrats, and other special interest groups including medical schemes, the Actuarial Society, private hospitals, academic and research organizations, and elite professional associations (241).

Of note is the exclusion of key constituencies including community health workers and nurses to represent the primary health care sector. Key constituencies have been left out. Community health workers and nurses – the backbone of the primary health care system that forms the foundation of the NHI – are excluded. Civil society is included in only one group. As explained by a public financing expert:

> *"I'm very disappointed at how the NHI pilots have been run… they've been focusing on interventions related to maternal and child health. Why is there not a psychiatrist in the clinical specialist teams …because [mental health] doesn't have as direct an impact on mortality and I think it's been an absolutely wasted opportunity….to deliver comprehensive services that actually address the whole range of issues".*

Despite the adoption of the South African MHPF (2013), health budgets and broader health sector transformations have not followed to actualize the contents of the policy (167, 168). Most critically, there remains a lack of consistency between the content of, and priorities outlined in the MHPF and those expressed in the NHI Policy (114, 230, 242). The Guidelines have included mental health in the comprehensive package of services being re-engineered in the primary health system, and have specified the work of the Community Health Workers (CHWs) to include psychosocial support, adherence support for chronic conditions and referral support to social and health services. However, the training programs and manuals that have been developed and rolled-out for both for the CHWs and their team leaders have not included training on mental health (114, 243, 244) and up until 2015, households profiled by the outreach teams reported no assessments or referrals for mental health (243).

Similarly, the implementation of the Integrated School Health Policy (ISHP) introduced in 2012 has neglected mental health service provision (245). Notably, across all of the ten pilot sites, the ISHP did not identify a single learner with mental illness or substance use disorder, despite the inclusion of the identification of cognitive and related developmental impairment in the range of services provided by the ISHP, among numerous other mental health services (243, 245).

There are a multitude of factors that have weakened the provision of mental health services in South Africa, most critically the lack of human and financial resources to address treatment gaps (96, 160, 161), limited routine information systems to understand the true burden of mental disorders and utilisation patterns and high levels of stigma (246). As a result of poor access to good quality primary mental health care, the entry level for accessing mental health services at present is mostly at an inappropriate level of care (tertiary and specialist psychiatric services) (96, 114). This has significantly contributed to the high costs of health care and the inefficiency of the health system (114). This has also meant that care-seeking typically occurs when patients experience very severe symptoms, largely as a result of untreated mental illness, and often require long-term institutionalized care. Approximately two thirds of discharged patients (from psychiatric facilities) are readmitted, and largely remain institutionalized without much potential of returning to their communities (157, 158). This is largely due to limited availability of well-resourced community-based residential and day care service to manage mental health care users after

discharge, coupled with the impact of poverty on households, with many families unable or unwilling to care for family members after discharge (247).

While in-depth interviews acknowledged the significance of the policy effort, the key blockage has been a lack of budget allocations at the provincial level to allow for the implementation of the MHPF. As one interviewee explained:

> *"…without explicit earmarking of funds there is no way of guaranteeing the actualization of the MHPF, particularly when considering South Africa's decentralized fiscal system and the current environment of strained fiscal capacity".*

Most stakeholders also acknowledged the biggest hurdle has been at provincial implementation, and the very institutionalized model of mental health care continues to persist with services and resources concentrated in hospitals. As clarified by one respondent from the NGO sector:

> *"…we find that…implementation in terms of the provinces…we can't get any go-ahead, even if there's policies at National or buy-in from National…provincial implementation is where the blockages are…so it doesn't really help to have a policy".*

Similarly, a public financing expert reaffirmed this view clarifying that:

> *"…the vast majority of money for health services comes through provinces. And your battleground is every single province… who are currently struggling to actively fund existing services".*

Both the MHPF and the Mental Health Care Act (MHCA) (2002) explicitly mandate the role of the district hospital as the first point of contact for mental health care users (MHCUs), and assigns the responsibility of ensuring that MHCUs are assessed and provided with ongoing referrals to more specialist treatment within a 72-hour period (167, 248, 249). Presently however, the majority of district hospitals in the country are not equipped with the infrastructure required to safely admit MHCUs for a 72-hour observation, nor are they equipped with adequate room space for group therapy and self-help groups or workshop space for occupational therapy, as mandated by the MHCA (167, 250). Further, the White Paper on the NHI (2015), has specifically excluded

Psychiatry and/or Mental Health services from the four cited disciplines on work to be provided at the District hospital (114)(250). This is in contradiction to efforts to integrate mental health services at lower level services to ensure wider access to care with district hospitals meant to serve as the first point of care for mental health care users.

Stakeholders mentioned that there has been little capacity for District Management structures to engage with mental health issues. The current tiered structure of the health care system, and the commitment to greater autonomy at the district level, in the context of ambitious reforms such as the NHI – "has created a situation wherein the success or failure of health care reforms will largely revolve around the strengths and weaknesses of district management" (251). As one stakeholder noted:

> *"...[they] don't have the knowledge of what they are required to deliver...there are no measurable deliverables" associated with the MHPF for the district level, making it a very low priority for overburdened district health management teams"*

Challenges to increased public and mental health financing

There is a lack of data available for mental health financing in South Africa, with Government being the main source of funding through tax-based health budgets (252). Provincial and national budgets for mental health services are not reported or routinely available. Based on modelled estimates (for expenditure on psychiatric hospital level services only), South Africa spent an estimated $59 million (US$ 5.94 per capita (252)) on mental health services in 2005 (165). The National Government of South Africa uses two types of transfers, conditional grants and unconditional provincial equitable share funds, to send money to provinces in South Africa. Presently, South Africa does not have a ring-fenced budget for mental health and funding falls under general health allocations of the equitable share. This means that provinces receive a set amount of funds from the national revenue, based on a provincial equitable share formula, and resource allocations to health and to specific health programmes are therefore determined by the Province's own priorities. A conditional grant is a ring-fenced amount that comes with certain conditions and must be spent on particular activities.

While this approach to financing is consistent with global trends of decentralizing expenditure responsibilities, stakeholders felt that it has contributed to a situation in which increases in resourcing to Provinces do not guarantee use of these resources for their intended purpose, and these provincial decisions often redirect additional resources for health to other needs. Provinces are not required to report on expenditure for specific health programmes paid for through the equitable share transfer, making it difficult to assess whether Provincial budget priorities are aligned to National priorities for health. Stakeholders from all sectors believed that motivating for mental health to be included in provincial equitable share is therefore unlikely to yield any measurable increases in revenues for mental health, or any measurable improvements in the mental health system.

Further, the absence of ring-fenced allocations for the development and maintenance of the specialized psychiatric service at the tertiary level has created a number of substantial challenges: the psychiatric hospitals are outdated and in disrepair; there is an acute shortage of mental health professionals available to deliver this service; these facilities are unable to invest in the advancement of their scope of service (for example, child and adolescent psychiatry, neuropsychiatry and old age psychiatry)(157).

The NGO sector also reported severe challenges with respect to financing and it was estimated that 50% of the mental health NGOs in South Africa are struggling with sustainability at present. To secure funding from the Department of Social Development and/or Health, most mental health NGOs in South Africa have needed to commit to the delivery of statuary interventions, not mental health services. The NGO stakeholders believe that due to these models of funding, their mental health services become diluted and unspecialized – focusing on family planning, or foster care, or services to the aged.

Options for change for a scaled up mental health service in South Africa

Budget Planning and Allocations for Mental Health

The process of health budgeting has changed in the past ten years, motivated by increased pressure after the 2008 recession and increased complaints around fiscal federalism and the lack of control over the use of funds by the Minister of Health. The respondent from the NT explained:

> *"…increasingly, rather than just giving an unlinked equitable share increase and allowing provinces to decide where to allocate these increases, the role of NT and the National Process has become more prominent…increases in budgets for major changes are hinged on the capacity and technical expertise that program managers possess in order to put together an effective budget bid…one shouldn't be too pessimistic about funding possibilities….we have funded many things...[but] we've had very few mental health budget bids…a lot of programs don't have economic capacity… they know what they want to do, but they don't quite know how to convert it into a plan and cost it…".*

Recently, the NT funded an HIV and TB investment case, representing the first time any HIV and TB investment case was funded. A finance-level state stakeholder suggested that there is reason not to be optimistic and that despite prevailing opinions being that there is simply not enough money, there are funds that could be made available if mental health tabled a series of big budget bids as was done for TB and HIV. Should a budget bid for mental health be successful, it would ensure an escalating resource envelope for mental health. As one respondent explained:

> *"…we'd have to tell provinces, "this money is for doing the following" …and the more specific…detailed and measurable it can be…in terms of the way you've costed it, the easier it is for us to know whether the provinces are using the money for that."*

The likelihood of seeing a successful budget bid for mental health was challenged somewhat by the health-sector stakeholder, who believed that demonstrating cost-saving and returns on investment for mental health does not necessarily guarantee it will be funded:

> *"…even if we can demonstrate that [investing in] mental health makes sense…in this climate …unless something very dramatic happens economically in our country, and that doesn't look very likely at this point in time…there isn't going to be a lot more resources*

to give around…what one really needs to be looking at more is "how does one make better use of resources" rather than "how do we get more resources".

Nonetheless, the respondent from the NT did also mention that a key criterion for evaluating these bids is the ability to demonstrate efficiency gains and value for money, meaning that efficiency is a priority for both health and the finance-sectors. Some opportunities for improving efficiency that emerged from the interviews included: improved matching of human resource posts and budget with workload; a review of hospital platforms with activities that support shorter length of stays and greater outpatient care, and; reducing budgets for new facilities, with a focus on dedicating budgets to ensure existing facilities that are only partially operationalized become fully operational.

A further difficulty to the budget planning process was identified as the very medical model used by the DOH, and the difficulty in conceptualizing developmental models – which leads to very little resourcing for psychosocial rehabilitation, outside of the licensing of these facilities with most resources going directly into hospitals. Yet this service is a critical component of treatment for the service users. Respondents noted the need for increased advocacy among policy makers to ensure that both developmental and medical models of mental health care are recognised, with adequate recognition and resources dedicated to community psychosocial support.

At present, stakeholders reported that there is no way of monitoring mental health financing in the public sector outside of specialized hospital care for mental health. The NHI model is intended to include improved expenditure tracking and mechanisms by which the NHI Fund will be able to associate services at all levels of the health care system with the resources made available, however these mechanisms are still not fully developed and little information has been provided to these stakeholders regarding how and when this improved monitoring system will be implemented. It is hoped that this will ensure the health system can be more responsive and accountable.

Strengthening mental health systems

Stakeholders who were interviewed highlighted a series of mental health system reforms that should be prioritized. These included: the explicit inclusion of mental health services in NHI

implementation efforts through the expansion of the mandate of District (first referral) hospitals to include mental health services in their priority services; secondly, investing in infrastructure upgrades required to safely treat patients who are admitted for 72-hour observation, as per the MHCA (2002); ensuring the availability of mental health specialist staff in District and community health services whilst allowing for psychiatrist input into district management teams and ensuring that clinical specialist teams include at least one psychiatrist; and investing in targeted mental health training for all generalist staff particularly in mental health screening and diagnosis including anti-stigma training. Due to the critical shortage of psychiatrists working in the public sector, this strategy would necessitate contracting of private providers and the provision of an explicit reorientation program to ensure they commit to the delivery of therapies based on a public health approach, and; acknowledgment that particularly in rural settings, a Medical Officer with a Diploma or an interest in psychiatry may be the only available option in the short-term.

The potential for the private sector to address the chronic human resource shortage for mental health services in the public sector was also emphasized by a number of stakeholders. Considering the discussions around the NHI, accessing private sector resources, including human resources, would be facilitated through contracting the private providers through the NHI central fund.

> *"…when you look at how much is being spent in the private sector and how many people are in the private sector dealing with mental health, it's pretty substantial… if we could unlock all of those people… …if they moved away from, sort of doing long-term therapies to doing more community-oriented work and to looking more at preventive interventions and so on, there's huge resource".*

There was consensus that there is interest from private sector psychiatrists and psychologists to contribute their services and time to the public sector, however challenges have already emerged with respect to the provider payment contracting through the NHI implementation efforts, with provinces not having the resources to pay the private providers for their time. Details of the strategic purchasing arrangements through the NHI Fund are still unclear, however would impact on the success of drawing on the private sector. As one respondent explained:

"…[only] on their terms…where and how their services are provided and also at what price…and that's not affordable".

The interviews also emphasized the need for an integrated multi-sectoral response to community-based service delivery for mental health:

"…we have education, we have health, we have social development, we have public works, we have transport and all these must come into one package for mental health services, because only then we have adequate resources".

According to the respondents, strengthening community-based service delivery must to be complimented with an empowerment of mental health care users through education, particularly for those with intellectual disabilities and severe mental health problems. In addition, all stakeholders believed there is a need to engage with communities to establish their own needs, and to understand the range of NGOs operating within their districts to ensure a more efficient and targeted model of service. There was a strong importance placed on capitalizing on the capacities of all stakeholders involved in mental health service delivery into a unified, efficient service.

Financing Mechanisms

Innovative financing mechanisms do not serve as a significant revenue generation source for the health sector, and although these mechanisms are exciting and innovative, their contributions are marginal in the broader sense, according to the respondent from the NT:

"…so called "innovative financing" is a bit fringe in a way…that sits on the margin… it doesn't really matter whether funding is raised through VAT or personal income tax or company tax, or alcohol tax or tobacco tax … in general the source of revenue is not so relevant for the health sector…what's important is that there is sufficient revenue for the service".

On the other hand, while conditional grants from the NDOH make up only 20% of provincial health department budgets, they play a very important role in provincial health care delivery

because are used by the National government to protect special health programmes or start up new programmes. This was exemplified with the establishment of an HIV/TB conditional grant and the subsequent success in the expansion of services including the numbers of people put on antiretroviral treatment (253). South Africa's expenditure on HIV/AIDS programmes is estimated to have almost doubled over the past five years from R10.6 billion in 2012/13 to R20.3 billion in 2017/18.1; 85% of this was funded through the conditional grant (254). This commitment over the next several years could ensure that Provincial departments submit detailed business plans for the allocation of funds to various mental health systems activities, aligned with performance targets detailed in the MHPF. The NDOH would then be responsible for approving these business plans and transferring funds to provincial or local departments for their implementation. This mechanism will require that Provinces and local governments report on their expenditure against specific mental health targets. In the short term, the priority areas for activities funded through a conditional grant should include the development of community based mental health services in South Africa.

In the long term, the transition to the NHI model was highlighted as the main mechanism to generate additional funding for health and could potentially play a key role in reversing the trend of low public health expenditure growth. NHI should increase public funding from around 4% of GDP to around 6% of GDP; the NHI is considered the best chance for increased funding for the health sector and further provides an opportunity for the provinces to purchase services from the private sector.

Discussion

This paper set out to synthesize new evidence and perspectives relating to the current policy context, strategic needs, and opportunities for mental health resourcing in South Africa with a view to providing recommendations for how scaled-up mental health services can best be paid for in a way that is feasible, fair and appropriate within the fiscal constraints and structures of the country, and in line with the transformation of the health sector toward NHI. Despite the country's comprehensive MHPF, progress in service delivery is challenged by a combination of weak health information systems to understand the true burden of disease, inequitable health service access due to the legacy of the apartheid system, ongoing inequities in economic and employment

opportunities, macro-fiscal strain and multiple competing health priorities in an environment of reduced fiscal capacity and a growing population with chronic health needs. Early evidence from the NHI pilot districts point to discordance with the MHPF and limited integration of mental health service provision in the country's PHC strengthening plans, highlighting a significant missed opportunity for sustainable mental health services in the long term (255). Plans around the NHI are intended to move South Africa closer to achieving UHC; this cannot be achieved in the absence of the explicit inclusion of integrated mental health service planning and sustainable resourcing. Mental health remains an integral component of health care, both in light of the significant and growing impact of MNS disorders and the high level of comorbidities with other major conditions, as well as its impact on overall population well-being. Improved and sustainable mental health financing to improve access to care for all citizens remains a fundamental human right and is aligned to the global Sustainable Development Goal of ensuring health and wellbeing for all; and aspiring to actualize a world, in which "physical, mental and social wellbeing are assured" (256).

Better managing the country's existing health resources, advocating for the increased decentralization of health system resources to primary and community-level mental health care, in addition to intersectoral collaboration to address the upstream determinants of mental health conditions, ensuring earmarked funding for mental health in in the short-term and the explicit integration of mental health plans in the NHI efforts were recommended as efficient and sustainable approaches to scaling-up the South African mental health service and its' financing. This is consistent with the recommendations of a joint initiative of the World Bank and World Health Organization (WHO) which emphasized the need for a multi-sectoral, global response to mental health as a humanitarian and development priority (33). The event culminated with a global investment case for mental health, clearly outlining how equitable investments in primary and community-based mental health systems can lead to clear and definable health, economic and social benefits (33, 34).

The study revealed that improving the management of the country's existing resources may entail: decentralising and deinstitutionalizing services once an effective community-based platform for mental health service delivery is established to reduce hospital length of stays and readmission rates by strengthening the transition between hospital care and the next source of care within the community (257); task-shifting and task sharing approaches including nurse-initiated psychotropic

medication (258) and the explicit integration of mental health care into chronic care services at all levels of the health system (259). In addition, these efforts should be implemented in parallel with the implementation of more effective information systems with concrete Provincial deliverables in place to monitor implementation.

The creation of a mental health conditional grant in the short- to medium-term emerged as a critical recommendation for ensuring a stable funding source is in place to reverse historical trends of budgeting for mental health, and ensure parity in financing with other health priorities in the country. Key challenges to successful budget bids for mental health were identified as the lack of technical expertise to convert the activities outlined in the MHPF into measurable and specific plans that quantify the financial costs and the yields on the investment, and; the difficulty in quantifying the population level outcomes as a result of significant new investments in mental health care. Therefore, advocating for this conditional grant will require the NDOH to source technical expertise to systematically cost the existing mental health service; and use these cost estimates to develop an investment case for mental health service scale-up nationally, projecting the potential resource requirements and returns on investment of a strong mental health service platform, by province and across geographies. Following the Life Esidimeni tragedy in South Africa (260), there is a strong level of political will for mental health service strengthening at present, and thus a conditional grant for mental health in the short-medium term will capitalize on the political appetite for change, and lead to a sustained focus on mental health as the country engages in broader health sector strengthening efforts.

Once in place, the priority should be to invest in developmental models of care by strengthening the community based mental health service, which is largely non-existent and fragmented (258). This must include infrastructural investments in home-based and community residential care facilities, while maintaining current financing of specialized psychiatric hospitals already included in the provincial equitable share; psychiatric hospitals being the only level of mental health care with a dedicated line item budget is specified within provincial budgets, further reinforcing a hospi-centric model of care. This will also include financing the provision of training for CHWs, PHC nurses and generalists working in the district health sector and ensuring that funds are dedicated to obtaining population-based estimates of the prevalence of mental health disorders.

In the longer-term, study findings support the recommendation that mental health is included in general health resource development which has been focussed on raising public funds through the implementation of a NHI system. Further, we recommend expanding the NHI benefit package to explicitly include comprehensive mental health services at all levels of the health system, as outlined in the MHPF with priority given to community-based mental health services. As the South African government moves toward developing the exact mechanisms by which the NHI Fund will operate and pay providers, we recommend that the government explores capitation payment mechanisms and other provider or consumer led demand side financing approaches as outlined in the previous chapter. Results-based financing should be explored as a feature of the NHI provider payment mechanism through the inclusion of performance targets for mental health as a means to incentivize service delivery at the primary care level. Results-based financing can improve efficiency by offering high remuneration for services performed at PHC centres, particularly for early and continued community support and referrals for severe mental disorders (261), which will reduce the burden on specialized hospital based services. Results based financing also has the capacity to improve the quality of care (262), and may catalyse a reduction in the stigma that mental health care users face in accessing care, particularly at lower levels of the health care system. It is however important to note that results-based financing can be difficult to design and implement correctly (263). At present there remains limited evidence that RBF is effective in LMICs, with a recent Cochrane review concluding that 'the effects of provider incentives are uncertain (very low-certainty evidence), including […] the effects of pay-for-performance on provider performance, the utilisation of services, patient outcomes, or resource use in low-income countries'(264).

Finally, we recommend that the well-developed private mental health sector in South Africa is leveraged through contracts with private providers. This may be a means of improving coverage of mental health services in hard to reach and/or underserved areas of the country and ensure that quality clauses for mental health services are explicitly outlined in these contracts (265). Funds to facilitate contracting with private providers should initially be covered by the conditional grant for mental health (to bypass current experiences where Provinces are not able to pay these providers), and once mechanisms are established for contracting with private providers through the NHI Fund (by 2025), these costs can be transferred to the NHI fund, in line with the long-term

recommendation of including mental health in general resource development. Private providers should also be contracted to provide specialized psychiatric input to support district health management teams, and clinical support to primary care providers and generalists. This recommendation is not without some risks and is contingent upon ensuring that private providers who are engaged by the NHI make use of evidence-based mental health interventions that make optimal use of scarce public resources. Particularly in the field of psychological therapies, priority should be given to practices that are based on proven evidence of clinical benefit, and that adopt a public health approach.

This study has several limitations. Firstly, in relation to the availability of current statistics and information pertaining to mental health service coverage and burden of disease; while the Situational Analysis did attempt to gather information from a large selection of both peer-reviewed and grey literature in addition to policy and strategic documents to provide a comprehensive picture of the political and economic backdrop of mental health service delivery the search strategy employed was unsystematic in nature. A systematic review of the literature may have yielded a wider resource base with which to draw information regarding mental health financing in South Africa. Secondly, this study was qualitative in nature and we are reporting on the perceptions of a small number of purposefully selected interviewees which may limit the breadth of perspectives available to inform the synthesis of this paper. We acknowledge the inability to include a full range of views and experiences from all sectors involved in mental health service delivery and financing in South Africa nor the perspectives of Provincial stakeholders. Furthermore, due to time and resource constraints, outside of service user organizations, no mental health care users or their families were sampled in this study potentially introducing sampling bias with their perspectives not represented.

This study builds on others reporting on mental health services in South Africa by offering explicit financing perspectives and recommendations for mental health, contextualized to South Africa's ongoing NHI plans. Future areas of study that incorporate a wider stakeholder perspective, particularly the NGO sectors and increased cross-sectoral input from the Departments of Health, Social Development and Education, may help to identify other opportunities for shared actions for improved efficiency in mental health service delivery. Furthermore, district level inputs to help further identify ground level implementation challenges around the NHI and the incorporation of

mental health services into PHC strengthening efforts would support the re-orientation of strategies as the NHI enters its second stage of implementation.

Conclusions

In a context of weak integration of mental health services into general health services in South Africa, this paper has suggested several ways in which existing reforms may be leveraged to incorporate the objectives of the MHPF and achieve better mental health outcomes for South Africans. Better managing the country's existing health resources and advocating for the increased decentralization of resources to primary and community level mental health services have been outlined as strategies for more efficient financing mechanisms for an equitable system of mental health service delivery. Furthermore, active integration of mental health in the ongoing NHI implementation, the submission of costed budget bids for mental health, while ensuring that information systems are in place to monitor implementation provide a critical opportunity for mental health service scale-up to be embedded in South Africa's future health delivery strategy.

Chapter 4

Mental health system costs, resources and constraints in South Africa: a national survey

Authors: Sumaiyah Docrat[1*], Donela Besada[2], Susan Cleary[3], Emmanuelle Daviaud[2] and Crick Lund[1,4]

1 Alan J. Flisher Centre for Public Mental Health, Department of Psychiatry and Mental Health, University of Cape Town, South Africa; 46 Sawkins Road, Rondebosch, Cape Town, Western Cape, South Africa 7700; +27.21.406.6129; s.docrat@uct.ac.za.

2 Health Systems Research Unit, South Africa Medical Research Council, South Africa

3 Health Economics Unit, University of Cape Town, South Africa

4 Centre for Global Mental Health, King's Global Health Institute, Health Service and Population Research Department, Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom

Description of the contribution of the candidate and co-authors

Following a request by the National Department of Health for a cost-analysis to support their resource-mobilization efforts for the National Mental Health Policy Framework and Strategic Plan 2013-2020, SD developed the costing study protocol that was applied across the nine provinces of South Africa, under the guidance of CL. SD led all aspects of the national data collection process, with support from DB who was involved as an independent researcher. SD independently analyzed the dataset, with input on the analytical methods received from ED, who was also involved as an independent researcher, DB and SC. SD independently wrote the first draft of the paper, under the guidance of CL. All authors were subsequently involved in critically revising and approving the manuscript prior to submission to Health Policy and Planning.

Current status: Published in *Health Policy and Planning*

Docrat, S., Besada, D., Cleary, S., Daviaud, E., Lund, C. 2019. Mental health system costs, resources and constraints in South Africa: a national survey. Health Policy and Planning. Advance article. Available at: https://academic.oup.com/heapol/advance-article/doi/10.1093/heapol/czz085/5572608

Abstract

Background: The inclusion of mental health in the Sustainable Development Goals represents a global commitment to include mental health among the highest health and development priorities for investment. Low- and Middle-Income Countries (LMICs), such as South Africa, contemplating mental health system scale-up embedded into wider universal health coverage-related health-system transformations, require detailed and locally-derived estimates on existing mental health system resources and constraints. The absence of these data has limited scale-up efforts to address the burden of mental disorders in most LMICs.

Methods: We conducted a national survey to quantify public expenditure on mental health and evaluate the constraints of the South African mental health system.

Results: The study found that South Africa's public mental health expenditure in the 2016/17 financial year was USD615.3million, representing 5.0% of the total public health budget (provincial range: 2.1% to 7.7% of provincial health budgets) and USD13.3 per capita uninsured. Inpatient care represented 86% of mental health care expenditure, with nearly half of total mental health spending occurring at the psychiatric hospital-level. Almost one quarter of mental health inpatients are readmitted to hospital within three months of a previous discharge, costing the public health system an estimated USD112million. Crude estimates indicate that only 0.89% and 7.35% of the uninsured population requiring care received some form of public inpatient and outpatient mental health care, during the study period. Further, mental health human resource availability, infrastructure and medication supply are significant constraints to the realization of the country's progressive mental health legislation.

Conclusion: For the first time, this study offers a nationally representative reflection of the state of mental health spending and elucidates inefficiencies and constraints emanating from existing mental health investments in South Africa. With this information at hand, the government now has a baseline for which a rational process to planning for system reforms can be initiated.

Introduction

Over the past decade, calls to address the increasing burden of mental, neurological and substance-use (MNS) disorders and to include mental health care as an essential component of universal health coverage (UHC) have attracted mounting interest from governments (60, 117, 234, 266). With the inclusion of mental health in the 2015 Sustainable Development Goals (SDGs), there is now a global commitment to include mental health among the highest priorities for investment as a health, humanitarian and development priority (62, 90-92).

International evidence has articulated the most promising, cost-effective options for reducing the contribution of mental disorders to the global burden of disease, particularly for Low- and Middle-Income Countries (LMICs) (60). In brief, strategies include: the explicit recognition and inclusion of mental health in the UHC agenda; intensified investments in mental health systems; reducing inefficiencies in the use of resources through the redistribution of budgets from hospi-centric care to the community; task-shifting mental health care to non-specialist providers who receive ongoing specialist supervision; amplified training for all cadres of mental health professionals and specialists; the initiation of early interventions that are accessible to at risk populations; integration of mental health in broader primary health care, and; the active engagement of those living with and effected by MNS disorders in the reform process (52, 60-67). With an expanding array of evidence-informed recommendations for scaling-up integrated mental health care, preventing mental illness and improving population mental health, coupled with an intensifying global momentum for investment; the question arises as to why there has been slow action in the way mental health services are financed and delivered (267).

Since the World Health Organization (WHO) Mental Health Atlas (MHA) initiative commenced in 2001, our understanding of mental health systems and ability to monitor progress toward the ambitious global mental health goals outlined in the SDGs has improved significantly (90-92) Yet, significant gaps in the knowledge base remain among most LMICs, including South Africa. For example, among the 127 LMICs that were able to partially complete the WHO MHA (2017) questionnaire, only 40% (n=51) were able to report on total government expenditure on mental health (93). Service coverage estimates were reported by only 41% (n=52) of LMICs (93). The most common reason for missing data is that it simply does not exist, with a further limitation that

most information provided by countries relates to the country as a whole, overlooking important variability across regions, concerning the degree of policy implementation, availability of services and the existence of promotion and prevention campaigns for mental health (93).

LMICs such as South Africa contemplating mental health system scale-up, embedded into wider SDG- and UHC-related health-sector transformations, require detailed, reliable and locally-derived estimates on current resources and expenditures on mental health – (1) as an indicator for measuring the efficiency of existing investments; (2) to measure inequities in resourcing and access; (3) to identify priorities and plan mental health services; (4) to provide a baseline against which additional resource need estimates can be monitored; and (5) for targeting service reforms towards addressing the health system constraints that may limit scale-up efforts (10, 92, 268, 269).

South Africa has taken some critical steps forward to strengthen its mental health system including reforming the Mental Health Care Act 17 of 2002 (MHCA), the development of the South African National Mental Health Policy Framework and Strategic Plan 2013–2020 (MHPF) and the adoption of the National Health Insurance (NHI) Policy (2017) to promote equity in health service delivery towards UHC (166, 270, 271). South Africa's health system currently comprises a large public sector that serves about 84% of the population and a smaller private sector which serves the affluent minority. Considering that only 40% of the overall health budget in South Africa is funded by the state– the public health system is under extreme pressure to expand health care access. In keeping with international human right standards, the MHCA introduces Mental Health Review Boards (MHRBs) and commits to the establishment of 72-hour assessment areas in district level general hospitals before referral to specialist mental hospitals (272).

Despite the country's comprehensive MHPF and MHCA, health budgets and broader health sector transformations have not followed to actualize the contents of the policy (166, 168). Progress in service delivery is challenged by: inadequate usage of national-provincial dissemination channels to communicate and promote the MHPF and MHCA, a lack of technical support around policy implementation within provinces, as well as a weak health information system leading to a lack of information about the true impact of MNS disorders, patterns of mental health service access, human resources (HR) for mental health, and provincial and national budgets for mental health services rendered outside of the specialized (psychiatric) care levels (10, 96, 175, 272, 273).

Further, with no explicit reporting requirements linked to the MHPF and MHCA, the degree to which they have been implemented remains unknown. Without explicit understanding of these aspects of the current mental health system and its resource environment, active integration of mental health into the future health system of South Africa along with and the achievement of the MHPF will be challenging (175). For this reason, South Africa represents an ideal LMIC setting to develop and test a methodology to fill this gap that can be applied to other settings.

The aim of this chapter is to quantify public health system expenditure on mental health services, by service-level and province, and to document and evaluate the resources and constraints of the mental health system in South Africa in order to inform a rational approach to planning effectively for mental health service scale-up.

Methods

Setting

This study was conducted across all nine provinces of South Africa at all levels of the public health system and reports the full costs of mental health services and programmes rendered through the Provincial and National Department(s) of Health (NDOH) between April 1 2016 and March 31 2017 (i.e. the 2016/17 financial year (FY)). The population in need is assumed to be equivalent to those without private health insurance, who typically depend on the public health system for their care.

Costing Approach, Perspective and Time Frame

This study employed a cross-sectional, accounting-based, aggregate costing approach using primary and secondary data sources (274, 275). This method is appropriate given that the aim was to assess the total cost of mental health services rendered by all health facilities, at all levels of the public health system in South Africa and more detailed costing approaches would not have been feasible in light of data availability and the lack of routine information systems for mental health in the country (274, 276). The cost analyses were conducted from the provider perspective. All costs are expressed in 2016/17 US Dollars (USD).

Data Collection and Data Sources

Primary Data Collection & Study Sample

Data collection took place between January and October 2018. Three data collection tools were designed purposively for three categories of respondents (Appendix F): (1) Provincial Departments of Health (PDOH); (2) Regional, Tertiary, Central and Specialized Hospitals, and; (3) primary health care (PHC) facilities and District Hospitals (District health system). Each instrument was sent directly to the target respondents via PDOH. The e-mailed instruments were followed up with telephone calls and ongoing support to all respondents. Table 8 outlines the key domains of each instrument, a description of the respondents, the sample size for each province and the overall response rate(s) achieved.

Table 8 Overview of Primary Data Collection Tools, Respondents and Sample Sizes, by province

	Provincial Department of Health Data Collection	**Regional, Tertiary, Central and Specialized Hospital Data Collection**					**Primary Health Care (PHC) and District Hospital Data Collection**
Key Domains of Data Collection Instrument	• Provincial-level Financial Allocations to different Service Levels • Subsidies for Contracted Mental Health Services, • Subsidies and Service descriptions regarding Day and Residential care for Mental Health Care Users (MHCU)	• Mental Health Human Resources • Medication Availability and Stockouts • Outpatient and Inpatient Mental Health Visits • Average Length of Inpatient Mental Health Admissions • Patient load by Mental Health Disorders • Readmission Rates for Mental Health inpatient admissions					• Mental Health Human Resources • Medication Availability and Stockouts • Characteristics of Designated District Hospital 72-hour assessment areas • Outpatient and Inpatient Mental Health Visits • Mental Health Prevention and Promotion Campaigns • Residential and Day Care facilities.
Respondents	Provincial Director(s) of Non-Communicable Disease, Director(s) of Mental Health and/or Mental Health Coordinators	Hospital Directors and Chief Executive Officers, Psychiatrists, Pharmacists, Operational Managers and Nursing Managers					District Health Service Coordinators and District Mental Health Coordinators
Organizational Level	Provincial Offices	RHs	THs	CHs	SPHs	OSHs	Health Districts (PHC facilities and DH)
National Target Sample Size	9	47	18	9	24	6	52
Sample Sizes, by province							
Eastern Cape	1	2			3		7

Free State	1	2			1		5
Gauteng	0	5	2	1	3	1	5
KwaZulu-Natal	1	6	2	1	5		10
Limpopo	1	3	2		3		5
Mpumalanga	1	3	2				3
North West	1	1	1		1		0
Northern Cape	1	2			2		5
Western Cape	1	1	1	2	4		2
National Sample Size	8	25	10	4	22	1	42
Response Rate	88.9%	53.2%	55.6%	44.4%	91.7%	16.7%	80.8%

PHC facilities = Health Posts, Mobile Clinics, Clinics, Community Day Centres, Community Health Centres; DH = District Hospital; RH = Regional Hospital; TH = Tertiary Hospital; CH = Central Hospital; SPH = Specialized Psychiatric Hospital; OSH = Other Specialized Hospital

At the provincial-level, completed provincial data collection tools were received from 8/9 PDOH in South Africa, with 1 PDOH submitting a partially completed provincial data collection tool (Table 1). For hospitals, response rates were 53.2%, 55.6%, 44.4%, 91.7% and 16.7% for regional, tertiary, central, specialized psychiatric and other specialized hospitals, respectively. This represented 62 of 104 hospitals in the country. At the district-level, 42 data collection tools were received from the 52 health districts of South Africa, representing a response rate of 80.8%. The sample size generated through primary data collection was supplemented with a number of secondary datasets (outlined below) to allow for costs to be appropriately modelled for all facilities and health districts in the country. Although total health system mental health expenditure was estimated for all public sector facilities in the country, the evaluation of mental health system resources and constraints (e.g. medication availability, readmission rates, duration of inpatient mental health admissions and district hospital infrastructure for mental health) was limited to the sample of facilities that completed primary data collection.

Secondary Sources

Several secondary data sources were used in this study (Table 9). The District Health Information System (DHIS) datafile supplied by the NDOH provided age-disaggregated indicators of total

mental health outpatient visits and mental health admissions by facility. The Health Systems Trust District Health Barometer (HST-DHB) (12th Edition – 2016/17) datafile (1) provided: hospital-level indicators of expenditure per patient day equivalent (PDE) for all categories of hospitals; and indicators of expenditure per PHC headcount for all health districts for the 2015/16 FY. Costs from the 2015/16 FY were converted to real 2016/17 prices using the Consumer Price Index of 6.8% obtained from Statistics South Africa (2). Data quality of the DHIS is addressed through checking of the data for inaccuracies by clinic managers and supervisors, using minimum and maximum expected values for data elements, and using the DHIS software. However it is known that in many health facilities there are a number of barriers to efficient and accurate reporting that cast doubt on the reliability and validity of these data. The District Health Barometer (DHB) produced by the Health Systems Trust Health Systems Trust (HST) provides a detailed overview of the country's public health services in all 52 health districts. The publication has become an important planning and management resource for health service providers, managers, researchers and policy-makers in the country. Compilation of the DHB is guided by a technical work group made up of managers from the National Department of Health (NDoH) and Health Systems Trust (HST). The NDOH Average Length of Stay (ALOS) datafile, supplied by the Parliamentary Monitoring Group, provided the Average Length of (inpatient) Stay for each hospital in South Africa, organized by province (277). The NDOH Personnel and Salary System (PERSAL) database was obtained to estimate mental health staffing coverage.

Table 9 Secondary Data Sources, Indicators and Definitions

Indicator Name	Source	Definition	Period
Mental health clients total	DHIS	Total outpatient visits for mental health conditions	April 2016-March 2017
Mental health clients 18 years and older	DHIS	Total outpatient visits for mental health conditions for clients 18 years and older	April 2016-March 2017
Mental health clients under 18 years	DHIS	Total outpatient visits for mental health conditions for clients under 18 years	April 2016-March 2017
Mental health admissions total	DHIS	Total number of clients admitted for mental health conditions (both voluntary and involuntary)	April 2016-March 2017
Expenditure per patient day equivalent	HST	A composite indicator which measures the average cost per patient day equivalent (PDE) calculated by dividing the total expenditure of a hospital by the number of PDEs. PDE is calculated by adding the number of inpatients, plus half the number of day patients, plus one third the number of outpatients and emergency room visits as recorded in the DHIS	April 2015-March 2016

PHC expenditure per headcount	HST	Provincial expenditure on: clinics, CHCs, community-based services and other community services, nutrition, HIV plus local government expenditure on PHC divided by PHC headcount from DHIS	April 2016-March 2017
Average Length of Stay (all patients)	NDOH	Average length of inpatient admission calculated in days for all patients, regardless of diagnosis.	2017
Posts filled by health worker	NDOH	PERSAL human resource database indicating total posts filled for all cadres of health workers organized by facility	2018
DHIS = District Health Information System, HST = Health Systems Trust, NDOH = National Department of Health			

Data Management and Analysis Approach

A linked Excel database was created for storing all data. The calculations performed to arrive at the cost estimates are described below. The results are presented by each category of facility, and by inpatient and outpatient costs. Age-disaggregated costs are provided for outpatient visits for adults (18 years and older) and children (under 18 years).

Hospital-level Cost Analysis

In order to estimate mental health care inpatient and outpatient costs at the hospital-level, the inpatient and outpatient estimates of cost per PDE were multiplied against inpatient and outpatient mental health utilization data across all hospitals (Box 1). Where the total number of mental health inpatient admissions (MHIAs) and/or mental health outpatient visits (MHOVs) were not provided directly from the facility, these data were included from the DHIS. Where facilities directly provided these data, and the totals as reported by the DHIS were either higher or lower, we systematically used the higher estimate to ensure that costs were not underestimated. Variation between each data source was not substantial.

Inpatient days were calculated by multiplying the number of MHIAs within the reporting period by the Average Length of Stay (ALOS) for MHIAs, provided directly from facilities. Total inpatient expenditure was then calculated by multiplying inpatient days by the cost per inpatient

Box 1 Methods and Data Sources for the Calculation of Inpatient and Outpatient Mental Health Costs

Inpatient Costing

Total Inpatient Cost =

Expenditure per Patient Day Equivalent [a] x Total Inpatient Days [b]

Total Inpatient Days =

Inpatient Admissions [c] x Average Length of Stay [d]

[a] Cost per Patient Day Equivalent (PDE) was drawn from the DHB 2016/17 data file for each facility (1). These estimates were provided up until the financial year ending 2015/16. We adjusted the the 2015/16 estimates to real 2016/17 prices using the Consumer Price Index of 6.8% (2)

[b] Total Inpatient Days was calculated by multiplying Total MHIA between 1 April 2016 and 31 March 2017 by the ALOS for these inpatients between 1 April 2016 and 31 March 2017. It was assumed that the inpatient days of existing patients at the beginning of the year will balance out the inpatient days of patients admitted towards the end of the year who would be discharged in the following year.

[c] Inpatient admission data was drawn from primary data provided by facilities or from the DHIS using the indicator *Mental health admissions total*. If the DHIS and primary data collection responses differed, we used the higher reported figure.

[d] ALOS data was drawn from the primary data collection responses from each hospital. Hospitals reported the ALOS (in days) across all MHIA between 1 April 2016 and 31 March 2017. For facilities that were not able to specify an ALOS for MHIAs, the ALOS for all admissions was used, and a sensitivity analysis was performed based on the average difference between LOS for all admissions and mental health admissions, by level of service. When average length of stay exceeded one year, a maximum length of stay of 365 days was applied.

Outpatient (OPD) Costing: Hospital-Level

Total Outpatient Cost =

$$\frac{\text{Expenditure per Patient Day Equivalent}_{e}}{3} \times \text{Total OPD Visits by Mental health Clients}$$

Outpatient (OPD) Costing: PHC-Level

Total Outpatient Cost =

Expenditure per PHC Headcount [f] x Total OPD Visits by Mental Health Clients

[e] Total Mental Health Clients was drawn from the DHIS for each Mobile, Primary Care Clinic, Community Health & Day Center facility using the indicator *Mental health clients total*. Entries for the period April 1 2016 to 31 March 2017 were summed for each facility.

[f] Expenditure per Headcount was drawn from the District Health Barometer 2016/17 Data file for each Primary Care Clinic, Community Health & Day Center (1). We adjusted the 2015/16 estimates to real 2016/17 prices using the Consumer Price Index of 6.8% (STATS SA, 2017)

PDE for each facility. When ALOS exceeded one year, a maximum length of stay of 365 days was applied as this study sought to estimate mental health expenditure over a one year period. It was assumed that the inpatient days of existing patients at the beginning of the year would balance out the inpatient days of patients admitted towards the end of the year that would be discharged in the following year.

As a number of hospitals across the country did not complete the primary data collection tools, we did not have mental-health-specific ALOS for every hospital in South Africa. For these hospitals, we first extracted the ALOS for all admissions from the NDOH ALOS database, which provided hospital-specific ALOS for 2017, and multiplied the number of MHIA within the reporting period by these ALOS estimates (277). Using primary data from participating hospitals at each service-level, we then determined the average difference between ALOS for all inpatient admissions and ALOS for mental-health-specific admissions, for each service-level. A sensitivity analysis was then performed among hospitals for which mental-health-specific ALOS were not available, by adjusting the ALOS for all admissions based on the average difference between the duration of mental health versus all admissions for each level of care. The final inpatient cost for these hospitals (i.e. those with imputed ALOS) was reported as the mid-point between the total cost with and without sensitivity adjustment. No sensitivity analyses were performed for hospitals that provided a mental-health-specific ALOS.

Consistent with other empirical cost studied using the PDE methodology, outpatient expenditure at the hospital-level was calculated by multiplying the number of MHOV within the reporting period, as reported in the DHIS or through primary data at the facility-level, by one third the cost per PDE for inpatients. This calculation assumes that the resources required to treat one outpatient represent one third of the resources for treating a single inpatient (1).

For the assessment of the cost of readmissions, each hospital was asked to indicate the number of inpatient mental health patients that were readmitted as mental health inpatients within three months of a previous discharge. Costs of readmissions were then determined on a proportional basis, i.e. the proportion of inpatient admissions that were readmissions were applied to the total cost of inpatient admissions for each hospital to determine the total cost of readmissions. Where

hospitals did not provide the total number of readmissions, we applied an average readmission rate for each hospital-level in each province based on those that had completed primary data collection.

Primary Health Care-level Outpatient Cost Analysis

Outpatient mental health expenditure at the PHC-level, which included mobile clinics, PHC clinics, Community health Centres (CHCs), and Community Day Centres (CDCs), was calculated by multiplying the expenditure per PHC headcount for each health district obtained from the HST-DHB (1), by the total number of MHOV within the reporting period. More information about the differences in the types of clinics and the populations they serve can be found in Table 10.

Table 10 Proportion of Mental Health Inpatient and Outpatients by Health-facility type

	Number of Facilities	Total Mental Health Outpatients	Total Mental Health Inpatients	% of Mental Health Outpatients	% of Mental Health Inpatients
Health Post	16	404		0.02%	
Mobile*	801	39888		2.05%	
Clinic*	3406	905618		46.44%	
Community Day Center*	65	114293		5.86%	
Community Health Centre*	276	480837		24.66%	
District Hospital	251	167083	33074	8.57%	44.33%
Mental Health Centre	1	17669	296	0.91%	0.40%
National Central Hospital	9	1775	3786	0.09%	5.07%
Provincial Tertiary Hospital	18	30102	4742	1.54%	6.36%
Regional Hospital	47	114048	14629	5.85%	19.61%
Specialised Psychiatric Hospital	24	58261	17304	2.99%	23.19%
Other Specialized Hospital	6	19963	778	1.02%	1.04%

*Definitions of primary health care Facilities [32]
***Clinic**: Render a nurse driven primary health care service at clinic level including visiting points, mobile- and local authority clinics. a range of primary health care services is provided here and that is normally open eight or more hours a day based on the need of the community to be served.*
***Mobile**: Mobile clinics offer services such as pregnancy tests, ultrasounds, diabetes and blood pressure testing. Mobile units are often, but not always staffed with general practitioners and nurses. The mobile clinics aim to visit a community in a sub-district twice a month, but generally go to where the demand is the highest*

***Community Day Centers**: Community day centers usually operate between 07:30 am to 16:00 from Monday to Friday. Services offered are for women's health which include family planning, antenatal care and termination of pregnancy (TOP); an integrated chronic disease management consisting of non-communicable and communicable disease and mental health services which will include antiretroviral (ART) services; minor surgical procedures which includes the medical male circumcision (MMC) procedure; dietetics; chronic medicine collection (CDU); orthopaedic nursing outreach; wound care and dermatology and pharmacy services.*

***Community Health Centre:** Rendering a primary health service with full-time medical officers in respect of mother and child, health promotion, geriatrics, occupational therapy, physiotherapy, psychiatry, speech therapy, communicable diseases, and mental health, amongst others. Services include 24-hour maternity, accident and emergency services and beds where health care users can be observed for a maximum of 48 hours and which normally has a procedure room but not an operating theatre.*

NGO and Contracted Hospital Cost Analysis

Although all PDOH were asked to outline detailed information regarding financial transfers made for contracted hospital and NGO mental health services within their provinces, including the name of facility, type of services rendered, number of inpatient and day patients, and the cost per patient day; none were able to comprehensively specify and validate the range of services and total financial transfers for these services. In lieu, we then requested PDOH to provide the overall total amount transferred for contracted hospital and NGO mental health services during the 2016/17 FY. For those that were able to provide this information, the absolute amount was used and total mental health expenditure was therefore expressed both including and excluding contracted hospital and NGO services for both national and provincial-levels

Financial adjustments

All costs were calculated in 2016/17 South African rands (ZAR) and were converted to 2016/17 USD based on the historical rates of exchange for the 2016-17 FY, reported by the United States Treasury (USD1=ZAR13.6) (278).

Analysis of Mental Health Human Resources, Medication Availability and Infrastructure

For the assessment of public sector mental health HR availability, we relied on the NDOH PERSAL database of staffing as at August 2018, for all cadres except for psychiatrists. The number of public sector psychiatrists were obtained from primary data collection, and due to incomplete facility inputs, may reflect an underestimate in the number of these posts. The total number of mental health HRs were divided by the uninsured population in each province for the

2016/17 FY, and expressed as rates per 100,000 uninsured population. Given that the staffing data were for 2018, the estimates of uninsured populations for each province, obtained from the HST-DHB, was increased by a factor of 2% to account for population growth.

For the assessment of mental health medication stockouts and infrastructure, we relied entirely on direct facility reports. All medications outlined for the treatment of MNS disorders were extracted from the Standard Treatment Guidelines (STG) and Essential Medicines Lists (EML) for each service-level (279, 280). Hospitals and PHC facilities were requested to indicate whether, in the past one year, any of the listed medications for their service-level were stocked-out or whether the medication was considered to be not-routinely-available (NRA). Where stockouts were reported, hospital(s) and PHC facilities indicated the duration of each stockout. Due to the significant number of medications included in the instrument, the analysis of these data focused on summarizing the most frequently reported medications stocked at each level of care.

For the assessment of infrastructure, in line with the priorities outlined by collaborators at the NDOH, we focused our analysis on the degree to which designated district hospitals across the country have met the infrastructural criteria outlined by the MHCA (2002) and accompanying guidelines for the admission of mental health patients without consent for 72-hour observation (270, 281). Whilst the guidelines include a vast number of infrastructural requirements including close circuit television monitoring and panic buttons for staff, we prioritized the following criteria: whether district hospitals had a designated inpatient psychiatric unit; whether mental health inpatients are kept together with non-mental health patients in a general ward; whether adolescent and adult mental health inpatients are kept together, and; whether male and female mental health inpatients are kept separate from one another. These criteria are considered the most paramount for ensuring that the rights and dignity of users that cannot give consent and are posing a danger to themselves and others are protected. For each health district, contributors were asked to indicate which of their listed district hospitals were designated by the MHCA (2002) to admit mental health users for involuntary admission. Amongst these, contributors were then asked to indicate which of the listed criteria had been met. Responses were then summarized by province.

Ethical Approval

This study made use of secondary data and collected routine health services data pertaining to mental health service delivery in South Africa from the NDOH and nine PDOH. No direct access to any facilities was required and no data that were collected in this study contained any patient identifiers. Ethics approval was obtained from the authors institution (HREC 744-2017) and from Provincial Health Research Committees in each province. Written permission for this study was also provided by Provincial Heads of Health.

Results

Health System Costs of Mental Health Services

This study found that the total health system costs of inpatient and outpatient mental health services across all provinces of South Africa amounted to an estimated USD573.6million in the 2016/17 FY (Table 11). At the national-level, this represented 4.6% of the total health budget (239) and equated to USD12.4 mental health expenditure for inpatient and outpatient care, per capita uninsured (i.e. for those without private health insurance who are assumed to be dependent on the public health system). When including transfers for contracted hospital and non-governmental organization (NGO) mental health services, the total health system cost of mental health services increased to USD615.3million or USD13.3 per capita uninsured. It must be noted however that not all provinces were able to comprehensively specify and validate the range of services and total financial transfers made for contracted hospital and NGO mental health services, and we have therefore expressed the results both including and excluding contracted hospital and NGO services for both national and provincial-levels.

Per capita expenditure (uninsured) on inpatient and outpatient mental health services (i.e. excluding contracted hospital and NGO mental health services) ranged from USD3.5 in Mpumalanga to USD22.1 in the Western Cape. The North West, Limpopo, Free State and Eastern Cape provinces spent less than USD10.0 per capita (uninsured) on mental health inpatient and outpatient care. After the Western Cape, Gauteng and KwaZulu-Natal spent the most on inpatient and outpatient mental health care, with estimates of USD17.1 and USD14.1 per capita (uninsured),

Table 11 Provincial and National Summary of Total Costs of Mental Health Services

	EC	FS	GT	KZN	LP	MPU	NC	NW	WC	National
Inpatient Cost of Mental Health Services (USD,millions)	50.8	16.4	152.9	110.8	21.8	10.0	10.7	18.8	100.0	492.1
Outpatient Cost of Mental Health Services (USD,millions)	8.5	2.2	18.8	23.8	9.3	3.1	2.3	3.0	10.5	81.5
Total Inpatient and Outpatient Mental Health Service Cost (USD,millions)	59.3	18.6	171.6	134.7	31.1	13.1	13.0	21.8	110.6	573.6
Total Inpatient and Outpatient Mental Health Expenditure per Capita (Uninsured) (USD)	9.7	7.8	17.1	14.1	5.9	3.5	12.9	6.7	22.1	12.4
Proportion of 2016/17 Health Budget spent on Mental Health Inpatient and Outpatient Services (%)	4.0%	2.8%	6.2%	5.0%	2.6%	1.7%	3.9%	3.1%	7.5%	4.6%
Total Transfers for Contracted Hospital Services for Mental Health (USD,millions)	8.9	*0.0**	*0.0**	11.3	*0.0**	3.1	*0.0**	*0.0**	*0.0**	23.3
Total DOH Transfers to Mental Health NGOs (USD,millions)	0.8	0.2	13.7	1.0	*0.0**	*0.0**	*0.0**	*0.0**	2.7	18.4
Total Costs of Inpatient and Outpatient Mental Health Services and Transfers to Contracted Hospitals and NGOs for Mental Health Services (USD,millions)	69.0	18.7	185.3	147.0	31.1	16.1	13.0	21.8	113.3	615.3
Total Costs of Inpatient and Outpatient Mental Health Services and Transfers to Contracted Hospitals and NGOs for Mental Health Services per capita uninsured (USD)	11.3	7.9	18.5	15.4	5.9	4.3	12.9	6.7	22.6	13.3
Proportion of 2016/17 Health Budget spent on Mental Health Inpatient and Outpatient Services and Transfers to Contracted Hospitals and NGOs (%)	4.6%	2.8%	6.7%	5.5%	2.6%	2.1%	3.9%	3.1%	7.7%	5.0%

EC = Eastern Cape, FS = Free State, GT = Gauteng, KZN = Kwa-Zulu Natal, LP = Limpopo, MP = Mpumalanga, NC = Northern Cape, NW = North West, WC = Western Cape

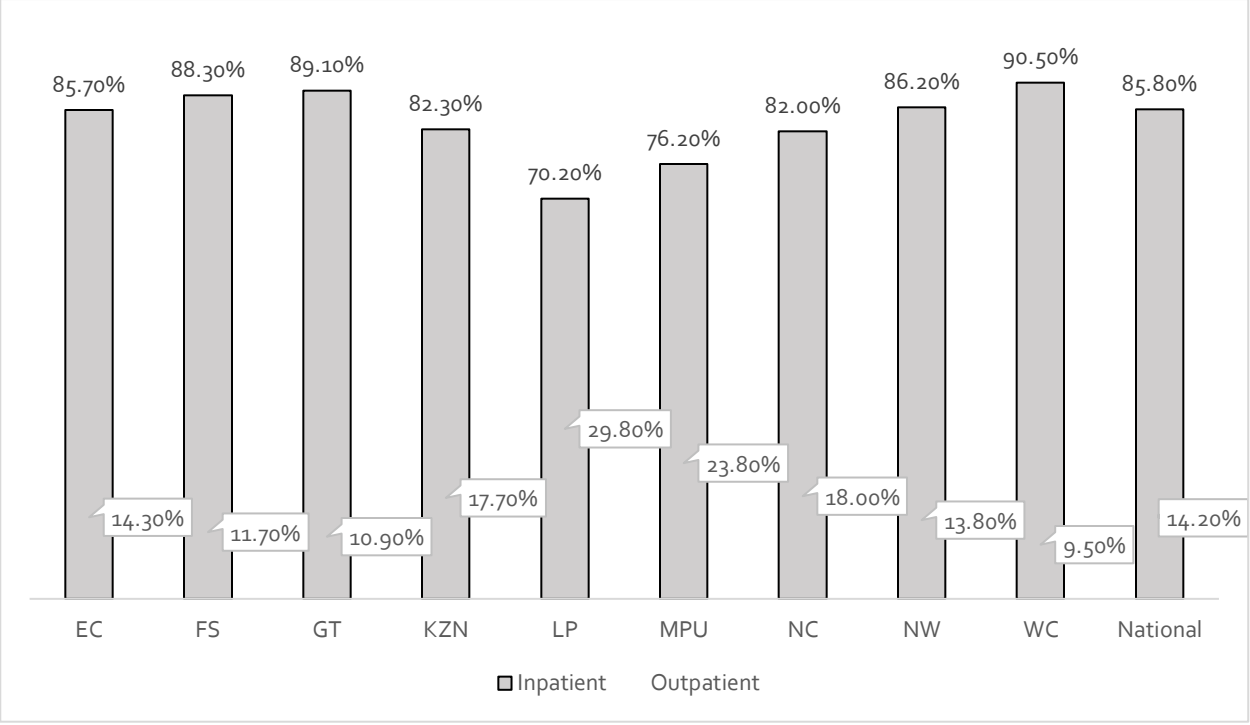
* province was not able to comprehensively specify the total transfers for DOH contracted hospital and/or NGO services for mental health.

NB: At the time this report was prepared, no provincial departments of health were able to validate that the reported total transfers to contracted hospitals and NGOs represented *all* transfers to contracted hospitals and NGOs for mental health services in their respective provinces for the 2016/17 financial year.

respectively; these provinces were the only three provinces (of nine) to spend 5.0% or more of their provincial health budgets on inpatient and outpatient mental health services. This trend was consistent when including expenditure on contracted hospital and NGO mental health services.

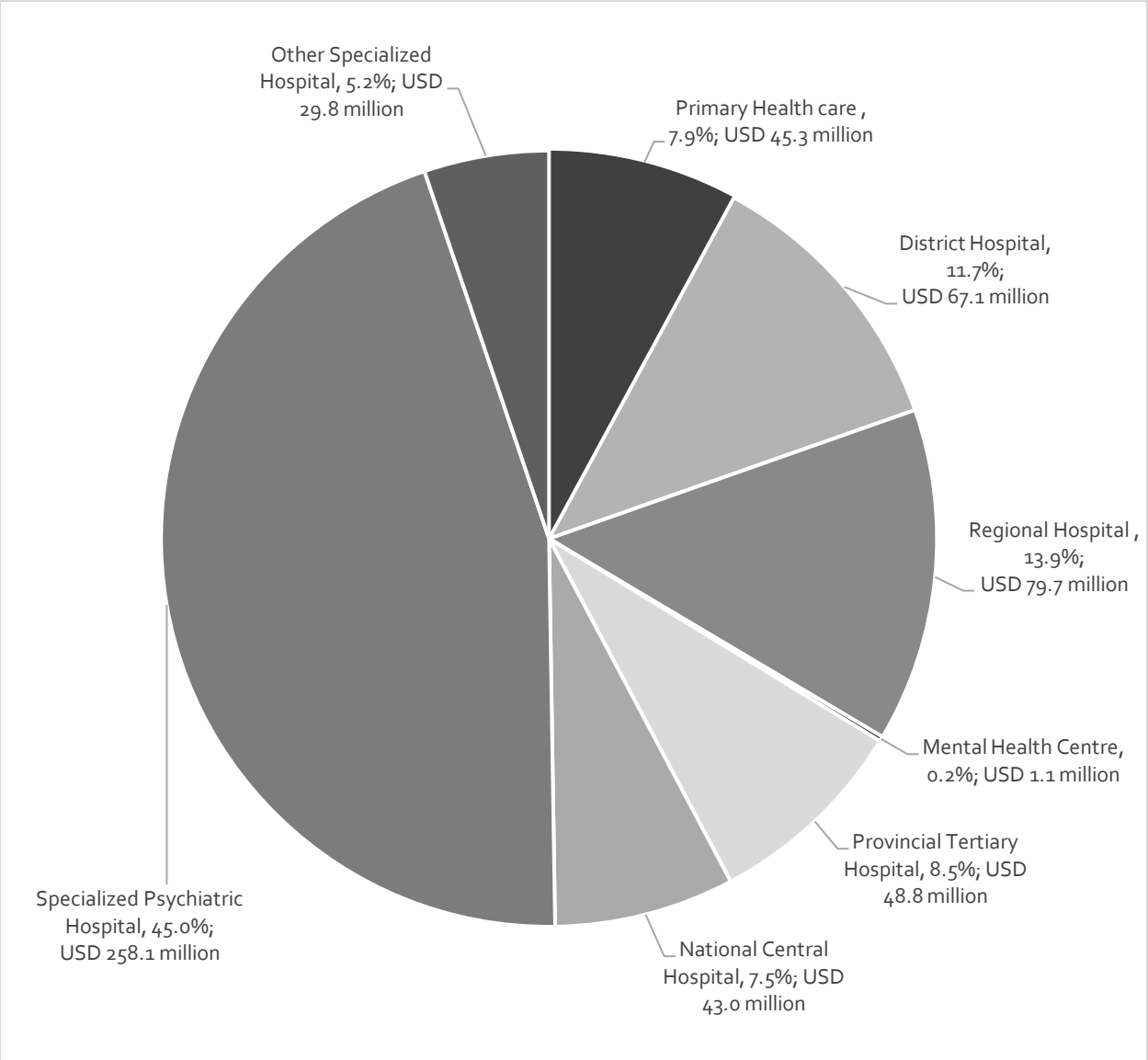
At the national-level, 86% of overall health system expenditure on mental health was attributed to inpatient care, while the remaining 14% was attributed to outpatient care (Figure 3; Table 11). This trend was consistent across all provinces in the country. Limpopo and Mpumalanga spent the highest share of their mental health expenditure on outpatient care: 29.8% and 23.8%, respectively. The lowest proportion of overall spending on outpatient care was seen in the Western Cape, where only 9.5% of the total mental health spending of inpatient and outpatient mental health services was spent on outpatient care.

Figure 3 Proportion of Total Costs of Mental Health Services spent on Inpatient & Outpatient Services, by province



National-level estimates show that care at the specialized psychiatric hospital-level made up the large majority of the total cost (Figure 4), amounting to 45% of the total; with PHC-level mental health care accounting for 7.9%, district hospital mental health care accounting for 11.7% and, regional, tertiary and central hospital mental health services accounting for 13.9%, 8.5% and 7.5% of the total cost of inpatient and outpatient mental health care, respectively.

Figure 4 Distribution of Total Costs of Inpatient and Outpatient Mental Health Services by Service-level

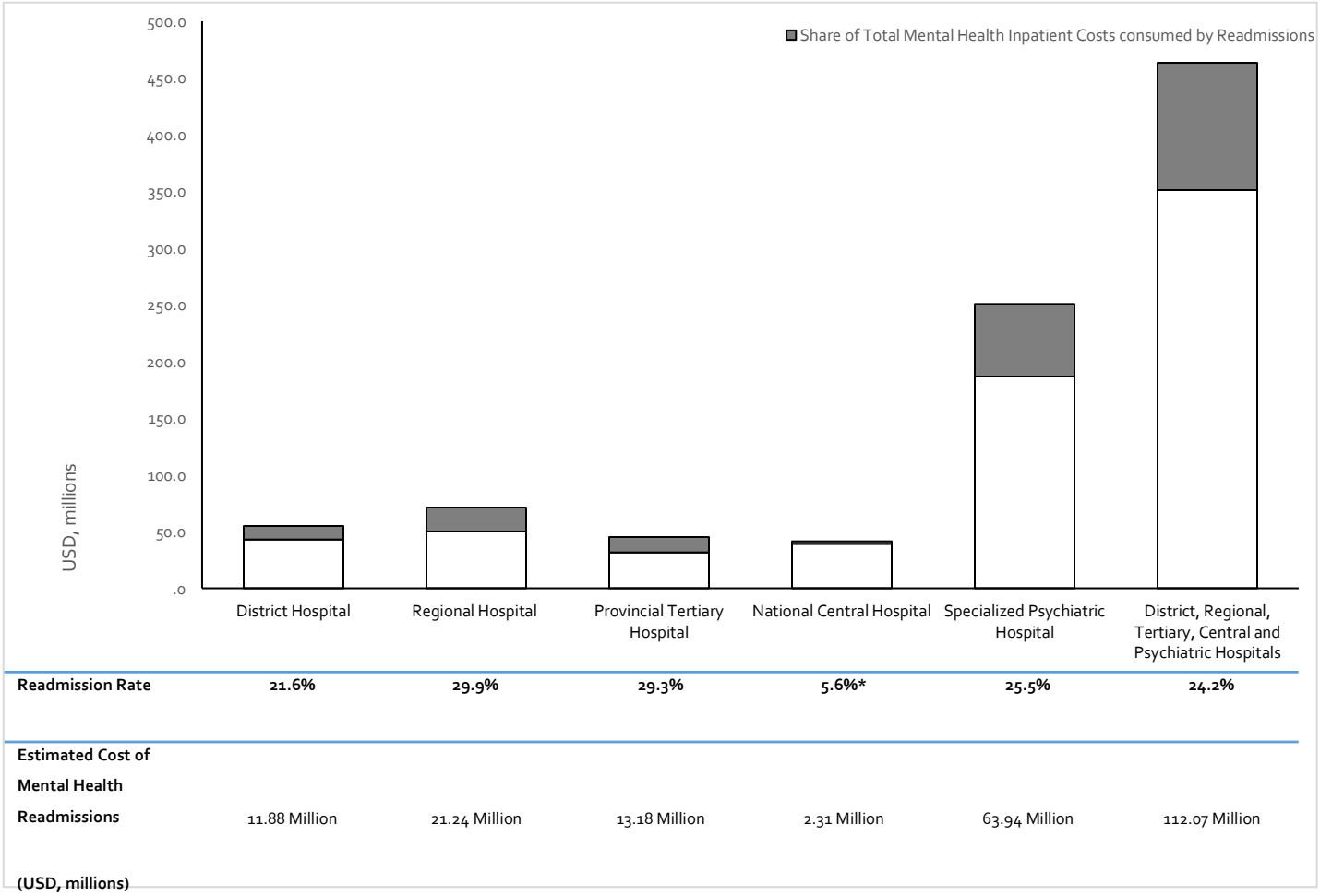


Mental Health Readmission Rates and Costs

Based on national average readmission rates obtained directly from facilities, across all hospital-levels, the average overall readmission rate within three months from previous discharge for MHIAs was 24.2% (Figure 5). The service-level readmission rates for MHIA at district, regional, tertiary, central and specialized psychiatric hospitals were: 21.6%, 29.9%, 29.3%, 5.6% and

25.5%, respectively. Based on the inpatient cost calculations for each service-level, readmissions during the 2016/17 FY are estimated to have cost approximately USD11.9million at the district hospital-level, USD21.24million at the regional hospital-level, USD13.2million at the tertiary hospital-level, USD2.3million at the central hospital-level and USD63.9million at the specialized psychiatric hospital-level. Using an average readmission rate for all service-levels, in total, readmissions cost the South African health system USD112.6million, or 18.2% of the total mental health expenditure.

Figure 5 Readmission Rates and Estimated Costs of Mental Health Readmissions for District, Regional, Tertiary, Central and Psychiatric Hospitals.

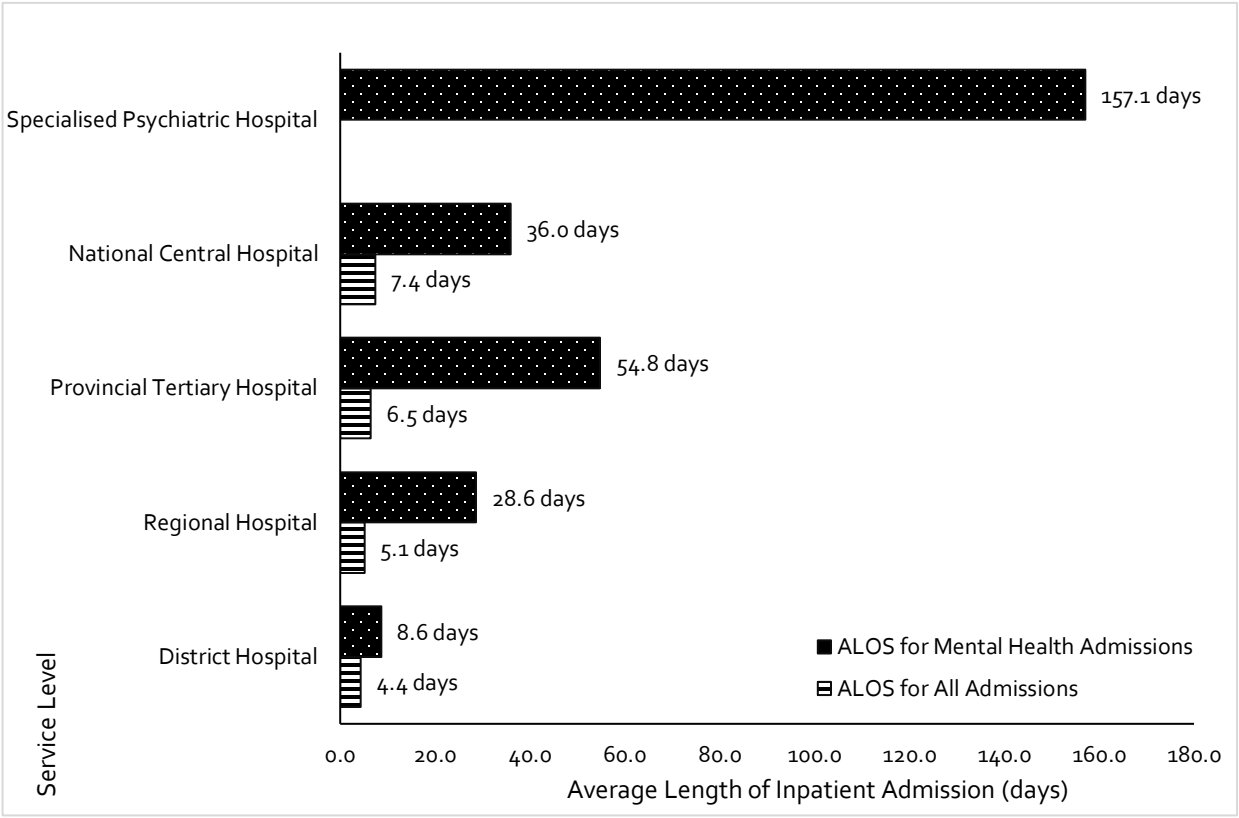


Readmission Rate	**21.6%**	**29.9%**	**29.3%**	**5.6%***	**25.5%**	**24.2%**
Estimated Cost of Mental Health Readmissions (USD, millions)	11.88 Million	21.24 Million	13.18 Million	2.31 Million	63.94 Million	112.07 Million

Duration of Mental Health Inpatient Admissions

Across all hospital-levels, MHIAs were found to be substantially longer when compared to the ALOS for all admissions (Figure 6). At the district hospital-level, MHCUs admitted for inpatient care spent twice as long in hospital in comparison to all patients. At the regional and tertiary hospital-level(s), MHIAs lasted nearly 6 and 8 times longer, respectively, when compared to inpatient admissions for all health conditions. At the central hospital-level, mental health patients admitted for inpatient care spent almost 5 times longer in hospital. While all patients admitted at the specialized psychiatric hospital-level were considered MHIAs, the ALOS at this level of care was 157.1 days.

Figure 6 Average Length of Inpatient Stay (ALOS) for All Admissions vs Mental Health Admissions, by Service-level



Mental Health Human Resources

At the national-level, this study found that there is on average 0.31 public sector psychiatrists per 100,000 uninsured population; with the Western Cape reporting the highest availability of psychiatrists at 0.89 per 100,000 uninsured population and Mpumalanga reporting the lowest rate, at 0.08 psychiatrists per 100,000 uninsured (Table 12). There remains a critical shortage of child

Table 12 Mental Health Human Resources per 100,000 uninsured population, by province

	EC	FS	GT	KZN	LP	MP	NC	NW	WC	NAT
Psychiatrist*	0.10	0.59	0.51	0.12	0.15	0.08	0.40	0.12	0.89	0.31
Sessional Psychiatrist*	0.02	0.00	0.00	0.06	0.00	0.00	0.00	0.03	0.00	0.02
Psychiatry Registrar*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.01
Child Psychiatrist*	0.00	0.04	0.02	0.00	0.00	0.00	0.00	0.00	0.08	0.02
Child Psychiatry Registrar*	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01
Psychologists$^{\Psi}$	0.87	0	1.38	0.61	1.22	0.7	3.28	0.46	1.22	0.97
Psychologist (Community Service)	0.2	0.42	0.58	0.17	0.09	0	0.5	0	0.3	0.26
Psychologist Intern	0.02	0.17	0.39	0.09	0.11	0.05	0.6	0	0.16	0.16
Medical Officers	18.91	15.73	17.97	20.98	16.01	14.8	24.76	15.35	19.93	18.3
Medical Officer (Community Service)	2.07	2.73	2.38	2.16	2.82	4.08	7.06	5.15	4.07	2.98
Medical Officer (Intern)	5.44	7.32	8.99	7.79	3.99	3.71	6.36	6.77	6.52	6.71
Occupational Therapist (Grade 1 - 3)	1.38	0	1.62	0.79	2.5	1.45	3.68	0.98	2.61	1.53
Occupational Therapist (Community Service)	0.57	0.76	0.86	0.53	0.24	0.67	1.59	0.67	0.3	0.61
Speech Therapists and Audiologists (Grade 1-3)	0.67		1.69	0.75	1.35	1.61	2.09	0.64	0.76	1.07
Social Worker	1.9		2.44	2.07	0.64	1.26	2.98	1.41	2.65	1.83
Professional Nurse	117.9		74.82	81.74	97.97	87.8	78.45	78.56	55.23	80
Professional Nurse Specialty	26.27		27.58	37.49	31.82	22.57	16.9	17.71	27.89	27.23
Professional Nurse (Community Service)	10.21	9	7.19	7.31	1.66	5.91	10.64	13.36	7.16	7.47

EC = Eastern Cape, FS = Free State, GT = Gauteng, KZN = Kwa-Zulu Natal, LP = Limpopo, MP = Mpumalanga, NC = Northern Cape, NW = North West, WC = Western Cape, NAT = National

* No data was available through the National Department of Health PERSAL database regarding total number of psychiatrists working in the public sector. These estimates are therefore based on responses received through primary data collection only and may be underestimated.

$^{\Psi}$ The PERSAL database does not differentiate between Clinical Psychologists and other Psychologists. These figures therefore include the total number of Psychologists (Grade 1,2 and 3), Senior Clinical Psychologists and Principal Psychologists (Grade 1,2 and 3). It is assumed that a Masters degree in Clinical Psychology and registration with the Health Professions Council of South Africa is a requirement for these posts.

psychiatrists with only three of the nine provinces of South Africa, namely the Western Cape, Free State and Gauteng, reporting any child psychiatrists working in the public sector.

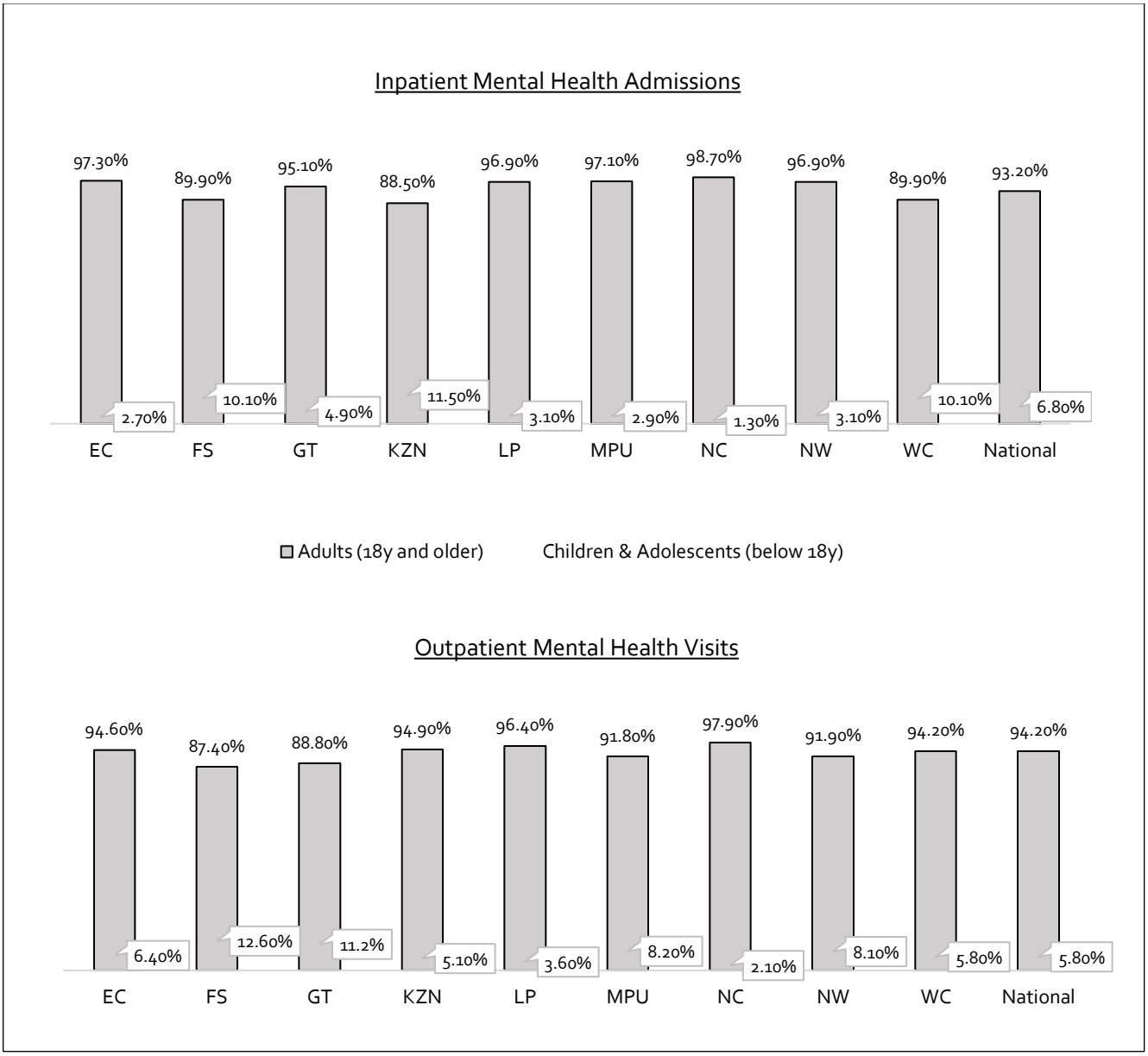
There were 0.97 public sector psychologists, senior clinical psychologists and principal psychologists per 100,000 uninsured population. The availability of auxiliary health workers, critical for rehabilitative care and support services for MHCUs, was also found to be scarce with estimates of 1.53 public sector occupational therapists; 1.07 public sector speech therapists and audiologists, and 1.83 social workers per 100,000 uninsured population. The study also reported

good coverage of nurses with 80 per 100,000 professional and27.2 specialist nurses. These however may not all be psychiatric nurses.

Mental Health care Utilization among Adults, Adolescents and Children

Collectively, 93.2% of MHIAs in South Africa were for adults aged 18 and older, with only 6.8% of MHIAs being recorded for those below 18 years (Figure 7). This trend was consistent across all provinces, with the highest rates of MHIAs for children and adolescents recorded in KwaZulu-

Figure 7 Mental Health Inpatient Admissions and Outpatient Visits for Adults, Adolescents and Children, by province



Natal at 11.5%. Similarly, the proportion of adults aged 18 years and older receiving outpatient

mental health care in the country represented 94.2% of all MHOV, compared to only 5.8% for those under 18 years. In the Free State, MHOVs for children and adolescents aged below 18 years accounted for 12.6% of all MHOVs, compared to only 2.1% in the Northern Cape.

District Hospital Infrastructure for Mental Health

Despite the majority of district hospitals being designated by the MHCA (2002) for the provision of 72-hour assessments; this study found that there are specific characteristics outlined by the MHCA (2002) that are not met across a large number of these hospitals (270). Although the North West and Western Cape provinces did not submit complete data regarding district hospital infrastructure, among the remaining provinces, over 62% of district hospitals indicated that adult mental health inpatients are kept in general wards with other patients, contrary to guidelines within the MHCA (Table 13). The exception to this is in the Free State, which indicated that all its hospitals keep their mental health patients separately. KwaZulu-Natal, Limpopo, Mpumalanga and the Northern Cape indicated that over 80% of their district hospitals keep their mental health patients together with other patients. Furthermore, an extremely low proportion of district hospitals keep their adult and adolescent patients separately (13%), however, close to 80% of all district hospitals sampled separate female and male mental health inpatients.

Table 13 District Hospital Infrastructure for Mental Health Inpatients

Dimensions of District Hospital Infrastructure	EC	FS	GT	KZN	LP	MP	NC	National
Proportion of District Hospitals included in the sample (%)	69%	100%	80%	91%	84%	100%	100%	84%
Proportion of sampled District Hospitals designated for 72-hour Assessments by the Mental Health Care Act (2002) (%)	62%	100%	88%	81%	96%	87%	82%	84%
Proportion of sampled District Hospitals with Inpatient Psychiatric Unit (%)	14%	24%	50%	25%	19%	4%	0%	18%
Proportion of sampled District Hospitals reporting that Mental Health Inpatients are kept together with non-mental health patients in a general ward (%)	51%	0%	63%	81%	78%	96%	82%	62%
Proportion of sampled District Hospitals reporting that Adult Mental	8%	0%	25%	3%	0%	30%	64%	13%

Health Inpatients are kept separate from Adolescent Mental Health Inpatients (%)								
Proportion of sampled District Hospitals reporting that Male Mental Health Inpatients are kept separate from Female Mental Health Inpatients (%)	70%	100%	75%	63%	96%	87%	36%	78%

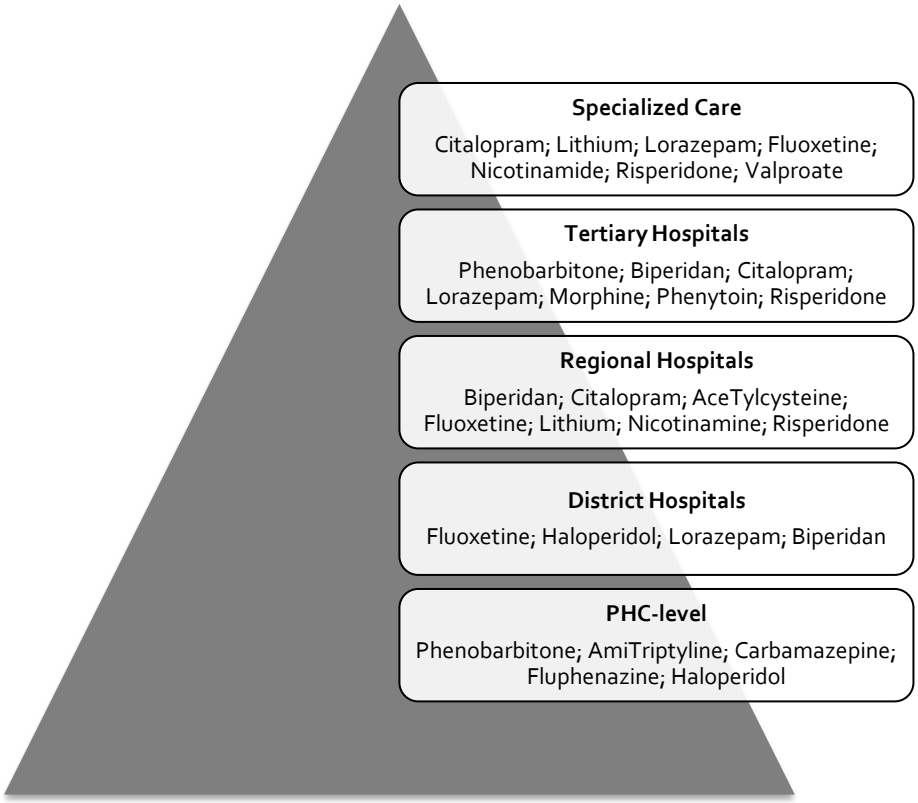
EC = Eastern Cape, FS = Free State, GT = Gauteng, KZN = Kwa-Zulu Natal, LP = Limpopo, MP = Mpumalanga, NC = Northern Cape

NB: The North West and Western Cape province(s) were unable to provide complete data regarding district hospital infrastructure for mental health inpatients, and have therefore been excluded.

Mental Health Medication Stock-outs

With respect to mental health medication availability, the findings illustrated that the most frequently stocked out medications are those prescribed for the treatment of: adult depression and dysthymia, bi-polar disorder, psychosis, epilepsy, dementia, child and adolescent developmental

Figure 8 MNS Disorder Medications most frequently stocked out by level of the health system



disorders and adolescent behavioural-conduct disorder (Figure 8). Starkly, among the sampled specialized psychiatric and regional hospitals, lithium was among the MNS medications most frequently reported as stocked-out. Further, at the district and regional hospital-level(s), fluoxetine, the first-line treatment for major depressive disorders as per the STGs, was among the most frequently stocked-out. Both these drugs are listed as essential medicines by the WHO as well as several others listed in Figure 8.

MNS Disorder Prevalence and Modelled (Crude) Estimates of Access to Care

The Global Burden of Disease (GBD) (2016) study estimated that the 12-month prevalence for any MNS disorder in South Africa in 2016 was 15.9% (excluding epilepsy and intellectual disability) and 16.2%, including epilepsy and intellectual disability (Table 14) (9). Based on an uninsured South African population of over 46.4million, we have estimated that there were approximately 7.5million uninsured individuals living with a MNS disorder in 2016. With total MHIAs for the country reported as 88,444, and an average readmission rate of 24.2% across all hospitals in South Africa; we can crudely model that approximately 0.89% of the uninsured South African population requiring care received some form of public inpatient mental health care during the 2016/17 FY. Similarly, with total MHOVs reported as 567,277, we can crudely model that approximately 7.5% of the uninsured South African population requiring care received some form of public outpatient care during this period. Caution should be exercised when interpreting these figures; they are crude in that they do not take into account the impact of multiple outpatient visits for the same mental health care users (MHCUs).

Table 14 Prevalence of MNS disorders, Epilepsy & Intellectual Disability and Proportions of Target Population(s) accessing Inpatient and Outpatient Mental Health care, South Africa

Cause	Prevalence (2016) **(282)**
Idiopathic developmental intellectual disability	1.7%
Epilepsy	0.6%
Schizophrenia	0.2%
Alcohol use disorders	1.6%
Drug use disorders	0.7%
Depressive disorders	3.9%

Bipolar disorder	0.6%
Anxiety disorders	3.8%
Eating disorders	0.2%
Autistic spectrum disorders	0.8%
Attention-deficit/hyperactivity disorder	1.2%
Conduct disorder	0.8%
Total: Mental and substance use disorders	**15.9%**
Total: Mental and substance use disorders, Epilepsy & Intellectual Disability	**16.2%**
Total Uninsured Population (South Africa), 2016/17	**46,392,634**
Modelled Estimate: Total Population (uninsured) living with Mental and substance use disorders, Epilepsy & Intellectual Disability (2016/17)	**7,534,125**
Total: Inpatient Mental Health Admissions, 2016/17	**88,444**
Modelled Estimate: Total Inpatient Mental Health Admissions that were Readmissions, 2016/17	**21,404**
Modelled Estimate: % of Uninsured South Africans living with Mental and substance use disorders, Epilepsy & Intellectual Disability (2016/17) that have accessed Inpatient Care (2016/17)	**0.89%**
Total: Outpatient Mental Health Admissions, 2016/17	**567,277**
Modelled Estimate: % of Uninsured South Africans living with Mental and substance use disorders, Epilepsy & Intellectual Disability (2016/17) that have accessed Outpatient Care (2016/17)	**7.5%**

Discussion

To the best of our knowledge, this is the first study to characterize the public health system expenditure on mental health services in South Africa and document the resources and constraints to the mental health system by service-level and province; achieving one of the highest sample sizes of any costing study conducted for mental health in LMICs (93). This study builds on a situational analysis of the policy context, strategic needs, barriers and opportunities for sustainable financing for mental health in South Africa (175) by providing policy makers with the necessary information to identify priorities and resources for mental health service scale-up to make progress towards the country's progressive MHPF and achieve better mental health outcomes for South Africans. Furthermore, while the study was not able to report on all health system inputs due to data limitations, it was able to report on HR for mental health, access to essential medicines, infrastructure and resourcing. This paper set out to propose and apply a methodology that addresses a number of key information gaps for LMICs contemplating mental health system reform. These

gaps have thus far limited efforts to scale-up integrated mental health care and achieve global health and development targets. Understanding the variation in health system resources and constraints within countries represents the first step in a rational approach to planning for the implementation of mental health reforms. This study has attempted to address these constraints by providing data regarding national mental health resources, costs and treatment coverage in South Africa – both to provide a baseline for planned UHC investments and to illustrate methods for this task in other LMICs.

South Africa's public mental health expenditure represented an estimated 5.0% of the total public health budget in the 2016/17 FY. Provincial expenditure on mental health care represented between 2.1% and 7.7% of provincial health budgets, with the majority of provinces (six of the nine) spending less than 5% of their health budgets on mental health care. It has been estimated that to match the most comprehensive mental health systems in the world, countries should expect to allocate up to 10% and a minimum of 5% of the total health budget to mental health (92). Although South Africa is spending close to the lower target on the delivery of mental health care, modelled estimates revealed that approximately 0.89% and 7.5% of the uninsured South African population requiring care received some form of inpatient and outpatient care, respectively – suggesting the treatment gap for mental disorders, epilepsy and intellectual disability in South Africa is close to 92%.

A global scoping review of the availability of resources for mental health found that across LMICs, not only are resources limited for mental health service provision, but they are inequitably distributed and inefficiently used (19). The findings for South Africa confirm this, with huge disparities between provinces in the allocation of mental health resources. Per capita expenditure (uninsured) on inpatient and outpatient mental health services ranges from USD3.5 to USD22.1 between provinces. There are huge disparities in mental health personnel across provinces with the availability of psychiatrists ranging from 0.08 to 0.89 per 100,000 uninsured population, building on existing estimates of inequality in human resources in the country (283). Globally, the median number of mental health workers is 9 per 100 000 population; the mental health atlas reports extreme variation from high income countries reporting 1.2-1.6 psychiatrists and 5.4 psychologists per 100,000 population as compared to 0.4-0.6 psychiatrists and 0.1 psychologists per 100,000 population across African and Asian settings (93). These disparities need to be

rectified with a more consistent, evidence-based approach to planning. This study has confirmed that the majority of public sector psychiatrists are concentrated in the urban provinces which is consistent with existing evidence (157). Yet, mental health workforce targets for psychiatrists for the southern sub-Saharan region suggest that 1.9 psychiatrists per 100,000 will be needed by 2050 (284). Given the low absolute levels of psychiatrists currently working in the public sector in South Africa, it is unlikely that sufficient psychiatrists will be available to service mental health needs. We know that nurses represent the backbone of PHC services and in the absence of widespread access to psychiatrists, present a key resource to mental health service delivery. The analysis found that there is a high coverage of both professional and specialist nurses across the provinces, reporting a coverage of 80 per 100,000 and 27.3 per 100,000 respectively. Provinces must commit to ensuring that - where shortages have been identified - plans and resources are targeted to ensure generalists, nurses and community-health workers are trained in task-shifted approaches for the delivery of mental health care, including care for children and adolescents, and private providers are contracted where no psychiatrists are envisaged to be available in the public health system.

In addition to the inequitable distribution of mental health resources across South Africa - reflected by the number of rural provinces in South Africa reporting low levels of expenditure per capita, extremely limited access to mental health workers and inadequate infrastructure, the resources are not optimally used in order to maximize population health outcomes based on the allocation of limited resources. The findings revealed that inpatient care forms the main source of care, comprising 86% of mental health expenditure, with specialized psychiatric hospitals comprising 45% of total cost. According to reporting low- and middle-income countries in the 2017 Mental Health Atlas, over 80% or expenditure is allocated to mental hospitals as compared to less than 43% in high income countries; it is unclear what proportion is allocated to inpatient services however (93).

Due to the limited number of mental health indicators to monitor service delivery at PHC level, expenditure at this level of care may be underestimated but is unlikely to change the overall estimate of expenditure greatly. This is a reflection of the historical hospi-centric legacy of the country. Although Limpopo and Mpumalanga both spent larger proportions on outpatient care when compared to other provinces, this is due to the complete absence of any specialized

psychiatric hospitals in Mpumalanga and a very limited number in Limpopo. While global recommendations have urged countries to redistribute existing hospi-centric mental health budgets toward more efficient and effective uses in community-based settings - in the absence of adequate community-based services in South Africa, investments in psychiatric and hospital-based care must be maintained in the short-term, while concurrent bridge funding is earmarked to support capital investments to establish community based services across the country.

Acknowledging that most mental disorders have their onset before the age of 18 years and approximately 38% of the population falls in this age bracket, this study has revealed an exceptional gap in terms of the service availability for children and adolescents in South Africa (285, 286). Only 6.8% of MHIA and 5.8% of MHOV were for patients below 18 years; and only three provinces reported the existence of public-sector child psychiatrists. The mental health of those aged between 10 and 19 years can profoundly impact their future health, social and economic circumstances as adults, particularly in contexts of poverty and vulnerability (285, 286). Improving and protecting adolescent mental health requires early detection, through routinized mental health screening, and early treatment both with and without pharmacological intervention (286). Further, mental health prevention and promotion campaigns are critical at this age, to capacitate adolescents with resilience to cope with difficulties and avoid risk-taking behaviours (286). Although efforts were made to cost DOH subsidized mental health promotion and prevention campaigns, none could be identified where funding had been directly provided by the DOH. Yet, most health districts who contributed to this study reported a considerable number of self-initiated campaigns, delivered without budgetary support in primary care settings, in response to the needs identified within their communities. There is a critical need for accelerated action for improved access to treatment and targeted mental health prevention and promotion for adolescents.

Across all hospital-levels, the duration of mental health inpatient admissions were substantially longer than admissions for all conditions. According to the Mental Health Atlas, reporting countries indicated that the majority of inpatients are discharged within one year, however, in certain regions which include both high-income settings in America and low-income settings in the African region, as high as 20% of mental hospital residents are reported to have a length of stay of more than one year, and up to five years (93). At the district hospital-level, mandated as the first point of contact for MHCUs, clear contradictions to the recommendations of both the

MHPF and the MHCA emerged (166, 248, 270). These hospitals are assigned the responsibility of ensuring that MHCUs are assessed and provided with ongoing referrals to more specialist treatment within a 72-hour period, yet, this study revealed that mental health patients admitted to district hospitals spend more than 8 days as an inpatient at this level of care and the majority of facilities do not meet care requirements (166, 248, 270). At higher levels of care, even larger differences are seen between the admission lengths for all admissions, compared to mental health admissions, reflecting an absence of effective referral mechanisms for the complex long term care needs of MHCUs.

Similarly, adequate attention must be paid to the potential savings that may yield from reducing readmission rates for all hospitals which cost the health system USD112.07million. This is stark when compared to the total PHC-service for mental health costing USD45.3million during the same period (excluding PHC services provided by NGOs). Readmission rates have been used as a proxy for relapse or complications following inpatient admission, and serve to indicate premature discharge, quality of care received prior to discharge or a lack of coordination and continuity of care with outpatient services post-discharge (287). Given the long length of inpatient admissions in South Africa, the high rates of readmission are likely a result in systemic failures when patients transition from hospitals to the next source of care within the community (288). A systematic review undertaken to explore the factors associated with psychiatric readmission rates sampled studies across both high and low-middle income settings, and reported one-month readmission rates between 11% to 31%, three month readmission rates of 49%, and six month readmission rates between 21% and 37% (289). Most included studies reported one-year readmission rates, reported values ranged between 10% and 72%.

This study confirmed that medications prescribed for the first-line treatment of several severely disabling MNS disorders, including depression and bi-polar disorder, were among the most frequently stocked out (i.e. out of stock). Further, despite being listed in the STGs and EMLs, a number of mental health medications are not routinely available at level(s) of care for which the guidelines mandate their use, which points to a need to update the guidelines or improve their implementation (279, 280). The unavailability of medications at PHC-level may be partly due to unavailability of doctors and health care workers with advanced psychiatric training authorized to

initiate treatment, which speaks to the need to move toward nurse-initiated prescribing of psychotropic medication, particularly for depression and anxiety disorders.

There are a number of study limitations which should be noted. Firstly, most facilities that contributed to this study were unable to report a diagnostic disaggregation of inpatient and outpatient caseloads, and could not provide the average length of inpatient admissions for mental health patients, readmission rates and referral pathways post-discharge without extensive reviews of their patient records over a one-year period. Secondly, tracking health personnel is instrumental in the delivery of mental health services in the country and critical in order to determine access to care and address shortages; yet the current staffing database of the DOH could not identify specific cadres of specialists or specialist nurses, making estimates of the availability of psychiatrists limited to those facilities and districts that completed primary data collection and estimates of the availability of specialist nurses with advanced psychiatric training indistinguishable from those with other advanced training in other areas. Thirdly, although this study described the availability of psychotropic medications, there was discordance between the information received from direct facility input, which reported a significant number of stock-outs, and stock-out reports generated by the NDOH. For this reason, little remains known about the underlying reasons for these stock-outs, and further interrogation is required. In addition, the NDOH must ensure that the centralized monitoring of psychotropic medications is improved to ensure it reflects the realities being faced by facilities on the ground. Despite attempts to cost expenditure on contracted hospitals and NGOs, not all provinces were able to provide expenditure this data. Upcoming research will include the mapping out of residential and day care facilities, understanding population needs and existing resourcing for this level of service delivery ; this has been identified as a priority for the South African government. The study did also attempt to collect data on the training of health personnel, a key strategy to strengthen primary care in terms of skills and competencies, however a large number of facilities were not able to report accurately or comprehensively on training received by their personnel. Furthermore, data on referrals and the continuity of care for mental health users was not comprehensively available from reporting facilities to understand access to specialist services.

With a baseline understanding of current expenditure and coverage for mental health services in South Africa, future research should focus on determining the cost of scaling up mental health care

in keeping with international cost-effective recommendations and potential system savings that may be incurred as a result. Furthermore, while this study provides a cross sectional snapshot of health system utilisation for MNS, longitudinal studies will help elicit an understanding of trends over time to monitor progress. While global recommendations call for the integration of mental health within PHC, there remains a critical need to strengthen information systems for mental health to ensure that the goals of the MHPF are met and mental health services are embedded within the country's plans for UHC through the NHI Scheme. Fiscal constraints and multiple competing health demands require a re-orientation away from hospi-centric models of care to allow for increased decentralization of services. Investments in primary and community-based mental health care may improve the efficiency of the health system and address the high rates of readmissions in hospitals, whilst allowing for increased access to mental health services and the actualization of South Africa's commitment towards deinstitutionalization (290).

Conclusions

Despite South Africa's supportive legislative and policy environment, in the absence of explicit tracking of resources and essential health system inputs, meeting the goals of the South African mental health policy and commitments for UHC more broadly, will remain a challenge. Whilst acknowledging limitations in health information systems to track dedicated health expenditure and the delivery of services, this study offers a nationally representative reflection of the state of mental health spending and elucidates inefficiencies in the system that may be addressed to increase the resource envelope for the delivery of critical mental health services within an integrated primary care model.

Chapter 5

The household economic costs associated with depression symptoms: a cross-sectional household study conducted in the North West province of South Africa

Authors: Sumaiyah Docrat[1*], Susan Cleary[2], Dan Chisholm[3] and Crick Lund[1,4]

[1] Alan J. Flisher Centre for Public Mental Health, Department of Psychiatry and Mental Health, University of Cape Town, South Africa; 46 Sawkins Road, Rondebosch, Cape Town, Western Cape, South Africa 7700; +27.21.406.6129; s.docrat@uct.ac.za.

[2] Health Economics Unit, University of Cape Town, South Africa

[3] Department of Mental Health and Substance Abuse, World Health Organization, Switzerland

[4] Centre for Global Mental Health, King's Global Health Institute, Health Service and Population Research Department, Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom

Description of the contribution of the candidate and co-authors

SD conceptualized the paper, under the guidance of CL. The data for this study was collected as part of Work Package 3 of the Emerald project, which was led by DC and CL. SD developed the household study protocol that was applied across the six Emerald countries, under the guidance of DC and CL. SD led all aspects of the South African data collection in the North West province, independently cleaned and analyzed the dataset, and drafted the article. The draft was critically reviewed by both CL and SC in addition to DC, who made recommendations for improving the manuscript, and the interpretation of the data, prior to submission.

Current status: Published in *PLOS One*

Docrat, S., Cleary, S., Chisholm, C., and Lund, C. 2019. The household economic costs associated with depression symptoms: a cross-sectional household study conducted in the North West province of South Africa. PLOS One, 14,11

Abstract

Background: The aim of this study was to assess the association between depression symptom severity and household income, consumption, asset-based wealth, debt and use of distress financing strategies, to understand how depression symptom severity and household economic welfare are related.

Methods: A household survey was administered to the households of primary health clinic-attenders who were screened for depression symptoms using the 9-item Patient Health Questionnaire in the chronic care units of four primary health clinics in the North West province of South Africa. Univariate and multivariable regression models were used to assess whether a range of household economic measures were significantly associated with depression symptom severity; and whether depression symptom severity was significantly associated with changes to household economic welfare, across a number of different economic measures using both multiple linear regression and logistic regression analyses.

Results: On univariate analysis, certain characteristics were associated with significantly worse (higher) PHQ-9 scores, namely: households in which the household head was younger, female, and unmarried; households in which the indexed patient was younger, and did not receive an education beyond primary school; increasing household size, receipt of a social grant, households living in housing constructed of metal sheet walls and households making use of a public tap as their primary water source. In addition, univariate analysis demonstrated that higher log-transformed food expenditure, lower log-transformed capacity to pay, the presence of household debt and both reducing the size or frequency of meals and drawing up retail shop accounts in response to financial distress over the past three years were associated with significantly worse (higher) PHQ-9 scores. Multivariable analysis demonstrated that larger household sizes ($p<0.05$), receipt of social grants ($p<0.05$), higher food expenditure ($p<0.01$), and drawing up retail shop accounts in response to financial distress ($p<0.05$) were independently associated with worse (higher) PHQ-9 scores. Inversely, increasing age of the household head ($p<0.05$), having piped water directly into the household (as opposed to making use of a public water sources) ($p<0.01$), and increasing capacity to pay ($p<0.01$) were independently associated with better (lower) PHQ-9 scores. Similarly, multivariable analysis demonstrated that worse (higher) PHQ-9 scores were

independently predictive of lower household capacity to pay ($p<0.10$) and higher food expenditure ($p<0.01$).

Conclusions: This study is the first of its kind in South Africa, identifying household economic factors associated with increased depression symptom severity on a continuum; and demonstrating that financial risk protection efforts are needed across this continuum. Further inquiry in this area is required including exploring experimental and longitudinal study designs to better confirm the relationship between household mental health burden and financial protection. The study demonstrates that the relationship between poverty and mental health likely extends beyond the individual to affect household economic functioning. These findings should be explored in policy considerations to achieve effective protection for vulnerable households facing the interaction of depression and adverse economic circumstances

Introduction

Depression is a leading cause of disability worldwide (50, 81, 291, 292). In part, this is explained by the high treatment gap globally; 12-month prevalence rates for major depression and anxiety disorders stood at 4.6% and 9.8% of the global population in 2017, with the treatment gap for minimally adequate treatment exceeding 80% (83.5% and 90.2%, for major depression and anxiety respectively) (11, 12). Since 2010, South Africa's prevalence of major depression and anxiety disorders has exceeded global averages; in 2017, the prevalence stood at 6.7%, representing one of the top five contributors to years lived with disability (YLD) in the country (9). As in South Africa, other low- and middle-income countries (LMICs) experiencing demographic and epidemiological transitions are realizing the increasing public health importance of common mental disorders, including depression (50, 293).

A strong association exists between depression and poverty (294). Two causal pathways are hypothesized to maintain the cycle of poverty and mental illness: the *social causation* hypothesis, by which the conditions associated with poverty (such as increased stress, poor housing, social exclusion, reduced social capital, malnutrition and increased violence and trauma) increase the risk for mental illness; and the *social selection* or *social drift* hypothesis, by which people living with mental illness are at increased risk of drifting into or remaining in poverty as a result of increased health care expenditure, reduced productivity, stigma and job loss (48, 294). Until recently, the limited availability of longitudinal data means that little was known regarding the causal relationships underlying these associations. Earlier studies suggested that there was more promising evidence that the social causation hypothesis was more applicable to depression (i.e. that conditions associated with poverty increase the risk of depression), however a recent study on poverty and depression, conducted using three waves of a nationally representative longitudinal dataset in South Africa, demonstrated that both social causation and social drift act simultaneously (50). Household-level data which examines the economic impact of depression on households is limited for LMICs; in a 2010 systematic review of poverty and common mental disorders in LMIC, the vast majority of the 115 studies examined individual-level rather than household-level economic variables (294).

Among LMICs, the costs of illness do not fall on ill individuals alone; the time and financial costs of illness are often carried by healthy household members and decisions about treatment seeking and coping with financial difficulty are similarly made at the household-level (295-297). The economic impact of physical illnesses on households in LMICs has been well documented (47, 295, 298). Unanticipated increases in health expenditures coupled with a reduction of functional capacity and lost income as a result of reduced productivity from illness, or death of the main household income earner, is considered a primary risk factor for impoverishment - a phenomenon known as the *medical poverty trap* (39, 47, 54-56, 298). Households risk worsening health by adapting their use of health care and other subsistence needs to evade costs they cannot face, or by employing financial strategies which compromise their livelihoods (55, 56, 296, 299). The need for evidence quantifying the magnitude of the economic impact of illness to individuals and households is crucial in the context of the recent adoption of the Sustainable Development Goals (SDGs), specifically the inclusion of universal health coverage (UHC) goals which include a commitment by governments to protect vulnerable households against the catastrophic financial and economic consequences of illness (90).

Depression is characterized by a wide range of emotional, cognitive, physical and behavioral symptoms. Over several decades there has been debate about whether sub-threshold depression symptoms (i.e. below the threshold for a clinical diagnosis of depression) are associated with significant psychosocial impairment, and relatedly, whether sub-threshold depression symptoms share the same constructs with diagnosable major depression (300, 301). However, in recent years, there is increased recognition that the symptoms of depression must be considered on a continuum, and clinical depression should not be considered categorically distinct from other degrees of depression symptoms (300, 301). Further, the common symptoms of mental distress such as anxiety or low mood have been associated with more total disability at a population-level than diagnostically defined mental disorders [78].

A recent Lancet Commission on Global Mental Health and Sustainable Development emphasized the need to adopt a dimensional approach to the classification and treatment of mental disorders by moving beyond absolute boundaries which denote the presence or absence of a mental disorder (4). The Commission asserts that the lengthy period between the appearance of initial symptoms, characterized by a gradual decline in functioning, is often the time when early interventions can

lead to better outcomes (as opposed to waiting until the disease has progressed and symptoms have persisted sufficiently to warrant a diagnosis). With this in mind, a broader research agenda is required to address key questions around the appropriate treatment and prevention of depression, which acknowledges the importance of management of sub-threshold symptoms to mitigate progression to more serious depression and, of relevance to this paper, their potential broader economic impacts. This chapter therefore aims to assess the association between depression symptom severity and household income, consumption, asset-based wealth, debt and use of distress financing strategies, and to understand how depression symptom severity and household economic welfare are related, based on insights from a survey conducted in a South African setting.

Methods

Study design

This study forms part of the Emerald (Emerging mental health systems in low- and middle-income countries) project which pursued a programme of research into a number of mental health system strengthening components across six LMICs (Ethiopia, India, Nepal, Nigeria, South Africa and Uganda), [16]. As part of the mental health financing component of the project, a household survey was carried out in each of the six Emerald country sites to determine the economic consequences of mental disorders to households. In South Africa, the cross-sectional household survey was conducted in the Dr. Kenneth Kaunda (Dr. KK) health district of the North West province. This study adheres to the STROBE guidelines for the reporting of observational cross-sectional epidemiological studies (302).

Setting

The rationale for the choice of the Dr. KK health district (North West province), as well as the district characteristics, has been described in detail elsewhere (45, 66, 248, 303). Briefly, the Dr. KK district was identified based on the priorities identified by the Department of Health (DOH). The district is also serving as a pilot site for the implementation of a new mental health care plan, being conducted through a separate, ethically approved study: the PRogramme for Improving Mental health carE (PRIME) (67), to which the Emerald household survey recruitment was linked.

Dr. KK comprises a population of 745,878, with an unemployment rate of 30.4%; above the provincial and national averages and is estimated to be 14% rural (66, 304). Dr. KK faces a high prevalence of both HIV (30% of the district population) and Tuberculosis (TB), and a rising burden of concomitant non-communicable disease including diabetes and hypertension (66). Although the district has one specialized psychiatric hospital, four general hospitals with capacity for acute admissions for severe psychiatric cases and a multi-disciplinary team providing outpatient care for people with severe mental disorders; a situational analysis conducted in 2014 revealed that the district is unable to meet the mental health needs of the district population (66).

Data Collection and Sample

Between August 2014 and July 2015, individual-level screening of adult (≥ 18 years) primary health care (PHC) attenders in the chronic care units of four PHC clinics was conducted through the PRIME Cohort Study (305). PHC attenders were screened by PRIME researchers following their consultation with a clinician using the PHQ-9 (306), which has been widely used in LMICs and validated in primary care patients in South Africa (305, 307). Psychometric assessment of the tool has indicated it has good validity and reliability (306, 308). PHQ-9 scores ranging from 0-4, 5-9, 10-14, 15-19 and 20-27 are considered to indicate minimal, mild, moderate, moderately-severe and severe depressive symptoms, respectively (305, 307). A threshold score of 10 identifies a probable case of major depression (305, 307). After screening, participants were approached and permission to visit their households for the Emerald study was sought through written informed consent, irrespective of their PHQ-9 scores.

Individuals who provided written informed consent were visited in their households by Emerald fieldworkers where the head of the household, or adult most knowledgeable about the household financial situation, was asked to participate in the household study by providing additional written informed consent. A household was defined as individuals living in the same home, who shared a common source of food. Where the household informant consented, fieldworkers administered a household survey, lasting approximately one hour, in English or Setswana, the languages of the majority in Dr. KK. The survey instrument (Appendix G) is adapted from the previously validated World Health Organization (WHO) Study on global AGEing and adult health (SAGE) survey on health and ageing developed specifically for use in LMICs (309). SAGE has adapted and added

to the methods and instruments developed by the WHO for the World Health Survey (WHS) that was conducted in 2002 and 2003 in 70 countries (310). The key domains of the SAGE household instrument are as follows: demographics of household members, housing (type and ownership of housing, number of residents); transfers (to or from those not living in household, including financial or non-financial help to and from family and friends, as well as state benefits, debts or loans); assets and income (asset index, sources and levels of income); expenditure (food and non-food items, health care costs and source of funds for these expenditures); and the global situation (financial strain index, perceived situation) (45, 309). Demographic data related to the indexed PHC attender were obtained from the PRIME Cohort study (305).

The broader Emerald household study sought to describe the economic characteristics of households affected by depression symptoms that had met the threshold for major depression; compared to those that did not meet the threshold (45). Previous cross-country analyses of these data therefore did not consider depression symptoms on a continuum nor did they include any in-depth regression analyses to determine which factors were associated with worse economic circumstances for households affected by depression (45). Further, previous cross-country analyses of these data included households in which indexed PHC attenders were diagnosed with depression but screened-negative using the PHQ-9 (i.e. disagreement between PHC-worker diagnoses and PRIME researcher screening); households in which indexed PHC attenders were screened during the PRIME pilot recruitment period (whereby evidence emerged of fieldworker error in the administration of the PHQ-9), and; households in which indexed PHC attenders were screened at subsequent PHC-visits during the recruitment period and there was disagreement in their screening scores (305).

Measures

The primary economic outcome measures were: household income, consumption, capacity to pay, food expenditure, the presence of household debt, household asset score and household use of distress financing strategies in response to financial difficulty. A detailed description of the construction and assumptions used for each of these economic measures is provided in Appendix H and elsewhere (45). Briefly, household reports of income by source and consumption by item

were standardized to reflect annual amounts during the data cleaning process, given that a range of recall periods were applied depending on the income source or consumption item (45).

Total household food (subsistence) consumption was subtracted from total household consumption as a measure of *households' capacity to pay*. These financial variables were adjusted for household size and composition to ensure all comparisons generated would be based on a per adult equivalency (per capita) basis, using the OECD modified scale, accounting for the varying resource needs of adults and children in the household, and the economies of scale associated with sharing household resources (45, 311). All financial data were converted to United States Dollars (USD) using the 2015 average annual exchange rate (the year data collection was conducted) reported by the US Department of Treasury for South Africa (1 USD = ZAR 13.46) (312)

A range of household assets were used to generate a *household asset score* using Multiple Correspondence Analysis (MCA). MCA as opposed to Principal Components Analysis (PCA) was used to create the asset index as MCA makes fewer assumptions about the underlying distributions of indicator variables and is more suited for the analysis of categorical variables (45, 313-315). Wealth quintiles were generated based on these scores for descriptive purposes. For the assessment of *household-use of distress financing strategies in response to financial difficulty*, summary variables were generated based on the household report of: withdrawing children from school, reducing health care use, restricting the size or frequency of meals, or drawing up accounts at retail outlets in response to financial distress over the past three years. Similarly, for the assessment of the presence of *household debt*, summary variables were generated based on the report of debt in the household.

Data Analysis

We used frequency distributions and univariate descriptive statistics for preliminary analysis, to describe household head, indexed patient, and household and housing characteristics among the sampled households. Mean PHQ-9 scores and standard deviations (SD) were reported for each characteristic. To assess independent differences in depressive symptom severity (PHQ-9 scores) across these characteristics, *p*-values were calculated using: two-sample, unpaired t-tests for dichotomous categorical variables; one-way analyses of variance (ANOVA) for categorical

variables with more than 2 groups, and; linear regression for continuous variables. Tests were considered significant if *p*-values were less than 0.05 (5% level). Where depressive symptom severity (PHQ-9 score) was significantly associated with socio-demographic factors, these were adjusted for in all multivariable regression models.

Univariate and multivariable models were used to assess risk factors associated with worse (higher) PHQ-9 scores. Independent variables included significant socio-demographic factors, household income, consumption, capacity to pay, food expenditure, the presence of household debt, asset-based wealth score and use of distress financing strategies in response to financial difficulty. Variables that retained a value of $p<0.05$ on univariate analysis were entered into the multivariable linear regression model. As anticipated, financial data reported by households were highly skewed to the right. For all regressions, these data were logarithm transformed to fulfill the assumption of normality required for the use of parametric tests. The assumptions justifying the use of linear regression were evaluated; whilst no collinearity was found between the predictor variables, robust-standard errors were included in the regression model to account for the non-homogenous variance of the residuals.

Similarly, a series of multiple linear regression models were fitted to assess whether depression symptoms were associated with lower household income, consumption, capacity to pay, food expenditure and asset-based wealth scores derived through MCA. Each model proceeded by initially assessing the effect of PHQ-9 score independently through linear regression, with log-transformed financial variables and asset-based wealth scores treated as the continuous response variables. Where PHQ-9 scores retained a value of $p<0.05$ on univariate analysis for each economic outcome, multivariable linear regression models were fit, adjusting for significant socio-demographic factors.

Finally, logistic regression analyses were used to assess the independent association between depression symptom severity and the presence of debt in the household (coded dichotomously as yes or no) and of the use of distress financing strategies in response to financial difficulty (each strategy coded dichotomously as yes or no). All models were adjusted for independent associates.

To account for sampling errors in the estimated variance of covariates included in the final models, bootstrapping was applied. Bootstrapping was run on the models with 1000 replacements to obtain the final estimates that are reported. For all multiple linear regression models, the final adjusted regression coefficients and 95% confidence intervals are reported; for all logistic regression models, the final odds ratios and 95% confidence intervals are reported.

To avoid the loss of statistical power in detecting an association between depression symptom severity and the economic variables of interest, households were *only* categorized based on depression symptom severity cutoffs (i.e. minor, mild, moderate, moderate-severe and severe depressive symptoms) for the purpose of presenting descriptive statistics (median household income, consumption, capacity to pay, and; overall frequencies in the use of distress financing strategies, asset-based wealth group assignment and the presence of debt in the household). Medians (as opposed to means) were reported in the case of financial variables given that these data were skewed and non-parametric. In all univariate and multivariable models, depression symptom severity (PHQ-9 score) was included as a continuous variable.

Ethical considerations

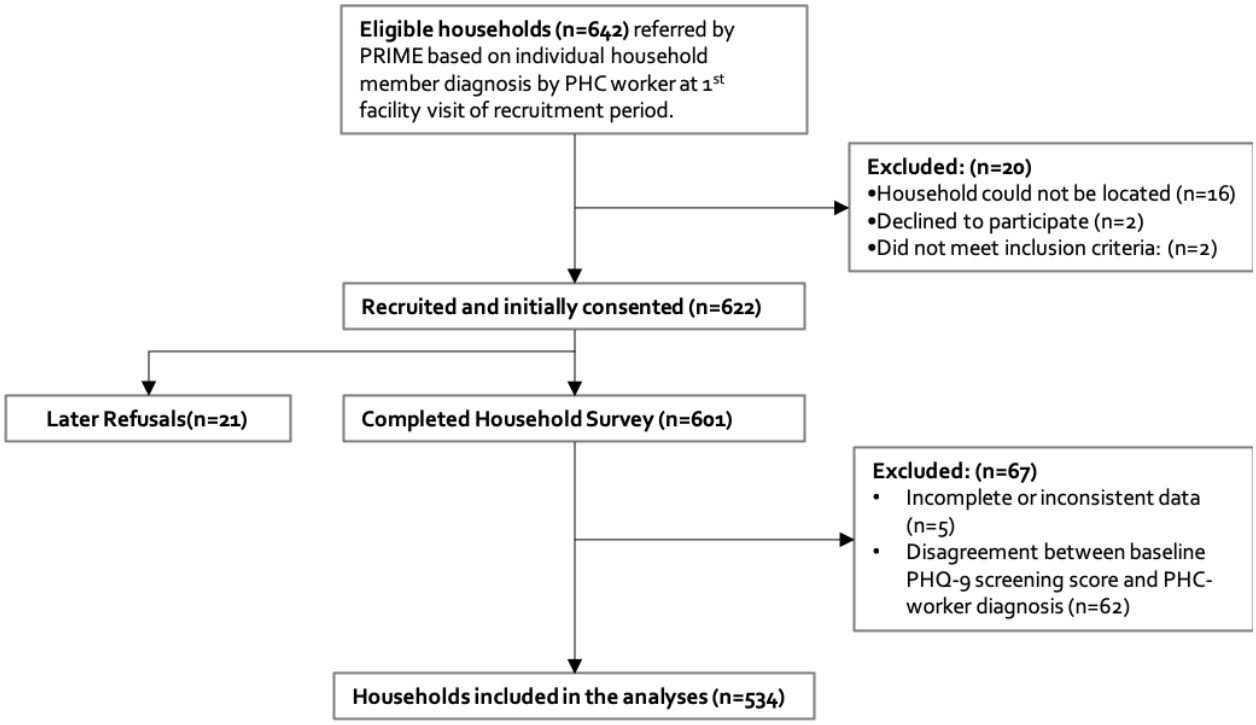
The consenting process for the study involved has already been described. All participants provided voluntary informed consent to participate in the study, none of the household heads or individual household members screened at the PHC facility lacked capacity to consent. Hand-held electronic data-collection devices were used to collect household data which ensured that data remained secure by (a) password-protecting access to the hand-held devices, (b) transmitting data to the server regularly, (c) password-protecting the computers that accessed the server, and (d) accessing raw data on the server via a password-protected website. The study including all consent procedures received ethical approval from the ethics review committees of the University of Cape Town (HREC REF 531/2013), as well as that of the project coordinating centre (King's College London) and WHO (RPC619).

Results

Sample characteristics

A total of 534 households were included in the analyses (Figure 9). The final sample size was derived after the removal of households who had participated in the survey but had >80% incomplete data (i.e. only the household roster was completed) (n=5), and; the removal of households in which there was disagreement between baseline PHQ-9 score and PHC-worker diagnosis (n=62). Prior to exclusion, excluded households were assessed to ensure that they did not have any significant differences with respect to their socio-demographic characteristics, when compared to households that were included in the final analyses (Appendix I).

Figure 9 Participant Flow Diagram



Across the sampled households, 46% (n=248) included a household member who achieved a PHQ-9 score of 10 or more, indicating probable cases of major depression; 47.7% (n=255) included a household member who had minimal or mild depressive symptoms, whilst for the remaining 5.8% (n=31) of households, the indexed household member had no depressive symptoms (Table 15). Female-headed households represented 52.1% of the sample, with the majority of household heads being unmarried (73%) with no formal education beyond primary school (80.0%). Indexed patients within households were predominantly female (78.5%), with children (86.6%) and

similarly unmarried (79.1%) with a primary school education or less (87.4%). The mean household size consisted of four household members, with 73% of households receiving a social grant, although the detail of the specific type of grant received was not requested from participants. It is important to note that South Africa provides a range of different grants including the Child Support Grant, Older Person's Grant, Disability Grant, Grant-in-Aid, Care Dependency Grant, War Veteran's Grant, Foster Child Grant (316). Only 1.7% of the sampled households included a household member with health insurance. With respect to housing, the majority of households were residing in housing that was provided free of charge (i.e. government housing) (61.1%), with 32.2% residing in housing that was owned by the household head. The majority of the sample lived in housing with cement walls, with 11.4% of households living in structures constructed of metal sheet walls. Just over half of the households had water piped directly into their dwelling (50.9%) with the remaining households accessing water through public taps or piped water into a yard.

Table 15 Sociodemographic characteristics and depression symptom (PHQ-9) scores among the sampled households

Characteristics	**N or Mean**	**% or SD**	**PHQ-9 Score Mean**	**SD**	**Comparisons (p-values)+**
Household Head characteristics					
Age					**0.053**
20-35	60	11.2	9.6	5.9	
36-50	197	36.9	9.1	5.8	
51-65	206	38.6	8.2	5.3	
66-80	63	11.8	7.3	5.0	
>81	8	1.5	10.6	4.0	
Sex					**0.009**
Male	256	47.9	7.8	5.5	
Female	278	52.1	9.1	5.5	
Marital Status					**0.006**
Unmarried	390	73.0	8.9	5.4	
Married	144	27.0	7.3	5.6	
Education					0.239
Primary school or less	427	80.0	8.6	5.5	
Beyond primary school	107	20.0	8.0	5.6	
Indexed Patient characteristics					
Age					**0.042**
20-35	118	22.1	9.1	5.2	
36-50	192	36.0	9.0	5.9	
51-65	177	33.1	8.3	5.5	
66-80	41	7.7	7.3	4.6	
>81	6	1.1	6.0	1.4	
Sex					0.181
Male	114	21.5	8.0	5.8	
Female	416	78.5	8.6	5.4	
Marital Status					0.061
Unmarried	419	79.1	8.7	5.5	
Married	111	20.9	7.6	5.5	

Characteristics	N or Mean	% or SD	PHQ-9 Score Mean	SD	Comparisons (p-values)✦
Education					0.040
Primary school or less	463	87.4	8.6	5.5	
Beyond primary school	67	12.6	7.4	5.3	
Children					0.765
No children	71	13.4	8.6	5.2	
Has children	457	86.6	8.4	5.5	
Depressive symptom severity					**0.028**
None	31	5.8%	0.0	0.0	
Minimal	116	21.7%	2.7	1.1	
Mild	139	26.0%	6.4	1.2	
Moderate	166	31.1%	11.5	1.4	
Moderately-severe	64	12.0%	16.7	1.3	
Severe	18	3.4%	21.4	1.5	
Household characteristics					
Household Size					**0.001**
1-2	134	25.1	7.7	5.3	
3-4	213	39.9	8.5	5.3	
5-6	131	24.5	8.8	5.9	
7-8	44	8.2	11.1	5.7	
>8	12	2.2	10.3	4.6	
Health Insurance Coverage					0.258
Uninsured	525	98.3	8.5	5.5	
Insured	9	1.7	6.3	4.6	
Social Protection					**0.001**
Not receiving social grant	144	27.0	7.2	5.2	
Receiving social grant	390	73.0	8.9	5.5	
Housing characteristics					
Ownership					0.199
Owned and fully paid off	165	32.2	8.5	5.1	
Provided free of charge	313	61.1	8.7	5.5	
Rented	34	6.7	6.9	6.9	
Wall Material					**0.050**
Metal sheet	61	11.4	9.6	5.4	
Cement	473	88.6	8.3	5.5	
Water Source					**0.001**
Piped into dwelling	272	50.9	7.4	5.0	
Piped into Yard or Public Tap	262	49.1	9.6	5.8	

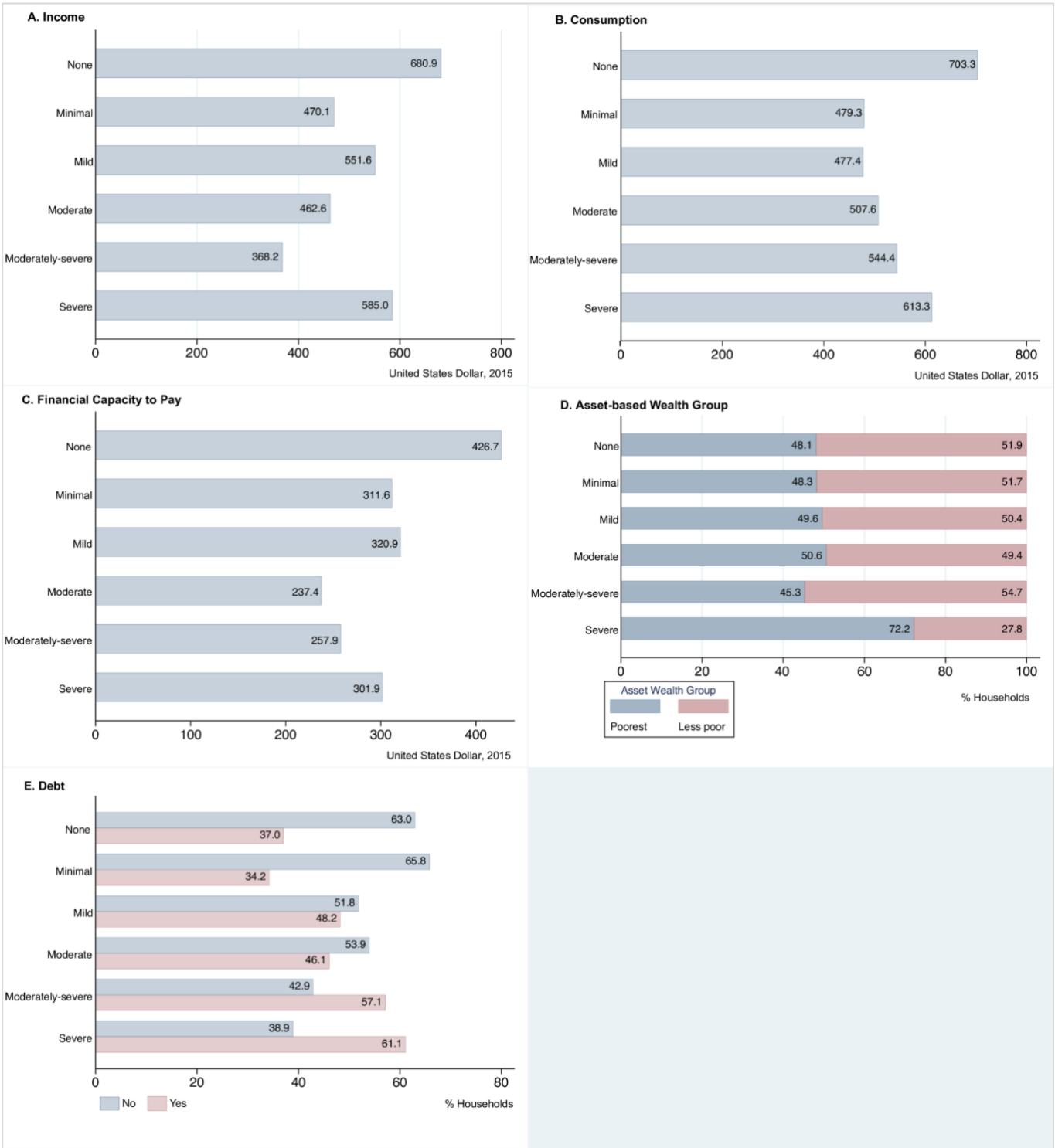
✦Two-sample, unpaired t-test for dichotomous categorical variables, one-way analysis of variance (ANOVA) for categorical variables with > 2 groups, linear regression for continuous variables

Median Absolute Income, Consumption and Capacity to Pay by Severity-group

In absolute terms, median annual household income ranged from USD680.9 per adult equivalent amongst households unaffected by depression symptoms to USD368.2 per adult equivalent amongst households affected by moderately-severe depression symptoms (Figure 10A). While there lacked a linear trend of lower reported household income as household member depression severity increased, when compared with those unaffected by depressive symptoms, households

affected by minimal, mild, moderate, moderately-severe and severe depressive symptoms all reported lower median household incomes in absolute terms.

Figure 10 Annual median household (A) income, (B) consumption and (C) capacity to pay (per adult equivalent) and frequency distributions of (D) asset-based wealth and (E) debt among the sampled households, by depression symptom severity group.



With regards to household consumption, households unaffected by depression symptoms reported median annual household consumption per adult equivalent of USD703.3 (Figure 10B). Annual consumption per adult equivalent ranged from USD479.3 amongst households affected by minimal depression symptoms to USD613.3 amongst households affected by severe depression symptoms. Although households affected by any form of depression symptoms all reported lower median household consumption when compared to households unaffected by depression symptoms; median household consumption (in absolute terms) was higher among households affected by worse (higher) depression symptom severity .

Median annual capacity to pay ranged from USD426.7 per adult equivalent amongst households unaffected by depression symptoms to USD237.4 per adult equivalent amongst households affected by moderate depression symptoms (Figure 10C). While there was no linear relationship between capacity to pay and higher depression symptom severity group, capacity to pay appears to be lower when depression severity is higher; amongst all depression symptom severity groups, median annual capacity to pay was lower than those unaffected by depression symptoms.

Asset-based Wealth

With regards to asset-based wealth, a higher proportion of households were assigned to the poorest wealth group amongst households affected by severe depression symptoms (72.2%), compared with those unaffected by depression symptoms where 48.1% of households were assigned to poorest wealth group (Figure 10D). This trend was consistent amongst the minimal, mild and moderate depression symptom severity groups; with higher depression symptom severity groups seeing a larger proportion of households assigned to the poorest wealth group. The only exception to this trend was amongst households affected by moderately-severe depression symptoms, where 54.7% of households were assigned to the less poor wealth group and consequently, 45.3% assigned to the poorest wealth group.

Debt affecting Households

With regards to the presence of debt in the household, the proportion of households reporting that they have current debts ranged from 34.2% of households affected by minimal depression symptoms, to 61.1% of households affected by severe depression symptoms (Figure 10E). Particularly for households affected by moderate, moderately-severe and severe depression symptoms (i.e. PHQ-9 scores≥10), the proportion of households reporting debt was higher with higher (worse) depression symptom severity.

Coping with financial distress

Across the sampled households, 17.8% (n=95) reported reducing the frequency or size of meals in response to financial difficulty over the past three years (Table 16). There were very small numbers of households reducing their use of health care (n=2) or withdrawing children from school (n=5) in response to financial difficulty. Nonetheless, 11% (n=59) of the sampled households reported that they had drawn up accounts at retail shop outlets in response to financial difficulty over the past three years.

Table 16 Use of distress financing strategies and depression symptom (PHQ-9) scores among the sampled households

Use of Distress Financing Strategies in response to financial difficulty	**N**	**%**	**Depressive Symptom (PHQ-9) Score**		**Comparisons (p-values)✦**
			Mean	SD	
Reduce frequency or size of meals					**0.007**
No	439	82.2	8.3	5.5	
Yes	95	17.8	10	5.4	
Reduce use of health care					0.774
No	532	99.6	8.6	5.5	
Yes	2	0.4	7.5	4.9	
Withdraw children from school					0.335
No	529	99.1	8.6	5.5	
Yes	5	0.9	11	4.3	
Draw up retail shop accounts					**0.025**
No	475	89	8.4	5.4	
Yes	59	11.0	10.2	6.4	
✦Two-sample, unpaired t-test for dichotomous categorical variables					

Univariate analyses

On univariate analysis, certain characteristics were associated with worse (higher) PHQ-9 scores, namely: age), gender and marital status of the household head; age and education-level of the

indexed patient; the household size whether the household received a social grant, the wall material of the housing, household water source, higher log-transformed food expenditure , lower log-transformed capacity to pay, the presence of household debt and both reducing the size or frequency of meals and drawing up retail shop accounts in response to financial distress over the past three years. Univariate analyses also found that higher PHQ-9 scores were associated with the presence of household debt reducing the size or frequency of meals and drawing up retail shop accounts in response to financial distress over the past three years.

Multivariable analyses

In model 1, which had depressive symptoms as the dependent variable, multivariable analysis demonstrated that larger household sizes, receipt of social grants, higher food expenditure, and drawing up retail shop accounts in response to financial distress were all independently associated with worse (higher) PHQ-9 scores (Table 17). Inversely, increasing age of the household head, having piped water directly into the household (as opposed to making use of a public water sources), and increasing capacity to pay were independently associated with better (lower) PHQ-9 scores. For a one unit increase in household head age, PHQ-9 scores decreased by 0.043; whilst a one unit increase in household size increased PHQ-9 scores by 0.323. In comparison to households not receiving social grants, PHQ-9 scores of households receiving grants were 1.19 units higher. Interestingly, compared to households making use of public water sources, households with water piped directly into the household had PHQ-9 scores that were 1.93 units lower. With regards to the financial variables of interest, for every 10% increase in household's capacity to pay, expected mean PHQ-9 scores decreased by 0.06 whilst for a 10% increase in household food expenditure, expected mean PHQ-9 scores increased by 0.08. In comparison to households that did not draw up retail shop accounts in response to financial distress, households that did had PHQ-9 scores that were 1.75 units higher. While indexed patient age and education was not significantly associated with depression scores at the 95% interval, depression scores appear to be lower as education and age increases (i.e. at the 90% confidence level).

Table 17 Multivariable linear and logistic regression models

	Model 1[a]	**Model 2[a]**	**Model 3[a]**	**Model 4[b]**	**Model 5[b]**	**Model 6[b]**
Multivariable predictor						
Household head age[c]						
Adjusted Coefficient or Odds Ratio (95% CI)	-0.043 (-0.083,-0.004)	0.002 (-0.004,0.007)	-0.001 (-0.009,0.006)	0.999 (0.982,1.017)	0.977 (0.958,0.996)	0.989 (0.958,1.022)
p-value	0.032*	0.563	0.705	0.946	0.019*	0.521
Household head sex *(female vs male)*						
Adjusted Coefficient or Odds Ratio (95% CI)	0.552 (-0.551,1.654)	-0.044 (-0.203,0.115)	-0.141 (-0.339,0.057)	0.870 (0.534,1.419)	0.987 (0.548,1.776)	1.482 (0.588,3.735)
p-value	0.327	0.586	0.162	0.577	0.964	0.404
Household head marital status *(married vs unmarried)*						
Adjusted Coefficient or Odds Ratio (95% CI)	-0.738 (-2.055,0.580)	0.258 (0.071,0.445)	0.015 (-0.228,0.259)	1.010 (0.558,1.830)	0.503 (0.233,1.086)	1.372 (0.481,3.911)
p-value	0.273	0.007**	0.901	0.973	0.080	0.555
Indexed patient age[c]						
Adjusted Coefficient or Odds Ratio (95% CI)	-0.029 (-0.063,0.005)	-0.001 (-0.006,0.004)	0.001 (-0.006,0.008)	1.004 (0.988,1.021)	0.998 (0.976,1.021)	1.003 (0.974,1.033)
p-value	0.093	0.630	0.780	0.612	0.866	0.846
Indexed patient education *(beyond primary school vs primary school or less)*						
Adjusted Coefficient or Odds Ratio (95% CI)	-1.307 (-2.785,0.171)	0.074 (-0.145,0.293)	-0.043 (-0.317,0.231)	1.132 (0.592,2.167)	0.998 (0.976,1.021)	0.586 (0.174,1.974)
p-value	0.083	0.507	0.758	0.707	0.083	0.389
Household size[c]						
Adjusted Coefficient or Odds Ratio (95% CI)	0.323 (0.075,0.572)	-0.063 (-0.101,-0.026)	-0.045 (-0.093,0.003)	1.136 (1.018,1.267)	1.094 (0.965,1.239)	1.094 (0.918,1.304)
p-value	0.011*	0.001**	0.067	0.023*	0.161	0.315
Social Protection *(receiving grant vs. not receiving grant)*						
Adjusted Coefficient or Odds Ratio (95% CI)	1.190 (0.076,2.304)	-0.069 (-0.256,0.119)	-0.054 (-0.266,0.157)	1.439 (0.817,2.533)	1.268 (0.629,2.555)	0.541 (0.217,1.347)
p-value	0.036*	0.473	0.615	0.207	0.508	0.187
Housing wall material *(cement wall vs. metal sheet walls)*						
Adjusted Coefficient or Odds Ratio (95% CI)	0.155 (-1.496,1.806)	0.205 (0.009,0.401)	-0.129 (-0.366,0.107)	1.194 (0.605,2.358)	0.552 (0.258,1.183)	2.780 (0.681,11.35)
p-value	0.854	0.040*	0.284	0.609	0.127	0.154
Water source *(piped into household vs. public tap/piped into yard)*						
Adjusted Coefficient or Odds Ratio (95% CI)	-1.933 (-2.984,-0.881)	0.127 (-0.018,0.273)	-0.171 (-0.367,0.025)	0.689 (0.435,1.089)	1.006 (0.573,1.766)	2.298 (1.078,4.899)
p-value	0.001**	0.086	0.087	0.111	0.984	0.031*
Depressive symptoms (PHQ-9 score) [c]						

Adjusted Coefficient or Odds Ratio (95% CI)	*Outcome variable for Model 1*	-0.012 (-0.025,0.001)	0.029 (0.014,0.044)	1.023 (0.983,1.065)	1.035 (0.988,1.085)	1.066 (0.994,1.143)
p-value		0.063	0.001**	0.259	0.142	0.073
log(Household capacity to pay) [c]						
Adjusted Coefficient or Odds Ratio (95% CI)	-0.599 (-1.212,0.013)	*Outcome variable for Model 2*	0.392 (0.275,0.510)	1.716 (1.264,2.330)	0.780 (0.570,1.069)	1.048 (0.661,1.660)
p-value	0.053*		0.001**	0.001**	0.123	0.843
log(Household food expenditure)[c]						
Adjusted Coefficient or Odds Ratio (95% CI)	0.852 (0.400,1.304)	0.237 (0.163,0.311)	*Outcome variable for Model 3*	1.113 (0.888,1.395)	0.957 (0.718,1.277)	0.755 (0.524,1.087)
p-value	0.001**	0.001**		0.353	0.766	0.130
Household debt *(debt in household vs. no debt)*						
Adjusted Coefficient or Odds Ratio (95% CI)	0.523 (-0.496,1.542)	0.290 (0.142,0.438)	0.106 (-0.093,0.304)	*Outcome variable for Model 4*	2.224 (1.238,3.996)	76.58 (27.93,210.0)
p-value	0.315	0.001**	0.297		0.007**	0.001**
Reduce frequency or size of meals *(reduction in meal size or frequency in response to financial distress vs. no reduction)*						
Adjusted Coefficient or Odds Ratio (95% CI)	0.833 (-0.461,2.127)	-0.127 (-0.290,0.036)	-0.029 (-0.251,0.192)	2.171 (1.209,3.899)	*Outcome variable for Model 5*	1.784 (0.726,4.383)
p-value	0.207	0.126	0.796	0.009**		0.207
Draw up retail shop accounts *(draw up retail shop account in in response to financial distress vs. no retail shop account)*						
Adjusted Coefficient or Odds Ratio (95% CI)	1.746 (0.032,3.460)	0.039 (-0.189,0.266)	-0.211 (-0.476,0.054)	70.21 (27.07,182.1)	1.684 (0.774,3.666)	*Outcome variable for Model 6*
p-value	0.046*	0.739	0.119	0.001**	0.189	
R_2	0.164	0.223	0.158	0.179	0.098	0.295

Model 1: Multivariable predictors of depressive symptom severity (PHQ-9 score)
Model 2: Multivariable predictors of log-transformed annual capacity to pay per adult equivalent
Model 3: Multivariable predictors of log-transformed food consumption per adult equivalent
Model 4: Multivariable predictors of debt in the household
Model 5: Multivariable predictors of reducing size of frequency of meals in response to financial distress
Model 6: Multivariable predictors of drawing up shop accounts in response to financial distress
PHQ-9: Patient Health Questionnaire 9-item

[a]Multiple linear regression model (Models 1-3): adjusted regression coefficients and 95% CI are reported. For continuous predictor variables, the coefficient indicates the increase or decrease in the outcome variable per unit increase in the predictor; for categorical predictor variables, the coefficient indicates the difference in the outcome variable between the specified group and the comparison group indicated in brackets next to the predictor variable name.

[b]Logistic regression models (Models 4-6): adjusted odds ratios and 95% CI are reported. For continuous predictor variables, the odds ratio indicates the increased or decreased odds of the outcome variable per unit increase in the predictor; for categorical predictor variables, the odds ratio indicates the increased or decreased odds of the outcome variable between the specified group and the comparison group indicated in brackets next to the predictor variable name.

[c]Included as a continuous variable
*p<0.05, **, p<0.01

Adjustments to co-efficients and odds ratios for log-transformed variables(317)

For linear regression:

- Where predictor variables are log-transformed (and the outcome variable is not): the coefficient of the predictor variable was back transformed using the following equation: β(coefficient) x log(1.1) to estimate the effect on the outcome for a 10% change in the predictor
- Where both the predictor and outcome variables are log-transformed, we use the equation: $(1.10)^{\beta(\text{coefficient of transformed predictor})}$ to estimate the effect on the outcome variable for a 10% change in the predictor variable
- Where the outcome variable is log-transformed, but the predictor variable is not: the coefficient of the predictor variable was exponentiated: $\exp^{\beta(\text{coefficient})}$ to reflect the change in the outcome variable for a one unit change in the predictor variable. If the predictor variable is dichotomous, the exponentiated coefficient is the ratio of the expected geometric mean for the one group over the expected geometric mean of the comparison group, when the other variables are held at a fixed value.

For logistic regression:

- Where predictor variables are log-transformed the outcome variable is not in logistic regression, the following was applied: the OR in the output is xx, then the coefficient is log(xx). A 10% increase in the predictor variable corresponds to log(xx)* log(1.1) change in the outcome variable. The odds ratio corresponding to this change is exp(log(xx)*log(1.1))

In model 2 (relating to household capacity to pay), multivariable analysis demonstrated that married household heads, housing in which walls were constructed of cement, higher food expenditure and having household debt were independently associated with higher household capacity to pay. Inversely, larger household sizes were independently associated with lower household capacity to pay Whilst model 2 found that worse (higher) PHQ-9 scores were associated with lower household capacity to pay per adult equivalent, this relationship was not significant at the 95% confidence level ($p<0.10$). Household capacity to pay was 29% higher for married household heads compared to unmarried household heads. For every one-unit increase in household size, capacity to pay per adult equivalent decreased by 6%. Household capacity to pay was 23% higher among households in which the walls were constructed of cement when compared to those constructed of metal sheets. Surprisingly, household capacity to pay increased by 34% for households with debt in comparison to those without debt.

Model 3 (on food health expenditure) demonstrated that worse (higher) PHQ-9 scores and higher household capacity to pay were independently associated with higher food expenditure. For a one unit increase in PHQ-9 scores, we would expect a 3% increase in food expenditure; similarly, a 10% increase in household capacity to pay would be associated with a 3% increase in food expenditure.

In model 4 (debt), multivariable analysis demonstrated that larger household sizes, higher household capacity to pay, coping with financial distress by reducing the frequency or size of meals and drawing up retail shop accounts were independently associated with households having debt. Depression symptoms were not significantly correlated with debt within the household. For a one-unit increase in household size, we would expect a 14% increased odds of having household debt. Starkly, the odds of debt are 117% higher among households who are reducing the frequency and size of meals in response to financial distress and 70 times higher for households who have drawn up retail shop accounts. A 10% increase in household capacity to pay increased the odds of debt affecting households by 5%.

Model 5 (frequency or size of meals) demonstrated that lower age of the household head and debt affecting households were independently associated with responding to financial distress by reducing the frequency or size of meals. For a one unit increase in household age, the odds of reducing the frequency of meals reduced by 2%, whilst for households affected by debt, the

odds of reducing the frequency or size of meals in response to financial difficulty increased by 122%.

In model 6 (drawing up shop accounts), household debt affecting households and having water piped directly into the household (as opposed to making use of a public water source) were found to be independently associated with drawing up retail shop accounts in response to financial distress. Although higher (worse) PHQ-9 scores were not found to be independently associated with drawing up retail shop accounts in response to financial distress at the 95% confidence level, higher PHQ-9 scores appeared to increase the odds of drawing up a shop account. The odds of drawing up a retail shop account in response to financial distress were 77 times higher for households with debt in comparison to households with no debt; and 2.3 times higher for households with water piped directly into the household.

Discussion

This study provides new evidence on the economic burden of depression symptoms in South Africa. We assess this burden at the level of the household; by severity of symptoms; and include households that are also suffering the impacts of chronic physical health conditions. In this way, we add to existing literature that has predominantly focused on individual-level economic costs of depression in those with a diagnosis of major depression and without comorbid conditions (294). Consideration of the household-level impacts of depression symptoms may provide an understanding of whether financial risk protection efforts could mitigate the negative economic consequences of depression to households.

Symptoms of depression were found at higher than anticipated rates, with 94% of the screened PHC attenders found to have some degree of depression symptoms –48% of whom met the clinical threshold score of 10, indicating probable cases of major depression. This is in keeping with evidence suggesting high comorbidity of depression with hypertension, HIV and diabetes (318-320). The PRIME cohort study - which provided the recruiting ground for this current study - found that the majority of participants were attending the PHC facility for treatment related to HIV and hypertension (78). These findings underscore the importance of integrating mental health care into care for other chronic physical conditions at the primary health care level.

The study findings note very low levels of educational attainment, with over 80% of household heads having no formal education beyond the primary level in our study site. This finding is higher than the majority of South Africa's other provinces and even amongst a larger sample within the North West, with the 2016 Community Survey reporting approximately 14% of the population having attained a primary level education-the proportion was similar across all provinces, with the highest proportion (19.8%) being reported in the Northern Cape (321). The relationship between educational attainment and depression has been noted in previous studies; the South African Stress and Health study, the last nationally representative survey of common mental disorders noted that the prevalence of major depression was significantly higher among those with a low average level of education, with those only attaining primary level education being 2.11 times more likely to have experienced lifetime major depression and 3.70 times more likely to have experienced 12-month major depression than those with higher levels of education (322) .

According to the World Bank, when deciding between monetary measures of poverty, consumption has been found to be more closely related to a person's well-being with regards to having enough resources to meet current basic needs; with expenditure (consumption) data being more reliable than income data in household survey research (323, 324). Consumption is also more appropriate in economies with large informal sectors, such as South Africa, as such household consumption is often used as a proxy of *effective* income (324). In 2015, the South African national poverty line stood at USD 68.50 (ZAR922) per capita, per month; and this study has found that the entire sample of households fell below this line, using both metrics of household income and effective income (i.e. household consumption) (325).

Surprisingly, this study also found that whilst all households affected by depression symptoms had lower effective incomes (consumption), when compared to households unaffected by depression symptoms, neither household consumption nor income emerged as being significantly associated with depression symptom severity, nor was depression symptom severity significantly associated with consumption or income, through bivariate and multivariable analyses. There are several possible explanations for these findings. Firstly, given the limited variability in absolute incomes and consumption across the sample, with monthly consumption per capita varying by only USD18.6 per capita, per month, between households with the lowest median consumption (minimal depression symptoms), and those with the highest median consumption (no depression symptoms), the sample was likely too

homogenous with respect to these metrics to detect significant differences. Secondly, while it is hypothesized that earnings decrease as a result of the productivity impacts of poor health, thereby resulting in an overall decrease in the resources available for consumption; total resources available to meet a household's needs may not decrease at the same rate as that of income due to other mitigating practices such as private income transfers from friends and family or households decumulating their assets or borrowing (326). This study found that sampled households reported high levels of debt ranging from 34%-61%, with the proportion of households reporting debt increasing with depressive symptom severity. Further, drawing up retail shop accounts in response to financial distress was found to be independently associated with worse depression symptoms. Taken together, households may be accruing debts in the short-term to maintain their overall consumption needs – however these practices are known to have detrimental long-term, intergenerational effects associated with lifelong repayment (55, 56, 296, 299). This highlights the extreme vulnerability of all households included in this sample, but particularly those affected by depression symptoms.

A project of the World Bank's Development Research Group (327) which investigated the socio-economic context of poor mental health in LMICs including Tonga, India, Indonesia, Mexico and Bosnia and Herzegovina also found no clear relationship between mental health and per-capita household consumption (328). Similarly, Babiarz et al (2017) found that households did not experience a major change in consumption following a diagnosis of a severe or mild physical health condition, but if the household head was diagnosed with a psychological or mental health problem, consumption expenditure declined by 6-7% (326). In addition Babiarz et al (2017) found that younger household heads were more likely to become unemployed or become financially dependent on other family members following a diagnosis of a mental health problem (326). The limitations of our study design meant that we were unable to identify whether the individual affected by depression symptoms was the household head, potentially masking the relationship between depression symptoms and consumption.

An important and significant finding of this study relates to the relationship between household financial capacity to pay and depression symptom severity. Increasing financial capacity to pay was found to be independently and significantly associated with lower depression symptom severity. The association between increased financial capacity to pay and lower depression severity may be explained by two potential causal pathways: the social causation pathway (by which increased financial capacity to pay reduces depression severity for example by reducing

financial stress or increasing the available resources to cope with the consequences of negative life events); or the social drift pathway (by which lower depression symptom severity increases financial capacity to pay, for example through improved work performance or increased income generating opportunities associated with improved social or economic functioning). However, the cross-sectional nature of our data does not allow us to draw clear conclusions in this regard.

A household's financial capacity to meet its needs is arguably not a function only of its income (whether measured using income itself or consumption, as a proxy). The rationale for the use of capacity to pay as an important metric for assessing the economic circumstances of households is based on the acceptance that before a household can make decisions regarding how and where to spend its resources, its basic subsistence needs must be met (324). In this study, consistent with others in the field, food expenditure was used as a proxy for subsistence and, noting the aforementioned reliability issues associated with income data, consumption was used as a proxy for effective income. The household's financial capacity to meet all its non-food household needs was calculated as effective income net of food consumption. These findings therefore suggest that where households have a larger amount of resources to meet their needs, the severity of depression symptoms among the affected household member is reduced. Other factors such as receipt of social grants which would contribute to effective income were also associated with higher depression symptom severity. While this finding may seem surprising given the presumed financial protection offered through government grants, eligibility for these grants in South Africa is based on demonstration of illness and being below a particular income threshold for the Child Support Grant (which may independently predict depression). Given the outlined benefits of using consumption measures as a proxy for income, this may explain why capacity to pay has been more responsive to depression symptoms in our sampled households.

The analysis further highlights the significance of considering other variables in relation to the association between depression symptoms and poverty, with data demonstrating that higher food expenditure and drawing up retail shop accounts in response to financial distress were also both independently associated with higher depression symptom severity. Consideration of this finding in the context of Engel's law (329) can provide a possible explanation: as income rises, the proportion of income spent on food falls, signifying improvements in the satisfaction of needs extending beyond basic needs such as food.

Further, housing conditions, such as having piped water directly into the household (as opposed to making use of public water sources) were independently associated with lower depression symptom severity, while housing in which walls were constructed of cement (rather than metal sheeting) was predictive of higher household capacity to pay, underlining the importance of addressing the social determinants of mental health, particularly by improving structural characteristics of neighborhoods and access to infrastructure (330). Another unforeseen finding of these analyses was that households with debt have higher capacity to pay. Having debt, in this case, may serve as an indication of the households' ability to access credit through formal employment, and therefore reflect increased financial freedom. The existence of debt however has ripple effects on household coping practices including responding to financial distress by reducing the frequency or size of meals and going further into debt by drawing up retail shop accounts. Although higher depression symptom severity was not found to be associated with drawing up retail shop accounts in response to financial distress at the 95% confidence level, worse depression symptoms did appear to increase the odds of drawing up a shop account ($p<0.10$).

The present findings should be considered in the context of the study's limitations. Firstly, given that the study is cross-sectional, it is limited by recall bias and causal inferences cannot be drawn. The extent to which we can infer social causation or social drift mechanisms in the relationships we have identified is therefore limited. Secondly, the study only collected information on depression symptoms and is not a comprehensive assessment of all mental disorders; as such, it does not fully capture the impact of more severe mental disorders. A third limitation of this study was the inability to identify the role of the depression-symptom affected individual within the household, or to index illnesses affecting other household members. A fourth and critical limitation of the study is potential endogeneity in which there are likely correlations between the predictor variables in our model and the error terms of the model (331). This can be due to non-random measurement errors as a result of particular individual factors, "simultaneity bias" (where the relationship between mental health and economic outcomes are bi-directional) and when other variables are unaccounted for (331). The linear regression techniques for estimating impact relies on the absence of endogeneity, and as such, the estimated relationships in this study may be biased; the study's findings should be taken as confirmation that there is a relationship between mental health and household financial variables, however the nature of causality and the estimates of impact require further inquiry.

However, the study did attempt to collect a wide range of indicators relating to the socio-economic conditions of households and wealth of households. One factor that could not be controlled for is the selection bias that is likely present in the study due to the recruitment strategy of identifying patients attending primary health care facilities. These participants have higher health seeking behavior and therefore may also be different from the general population with regards to both their income and likelihood of depression given its links with delayed care seeking, and therefore the generalizability of the findings cannot be assured. It is important however to note that over 90% of participants screened positive for depression symptoms, 48% of which were diagnosed. Furthermore, participants reported very low incomes and asset-based wealth. While care is free of charge at primary health care level in South Africa, participants accessing the services may have been better placed to cover travel related costs. The study is robust however in the sense that the diagnosis for depression was made using both the application of a screening tool by a trained interviewer with agreement and diagnosis by an experienced clinician.

The success of UHC efforts are dependent on ensuring guaranteed access to heath for all, on a timely basis whilst ensuring that the use of these services do not result in financial hardship. Financial protection ensures that individuals do not incur catastrophic expenditure as a result of a health problem that subsequently threatens subsistence expenditure and forces a choice between physical and mental health and economic well-being (332, 333). Providing financial protection in turn may result in improved health by avoiding the negative consequences of financial hardship such as through the protection of non-health consumption (primarily food) and increasing the likelihood of treatment completion (334, 335). In addition to specific mention of mental health, the Sustainable Development Goals strongly emphasize the importance of equitable development, equal rights to economic resources and the inclusion of marginalized and vulnerable groups. The limited evidence base regarding individual and household financial hardship and mental health in low- and middle-income settings, underestimates the broader societal impact of MNS disorders and hampers advocacy efforts to ensure households with persons with mental health problems are given attention. Research that examines the household economic costs associated with MNS disorders may help identify individuals in need of financial risk protection.

Conclusion

This study is the first of its kind carried out in South Africa, identifying household economic factors associated with increased depression symptom severity on a continuum; and demonstrating that financial risk protection efforts are likely needed across this continuum. While more research is required to ascertain causality in the bi-directional relationship between economic risk factors and mental health outcomes, these findings lend themselves to the growing recognition that South Africa's ability to achieve UHC will require interventions targeted towards the effective financial protection for households affected by mental health including depression, particularly in light of high-levels of co-morbidities in South Africa. This can be achieved both by routinizing screening for depression and integrating treatment for mental disorders into chronic disease management; expanding eligibility for social protection mechanisms and supporting development efforts towards improving the conditions by which people live.

Chapter 6

Discussion

This chapter draws on the accumulated evidence presented in Chapters two, three, four and five. It aims to synthesize findings to improve our understanding of the key lessons that can be learned from other LMICs toward sustainable financing for mental health; the efficiency of existing mental health investments and inequities in resourcing and access; and the economic burden of inadequate mental health care to households in South Africa. Through this lens, and borrowing from the experiences of other LMICs, recommendations for key priorities for health service and financing reforms towards UHC inclusive of mental health care in South Africa are generated. In addition, this Chapter reflects on the overall findings in terms of their implications for future research and describes the overall limitations of this study.

Introduction

This PhD thesis sought to address a number of key health financing considerations for including mental health among South Africa's health sector transformations by generating new knowledge on the economic burden, impacts and financing strategies for mental health in South Africa. The motivation behind this study was to fill a number of significant information gaps that have thus far limited South Africa's ability to initiate a sustained response to the burden of mental disorders in the country. As outlined in the introductory chapter of this PhD thesis, there have been calls for economic evidence for mental health that are sensitive to local priorities and health system characteristics if mental health scale-up is to be achieved in line with UHC- and SDG-related health sector transformations that are ongoing in many LMICs. This PhD thesis contributes to the burgeoning economic research on mental health systems in LMICs by adopting a mixed-methods approach to generating the economic evidence required to build the case for increased or improved investment in mental health systems and its inclusion in the Universal health coverage (UHC) agenda.

Following Kutzin's (2013) framework of the goals and objectives of UHC that a health financing system can influence (refer to Figure 1, page 14) (42, 97); the discussion of study

findings firstly reflects on the key lessons that can be learned from other LMICs toward sustainable financing for mental health across the three health financing functions of revenue generation, pooling and purchasing, whilst considering South Africa's macro-fiscal and health system context and insights from key stakeholders. The discussion then reflects on South Africa's progress towards UHC for mental health care, specifically in terms of progress towards the specific health system goals and intermediate objectives of UHC (42, 97). Through this lens, and borrowing from the experiences of other LMICs, recommendations for key priorities for health service and financing reforms towards UHC inclusive of mental health care in South Africa are generated.

Overview of findings

Towards UHC for mental health care through sustainable financing reforms across LMICs

Chapter 2 utilized a systematic review to explore how shifts in financing towards national-social- and community-based health insurance models in LMICs have impacted on mental health care utilization. This comes at a time where many LMICs are turning their attention to achieving universal health coverage, financial protection and health systems efficiency in particular through the pursuit of sustainable health financing mechanisms, namely, social and national health insurance (44, 98, 99). South Africa has embraced these commitments through the phased implementation of a National Health Insurance financing system (170). As the South African government moves toward developing and defining the exact mechanisms by which the NHI reform will operate; economic evidence on the exact features of the financing functions of UHC that may improve mental health care utilization can support decision making regarding the explicit entitlements for mental health for all South Africans.

Despite the fact that many countries have been hailed for having almost achieved UHC through health financing reforms toward SHI and NHI, it was surprising that only 18 studies explicitly explored the effects of these specific health financing policies on mental health care utilization across only four LMICs (Chapter 2). The majority of studies included in the systematic review explored the impact of social health insurance mechanisms on mental health care utilization, with South Korea and Thailand among the only study settings to have adopted a national health insurance model. Overall, Chapter 2 demonstrated that enrollment in SHI or NHI schemes increased utilization of mental health care. This was consistent for the length of inpatient

admissions, the number of hospitalizations, outpatient use of rehabilitation services, having ever received treatment for diagnosed schizophrenia and depression, compliance with drug therapies and the prescription of more favorable medications and therapies when compared to the uninsured. The review also found that co-payments or cost-sharing arrangements impacted mental health care utilization; whereby an increase in the proportion of cost-sharing through co-payments resulted in a reduction in mental health utilisation regardless of insurance mechanism.

Acknowledging that the pace at which such significant reforms can be made is largely dependent on the existing characteristics of the health financing system, and a country's social, macro-economic and political context (105); this PhD thesis undertook a complimentary qualitative study, involving a situational analysis of the policy context, strategic needs, barriers and opportunities for sustainable financing for mental health in South Africa, that included a synthesis of key stakeholder consultations (Chapter 3). Synthesizing evidence and perspectives of key stakeholders regarding opportunities for incorporating mental health into ongoing health financing reforms towards UHC offers insight on how a scaled-up response to the impact of MNS disorders can best be paid for in a way that is feasible, fair and appropriate within the fiscal constraints, health policy development and structures of the country.

Revenue Generation

Findings from the review (Chapter 2) demonstrated that a significant challenge to UHC in many LMIC's, including South Africa is the coverage of those who are informally employed and other vulnerable population groups who are too poor to pay contributions. Government subsidization of contributions through general government revenue towards the health insurance fund or policies for premium subsidization or contribution exemptions have been mechanisms adopted by countries on the path towards UHC. Based on the review from Chapter 2, countries including China were providing government subsidies, while South Korea had medical schemes for low income earners that exempt their members from co-payments. Whether this approach is affordable in South Africa is unclear.

South Africa is now facing a quadruple burden of disease made up of HIV/AIDS and TB, maternal and childhood diseases, non-communicable diseases and violence and injuries; all compounded by a shortage of key human resources and necessitating an integrated health system response. After adjusting for population growth, real per capita (uninsured) public-

health expenditure has levelled off since 2012/13 and may actually be decreasing. Furthermore, the legacy of apartheid prevails in the health system, organized along hospi-centric services, concentrated in urban areas and resulting in the poorest and marginalized without access to comprehensive health care.

In the long-term, generating additional revenue for mental health through the explicit inclusion and integration of mental health and the MHPF in NHI implementation plans is essential to ensuring an escalating resource envelope for mental health. Nonetheless, it must be highlighted that Chapter 3 specifically identified that better management of the country's existing mental health resources represents an immediate opportunity for more efficient, equitable and effective use of existing resources; with Chapter 4 identifying and quantifying these inefficiencies and inequities (as discussed hereinafter). The need to ensure the most efficient use of resources for South Africa's health system is tantamount at a time in which the affordability of South Africa's planned NHI is under question. Stakeholders indicated concern with the methods adopted by the government to contain cost, including limiting personnel numbers, centralised tendering for medicines and delays in major capital projects. While the guidelines have called for the inclusion of mental health in a comprehensive package of primary health care services, stakeholders noted that as a result of the country's budget planning process which embodies a medical model of care in addition to the difficulty in conceptualizing developmental models, little resourcing for psychosocial rehabilitation is available, with most resources for mental health care going directly into hospitals. Calls to redistribute existing hospi-centric resources to develop community-based mental health services and to integrate mental health into primary health care, on the condition that the capacity of the primary health care system is increased by training, support and supervision cannot be realized in the absence of capital investments in the development of such services (4, 20, 64). These actions will require earmarked resources, before resource re-distribution between the hospital and community health care levels can be practically achieved.

Currently, the National Government of South Africa uses two types of transfers, conditional grants and unconditional provincial equitable share funds, to send money to Provinces in South Africa. Provincial equitable share allocations allow operational and financial decision-making to be decentralized to the provinces and municipalities. This means that resource allocations to health and to specific health programmes are therefore determined by the Province's own priorities.

While this approach to financing is consistent with global trends of decentralizing expenditure responsibilities, in South Africa, it has contributed to a situation in which increases in resourcing to Provinces, or increases allocated for a specific purpose, do not guarantee use of these resources for their intended purpose, and these provincial decisions often redirect additional resources for health to other needs, both within or outside of the health sector. There is also a trend for provincial budgets to be based on historical budgeting, and this has contributed to huge inequities in the financing and provision of health services across geographic areas in South Africa (as demonstrated in Chapter 4). Provinces are also not required to report on expenditure for specific health programmes paid for through the equitable share transfer, which means it is difficult to assess whether Provincial budget priorities are aligned to National priorities for health.

Given the implicit neglect for mental health in provincial budgets over the past few decades, and the lack of political interest in mental health at lower levels of government, motivating for mental health to be included in the provincial equitable share is unlikely to yield any measurable increases in revenues for mental health, or any measurable improvements in the mental health system. Conditional grants, however, are the National government's primary mechanism for ensuring provinces spend funds on key national priorities – this mechanism has been especially important for the HIV programme in South Africa, in addition to the development of hospital infrastructure. While conditional grants from the National Department of Health make up only 20% of Provincial health department budgets, they play a very important role in provincial health care delivery at present; they are used by the National government to protect special health programmes or start up new programmes. The benefit of the conditional grant is that Provinces are required to submit detailed business plans before these transfers are made, outlining to the National government how these funds will be used – and Provinces are required to report progress against these plans making expenditure tracking and impact transparent and directly linked to a specific national priority. In Chapter 3, the short-term recommendation for the creation of a mental health conditional grant would ensure a stable funding source is in place immediately to support capital investments to develop community-based mental health services and to integrate mental health into primary health care, through improving the capacity of the primary health care system by training, support and supervision. This commitment over the next several years will ensure that Provincial departments submit detailed business plans for the allocation of funds to various mental health systems activities, aligned with performance targets. This mechanism will require that

Provinces and local governments report on their expenditure against specific mental health targets (i.e. specific enough for funds not to be appropriated to other programmatic areas).

Further, a conditional grant for mental health over several years will ensure the Provinces become bound to delivering on the MHPF, and has the potential to sensitize Provincial and district health authorities to the importance of mental health, allowing mental health to be given parity with other health programmes ahead of the full implementation of the NHI. Without an initial conditional grant to explicitly support these activities, there is likely to be a continuation of the Provincial exclusion of mental health service investments outside of the specialized hospital level – regardless of National policies which mandate these activities and particularly due to the slowing of the health budget growth at present.

The health financing function of revenue generation is particularly relevant to the recommendations of ensuring earmarked funding for mental health is in place in the short-term through the submission of costed budget bids for a conditional grant for mental health. However, a key aspect of ensuring sustainable financing for mental health (and avoiding disease-specific fragmentation in the long-term) is the explicit integration of mental health in the ongoing NHI efforts. Chapter 3 ultimately recommended that mental health is included in general health resource development focussed on raising public funds through the implementation of a National Health Insurance system, by expanding the NHI benefit package to explicitly include comprehensive mental health services at all levels of the health system, with priority given to community-based mental health services. As mentioned, the National Health Insurance scheme aims to provide health care for all, irrespective of household ability to pay and income band, and will be mandatory for all South Africans. Complete implementation of the NHI is set for 2025 with funding via general tax revenue, including shifting funds from the provincial equitable share and conditional grants; the reallocation of funding for medical tax credits that are currently paid to medical schemes, payroll taxes (employer and employee), surcharges on taxable income and possible increased VAT revenues (125, 127, 130, 136, 141, 143, 144).

This policy envisages greater access and quality of care for all South Africans, however this commitment also embodies a need for health expenditure to increase in the face of fiscal constraint (141). In October 2019, the Medium-Term Budget Policy Statement tabled in

Parliament stated that the original NHI costs were projected to increase public health spending from 4% to 6% of GDP over 15 years, and that this is no longer affordable.

It is critical that dialogue between the Departments of Health and Departments of Finance, as identified from Chapter 3, support the prioritization of the health sector in government budget allocations; though already, the Departments of Health and Education consume close to 70% of the budget. Given that Provincial implementation and resource allocation decisions determine how resources flow into the health service, improving technical capacity and mental health systems advocacy among these authorities is an imperative complementary activity. Evidence of improved and more efficient spending on health services could contribute to a stronger case for greater investment in the health system. While there is a lack of consensus on the level of funding required to progress towards UHC, evidence has shown that when countries rely predominantly on private sources, many households forgo care or experience financial hardship (97). The evidence has shown however, that even at low levels of public spending, countries can make significant steps towards UHC (97). Generating additional revenue for mental health through the NHI is essential to ensuring an escalating resource envelope for mental health in the long-term (Chapter 3); and also serves as a promising option to increasing mental health care utilization in the country (Chapter 2). The resource envelope should factor in affordability considerations for the basket of mental health entitlements to be provided under the NHI.

Pooling

Currently South Africa's health system is characterized by highly fragmented risk pools, with the formally employed making contributions to multiple medical aid schemes. The lack of large risk pools limits the potential of taking advantage of the economies of scale through improved purchasing power and reduced administrative costs, as well as limiting cross-subsidization from low-risk to high-risk individuals. Chapter 2 revealed that efforts towards the establishment of social-health insurance and community-based schemes for the informally employed have been hampered by adverse selection, poor regulation and inadequate administrative capacity [54]. While such insurance schemes for poor income or rural households in countries such as China and Thailand have contributed to increased health access, the often smaller benefit package, geographical fragmentation of services and reduced risk pooling associated with these

schemes challenge the attainment of equity in service provision, and therefore the Universal Health Coverage.

Despite Thailand being hailed as having achieved UHC, disparities in access to mental health care exist across Thailand's three different insurance schemes (214). In China, 95% are reported to have basic insurance under one of their three major schemes, only the UEBMI requires mandatory contributions, while the other two rely on government subsidies which account for 75-85% of the premiums (215). China's rural populations are particularly affected as their insurance scheme does not cover services outside their place of residence in urban cities where the large psychiatric hospitals are located. South Korea's health system reflects a combination of a National Health Insurance mechanism in place for 97% of the population funded through income tax and two other public assistance schemes for low-income families, with Medical Aid beneficiaries reporting poorer health outcomes including a lower life expectancy (215). The review therefore emphasizes that as long as multiple risk pools exist, particularly with different benefit packages, equity in access, and therefore UHC, cannot be achieved. Therefore, in the context of findings from Chapter 2, indicating that fragmentation in risk pools reduces mental health care utilization, a single-pool as envisioned by South Africa's NHI plans is promising.

Purchasing

The NHI White paper notes that South Africa's purchasing mechanisms reflect a relatively passive relationship between purchasers and service providers (336). Furthermore, the current mechanisms through which providers are paid both within the public and private sector are inefficient. Line-item budgeting in the public sector does not introduce incentives for efficiency or for providing good quality care. Adopting a strategic purchasing approach would entail identifying the interventions or services to be purchased, considering population needs, national health priorities and cost-effectiveness, choosing service providers according to considerations of service quality, efficiency and equity, and determining the mechanisms to reimburse providers (115).

While the NHI White paper commits to reorienting the currently passive purchasing to adopt strategic purchasing under the NHI and the recently released NHI Bill outlines provider reimbursement strategies being considered for hospitals to include Global Budgets of Diagnosis Related Groups and capitation methods for PHC services; there is a lack of clarity on the quality

assurance mechanisms that will be put in place beyond the Office of Health Standards Compliance process and processes to contract facilities to be providers within NHI.. The Bill outlines that only accredited facilities will be contracted to provide services, an effort towards improving the quality of service provision, however the limited resources and capacity in the public sector may result in a heavy reliance on private care for the provision of services. Should private care be largely drawn on, there is a lack of detail on how service delivery will be regulated to ensure a public health approach. As the South African government moves toward developing the exact mechanisms by which the NHI Fund will operate and pay providers, a key recommendation of Chapter 3 is that the government includes results-based financing as a key feature of the NHI provider payment mechanism and ensures that performance targets for mental health specifically are included and therefore incentivised. This was consistent with the findings of the systematic review (Chapter 2)

Results-based financing can improve efficiency by offering higher remuneration for services performed at primary health care centres, particularly for early and continued community support and referrals for severe mental disorders, which will reduce the burden on specialized hospital-based services. Results based financing also has the capacity to improve the quality of care, and may catalyse a reduction in the stigma that mental health care users face in accessing care, particularly at lower levels of the health care system. It is however important to note that performance-based financing can be difficult to design and implement correctly and requires some pre-requisite conditions for its success.

The inclusion of an explicit package of benefits is critical to ensure product transparency and homogeneity as well as adequate consumer information (116, 337). A key requirement of countries progressing towards UHC is that the services that are made available are in line with the budget available to finance them; this is the key element to ensuring a sustainable UHC system, with the disconnect between aspirational health plans and available funds as the most common failing of existing benefit plans in LMICs (116, 337). The distinction between the *de jure* or "all necessary services" and the *de facto* set of treatments, those actually received, are a product of constraints related to budget, infrastructure, human resources, geography, culture amidst others (116, 337). Explicitly defining the benefits package, with the inclusion of mental health services, allows citizens to be made aware of the benefits afforded to them and for the payers to be able to assess resource requirements to ensure provision (116, 337). Explicit benefit entitlements, particularly for mental health users undergoing a range of cultural and

financial barriers to care, including significant stigma from both the community and care providers, reduces the potential for care to be determined by clinical professionals resulting in arbitrary variations in access.

Being explicit allows for detailed monitoring of expenditure to ensure that limited resources are being spent efficiently and resource allocation decisions take into consideration regional funding allocations to improve equity. Further, explicit benefit entitlements for mental health care can facilitate adherence to budget limits, reduces the potential for out of pocket payments by patients (thereby ensuring financial protection), empowers poor and marginalized groups.

Predominantly, papers included in the review in Chapter 2 focussed their analysis on the impact of health insurance enrolment on inpatient care; with cost-sharing proportions generally lower (i.e. in settings where cost-sharing mechanisms are in place, mental health care users pay a lower proportion of the overall cost for inpatient care when compared to outpatient care). These findings point to the limited inclusion of community-based mental health care in the entitlements to insurance beneficiaries among LMICs adopting social or national health insurance financing at present. Alternatively, mental health benefits may be ambiguously provided through an umbrella of primary health care services. A lack of provider regulation and mechanisms to mitigate against perverse prescribing patterns has led to the provision of medication to patients that were not aligned to global recommendations, as found in China. The explicit inclusion of mental health within the benefits package, including access to integrated outpatient primary health care level services and referral to inpatient or specialized care is critical if we are to see any reductions in mental health treatment gaps in South Africa.

Progress towards UHC for mental health care in South Africa

Inequitable resource distribution and inefficiency of resource use

This PhD thesis examined South Africa's progress towards the intermediate UHC objectives of equitable resource distribution and efficiency of resource use through an empirical costing study that was conducted to quantify public health system expenditure on mental health services, by service-level and Province. The thesis also set out to document and evaluate the resources and constraints of the mental health system in South Africa, in order to inform a rational approach to planning effectively for mental health service scale-up (Chapter 4*)*. The costing study was conceived based on the findings emanating from Chapter 3 after review of

the country's policy context and strategic barriers and opportunities for sustainable mental health financing. Key stakeholder consultations identified the need for technical expertise to systematically cost the existing mental health service and evaluate the degree to which aspects of the MHPF and MHCA have been implemented (Chapter 3).

As stated earlier, the decentralized fiscal system in South Africa is such that mental health-specific funding within the integrated health sector, in the absence of a programme-specific conditional grant, cannot be tracked beyond the specialized-hospital level (Chapter 3). Until this study, the country therefore did not have nationally-representative, empirical data on the current state of mental health expenditure, expenditure patterns for the determination of equity and efficiency in mental health service delivery, service coverage estimates, and the current state of critical mental health system inputs including human resources, infrastructure and medicines availability. Without this information at hand, South Africa, like many LMICs, has faced difficulties in translating global calls for the scale-up of mental health care into well-resourced implementation plans (43, 64, 72, 81, 169). These results have therefore provided a quantitative examination of the resource envelope for mental health services in South Africa for which service scale-up must be built to fulfil the commitments of the MHPF and ultimately the goals of UHC.

The analysis illuminated significant inequities and inefficiencies in the health system for mental health in South Africa. Areas of concern exist along a number of health system inputs including the distribution of human, medication and infrastructural resources across the country. Furthermore, the distribution in observed costs– or more accurately, expenditures, across Provinces, service-levels, between inpatient and outpatient care and between services for children and adolescents compared to adults, highlight an inefficiency in spending which further contributes to inequitable access to mental health care. The cost analysis (Chapter 4) revealed that despite alignment to the lower end of international benchmarks of mental health spending targets, whereby South Africa is spending an estimated 5% of its overall public health expenditure on mental health, the treatment gap for MNS disorders has been crudely estimated at 92%; this means that fewer than 1 in 10 uninsured people living with an MNS disorder in South Africa receive some form of inpatient or outpatient care they need. Heated debate around the affordability of the NHI within a fiscally constrained environment coupled with competing interests related to the basket of services to be funded, necessitates that the health system must first reorient itself towards efficient expenditure patterns. Consistent with findings from the

situational analysis, these findings point to a need for the country to focus on *"how does one make better use of resources"* rather than an explicit focus on *"how do we get more resources"* (Chapter 3).

There are huge disparities between provinces in the allocation of mental health resources. Across the health system, provincial spending on mental health per uninsured South African ranged from USD 4.3 to USD 22.6 per capita uninsured, with mental health spending as a share of overall health sector spending ranging from 2.1% to 7.7% of Provincial health budgets; this speaks to significant inequities across South Africa's nine Provinces. Similarly, in Chapter 3, stakeholders cited Provincial implementation of the MHCA and MHPF as representing a significant bottleneck to increased resourcing for mental health; Provinces are struggling to actively fund existing services and are experiencing a lack of technical capacity to move away from historical budgeting for mental health by translating National policies into costed Provincial implementation plans. Limited technical capacity and guidance has been noted in other LMIC settings adopting decentralized management approaches. In Kenya, the devolution of health and other services to sub-national (county) governments resulted in decision-making and prioritization for health being interfered with by political and power interests. This resulted in the neglect of community health services that focus on health promotion, disease prevention and referral systems in favour of curative health services within the prioritization process (338) .

In Chapter 4, Provinces also reported significant inequities with regards to human resource availability, with the availability of psychiatrists ranging from 0.08 to 0.89 per 100,000, including a complete lack of child psychiatrists in most Provinces. Mental health workforce targets for psychiatrists for the southern sub-Saharan region suggest that 1.9 psychiatrists per 100,000 will be needed by 2050 (284). Recommendations for strengthening the mental health system towards sustainable mental health financing in South Africa (Chapter 3) also recognized the critical shortages in the absolute number of mental health specialists in the public sector. Strategies to mitigate mental health human resource gaps were identified as: engaging with private providers through contracting arrangements to regulate service delivery and ensure they commit to the delivery of therapies based on a public health approach, and; the acknowledgment that particularly in rural settings, a Medical Officer or Nurse with a Diploma or an interest in psychiatry may be the only available option to address mental health human resource shortages in the short-term (Chapter 3). There is a consequent need to advocate for

increased task-shifting approaches that support nurse-initiated psychotropic medication, basic psychosocial counselling and routine mental health screening delivered in primary health care settings. Recent studies have demonstrated that mental health care delivered by primary care workers can effectively reduce symptoms for priority MNS disorders among patients with chronic conditions, improve clinical and functioning outcomes, and reduce the treatment gap in LMIC contexts, including South Africa (78-80).

Despite children and adolescents forming nearly 40% of the South African population, less than 10% of outpatient and inpatient mental health expenditure, respectively, was attributed to this demographic. This is particularly concerning in light of the fact that most mental disorders have their onset before the age of 18 years (285, 286). The weaknesses in the provision of care for children and adolescents were also revealed in Chapter 3; the Integrated School Health Policy, a key aspect of the primary health care re-engineering strategy towards the NHI, has neglected mental health services despite the identification of, and referrals for, learners with mental illness, substance-use disorders, cognitive and/or related developmental impairment outlined explicitly in the scope of services provided by the ISHP (339, 340). Across the ten NHI pilot sites in South Africa, the ISHP in 2015 had not yet reported a single learner with an MNS disorder. This reflects a lack of recognition for child and adolescent mental health in the current NHI implementation strategies at the primary health care level (339, 340). Further, with only three Provinces reporting the availability of child psychiatrists, addressing the inequitable access to mental health services for children and adolescents must be considered a national priority. The mental health of those aged between 10 and 19 years old profoundly impacts their future health, social and economic circumstances in adulthood, particularly in contexts of poverty and vulnerability (285, 286). Improving and protecting adolescent mental health requires targeted prevention efforts, early detection, through routinized mental health screening, and early treatment both with and without pharmacological intervention (286).

Further granular analysis of the expenditure patterns revealed considerable inefficiencies in expenditure as a result of a hospi-centric model of care with inpatient care consuming close to 90% of the overall mental health spending (Chapter 4). Approximately 50% of expenditure occurs at specialised hospital-level, a product of substantially longer lengths of inpatient stays at this level of care and in stark contrast to primary level mental health care accounting for only 7.9% of total mental health expenditure.

Also worth noting is the finding that only 11.7% of overall mental health expenditure occurred at the district hospital-level. As revealed in Chapter 3, both the MHPF and the MHCA (2002) explicitly mandate the role of the district hospital as the first point of inpatient contact for mental health care users (MHCUs), and assigns the responsibility of ensuring that MHCUs are assessed and provided with ongoing referrals to more specialist treatment within a 72-hour period (167, 248, 249). Presently however, the majority of district hospitals in the country are not equipped with the infrastructure required to safely admit MHCUs for a 72-hour observation, nor are they equipped with adequate room space for group therapy and self-help groups or workshop space for occupational therapy, as mandated by the MHCA (167, 250).

Chapter 4 set out to assess the degree to which designated district hospitals across the country have met the infrastructural criteria outlined by the MHCA (2002) and accompanying guidelines for the admission of mental health patients without consent for 72-hour observation (270, 281). The chapter demonstrated discordance between the MHCA and MHPF guidelines with regards to district hospital infrastructure as it relates to the separation of mental health users from general wards, as well as for adolescent and adults and according to gender. Further, in contradiction to the MHCA, the average length of inpatient admission was considerably longer than recommended, suggesting either a lack of appropriate provision of referrals to more specialist levels of care when needed or a lack of required personnel to undertake these assessments.

Furthermore, average readmission rates demonstrated that on average just over one fifth of mental health care users discharged from South African hospitals are readmitted within three months of a previous discharge, consuming almost a quarter of the overall mental health spend, a share 250 times the current mental health expenditure at the primary health care level. This study builds on previous estimates available of readmission rates which had only been estimated for the specialized psychiatric hospital service level (157, 158); demonstrating that the highest readmission rates were observed at the regional hospital level (29.9%) and tertiary hospitals (29.3%); whilst readmission rates at the specialized psychiatric level were lower than previous estimates (which had suggested approximately two thirds of patients were readmitted within three months) (Chapter 3), finding that the readmission rate was 25.5% at this level of care (Chapter 4).

It must be recognized that most readmissions are as a result of systemic failures in transition from hospitals to the next source of care within the community (288). The failure to provide patients with adequate community-based care following discharge therefore represents a key inefficiency that could yield significant cost-savings if adequately addressed both through the development of community-based care and through measures to improve adherence, retention in care and prevention of relapse. In the 2001 World Health Report, the WHO called for a shift in focus from psychiatric hospitals and long-stay institutions to community care, arguing that community based care contributes to an improved quality of life, better respects human rights and that it is more cost–effective than institutional treatment (341). It is critical to bear in mind that deinstitutionalization extends beyond the administrative discharge of patients and should ensure the implementation of a network of alternatives outside of psychiatric institutions supported by adequate funding and human resources (342). If this does not take place, there stands a risk that persons living with mental illness may have even less access to mental health services upon discharge (342). This trend was tragically demonstrated during what is known as the Life Esidimeni tragedy in South Africa in 2016 (discussed in detail later in this chapter).

Lack of Financial Protection

This PhD thesis enabled the examination of South Africa's progress towards the overall UHC goal of financial protection by exploring potential associations between depression symptom severity and a range of household economic outcomes to understand how depression symptoms and household economic welfare may be related, based on insights from a survey conducted in the North West province of South Africa. The household survey study (Chapter 5) explored the economic burden associated with depression symptoms at the level of the household by severity of symptoms among households that are also suffering the impacts of chronic physical health conditions. In this way, this PhD thesis adds to the existing literature that has predominantly focused on individual-level economic costs of depression in those with a diagnosis of major depression and without comorbid conditions (294). Household-level data are important when examining the economic impact of MNS disorders for a number of reasons: economic shocks tend to affect the household and are often measured at the household-level; opportunity costs associated with MNS disorders such as additional caregiver burden can be more accurately captured by examining households; decisions about treatment seeking and coping with financial distress are often made at the household level (295); households often reflect

intergenerational transmission of poverty; and erosion of assets over time is often felt at the household level (45).

Chapter 5 found high rates of depression symptoms among primary health clinic attenders, who were predominantly attending the sampled clinics for the treatment of hypertension and HIV, with almost half with a clinic diagnosis. It is important to note that systematic screening of PHC attendees does not take place in South African facilities and represents a significant lost opportunity to identifying those in need of mental health services. These findings highlight the need to integrate mental health screening and treatment into primary health care for other chronic physical health conditions (343). In terms of the economic burden of depressive symptoms; Chapter 5 found that as depression symptom severity affecting households increased, there appeared to be lower financial resources with which to sustain their needs. Living conditions and increasing household capacity to pay were independently associated with less severe depression symptoms, while the purchasing of goods on credit, typically characterized by exorbitant interest rates, was associated with worse depression symptoms.

Although drawing inferences regarding causality was limited by the cross-sectional study design, particularly around the social drift and social causation pathways, a key issue for many LMICs, including South Africa, is the low-priority afforded to mental health. Demonstrating that households affected by depression symptoms constitute an economically vulnerable group that warrant financial protection efforts provides more political momentum to the prioritization of common mental disorders– recognizing that depression is to be the highest contributor to DALYs in middle-income countries by 2030. As a result, there is an urgent and ongoing need for high quality population-based studies that specifically address causality between socioeconomic and mental health status of households of persons with mental health problems. Earlier intervention, through integrated primary health care for sub-threshold depression symptoms, and investments in the conditions by which people live, could mitigate these economic consequences that are being felt at the household-level. A large body of evidence currently exists globally in support of the social drift hypothesis, demonstrating that providing mental health care improves social and economic functioning, and reduces caregiver burden and health care payments (26). Further, providing financial support through targeted social grants for those with sub-threshold depression symptoms could also address the lack of financial protection for those affected by depression symptoms in addition to chronic physical health complaints. The need for evidence quantifying the magnitude of the economic impact

of illness to individuals and households in South Africa is critical to support the South African government's endorsement of the Sustainable Development Goals (SDGs), with plans to roll out the NHI specifically mandated to ensure the protection of vulnerable households against the catastrophic financial and economic consequences of illness (90).

Lack of transparency and accountability

Whilst not a direct objective of this PhD thesis, findings from Chapters 3, 4 and 5 enabled inferences to be made regarding South Africa's progress towards the UHC intermediate objectives of transparency and accountability for mental health care. The Sustainable Development Goals (SDGs) have highlight the integral role of transparency and accountability across all sectors, with SDG 16 outlining the need for: (i) promoting the rule of law; (ii) preventing corrupt practices; (iii) developing accountable and transparent institutions; (iv) ensuring responsive, inclusive and participatory decision-making processes; and (v) ensuring public access to information (90). There are various frameworks that conceptualize accountability within and beyond the health sector, although a common thread exists in relation to its ultimate purpose; Brinkerhoff (2004) makes the distinction between financial, performance and political accountability (344), relating to the utilization of financial resources, the monitoring of performance targets, and mechanisms in place to ensure that governments deliver on their promises, gain public trust, and respond to societal needs (344). Such actions therefore would include strong regulatory mechanisms to be put in place for both the public and private sector in South Africa, the building of decentralized management and leadership capacity, engagement with both other departments and non-state partners, the empowerment of communities and the fostering of open access to information through an effective health information system.

In the context of UHC, transparency and accountability ensures that individuals are both aware of their health care entitlements and empowered to make use of services, with the health system being able to successfully deliver care(97). In addition to reducing the gap between the need for services and their use (one of the overall UHC goals); transparency can also contribute to improving financial protection (a second goal of UHC) (42) by avoiding informal payments for health care and provider driven supply. Indeed, making individuals aware of their entitlements to mental health care is a key concern in LMICs. With stigma, cultural norms and alternative explanatory models commonly influencing health seeking behaviour for mental health care;

transparency can only be assured if there are concerted efforts to inform the population about mental health, the contents of the MHPF and the Norms and Standards that exist for mental health service delivery in the country. In Chapter 3, stakeholders highlighted the need for empowerment of mental health care users, although Chapter 4 revealed a lack of dedicated budgets towards mental health promotion and prevention campaigns.

The South African government has committed itself to transforming mental health services and ensuring that "quality mental health services are accessible, equitable, comprehensive and are integrated at all levels of the health system" (167). The MHPF outlines key activities required to address South Africa's mental health burden, including the social determinants of mental illness and its associated comorbidities. The mental health system constraints evaluated in this PhD thesis speaks to a lack of implementation of the MHPF and the limited accountability mechanisms in place to ensure that Provinces deliver on their mandate (167, 168). This stems from both a weak health information system to understand the true impact of MNS disorders, patterns of mental health service access, and health system inputs including human resources for mental health, infrastructure and drug availability (10, 96, 175, 272, 273); as well as a lack of knowledge of what district health services are required to deliver because there are no measurable deliverables associated with the MHPF, thus making it a very low priority (Chapter 3). A number of ongoing national initiatives can be leveraged to strengthen information systems for mental health in South Africa including the roll out of the Health Patient Registration System (HPRS), an electronic health record system as part of the NHI plans (345). The purpose of the HPRS is to serve as an online registry of all patients using healthcare services to be accessed at facilities to provide health workers with patients' demographic information and their most up-to-date health records (345, 346). By the end of 2017/2018, almost 3000 PHC facilities were using the HPRS, with approximately 20 million people registered on the system (346). However, challenges have hindered its ability to contribute to improved decision-making and referrals thus far as the first stage of implementation was focused largely on setting-up user profiles (346). Populating the system with routine mental health information, including referrals and treatment uptake will improve patient tracking and, in turn, improved decision-making.

Further, until this time, estimates which quantified mental health expenditure and resources in the country were not available, speaking to a lack of accountability to these commitments. Correspondingly, improving accountability of health financing agencies for the use of public

resources is likely to translate to better use of resources (42). This comes at a time where despite the World Health Organization (WHO) Mental Health Atlas (MHA) initiative to monitor global progress towards the global mental health goals outlined in the SDGs (90-92) approximately 60% of countries were not able to report total government expenditure on mental health or service coverage estimates (93).

There has been no greater example of the lack of accountability than the Life Esidimeni tragedy (347). In 2016, the South African health system came under intense worldwide scrutiny as a result of what has now been termed the *Life Esidimeni disaster*, which occurred after the Gauteng Department of Health (GDOH) effected the decision to discharge an estimated 1900 involuntary longer-term inpatients, without their families' knowledge, from Life Health Esidimeni (LHE) Hospital, to a number of uncertified NGOs and other private locations across the province (348). According to the GDOH, "the criteria used to select NGOs was that they need to have water and lights, sufficient place to sleep for every patient, catering and recreational facilities, space for medication, care workers with a ratio of 1:10" (349). The NGOs which received these patients were under resourced, unlicensed, under-staffed and patients suffered significant human rights abuses, including not being fed, cleaned or cared for (350). As a result, 144 mentally ill patients died between the 23rd of March and 19th of December 2016 in the Gauteng Province and many more faced significant loss of dignity, bringing embarrassment to the South African health care system (350).

The Life Esidimeni tragedy has brought to light the "systemic flaws in mental health service planning and implementation in South Africa" (347). The Human Rights Commission report following the Life Esidimeni crisis noted that Provincial departments had not allocated sufficient resources for the provision of mental health services and lacked costed and budgeted strategic plans (351). Many believe that this tragedy has been a catalyst for a renewed sense of political will for mental health reform. At the same time, the Life Esidimeni arbitration hearings also pointed to a wider culture of corruption and a dissolution of accountability within the health sector, with each of the senior officials who were found to be responsible, placing blame on others. According to the Global Corruption Barometer, medical and health services were perceived as corrupt or extremely corrupt by 55% of surveyed respondents in South Africa (352). Although the new President has committed to addressing corruption in the public service, many South Africans believe that government corruption is undermining the Department of Health's ability to deliver equity – and theft from state-owned enterprises and

questionable government tenders are estimated to run over R100 billion – approximately 8.5% of government spending according to the former finance minister Pravin Gordhan (142).

Quality

Similarly, whilst not a direct objective of this PhD thesis, findings from Chapters 3, 4 and 5 enabled inferences to be made regarding South Africa's progress towards the overall UHC goal of ensuring the mental health care system is delivering mental health care of sufficient quality. Whilst it is difficult to obtain accurate and routinely available information on quality of care (97), the Institute of Medicine (IOM) qualifies that quality health services should be effective; efficient; equitable; patient centered; safe; and timely (353). South Africa's district health information system lacks patient outcome related indicators for the assessment of quality, nor was there data on patient perceptions. Quality of mental health care can be measured both through indicators around the structure or organization of care, evidence around the processes of care, and ultimately, patient-level mental health care outcomes (354). Organizational indicators may include availability of personnel, training received, quality improvement infrastructure, information technologies, medication supply and guidelines available for providing care (354). Process indicators should include services provided such as screening, receipt of psychotherapy and medicines, and outpatient follow up following discharge while patient outcomes should include functioning and symptom assessments (354).

Input related indicators derived through Chapter 4's assessment regarding the routine availability of the full range of essential drugs in health facilities as well as the availability of mental health staff speaks to poor quality of mental health service provision. A lack of consistency existed across levels of care and across provinces related to the reporting of drugs not routinely available, in contradiction of the Standard Treatment Guidelines. While reasons for stock outs were not ascertained, health workers were often not aware of the recommendations in the guidelines. The most frequently stocked out drugs were those prescribed for a range of severe conditions including bi-polar disorder, psychosis, epilepsy and dementia, as well as those for the treatment of child and adolescent developmental and behavioural-conduct disorders. In addition to the inequitable distribution of key health personnel such as mental health nurse specialists, child psychologists and psychiatrists, the study reflected a critical shortage of auxiliary workers, including social workers and occupational therapists key for patient-centered rehabilitative care and support services for

mental health users. In 2016, a non-specialist programme delivered by auxiliary social workers for psychosocial rehabilitation for service users with schizophrenia in a low-resource South African setting was found to improve self-esteem, increase illness knowledge, reduce risk taking, reduce social isolation and improve pro-social behavior, improve financial management and engagement in income generation activities as well as improve acceptance by the community (355). These cadres of workers are therefore not only essential for reducing the treatment gap, but also serve to improve patient-centered care.

Chapter 4 illuminated considerable inefficiencies in resource allocations for mental health coupled with inequitable access to care, thereby addressing less than 10% of the mental health needs of the South African population. Mental health care in South Africa must be reoriented to be responsive to population needs and allow for the participation of mental health users and their families as a means of improving service quality. Increased emphasis on prevention and promotion campaigns through allocated funding will improve patient health literacy and capacity for health decision-making, whilst self-efficacy and peer-support programmes would facilitate the empowerment of mental health users.

Recommendations for policy

Recommendations for policy and health-service reforms towards UHC inclusive of mental health care in South Africa are summarized by the following proposals:

1. Administration and governance arrangements for mental health must be improved; these actions should include exploring mechanisms to improve accountability at the district management and provincial health authority levels; improving national-provincial-district MHPF dissemination channels; and the specification of key deliverables and updated targets linked to the MHPF, with routine monitoring systems in place. In addition, these efforts must be complimented by building capacity for provinces and district health management to develop provincial and district mental healthcare plans.

2. Mental health indicators for measuring service coverage (by mental health condition), retention in care, treatment success, and financial, human, infrastructural and medication resource availability by Province and nationally must be routinized.

3. Better management of the country's existing mental health resources can be harnessed by addressing the existing mental health system inefficiencies and inequities including:
    a. Advocating for the increased decentralization of health system resources to primary and community-level mental health care and continuity of care to address high rates of readmission and hospi-centric services.
    b. Addressing the human resource shortages through the adoption of integrated primary mental health care training programs for generalists (nurses and PHC doctors); with mechanisms to contract private providers put in place that assure strategic purchasing, promoting quality and efficiency in mental health care delivery. Innovations for the provision of specialist supervision for generalists delivering mental health care in primary care settings must be investigated.
    c. Ensuring Provincial budgetary allocations reflect a recognition for the burden of disease and rural/urban disparities to achieve parity in provincial allocations across all provinces.

4. Mental health prevention and promotion campaigns need to be adopted Nationally. As a priority, such efforts should focus on: empowerment of service users, mental health literacy, opportunities for care, and; specifically targeted school-based campaigns for children and adolescents.

5. Development of a budget bid to support the implementation of a conditional grant for mental health services as a short-term solution to ensure earmarked funding for capital investments including:
    a. improving the outdated and dilapidated hospital infrastructure for mental health that exists at all hospital levels including the attachment of dedicated mental health units to regional and district hospitals to provide for emergency admissions, 72-hour assessments, care, treatment and rehabilitation of voluntary, assisted and involuntary mental health care users;
    b. capital projects to establish community-based residential and outpatient options for severe mental disorder(s) including rehabilitation and occupational therapy

c. rolling out training for task-shifted mental health interventions to be delivered at the primary care level;
d. integration of primary health care for depression/anxiety with other chronic conditions and maternal, child and infant health programs;
e. addressing medication supply shortages; and
f. amplified training for all cadres of mental health professionals and specialists.

6. The explicit definition of the health benefits package, in the context of the progressive realization of a National Health Insurance system in South Africa is paramount. This will require technical expertise to determine the costs and returns of prioritized interventions, and should be developed in collaboration with clinicians, district and provincial health management structures and service-user groups. These findings must be incorporated into the development of a defined list of specific entitlements for mental health care users, particularly for outpatient and psychosocial services delivered in community-care settings.

Limitations

Although the limitations of each sub-study have been discussed in detail in each chapter, there are a number of high-level limitations that should be considered in interpreting the overall findings of this PhD.

1. Firstly, this study as a whole was based in the South African context; outside of the systematic review, the economic costs, impacts and financing strategies were not explicitly contrasted to other settings, limiting the generalizability of these findings to other LMICs. This PhD thesis adopts the perspective that whilst the findings may not be generalizable to other LMIC settings, the mixed-methods approach adopted by this thesis, sensitive to local contexts, can be applied across all LMICs. The methodology allows for the generation of clear economic evidence to build the case for increased or improved investment in mental health systems and demonstrates the need for the inclusion of mental health in the UHC agenda

2. Secondly, each of the sub-studies linked to each objective were cross-sectional in nature limiting this PhD's ability to draw conclusions regarding causality or trends over time.

3. Thirdly, although inferences regarding quality of care and the levels of transparency and accountability for mental health care in South Africa were made based on the results of Chapters 3, 4 and 5; these aspects of South Africa's progress towards UHC were not directly examined by this PhD.

4. Fourthly, this study did not assess patient outcomes in relation to improved access to mental health care or in relation to the inequitable and inefficient use of resources at present; nor did the study capture the diverse perspectives and experiences of mental health care users themselves.

5. Fifthly, only the economic burden of depression symptoms was evaluated in this study; the true economic impact of MNS disorders to households, inclusive of those that are considered more disabling in nature (such as schizophrenia and bipolar mood disorder), were not estimated. Evidence on the economic burden of all MNS disorders would likely demonstrate a far greater economic burden to households, thus making a stronger case for inclusion of these households in financial protection efforts.

6. Whilst this thesis examined the baseline for a scaled-up response to the impact of MNS disorders in South Africa, in relation to progress towards UHC for mental health care; and generated financing and service-level recommendations for sustainable financing for mental health care in the country; this thesis did not empirically examine or estimate to what degree investments in mental health care can result in returns to the South African economy, regained healthy life years and cost-savings based on local priorities and health system characteristics.

7. Further, as a result of the infancy of the field of sustainable financing for mental health care in LMICs; very few lessons could be gathered in relation to structuring health financing reforms to revenue generation, pooling and purchasing in a way that will improve mental health utilization in an efficient and comprehensive way.

8. Although this PhD thesis presents the baseline for reform, and highlights opportunities for sustainable financing for a scaled-up response to mental health care in South Africa; it must be recognized that this evidence does not take into account competing demands on the health sector.

9. Whilst aspects of this PhD thesis underlined the importance of intersectoral action as a key opportunity for improved mental health systems functioning and resourcing; intersectoral perspectives and services were not captured.

10. Finally, this PhD thesis only undertook its analyses on the public health sector of South Africa; and focused on populations accessing the public sector (the uninsured). Given that the private sector will feature heavily in the NHI purchasing models; an important limitation of this study is that the private health sector resources and populations have not been represented.

Areas for future research

In the light of these limitations, there are several areas which could be considered for future research:

1. There is a need for increased documentation on the impact of the specific aspects of the health financing functions of UHC on utilization, coverage and patient outcomes for mental health care in LMICs.

2. There is a need for evidence on the household-level economic burden of all MNS disorders to demonstrate that these groups warrant explicit inclusion in financial protection efforts.

3. There is an urgent need for population-based prevalence studies for MNS disorders in the country; particularly in light of the health information needs for the definition, provision and monitoring of mental health care under a national health insurance system.

4. Longitudinal studies that track the prevalence and burden of mental disorders in relation to economic outcomes at individual and household level, as well as the mental health resource availability and the degree of policy implementation over time must be considered for future research.

5. Future research must also focus on generating evidence on the quality of mental health care being delivered across service-levels and Provinces in South Africa

6. Further, evidence on the economic benefits of access to appropriate mental health care to households in South Africa must be generated.

7. An additional gap in the research that must be addressed includes demonstrating the societal level cost-savings associated with investing in mental health care across multiple sectors.

8. Further, there is an urgent need for research regarding innovations for mental health promotion and prevention for children and adolescents at the population level, across LMICs.

9. Finally, an investment case is required to provide empirical evidence on the costs and benefits of investing in mental health based on the existing constraints identified in our mental health system, the most cost-effective mix of interventions to address these constraints, and the broader health-sector transformations that are ongoing in the country. Intensified dialogue regarding investment choices and priority setting across our integrated health system is a key aspect of the development of such a case.

Chapter 7

Conclusion

This PhD thesis sought to address a number of key health financing considerations for including mental health among South Africa's health sector transformations by generating new knowledge on the economic costs, impacts and financing strategies for mental health in South Africa. The thesis has quantified the economic burden of depression symptoms to households through a household survey, and the inefficiencies of existing mental health investments and inequities in resourcing and access to mental health care, through a national survey and cost-analysis. It has contributed to the burgeoning economic research on mental health systems by providing a mixed-methods approach to generating the evidence required to build the case for improved investment, towards achieving universal health coverage, inclusive of mental health care. Through this lens, based on a qualitative study including key stakeholder consultations, and borrowing from the experiences of other low- and middle-income countries derived through a systematic review, this thesis has developed recommendations for key priorities for health service and financing reforms towards UHC inclusive of mental health care in South Africa.

Appendices

Appendix A

Ethics Approval

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E52-24 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 404 7682
Email: nosi.tsama@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

13 November 2017

HREC REF: 744/2017

Prof C Lund
Psychiatry & Mental Health
Alan J Flisher Centre for Public Mental Health
Building B, Child & Adolescent Psychiatry
46 Sawkins Road
Rondebosch

Dear Prof Lund

PROJECT TITLE: THE INTEGRATION AND SCALE-UP OF MENTAL HEALTH SERVICES IN SOUTH AFRICA: ECONOMIC COSTS, HEALTH IMPACTS AND FINANCING STRATEGIES (PDH CANDIDATE - MS S DOCRAT) SUB-STUDY LINKED TO 531/2013

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30th November 2018.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

We acknowledge that the student Ms S Docrat will be involved in the study.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval before the research may occur.

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE

Appendix B

Motivation to the Doctoral Degrees Board for PhD thesis by publication

Alan J Flisher Centre
for Public Mental Health

27 May 2019

Prof Mike Lambert
Chair of the Masters and Doctoral Committee
Faculty of Health Sciences
University of Cape Town

Dear Prof Lambert,

Letter of Motivation for PhD thesis by publication

I am currently completing my PhD under the primary supervision of Prof Crick Lund and co-supervision of A/Prof Susan Cleary. I am planning on submitting my PhD thesis in August 2019, which is entitled "*Economic Costs, Impacts and Financing Strategies for Mental Health in South Africa*". I have been a registered PhD candidate since February 2015; my candidature was approved by UCT's Doctoral Degrees Board (DDB) on 14 September 2018 (Chairs Circular 03 -2018). Since registration, my supervisors and I have indicated in the Memorandum of Understanding that I wish to include published articles in my PhD thesis, or articles which are currently under review. Now that I am nearing completion of my PhD, I am writing this letter to ask the DDB permission to include publications in my thesis. As required by the DDB these publications will form part of a 'coherent and scholarly discourse' as I will outline below.

The overall aim of my PhD is to demonstrate the economic case for investing in mental health, and; provide recommendations for sustainable mental health financing to scale-up services for mental disorders in South Africa. As required by the DDB, the papers are 'thematically coherent' and present a substantive discourse on the PhD topic. To that effect, I would like to include four published papers as chapters, each of which will answer a specific objective. My thesis will also include an introduction to the topic, the aims and objectives of the overall thesis as well as a discussion which will reflect on the findings of the thesis as a whole.

Thus far, one paper has been published in an international peer-reviewed journal, one has undergone peer-review and has been approved for publication subject to minor revisions, one is drafted and will be submitted by June 2019 whilst the draft of the final paper is currently underway (with submission planned for July 2019). I am the lead author on all four papers. However, aspects of this research were conducted as part of two research programmes, namely: the Emerging mental health systems in low- and middle-income countries (Emerald) project (https://www.emerald-project.eu) and; a commissioned study by the National Department of Health for a cost-analysis to support their resource-mobilization efforts for the National Mental Health Policy Framework and Strategic Plan 2013-2020; therefore, other researchers were also involved. All co-authors are aware that these publications will be included in my PhD thesis, and none of them are currently PhD students. Please find attached to this letter, a supporting letter from my supervisor Prof. Crick Lund, confirming that the co-authors have given their permission to include these

SUMAIYAH DOCRAT
Research Officer
Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health, University of Cape Town
s.docrat@uct.ac.za | www.cpmh.org.za
Building B, 46 Sawkins Road, Rondebosch, 7700, Cape Town
South Africa

Alan J Flisher Centre
for Public Mental Health

papers as part of my PhD, in addition to copies of my electronic correspondence with each co-author indicating their support for the inclusion of these papers in my PhD.

Below is a list of my PhD objectives and the corresponding papers which address these objectives. For each, I have outlined the reference to the published paper (where applicable), a brief description of my own contribution and, a description of the contributions (or anticipated contributions) of each co-author.

PhD Objective:

1. **To locate, appraise and synthesize the best available international evidence relating to the impact of community and social health insurance on mental health service utilization, in low- and middle-income countries.**

   Reference and/or Paper Title & Author(s):
   Docrat, S., Besada, D., Cleary, S., Lund, C. The impact of social and community-based health insurance on mental healthcare utilization in low- and middle-income countries: a systematic review

   Status:
   Currently being drafted.

   Contributions:
   I conceptualized the paper, developed and registered the systematic review protocol, conducted the systematic search for peer-reviewed articles in nine databases, screened articles against the inclusion and exclusion criteria and will draft the article, under the guidance of my supervisors, Crick Lund and Susan Cleary. Ms. Donela Besada contributed as an independent researcher to double-screen articles to be included in the systematic review against the inclusion and exclusion criteria. All authors will review the draft manuscript prior to submission.

2. **To examine the household economic costs associated with depression in South Africa**

   Reference and/or Paper Title & Author(s):
   Docrat, S., Cleary, S., Chisholm, C., and Lund, C. The household economic costs associated with depression symptoms: a cross-sectional household study conducted in the North West province of South Africa.

   Status:
   Drafted and currently being reviewed by my supervisor(s) and co-author.

   Contributions:

SUMAIYAH DOCRAT
Research Officer
Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health, University of Cape Town
s.docrat@uct.ac.za | www.cpmh.org.za
Building B, 46 Sawkins Road, Rondebosch, 7700, Cape Town
South Africa

Alan J Flisher Centre
for Public Mental Health

I conceptualized the paper, under the guidance of my supervisor, Crick Lund. The data for this study was collected as part of Work Package 3 of the Emerald project, which was led by Dr. Dan Chisholm (World Heald Organization) and my supervisor Crick Lund. I developed the household study protocol that was applied across the 6 Emerald countries, under the guidance of Dan Chisholm and Crick Lund. I led all aspects of the South African data collection in the North West province, independently cleaned and analyzed the dataset, and drafted the article. The paper is now being critically reviewed by both of my supervisors, Crick Lund and Susan Cleary in addition to Dan Chisholm, who will make recommendations for improving the manuscript, and the interpretation of the data.

3. **To assess the full costs of mental health services and programmes in South Africa**

Reference and/or Paper Title & Author(s):
Docrat, S., Besada, D., Cleary, S., Daviaud, E., and Lund, C. Mental health system costs, resources and constraints in South Africa: a national survey and case study for universal health coverage. Health Policy and Planning. 2019; Under review.

Status:
Under review, reviewers' comments received

Contributions:
Following a request by the National Department of Health for a cost-analysis to support their resource-mobilization efforts for the National Mental Health Policy Framework and Strategic Plan 2013-2020, I developed the costing study protocol that was applied across the nine provinces of South Africa, under the guidance of my supervisor, Crick Lund. I led all aspects of the national data collection process, with support from Ms. Donela Besada. I independently analyzed the dataset, with input on the analytical methods received from Ms. Emmanuelle Daviaud, who was involved as an independent researcher, Donela Besada and my co-supervisor Susan Cleary. I wrote the first draft of the paper, under the guidance of my supervisor, Crick Lund. All authors were subsequently involved in critically revising and approving the manuscript prior to submission to Health Policy and Planning.

4. **To identify optimal financing mechanisms for improved mental health outcomes for South Africans.**

Reference and/or Paper Title & Author(s):
Docrat, S., Lund, C. & Chisholm, D. 2019. Sustainable financing options for mental health care in South Africa: findings from a situation analysis and key informant interviews. International Journal of Mental Health Systems, 13, 4.

SUMAIYAH DOCRAT
Research Officer
Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health, University of Cape Town
s.docrat@uct.ac.za | www.cpmh.org.za
Building B, 46 Sawkins Road, Rondebosch, 7700, Cape Town
South Africa

Alan J Flisher Centre
for Public Mental Health

Status:
Published.

Contributions:
The data for this study was collected as part of Work Package 3 of the Emerald project, which was led by Dan Chisholm and my supervisor Crick Lund. I developed the qualitative study protocol and interview guide that was applied across the 6 Emerald countries, under the guidance of Dan Chisholm and Crick Lund. I conceptualized the paper, under the guidance of my supervisor, Crick Lund with direct input from Dan Chisholm. I conducted all aspects of the South African data collection, including the situational analysis desk-review and qualitative interviews, independently analyzed the qualitative data, and drafted the article. The paper was critically reviewed by my supervisor, Crick Lund in addition to Dan Chisholm, who approved the manuscript before submission.

I would be grateful for your support with the inclusion of the above publications in my PhD thesis.

Yours sincerely,

Sumaiyah Docrat
PhD Student
Student Number: DCRSUM001
Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health

SUMAIYAH DOCRAT
Research Officer
Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health, University of Cape Town
s.docrat@uct.ac.za | www.cpmh.org.za
Building B, 46 Sawkins Road, Rondebosch, 7700, Cape Town
South Africa

Alan J Flisher Centre
for Public Mental Health

27 May 2019

Prof Mike Lambert
Chair of the Masters and Doctoral Committee
Faculty of Health Sciences
University of Cape Town

Dear Prof Lambert,

Re: Support for Sumaiyah Docrat's publications to be included in her PhD

I am Sumaiyah Docrat's primary PhD supervisor and hereby confirm that Ms. Docrat has led the work she describes in the letter dated 27 May 2019.

As outlined in her letter, Ms. Docrat's PhD objectives led her to make use of data linked to two different research programmes. The first being the Emerging mental health systems in low- and middle-income countries (Emerald) project, which I led as the UCT Principal Investigator and co-lead of Emerald's Work Package 3, of which her PhD is directly linked. The second being a project we at the Centre for Public Mental Health conducted in response to a request from the national Department of Health for a cost-analysis to support their resource-mobilization efforts for the National Mental Health Policy Framework and Strategic Plan 2013-2020. Sumaiyah coordinated this project under my guidance. Other co-authors have therefore supported Ms. Docrat with aspects of her data collection and analysis.

I can verify Ms Docrat's description of the author contributions to her PhD publications. I can also confirm that all co-authors are aware that these publications will be included in Ms Docrat's PhD thesis.

I would be grateful for your support for her application to include publications in her PhD.

Many thanks and kind regards,

Prof. Crick Lund

PROF CRICK LUND
Alan J Flisher Centre for Public Mental Health
Department of Psychiatry and Mental Health, University of Cape Town
crick.lund@uct.ac.za | www.cpmh.org.za
Building B, 46 Sawkins Road, Rondebosch, 7700, Cape Town
South Africa

Appendix C

Approval by the Doctoral Degrees Board for PhD thesis by publication

Tuesday, October 29, 2019 at 11:05:07 AM South Africa Standard Time

Subject: Permission to Include Publications in PhD Thesis: Sumaiyah Docrat DCRSUM001
Date: Wednesday, June 12, 2019 at 2:11:33 PM South Africa Standard Time
From: DOCTORAL DEGREES BOARD
To: Sumaiyah Docrat, Sumaiyah Docrat
CC: Adri Winckler, Crick Lund
Priority: High
Attachments: Declaration - Inclusion of publications.docx, image003.png

Dear Sumaiyah Docrat

I hereby confirm that the Doctoral Degrees Board has **approved** your request to include the specified publications in your PhD thesis.

In your thesis (after your declaration that it is your own work) please include the following separate signed statement listing the publications that you were given permission to include:
"I confirm that I have been granted permission by the University of Cape Town's Doctoral Degrees Board to include the following publication(s) in my PhD thesis, and where co-authorships are involved, my co-authors have agreed that I may include the publication(s): "

This declaration serves to notify examiners that the Doctoral Degrees Board has granted you permission to include publications in your thesis.

Yours sincerely

JANINE ISAACS
Doctoral Degrees Board Officer

UNIVERSITY OF CAPE TOWN
Room 5.04 | Masingene Building | Cross Campus Road |
| Middle Campus | Rondebosch | South Africa | 7700
Doctoral Candidates Webpage
+27 (0) 21 650 2202

Appendix D

Database search strategy for the systematic review and the full Pubmed search

Overview of Search Strategy

Health Insurance	AND	Mental Health Care Utilization	AND	LAMIC	NOT	Limits
National Health Insurance OR Social Health Insurance OR Community-based Health Insurance		Mental Health Services OR Mental Health Care		Low- and Middle-Income Countries (1987 – 2017)		High Income Countries (1987 and 2017)

Health Insurance Terms
National Health Insurance OR Social Health Insurance OR Community-based Health Insurance OR Community based Health Insurance OR Community Health Insurance OR Mandatory Health Insurance OR Informal Health Insurance OR Single-payer system OR Single Payer System
"National Health Programs/economics"[Mesh] OR "Insurance"[Mesh] OR "Health Care Sector/economics"[Mesh] OR "Health Care Sector/organization and administration"[Mesh] OR "Financing, Organized"[Mesh] OR "Health care Financing"[Mesh] OR "Health Equity/economics"[Mesh] OR "Universal Coverage/economics"[Mesh] OR "Health Care Reform/economics"[Mesh] OR "National Health Programs/legislation and jurisprudence"[Mesh] OR "National Health Programs/organization and administration"[Mesh] OR "Universal Coverage/legislation and jurisprudence"[Mesh]

Mental Health care Terms
Mental Health Services OR Mental Health Service OR Mental Health care OR Mental Health Care OR Mental Health System OR Psychiatric Services OR Psychiatric Care OR Psychiatry Services OR Psychiatric Health Care OR Psychiatric Health care OR Psychiatry OR Mental Illness OR Mental Health OR Severe Mental Disorder OR Severe Mental Disorders OR Common Mental Disorder OR Common Mental Disorders OR Mental Illness OR Mentally Ill Persons OR Substance Disorder OR Substance Disorders OR Substance Abuse OR Substance-Use Disorder OR Substance Use Disorder OR Substance-Use Disorders OR Substance Use Disorders OR Alcohol Use Disorder OR Alcohol Use Disorders OR Alcohol Abuse OR Alcohol-Related Disorder OR Alcohol Related Disorder OR Alcohol Addiction OR Opioid Abuse OR Opiate Addiction OR Opioid-Related Disorder OR Opioid Related Disorder OR Cannabis-Related Disorder OR Cannabis Related Disorder OR Cocaine Related Disorder OR Cocaine-Related Disorder OR Cocaine Addiction OR Amphetamine-Related Disorder OR Amphetamine Related Disorder OR Amphetamine Addiction OR Heroin Dependence OR Heroin Abuse OR Heroin Addiction OR Substance Induced Psychoses OR Substance-Induced Psychoses OR Anxiety Disorders OR Anxiety Disorder OR Bipolar Disorder OR Bipolar Disorders OR Manic-Depressive Psychosis OR Manic Depressive Psychosis OR Bipolar Affective Psychosis OR Bipolar Affective Psychosis OR Manic-Depressive Psychoses OR Manic Depressive Psychoses OR Bipolar Affective Psychoses OR Bipolar Affective Psychoses OR Bipolar Depression OR Anorexia Nervosa OR Binge-Eating Disorder OR Bulimia Nervosa OR Anorexia OR Binge Eating OR Binge-Eating OR Bulimia OR Depressive Disorders OR Depressive Disorder OR Depression OR Unipolar Depression OR Unipolar Depressions OR Mood Disorder OR Mood Disorders OR Dementia OR Dementias OR Attention Deficit Disorders OR Attention Deficit Disorders OR Conduct Disorder OR Conduct Disorders OR Neurocognitive Disorder OR Neurotic Disorder OR Neurodevelopmental Disorder OR Developmental Disability OR Development Disability OR Developmental Disorder OR Development Disorder OR

Autism Spectrum Disorder OR Asperger Syndrome OR Autistic Disorder OR Autistic Disorder OR Autism Spectrum Disorders OR Autism Spectrum Disorder OR Autism OR Aspergers Disease OR Aspergers Syndrome OR Asperger's Disease OR Asperger's Syndrome OR Kanner's Syndrome OR Kanner Syndrome OR Kanners Syndrome OR Schizophrenia OR Catatonic Schizophrenia OR Disorganized Schizophrenia OR Paranoid Schizophrenia OR Psychotic Disorder OR Psychotic Disorders OR Psychosis OR Psychoses OR Schizoaffective Disorder OR Schizoaffective Disorders OR Schizophreniform Disorders OR Schizophreniform Disorder OR Psychotic Affective Disorder OR Psychotic Affective Disorders OR Psychotic Mood Disorders OR Psychotic Mood Disorder OR Affective Psychoses OR Post-Traumatic Stress Disorder OR Post Traumatic Stress Disorder OR Post-Traumatic Stress Disorders OR Post Traumatic Stress Disorders OR Traumatic Stress Disorder OR Traumatic Stress Disorders OR Stress Disorder OR Stress Disorders OR Epilepsy OR Epilepsies OR Epileptic
"Mental Health Services"[Mesh] OR "Psychiatry/supply and distribution"[Mesh] OR "Psychiatry/organization and administration"[Mesh] OR "Psychiatry/therapy"[Mesh] OR "Psychiatry/utilization"[Mesh] OR "Emergency Services, Psychiatric"[Mesh] OR "Mental Disorders/prevention and control"[Mesh] OR "Mental Disorders/organization and administration"[Mesh] OR "Mental Disorders/economics"[Mesh] OR "Mental Disorders/legislation and jurisprudence"[Mesh] OR "Mental Disorders/therapy"[Mesh] OR "Mental Disorders/statistics and numerical data"[Mesh] OR "Mental Disorders/trends"[Mesh] OR "Epilepsy/prevention and control"[Mesh] OR "Epilepsy/organization and administration"[Mesh] OR "Epilepsy/economics"[Mesh] OR "Epilepsy/legislation and jurisprudence"[Mesh] OR "Epilepsy/therapy"[Mesh] OR "Epilepsy/statistics and numerical data"[Mesh]

Low and Middle Income Country Terms
Afghanistan OR Albania OR Algeria OR Angola OR Antigua OR Argentina OR Armenia OR Azerbaijan OR Bangladesh OR Barbados OR Belarus OR Belize OR Benin OR Bhutan OR Bolivia OR Bosnia OR Botswana OR Brazil OR Bulgaria OR Burkina Faso OR Burundi OR Cabo Verde OR Cambodia OR Cameroon OR Central African Republic OR Chad OR Chile OR China OR Colombia OR Comoros OR Congo OR Costa Rica OR Cote D'Ivoire OR Côte d'Ivoire OR Cuba OR Cyprus OR Democratic People's Republic of Korea OR Democratic Peoples Republic of Korea OR Deprived Countries OR Deprived Population OR Deprived Populations OR Developing Countries OR Developing Country OR Developing Economies OR Developing Economy OR Developing Nation OR Developing Nations OR Developing Population OR Developing Populations OR Developing World OR Djibouti OR Dominica OR Dominican Republic OR Ecuador OR Egypt OR El Salvador OR Equatorial Guinea OR Eritrea OR Ethiopia OR Fiji OR Gabon OR Gambia OR Gaza OR Georgia OR Ghana OR Gibraltar OR Greece OR Grenada OR Guatemala OR Guinea OR Guinea-Bissau OR Guyana OR Haiti OR Honduras OR Hungary OR India OR Indonesia OR Iran OR Iraq OR Ivory Coast OR Jamaica OR Jordan OR Kazakhstan OR Kenya OR Kiribati OR Kosovo OR Kyrgyz Republic OR LAMI Countries OR LAMI Country OR LAMIC OR Lao OR Lebanon OR Lesotho OR Less Developed Countries OR Less Developed Country OR Less Developed Economies OR Less Developed Nation OR Less Developed Nations OR Less Developed World OR Lesser Developed Countries OR Lesser Developed Nations OR Liberia OR Libya OR LMIC OR LMICS OR Low GDP OR Low GNP OR Low Gross Domestic OR Low Gross National OR Low Income Countries OR Low Income Country OR Low Income Economies OR Low Income Economy OR Low Income Nations OR Low Income Population OR Low Income Populations OR Lower GDP OR lower gross domestic OR Lower Income Countries OR Lower Income Country OR Lower Income Nations OR Lower Income Population OR Lower Income Populations OR Macao OR Macedonia OR Madagascar OR Malawi OR Malaysia OR Maldives OR Mali OR Malta OR Marshall Islands OR Mauritania OR Mauritius OR Mexico OR Micronesia OR Middle Income Countries OR Middle Income Country OR Middle Income Economies OR Middle Income Nation OR Middle Income Nations OR Middle Income Population OR Middle Income Populations OR Moldova OR Mongolia OR Montenegro OR Morocco OR Mozambique OR Myanmar OR Namibia OR Nauru OR Nepal OR New Caledonia OR Nicaragua OR Niger OR Nigeria OR North Korea OR Oman OR Pakistan OR Panama OR Papua New Guinea OR Paraguay OR Peru OR Philippines OR Poland OR Poor Countries OR Poor Country OR Poor Economies OR Poor Economy OR Poor Nation OR Poor Nations OR Poor Population OR Poor Populations OR poor world OR Poorer Countries OR Poorer Economies OR Poorer Economy OR Poorer Nations OR Poorer Population OR Poorer Populations OR Portugal OR Puerto Rico OR Republic of Congo OR Republic of Korea OR

Romania OR Russian Federation OR Rwanda OR Samoa OR Sao Tome OR São Tomé OR Senegal OR Serbia OR Seychelles OR Sierra Leone OR Solomon Islands OR Somalia OR South Africa OR South Korea OR South Sudan OR Sri Lanka OR St. Kitts OR St. Lucia OR St. Vincent OR Sudan OR Suriname OR Swaziland OR Syria OR Tajikistan OR Tanzania OR Thailand OR the Grenadines OR Third World OR Timor-Leste OR Tobago OR Togo OR Tonga OR Transitional Countries OR Transitional Country OR Transitional Economies OR Transitional Economy OR Trinidad OR Tunisia OR Turkey OR Turkmenistan OR Tuvalu OR Uganda OR Ukraine OR Under Developed Countries OR Under Developed Country OR under developed nations OR Under Developed World OR Under Served Population OR Under Served Populations OR Underdeveloped Countries OR Underdeveloped Country OR underdeveloped economies OR underdeveloped nations OR underdeveloped population OR Underdeveloped World OR Underserved Countries OR Underserved Nations OR Underserved Population OR Underserved Populations OR Uruguay OR Uzbekistan OR Vanuatu OR Venezuela OR Vietnam OR West Bank OR Yemen OR Zambia OR Zimbabwe

Health Insurance Search String	
(Title/Abstract) OR (Mesh)	National Health Insurance[Title/Abstract] OR Social Health Insurance[Title/Abstract] OR Community-based Health Insurance[Title/Abstract] OR Community based Health Insurance[Title/Abstract] OR Community Health Insurance[Title/Abstract] OR Mandatory Health Insurance[Title/Abstract] OR Informal Health Insurance[Title/Abstract] OR Single-payer system[Title/Abstract] OR Single Payer System[Title/Abstract] OR
	“National Health Programs/economics"[Mesh] OR "Insurance"[Mesh] OR "Health Care Sector/economics"[Mesh] OR "Health Care Sector/organization and administration"[Mesh] OR "Financing, Organized"[Mesh] OR "Health care Financing"[Mesh] OR "Health Equity/economics"[Mesh] OR "Universal Coverage/economics"[Mesh] OR "Health Care Reform/economics"[Mesh] OR “National Health Programs/legislation and jurisprudence”[Mesh] OR “Nsational Health Programs/organization and administration”[Mesh] OR “Universal Coverage/legislation and jurisprudence”[Mesh]

Mental Health care Utilization Search String	
(All Fields) OR (Mesh)	(Mental Health Services OR Mental Health Service OR Mental Health care OR Mental Health Care OR Mental Health System OR Psychiatric Services OR Psychiatric Care OR Psychiatry Services OR Psychiatric Health Care OR Psychiatric Health care OR Psychiatry OR Mental Illness OR Mental Health OR Severe Mental Disorder OR Severe Mental Disorders OR Common Mental Disorder OR Common Mental Disorders OR Mental Illness OR Mentally Ill Persons OR Substance Disorder OR Substance Disorders OR Substance Abuse OR Substance-Use Disorder OR Substance Use Disorder OR Substance-Use Disorders OR Substance Use Disorders OR Alcohol Use Disorder OR Alcohol Use Disorders OR Alcohol Abuse OR Alcohol-Related Disorder OR Alcohol Related Disorder OR Alcohol Addiction OR Opioid Abuse OR Opiate Addiction OR Opioid-Related Disorder OR Opioid Related Disorder OR Cannabis-Related Disorder OR Cannabis Related Disorder OR Cocaine Related Disorder OR Cocaine-Related Disorder OR Cocaine Addiction OR Amphetamine-Related Disorder OR Amphetamine Related Disorder OR Amphetamine Addiction OR Heroin Dependence OR Heroin Abuse OR Heroin Addiction OR Substance Induced Psychoses OR Substance-Induced Psychoses OR Anxiety Disorders OR Anxiety Disorder OR Bipolar Disorder OR Bipolar Disorders OR Manic-Depressive Psychosis OR Manic Depressive Psychosis OR Bipolar Affective Psychosis OR Bipolar Affective Psychosis OR Manic-Depressive Psychoses OR Manic Depressive Psychoses OR Bipolar Affective Psychoses OR Bipolar Affective Psychoses OR Bipolar Depression OR Anorexia Nervosa OR Binge-Eating Disorder OR Bulimia Nervosa OR Anorexia OR Binge Eating OR Binge-Eating OR Bulimia OR Depressive Disorders OR Depressive Disorder OR Depression OR Unipolar Depression OR Unipolar Depressions OR Mood Disorder OR Mood Disorders OR Dementia OR Dementias OR Attention Deficit Disorders OR Attention Deficit Disorders OR Conduct Disorder OR Conduct Disorders OR Neurocognitive Disorder OR Neurotic Disorder OR Neurodevelopmental Disorder OR Developmental Disability OR Development Disability OR Developmental Disorder OR Development Disorder OR Autism Spectrum Disorder OR Asperger Syndrome OR Autistic Disorder OR Autistic Disorder OR Autism Spectrum Disorders OR Autism Spectrum Disorder OR Autism OR Aspergers Disease

	OR Aspergers Syndrome OR Asperger's Disease OR Asperger's Syndrome OR Kanner's Syndrome OR Kanner Syndrome OR Kanners Syndrome OR Schizophrenia OR Catatonic Schizophrenia OR Disorganized Schizophrenia OR Paranoid Schizophrenia OR Psychotic Disorder OR Psychotic Disorders OR Psychosis OR Psychoses OR Schizoaffective Disorder OR Schizoaffective Disorders OR Schizophreniform Disorders OR Schizophreniform Disorder OR Psychotic Affective Disorder OR Psychotic Affective Disorders OR Psychotic Mood Disorders OR Psychotic Mood Disorder OR Affective Psychoses OR Post-Traumatic Stress Disorder OR Post Traumatic Stress Disorder OR Post-Traumatic Stress Disorders OR Post Traumatic Stress Disorders OR Traumatic Stress Disorder OR Traumatic Stress Disorders OR Stress Disorder OR Stress Disorders OR Epilepsy OR Epilepsies OR Epileptic)
	("Mental Health Services"[Mesh] OR "Psychiatry/supply and distribution"[Mesh] OR "Psychiatry/organization and administration"[Mesh] OR "Psychiatry/therapy"[Mesh] OR "Psychiatry/utilization"[Mesh] OR "Emergency Services, Psychiatric"[Mesh] OR "Mental Disorders/prevention and control"[Mesh] OR "Mental Disorders/organization and administration"[Mesh] OR "Mental Disorders/economics"[Mesh] OR "Mental Disorders/legislation and jurisprudence"[Mesh] OR "Mental Disorders/therapy"[Mesh] OR "Mental Disorders/statistics and numerical data"[Mesh] OR "Mental Disorders/trends"[Mesh] OR "Epilepsy/prevention and control"[Mesh] OR "Epilepsy/organization and administration"[Mesh] OR "Epilepsy/economics"[Mesh] OR "Epilepsy/legislation and jurisprudence"[Mesh] OR "Epilepsy/therapy"[Mesh] OR "Epilepsy/statistics and numerical data"[Mesh])

Low and Middle Income Country Search String	
(Title/Abstract)	(Afghanistan[Title/Abstract] OR Albania[Title/Abstract] OR Algeria[Title/Abstract] OR Angola[Title/Abstract] OR Antigua[Title/Abstract] OR Argentina[Title/Abstract] OR Armenia[Title/Abstract] OR Azerbaijan[Title/Abstract] OR Bangladesh[Title/Abstract] OR Barbados[Title/Abstract] OR Belarus[Title/Abstract] OR Belize[Title/Abstract] OR Benin[Title/Abstract] OR Bhutan[Title/Abstract] OR Bolivia[Title/Abstract] OR Bosnia[Title/Abstract] OR Botswana[Title/Abstract] OR Brazil[Title/Abstract] OR Bulgaria[Title/Abstract] OR Burkina Faso[Title/Abstract] OR Burundi[Title/Abstract] OR Cabo Verde[Title/Abstract] OR Cambodia[Title/Abstract] OR Cameroon[Title/Abstract] OR Central African Republic[Title/Abstract] OR Chad[Title/Abstract] OR Chile[Title/Abstract] OR China[Title/Abstract] OR Colombia[Title/Abstract] OR Comoros[Title/Abstract] OR Congo[Title/Abstract] OR Costa Rica[Title/Abstract] OR Cote D'Ivoire[Title/Abstract] OR Côte d'Ivoire[Title/Abstract] OR Cuba[Title/Abstract] OR Cyprus[Title/Abstract] OR Democratic People's Republic of Korea[Title/Abstract] OR Democratic Peoples Republic of Korea[Title/Abstract] OR Deprived Countries[Title/Abstract] OR Deprived Population[Title/Abstract] OR Deprived Populations[Title/Abstract] OR Developing Countries[Title/Abstract] OR Developing Country[Title/Abstract] OR Developing Economies[Title/Abstract] OR Developing Economy[Title/Abstract] OR Developing Nation[Title/Abstract] OR Developing Nations[Title/Abstract] OR Developing Population[Title/Abstract] OR Developing Populations[Title/Abstract] OR Developing World[Title/Abstract] OR Djibouti[Title/Abstract] OR Dominica[Title/Abstract] OR Dominican Republic[Title/Abstract] OR Ecuador[Title/Abstract] OR Egypt[Title/Abstract] OR El Salvador[Title/Abstract] OR Equatorial Guinea[Title/Abstract] OR Eritrea[Title/Abstract] OR Ethiopia[Title/Abstract] OR Fiji[Title/Abstract] OR Gabon[Title/Abstract] OR Gambia[Title/Abstract] OR Gaza[Title/Abstract] OR Georgia[Title/Abstract] OR Ghana[Title/Abstract] OR Gibraltar[Title/Abstract] OR Greece[Title/Abstract] OR Grenada[Title/Abstract] OR Guatemala[Title/Abstract] OR Guinea[Title/Abstract] OR Guinea-Bissau[Title/Abstract] OR Guyana[Title/Abstract] OR Haiti[Title/Abstract] OR Honduras[Title/Abstract] OR Hungary[Title/Abstract] OR India[Title/Abstract] OR Indonesia[Title/Abstract] OR Iran[Title/Abstract] OR Iraq[Title/Abstract] OR Ivory Coast[Title/Abstract] OR Jamaica[Title/Abstract] OR Jordan[Title/Abstract] OR Kazakhstan[Title/Abstract] OR Kenya[Title/Abstract] OR Kiribati[Title/Abstract] OR Kosovo[Title/Abstract] OR Kyrgyz Republic[Title/Abstract] OR LAMI Countries[Title/Abstract] OR LAMI Country[Title/Abstract] OR LAMIC[Title/Abstract] OR Lao[Title/Abstract] OR Lebanon[Title/Abstract] OR Lesotho[Title/Abstract] OR Less Developed Countries[Title/Abstract] OR Less Developed Country[Title/Abstract] OR Less Developed

	Economies [Title/Abstract] OR Less Developed Nation[Title/Abstract] OR Less Developed Nations[Title/Abstract] OR Less Developed World[Title/Abstract] OR Lesser Developed Countries[Title/Abstract] OR Lesser Developed Nations[Title/Abstract] OR Liberia[Title/Abstract] OR Libya[Title/Abstract] OR LMIC[Title/Abstract] OR LMICS[Title/Abstract] OR Low GDP[Title/Abstract] OR Low GNP[Title/Abstract] OR Low Gross Domestic[Title/Abstract] OR Low Gross National[Title/Abstract] OR Low Income Countries[Title/Abstract] OR Low Income Country[Title/Abstract] OR Low Income Economies [Title/Abstract] OR Low Income Economy[Title/Abstract] OR Low Income Nations[Title/Abstract] OR Low Income Population[Title/Abstract] OR Low Income Populations[Title/Abstract] OR Lower GDP[Title/Abstract] OR lower gross domestic[Title/Abstract] OR Lower Income Countries[Title/Abstract] OR Lower Income Country[Title/Abstract] OR Lower Income Nations[Title/Abstract] OR Lower Income Population[Title/Abstract] OR Lower Income Populations[Title/Abstract] OR Macao[Title/Abstract] OR Macedonia[Title/Abstract] OR Madagascar[Title/Abstract] OR Malawi[Title/Abstract] OR Malaysia[Title/Abstract] OR Maldives[Title/Abstract] OR Mali[Title/Abstract] OR Malta[Title/Abstract] OR Marshall Islands[Title/Abstract] OR Mauritania[Title/Abstract] OR Mauritius[Title/Abstract] OR Mexico[Title/Abstract] OR Micronesia[Title/Abstract] OR Middle Income Countries[Title/Abstract] OR Middle Income Country[Title/Abstract] OR Middle Income Economies [Title/Abstract] OR Middle Income Nation[Title/Abstract] OR Middle Income Nations[Title/Abstract] OR Middle Income Population[Title/Abstract] OR Middle Income Populations[Title/Abstract] OR Moldova[Title/Abstract] OR Mongolia[Title/Abstract] OR Montenegro[Title/Abstract] OR Morocco[Title/Abstract] OR Mozambique[Title/Abstract] OR Myanmar[Title/Abstract] OR Namibia[Title/Abstract] OR Nauru[Title/Abstract] OR Nepal[Title/Abstract] OR New Caledonia[Title/Abstract] OR Nicaragua[Title/Abstract] OR Niger[Title/Abstract] OR Nigeria[Title/Abstract] OR North Korea[Title/Abstract] OR Oman[Title/Abstract] OR Pakistan[Title/Abstract] OR Panama[Title/Abstract] OR Papua New Guinea[Title/Abstract] OR Paraguay[Title/Abstract] OR Peru[Title/Abstract] OR Philippines[Title/Abstract] OR Poland[Title/Abstract] OR Poor Countries[Title/Abstract] OR Poor Country[Title/Abstract] OR Poor Economies [Title/Abstract] OR Poor Economy[Title/Abstract] OR Poor Nation[Title/Abstract] OR Poor Nations[Title/Abstract] OR Poor Population[Title/Abstract] OR Poor Populations[Title/Abstract] OR poor world[Title/Abstract] OR Poorer Countries[Title/Abstract] OR Poorer Economies [Title/Abstract] OR Poorer Economy[Title/Abstract] OR Poorer Nations[Title/Abstract] OR Poorer Population[Title/Abstract] OR Poorer Populations[Title/Abstract] OR Portugal[Title/Abstract] OR Puerto Rico[Title/Abstract] OR Republic of Congo[Title/Abstract] OR Republic of Korea[Title/Abstract] OR Romania[Title/Abstract] OR Russian Federation[Title/Abstract] OR Rwanda[Title/Abstract] OR Samoa[Title/Abstract] OR Sao Tome[Title/Abstract] OR São Tomé[Title/Abstract] OR Senegal[Title/Abstract] OR Serbia[Title/Abstract] OR Seychelles[Title/Abstract] OR Sierra Leone[Title/Abstract] OR Solomon Islands[Title/Abstract] OR Somalia[Title/Abstract] OR South Africa[Title/Abstract] OR South Korea[Title/Abstract] OR South Sudan[Title/Abstract] OR Sri Lanka[Title/Abstract] OR St. Kitts[Title/Abstract] OR St. Lucia[Title/Abstract] OR St. Vincent [Title/Abstract] OR Sudan[Title/Abstract] OR Suriname[Title/Abstract] OR Swaziland[Title/Abstract] OR Syria[Title/Abstract] OR Tajikistan[Title/Abstract] OR Tanzania[Title/Abstract] OR Thailand[Title/Abstract] OR the Grenadines[Title/Abstract] OR Third World[Title/Abstract] OR Timor-Leste[Title/Abstract] OR Tobago[Title/Abstract] OR Togo[Title/Abstract] OR Tonga[Title/Abstract] OR Transitional Countries[Title/Abstract] OR Transitional Country[Title/Abstract] OR Transitional Economies[Title/Abstract] OR Transitional Economy[Title/Abstract] OR Trinidad[Title/Abstract] OR Tunisia[Title/Abstract] OR Turkey[Title/Abstract] OR Turkmenistan[Title/Abstract] OR Tuvalu[Title/Abstract] OR Uganda[Title/Abstract] OR Ukraine[Title/Abstract] OR Under Developed Countries[Title/Abstract] OR Under Developed Country[Title/Abstract] OR under developed nations[Title/Abstract] OR Under Developed World[Title/Abstract] OR Under Served Population[Title/Abstract] OR Under Served Populations[Title/Abstract] OR Underdeveloped Countries[Title/Abstract] OR Underdeveloped Country[Title/Abstract] OR underdeveloped economies[Title/Abstract] OR underdeveloped nations[Title/Abstract] OR underdeveloped population[Title/Abstract] OR Underdeveloped World[Title/Abstract] OR Underserved

	Countries[Title/Abstract] OR Underserved Nations[Title/Abstract] OR Underserved Population[Title/Abstract] OR Underserved Populations[Title/Abstract] OR Uruguay[Title/Abstract] OR Uzbekistan[Title/Abstract] OR Vanuatu[Title/Abstract] OR Venezuela[Title/Abstract] OR Vietnam[Title/Abstract] OR West Bank[Title/Abstract] OR Yemen[Title/Abstract] OR Zambia[Title/Abstract] OR Zimbabwe[Title/Abstract])

Limits (Not High Income Countries) Search String	
NOT (Mesh)	"Aruba"[Mesh] OR "Australia"[Mesh] OR "South Australia"[Mesh] OR "Western Australia"[Mesh] OR "Austria"[Mesh] OR "Bahamas"[Mesh] OR "Bahrain"[Mesh] OR "Belgium"[Mesh] OR "Bermuda"[Mesh] OR "Brunei"[Mesh] OR "Canada"[Mesh] OR "Channel Islands"[Mesh] OR "Denmark"[Mesh] OR "Finland"[Mesh] OR "France"[Mesh] OR "Germany"[Mesh] OR "Germany, West"[Mesh] OR "Germany, East"[Mesh] OR "Greenland"[Mesh] OR "Guam"[Mesh] OR "Hong Kong"[Mesh] OR "Iceland"[Mesh] OR "Ireland"[Mesh] OR "United Kingdom"[Mesh] OR "Israel"[Mesh] OR "Italy"[Mesh] OR "Japan"[Mesh] OR "Kuwait"[Mesh] OR "Luxembourg"[Mesh] OR "Netherlands"[Mesh] OR "New Zealand"[Mesh] OR "Norway"[Mesh] OR "Qatar"[Mesh] OR "Saudi Arabia"[Mesh] OR "Singapore"[Mesh] OR "Spain"[Mesh] OR "Sweden"[Mesh] OR "Switzerland"[Mesh] OR "Taiwan"[Mesh] OR "United Arab Emirates"[Mesh] OR "United States"[Mesh] OR "United States Virgin Islands"[Mesh]

FULL SEARCH STRING: PubMed (October 03, 2018) Yield: 796
(((((((National Health Insurance[Title/Abstract] OR Social Health Insurance[Title/Abstract] OR Community-based Health Insurance[Title/Abstract] OR Community based Health Insurance[Title/Abstract] OR Community Health Insurance[Title/Abstract] OR Mandatory Health Insurance[Title/Abstract] OR Informal Health Insurance[Title/Abstract] OR Single-payer system[Title/Abstract] OR Single Payer System[Title/Abstract])))) OR (("National Health Programs/economics"[Mesh] OR "Insurance"[Mesh] OR "Health Care Sector/economics"[Mesh] OR "Health Care Sector/organization and administration"[Mesh] OR "Financing, Organized"[Mesh] OR "Health care Financing"[Mesh] OR "Health Equity/economics"[Mesh] OR "Universal Coverage/economics"[Mesh] OR "Health Care Reform/economics"[Mesh] OR "National Health Programs/legislation and jurisprudence"[Mesh] OR "National Health Programs/organization and administration"[Mesh] OR "Universal Coverage/legislation and jurisprudence"[Mesh])))) AND ((((Mental Health Services OR Mental Health Service OR Mental Health care OR Mental Health Care OR Mental Health System OR Psychiatric Services OR Psychiatric Care OR Psychiatry Services OR Psychiatric Health Care OR Psychiatric Health care OR Psychiatry OR Mental Illness OR Mental Health OR Severe Mental Disorder OR Severe Mental Disorders OR Common Mental Disorder OR Common Mental Disorders OR Mental Illness OR Mentally Ill Persons OR Substance Disorder OR Substance Disorders OR Substance Abuse OR Substance-Use Disorder OR Substance Use Disorder OR Substance-Use Disorders OR Substance Use Disorders OR Alcohol Use Disorder OR Alcohol Use Disorders OR Alcohol Abuse OR Alcohol-Related Disorder OR Alcohol Related Disorder OR Alcohol Addiction OR Opioid Abuse OR Opiate Addiction OR Opioid-Related Disorder OR Opioid Related Disorder OR Cannabis-Related Disorder OR Cannabis Related Disorder OR Cocaine Related Disorder OR Cocaine-Related Disorder OR Cocaine Addiction OR Amphetamine-Related Disorder OR Amphetamine Related Disorder OR Amphetamine Addiction OR Heroin Dependence OR Heroin Abuse OR Heroin Addiction OR Substance Induced Psychoses OR Substance-Induced Psychoses OR Anxiety Disorders OR Anxiety Disorder OR Bipolar Disorder OR Bipolar Disorders OR Manic-Depressive Psychosis OR Manic Depressive Psychosis OR Bipolar Affective Psychosis OR Bipolar Affective Psychosis OR Manic-Depressive Psychoses OR Manic Depressive Psychoses OR Bipolar Affective Psychoses OR Bipolar Affective Psychoses OR Bipolar Depression OR Anorexia Nervosa OR Binge-Eating Disorder OR Bulimia Nervosa OR Anorexia OR Binge Eating OR Binge-Eating OR Bulimia OR Depressive Disorders OR Depressive Disorder OR Depression OR Unipolar Depression OR Unipolar Depressions OR Mood Disorder OR Mood Disorders OR Dementia OR Dementias OR Attention Deficit Disorders OR Attention Deficit Disorders OR Conduct Disorder OR Conduct Disorders OR Neurocognitive Disorder OR Neurotic Disorder OR Neurodevelopmental Disorder OR Developmental Disability OR Development Disability OR Developmental Disorder OR Development Disorder OR Autism Spectrum Disorder OR Asperger Syndrome OR Autistic Disorder OR Autistic Disorder OR Autism Spectrum Disorders OR Autism Spectrum Disorder OR Autism OR Aspergers Disease OR

Aspergers Syndrome OR Asperger's Disease OR Asperger's Syndrome OR Kanner's Syndrome OR Kanner Syndrome OR Kanners Syndrome OR Schizophrenia OR Catatonic Schizophrenia OR Disorganized Schizophrenia OR Paranoid Schizophrenia OR Psychotic Disorder OR Psychotic Disorders OR Psychosis OR Psychoses OR Schizoaffective Disorder OR Schizoaffective Disorders OR Schizophreniform Disorders OR Schizophreniform Disorder OR Psychotic Affective Disorder OR Psychotic Affective Disorders OR Psychotic Mood Disorders OR Psychotic Mood Disorder OR Affective Psychoses OR Post-Traumatic Stress Disorder OR Post Traumatic Stress Disorder OR Post-Traumatic Stress Disorders OR Post Traumatic Stress Disorders OR Traumatic Stress Disorder OR Traumatic Stress Disorders OR Stress Disorder OR Stress Disorders OR Epilepsy OR Epilepsies OR Epileptic))) OR (("Mental Health Services"[Mesh] OR "Psychiatry/supply and distribution"[Mesh] OR "Psychiatry/organization and administration"[Mesh] OR "Psychiatry/therapy"[Mesh] OR "Psychiatry/utilization"[Mesh] OR "Emergency Services, Psychiatric"[Mesh] OR "Mental Disorders/prevention and control"[Mesh] OR "Mental Disorders/organization and administration"[Mesh] OR "Mental Disorders/economics"[Mesh] OR "Mental Disorders/legislation and jurisprudence"[Mesh] OR "Mental Disorders/therapy"[Mesh] OR "Mental Disorders/statistics and numerical data"[Mesh] OR "Mental Disorders/trends"[Mesh] OR "Epilepsy/prevention and control"[Mesh] OR "Epilepsy/organization and administration"[Mesh] OR "Epilepsy/economics"[Mesh] OR "Epilepsy/legislation and jurisprudence"[Mesh] OR "Epilepsy/therapy"[Mesh] OR "Epilepsy/statistics and numerical data"[Mesh]))))) AND ((Afghanistan[Title/Abstract] OR Albania[Title/Abstract] OR Algeria[Title/Abstract] OR Angola[Title/Abstract] OR Antigua[Title/Abstract] OR Argentina[Title/Abstract] OR Armenia[Title/Abstract] OR Azerbaijan[Title/Abstract] OR Bangladesh[Title/Abstract] OR Barbados[Title/Abstract] OR Belarus[Title/Abstract] OR Belize[Title/Abstract] OR Benin[Title/Abstract] OR Bhutan[Title/Abstract] OR Bolivia[Title/Abstract] OR Bosnia[Title/Abstract] OR Botswana[Title/Abstract] OR Brazil[Title/Abstract] OR Bulgaria[Title/Abstract] OR Burkina Faso[Title/Abstract] OR Burundi[Title/Abstract] OR Cabo Verde[Title/Abstract] OR Cambodia[Title/Abstract] OR Cameroon[Title/Abstract] OR Central African Republic[Title/Abstract] OR Chad[Title/Abstract] OR Chile[Title/Abstract] OR China[Title/Abstract] OR Colombia[Title/Abstract] OR Comoros[Title/Abstract] OR Congo[Title/Abstract] OR Costa Rica[Title/Abstract] OR Cote D'Ivoire[Title/Abstract] OR Côte d'Ivoire[Title/Abstract] OR Cuba[Title/Abstract] OR Cyprus[Title/Abstract] OR Democratic People's Republic of Korea[Title/Abstract] OR Democratic Peoples Republic of Korea[Title/Abstract] OR Deprived Countries[Title/Abstract] OR Deprived Population[Title/Abstract] OR Deprived Populations[Title/Abstract] OR Developing Countries[Title/Abstract] OR Developing Country[Title/Abstract] OR Developing Economies[Title/Abstract] OR Developing Economy[Title/Abstract] OR Developing Nation[Title/Abstract] OR Developing Nations[Title/Abstract] OR Developing Population[Title/Abstract] OR Developing Populations[Title/Abstract] OR Developing World[Title/Abstract] OR Djibouti[Title/Abstract] OR Dominica[Title/Abstract] OR Dominican Republic[Title/Abstract] OR Ecuador[Title/Abstract] OR Egypt[Title/Abstract] OR El Salvador[Title/Abstract] OR Equatorial Guinea[Title/Abstract] OR Eritrea[Title/Abstract] OR Ethiopia[Title/Abstract] OR Fiji[Title/Abstract] OR Gabon[Title/Abstract] OR Gambia[Title/Abstract] OR Gaza[Title/Abstract] OR Georgia[Title/Abstract] OR Ghana[Title/Abstract] OR Gibraltar[Title/Abstract] OR Greece[Title/Abstract] OR Grenada[Title/Abstract] OR Guatemala[Title/Abstract] OR Guinea[Title/Abstract] OR Guinea-Bissau[Title/Abstract] OR Guyana[Title/Abstract] OR Haiti[Title/Abstract] OR Honduras[Title/Abstract] OR Hungary[Title/Abstract] OR India[Title/Abstract] OR Indonesia[Title/Abstract] OR Iran[Title/Abstract] OR Iraq[Title/Abstract] OR Ivory Coast[Title/Abstract] OR Jamaica[Title/Abstract] OR Jordan[Title/Abstract] OR Kazakhstan[Title/Abstract] OR Kenya[Title/Abstract] OR Kiribati[Title/Abstract] OR Kosovo[Title/Abstract] OR Kyrgyz Republic[Title/Abstract] OR LAMI Countries[Title/Abstract] OR LAMI Country[Title/Abstract] OR LAMIC[Title/Abstract] OR Lao[Title/Abstract] OR Lebanon[Title/Abstract] OR Lesotho[Title/Abstract] OR Less Developed Countries[Title/Abstract] OR Less Developed Country[Title/Abstract] OR Less Developed Economies [Title/Abstract] OR Less Developed Nation[Title/Abstract] OR Less Developed Nations[Title/Abstract] OR Less Developed World[Title/Abstract] OR Lesser Developed Countries[Title/Abstract] OR Lesser Developed Nations[Title/Abstract] OR Liberia[Title/Abstract] OR Libya[Title/Abstract] OR LMIC[Title/Abstract] OR LMICS[Title/Abstract] OR Low GDP[Title/Abstract] OR Low GNP[Title/Abstract] OR Low Gross Domestic[Title/Abstract] OR Low Gross National[Title/Abstract]

OR Low Income Countries[Title/Abstract] OR Low Income Country[Title/Abstract] OR Low Income Economies [Title/Abstract] OR Low Income Economy[Title/Abstract] OR Low Income Nations[Title/Abstract] OR Low Income Population[Title/Abstract] OR Low Income Populations[Title/Abstract] OR Lower GDP[Title/Abstract] OR lower gross domestic[Title/Abstract] OR Lower Income Countries[Title/Abstract] OR Lower Income Country[Title/Abstract] OR Lower Income Nations[Title/Abstract] OR Lower Income Population[Title/Abstract] OR Lower Income Populations[Title/Abstract] OR Macao[Title/Abstract] OR Macedonia[Title/Abstract] OR Madagascar[Title/Abstract] OR Malawi[Title/Abstract] OR Malaysia[Title/Abstract] OR Maldives[Title/Abstract] OR Mali[Title/Abstract] OR Malta[Title/Abstract] OR Marshall Islands[Title/Abstract] OR Mauritania[Title/Abstract] OR Mauritius[Title/Abstract] OR Mexico[Title/Abstract] OR Micronesia[Title/Abstract] OR Middle Income Countries[Title/Abstract] OR Middle Income Country[Title/Abstract] OR Middle Income Economies [Title/Abstract] OR Middle Income Nation[Title/Abstract] OR Middle Income Nations[Title/Abstract] OR Middle Income Population[Title/Abstract] OR Middle Income Populations[Title/Abstract] OR Moldova[Title/Abstract] OR Mongolia[Title/Abstract] OR Montenegro[Title/Abstract] OR Morocco[Title/Abstract] OR Mozambique[Title/Abstract] OR Myanmar[Title/Abstract] OR Namibia[Title/Abstract] OR Nauru[Title/Abstract] OR Nepal[Title/Abstract] OR New Caledonia[Title/Abstract] OR Nicaragua[Title/Abstract] OR Niger[Title/Abstract] OR Nigeria[Title/Abstract] OR North Korea[Title/Abstract] OR Oman[Title/Abstract] OR Pakistan[Title/Abstract] OR Panama[Title/Abstract] OR Papua New Guinea[Title/Abstract] OR Paraguay[Title/Abstract] OR Peru[Title/Abstract] OR Philippines[Title/Abstract] OR Poland[Title/Abstract] OR Poor Countries[Title/Abstract] OR Poor Country[Title/Abstract] OR Poor Economies [Title/Abstract] OR Poor Economy[Title/Abstract] OR Poor Nation[Title/Abstract] OR Poor Nations[Title/Abstract] OR Poor Population[Title/Abstract] OR Poor Populations[Title/Abstract] OR poor world[Title/Abstract] OR Poorer Countries[Title/Abstract] OR Poorer Economies [Title/Abstract] OR Poorer Economy[Title/Abstract] OR Poorer Nations[Title/Abstract] OR Poorer Population[Title/Abstract] OR Poorer Populations[Title/Abstract] OR Portugal[Title/Abstract] OR Puerto Rico[Title/Abstract] OR Republic of Congo[Title/Abstract] OR Republic of Korea[Title/Abstract] OR Romania[Title/Abstract] OR Russian Federation[Title/Abstract] OR Rwanda[Title/Abstract] OR Samoa[Title/Abstract] OR Sao Tome[Title/Abstract] OR São Tomé[Title/Abstract] OR Senegal[Title/Abstract] OR Serbia[Title/Abstract] OR Seychelles[Title/Abstract] OR Sierra Leone[Title/Abstract] OR Solomon Islands[Title/Abstract] OR Somalia[Title/Abstract] OR South Africa[Title/Abstract] OR South Korea[Title/Abstract] OR South Sudan[Title/Abstract] OR Sri Lanka[Title/Abstract] OR St. Kitts[Title/Abstract] OR St. Lucia[Title/Abstract] OR St. Vincent [Title/Abstract] OR Sudan[Title/Abstract] OR Suriname[Title/Abstract] OR Swaziland[Title/Abstract] OR Syria[Title/Abstract] OR Tajikistan[Title/Abstract] OR Tanzania[Title/Abstract] OR Thailand[Title/Abstract] OR the Grenadines[Title/Abstract] OR Third World[Title/Abstract] OR Timor-Leste[Title/Abstract] OR Tobago[Title/Abstract] OR Togo[Title/Abstract] OR Tonga[Title/Abstract] OR Transitional Countries[Title/Abstract] OR Transitional Country[Title/Abstract] OR Transitional Economies[Title/Abstract] OR Transitional Economy[Title/Abstract] OR Trinidad[Title/Abstract] OR Tunisia[Title/Abstract] OR Turkey[Title/Abstract] OR Turkmenistan[Title/Abstract] OR Tuvalu[Title/Abstract] OR Uganda[Title/Abstract] OR Ukraine[Title/Abstract] OR Under Developed Countries[Title/Abstract] OR Under Developed Country[Title/Abstract] OR under developed nations[Title/Abstract] OR Under Developed World[Title/Abstract] OR Under Served Population[Title/Abstract] OR Under Served Populations[Title/Abstract] OR Underdeveloped Countries[Title/Abstract] OR Underdeveloped Country[Title/Abstract] OR underdeveloped economies[Title/Abstract] OR underdeveloped nations[Title/Abstract] OR underdeveloped population[Title/Abstract] OR Underdeveloped World[Title/Abstract] OR Underserved Countries[Title/Abstract] OR Underserved Nations[Title/Abstract] OR Underserved Population[Title/Abstract] OR Underserved Populations[Title/Abstract] OR Uruguay[Title/Abstract] OR Uzbekistan[Title/Abstract] OR Vanuatu[Title/Abstract] OR Venezuela[Title/Abstract] OR Vietnam[Title/Abstract] OR West Bank[Title/Abstract] OR Yemen[Title/Abstract] OR Zambia[Title/Abstract] OR Zimbabwe[Title/Abstract])))) NOT ((“Aruba"[Mesh] OR "Australia"[Mesh] OR "South Australia"[Mesh] OR "Western Australia"[Mesh] OR "Austria"[Mesh] OR "Bahamas"[Mesh] OR "Bahrain"[Mesh] OR "Belgium"[Mesh] OR "Bermuda"[Mesh] OR "Brunei"[Mesh] OR "Canada"[Mesh] OR "Channel Islands"[Mesh] OR "Denmark"[Mesh] OR "Finland"[Mesh] OR "France"[Mesh] OR "Germany"[Mesh] OR "Germany, West"[Mesh] OR

"Germany, East"[Mesh] OR "Greenland"[Mesh] OR "Guam"[Mesh] OR "Hong Kong"[Mesh] OR "Iceland"[Mesh] OR "Ireland"[Mesh] OR "United Kingdom"[Mesh] OR "Israel"[Mesh] OR "Italy"[Mesh] OR "Japan"[Mesh] OR "Kuwait"[Mesh] OR "Luxembourg"[Mesh] OR "Netherlands"[Mesh] OR "New Zealand"[Mesh] OR "Norway"[Mesh] OR "Qatar"[Mesh] OR "Saudi Arabia"[Mesh] OR "Singapore"[Mesh] OR "Spain"[Mesh] OR "Sweden"[Mesh] OR "Switzerland"[Mesh] OR "Taiwan"[Mesh] OR "United Arab Emirates"[Mesh] OR "United States"[Mesh] OR "United States Virgin Islands"[Mesh]))

Appendix E

Semi-structured Mental Health Financing Diagnostic interview guides

INTERVIEW DATE	
INTERVIEWER	
START TIME	:
END TIME	:
[illegible]	

MENTAL HEALTH FINANCING DIAGNOSTIC TOOL
STATE ACTORS – HEALTH

RESPONDENT INFORMATION	
1.01	
1.02	**FIRST NAME(S)**
1.03	**LAST NAME(S)**
1.04	**GENDER**
1.05	**ORGANIZATIONAL AFFILIATION**
1.06	

PREAMBLE

We are conducting interviews with key experts in a number of different government, and non-governmental agencies in *[Country Name]* , including experts involved in Finance, Health, Parliament, Social Welfare and Economic Development. We are conducting these interviews to answer the overall question of:

How can scaled-up mental health services in *[Country Name]* best be paid for in a way that is feasible, fair and appropriate and within the fiscal constraints and structures of the country?

Depending on your interests or involvement, we would like to ask you questions regarding your opinions on:

* The main perceived challenges/constraints to increased public health financing, generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will;

* Options for moving towards more adequate, fair and appropriate financing for health and mental health service development and system strengthening;

* Criteria for identifying most suitable strategies for sustainable financing (strength of preference): efficiency, equity, poverty reduction, economic growth and political feasibility.

By conducting these interviews, we hope to generate a comprehensive picture of the main opportunities and also challenges to equitable and sustainable financing of a scaled-up mental health service in *[Country Name]*. The analysis of these interviews will provide an optimal starting point with which to identify:

* mechanisms to raise general government revenues (thereby raising increased revenues for health);
* improvements in the efficiency with which resources are currently mobilized and spent; and
* innovative mechanisms to raise new funds that could go directly to improving the resource availability for health services, including mental health.

Before beginning the interview, we would like to remind you that all responses and comments that you make during this interview will be kept confidential, and you will **not** be quoted or individually identified with specific opinions in any publications, reports, presentations or the proposed round-table discussion with interested stakeholders. Confidentiality will be maintained throughout the research process, as set out in the Informed Consent form we ask you to complete. Participant names will not be used. Instead a unique identifier will be used. All study data will be kept in a secure place and the informed consent documentation will be kept in a lock and key cabinet.

Do you have any questions about the interview before we proceed?

We will start the interview with questions that help to identify your background and expertise, so that we ask you questions that are within your area of expertise.

A. Which area(s) of the health sector are you primarily involved in?

i. Do you work in the government / public health sector? [YES / NO]
ii. Do you work in the area of mental health? [YES / NO]
iii. Do you work in the area of health financing? [YES / NO]

B. What is your job title and place of work?

_____

_____

HEALTH SECTOR PLANNING

We will start the interview with questions that discuss the current conditions and planned changes in the public/health sector organization and financing that are likely to affect the Mental Health programme's resource requirements, availability or use.

1. When comparing Mental Health with other Health-sector programme areas in [Country Name]**, do you think that Mental Health has been given adequate priority?**

Probe on: Do you feel that decision-makers in the public sector are aware of the magnitude of mental illness in [Country Name]
Probe on: Do you feel that decision-makers in the public sector are aware of the impacts of mental illness to the economy and the health of the population?
Probe on: What key messages do you think would convince decision makers to address mental health as a health-sector priority?

2. From your experience and point of view, how would you describe the current provision of mental health services in [Country Name]**?**

Probe on: Availability of Services
Probe on: Quality of Services
Probe on: Structure of Services
Probe on: Affordability of Services
Probe on: Access to Services

3. What population segments do you feel are unable to access adequate mental health services in [Country Name]?

Probe on: Specific regions, ethnic, socioeconomic or gender groups, vulnerable groups such as the disabled, women and children.

4. Do you think that the mental health system in [Country Name] is resourced efficiently?

Probe on: What is the distribution of patients being seen at tertiary/specialized care, vs district or primary care? Outpatient vs. Inpatient?
Probe on: In what ways could the delivery of mental health services be reorganized to use resources more efficiently (better value for money).

5. Has a multi-year plan been developed for the mental health sector?

Probe on: Are there planned programme improvements to the National Mental Health program over the next 5-10 years?
Probe on: Are the costing and budgeting requirements of all mental health strategies included in the current National plan?
Probe on: Do these plans include specific directives to improve coverage of Mental Health services for those living in hard to reach areas or for any other specific population sub-groups?

6. Is mental health integrated into overall health policy, planning and practice?

If yes:
Probe on: Is mental health represented in the national health plan?
Probe on: Are mental disorders included in any essential package of care?
Probe on: Is the prevention and management of mental, neurological and substance use disorders considered an integral part of the response to the burden of non-communicable diseases?

If no:
Probe on: Are mental health services largely or entirely separated from other health services?
Probe on: What would be the main opportunities for better integration of mental health into health policy, planning and practice?

In the next set of questions, we will ask about current mental health financing arrangements in the country.

7. Is there a specific budget line item for Mental Health services in [Country Name]?

If yes:
Probe on: What is this budget intended to cover? What is excluded from this budget – and how are these excluded items paid for?
Probe on: How is this budget intended to flow through the health sector?
Probe on: How is the budget determined – based on historical budget totals or estimates of resource needs? Is the budget planning centrally coordinated or does it begin at the district level?

If no:
Probe on: How are mental health services paid for in [Country Name] in the absence of specific budget allocations?
Probe on: Is this budget guaranteed, or does it vary?

8. Is the total current funding for the Mental Health known by funding source?

Probe on: Awareness of funding for all levels of mental health system, and by all possible funding sources.

9. In terms of recurrent health expenditures, does the current health budget make specific provisions for: salaries for health workers involved in mental health service delivery, medicines related to the treatment of mental health conditions, facility and equipment maintenance costs?

Probe on: Are all health workers paid on time?
Probe on: Is the budget sufficient to cover the costs of medicines for those affected by mental disorder? Are there medications for which patients are required to cover out of pocket?
Probe on: Do you feel that primary and district level facilities are equipped to deal with patients presenting with severe mental health symptoms?

10. Are there any patterns of mental health staff vacancies that have been identified in the health system?
Probe on: Difficulties retaining specific cadres of mental health personnel

11. Do you feel like the available budget for mental health services in [Country Name] is adequate in terms of addressing the resource needs for mental health?

If yes:
Probe on: What indicators are used to assess the adequacy of mental health financing?
Probe on: Is there an annual review of the Mental Health programme's funding and expenditures by those responsible for the planning, budgeting and resource mobilization process within the health sector? Has the resource needs and potential funding gaps ever been evaluated in your Country?

If no:
Probe on: In your opinion, what are the most important impacts of this inadequate resourcing?
Probe on: Do you feel that improving the budget availability for mental health services is sufficient to address the impacts of mental health service provision in [Country Name]?
Probe on: What other actions do you think may be required to address the inadequate resourcing of mental health services (e.g. human resource development, governance, coordination, better use of funds that are available – decentralized care)

HEALTH FINANCING POLICY

In the next set of questions, we will ask about any ongoing health financing efforts or future plans as well as the budgetary (and efficiency) implications for mental health service development.

12. Are there any planned changes in the financing strategy or financing mechanisms to fund the health system that are likely to have a positive impact on the funding of mental health services in [Country Name]*?*

Probe on: Social health insurance, community financing, payroll taxes, other…
Probe on: How are these plans likely to impact the funding of mental health services?

13. (If reforms are planned): Do you feel that these plans are feasible? Can you foresee any challenges that might emerge as these reforms are implemented?

Probe on: Potential opposition
Probe on: Challenges in terms of governance, implementation, time-frame(s)

14. Do you feel that the financing and resourcing arrangements reflected in these plans will be sufficient to address the future mental health needs of [Country Name]?

Probe on: Do these plans take into account changing demographic trends?
Probe on: To what extent do these plans reflect the changing burden of disease – toward non-communicable disease, for example?

Now, we'd like to ask questions about the process for change: how things work (in public health finance), how they get done, how long they take to do, key players and structures, links to other sectors (political economy)

15. Who is responsible for deciding how much funding is available for health services in [Country Name]*?*

Probe on: All stakeholders both within and external to the health sector

16. What is the process for deciding how much funding is available for mental health service provision in [Country Name]*?*

Probe on: Who sets the priorities for funding?
Probe on: What does the process look like?
Probe on: When does the process start/end?

17. How are mental health budgets allocated and dispersed, across levels of the health system, in [Country Name]?

Probe on: How do central budgets get disbursed to regions?
Probe on: What are the criteria used to allocate budgets?

18. How are health budgets allocated and dispersed, across program area, in [Country Name]?

Probe on: Does the allocation of health budgets to specific program areas occur at the central, regional or local government levels?
Probe on: Do you feel that those who have the autonomy to determine allocations of health budgets to specific program are motivated by resource needs or other factors (policitcal interests)?

19. What institutions are responsible for conducting oversight in the health sector?

Probe on: Speficially, who is responsible for ensuring the resources are used efficiently and effectively?
Probe on: Are public officials held to account when health funds are not used effectively, or when health programs do not have the intended results?
Probe on: At what level of the public service is accountability for use of health funds, and impact of health programs held?

20. How does the government track health system performance?

Probe on: Facility level, regionally, nationally

21. How does the government track financial flows and performance?

Probe on: districtlevel, regionally, nationally

22. Who are the key stakeholders, outside of the Health sector, that impact or influence the availability of financing for the health sector?

Probe on: National Development Planning, National Strategic Planning, Portfolio Committees, Parliament, Minister(s) of Finance, Treasury, Economy…
Probe on: How are their interests different to stakeholders in the health sector?
Probe on: What factors do you believe these non-health stakeholders consider when determining resource availability for the health sector?

23. What is your perception of the overall financing system for health in general and mental health in particular?

Probe on: Pros and Cons of existing processes for budget formulation, allocation, ability to use allocated funds.
Probe on: How do you feel these challenges could be addressed?

MACROECONOMIC POLICY

The next questions will ask about the main perceived challenges/constraints to increased public health financing, generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will.

24. Are there any macroeconomic issues facing the country that are expected to positively or negatively affect the future funding of the health sector and/or mental health program?

Probe on: Economic Growth
Probe on: Unemployment
Probe on: Debt
Probe on: Inflation
Probe on: Other

25. Does economic growth contribute to additional resources for health?

Probe on: How do policy priorities affect the share of public spending allocated to health?
Probe on: Is the government budget in deficit? If so, for how long – how large is the current government debt? How does the need to service this debt impact on the country's capacity to increased revenues?
Probe on: If economic growth leads to additional resources for health but not mental health, why do you think this is the case?

26. Do you think that the mental health sector advocates effectively for its fair share of government funds?

Probe on: How would you describe the mental health sector's efforts to advocate for for an increased share of government revenues?
Probe on: What opposition does the health sector typically receive from external governmental agencies when advocating for an increased share of government revenues?

27. Do you think that one of the challenges to attracting a larger share of government revenues for health is the health sector's inability to demonstrate effective use of existing funds?

Probe on: How do you think the health sector can improve the ways in which it demonstrates effective use of resources?
Probe on: What (outcomes) would encourage the Finance ministry to allocate more funds to the health sector?

Moving on to options for change toward more feasible, fair and appropriate strategies to raise the required resources for a scaled up mental health service through (and main perceived challenges)

28. Is the total funding requirement for the mental health programme by funding source known for the next 5 years?

29. Are government funds for the mental health programme predictable for up to 5 years?

30. Are donor funds for the mental health programme predictable for up to 5 years?

31. Is there an estimate of the potential funding gap for mental health for the next 5 years?

32. Is there any indication of changes in funding priorities of national or external funding partners that are likely to have positive affect on the funding of the mental health programme?

33. Are new sources and mechanisms of internal and external funding being considered for future funding of the mental health programme?

As we approach the end of the interview, we'd like to ask for a few final comments and provide you with an opportunity to raise any issues that we may have not discussed

34. Imagine that it is ten years from now and you are looking back at the last decade, 2016-2026. If you were to tell a story of how a low- or middle-income country effectively advocated for and implemented a scaled-up mental health service, sustainably financed and integrated into the wider health system, and afforded its population universal coverage to mental health services, at a high impact platform for delivering support to country health systems, what would the story be? What would have been the key elements of success?

35. In order to achieve the successes you describe, what sort of ongoing engagement with stakeholders would be required?

36. Are there any other issues you would like to raise?

Thank you for making the time to talk to me today.

INTERVIEW DATE	
INTERVIEWER	
START TIME	:
END TIME	:
[illegible]	

MENTAL HEALTH FINANCING DIAGNOSTIC TOOL
STATE ACTORS – FINANCE

RESPONDENT INFORMATION	
1.01	
1.02	**FIRST NAME(S)**
1.03	**LAST NAME(S)**
1.04	**GENDER**
1.05	**ORGANIZATIONAL AFFILIATION**
1.06	

PREAMBLE

We are conducting interviews with key experts in a number of different government, and non-governmental agencies in *[Country Name]* , including experts involved in Finance, Health, Parliament, Social Welfare and Economic Development. We are conducting these interviews to answer the overall question of:

How can scaled-up mental health services in *[Country Name]* best be paid for in a way that is feasible, fair and appropriate and within the fiscal constraints and structures of the country?

Depending on your interests or involvement, we would like to ask you questions regarding your opinions on:

* The main perceived challenges/constraints to increased public health financing, generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will;

* Options for moving towards more adequate, fair and appropriate financing for health and mental health service development and system strengthening;

* Criteria for identifying most suitable strategies for sustainable financing (strength of preference): efficiency, equity, poverty reduction, economic growth and political feasibility.

By conducting these interviews, we hope to generate a comprehensive picture of the main opportunities and also challenges to equitable and sustainable financing of a scaled-up mental health service in *[Country Name]*. The analysis of these interviews will provide an optimal starting point with which to identify:

* mechanisms to raise general government revenues (thereby raising increased revenues for health);
* improvements in the efficiency with which resources are currently mobilized and spent; and
* innovative mechanisms to raise new funds that could go directly to improving the resource availability for health services, including mental health.

Before beginning the interview, we would like to remind you that all responses and comments that you make during this interview will be kept confidential, and you will **not** be quoted or individually identified with specific opinions in any publications, reports, presentations or the proposed round-table discussion with interested stakeholders. Confidentiality will be maintained throughout the research process, as set out in the Informed Consent form we ask you to complete. Participant names will not be used. Instead a unique identifier will be used. All study data will be kept in a secure place and the informed consent documentation will be kept in a lock and key cabinet.

Do you have any questions about the interview before we proceed?

We will start the interview with questions that help to identify your background and expertise, so that we ask you questions that are within your area of expertise.

A. Which area(s) of the finance sector are you primarily involved in?

i. Do you work in the government (e.g. Ministry of Finance or Planning)? [YES / NO]
ii. Are you involved in health sector planning or financing? [YES / NO]

B. What is your job title and place of work?

_____

_____

We will start the interview with questions that discuss the current economic conditions and planned any ongoing health financing efforts or future plans as well as the budgetary (and efficiency) implications for health service development.

HEALTH FINANCING POLICY

1. **Are there any planned changes in the financing strategy or financing mechanisms to fund the health system that are likely to have a positive impact on the funding of mental health services in [Country Name]***?*

   Probe on: Social health insurance, community financing, payroll taxes, other…
   Probe on: How are these plans likely to impact the funding of mental health services?

2. **(If reforms are planned): Do you feel that these plans are feasible? Can you foresee any challenges that might emerge as these reforms are implemented?**

   Probe on: Potential opposition
   Probe on: Challenges in terms of governance, implementation, time-frame(s)

3. **Do you feel that the financing and resourcing arrangements reflected in these plans will be sufficient to address the future mental health needs of [Country Name]?**

   Probe on: Do these plans take into account changing demographic trends?
   Probe on: To what extent do these plans reflect the changing burden of disease – toward non-communicable disease, for example?

Now, we'd like to ask questions about the process for change: how things work (in public health finance), how they get done, how long they take to do, key players and structures, links to other sectors (political economy)

4. **Who is responsible for deciding how much funding is available for health services in [Country Name]***?*

   Probe on: All stakeholders both within and external to the health sector

5. **What is the process for deciding how much funding is available for mental health service provision in [Country Name]***?*

   Probe on: Who sets the priorities for funding?
   Probe on: What does the process look like?
   Probe on: When does the process start/end?

6. **How are mental health budgets allocated and dispersed, across levels of the health system, in [Country Name]?**

   Probe on: How do central budgets get disbursed to regions?
   Probe on: What are the criteria used to allocate budgets?

7. **How are health budgets allocated and dispersed, across program area, in [Country Name]?**

   Probe on: Does the allocation of health budgets to specific program areas occur at the central, regional or local government levels?
   Probe on: Do you feel that those who have the autonomy to determine allocations of health budgets to specific program are motivated by resource needs or other factors (policitcal interests)?

8. **What institutions are responsible for conducting oversight in the health sector?**

   Probe on: Speficially, who is responsible for ensuring the resources are used efficiently and effectively?
   Probe on: Are public officials held to account when health funds are not used effectively, or when health programs do not have the intended results?
   Probe on: At what level of the public service is accountability for use of health funds, and impact of health programs held?

9. **How does the government track health system performance?**

Probe on: Facility level, regionally, nationally

10. **How does the government track financial flows and performance?**

Probe on: districtlevel, regionally, nationally

11. **Who are the key stakeholders, outside of the Health sector, that impact or influence the availability of financing for the health sector?**
Probe on: National Development Planning, National Strategic Planning, Portfolio Committees, Parliament, Minister(s) of Finance, Treasury, Economy…
Probe on: How are their interests different to stakeholders in the health sector?
Probe on: What factors do you believe these non-health stakeholders consider when determining resource availability for the health sector?

12. **What is your perception of the overall financing system for health in general and mental health in particular?**

Probe on: Pros and Cons of existing processes for budget formulation, allocation, ability to use allocated funds.
Probe on: How do you feel these challenges could be addressed?

MACROECONOMIC POLICY

The next questions will ask about the main perceived challenges/constraints to increased public health financing, generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will.

13. **Are there any macroeconomic issues facing the country that are expected to positively or negatively affect the future funding of the health sector and/or mental health program?**

Probe on: Economic Growth
Probe on: Unemployment
Probe on: Debt
Probe on: Inflation
Probe on: Other

14. **Does economic growth contribute to additional resources for health?**

Probe on: How do policy priorities affect the share of public spending allocated to health?
Probe on: Is the government budget in deficit? If so, for how long – how large is the current government debt? How does the need to service this debt impact on the country's capacity to increased revenues?
Probe on: If economic growth leads to additional resources for health but not mental health, why do you think this is the case?

15. **Do you think that the mental health sector advocates effectively for its fair share of government funds?**

Probe on: How would you describe the mental health sector's efforts to advocate for for an increased share of government revenues?
Probe on: What opposition does the health sector typically receive from external governmental agencies when advocating for an increased share of government revenues?

16. **Do you think that one of the challenges to attracting a larger share of government revenues for health is the health sector's inability to demonstrate effective use of existing funds?**

Probe on: How do you think the health sector can improve the ways in which it demonstrates effective use of resources?
Probe on: What (outcomes) would encourage the Finance ministry to allocate more funds to the health sector?

Moving on to options for change toward more feasible, fair and appropriate strategies to raise the required resources for a scaled up health service (and main perceived challenges)

17. **Is the total funding requirement for the health system by funding source known for the next 5 years?**

18. **Are government funds for the health system predictable for up to 5 years?**

19. **Are donor funds for the health system predictable for up to 5 years?**

20. **Is there an estimate of the potential funding gap for the health system for the next 5 years?**

21. **Is there any indication of changes in funding priorities of national or external funding partners that are likely to have positive affect on the funding of the health system?**

22. **Are new sources and mechanisms of internal and external funding being considered for future funding of the health system**

As we approach the end of the interview, we'd like to ask for a few final comments and provide you with an opportunity to raise any issues that we may have not discussed

23. **Imagine that it is ten years from now and you are looking back at the last decade, 2016-2026. If you were to tell a story of how a low- or middle-income country effectively advocated for and implemented innovative sustainable financing strategies for the health sector, which increased government revenues available to the health sector, and afforded its population universal coverage to health services, at a high impact platform for delivering support to country health systems, what would the story be? What would have been the key elements of success?**

24. **In order to achieve the successes you describe, what sort of ongoing engagement with stakeholders would be required?**

25. **Are there any other issues you would like to raise?**

Thank you for making the time to talk to me today.

INTERVIEW DATE	
INTERVIEWER	
START TIME	:
END TIME	:
[illegible]	

MENTAL HEALTH FINANCING DIAGNOSTIC TOOL
NON HEALTH/FINANCE STATE ACTORS

RESPONDENT INFORMATION	
1.01	
1.02	**FIRST NAME(S)**
1.03	**LAST NAME(S)**
1.04	**GENDER**
1.05	**ORGANIZATIONAL AFFILIATION**
1.06	

MENTAL HEALTH FINANCING DIAGNOSTIC TOOL

STAKEHOLDER GROUP(S): NON HEALTH/FINANCE STATE ACTORS

PREAMBLE

We are conducting interviews with key experts in a number of different government, and non-governmental agencies in *[Country Name]* , including experts involved in Finance, Health, Parliament, Social Welfare and Economic Development. We are conducting these interviews to answer the overall question of:

How can scaled-up mental health services in *[Country Name]* best be paid for in a way that is feasible, fair and appropriate and within the fiscal constraints and structures of the country?

Depending on your interests or involvement, we would like to ask you questions regarding your opinions on:

- The main perceived challenges/constraints to increased public health financing, generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will;
- Options for moving towards more adequate, fair and appropriate financing for health and mental health service development and system strengthening;
- Criteria for identifying most suitable strategies for sustainable financing (strength of preference): efficiency, equity, poverty reduction, economic growth and political feasibility.

By conducting these interviews, we hope to generate a comprehensive picture of the main opportunities and also challenges to equitable and sustainable financing of a scaled-up mental health service in *[Country Name]*. The analysis of these interviews will provide an optimal starting point with which to identify:

- mechanisms to raise general government revenues (thereby raising increased revenues for health);
- improvements in the efficiency with which resources are currently mobilized and spent; and
- innovative mechanisms to raise new funds that could go directly to improving the resource availability for health services, including mental health.

Before beginning the interview, we would like to remind you that all responses and comments that you make during this interview will be kept confidential, and you will **not** be quoted or individually identified with specific opinions in any publications, reports, presentations or the proposed round-table discussion with interested stakeholders. Confidentiality will be maintained throughout the research process, as set out in the Informed Consent form we ask you to complete. Participant names will not be used. Instead a unique identifier will be used. All study data will be kept in a secure place and the informed consent documentation will be kept in a lock and key cabinet.

Do you have any questions about the interview before we proceed?

We will start the interview with questions that help to identify your background and expertise, so that we ask you questions that are within your area of expertise.

A. What is your job title and place of work?

_____

We will start the interview with questions that discuss the current role of Mental Health in your field

1. **When comparing Mental Health with other Health-sector or Social-sector programme areas across your [ministry/department]'s portfolio, do you think that Mental Health has been given adequate priority?**

If yes:

Probe on: Why do you think it is important to address the mental health needs of the populations you serve?
If no:
Probe on: Do you feel that addressing the mental health needs of the populations you serve should be a priority? Please explain your answer. What key messages do you think would convince decision makers to address mental health as a priority?

(if yes, go to Questions 2; if not, go to Question 3)

2. Can you briefly describe the ways in which your [ministry/department] has prioritized the mental health needs of the populations you serve?

Probe on: Specific programs, services rendered directly to affected individuals and their households including financial assistance, grants, social care services or health services.

3. Do you think there are any specific population segments that are unable to access adequate mental health services in [Country Name]?

Probe on: Specific regions, ethnic, socioeconomic or gender groups, vulnerable groups such as the disabled, women and children.

4. From your experience and point of view, what key messages do you think would convince decision makers to address mental health as a priority?

In the next set of questions, we will ask about the resourcing arrangements in your [ministry/department]

5. Is there a specific budget line item for programs and services for those affected by Mental Disorders in your [ministry/department]?

If yes:
Probe on: What is this budget intended to cover? What is excluded from this budget – and how are these excluded items paid for?
Probe on: How is this budget intended to flow through the public sector?
Probe on: How is the budget determined – based on historical budget totals or estimates of resource needs? Is the budget planning centrally coordinated or does it begin at the district level?

6. Do you feel like the available budget for programs and services for those affected by Mental Disorders (or other vulnerable groups) in your [ministry/department] is adequate?

If yes:
Probe on: Do you think there are any ways in which this budget could be used more efficiently?

If no:
Probe on: In your opinion, what are the most important impacts of this inadequate resourcing?
Probe on: What changes or advocacy efforts do you think may be required to improve the resourcing of services for those affected by mental disorder and their families?

In the next set of questions, we will ask about any ongoing health financing efforts or future plans as well as the budgetary (and efficiency) implications for mental health service development.

7. Are there any planned changes to the financing strategies or financing mechanisms that are currently used to fund the [ministry/department] that are likely to have a positive impact on the funding of, or likelihood of funding for, services and programs for those affected by mental disorder and other vulnerable groups in [Country Name]*?*

Probe on: Changes in national development priorities, reorganization of social support agencies, other health-specific health financing reforms that may impact on social support agencies' functions and capacities.

8. **(If reforms are planned): Can you foresee any challenges that might emerge as these reforms are implemented?**

   Probe on: Long-term sustainability of existing programs that support those affected by mental disorder, their households and other vulnerable groups

Now, we'd like to ask questions about the process for change: how things work, how they get done, how long they take to do, key players and structures, links to other sectors (political economy)

9. **Who is responsible for deciding how much funding is, or could be available for programs that support those affected by mental disorder and their households in the [ministry/department]?**

   Probe on: All stakeholders both within and external to the [ministry/department]

10. **What is the process for deciding how much funding is, or could be available for programs that support those affected by mental disorder and their households in the [ministry/department]?**

    Probe on: Who sets the priorities for funding?
    Probe on: What does the process look like?
    Probe on: When does the process start/end?

11. **What institutions are responsible for conducting oversight in your sector?**

    Probe on: Specifically, who is responsible for ensuring the resources are used efficiently and effectively?
    Probe on: Are public officials held to account when funds are not used effectively, or when programs do not have the intended results?
    Probe on: At what level of the public service is accountability for use of funds, and impact of programs held?

12. **In your opinion, who are the key stakeholders that impact or influence the availability of funding for services and programs to improve the livelihoods of those affected by mental disorder and other vulnerable groups in [Country Name]***?*

    Probe on: What factors do you believe these stakeholders consider when determining resource availability for these services?
    Probe on: What factors do you believe would increase their appetite for funding programs which improve the livelihoods of those affected by mental disorder, and other vulnerable groups in [Country Name]?

The next questions will ask about the main perceived challenges/constraints to increased public sector financing, generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will.

13. **Are there any macroeconomic issues facing the country that are expected to positively or negatively affect the future funding of the programs and services you currently provide, or plan to provide – to those affected my mental disorder or other vulnerable groups in South Africa**

    Probe on: Economic Growth
    Probe on: Unemployment
    Probe on: Debt
    Probe on: Inflation
    Probe on: Other

14. **Does economic growth contribute to additional resources for your [ministry]?**

    Probe on: If economic growth leads to additional resources for the public sector, but not for your [ministry], why do you think this is the case?

As we approach the end of the interview, we'd like to ask for a few final comments and provide you with an opportunity to raise any issues that we may have not discussed

15. **Based on your experience, what do you feel are the most critical support needs for those affected by mental disorder and their families in [Country Name], both currently and over the next ten years, outside of health service/health sector needs?**

16. **Imagine that it is ten years from now and you are looking back at the last decade, 2016-2026. If you were to tell a story at a high impact platform about how [Country Name] was able to address the critical needs of those affected by mental disorder and their families, what would that story be? What would have been the key elements of success?**

17. **In order to achieve the successes you describe, what sort of ongoing engagement with stakeholders would be required?**

18. **Are there any other issues you would like to raise?**

Thank you for making the time to talk to me today.

INTERVIEW DATE	
INTERVIEWER	
START TIME	:
END TIME	:
[illegible]	

MENTAL HEALTH ENHANCING DIAGNOSTIC TOOL
NON-STATE ACTORS

RESPONDENT INFORMATION	
1.01	[illegible]
1.02	FIRST NAME(S)
1.03	LAST NAME(S)
1.04	GENDER
1.05	ORGANIZATIONAL AFFILIATION
1.06	[illegible]

NON-STATE ACTORS

PREAMBLE

We are conducting interviews with key experts in a number of different government, and non-governmental agencies in *[Country Name]* , including experts involved in Finance, Health, Parliament, Social Welfare and Economic Development. We are conducting these interviews to answer the overall question of:

How can scaled-up mental health services in *[Country Name]* best be paid for in a way that is feasible, fair and appropriate and within the fiscal constraints and structures of the country?

Depending on your interests or involvement, we would like to ask you questions regarding your opinions on:

* The main perceived challenges/constraints to increased public health financing, generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will;

* Options for moving towards more adequate, fair and appropriate financing for health and mental health service development and system strengthening;

* Criteria for identifying most suitable strategies for sustainable financing (strength of preference): efficiency, equity, poverty reduction, economic growth and political feasibility.

By conducting these interviews, we hope to generate a comprehensive picture of the main opportunities and also challenges to equitable and sustainable financing of a scaled-up mental health service in *[Country Name]*. The analysis of these interviews will provide an optimal starting point with which to identify:

* mechanisms to raise general government revenues (thereby raising increased revenues for health);
* improvements in the efficiency with which resources are currently mobilized and spent; and
* innovative mechanisms to raise new funds that could go directly to improving the resource availability for health services, including mental health.

Before beginning the interview, we would like to remind you that all responses and comments that you make during this interview will be kept confidential, and you will **not** be quoted or individually identified with specific opinions in any publications, reports, presentations or the proposed round-table discussion with interested stakeholders. Confidentiality will be maintained throughout the research process, as set out in the Informed Consent form we ask you to complete. Participant names will not be used. Instead a unique identifier will be used. All study data will be kept in a secure place and the informed consent documentation will be kept in a lock and key cabinet.

Do you have any questions about the interview before we proceed?

We will start the interview with questions that help to identify your background and expertise, so that we ask you questions that are within your area of expertise.

A. What is your job title and place of work?

_____

We will start the interview with questions that discuss the current role of Mental Health in your field

1. When comparing Mental Health with other Health-sector or Social-sector programme areas across your [organization]'s portfolio, do you think that Mental Health has been given adequate priority?

If yes:
Probe on: Why do you think it is important to address the mental health needs of the populations you serve?

If no:
Probe on: Do you feel that addressing the mental health needs of the populations you serve should be a priority? Please explain your answer. What key messages do you think would convince decision makers to address mental health as a priority?

(if yes, go to Questions 2; if not, go to Question 3)

2. Can you briefly describe the ways in which your [organization] has prioritized the mental health needs of the populations you serve?

Probe on: Specific programs, services rendered directly to affected individuals and their households including financial assistance, grants, social care services or health services.
Probe on: Support for existing State/public sector programs and services rendered through public sector agencies (for example, providing human resources, other resources, oversight)

3. Do you think there are any specific population segments that are unable to access adequate mental health services in [Country Name]?

Probe on: Specific regions, ethnic, socioeconomic or gender groups, vulnerable groups such as the disabled, women and children.

4. From your experience and point of view, what key messages do you think would convince decision makers to address mental health as a priority?

In the next set of questions, we will ask about the resourcing arrangements in your [organization]

5. Is there a specific budget line item for programs and services for those affected by Mental Disorders in your [organization]?

If yes:
Probe on: What is this budget intended to cover? What is excluded from this budget – and how are these excluded items paid for?

6. Do you feel like the available budget for programs and services for those affected by Mental Disorders (or other vulnerable groups) in your [organization] is adequate?

If yes:
Probe on: Do you think there are any ways in which this budget could be used more efficiently?

If no:
Probe on: In your opinion, what are the most important impacts of this inadequate resourcing?
Probe on: What changes or advocacy efforts do you think may be required to improve the resourcing of services for those affected by mental disorder and their families?

In the next set of questions, we will ask about any ongoing health financing efforts or future plans as well as the budgetary (and efficiency) implications for mental health service development.

7. Are there any planned changes to the financing strategies or financing mechanisms that are currently used to fund the [organization] that are likely to have a positive impact on the funding of, or likelihood of funding for, services and programs for those affected by mental disorder and other vulnerable groups in [Country Name]*?*

Probe on: Changes in national development priorities, reorganization of social support agencies,
Probe on: Changes in donor priorities or practices

8. (If reforms are planned): Can you foresee any challenges that might emerge as these reforms are implemented?

Probe on: Long-term sustainability of existing programs that support those affected by mental disorder, their households and other vulnerable groups

Now, we'd like to ask questions about the process for change: how things work, how they get done, how long they take to do, key players and structures, links to other sectors (political economy)

9. Who is responsible for deciding how much funding is, or could be available for programs that support those affected by mental disorder and their households in the [organization]?

Probe on: All stakeholders both within and external to the [organization]

10. What is the process for deciding how much funding is, or could be available for programs that support those affected by mental disorder and their households in the [organization]?

Probe on: Who sets the priorities for funding?
Probe on: What does the process look like?
Probe on: When does the process start/end?

11. What institutions are responsible for conducting oversight in your sector?

Probe on: Specifically, who is responsible for ensuring the resources are used efficiently and effectively?
Probe on: Is oversight coordinated locally, or outside of the Country?
Probe on: Are there any ways in which the public sector in [Country Name] is involved in the oversight of your organization?

12. In your opinion, who are the key stakeholders that impact or influence the availability of funding for services and programs to improve the livelihoods of those affected by mental disorder and other vulnerable groups in [Country Name]*?*

Probe on: What factors do you believe these stakeholders consider when determining resource availability for these services?
Probe on: What factors do you believe would increase their appetite for funding programs which improve the livelihoods of those affected by mental disorder, and other vulnerable groups in [Country Name]?

The next questions will ask about the main perceived challenges/constraints to increased public sector financing, generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will.

13. Are there any macroeconomic issues facing the country that are expected to positively or negatively affect the future funding of the programs and services you currently provide, or plan to provide – to those affected my mental disorder or other vulnerable groups in South Africa

Probe on: Economic Growth
Probe on: Unemployment
Probe on: Debt
Probe on: Inflation
Probe on: Other

As we approach the end of the interview, we'd like to ask for a few final comments and provide you with an opportunity to raise any issues that we may have not discussed

14. Based on your experience, what do you feel are the most critical support needs for those affected by mental disorder and their families in [Country Name], both currently and over the next ten years, outside of health service/health sector needs?

15. Imagine that it is ten years from now and you are looking back at the last decade, 2016-2026. If you were to tell a story at a high impact platform about how [Country Name] was able to address the critical needs of those affected by mental disorder and their families, what would that story be? What would have been the key elements of success?

16. In order to achieve the successes you describe, what sort of ongoing engagement with stakeholders would be required?

17. Are there any other issues you would like to raise?

Thank you for making the time to talk to me today.

A priori coding framework

Themes	Theme description	Sub-themes
Perceived challenges/ constraints (to increased public health financing, including for mental health)	The main perceived challenges/ constraints to increased public health financing, budgeting proccess generally and specifically for mental health, for example fiscal pressures, exacerbated by rising disease burdens, unemployment and economic recessions, and political will, lack of budget line, barriers to budgeting process, funding sources unknown.	Priority given to mental health
		Mental health strategies and plans
		Financing policies and strategies
		Barriers to budget allocation process
		Impact of macro-economic issues
Options for change (for increased financing for public health including mental health)	Options for change toward more feasible, fair and appropriate strategies to raise the required resources for a scaled up mental health service through (and main perceived challenges) and for mental health system strengthening	Strengthening mental health systems
		Improving public health financing policies
		Financing Mechanisms
Key elements / criteria (for improved public health financing, including mental health)	Criteria for identifying most suitable strategies for sustainable financing and for planning programs and budget effectively (strength of preference): efficiency, equity, poverty reduction, economic growth, development of capacity to spend,political feasibility.	Budget planning and allocation for general and Mental Health
		Engagement of participants in mental health financing
		Monitoring and Evaluation of health systems / financing

Appendix F

Provincial Department of Health Data Collection Tool

Data Collection Information

Dates

Start Date:	*Completion Date:*

Contributors

Please list the name(s), position(s) and contact details of all individuals who contributed to the completion of this instrument

Name	Position	Phone Number	Email Address

Provincial funding allocations for Hospitals and Primary-care level Facilities

Specialized Psychiatric Hospitals

For the period April 2016 to March 2017, please specify the total amount of funding that was allocated to Specialized Psychiatric Hospitals in your Province:

Total Provincial funding allocated to Specialized Psychiatric Hospitals (April 2016-March 2017)	ZAR

Regional, Tertiary and Central Hospitals

For the period April 2016 to March 2017, please specify the total amount of funding that was allocated to Regional, Tertiary and Central Hospitals in your Province:

Total Provincial funding allocated to Regional, Tertiary and Central Hospitals (April 2016-March 2017)	ZAR

District Hospitals

For the period April 2016 to March 2017, please specify the total amount of funding that was allocated to District Hospitals in your Province:

Total Provincial funding allocated to District Hospitals (April 2016-March 2017)	ZAR

primary health care-level Facilities

For the period April 2016 to March 2017, please specify the total amount of funding that was allocated to primary health care in your Province:

Total Provincial funding allocated to Primary care (April 2016-March 2017)	ZAR

Contracted Hospitals

In the table below, please specify the name(s) of any contracted hospitals that render any form of mental health and/or psychiatric services in your Province and please specify the total amount of funding that was allocated to each facility for the period April 2016 to March 2017:

Contracted Hospital Name	**Provincial funding allocated to Contracted Hospital (April 2016-March 2017)**
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR

Contracted NGOs

In the table below, please specify the name(s) of any contracted NGOs involved in the treatment, rehabilitation or care of individuals with mental health and/or neurological disorders in your Province and please specify the total amount of funding that was allocated to each facility for the period April 2016 to March 2017:

Contracted NGO Name	Description/Type of Service *e.g. Support Groups for Depression, Residential Care for persons with profound intellectual disabilities, Vocational Services, Day care services etc.*	Provincial funding allocated to NGO (April 2016-March 2017)
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR
		ZAR

Mental Health Prevention and Promotion

In the table below, please specify the name(s) of any mental health prevention or promotion campaigns that were run by the Department of Health in your Province between April 2015 to March 2017 (past two years), then, please specify the total funding that was allocated to each campaign:

Mental health prevention or promotion campaign name	Provincial funding allocated to Campaign (April 2015-March 2017)
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR
	ZAR

Intersectoral Mental Health Service Stakeholders

In the table below, please identify a Contact Person for each Department that may be able to provide information of the services that provide support, care or treatment services **outside of the health sector** for people living with the impacts of mental and neurological disorders In your Province

Department	Contact Details		
	Full Name	Designation	Email address and/or phone number
Department of Social Development			
Department of Education			
Department of Housing			
Department of Labour			
Department of Correctional Services			

Regional, Tertiary, Central and Specialized Hospital Data Collection Tool

Data Collection Information

Dates

Start Date:	*Completion Date:*

Contributors

Please list the name(s), position(s) and contact details of all individuals who contributed to the completion of this instrument

Name	Position	Phone Number	Email Address

Hospital Name

Please list the name of the hospital being reported on in this tool:

Human Resources

Mental Health Personnel

For each type of personnel listed in the table below, please specify **Total Number of Posts filled in your hospital**

Hospital Personnel	Total Number of Posts filled
Psychiatrist	
Pediatrician	
Medical Officer/Registrar	
Professional Nurse	
Mental Health/Psychiatric Nurse	
Enrolled Nurse	
Enrolled Nurse Assistant	
Clinical Psychologist	
Psychologist	
Physiotherapist	
Occupational Therapist	
Occupational Therapist Assistant/Technician	
BPsych/Registered Counsellor	
Social Worker	
Social Auxiliary Worker	

Mental Health Training at Hospitals

For each type of personnel listed in the table below, please specify:

- Total Number who received any form of in-service Mental Health Training between April 2016 and March 2017
- A brief description of the type/name of in-service training received
- Who facilitated or provided the in-service Mental Health Training (*e.g. Senior Psychiatrist from Valkenberg Hospital, PHC Facility Sister in Charge, External USAID facilitator, Clinical Psychologist.)*
- The duration of the training session
  Please either enter total number of days or total number of hour(s) and minute(s)
- Whether refreshments were provided during the training session
  Please either enter "Y" for Yes or "N" for No
- Whether participants were given per diems to attend the training.
  Please either enter "Y" for Yes or "N" for No
- Total rand value of per diem per participant

Personnel	Total Number Receiving in-service Mental Health Training (April 2016 – March 2017)	Type/Description of in-service training received	Who provided/facilitated the in-service Mental Health training?	Duration of training session (days or hours)	Were refreshments provided? (Y – Yes; N – No)	Were participants given per diems? (Y – Yes; N – No)	Amount of per diem per participant (Rand)
Medical Officer/Registrar							
Professional Nurse							
Enrolled Nurse							
Enrolled Nurse Assistant							

Hospital Infrastructure for Mental Health

For Regional, Tertiary and Central Hospitals only

(Psychiatric Hospitals, please move to next section)

For each hospital:

- Please indicate if the hospital has a designated inpatient psychiatric unit?
  Please either enter "Y" for Yes or "N" for No
- Please indicate if the hospital is authorized to undertake 72 hour assessments and admissions per the Mental Health Care Act
  Please either enter "Y" for Yes or "N" for No
- Please specify total number of beds available in the hospital
- Please specify total number of beds available for mental health patients in the hospital

Inpatient psychiatric unit? (Yes – Y; No – N)	Authorized to undertake 72 hour assessments? (Yes – Y; No – N)	Total number of beds	Total number of beds available for mental health patients

If the hospital is authorized to undertake 72 hour assessments and admissions per the Mental Health Care Act, please answer Y (Yes) if the hospital meets the criteria listed or N (No) if the hospital does not meet the criteria listed:

How many of the designated 72-hourt hold units meet the following criteria:	Does this hospital meet the criteria listed? (Y-Yes; N-No)
All patients admitted for 72 hour hold are secluded in an access controlled room away from other non-mental health patients that is constantly monitored by Nursing Staff	
All patients admitted for 72 hour hold are kept together with non-mental health patients in a general ward	
Adult patients and adolescent patients admitted for 72 hour hold are kept separate from each other	
Male patients and female patients admitted for 72 hour hold are kept separate from each other	
No provisions are made for separation of patients admitted for 72 hour hold according to age or gender	

Hospital Budget Allocation for Mental Health

Please specify the total Hospital budget between April 2016 and March 2017 and the mental health budget allocation for the same period.

Total Hospital Budget excluding Overheads (April 2016-March 2017)	Total Hospital Budget Allocation to Mental Health and Psychiatry Services excluding Overheads (April 2016 – March 2017)

Mental Health Drug Availability

For each drug listed in the table below, please indicate if you have experienced a stock-out of the drugs listed between April 2016 and March 2017. Then, please specify the duration of stock-out for each drug

NB: For reporting the duration of the stock-out, please use:
A – to indicate stock-out lasted on average ***for between 1 to 4 weeks***
B – to indicate stock-out lasted on average ***between 1 and 3 months***
C – to indicate stock-out lasted longer than ***3 months.***

Drug Name	Has your Hospital Reported a Stock-out of the Drug between April 2016 and March 2017?	Please specify average duration of stock-out.
AceTylcysteine		
AmiTriptyline		
Atropine		
Biperidan		
Buprenorphine		
Carbamazepine		
Citalopram		
Charcoal (activated)		
Chlorpromazine		
Clonazepam		
Clonidine		
Clozapine		
Diazepam		
Epinephrine(adrenaline)		
Fluoxetine		
Fluphenazine		
Flupentixol		
Haloperidol		
Hydrcortisone		
Lamotrigine		
Lithium		
Lofexidine		
Lorazepam		
Methadone		
Methylphenidate		
Morphine		
Naloxone		
Nicotinamine (vB3)		
Orphenadrine		
Phenobarbitone		
Phenytoin		

Drug Name	Has your Hospital Reported a Stock-out of the Drug between April 2016 and March 2017?	Please specify average duration of stock-out.
Povidoneiodine		
Risperidone		
Silver sulfadiazine		
Sodium Chloride		
Thiamine		
Valproate		
VK1(phytomenodione)		
Zuclopenthixol		

Mental Health Case Load at Hospitals

Inpatient and Outpatient Visits

Please complete the table below by reporting on the following indicators for your hospital:

- **Total Number of Mental Health Inpatient Admissions** between April 2016 and March 2017
- **Total Number of Mental Health Inpatient Readmissions (readmitted within 3 months)** between April 2016 and March 2017
- **Average Length of Mental Health Inpatient Admission** between April 2016 and March 2017
- **Total Number of Outpatient Visits for Mental Health** between April 2016 and March 2017
- **Total Number of Readmissions (patients readmitted within 3 months or 90 days) for Mental Health** between April 2016 and March 2017

Total Number of Mental Health Inpatient Admissions (April 2016-March 2017)	Total Number of Mental Health Inpatient Readmissions (April 2016-March 2017)	Average Length of Mental Health Inpatient Admission (April 2016-March 2017)	Total Number of Outpatient Visits for Mental Health (April 2016-March 2017)

Hospital Referrals

For your hospital, please indicate the **Total Number of Patients who Self-referred (Voluntary admission) in to the Hospital** between April 2016 and March 2017; and, the **Total Number of Patients Referred IN from District Hospital or PHC service** between April 2016 and March 2017.

Total Number of Self-Referral IN (Voluntary) (April 2016-March 2017)	Total Number of Referral IN from District Hospital and/or PHC service (April 2016-March 2017)

For your hospital, please indicate the **Total Number of Patients who were referred OUT to a District Hospital** between April 2016 and March 2017; and, the **Total Number of Patients who were referred OUT to a PHC facility** between April 2016 and March 2017.

Total Number Referred OUT to District Hospital (April 2016-March 2017)	Total Number Referred OUT to PHC Facility (April 2016-March 2017)

Inpatient and Outpatient Hospital Visits by Disorder

For each child and adult disorder and for each hospital listed in the table(s) below, please specify:

- Total number of inpatient admissions
- Average length of inpatient stay
- Total number of readmissions within 3 months/90 days (specify if reporting a different time period)
- Total number of outpatient visits

Please complete the information for Adult(s) and Children **separately**.

Adult Disorders	ICD Code	Total number Inpatient admissions between April 2016 and March 2017	Average length of stay (days)	Total Number of readmissions past 3 months *Please specify if different time period*	Total number outpatient visits between April 2016 and March 2017
Mood Disorders					
Major Depressive Disorder	F32 - F33				
Bipolar Disorder	F31				
Anxiety Disorder	F40 - F48				
Psychotic Disorders					
Schizophrenia	F20 - F29				
Substance-Use Disorders					
Alcohol-use Disorder	F10				
Opioid-use Disorder	F11				
Cocaine-use Disorder	F14				
Amphetamine use disorder	F15				
Cannabis use disorder	F12				
Neurological Disorder					
Alzheimer's disease and other dementias	G30				
Epilepsy	G40				
Eating Disorders					
Anorexia nervosa	F50.0				
Bulimia Nervosa	F50.2				
Autistic Spectrum disorders					
Autism	F84.1				
Asperger syndrome	F84.5				
Behavioural Disorders					
Attention-deficit/hyperactivity disorder	F90				
Conduct disorder	F91				
Developmental Disorders					
Intellectual Disabilities	F70-F79				

Child Disorders	ICD Code	Total number Inpatient admissions between April 2016 and March 2017	Average length of stay (days)	Total Number of readmissions past 3 months *Please specify if different time period*	Total number Outpatient visits between April 2016 and March 2017
Mood Disorders					
Major Depressive Disorder	F32 - F33				
Bipolar Disorder	F31				
Anxiety Disorder	F40 - F48				
Psychotic Disorders					
Schizophrenia	F20 - F29				
Neurological Disorder					
Epilepsy	G40				
Autistic Spectrum disorders					
Autism	F84.1				
Asperger syndrome	F84.5				
Behavioural Disorders					
Attention-deficit/hyperactivity disorder	F90				
Conduct disorder	F91				
Developmental Disorders					
Intellectual disabilities	F70-F79				

Primary health care (PHC) and District Hospital Data Collection Tool

Data Collection Information

Dates

Start Date:	*Completion Date:*

Contributors

Please list the name(s), position(s) and contact details of all individuals who contributed to the completion of this instrument

Name	Position	Phone Number	Email Address

Human Resources

Mental Health Personnel at Primary Care Level

For each type of personnel listed in the table below, please specify **Total Number of Posts filled at Primary Care Level**. Please only report on personnel operating out of PHC Clinics, Mobile Units, Satellite Clinics, Community Health Centres and Community Day Care Centres. *Personnel at the District Hospital level should be reported in the next section below.*

Primary Care-level Personnel	Total Number of Posts filled
Clinical Psychologist	
Psychologist	
Physiotherapist	
Occupational Therapist	
Occupational Therapist Assistant/Technician	
BPsych Counsellor/Registered Counsellor	
Mental Health Nurse/Psychiatric Nurse	
School Health Nurse	
Social Worker	
Social Auxiliary Worker	

Adult Primary Care(APC)/PC101 Training at Primary Care Level

For each type of personnel listed in the table below, please specify:

- **Total Number Ever Receiving PC101 or APC (Adult Primary Care) Training across the District**

Primary Care-level Personnel	**Total Number Ever Receiving PC101 or APC Training**
Medical Officer/PHC Doctor	
Professional Nurse	
School Health Nurse	
Enrolled Nurse	
Enrolled Nurse Assistant	
Community Health Worker	
Medical Officer/PHC Doctor	

Mental Health Training at Primary Care Level

For each type of personnel listed in the table below, please specify:

- Total Number who received any form of in-service Mental Health Training between April 2016 and March 2017
- Name/Description of In-service Mental Health Training Received April 2016 and March 2017
- Who facilitated or provided the in-service Mental Health Training (*e.g. Senior Psychiatrist from Valkenberg Hospital, PHC Facility Sister in Charge, External USAID facilitator, Clinical Psychologist.)*
- The duration of the training session
  Please either enter total number of days or total number of hour(s) and minute(s)
- Whether refreshments were provided during the training session
  Please either enter "Y" for Yes or "N" for No
- Whether participants were given per diems to attend the training.
  Please either enter "Y" for Yes or "N" for No
- Total rand value of per diem per participant

Primary Care-level Personnel	Total Number who received any form of in-service Mental Health Training between April 2016 and March 2017	Name or Description of In-service Mental Health Training Received	Who provided/facilitated the in-service Mental Health training?	Duration of training session(days or hours)	Were refreshments provided? (Y – Yes; N – No)	Were participants given per diems? (Y – Yes; N – No)	Amount of per diem per participant (Rand)
Medical Officer/PHC Doctor							
Professional Nurse							
School Health Nurse							
Enrolled Nurse							
Enrolled Nurse Assistant							
Community Health Worker							
Medical Officer/PHC Doctor							

Mental Health Personnel at District Hospitals

For each type of personnel listed in the table below, please specify **Total Number of Posts filled across all District Hospitals.**

District Hospital Personnel	Total Number of Posts filled
Psychiatrist	
Pediatrician	
Medical Officer/Registrar	
Professional Nurse	
Mental Health/Psychiatric Nurse	
Enrolled Nurse	
Enrolled Nurse Assistant	
Clinical Psychologist	
Psychologist	
Physiotherapist	
Occupational Therapist	
Occupational Therapist Assistant/Technician	
BPsych/Registered Counsellor	
Social Worker	
Social Auxiliary Worker	

Adult Primary Care(APC)/PC101 Training at District Hospitals

For each type of personnel listed in the table below, please specify:

- **Total Number Ever Receiving PC101 or APC (Adult Primary Care) Training across the District Hospitals**

District Hospital-level Personnel	Total Number Ever Receiving PC101 or APC Training
Medical Officer/PHC Doctor	
Professional Nurse	
School Health Nurse	
Enrolled Nurse	
Enrolled Nurse Assistant	
Community Health Worker	
Medical Officer/PHC Doctor	

Mental Health Training at District Hospitals

For each type of personnel listed in the table below, please specify:

- Total Number who received any form of in-service Mental Health Training between April 2016 and March 2017
- Name/Description of In-service Mental Health Training Received April 2016 and March 2017
- Who facilitated or provided the in-service Mental Health Training (*e.g. Senior Psychiatrist from Valkenburg Hospital, PHC Facility Sister in Charge, External USAID trainer, Clinical Psychologist..)*
- The duration of the training session
  Please either enter total number of days or total number of hour(s) and minute(s)
- Whether refreshments were provided during the training session
  Please either enter "Y" for Yes or "N" for No
- Whether participants were given per diems to attend the training.
  Please either enter "Y" for Yes or "N" for No
- Total rand value of per diem per participant

Personnel	Total Number who received any form of in-service Mental Health Training between April 2016 and March 2017	Name or Description of In-service Mental Health Training Received	Who provided/facilitated the in-service Mental Health training?	Duration of training session (days or hours)	Were refreshments provided? (Y – Yes; N – No)	Were participants given per diems? (Y – Yes; N – No)	Amount of per diem per participant (Rand)
Medical Officer/Registrar							
Professional Nurse							
Enrolled Nurse							
Enrolled Nurse Assistant							

District Hospital Infrastructure for Mental Health

For each District hospital in the table below:

- Please indicate if the hospital has a designated inpatient psychiatric unit?
  Please either enter "Y" for Yes or "N" for No
- Please indicate if the hospital is authorized to undertake 72 hour assessments and admissions per the Mental Health Care Act
  Please either enter "Y" for Yes or "N" for No
- Please specify total number of beds available in the hospital
- Please specify total number of beds available for mental health patients in the hospital

District Hospital(s)	Inpatient psychiatric unit? (Yes – Y; No – N)	Authorized to undertake 72 hour assessments? (Yes – Y; No – N)	Total number of beds	Total number of beds available for mental health patients
gp Heidelberg Hospital				
gp Kopanong Hospital				

For each District hospital that **is** authorized to undertake **72 hour assessments and admissions per the Mental Health Care Act,** please report on the total number of facilities that meet each of the criteria in the table below:

How many of the designated 72-hour hold units meet the following criteria:	Number of District Hospitals
All patients admitted for 72 hour hold are secluded in an access controlled room away from other non-mental health patients that is constantly monitored by Nursing Staff	
All patients admitted for 72 hour hold are kept together with non-mental health patients in a general ward	
Adult patients and adolescent patients **admitted** for 72 hour hold are kept separate from each other	
Male patients and female patients admitted for 72 hour hold are kept separate from each other	
No provisions are made for separation of patients admitted for 72 hour hold according to age or gender	

Mental Health Case Load at District Hospitals

Inpatient and Outpatient Visits

For each District hospital in the table below, please indicate the:

- **Total Number of Mental Health Inpatient Admissions** between April 2016 and March 2017
- **Total Number of Mental Health Inpatient Readmissions (patients that have been readmitted within 3 months or 90 days)** between April 2016 and March 2017
- **Average Length of Mental Health Inpatient Admission** between April 2016 and March 2017
- **Total Number of Outpatient Visits for Mental Health** between April 2016 and March 2017

District Hospital(s)	Total Number of Mental Health Inpatient Admissions (April 2016-March 2017)	Total Number of Mental Health Inpatient Readmissions (April 2016-March 2017)	Average Length of Mental Health Inpatient Admission (April 2016-March 2017)	Total Number of Outpatient Visits for Mental Health (April 2016-March 2017)
gp Heidelberg Hospital				
gp Kopanong Hospital				

District Hospital Referrals

For each District hospital, please indicate the **Total Number of Patients who Self-referred (Voluntary admission) in to the District Hospital** between April 2016 and March 2017; and, the **Total Number of Patients Referred Up (to Regional, Tertiary or Specialized Psychiatric Hospitals)** between April 2016 and March 2017.

District Hospital(s)	Total Number of Self-Referral IN (Voluntary) (April 2016-March 2017)	Total Number of Referral OUT to Regional/Tertiary Hospital/Specialized Psychiatric Hospital (April 2016-March 2017)
gp Heidelberg Hospital		
gp Kopanong Hospital		

Mental Health Drug Availability

For each drug listed in the table below, please indicate:

- **Total Number of PHC facilities that experienced a stock-out of any of the drugs listed** between April 2016 and March 2017
- **The Average Duration of the Stock-out at the PHC Facilities** between April 2016 and March 2017 *(see note below for coding)*
- **Total Number of District Hospitals that have experienced a stock-out of any of the drugs listed** between April 2016 and March 2017
- **The Average Duration of Stockout at the District Hospital(s)** between April 2016 and March 2017 *(see note below for coding)*

NB: For reporting the duration of the stock-out, please use:
A – to indicate stock-out lasted on average ***for between 1 to 4 weeks***
B – to indicate stock-out lasted on average ***between 1 and 3 months***
C – to indicate stock-out lasted longer than ***3 months***

Drug Name	Total Number of PHC Facilities (Clinics, Mobiles and CHCs) Reporting Stock-out of Drug between April 2016 and March 2017	Average duration of stock-out at PHC Facilities between April 2016 and March 2017	Total Number of District Hospital(s) Reporting Stock-out of Drug between April 2016 and March 2017	Average duration of stock-out at District Hospital(s) between April 2016 and March 2017
AceTylcysteine				
AmiTriptyline				
Atropine				
Biperidan				
Buprenorphine				
Carbamazepine				
Citalopram				
Charcoal (activated)				
Chlorpromazine				
Clonazepam				
Clonidine				
Clozapine				
Diazepam				
Epinephrine(adrenaline)				
Fluoxetine				
Fluphenazine				
Flupentixol				
Haloperidol				
Hydrcortisone				
Lamotrigine				
Lithium				
Lofexidine				
Lorazepam				

Drug Name	Total Number of PHC Facilities (Clinics, Mobiles and CHCs) Reporting Stock-out of Drug between April 2016 and March 2017	Average duration of stock-out at PHC Facilities between April 2016 and March 2017	Total Number of District Hospital(s) Reporting Stock-out of Drug between April 2016 and March 2017	Average duration of stock-out at District Hospital(s) between April 2016 and March 2017
Methadone				
Methylphenidate				
Morphine				
Naloxone				
Nicotinamine (vB3)				
Orphenadrine				
Phenobarbitone				
Phenytoin				
Povidoneiodine				
Risperidone				
Silver sulfadiazine				
Sodium Chloride				
Thiamine				
Valproate				
VK1(phytomenodione)				
Zuclopenthixol				

Contracted Residential Care & Day-care Facilities

Residential Care

Group Homes

In the table below, please list all contracted or state-funded Group Homes in the District, and for each facility, please specify:

- Total Number of Beds
- Total Number of Admissions between April 2016 and March 2017
- Average Length of Inpatient Stay
- Cost per inpatient day

Please make additional copies of pages if required and add to form if required.

Group Home name	Total Number of Beds	Total Admissions between April 2016 and March 2017	Average Length of Stay	Cost per inpatient day

Halfway Houses

In the table below, please list all contracted or state-funded Halfway Houses in the District, and for each facility, please specify:

- Total Number of Beds
- Total Number of Admissions between April 2016 and March 2017
- Average Length of Inpatient Stay
- Cost per inpatient day

Please make additional copies of pages if required and add to form if required.

Halfway House name	Total Number of Beds	Total Admissions between April 2016 and March 2017	Average Length of Stay	Cost per inpatient day

Supported Independent Living Facilities

In the table below, please list all contracted or state-funded Supported Independent Living facilities in the District, and for each facility, please specify:

- Total Number of Beds
- Total Number of Admissions between April 2016 and March 2017
- Average Length of Inpatient Stay
- Cost per inpatient day

Please make additional copies of pages if required and add to form if required.

Supported Independent Living Facilities	Total Number of Beds	Total Admissions between April 2016 and March 2017	Average Length of Stay	Cost per inpatient day

Day Care

Home-based Care

In the table below, please list all contracted or state-funded Group Homes in the District, and for each facility, please specify:

- The health personnel providing the service (e.g. Nurse, Lay Counsellor, CHW etc)
- Total Number of Mental Health patients receiving home-based caree.
- Average Number of Visits per year per patient
- Average Duration of Visits

Please make additional copies of pages if required and add to form if required.

Service Provider (e.g Nurse, Lay counsellor, CHW)	Number of patients	Average Number of Visits per year	Average Duration of Visits (hh:mm)

Support Groups

In the table below, please list all Support Groups in the District, and for each facility, please specify:

- Service Provided in Support Group (e.g. basic psychosocial counselling, life coping skills, adherence counselling)
- The health personnel providing the service (e.g. Nurse, Lay Counsellor, CHW etc)
- Number of patients per support group
- Average number of sessions per year
- Average duration of each session

Please make additional copies of pages if required and add to form if required.

Service Provided in Support Group (e.g. basic psychosocial counselling; life coping skills, adherence counselling etc)	**Service Provider** (e.g Nurse, Lay counsellor, CHW)	**Number of Patients per group**	**Average number of sessions per year**	**Average duration of each session** (hh:mm)

Other (Non-residential) Services/NGOs

In the table below, please list all other non-residential services provided for people with mental disorders in the District and for each, please specify:

- Type of Service (e.g. basic psychosocial counselling, life coping skills, adherence counselling)
- The personnel providing the service (e.g. Nurse, Lay Counsellor, CHW etc)
- Number of patients
- Average number of sessions/visits per year
- Average duration of each session/visit

Please make additional copies of pages if required and add to form if required.

Type of Service (e.g. basic psychosocial counselling; life coping skills, adherence counselling etc)	**Service Provider** (e.g Nurse, Lay counsellor, CHW)	**Number of Patients**	**Average number of sessions/visits per year**	**Average duration of each session/visit** (hh:mm)

Mental Health Prevention and Promotion

Mental Health Prevention and Promotion Campaigns and Activities

In the table below, please list any prevention and promotion activities for mental health in your district that have taken place over the past two years:

For each campaign/activity, please specify

- The name of the Mental Health Promotion or Prevention Campaign/Activity
- The dates the campaign/activity was run
- The medium that was used to deliver the campaign
- The target population (e.g adolescents, people affected by substance-use disorders etc)
- The budget or actual expenditure on the campaign or activity
- The funding source

Mental Health Promotion or Prevention Campaign or Activity Name	Dates		Medium (Radio, TV, Direct Mail, Print/Digital Ads, Event)	Target population	Budget or Actual Spend	Funding Source (e.g. Department of Health or other; DoH Partners; NGOs; Corporate)
	From	To				

Appendix G

Emerald Household Survey Instrument

EMERALD HOUSEHOLD QUESTIONNAIRE FOR USE IN SOUTH AFRICA

BASELINE 2014

Section 0000: Coversheet

Q0001	HOUSEHOLD ID	☐☐☐☐☐☐☐☐☐☐
Q0003	INTERVIEWER ID	☐☐☐
Q0004	TOTAL NUMBER OF CALLS/VISITS:	1 2 3
Q0005	DATE OF FINAL RESULTS: *(DD/MM/YYYY)*	☐☐/☐☐/☐☐☐☐
Q0006	FINAL RESULT CODE:	☐☐

01=COMPLETED INTERVIEW
02=PARTIAL INTERVIEW (INTERVIEW IS PARTIALLY COMPLETED AND PERSON WILL NOT BE CONTACTED ANYMORE).
03=ONLY HOUSEHOLD ROSTER COMPLETED
04=FINAL REFUSAL BY HOUSEHOLD HEAD/OTHER MEMBER
05=UNABLE TO LOCATE HOUSEHOLD OR HOUSEHOLD INFORMANT
06=NO INTERVIEW BECAUSE NO ELIGIBLE INFORMANT(ALL LESS THAN 18 OR MENTALLY UNFIT OR TOO ILL).
07=LANGUAGE BARRIER
08=HOUSE IS VACANT OR HOUSEHOLD OCCUPANTS ARE ELSEWHERE (SEASONAL VACANCY, OTHER RESIDENCE)
09=UNSAFE OR DANGEROUS AREA OR NO ACCESS TO INFORMANT

Q0007	DATE DATA ENTRY COMPLETED *(DD/MM/YYYY)*	☐☐/☐☐/☐☐☐☐

SUPERVISOR	FIELD EDITOR	OFFICE EDITOR	KEYED BY
NAME _____ ☐☐	NAME _____ ☐☐	☐☐	☐☐
DATE _____	DATE _____		

Section 0100: Recontact Information

Interviewer: you will select an informant to complete this household questionnaire.

A. INSTRUCTIONS FOR SELECTING RESPONDENT FOR HOUSEHOLD QUESTIONNAIRE

INTERVIEWER: For the Household Informant, choose the person in the household most knowledgeable about the financial welfare of the household (i.e. questions relating to the household asset ownership, income and expenditure). Several persons in the household may have to be spoken to in order to determine this, but the most knowledgeable should be identified and coded in Q0101a.

- *It is expected that for the majority of households, the Household Head (the main decision maker in the household; if two people are equal decision-makers, take the older person) will be the Household Informant.*
- *In some cases, the Household Head may either lack the information or, may lack capacity to consent/to respond to the household survey.*
- *In these cases, approach other adult members of the household (e.g. the spouse or partner of the household head or; the primary caregiver of the household head) who has the information, time and ability to complete the full interview. This person will then be our "Household Informant" and will be asked to provide consent to participate .*
- *Should both the Household Head and the other adult members of the household lack the information or the capacity to respond to the household survey or to provide informed consent to participate, these households will be excluded from the study.*
- *In all cases, the role and identity of the "Household Informant" will be recorded within the household survey.*
- *If more than one person provides information on the Household Questionnaire, the person providing most of the information should be coded as the household informant.*

<table>
<tr><td rowspan="2">Q0101</td><td colspan="3">What is the informant's full name? (verify spelling and write clearly)

Q0101a. LAST NAME (SURNAME):_____

Q0101b. FIRST NAME:_____</td></tr>
<tr><td>Q0101c. Was the Household Consent Form:</td><td>1 Agreed and signed
2 Agreed, but witness signed
3 Refused…….➔</td><td>Next Section</td></tr>
<tr><td>Q0102</td><td colspan="3">What is the physical address of the Informants home?

(If participant does not have an address that follows the format: Street Number, Street Name, City, Postal Code; please ensure that sufficient detail (e.g. landmark, direction) is provided to locate this household during follow-up.)
_____
_____
_____
_____</td></tr>
<tr><td>Q0103</td><td>Does this informant/household have a telephone?</td><td>1 YES
2 NO…….➔</td><td>Q0105</td></tr>
<tr><td>Q0104</td><td colspan="2">What is the telephone number?

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐</td><td></td></tr>
</table>

Q0105	If we cannot reach you for whatever reason, is there someone else we could contact who would know how to reach you or someone in your household?	1 YES 2 NO……➔	**Next section**

Q0106

What is this person's name, relationship to you and his or her address?

Q0106a. LAST NAME (SURNAME):_____

Q0106b. FIRST NAME:_____

Q0106c. What is the physical address of this persons home?

(If participant does not have an address that follows the format: Street Number, Street Name, City, Postal Code; please ensure that sufficient detail (e.g. landmark, direction) is provided to locate this household during follow-up.)

_____

_____

_____

Q0106d. What is this person's relationship to you?

01=SPOUSE
02=SON OR DAUGHTER
03=SON OR DAUGHTER-IN-LAW
04=GRANDCHILD
05=PARENT
06=PARENT-IN-LAW
07=BROTHER OR SISTER
08=CO-WIFE
09=GRANDPARENT
10=OTHER RELATIVE
11=NOT RELATED (FRIENDS, SERVANTS, BOARDERS, LODGERS, OTHER)
88=*DON'T KNOW*

☐☐

Q0106e. What is their telephone number?

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

Please enter all additional location information below.

Q0106f. OTHER: If there is any additional location or contact information, please provide these here.

_____

_____

_____

_____

_____

A survey supervisor may be calling or visiting you again to verify this interview or to collect additional information in the future

Section 0200: Household Roster

INTERVIEWER: The Household Roster must be completed for all households selected into the survey sample. If the household refuses to participate, the interviewer should attempt to at least complete the household roster. ***If they refuse all participation, including completion of the roster, then document in "Section 0000: Coversheet" and go to next household.***

In order to determine who to interview, I need to know who lives at this address. Let me assure you that any information you provide is strictly confidential. By asking "who lives at this household?", I mean those who share meals ('eat out of the same cooking pot') and usually stay here for at least four months a year.

I would like to know the age, sex, marital status, educational level and relationship to the household head of each of the members of this household who live here.

Please include people who may presently be in an institution due to their health (for example, in hospital or old people's home) for a short time.

Q0201	What is the total number of people who live in this household?	☐☐ Persons

We want to start with the person who is the head of the household. By head of the household we mean the main decision maker in the household. The head can be either male or female. If two people are equal decision-makers, take the older person.

INTERVIEWER: Use Column 01 on the Household Roster for this person.

Q0202	*INTERVIEWER: Indicate who is the* ***'Household Informant'?*** *Record the Person (HH member) number from the Household Roster (next page)* *If Household Informant is Household Head, Record the Household Roster Person Number as 01.*	☐☐

INTERVIEWER: remember to include people who may presently be in an institution for a short time due to their health.

Complete one column for each household member in the table on the following pages.

HOUSEHOLD ROSTER		Person (HH member) number														
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Q0203	**What is [*HH MEMBER #*]'s relationship to the household head?** 01=SPOUSE 02=SON OR DAUGHTER 03=SON-IN-LAW OR DAUGHTER-IN-LAW 04=GRANDCHILD 05=PARENT 06=PARENT-IN-LAW 07=BROTHER OR SISTER 08=CO-WIFE 09=GRANDPARENT 10=OTHER RELATIVE 11=NOT RELATED (FRIENDS, SERVANTS, BOARDERS, LODGERS, OTHER) 88=*DON'T KNOW*	Household head	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88	01 02 03 04 05 06 07 08 09 10 11 88
Q0204a	**Is [*HH MEMBER #*] a male or a female?** 1 = MALE 2 = FEMALE	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
Q0204b	**How old is he/she?** *(if less than 1 year old enter "00")*															
Q0205	**What is [*HH MEMBER #*]'s marital status?** 1= NEVER MARRIED (AND NOT COHABITATING) 2= CURRENTLY MARRIED 3= COHABITATING 4= SEPARATED/DIVORCED 5= WIDOWED 88=*DON'T KNOW*	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88	1 2 3 4 5 88

Q0206	**What is the highest level of education [*HH MEMBER #*] completed?** 0=NO FORMAL EDUCATION 1=LESS THAN PRIMARY SCHOOL 2=PRIMARY SCHOOL COMPLETED 3=SECONDARY/MIDDLE SCHOOL COMPLETED 4=HIGH SCHOOL (OR EQUIVALENT) COMPLETED 5=COLLEGE OR UNIVERSITY COMPLETED 6=POST GRADUATE DEGREE COMPLETED	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6	0 1 2 3 4 5 6

Continue questions for HH Member on next page

HOUSEHOLD ROSTER		Person (HH member) number														
		01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Q0207	**Does [*HH MEMBER #*] have health insurance coverage?** 1 = Yes, mandatory insurance* 2 = Yes, voluntary insurance** 3 = Yes, both mandatory and voluntary insurance 4 = No, none.	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Q0208	**Does [*HH MEMBER #*] need care due to his/her health condition, such as a long-term physical or mental illness or disability, or because he/she is getting old and weak?** 1 = YES ***Continue*** 2 = NO ***Go to Q0210 or Next Person***	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2
Q0209	**How much care does he/she need?** 1 = Needs help/watching all the time (day and night) 2 = Cannot be without help/watching or be left alone at home for more than an hour 3 = Can be left on his/her own at home for several hours but requires accompaniment when leaving home 4 = Needs some help at home and sometimes needs to be accompanied when leaving home	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4

Q0210	**Is [*HH MEMBER #*] presently in an institution (hospital, after care home, home for the aged, hospice) due to his/her health condition?** 1 = YES; 2 = NO	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2	1 2

Go to next HH member or if last HH member go to Q0211

Just to make sure I have a complete listing of everyone in the household - you said previously that: (*SEE Q0201)*

		people live in this household

INTERVIEWER: Check Q201 - make sure total number of persons listed in the roster table above is equal to the number of persons living in the household.

Q0211	Are there any other persons such as small children or	1 YES	(GO BACK TO HH ROSTER AND COMPLETE
Q0212	Are there any other persons not here at the moment who	1 YES	
Q0213	Who is the main income earner for the household (person who brings in most money)?		
Q0214	Who is the household member who completed the household roster? *INTERVIEWER: insert the Person (HH member) number from*		

Deaths in the household/dwelling in last 24 months

We want to know if there have been any deaths in this household/dwelling in the last 24 months.

Q0215	Has any member of this household died in the last 24 months?	1 YES 2 NO →	**Next**

Q0216	How many deaths were there in the household in the last 24 months?	

		a. Person 1	**b.** Person 2	**c.** Person 3	**d.** Person 4
Q0217	Sex of deceased? *1=Male, 2=Female*	1 2	1 2	1 2	1 2
Q0218	What was his/her age at death (in **years)**? *Age at last birthday.* *For children less than 1 year, enter "000"*				

Section 0300: Housing

I would like to ask you some questions about your dwelling or home.

Q0301	Is this dwelling where you live…? *INTERVIEWER: read options to the respondent.*	1 Owned by the household head and fully paid off 2 Owned by the household head but not yet fully paid off 3 Owned by someone else in household and fully paid off 4 Owned by someone else in household but not yet fully paid off 5 Rented……..…..➔ 6 Provided free of charge……..……➔ 7 Other, specify: _____ *-9 REFUSED*……..……..……➔	Q0303 Q0303 Q0303
Q0302	If the owner were to sell this dwelling today, what is the approximate value (about how much is it worth)? *Use local currency.*	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*	
Q0303	How many rooms does this dwelling have in total, without counting the bathrooms/ toilets or hallways/passage ways?	☐☐	
Q0304	What is the main material of the floor? *INTERVIEWER TO OBSERVE*	1 Hard Floor (Tile, Cement, Brick, Wood) 2 Earth Floor	
Q0305	What is the main material of the Exterior Walls? *INTERVIEWER TO OBSERVE*	1 Cement, Brick, Stone Or Wood 2 Mud/ Mud Brick 3 Thatch And Other 4 Plastic Sheet 5 Metal Sheet 7 Other, Specify: _____	
Q0306	What is the main source of **drinking** water for members of your household? *INTERVIEWER: do not read all options; if the Respondent does not know, ask to observe the water source and mark appropriate response.*	1 Piped Water Into Dwelling ……➔ 2 Piped Water To Yard/Plot ……..…….. ….➔ 3 Public Tap/Standpipe ……..…….. 4 Tubewell/Borehole ……..…….. 5 Protected Dug Well …….. 6 Unprotected Dug Well…….. 7 Protected Spring…….. 8 Unprotected Spring…….. 9 Rainwater Collection …….. 10 Bottled Water ……..➔.	**Q0308** **Q0308** Q0307 Q0307 Q0307 Q0307 Q0307 Q0307 Q0307 **Q0306a**

		11 Small Scale Vendor …….. 12 Tanker-Truck …….... 13 Surface Water (River, Dam, Lake, Pond, Stream, Canal, Irrigation Channels) …..... 87 Other, Specify:	Q0307 Q0307 Q0307 Q0307

	Q0306a. What is the main source of water used by your household **for other purposes such as handwashing**?	1 Piped Water Into Dwelling ……➔ 2 Piped Water To Yard/Plot ……..……...➔ 3 Public Tap/Standpipe ……..…….. 4 Tubewell/Borehole …….. 5 Protected Dug Well …….. 6 Unprotected Dug Well…….. 7 Protected Spring…….. 8 Unprotected Spring…….. 9 Rainwater Collection …….. 10 Bottled Water …….. 11 Small Scale Vendor …….. 12 Tanker-Truck …….... 13 Surface Water (River, Dam, Lake, Pond,	**Q0308** **Q0308**
Q0307	How long does it take to go there, get water and come back?	☐☐ Minutes 0 Water On Premises ……..……...➔ *-8 Don't Know*	Q0308
	Q0307a. Who usually goes to this source to fetch the water for your household?	1 Adult Man 2 Adult Woman 3 Male Child (Under 15 Years Old) 4 Female Child (Under 15 Years Old) 7 Other, Specify:	
Q0308	What type of toilet facility do members of your household usually use? *INTERVIEWER: do not read all options; if the Respondent does not know, ask to observe the toilet and mark appropriate response; If respondent indicates "flush" or "pour flush", probe: Where does it flush to?*	1 Flush/Pour Flush To Piped Sewer System 2 Flush/Pour Flush To Septic Tank 3 Flush/Pour Flush To Pit Latrine 4 Flush/Pour Flush To Other Location 5 Flush/Pour Flush To Unknown Place/Not Sure 6 Ventilated Improved Pit Latrine (Vip) 7 Pit Latrine With Slab 8 Pit Latrine Without Slab/Open Pit 9 Composting Toilet 10 Bucket Latrine 11 Hanging Toilet/Hanging Latrine 12 No Facilities Or Bush Or Field …… 87 Other, Specify:	
Q0309	Do you share this facility with other households?	1 YES 2 NO	

Q0310	Where is cooking usually done?	1 In a room used for living or sleeping 2 In a separate room used as kitchen 3 In a separate building used as kitchen 4 Outdoor 7 Other, specify:	

Section 0400: Household, Family Support Networks & Transfers

INTERVIEWER: The first part of this section is intended to collect information about sources of transfers into the household from those outside the household.

The next questions are about your family and friends, specifically those not living with you in this household.

Families and friends sometimes help one another in a variety of different ways, and each type of help or support can be important. Part of our survey involves finding out how they do that. We would now like to ask some questions about your family and friends who do not live with you, and the different ways in which you help or support each other. The next questions are about help **received** by your household in the last 12 months.

FAMILY AND KIN (TRANSFERS IN)

Q0401	In the last 12 months, has anyone in the household received any financial or in-kind support from your family (children, siblings or parents) and relatives (other kin) who do not live with you?	1 YES 2 NO…… ➔ 8 *DON'T KNOW*…….. ➔	Q0404 Q0404

		A. *If Yes, ➔ Column B. If no ➔ skip to next Q*	**B.** About how much was this amount in total over the last 12 months? *(cash or cash equivalent)*
Q0402	What type of financial or in-kind support did your household receive?		
	Q0402a. Money, loans, tuition, paying for bills, fees or taxes (that is, cash)?	1 YES ➔ *Column B* 2 NO ➔ Q0402b 8 *DK* *9 Refused*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*
	Q0402b. Value of food or other goods (that is, non-monetary)?	1 YES ➔ *Column B* 2 NO ➔ Q0402c 8 *DK* *9 Refused*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*
	Q0402c. Doing household chores or activities (meal preparation, shopping, cleaning, laundry), providing care or transportation (help getting around outside the home)? *INTERVIEWER: This DOES NOT include paid or hired help.*	1 YES ➔ *Column B* 2 NO ➔ Q0403 8 *DK* *9 Refused*	☐☐ AVERAGE HOURS PER WEEK -8 *DON'T KNOW*

Q0403	Keeping the support you just identified in mind, do you consider this as income or support that the household can count on in the future?	1 YES 2 NO 8 *DON'T KNOW* *9 Refused*	

COMMUNITY TRANSFERS AND ASSISTANCE (TRANSFERS IN)

Q0404	In the last 12 months, has your household received any financial or in-kind support from any CLUBS, OR GROUPS IN YOUR COMMUNITY?	1 YES 2 NO……➔ 8 *DON'T KNOW*……➔ 9 *REFUSED* ……➔		Q0407 Q0407 Q0407
Q0405	What type of financial or in-kind support did your household receive?	**A.** *If Yes, ➔ Column B.* *If no ➔ skip to next Q*	**B.** About how much was this amount in total over the last 12 months? *(cash or cash equivalent)*	
	Q0405a. Money, loans, tuition, paying for bills, fees or taxes (that is, cash)?	1 YES ➔ *Column B* 2 NO ➔ Q0405b 8 *DK* *9 Refused*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*	
	Q0405b. Value of food or other goods (that is, non-monetary)?	1 YES ➔ *Column B* 2 NO ➔ Q0405c 8 *DK* *9 Refused*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*	
	Q0405c. Doing household chores or activities (meal preparation, shopping, cleaning, laundry), providing care or transportation (help getting around outside the home)? *INTERVIEWER: This DOES NOT include paid or hired help.*	1 YES ➔ *Column B* 2 NO ➔ Q0406 8 *DK* *9 Refused*	☐☐ AVERAGE HOURS PER WEEK -8 *DON'T KNOW*	
Q0406	Keeping in mind what you just described from your community, do you consider this support as income that the household can count on in the future?	1 YES 2 NO 8 *DON'T KNOW* *9 Refused*		

GOVERNMENT ASSISTANCE (TRANSFERS IN)

Q0407	In the last 12 months, has your household received any financial or in-kind support from the government?	1 YES 2 NO……➔ 8 *DON'T KNOW*……➔ 9 REFUSED……➔		Q0410 Q0410 Q0410
Q0408	What type of support did your household receive?	**A.** *If Yes, ➔ Column B* *If no ➔ skip to next Q*	**B.** About how much was this amount in total over the last 12 months? *(cash or cash equivalent)*	

	Q0408a. Money, loans, tuition, paying for bills, fees or taxes (that is, cash)?	1 YES ➔ *Column B* 2 NO ➔ Q0408b 8 *DK* *9 Refused*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*
	Q0408b. Value of food or other goods/services (that is, non-monetary)?	1 YES ➔ *Column B* 2 NO ➔ Q0409 8 *DK* *9 Refused*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*
Q0409	Keeping in mind what you just described from the government, do you consider this as income or support that the household can count on in the future?	1 YES 2 NO 8 *DON'T KNOW* *9 Refused*	

*INTERVIEWER: emphasize the shift **from receiving to giving assistance** in the next section.*

Now, moving away from assistance your household received, we would like to find out what financial and in-kind assistance you or other members of your household provided in the last 12 months to others who do not live with you.

FAMILY AND KIN (TRANSFERS OUT)

Q0410	In the last 12 months, has your household provided any financial or in-kind support to any of your children, grandchildren and/or other relatives (and those of your spouse) who do not live in this household?	1 YES 2 NO……➔ 8 *DON'T KNOW*……➔ 9 *REFUSED*……➔		Q0412 Q0412 Q0412
Q0411	What type of financial or in-kind support did your household give?	**A.** *If Yes, ➔ Column B* *If no ➔ skip to next Q*	**B.** About how much was this amount in total over the last 12 months? *(cash or cash equivalent)*	
	Q0411a. Money, loans, tuition, paying for bills, fees or taxes (cash)?	1 YES ➔ *Column B* 2 NO ➔Q0411b 8 *DK* 9 *REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*	
	Q0411b. Value of food or other goods (that is, non-monetary)?	1 YES ➔ *Column B* 2 NO ➔Q0411c 8 *DK* 9 *REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*	
	Q0411c. Doing household chores or activities (meal preparation, shopping, cleaning, laundry), providing care or transportation (help getting around outside the home)? *INTERVIEWER: This DOES NOT include paid or hired help.*	1 YES ➔ *Column B* 2 NO➔ Q0412 8 *DK* 9 *REFUSED*	☐☐ AVERAGE HOURS PER WEEK -8 *DON'T KNOW*	

COMMUNITY, NEIGHBOURS AND OTHER KIN (TRANSFERS OUT)

Q0412	In the last 12 months, has your household provided financial or in-kind support to any other kin, neighbours, or community members/groups?	1 YES 2 NO……..……➔ 8 *DON'T KNOW*……..……..…➔ 9 *REFUSED*……..……..…➔	Q0414 Q0414 Q0414

		A. *If Yes, ➔ Column B If no ➔ skip to next Q*	**B.** About how much was this amount in total over the last 12 months? *(cash or cash equivalent)*
Q0413	What type of support did your household give?		
	Q0413a. Money, loans, tuition, paying for bills, fees or taxes, religious and community events?	1 YES ➔ *Column B* 2 NO ➔ Q0413b 8 *DK* 9 *REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*
	Q0413b. Value of food or other goods (that is, non-monetary)?	1 YES ➔ *Column B* 2 NO ➔ Q0413c 8 *DK* 9 *REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*
	Q0413c. Doing household chores or activities (meal preparation, shopping, cleaning, laundry), providing care or transportation (help getting around outside the home)? *INTERVIEWER: This DOES NOT include paid or hired help.*	1 YES ➔ *Column B* 2 NO➔ Q0414 8 *DK* 9 *REFUSED*	☐☐ AVERAGE HOURS PER WEEK -8 *DON'T KNOW*

In addition to providing the assistance you indicated above, we would like to know if you or someone in your household has provided any type of personal or health care to other persons. Remember this is for persons outside the household.

Here the household members are the members who are staying under the same house. Whoever is living outside the household, they are considered outsiders

Q0414	During the last 12 months, did you or someone in your household provide help to a relative or friend (adult or child), because this person has a long-term physical or mental illness or disability, or is getting old and weak?	1 YES 2 NO……..……➔ 9 *REFUSED*	Q0501

		A. *If Yes, ➔ Column B If no ➔ skip to next Q*	**B.** About how many hours per week, on average, was this over the last 12 months?
Q0415	Please tell me the kind of care that was provided:		
	Q0415a. Helped with personal care, such as going to the toilet, washing, getting dressed, and eating?	1 YES ➔ *Column B* 2 NO ➔ Q0415b 8 *DK* 9 *REFUSED*	☐☐ AVERAGE HOURS/ WEEK -8 *DON'T KNOW*

	Q0415b. Helped with medical care, like changing bandages and giving medicines?	1 YES ➔ *Column B* 2 NO ➔ Q0415c 8 *DK* 9 *REFUSED*	☐☐ AVERAGE HOURS/ WEEK -8 *DON'T KNOW*
	Q0415c. Watched over them since their behaviour can be upsetting or dangerous to themselves or others?	1 YES ➔ *Column B* 2 NO ➔ Next Section 8 *DK* 9 *REFUSED*	☐☐ AVERAGE HOURS/ WEEK -8 *DON'T KNOW*

Section 0500: Assets and Household Income

PERMANENT INCOME INDICATORS (ASSETS)

I would like to ask you a few more questions about your home and items you might have in your home. Remember that any information you provide will be kept confidential.

Q0501	Q0501a. Do you have any televisions in your household?	*1* YES……. ➔ 2 NO ……. ➔	*Q0501b* Q0502
	Q0501b How many televisions are there in your household?	☐☐ TELEVISIONS	
Q0502	Does your household have electricity/solar power?	1 YES 2 NO	

Does any member of your household own:

Q0503	Bicycle?	1 YES 2 NO
Q0504	Motorcycle or Motor Scooter?	1 YES 2 NO
Q0505	Animal-Drawn Cart?	1 YES 2 NO
Q0506	A Car or Truck?	1 YES 2 NO

Does your household or anyone in your household have…?

Q0507	A Radio or Transistor?	1 YES 2 NO
Q0508	A Clock or Watch?	1 YES 2 NO
Q0509	A Mobile telephone	1 YES 2 NO
Q0510	A Fixed-line telephone	1 YES 2 NO
Q0511	Protected Windows (Shutters, Glass, Curtains, Screens)	1 YES 2 NO
Q0512	Someone employed in house who is not a member of your family (gardener, cook, cleaner, driver...)?	1 YES 2 NO

Q0513	A [Furniture Item 1]	1 YES 2 NO	
Q0514	A [Furniture Item 2]	1 YES 2 NO	
Q0515	A [Furniture Item 3]	1 YES 2 NO	
Q0516	A [Furniture Item 4]	1 YES 2 NO	
Q0517	A [Furniture Item 5]	1 YES 2 NO	
Q0518	1 of 3 Poor Household Appliance	1 YES 2 NO	
Q0519	2 of 3 Poor Household Appliance	1 YES 2 NO	
Q0520	3 of 3 Poor Household Appliance	1 YES 2 NO	
Q0521	1 of 3 Middle Wealth Household Appliance	1 YES 2 NO	
Q0522	2 of 3 Middle Wealth Household Appliance	1 YES 2 NO	
Q0523	3 of 3 Middle Wealth Household Appliance	1 YES 2 NO	
Q0524	1 of 3 Wealthy Household Appliance	1 YES 2 NO	
Q0525	2 of 3 Wealthy Household Appliance	1 YES 2 NO	
Q0526	3 of 3 Wealthy Household Appliance	1 YES 2 NO	
Q0527	Livestock (cattle, goats, pigs, poultry, donkey, ducks, mules, sheep, buffalo)?	1YES……..……➔ 2NO……..……➔	Q0528 Q0529

		A. *If Yes, ➔ Column B* *If no ➔ skip to next Q*	**B.** Quantity
Q0528	Please specify the type and quantity of livestock that your household owns….		
	Q0528a Goats or Sheep?	1 YES ➔ *Column B* 2 NO 8 *DK* 9 *REFUSED*	☐☐☐☐☐ 8 *DK*
	Q0528b Chickens?	1 YES ➔ *Column B* 2 NO 8 *DK* 9 *REFUSED*	☐☐☐☐☐ 8 *DK*
	Q0528c Cows or Oxen?	1 YES ➔ *Column B* 2 NO 8 *DK* 9 *REFUSED*	☐☐☐☐☐ 8 *DK*

	Q0528d Pigs?	1 YES ➔ *Column B* 2 NO 8 *DK* *9 REFUSED*	☐☐☐☐☐ 8 *DK*
	Q0528e Mules/Horses/Donkeys?	1 YES ➔ *Column B* 2 NO 8 *DK* *9 REFUSED*	☐☐☐☐☐ 8 *DK*
	Q0528f Other, specify…….	_____ _____ _____ ➔ ***Enter Quantity in Column B***	☐☐☐☐☐ 8 *DK*

I would now like to know if you own any land or jewellery – and the approximate value (amount). I know this is sensitive information and will not share this with any persons outside of the survey team.

Please tell us if you own any land or jewellery and other items of value.		**A**. *If Yes,* ➔ *Column B* *If no* ➔ *skip to next Q*	**B.** About how much is this worth in total? *(cash equivalent)*
Q0529	Land or property?	1 YES ➔ *Column B* 2 NO ➔ Q0530 8 *DK* *9 REFUSED*	☐☐☐☐☐☐☐☐ *-8 DON'T KNOW* *-9 REFUSED*
Q0530	Other valuable items, such as jewellery, books, art or other valuable items?	1 YES ➔ *Column B* 2 NO ➔ Q0531 8 *DK* *9 REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*

In the last part of this section, I will ask about the <u>total income for the household in the last 12 months</u> (previous to today) from paid work or other sources. I would like to know about all sources of income. I know it may be difficult to calculate that figure, but please do try to give as accurate an amount as possible. Remember that all information will be kept strictly confidential. This information is important to assess overall health and well-being of people in your household compared to other similar households.

Q0531	Does your household have a regular source of income? *Interviewer: Regular income over the last 12 months, meaning that the household can depend on a source to provide an income at intervals that can be used to base household budget decisions.*	1 Yes, regular source 2 Yes, regular but seasonal 3 No

I am now going to read you a list of possible sources of income. Thinking over the last 12 months, can you tell me what the average earnings of the household have been per week or per month or per year? Please tell me whichever time period that is easier for you.

		A. *If Yes, ➔ Column B If no ➔ go to next Q*	**B.** Can you estimate an approximate total amount of income for the household over the last [week/month/year- *time period circled in Column **A**]?*
Q0532	Please tell me from which of these sources members of your household receive income:		
	Q0532a. Wages, salary from job?	1 YES, WEEKLY 2 YES, MONTHLY 3 YES, YEARLY 4 NO ➔ Q0532b 8 *DK* *9 REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0532b. Earnings from selling, trading or hawking products?	1 YES, WEEKLY 2 YES, MONTHLY 3 YES, YEARLY 4 NO ➔ Q0532c 8 *DK* *9 REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0532c. Income from rental of property?	1 YES, WEEKLY 2 YES, MONTHLY 3 YES, YEARLY 4 NO ➔ Q0532d 8 *DK* *9 REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0532d. Pension fund (State/Private), Provident fund, grants and/or social security benefit?	1 YES, WEEKLY 2 YES, MONTHLY 3 YES, YEARLY 4 NO ➔ Q0532e 8 *DK* *9 REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0532e. Interest/dividends from savings account or fixed deposits (or other interest/dividends)?	1 YES, WEEKLY 2 YES, MONTHLY 3 YES, YEARLY 4 NO ➔ Q0532f 8 *DK* *9 REFUSED*	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0532f. Other (specify): _____	1 YES, WEEKLY 2 YES, MONTHLY 3 YES, YEARLY 4 NO ➔ Q0533	☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*

Q0533	So to verify this information, your approximate total household income from **ALL** sources over the last 12 months is about how much?	☐☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*

Q0534	How many people depend on this income? *(INTERVIEWER: This number should include the respondent - so enter "01" if only the respondent depends on/is supported by this income.)*	☐☐ NUMBER OF PEOPLE -8 *DON'T KNOW*	
Q0535	Q0535a Does your household or any members of the household have current debt or outstanding loans?	1 YES……➔ 2 NO ……➔ 8 *DON'T KNOW* *9 REFUSED*	Q0535b Q0536
	Q0535b. What is the approximate total amount of this debt or loan(s)?	☐☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *- 9 REFUSED*	
Q0536	Thinking about the income for this household, do you believe that it is enough money to cover your daily living needs and obligations?	1 YES 2 NO 8 *DON'T KNOW*	
Q0537	Would you say your household's financial situation is…?	1 Very Good 2 Good 3 Moderate 4 Bad 5 Very Bad	

Section 0600: Household Expenditure

I would like to ask you some questions about how much your household and all its members spends on food, household items, health services and other things. Expenditures can be monetary or non-cash (in-kind). The value of in-kind payments and items produced or raised, and consumed, by the household need to be estimated and included. We ask about different time periods, so please listen carefully to the time frame.

For all questions in this section report all amounts in local currency, whether paid in cash or in kind.

I would like to start by asking about household expenses over the last 7 days. The next questions are about food items purchased by the household. I would like to start with asking details about the types of food your household has purchased in cash or kind and/or self-produced goods consumed in the last 7 days.

In the last 7 days, how much did your household spend on: *(INTERVIEWER: Use "0" for no expenditure below.)*		
Q0601	Q0601a. Staple foods (rice, grains, potatoes, bread, crackers)?	☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0601b. Meat (beef, pork, lamb, mutton, chicken, turkey, or other meat - fish or other seafood)?	☐☐☐☐☐☐ -8 *DON'T KNOW*

		-9 REFUSED
	Q0601c. Fruits and vegetables?	☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0601d. Milk and eggs?	☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0601e. Spices and oils (salt, sugar, curry, garlic, ginger, pepper, chilli, or other - butter, lard, cooking oils (coconut oil, palm oil, vegetable oil, corn oil))?	☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0601f. Beverages and other non-alcoholic drinks such as coffee, tea, juice, water and soft drinks.	☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0601g. Tobacco and alcoholic beverages (including, beer, wine, spirits)?	☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0601h. Food eaten outside the dwelling (for example, at vendors, kiosks or restaurants)?	☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0601i. All other food items.	☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Please if you could now give us a total of how much your household spent overall on food items.		
Q0602	In the last 7 days, how much did your household spend on food items overall?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW*

Now I will shift into expenses for your household over the last 30 days. We are interested in frequent or regularly occurring non-food expenditures for the household.

In the last 30 days, how much did your household spend on:		
Q0603	Q0603a. Housing and utilities (rent, mortgage/bond, electricity, heating/cooking fuel, water, telephone…)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0603b. Clothing (footwear, hats, shirts, pants, dresses, skirt, jackets, coats…) and other personal	☐☐☐☐☐☐☐☐☐

	items (soap, shampoo, cosmetics, shaving cream…)?	-8 *DON'T KNOW* *-9 REFUSED*
	Q0603c. Transportation (bus fares, cab/taxi fares, vehicle repair costs, petrol…)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0603d. Recreation and entertainment?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
	Q0603e. All other goods and services? *Specify:* *INTERVIEWER: See QxQ for acceptable items - do not include "big expenditure" items that would be listed as expenditures in the last 12 months (Q0611-0621)*	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*

I would like to ask you more specific questions about how much your household and all its members spent in cash or in-kind on all health care and services that did not require an overnight stay. Again, we want expenses in the last 30 days. If payment was in-kind, please estimate a monetary value. Please exclude costs to be reimbursed by insurance.

In the last 30 days, how much did your household spend on:		
Q0604	Registration and consultation fees by doctors, nurses, or trained midwives that did not require an overnight stay?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0605	Health care by traditional or alternative healers *(midwife without formal training, traditional healer, religious healer, masseur, herbalist, acupuncture or aromatherapy practitioners)?*	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0606	Diagnostic and laboratory tests such as X-rays or blood tests?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0607	Medications or drugs (prescription, non-prescription, traditional, homeopathic…)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0608	Dentists or dental care?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0609	Ambulance?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*

Q0610	Any other health care products or services that were not included above? *Specify:*	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*

I know these questions may be difficult to answer - try to give us the best estimate of expenses. Now I want you to focus on household expenses over the last 12 months. These are expenses that may be more periodic or "big purchases". I would like to ask how much money was spent by all household members for the following items in the last 12 months.

In the last 12 months, how much did your household spend on:		
Q0611	Education fees and supplies (tuition, course fees, books)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0612	Durable goods (televisions, phones, bed sheets, towels, tools), furniture (tables, chairs, beds) and appliances (refrigerators)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0613	Vehicles (trucks, cars, motorcycles, scooters, bicycles) and upkeep/repairs?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0614	Rituals, gifts or ceremonies (funerals, birthdays, weddings…)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0615	Taxes (property tax, vehicle tax, income tax…) and non-health related insurance (personal, vehicle, household, life…)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0616	Voluntary health insurance premiums (including, community health insurance schemes)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0617	Health-related items (prescription glasses, hearing aids, canes, prosthetic devices…)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0618	Costs associated with overnight stays in a hospital or health facility? *Please exclude any reimbursements from insurance and transportation costs.*	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*
Q0619	Costs associated with long-term care facility?	☐☐☐☐☐☐☐☐☐

	Long-term care facilities include old age homes, shelter for old, or social development centres for developmental or MNS disorders, or old age . Please exclude any reimbursements from insurance and transportation costs.	-8 *DON'T KNOW* *-9 REFUSED*
Q0620	All other goods and services (property, land, livestock, cleaning services, repair services…)?	☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* *-9 REFUSED*

INTERVIEWER: ***If no (Q0604-Q0610= "0" and Q0617-Q0619= "0") health expenditure has been recorded for questions:***

Q0604-Q0610 and;
Q0617-Q0619 ➔ ***SKIP TO Q0629***

Next, I want you to think of how you paid for your health care expenditures over the last 12 months. This includes costs for all fees, services and goods, including overnight stays.

In the last 12 months, which of the following financial sources did your household use to pay for any and all health expenditures? How much did each source contribute to total health expenditures (in % terms)?

Q0621	Current income of any household members (salaries, pensions, paid benefits…)?	1 YES 2 NO 8 *DON'T KNOW* *9 REFUSED*	☐☐☐% -8 *DON'T KNOW* *-9 REFUSED*
Q0622	Savings?	1 YES 2 NO 8 *DON'T KNOW* *9 REFUSED*	☐☐☐% -8 *DON'T KNOW* *-9 REFUSED*
Q0623	Payment or reimbursement from a health insurance plan (including community health schemes)?	1 YES 2 NO 8 *DON'T KNOW* *9 REFUSED*	☐☐☐% -8 *DON'T KNOW* *-9 REFUSED*
Q0624	Sold items (land, property, furniture, livestock, jewellery…)?	1 YES 2 NO 8 *DON'T KNOW* *9 REFUSED*	☐☐☐% -8 *DON'T KNOW* *-9 REFUSED*
Q0625	Relatives or friends from outside the household?	1 YES 2 NO 8 *DON'T KNOW*	☐☐☐% -8 *DON'T KNOW* *-9 REFUSED*

		9 REFUSED	
Q0626	Borrowed from financial institutions or agencies (microfinance schemes, banks…)?	1 YES 2 NO 8 *DON'T KNOW* *9 REFUSED*	☐☐☐% -8 *DON'T KNOW* *-9 REFUSED*
Q0627	Other, specify: _____	1 YES 2 NO	☐☐☐% -8 *DON'T KNOW* *-9 REFUSED*

To complete this section, we want you to think of a typical month and the expenditures for your household. We want to know an average total amount your household spends on all items in a typical month. This includes the total amount your household and all its members spent on everything, for example, clothing, transport, rent and rates, school fees, food, drink, entertainment, health care and all other expenses.

Q0628	In general, what is your household's average overall monthly spending?	☐☐☐☐☐☐☐☐☐☐ -8 *DON'T KNOW* -9 *REFUSED*

Section 0700: Financial Situation Outlook

This is the final section of our household survey. We would like you to answer a few questions regarding the way you and your household members feel about your household's financial situation.

Q0701	Taking everything into account, how satisfied do you think people living in this household are with the way it lives at present? Would you say - very satisfied, satisfied, dissatisfied or very dissatisfied?	1 VERY SATISFIED 2 SATISFIED 3 NEITHER SATISFIED OR DISSATISFIED 4 DISSATISFIED 5 VERY DISSATISFIED 9 *REFUSED*	
Q0702	How would you rate the financial situation of this household AT PRESENT? Is it very good, good, average, bad or very bad?	1 VERY GOOD 2 GOOD 3 AVERAGE 4 BAD 5 VERY BAD 9 *REFUSED*	
Q0703	How would you rate the financial situation of the household compared to three years ago? Is it better, the same or worse than three years ago?	1 BETTER 2 SAME ……➔ 3 WORSE 9 *REFUSED*	Q0705
Q0704	What would you say is the <u>MAIN</u> reason for the change in the financial situation of the household? *(Write exact words and only ONE reason))*	_____ _____ _____ _____ _____ _____	

Q0705	How do you expect life will be like for this household in five years time?	1 BETTER 2 SAME 3 WORSE	

Finally, we would like to ask you whether you or your household members have had to take any of the following actions because of financial difficulty.
We will first ask you whether these actions were taken over the last three years. We will then ask you whether you currently have to do this.

*INTERVIEWER: please ensure you complete **column A for the last three years** and **column B for current actions** addressing financial difficulty.*

In [*TIME PERIOD]*…because of financial difficulty, have you had to…:		In the **last three years?** 1 YES 2 NO		Do you **currently** have to do this? 1 YES 2 NO	
Q0706	Ask friends and relatives for help?	Q0706a		Q0706b	
Q0707	Ask an employer for help?	Q0707a		Q0707b	
Q0708	Ask a religious organization or an NGO for help?	Q0708a		Q0708b	
Q0709	Borrow from a bank, moneylender or loan shark?	Q0709a		Q0709b	
Q0710	Cut down on food consumption?	Q0710a		Q0710b	
Q0711	Try to find extra work?	Q0711a		Q0711b	
Q0712	Run up an account with a shop?	Q0712a		Q0712b	
Q0713	Draw on your savings, sell shares/stocks?	Q0713a		Q0713b	
Q0714	Withdraw Children from School?	Q0714a		Q0714b	
Q0715	Reduce medical visits/treatment?	Q0715a		Q0715b	

Q0716	If you or your household members have had to take any other actions because of financial difficulty, please specify them here?	*SPECIFY:* _____ _____ _____ _____ _____ _____ _____

This completes the household section of our survey. Thank you for your time and answers.

Section 0800: Interviewer Observations

Q0801	*Was someone else present during the interview?*	1 YES 2 NO
Q0802	*What is your evaluation of the accuracy of the informant's answers?*	1 VERY GOOD 2 GOOD 3 MODERATE 4 BAD 5 VERY BAD

		QUESTION NUMBER(s)	NOTES
Q0803	*Questions with doubtful answers*		
Q0804	*Questions needing follow-up or clarification from supervisor*		
Q0805	*Other problems or issues*		
Q0806	*What questions did informant find difficult, embarrassing or confusing?*		
Q0807	*What questions did you the interviewer find difficult, embarrassing or confusing?*		

INTERVIEWER NOTES

Appendix H

Description and construction of household economic measures

Household Income included all reported household income received from wages, rental property, self-employment (informal trade), savings and cash transfers into the household (from: other households, community organizations or the government (e.g. social grants)). With the exception of cash transfers, which asked households to report totals received annually, all households were given the option of reporting income received daily, weekly, monthly or annually. Regarding *household consumption*, for items that were likely to be purchased on a frequent basis (e.g. food) households were asked how much they spent during the last week; a monthly recall period was applied for less frequent spending items like clothing, housing, frequent health items (e.g. consultation fees, medication) and transport; and an annual recall period was applied for very infrequent expenditures such as durable household assets, vehicles, education, cultural rituals and infrequent health items (hospitalizations, ambulatory costs, health devices such as eyeglasses).

After standardizing the time period to annual, total household food (subsistence) consumption was subtracted from total household income as a measure of *households' capacity to pay*. These financial variables were adjusted for household size and composition to ensure all comparisons generated would be based on a per adult equivalency (per capita) basis, using the OECD modified scale (235, 311). This approach assigns a value of 1.0 to the first adult household member (or household head), a value of 0.5 to each additional adult household member and a value of 0.3 to each child household member to standardized estimates and account for the varying resource needs of adults and children in the household, and the economies of scale associated with sharing household resources (235, 311). All household financial data were converted to United States Dollars (USD) using the 2015 average annual exchange rate (the year data collection was conducted) reported by the United States Department of Treasury for South Africa (1 USD = ZAR 13.46) (312)

A range of household assets were used to generate a *household asset score* using Multiple Correspondence Analysis (MCA). Household measures of socioeconomic status were collected to create the asset index. These included: household floor material, cooking location, access to electricity or solar energy, land or property ownership, access to improved drinking water and sanitation sources, receipt of

regular income, as well as possession of a range of household assets including bicycle, car, motor-cycle, cell-phone, watch/clock, landline, valuables such as jewellery, as well as five contextualized furniture items, and nine contextualized household appliances; three each reflecting likely ownership by poor, middle-wealth and rich households. MCA as opposed to Principal Components Analysis (PCA) was used to create the asset index as MCA makes fewer assumptions about the underlying distributions of indicator variables and is more suited for the analysis of categorical variables (235, 313-315). Wealth quintiles were generated based on these scores.

For the assessment of *household-use of distress financing strategies in response to financial difficulty*, summary variables were generated based on the household report of: withdrawing children from school, reducing health care use, restricting the size or frequency of meals, or drawing up accounts at retail outlets in response to financial distress over the past three years. Similarly, for the assessment of the presence of *household debt*, summary variables were generated based on the household report of debt in the household.

Appendix I

Sociodemographic characteristics of the included and excluded participants

Characteristics	Included (n=534)	Excluded (n=62)	p-value
Head Gender (% female)	52	48	0.584
Head Marital Status (% married)	27	27	0.796
Head Education (% no formal education)	12	11	0.923
Head Age (mean age)	52	54	0.130
Household size (mean number of members)	4	4	0.183
Indexed Patient Gender (% female)	79	75	0.490
Indexed Patient Marital Status (% married)	21	19	0.108
Indexed Patient Education (% no formal education)	8	7	0.944
Indexed Patient Age (mean age)	47	49	0.265

References

1. Massyn N, Padarath A, Peer N, Day C. District Health Barometer 2016/17. Health Systems Trust. 2017.

2. Consumer Price Index - December 2016 [Internet]. Statistics South Africa. 2017 [cited 20 July 2018].

3. Patel V, Chisholm D, Dua T, Laxminarayan R, Medina-Mora MaL. Disease Control Priorities, (Volume 4): Mental, Neurological, and Substance Use Disorders: The World Bank; 2016.

4. Patel V, Saxena S, Lund C, Thornicroft G, Baingana F, Bolton P, et al. The Lancet Commission on global mental health and sustainable development. The Lancet. 2018;392(10157):1553-98.

5. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM-5®): American Psychiatric Pub; 2013.

6. WHO. ICD-11 for mortality and morbidity statistics. Retrieved June. 2018;22:2018.

7. WHO. Mental Disorders: World Health Organization; 2018 [updated 9 April 2018. Available from: https://www.who.int/news-room/fact-sheets/detail/mental-disorders.

8. Patel V, Minas H, Cohen A, Prince MJ. Global mental health: principles and practice: Oxford University Press; 2013.

9. Global Burden of Disease Study 2017 (GBD 2017) Results [Internet]. Institute for Health Metrics and Evaluation (IHME). 2018 [cited November 2018]. Available from: http://ghdx.healthdata.org/gbd-results-tool.

10. Chisholm D, Heslin M, Docrat S, Nanda S, Shidhaye R, Upadhaya N, et al. Scaling-up services for psychosis, depression and epilepsy in sub-Saharan Africa and South Asia: Development and application of a mental health systems planning tool (OneHealth). Epidemiology and Psychiatric Sciences. 2017;26(3):234-44.

11. Thornicroft G, Chatterji S, Evans-Lacko S, Gruber M, Sampson N, Aguilar-Gaxiola S, et al. Undertreatment of people with major depressive disorder in 21 countries. The British journal of psychiatry : the journal of mental science. 2017;210(2):119-24.

12. Alonso J, Liu Z, Evans-Lacko S, Sadikova E, Sampson N, Chatterji S, et al. Treatment gap for anxiety disorders is global: Results of the World Mental Health Surveys in 21 countries. Depress Anxiety. 2018;35(3):195-208.

13. Demyttenaere K, Bruffaerts R, Posada-Villa J, Gasquet I, Kovess V, Lepine J, et al. Prevalence, severity, and unmet need for treatment of mental disorders in the World Health Organization World Mental Health Surveys. Jama. 2004;291(21):2581-90.

14. Rathod S, Pinninti N, Irfan M, Gorczynski P, Rathod P, Gega L, et al. Mental Health Service Provision in Low- and Middle-Income Countries. Health Serv Insights. 2017;10:1178632917694350-.

15. Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. PLoS medicine. 2006;3(11):e442.

16. Jacob KS, Sharan P, Mirza I, Garrido-Cumbrera M, Seedat S, Mari JJ, et al. Mental health systems in countries: where are we now? Lancet. 2007;370(9592):1061-77.

17. de Jesus MJ, Razzouk D, Thara R, Eaton J, Thornicroft G. Packages of care for schizophrenia in low- and middle-income countries. PLoS medicine. 2009;6(10):e1000165-e.

18. Novella EJ. Mental health care in the aftermath of deinstitutionalization: a retrospective and prospective view. Health Care Anal. 2010;18(3):222-38.

19. Saxena S, Thornicroft G, Knapp M, Whiteford H. Resources for mental health: scarcity, inequity, and inefficiency. The lancet. 2007;370(9590):878-89.

20. WHO. Organization of services for mental health. Mental health policy and service guidance package: World Health Organization; 2003.

21. Kleinman A. Concepts and a model for the comparison of medical systems as cultural systems. Social Science & Medicine Part B: Medical Anthropology. 1978;12:85-93.

22. Stein D, Wessels C, Van JK, Emsley R. The Mental Health Information Centre of South Africa: a report of the first 500 calls. The Central African journal of medicine. 1997;43(9):244-6.

23. Minde M. History of mental health services in South Africa-Part XIII. The National Council for Mental Health. South African Medical Journal. 1976;50(37):1452-6.

24. Cheetham R, Cheetham R. Concepts of mental illness amongst the rural Xhosa people in South Africa. Australian and New Zealand Journal of Psychiatry. 1976;10(1):39-45.

25. Callard F, Arboleda-Flórez J. Mental illness, discrimination and the law: fighting for social justice: John Wiley & Sons; 2012.

26. Lund C, De Silva M, Plagerson S, Cooper S, Chisholm D, Das J, et al. Poverty and mental disorders: breaking the cycle in low-income and middle-income countries. The Lancet. 2011;378(9801):1502-14.

27. Saraceno B, Levav I, Kohn R. The public mental health significance of research on socio-economic factors in schizophrenia and major depression. World Psychiatry. 2005;4(3):181.

28. Gutierrez-Recacha P, Chisholm D, Haro J, Salvador-Carulla L, Ayuso-Mateos J. Cost-effectiveness of different clinical interventions for reducing the burden of schizophrenia in Spain. Acta Psychiatrica Scandinavica. 2006;114(s432):29-38.

29. Chisholm D, Sanderson K, Ayuso-Mateos JL, Saxena S. Reducing the global burden of depression. The British Journal of Psychiatry. 2004;184(5):393-403.

30. Chisholm D, Van Ommeren M, Ayuso-Mateos J-L, Saxena S. Cost-effectiveness of clinical interventions for reducing the global burden of bipolar disorder. The British Journal of Psychiatry. 2005;187(6):559-67.

31. Wahlbeck K, Westman J, Nordentoft M, Gissler M, Laursen TM. Outcomes of Nordic mental health systems: life expectancy of patients with mental disorders. The British Journal of Psychiatry. 2011;199(6):453-8.

32. Thornicroft G. Physical health disparities and mental illness: the scandal of premature mortality. The British Journal of Psychiatry. 2011;199(6):441-2.

33. World Bank. Out of the Shadows: Making Mental Health a Global Priority. Online: The World Bank; 2016 [updated 13 April 2016. Available from: http://www.worldbank.org/en/events/2016/03/09/out-of-the-shadows-making-mental-health-a-global-priority.

34. Chisholm D, Sweeny K, Sheehan P, Rasmussen B, Smit F, Cuijpers P, et al. Scaling-up treatment of depression and anxiety: a global return on investment analysis. The Lancet Psychiatry. 2016;3(5):415-24.

35. Shiell A, Donaldson C, Mitton C, Currie G. Health economic evaluation. Journal of epidemiology and community health. 2002;56(2):85-8.

36. Drummond MF, Sculpher MJ, Claxton K, Stoddart GL, Torrance GW. Methods for the economic evaluation of health care programmes: Oxford university press; 2015.

37. Reidpath DD, Olafsdottir AE, Pokhrel S, Allotey P. The fallacy of the equity-efficiency trade off: rethinking the efficient health system. BMC public health. 2012;12(1):S3.

38. Whitehead SJ, Ali S. Health outcomes in economic evaluation: the QALY and utilities. British medical bulletin. 2010;96(1):5-21.

39. Whitehead M. The concepts and principles of equity and health. International journal of health services. 1992;22(3):429-45.

40. Mackenbach JP, Kunst AE. Measuring the magnitude of socio-economic inequalities in health: an overview of available measures illustrated with two examples from Europe. Social science & medicine. 1997;44(6):757-71.

41. O'donnell O, Van Doorslaer E, Wagstaff A, Lindelow M. Measuring and explaining inequity in health service delivery. Analyzing health equity using household survey data. 2008:177-86.

42. Kutzin J. Health financing for universal coverage and health system performance: concepts and implications for policy. Bulletin of the World Health Organization. 2013;91(8):602-11.

43. Chisholm D, Docrat S, Abdulmalik J, Alem A, Gureje O, Gurung D, et al. Mental health financing challenges, opportunities and strategies in low- and middle-income countries: findings from the Emerald project. BJPsych Open. 2019;5(5):e68.

44. WHA58.33 Sustainable health financing, universal coverage and social health insurance WHA58.33 (2005).

45. Lund C, Docrat S, Abdulmalik J, Alem A, Fekadu A, Gureje O, et al. Household economic costs associated with mental, neurological and substance use disorders: a cross-sectional survey in six low- and middle-income countries. BJPsych Open. 2019;5(3).

46. Russell S. The economic burden of illness for households in developing countries: a review of studies focusing on malaria, tuberculosis, and human immunodeficiency virus/acquired immunodeficiency syndrome. The American journal of tropical medicine and hygiene. 2004;71(2 suppl):147-55.

47. McIntyre D, Thiede M, Dahlgren G, Whitehead M. What are the economic consequences for households of illness and of paying for health care in low-and middle-income country contexts? Social science & medicine. 2006;62(4):858-65.

48. Saraceno B, van Ommeren M, Batniji R, Cohen A, Gureje O, Mahoney J, et al. Barriers to improvement of mental health services in low-income and middle-income countries. The Lancet. 2007;370(9593):1164-74.

49. Lund C, Kleintjes S, Kakuma R, Flisher AJ, Consortium MRP. Public sector mental health systems in South Africa: inter-provincial comparisons and policy implications. Social Psychiatry and Psychiatric Epidemiology. 2010;45(3):393-404.

50. Lund C, Cois A. Simultaneous social causation and social drift: Longitudinal analysis of depression and poverty in South Africa. Journal of affective disorders. 2018;229:396-402.

51. WHO. WHO_AIMS Country Reports, South Africa. 2007 ed. Geneva: WHO; 2007.

52. Lund C. Poverty and mental health: unlocking the potential for sustainable human development. TEDxCapeTown 2016; 15 October 2016; Century City, Cape Town, South Africa2016.

53. Kuruvilla A, Jacob K. Poverty, social stress & mental health. Indian Journal of Medical Research. 2007;126(4):273.

54. Whitehead M, Dahlgren G, Evans T. Equity and health sector reforms: can low-income countries escape the medical poverty trap? The Lancet. 2001;358(9284):833-6.

55. Leive A, Xu K. Coping with out-of-pocket health payments: empirical evidence from 15 African countries. Bulletin of the World Health Organization. 2008;86(11):849-56C.

56. WHO. WHO guide to identifying the economic consequences of disease and injury. World Health Organization; 2009. Report No.: 9241598298.

57. WHO. Mental Health Atlas 2011. World Health Organization; 2011.

58. Mahal A, Karan A, Engelgau M. The economic implications of non-communicable disease for India. 2010.

59. Patel V, Chisholm D, Kirkwood BR, Mabey D. Prioritizing health problems in women in developing countries: comparing the financial burden of reproductive tract infections, anaemia and depressive disorders in a community survey in India. Tropical Medicine &;; International Health. 2007;12(1):130-9.

60. Patel V, Saxena S, Lund C, Thornicroft G, Baingana F, Bolton P, et al. The Lancet Commission on Global Mental Health and Sustainable Development. The Lancet. 2018;392(10157):1553-98.

61. Patel V, Maj M, Flisher AJ, De Silva MJ, Koschorke M, Prince M, et al. Reducing the treatment gap for mental disorders: a WPA survey. World psychiatry : official journal of the World Psychiatric Association (WPA). 2010;9(3):169-76.

62. Thornicroft G, Patel V. Including mentalhealth among the new sustainable development goals. BMJ (Clinical research ed). 2014;349:g5189.

63. Chisholm D, Flisher AJ, Lund C, Patel V, Saxena S, Thornicroft G, et al. Scale up services for mental disorders: a call for action. Lancet. 2007;370(9594):1241-52.

64. WHO. mhGAP intervention guide for mental, neurological and substance use disorders in non-specialized health settings: World Health Organization; 2010.

65. Hanlon C, Semrau M, Alem A, Abayneh S, Abdulmalik J, Docrat S, et al. Evaluating capacity-building for mental health system strengthening in low- and middle-income countries for service users and caregivers, service planners and researchers. Epidemiology and Psychiatric Sciences. 2018;27(1):3-10.

66. Hanlon C, Luitel NP, Kathree T, Murhar V, Shrivasta S, Medhin G, et al. Challenges and opportunities for implementing integrated mental health care: a district level situation analysis from five low- and middle-income countries. PLoS One. 2014;9(2):e88437.

67. Lund C, Tomlinson M, De Silva M, Fekadu A, Shidhaye R, Jordans M, et al. PRIME: a programme to reduce the treatment gap for mental disorders in five low-and middle-income countries. PLoS Med. 2012;9(12):e1001359.

68. Chisholm D. Choosing cost-effective interventions in psychiatry: results from the CHOICE programme of the World Health Organization. World Psychiatry. 2005;4(1):37-44.

69. Shah A, Jenkins R. Mental health economic studies from developing countries reviewed in the context of those from developed countries. Acta Psychiatrica Scandinavica. 2000;101(2):87-103.

70. Knapp M, Chisholm D, Astin J, Lelliott P, Audini B. The cost consequences of changing the hospital-community balance: the mental health residential care study. Psychol Med. 1997;27(3):681-92.

71. Thornicroft G, Tansella M. Components of a modern mental health service: a pragmatic balance of community and hospital care: overview of systematic evidence. The British journal of psychiatry : the journal of mental science. 2004;185:283-90.

72. Lancet Global Mental Health Group. Scale up services for mental disorders: a call for action. The Lancet. 2007;370(9594):1241-52.

73. Patel V, Chisholm D, Parikh R, Charlson FJ, Degenhardt L, Dua T, et al. Addressing the burden of mental, neurological, and substance use disorders: key messages from Disease Control Priorities, 3rd edition. Lancet (London, England). 2016;387(10028):1672-85.

74. Chisholm D, Saxena S. Cost effectiveness of strategies to combat neuropsychiatric conditions in sub-Saharan Africa and South East Asia: mathematical modelling study. B M J - Clinical Research Edition. 2012;344:ee609-ee.

75. Gureje O, Chisholm D, Kola L, Lasebikan V, Saxena S. Cost-effectiveness of an essential mental health intervention package in Nigeria. World psychiatry: official journal of the World Psychiatric Association [WPA]. 2007;6(1):42-8.

76. Strand KB, Chisholm D, Fekadu A, Johansson KA. Scaling-up essential neuropsychiatric services in Ethiopia: A cost-effectiveness analysis. Health Policy and Planning. 2016;31(4):504-13.

77. Caddick H, Horne B, Mackenzie J, Tilley H. Investing in mental health in low-income countries. 2016.

78. Petersen I, Bhana A, Fairall LR, Selohilwe O, Kathree T, Baron EC, et al. Evaluation of a collaborative care model for integrated primary care of common mental disorders comorbid with chronic conditions in South Africa. BMC psychiatry. 2019;19(1):107.

79. Nakku JEM, Rathod SD, Garman EC, Ssebunnya J, Kangere S, De Silva M, et al. Evaluation of the impacts of a district-level mental health care plan on contact coverage, detection and individual outcomes in rural Uganda: a mixed methods approach. International Journal of Mental Health Systems. 2019;13(1):63.

80. Jordans MJD, Luitel NP, Kohrt BA, Rathod SD, Garman EC, De Silva M, et al. Community-, facility-, and individual-level outcomes of a district mental healthcare plan in a low-resource setting in Nepal: A population-based evaluation. PLOS Medicine. 2019;16(2):e1002748.

81. Chisholm D, Sweeny K, Sheehan P, Rasmussen B, Smit F, Cuijpers P, et al. Scaling-up treatment of depression and anxiety: a global return on investment analysis. The lancet Psychiatry. 2016;3(5):415-24.

82. Chisholm D, Clark S. Return on Investment in Global Mental Health innovation: a primer. 2016.

83. WHO. Investing in mental health: evidence for action. 2013.

84. Freeman M. Global mental health in low and middle income, especially African countries. Epidemiology and Psychiatric Sciences. 2016:1-3.

85. Aubry T, Goering P, Veldhuizen S, Adair CE, Bourque J, Distasio J, et al. A multiple-city RCT of housing first with assertive community treatment for homeless Canadians with serious mental illness. Psychiatric Services. 2016;67(3):275-81.

86. Modini M, Tan L, Brinchmann B, Wang M-J, Killackey E, Glozier N, et al. Supported employment for people with severe mental illness: systematic review and meta-analysis of the international evidence. The British Journal of Psychiatry. 2016;209(1):14-22.

87. Kerman N, Sylvestre J, Aubry T, Distasio J. The effects of housing stability on service use among homeless adults with mental illness in a randomized controlled trial of housing first. BMC health services research. 2018;18(1):190.

88. Tomlinson M, Lund C. Why does mental health not get the attention it deserves? An application of the Shiffman and Smith framework. PLoS Med. 2012;9(2):e1001178.

89. Gilbert BJ, Patel V, Farmer PE, Lu C. Assessing development assistance for mental health in developing countries: 2007–2013. PLoS medicine. 2015;12(6):e1001834.

90. WHO. About the Sustainable Development Goals: World Health Organization; 2016 [Available from: https://www.un.org/sustainabledevelopment/sustainable-development-goals/.

91. WHO. Mental health action plan 2013-2020: World Health Organization; 2013.

92. Chisholm D, Saxena S, Van Ommeren M. Dollars, DALYs and decisions: economic aspects of the mental health system: World Health Organization; 2006.

93. WHO. Mental Health Atlas 2017. Geneva: WHO Press: World Health Organization; 2018.

94. Lund C, Myer L, Stein DJ, Williams DR, Flisher AJ. Mental illness and lost income among adult South Africans. Social psychiatry and psychiatric epidemiology. 2013;48(5):845-51.

95. Kakuma R, Minas H, van Ginneken N, Dal Poz MR, Desiraju K, Morris JE, et al. Human resources for mental health care: current situation and strategies for action. The Lancet. 2011;378(9803):1654-63.

96. Schneider M, Baron E, Breuer E, Docrat S, Honikman S, Kagee A, et al. Integrating mental health into South Africa's health system: current status and way forward. South African Health Review. 2016:153-63.

97. McIntyre D, Kutzin J, Organization WH. Health financing country diagnostic: a foundation for national strategy development. World Health Organization; 2016. Report No.: 9241510110.

98. WHO. Health Systems Financing: The Path to Universal Coverage. Geneva; 2010.

99. McIntyre D, Ranson MK, Aulakh BK, Honda A. Promoting universal financial protection: evidence from seven low- and middle-income countries on factors facilitating or hindering progress. Health Res Policy Syst. 2013;11:36-.

100. Savedoff WD, de Ferranti D, Smith AL, Fan V. Political and economic aspects of the transition to universal health coverage. The Lancet. 2012;380(9845):924-32.

101. Carrin G, Mathauer I, Xu K, Evans DB. Universal coverage of health services: tailoring its implementation. Bulletin of the World Health Organization. 2008;86(11):857-63.

102. WHO. The World Health Report [2010]: Health Systems Financing; the Path to Universal Coverage2010.

103. Gottret P, Schieber G, Waters HR. Good practices in health financing: lessons from reforms in low and middle-income countries: The World Bank; 2008.

104. McIntyre D, Garshong B, Mtei G, Meheus F, Thiede M, Akazili J, et al. Beyond fragmentation and towards universal coverage: insights from Ghana, South Africa and the United Republic of Tanzania. Bulletin of the World health Organization. 2008;86:871-6.

105. McIntyre D, editor Learning from experience: Health care financing in low-and middle-income countries2007: Global forum for health research Geneva.

106. Kutzin J. Anything goes on the path to universal health coverage? No. Bulletin of the World Health Organization. 2012;90:867-8.

107. McIntyre D, Van den Heever A. Social or national health insurance: pooling of resources and purchasing of health care. South African health review. 2007;2007(1):71-87.

108. Department of Social Development. Transforming the Present - Protecting the Future. Pretoria: Department of Social Development,; 2002 [Available from: http://www.dsd.gov.za/docs_guidelines/2002/2002.asp.

109. Wagstaff A. Social health insurance vs. tax-financed health systems-evidence from the OECD: The World Bank; 2009.

110. Mathauer I, Kutzin J. Voluntary health insurance: potentials and limits in moving towards UHC. World Health Organization URL: https://apps who int/iris/bitstream/handle/10665/274317/WHO-HIS-HGF-PolicyBrief-185-eng pdf? ua. 2018;1.

111. Mills A. Strategies to achieve universal coverage: are there lessons from middle income countries? 2007.

112. WHO. Fragmentation in Pooling Arrangements 2010 [Available from: https://www.who.int/healthsystems/topics/financing/healthreport/FragmentationTBNo5.pdf?ua=1.

113. Health Policy Plus. Health financing: the basics: USAID; 2020 [Available from: https://www.fpfinancingroadmap.org/learning/health-financing-concepts/health-financing-basics.

114. Department of Health. National Health Insurance for South Africa White Paper. Pretoria: National Department of Health; 2015.

115. Honda A. What is strategic purchasing for health? London: London School of Hygiene & Tropical Medicine; 2014.

116. Glassman A, Giedion U, Smith PC. What's in, what's out: designing benefits for universal health coverage: Brookings Institution Press; 2017.

117. Prince M, Patel V, Saxena S, Maj M, Maselko J, Phillips MR, et al. No health without mental health. Lancet. 2007;370(9590):859-77.

118. Singh B, Hawthorne G, Vos T. The role of economic evaluation in mental health care. The Australian and New Zealand journal of psychiatry. 2001;35(1):104-17.

119. WHO. World Health Statistics Online; 2011.

120. Coovadia H, Jewkes R, Barron P, Sanders D, McIntyre D. The health and health system of South Africa: historical roots of current public health challenges. Lancet. 2009;374(9692):817-34.

121. Mabaso M, Makola L, Naidoo I, Mlangeni LL, Jooste S, Simbayi L. HIV prevalence in South Africa through gender and racial lenses: results from the 2012 population-based national household survey. International Journal for Equity in Health. 2019;18(1):167.

122. Mid-year population estimate 2019 [Internet]. Statistics South Africa. 2018 [cited 4 November]. Available from: http://www.statssa.gov.za/publications/P0302/P03022019.pdf.

123. Harris B, Goudge J, Ataguba JE. Inequities in access to health care in South Africa. Journal of public health policy. 2011;32(S1):S102-S23.

124. WHO. The World Health Report: Health Systems Financing-The Path to Universal Coverage. Geneva; 2010.

125. National Health Insurance for South Africa White Paper, (2016).

126. NDOH. Green Paper on National Health Insurance. In: South African National Department of Health, editor. Pretoria2011.

127. Ataguba JE. Health financing and NHI in South AfricaL why do we need a reform? Health Systems Trust 2016; Cape Town, South Africa2016.

128. NDOH. National Health Insurance White Paper. In: South African National Department of Health, editor. Pretoria2015.

129. Andy Gray YV. South Africa Health Review: Health Policy and Legistlation. 2016 05/2016.

130. Department of Health. National Health Insurance Policy: Towards Universal Health Coverage. Government Gazette 409552017.

131. Gray A, Vawda Y. Health policy and legislation. South African health review. 2017;2017(1):13-20.

132. National Health Insurance Bill, (2019).

133. Ranchod S, Adams C, Burger R, Carvounesi A, Dreyer K, Smith A, et al. South Africa's hospital sector: old divisions and new developments. South African health review. 2017;2017(1):101-9.

134. Retchin SM, Brown RS, Yeh SCJ, Chu D, Moreno L. Outcomes of Stroke Patients in Medicare Fee for Service and Managed Care. JAMA: The Journal of the American Medical Association. 1997;278(2):119-24.

135. DOH. Mobilizing Against Tuberculosis. South African plan for TB control: 2002- 2005. Pretoria; 2002.

136. Harrison D. An Overview of Health and Health care in South Africa 1994 – 2010 : Priorities, Progress and Prospects for New Gains. 2009.

137. Health Systems Trust. Health Indicators. 2012.

138. Solanki G, Conell JE, Besada D, Morar RL, Wilkinson T. The Competitions Commission Health Market Inquiry Report: An Overview and Key Imperatives. SAMJ: South African Medical Journal. 2019;Accepted for Publication.

139. WHO. Global Health Observatory Data 2015 [Available from: http://www.who.int/research/en/. .

140. Health Economics Unit. HEU Information Sheet: Who pays for health care in South Africa? ; 2009.

141. Blecher M, Kollipara A, Mansvelder A, Daven J, Marharaj Y, Gaarekwe O. Health spending at a time of low economic growth and fiscal constraint. South African health review. 2017;2017(1):25-40.

142. Cullinan K. Comment: Corruption is killing us. Health-e News Service. 2017.

143. Green Paper: National Health Insurance in South Africa, (2011).

144. DOH. National Health Insurance Bill. In: Health NDo, editor. Pretoria: National Department of Health; 2019.

145. Williams D, Herman A, Stein D, Heeringa S, Jackson P, Moomal H, et al. Prevalence, service use and demographic correlates of 12-month psychiatric disorders in South Africa: the South African stress and Health Study. Psychological Medicine. 2007;38(2):211-20.

146. National Mental Health Policy Framework and Strategic Plan: 2013-2020, (2013).

147. Petersen I, Hancock JH, Bhana A, Govender K. Closing the treatment gap for depression co-morbid with HIV in South Africa: Voices of afflicted women. 2013.

148. Seedat S, Williams DR, Herman AA, Moomal H, Williams SL, Jackson PB, et al. Mental health service use among South Africans for mood, anxiety and substance use disorders. South African Medical Journal. 2009;99(5).

149. Burns JK. The burden of untreated mental disorders in KwaZulu-Natal Province-mapping the treatment gap. South African Journal of Psychiatry. 2014;20(1):6-10.

150. Petersen I, Lund C. Mental health service delivery in South Africa from 2000 to 2010: one step forward, one step back. SAMJ: South African Medical Journal. 2011;101(10):751-7.

151. Mayers P, Keet N, Winkler G, Flisher AJ. Mental health service users' perceptions and experiences of sedation, seclusion and restraint. International Journal of Social Psychiatry. 2010;56(1):60-73.

152. Mkhize D. Human rights abuses at a psychiatric hospital in KwaZulu-Natal. South African Journal of Psychiatry. 2007;13(4):6.

153. Joska J, Flisher A. Needs and services at an in-patient psychotherapy unit. African journal of psychiatry. 2007;10(3):149-56.

154. Jack-Ide I, Uys L, Middleton L. A comparative study of mental health services in two African countries: South Africa and Nigeria. International Journal of Nursing and Midwifery. 2012;4(4):50-7.

155. Lund C, Kleintjes S, Campbell-Hall V, Mjadu S, Petersen I, Bhana A, et al. Mental health policy development and implementation in South Africa: a situation analysis. Phase 1 Country report Cape Town: Mental Health and Poverty Project. 2008.

156. Mental Health Atlas 2014 [Internet]. [Unpublished Database]. 2014.

157. Burns JK. Mental health services funding and development in KwaZulu-Natal: a tale of inequity and neglect. SAMJ: South African Medical Journal. 2010;100(10):662-6.

158. Tomita A, Moodley Y. The revolving door of mental, neurological, and substance use disorders re-hospitalization in rural KwaZulu-Natal Province, South Africa. African Health Sciences. 2016;16(3):817-21.

159. van der Merwe M. Psychiatry in distress: How far has South Africa progressed in supporting mental health. Daily Maverick. 2015 15 July 2015.

160. Bateman C. Mental health under-budgeting undermining SA's economy2014.

161. Petersen I, Lund C, Bhana A, Flisher AJ. A task shifting approach to primary mental health care for adults in South Africa: human resource requirements and costs for rural settings. Health policy and planning. 2012;27(1):42-51.

162. Burns JK. The mental health gap in South Africa: A human rights issue. The Equal Rights Review. 2011;6(99):99-113.

163. Nortje G, Oladeji B, Gureje O, Seedat S. Effectiveness of traditional healers in treating mental disorders: a systematic review. The Lancet Psychiatry. 2016;3(2):154-70.

164. Gureje O, Nortje G, Makanjuola V, Oladeji BD, Seedat S, Jenkins R. The role of global traditional and complementary systems of medicine in the treatment of mental health disorders. The Lancet Psychiatry. 2015;2(2):168-77.

165. Lund C, Myer L, Stein DJ, Williams DR, Flisher AJ. Mental illness and lost income among adult South Africans. 2013:845-51.

166. NATIONAL MENTAL HEALTH POLICY FRAMEWORK AND STRATEGIC PLAN: 2013-2020, (2013).

167. National Mental Health Policy Framework and Strategic Plan: 2013-2020, (2013).

168. Jack H, Wagner RG, Petersen I, Thom R, Newton CR, Stein A, et al. Closing the mental health treatment gap in South Africa: a review of costs and cost-effectiveness. Global health action. 2014;7.

169. Patel V, Chisholm D, Parikh R, Charlson FJ, Degenhardt L, Dua T, et al. Addressing the burden of mental, neurological, and substance use disorders: key messages from Disease Control Priorities. The Lancet. 2016;387(10028):1672-85.

170. Gottret P, Schieber G. Health financing revisited: a practitioner's guide: The World Bank; 2006.

171. Lagomarsino G, Garabrant A, Adyas A, Muga R, Otoo N. Moving towards universal health coverage: health insurance reforms in nine developing countries in Africa and Asia. Lancet. 2012;380(9845):933-43.

172. Spaan E, Mathijssen J, Tromp N, McBain F, Have At, Baltussen R. The impact of health insurance in Africa and Asia: a systematic review. Bulletin of the World Health Organization. 2012;90:685-92.

173. Giedion U AE, Diaz Y. The Impact of Universal Coverage Schemes in the Developing World: A Review of the Existing Evidence. World Bank; 2013.

174. Docrat S, Besada D, Cleary S, Daviaud E, Lund C. Mental health system costs, resources and constraints in South Africa: a national survey. Health Policy and Planning. 2019(Advance).

175. Docrat S, Lund C, Chisholm D. Sustainable financing options for mental health care in South Africa: findings from a situation analysis and key informant interviews. International Journal of Mental Health Systems. 2019;13:4.

176. Prinja S, Chauhan AS, Karan A, Kaur G, Kumar R. Impact of publicly financed health insurance schemes on healthcare utilization and financial risk protection in India: a systematic review. PloS one. 2017;12(2):e0170996.

177. Acharya A, Vellakkal S, Taylor F, Masset E, Satija A, Burke M, et al. The impact of health insurance schemes for the informal sector in low-and middle-income countries: a systematic review. The World Bank Research Observer. 2012;28(2):236-66.

178. Moher D, Liberati A, Tetzlaff J, Altman DG. Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. Annals of internal medicine. 2009;151(4):264-9.

179. Clarivate Analytics. EndNote® X8.2. 2018.

180. Effective Public Health Practice Project. Quality assessment tool for quantitative studies 2010 [Available from: http://www.ephpp.ca/PDF/Quality%20Assessment%20Tool_2010_2.pdf.

181. Pannarunothai S, Srithamrongsawat S, Kongpan M, Thumvanna P. Financing reforms for the Thai health card scheme. Health Policy and Planning. 2000;15(3):303-11.

182. Boon-Arj C. Universal Coverage in Access to Health Care: National experiences of Thailand N.d [Available from: https://www.social-protection.org/gimi/RessourceDownload.action?ressource.ressourceId=13112.

183. Mathauer I, Xu K, Carrin G, Evans DB. An analysis of the health financing system of the Republic of Korea and options to strengthen health financing performance. World Health Organizaiton Geneva: Swiss. 2009:29-30.

184. Health Insurance in China OnlineN.d [Available from: https://en.wikipedia.org/wiki/Health_insurance_in_China.

185. Fang H, Eggleston K, Hanson K, Wu M. Enhancing financial protection under China's social health insurance to achieve universal health coverage. BMJ. 2019;365:l2378.

186. Ding X, Zheng Y, Guo Y, Shen C, Wang S, Chen F, et al. Active epilepsy prevalence, the treatment gap, and treatment gap risk profile in eastern China: A population-based study. Epilepsy & Behavior. 2018;78:20-4.

187. Feng Y, Xiong X, Xue Q, Yao L, Luo F, Xiang L. The impact of medical insurance policies on the hospitalization services utilization of people with schizophrenia: A case study in Changsha, China. Pakistan Journal of Medical Sciences. 2012;29(3).

188. He P, Guo C, Luo Y, Wen X, Salas JMI, Chen G, et al. Trends in Rehabilitation Services Use in Chinese Children and Adolescents With Intellectual Disabilities: 2007-2013. Archives of physical medicine and rehabilitation. 2017;98(12):2408-15.

189. Jian W, Guo Y. Does per-diem reimbursement necessarily increase length of stay? The case of a public psychiatric hospital. Health economics. 2009;18 Suppl 2:S97-106.

190. Wang Z-M, Zhu H, Pan Y-L, Chiu HFK, Correll CU, Ungvari GS, et al. Electroconvulsive Therapy and Its Association With Demographic and Clinical Characteristics in Chinese Psychiatric Patients. Journal of Ect. 2015;31(2):114-8.

191. Xu J, Wang J, King M, Liu R, Yu F, Xing J, et al. Rural-urban disparities in the utilization of mental health inpatient services in China: the role of health insurance. International journal of health economics and management. 2018.

192. Xue Q, Xiong X, Feng Y, Yao L, Chen S, Xiang L. Socioeconomic factors influencing antipsychotic prescription for schizophrenia inpatients in China: a cross-sectional study. International clinical psychopharmacology. 2014;29(5):288-95.

193. Yu-tao X, Yong-zhen W, Chi-Ming L, Wai-Kwong T, Ungvari GS. Clinical correlates of clozapine prescription for schizophrenia in China. Human Psychopharmacology: Clinical & Experimental. 2007;22(1):17-25.

194. Yu-Tao X, Yong-Zhen W, Chi-Ming L, Wai-Kwong T, Ungavri GS. Exploring the clinical and social determinants of prescribing anticholinergic medication for Chinese patients with schizophrenia. Human Psychopharmacology: Clinical & Experimental. 2007;22(3):173-80.

195. Zhang X-Q, Wang Z-M, Pan Y-L, Chiu HFK, Ng CH, Ungvari GS, et al. Use of electroconvulsive therapy in older Chinese psychiatric patients. International Journal of Geriatric Psychiatry. 2015;30(8):851-6.

196. Zhou Y, Rosenheck RA, He H. Health Insurance in China: Variation in Co-payments and Psychiatric Hospital Utilization. Journal of Mental Health Policy and Economics. 2014;17(1):25-32.

197. Zhou Y, Rosenheck R, Mohamed S, Ning Y, He H. Factors associated with complete discontinuation of medication among patients with schizophrenia in the year after hospital discharge. Psychiatry Research. 2017;250:129-35.

198. Chung W, Chang H-S, Oh S-M, Yoon C-W. Factors associated with long-stay status in patients with schizophrenia: An analysis of national databases covering the entire Korean population. International Journal of Social Psychiatry. 2013;59(3):207-16.

199. Hwang JE, Song I, Lee E-K, Ha D, Shin J-Y. Prevalence and predictors of tricyclic antidepressant use among elderly Koreans in primary-care and specialty clinics. International Journal of Clinical Pharmacology and Therapeutics. 2018;56(5):224-30.

200. Asawavichienjinda T, Sitthi-Amorn C, Tanyanont W. Compliance with treatment of adult epileptics in a rural district of Thailand. Journal of the Medical Association of Thailand = Chotmaihet thangphaet. 2003;86(1):46-51.

201. Hirunrassamee S, Ratanawijitrasin S. Does your health care depend on how your insurer pays providers? Variation in utilization and outcomes in Thailand. International Journal of Health Care Finance and Economics. 2009;9(2):153-68.

202. Araya R, Lewis G, Rojas G, Fritsch R, Frank R. Inequities in Mental Health Care After Health Care System Reform in Chile. American Journal of Public Health. 2006;96(1):109-13.

203. El-Sayed AM, Palma A, Freedman LP, Kruk ME. Does health insurance mitigate inequities in non-communicable disease treatment? Evidence from 48 low- and middle-income countries. Health policy (Amsterdam, Netherlands). 2015;119(9):1164-75.

204. Zhou Y, Rosenheck RA, He H. Health insurance in China: variation in co-payments and psychiatric hospital utilization. J Ment Health Policy Econ. 2014;17(1):25-32.

205. De Berardis D, Rapini G, Olivieri L, Di Nicola D, Tomasetti C, Valchera A, et al. Safety of antipsychotics for the treatment of schizophrenia: a focus on the adverse effects of clozapine. Ther Adv Drug Saf. 2018;9(5):237-56.

206. Farooq S, Taylor M. Clozapine: dangerous orphan or neglected friend? The British Journal of Psychiatry. 2011;198(4):247-9.

207. Okhuijsen-Pfeifer C, Huijsman E, Hasan A, Sommer I, Leucht S, Kahn R, et al. Clozapine as a first-or second-line treatment in schizophrenia: A systematic review and meta-analysis. Acta Psychiatrica Scandinavica. 2018;138(4):281-8.

208. Warnez S, Alessi-Severini S. Clozapine: a review of clinical practice guidelines and prescribing trends. BMC psychiatry. 2014;14(1):102.

209. Hill M, Freudenreich O. Clozapine: key discussion points for prescribers. Clinical schizophrenia & related psychoses. 2013;6(4):177-85.

210. Yuan B, He L, Meng Q, Jia L. Payment methods for outpatient care facilities. The Cochrane database of systematic reviews. 2017;3:Cd011153.

211. Liu GG, Vortherms SA, Hong X. China's Health Reform Update. Annual Review of Public Health. 2017;38(1):431-48.

212. Reich MR, Harris J, Ikegami N, Maeda A, Cashin C, Araujo EC, et al. Moving towards universal health coverage: lessons from 11 country studies. Lancet (London, England). 2016;387(10020):811-6.

213. Fadlallah R, El-Jardali F, Hemadi N, Morsi RZ, Abou Samra CA, Ahmad A, et al. Barriers and facilitators to implementation, uptake and sustainability of community-based health insurance schemes in low- and middle-income countries: a systematic review. International journal for equity in health. 2018;17(1):13-.

214. Sumriddetchkajorn K, Shimazaki K, Ono T, Kusaba T, Sato K, Kobayashi N. Universal health coverage and primary care, Thailand. Bull World Health Organ. 2019;97(6):415-22.

215. Yu H. Universal health insurance coverage for 1.3 billion people: What accounts for China's success? Health policy (Amsterdam, Netherlands). 2015;119(9):1145-52.

216. Koch KJ, Cid Pedraza C, Schmid A. Out-of-pocket expenditure and financial protection in the Chilean health care system—A systematic review. Health policy (Amsterdam, Netherlands). 2017;121(5):481-94.

217. Liang D, Mays VM, Hwang W-C. Integrated mental health services in China: challenges and planning for the future. Health Policy Plan. 2018;33(1):107-22.

218. Ng C. Mental health and integration in Asia Pacific. BJPsych International. 2018:1-3.

219. After Chile's Health Reform: Increase In Coverage And Access, Decline In Hospitalization And Death Rates. Health Affairs. 2010;29(12):2161-70.

220. Smith PC, Chalkidou K. Should Countries Set an Explicit Health Benefits Package? The Case of the English National Health Service. Value Health. 2017;20(1):60-6.

221. WHO. Tracking Universal Health Coverage. First Global Monitoring Report. World Health Organization and World Bank; 2013.

222. Comfort AB, Peterson LA, Hatt LE. Effect of health insurance on the use and provision of maternal health services and maternal and neonatal health outcomes: a systematic review. Journal of health, population, and nutrition. 2013;31(4 Suppl 2):S81.

223. Erlangga D, Suhrcke M, Ali S, Bloor K. The impact of public health insurance on health care utilisation, financial protection and health status in low-and middle-income countries: A systematic review. PloS one. 2019;14(8).

224. Ong KS, Kelaher M, Anderson I, Carter R. A cost-based equity weight for use in the economic evaluation of primary health care interventions: case study of the Australian Indigenous population. International journal for equity in health. 2009;8(1):1.

225. Department of Health. National Health Insurance Policy: Towards Universal Health Coverage, Government Gazette 40955. Pretoria: National Department of Health; 2017.

226. World Health Organization. Mental health action plan 2013-2020: World Health Organization; 2013.

227. Global Health Estimates 2015: Deaths by Cause, Age, Sex, by Country and by Region, 2000-2015 [Internet]. 2016.

228. Health Policy Project. South Africa: Health Financing Profile. Health Policy Project; 2016.

229. Ataguba JE. Health financing and NHI in South Africa: why do we need a reform? Health Systems Trust 2016; Cape Town, South Africa2016.

230. Department of Health. Green Paper: National Health Insurance in South Africa. Pretoria: National Department of Health; 2011.

231. National Health Insurance for South Africa White Paper, (2016).

232. Harrison D. An overview of health and health care in South Africa 1994–2010: Priorities, progress and prospects for new gains. Washington, DC: Henry J Kaiser Family Foundation. 2009.

233. Semrau M, Evans-Lacko S, Alem A, Ayuso-Mateos JL, Chisholm D, Gureje O, et al. Strengthening mental health systems in low-and middle-income countries: the Emerald programme. BMC medicine. 2015;13(1):1.

234. Chisholm D, Docrat S, Abdulmalik J, Alem A, Gureje O, Gurung D, et al. Mental health financing challenges, opportunities and strategies in low- and middle-income countries: findings from the Emerald project. Submitted for publication. 2018.

235. Lund C, Docrat S, Abdulmalik J, Alem A, Fekadu A, Gureje O, et al. Household economic impact ofcosts associated with mental, neurological and substance use disorders: a cross-sectional survey in six low and middle-income countries. Submitted for publication. 2018.

236. Emerging Mental Health Systems in Low- and Middle-Income Countries (Emerald) Project. The Emerging Mental Health Systems in Low- and Middle-Income Countries (Emerald) Project Mental Health Financing Diagnostic Tool Online2016 [Available from: https://www.emerald-project.eu/fileadmin/websites/emerald/media/Tools___Instruments/Interview_Guide-_Mental_Health_Financing_Diagnostic_Tool_v5.pdf

237. QSR International Pty Ltd. NVivo qualitative data analysis Software, Version 11. 2011.

238. UNICEF South Africa. Brief: Health Budget South Africa 2017/2018. Pretoria: UNICEF South Africa; 2017.

239. South Africa National Treasury. Budget Review. South Africa National Treasury,; 2018.

240. SA S. Public health care: How much per person Pretoria, South Africa2017 [cited 2018. Available from: http://www.statssa.gov.za/?p=10548.

241. Gray A, Vawda Y. Health legislation and policy. South African health review. 2018;2018(1):1-11.

242. SASOP. National Health Insurance for South Africa White Paper of December 2015: Response and Position Statement of the South African Society of Psychiatrists. South African Society of Psychiatrists; 2016.

243. Department of Health. Status of NHI Pilot districts: 12-month progress report. Pretoria: National Department of Health; 2015.

244. Department of Health. National Health Insurance Green Paper. Pretoria: National Department of Health; 2011.

245. Department of Health. Integrated School Health Policy. Pretoria: National Department of Health; 2012.

246. Egbe CO, Brooke-Sumner C, Kathree T, Selohilwe O, Thornicroft G, Petersen I. Psychiatric stigma and discrimination in South Africa: perspectives from key stakeholders. BMC psychiatry. 2014;14:191-.

247. Lund C, Kleintjes S, Cooper S, Petersen I, Bhana A, Flisher AJ, et al. Challenges facing South Africa's mental health care system: stakeholders' perceptions of causes and potential solutions. International Journal of Culture and Mental Health. 2011;4(1):23-38.

248. Petersen I, Fairall L, Bhana A, Kathree T, Selohilwe O, Brooke-Sumner C, et al. Integrating mental health into chronic care in South Africa: the development of a district mental healthcare plan. The British Journal of Psychiatry. 2015:bjp. bp. 114.153726.

249. Department of Health. Mental Health Care Act. Pretoria: National Department of Health; 2002.

250. van Rensburg BJ. The South African Society of Psychiatrists (SASOP) and SASOP State Employed Special Interest Group (SESIG) position statements on psychiatric care in the public sector. South African Journal of Psychiatry. 2012;18(3):16.

251. Wolvaardt G, Johnson S, Cameron DA, Botha BJJ, Kornik S. Challenges and constraints at district management level. 2014.

252. Mental Health Atlas [Internet]. World Health Organization. 2014 [cited 07 June 2018].

253. Blecher MS, Kollipara A, Daven J, Meyer-Rath G, Chiu C, Pillay Y, et al. HIV and AIDS financing in South Africa: sustainability and fiscal space. South African Health Review. 2016;2016(1):203-19.

254. Daven J, Jamieson L, Masuku S, Meyer-Rath G. Budget execution of the Comprehensive HIV and AIDS Conditional Grant: an analysis of expenditure and performance. Health Economics and Epidemiology Research Office. 2019;HE²RO Policy Brief Number 30.

255. Robertson L. National Health Insurance for South Africa White Paper of December, 2015: Response and Position Statement of the South African Society of Psychiatrists (SASOP). South African Society of Psychiatrists; 2016.

256. World Health Organization. About the Sustainable Development Goals 2016 [Available from: https://www.un.org/sustainabledevelopment/sustainable-development-goals/.

257. Amoah D ML. Determinants of Hospital Readmission of Medical Conditions in Developing Countries. Austin J Public Health Epidemiol. 2016;3(5):1049.

258. Petersen I, Lund C. Mental health service delivery in South Africa from 2000 to 2010: One step forward, one step back2011.

259. Petersen I, Fairall L, Bhana A, Kathree T, Selohilwe O, Brooke-Sumner C, et al. Integrating mental health into chronic care in South Africa: the development of a district mental healthcare plan. The British journal of psychiatry : the journal of mental science. 2016;208 Suppl 56(Suppl 56):s29-s39.

260. Makgoba M. The Life Esidimeni disaster: The Makgoba report. PoliticsWeb, 1 February 2017.

261. Zeng W, Cros M, Wright KD, Shepard DS. Impact of performance-based financing on primary health care services in Haiti. Health Policy and Planning. 2013;28(6):596-605.

262. Bank W. Africa Health Forum: Results-Based Financing for Health. 2013.

263. Meessen B, Soucat A, Sekabaraga C. Performance-based financing: just a donor fad or a catalyst towards comprehensive health-care reform? Bulletin of the World Health Organization. 2011;89:153-6.

264. Wiysonge CS, Paulsen E, Lewin S, Ciapponi A, Herrera CA, Opiyo N, et al. Financial arrangements for health systems in low-income countries: an overview of systematic reviews. Cochrane Database of Systematic Reviews. 2017(9).

265. Kula N, Fryatt RJ. Public–private interactions on health in South Africa: opportunities for scaling up. Health Policy and Planning. 2014;29(5):560-9.

266. Mnookin S. Out of the Shadows: Making Mental Health a Global Development Priority. World Bank Group and World Health Organization: Washington, DC(http://documents worldbank org/curated/en/270131468187759113/Out-of-theshadows-making-mental-health-a-global-developmentpriority). 2016.

267. Chisholm D. Mental health system financing in developing countries: Policy questions and research responses. Epidemiologia e psichiatria sociale. 2007;16(4):282-8.

268. Eaton J, Ryan G. Making Universal Health Coverage a reality: Bridging the gap between Global Mental Health and practical integration into local health systems. Epidemiology and Psychiatric Sciences. 2017;26(3):245-7.

269. Saxena S, Sharan P, GARRIDO M, Saraceno B. World Health Organization's mental health atlas 2005: implications for policy development. World psychiatry. 2006;5(3):179.

270. DOH. Mental Health Care Act. Pretoria: National Department of Health; 2002.

271. DOH. National Health Insurance Policy: Towards Universal Health Coverage, Government Gazette 40955. Pretoria: National Department of Health; 2017.

272. Kleintjes S, Cooper S, Petersen I, Bhana A, Flisher AJ, the MRPC. Challenges facing South Africa's mental health care system: stakeholders' perceptions of causes and potential solutions AU - Lund, Crick. International Journal of Culture and Mental Health. 2011;4(1):23-38.

273. Lund C, Kleintjes S, Kakuma R, Flisher AJ. Public sector mental health systems in South Africa: inter-provincial comparisons and policy implications. Social psychiatry and psychiatric epidemiology. 2010;45(3):393-404.

274. Barnum H, Kutzin J. Public hospitals in developing countries: resource use, cost, financing: Johns Hopkins University Press; 1993.

275. Stenberg K, Rajan D. Estimating cost implications of a national health policy, strategy or plan. Strategizing national health in the 21st century: a handbook Geneva: World Health Organization. 2016.

276. Razzouk D. Methods for Measuring and Estimating Costs. Mental Health Economics: Springer; 2017. p. 19-33.

277. Average Length of Stay by Hospital and Province (2008 - 2017) [Internet]. Parliamentary Monitoring Group. 2018 [cited 01 November 2018]. Available from: https://pmg.org.za/files/RNW252-2018-05-03-Annexure-1.xlsx.

278. United States Bureau of the Fiscal Service. **Treasury Reporting Rates of Exchange:** Historical Rates 2018 [Available from: https://www.fiscal.treasury.gov/reports-statements/treasury-reporting-rates-exchange/historical.html.

279. DOH. Standard Treatment Guidelines And Essential Medicines List For South Africa - Adults Pretoria: National Department of Health; 2012.

280. DOH. Standard Treatment Guidelines And Essential Medicines List For South Africa - Paediatrics Pretoria: National Department of Health; 2012.

281. Policy guidelines on 72-hour assessment of involuntary mental health care users, (2012).

282. Global Burden of Disease Study 2017 (GBD 2017) Results [Internet]. Institute for Health Metrics and Evaluation (IHME). 2018 [cited November 2018]. Available from: http://ghdx.healthdata.org/gbd-results-tool.

283. De Kock JH, Pillay BJ. A situation analysis of psychiatrists in South Africa's rural primary healthcare settings. African journal of primary health care & family medicine. 2017;9(1):e1-e6.

284. Charlson FJ, Diminic S, Lund C, Degenhardt L, Whiteford HA. Mental and Substance Use Disorders in Sub-Saharan Africa: Predictions of Epidemiological Changes and Mental Health Workforce Requirements for the Next 40 Years. PLoS ONE. 2014;9(10):1-11.

285. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Archives of general psychiatry. 2005;62(6):593-602.

286. WHO. Adolescent mental health: World Health Organization; 2018 [updated 18 September 2018. Available from: https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health.

287. Donisi V, Tedeschi F, Wahlbeck K, Haaramo P, Amaddeo F. Pre-discharge factors predicting readmissions of psychiatric patients: a systematic review of the literature. BMC psychiatry. 2016;16(1):449.

288. Amoah D, Mwanri L. Determinants of Hospital Readmission of Medical Conditions in Developing Countries. Austin Journal of Public Health Epidemiology. 2016;3(5).

289. Zanardo GLdP, Moro LM, Ferreira GS, Rocha KB. Factors associated with psychiatric readmissions: a systematic review. Paidéia (Ribeirão Preto). 2018;28.

290. Thornicroft G, Tansella M. What are the arguments for community-based mental health care. Copenhagen: WHO regional Office for europe. 2003.

291. Kessler RC, Aguilar-Gaxiola S, Alonso J, Chatterji S, Lee S, Ormel J, et al. The global burden of mental disorders: An update from the WHO World Mental Health (WMH) Surveys. Epidemiologia e psichiatria sociale. 2009;18(1):23-33.

292. Kessler RC. The costs of depression. Psychiatric Clinics of North America. 2012;35(1):1-14.

293. Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari AJ, Erskine HE, et al. Global burden of disease attributable to mental and substance use disorders: findings from the Global Burden of Disease Study 2010. Lancet. 2013;382(9904):1575-86.

294. Lund C, Breen A, Flisher AJ, Kakuma R, Corrigall J, Joska JA, et al. Poverty and common mental disorders in low and middle income countries: A systematic review. Social Science & Medicine. 2010;71(3):517-28.

295. Russell S. The economic burden of illness for households in developing countries: a review of studies focusing on malaria, tuberculosis, and human immunodeficiency virus/acquired immunodeficiency syndrome. The American journal of tropical medicine and hygiene. 2004;71(2 Suppl):147-55.

296. Sauerborn R, Adams A, Hien M. Household strategies to cope with the economic costs of illness. Social science & medicine (1982). 1996;43(3):291-301.

297. McIntyre D, Thiede M, Dahlgren G, Whitehead M. What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? Soc Sci Med. 2006;62(4):858-65.

298. Asenso-Okyere WK, Dzator JA. Household cost of seeking malaria care. A retrospective study of two districts in Ghana. Social science & medicine. 1997;45(5):659-67.

299. Goudge J, Gumede T, Gilson L, Russell S, Tollman SM, Mills A. Coping with the cost burdens of illness: combining qualitative and quantitative methods in longitudinal, household research. Scandinavian journal of public health. 2007;35(69 suppl):181-5.

300. National Collaborating Centre for Mental Health, National Institute for Health Clinical Excellence, British Psychological Society, Royal College of Psychiatrists. Common mental health disorders: identification and pathways to care: RCPsych Publications; 2011.

301. Lewinsohn PM, Solomon A, Seeley JR, Zeiss A. Clinical implications of "subthreshold" depressive symptoms. Journal of abnormal psychology. 2000;109(2):345-51.

302. von Elm E, Altman DG, Egger M, Pocock SJ, Gotzsche PC, Vandenbroucke JP, et al. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Epidemiology. 2007;18(6):800-4.

303. Semrau M, Evans-Lacko S, Alem A, Ayuso-Mateos JL, Chisholm D, Gureje O, et al. Strengthening mental health systems in low- and middle-income countries: the Emerald programme. BMC Med. 2015;13:79.

304. North West Provincial Government. Dr. Kenneth Kaunda District Profile2017 18 February 2019. Available from: http://www.nwpg.gov.za/VTSDEconomy/Documents/VTSD%20Profile/Profile%20Dr%20Kenneth%20Kaunda%20District%20Nov%202017.pdf.

305. Baron EC, Rathod SD, Hanlon C, Prince M, Fedaku A, Kigozi F, et al. Impact of district mental health care plans on symptom severity and functioning of patients with priority mental health conditions: the Programme for Improving Mental Health Care (PRIME) cohort protocol. BMC psychiatry. 2018;18(1):61.

306. Kroenke K, Spitzer RL. The PHQ-9: a new depression diagnostic and severity measure. Psychiatr Ann. 2002;32(9):509-15.

307. Cholera R, Gaynes B, Pence B, Bassett J, Qangule N, Macphail C, et al. Validity of the patient health questionnaire-9 to screen for depression in a high-HIV burden primary healthcare clinic in Johannesburg, South Africa. Journal of affective disorders. 2014;167:160-6.

308. Cameron IM, Crawford JR, Lawton K, Reid IC. Psychometric comparison of PHQ-9 and HADS for measuring depression severity in primary care. British Journal of General Practice. 2008;58(546):32.

309. Naidoo N, Abdullah S, Bawah A, Binka F, Chuc NT, Debpuur C, et al. Ageing and adult health status in eight lower-income countries: the INDEPTH WHO-SAGE collaboration. Global health action. 2010;11.

310. WHO. WHO SAGE Survey Manual: The WHO Study on Global AGEing and Adult Health (SAGE). . Geneva: World Health Organization; 2006.

311. OECD. OECD Framework for Statistics on the Distribution of Household Income, Consumption and Wealth. Paris: OECD Publishing; 2013.

312. United States Treasury. Bureau of Fiscal Service Average Annual Exchange rate, 2015 2017 [Available from: https://www.fiscal.treasury.gov

313. Booysen F, Van Der Berg S, Burger R, Von Maltitz M, Du Rand G. Using an asset index to assess trends in poverty in seven Sub-Saharan African countries. World Development. 2008;36(6):1113-30.

314. Howe LD, Hargreaves JR, Huttly SR. Issues in the construction of wealth indices for the measurement of socio-economic position in low-income countries. Emerging themes in epidemiology. 2008;5(1):3.

315. Traissac P, Martin-Prevel Y. Alternatives to principal components analysis to derive asset-based indices to measure socio-economic position in low-and middle-income countries: the case for multiple correspondence analysis. International journal of epidemiology. 2012;41(4):1207-8.

316. Kelly G. Everything you need to know about social grants: GroundUp; 2017 [Available from: https://www.groundup.org.za/article/everything-you-need-know-about-social-grants_820/.

317. UCLA: Statistical Consulting Group. FAQ How do I interpret a regression model when some variables are log-transformed? : UCLA Institute for Digital Research and Education 2019 [Available from: https://stats.idre.ucla.edu/other/mult-pkg/faq/general/faqhow-do-i-interpret-a-regression-model-when-some-variables-are-log-transformed/.

318. WHO. Integrating mental health into primary care: a global perspective. 2008.

319. Thornicroft G, Ahuja S, Barber S, Chisholm D, Collins P, Docrat S, et al. Integrated care for people with long-term mental and physical conditions in low- and middle-income countries: narrative review [Submitted for Publication]. 2018.

320. WHO. Integrating the response to mental disorders and other chronic diseases in health care systems. 2014.

321. STATS SA. Education Series Volume III Statistics South Africa; 2016.

322. Tomlinson M, Grimsrud AT, Stein DJ, Williams DR, Myer L. The epidemiology of major depression in South Africa: results from the South African stress and health study. South African Medical Journal. 2009;99(5).

323. Bank TW. Defining Welfare Measures: The World Bank Group; 2016 [Available from: http://go.worldbank.org/W3HL5GD710.

324. Xu K, Klavus J, Kawabata K, B Evans D, Hanvoravongchai P, Pablo Ortiz J, et al. Household Health System Contributions and Capacity to Pay: Definitional, Empirical, and Technical Challenges2003.

325. National Poverty Lines [Internet]. Statistics South Africa. 2018. Available from: http://www.statssa.gov.za/publications/P03101/P031012018.pdf.

326. Babiarz P, Yilmazer T. The impact of adverse health events on consumption: Understanding the mediating effect of income transfers, wealth, and health insurance. Health Economics. 2017;26(12):1743-58.

327. Jishnu Das Q-TD, Jed Friedman, David McKenzie Mental Health Patterns and Consequences: Results from Survey Data in Five Developing Countries. World Bank; 2007.

328. Patel V, Kleinman A. Poverty and common mental disorders in developing countries. Bull World Health Organ. 2003;81(8):609-15.

329. Southerton D. Encyclopedia of consumer culture: Sage Publications; 2011.

330. Lund C, Brooke-Sumner C, Baingana F, Baron EC, Breuer E, Chandra P, et al. Social determinants of mental disorders and the Sustainable Development Goals: a systematic review of reviews. The lancet Psychiatry. 2018;5(4):357-69.

331. Lynch SM, Brown JS. Chapter 8 - Stratification and Inequality Over the Life Course. In: Binstock RH, George LK, editors. Handbook of Aging and the Social Sciences (Seventh Edition). San Diego: Academic Press; 2011. p. 105-17.

332. Kutzin J. Health financing policy: a guide for decision-makers. Health financing policy paper Copenhagen, WHO Regional Office for Europe. 2008;24.

333. World Health Organization. The world health report 2000: health systems: improving performance: World Health Organization; 2000.

334. Quimbo SA, Peabody JW, Shimkhada R, Florentino J, Solon O. Evidence of a causal link between health outcomes, insurance coverage, and a policy to expand access: experimental data from children in the Philippines. Health economics. 2011;20(5):620-30.

335. Wagstaff A, Pradhan M. Health insurance impacts on health and nonmedical consumption in a developing country: World Bank Publications; 2005.

336. DOH. National Health Insurance for South Africa White Paper. Pretoria: National Department of Health; 2015.

337. Glassman A, Giedion U, Sakuma Y, Smith PC. Defining a Health Benefits Package: What Are the Necessary Processes? Health Systems & Reform. 2016;2(1):39-50.

338. McCollum R, Theobald S, Otiso L, Martineau T, Karuga R, Barasa E, et al. Priority setting for health in the context of devolution in Kenya: implications for health equity and community-based primary care. Health Policy and Planning. 2018;33(6):729-42.

339. DOH. Status of NHI Pilot districts: 12-month progress report. Pretoria: National Department of Health; 2015.

340. DOH. Provincial Guidelines for the Implementation of the Three Streams of PHC Re-engineering. Pretoria: National Department of Health; 2011.

341. WHO. The world health report 2001. Mental health: new understanding, new hope. 2001. Report No.: 92-4-156201-3.

342. World Health Organization. Mental health policy and service guidance package. Mental health policy and service guidance package2003.

343. Thornicroft G, Ahuja S, Barber S, Chisholm D, Collins PY, Docrat S, et al. Integrated care for people with long-term mental and physical health conditions in low-income and middle-income countries. The lancet Psychiatry. 2019;6(2):174-86.

344. Brinkerhoff DW. Accountability and health systems: toward conceptual clarity and policy relevance. Health policy and planning. 2004;19(6):371-9.

345. Katurura MC, Cilliers L. Electronic health record system in the public health care sector of South Africa: A systematic literature review. African journal of primary health care & family medicine. 2018;10(1):1-8.

346. NDOH. Evaluation of the Phase 1 Implementation of the Interventions in the National Health Insurance Pilot Districts in South Africa. 2019.

347. Stein DJ, Sordsdahl K, Lund C. Intellectual disability in South Africa: Addressing a crisis in mental health services. South African Medical Journal. 2018;108(3):147-8.

348. SASOP. SASOP GUIDE STATEMENT ON CLINICIANS AND DISCHARGED PATIENTS FROM LIFE HEALTH ESIDIMENI FACILITIES. Mental Health Matters. 2016;July/August 2016.

349. Mahlangu Q. Statement by MEC for Health, Ms Qedani Mahlangu delivered at media conference. In: (GDoH) GDoH, editor. Gauteng Health Media Conference: September 1 2016: Gauteng Department of Health (GDoH); 2016.

350. Makgoba MW. The Life Esidimeni disaster: The Makgoba report. Health Ombudsman: Republic of South Africa; 2017.

351. South African Human Rights Commission. Report of the National Investigative Hearing into the Status of Menta Health Care in South Africa 2017.

352. Transparency International. CORRUPTION PERCEPTIONS INDEX 2016 2016 [Available from: https://www.transparency.org/news/feature/corruption_perceptions_index_2016#table.

353. Mitchell PH. Defining patient safety and quality care. Patient safety and quality: An evidence-based handbook for nurses: Agency for Healthcare Research and Quality (US); 2008.

354. Kilbourne AM, Beck K, Spaeth-Rublee B, Ramanuj P, O'Brien RW, Tomoyasu N, et al. Measuring and improving the quality of mental health care: a global perspective. World psychiatry. 2018;17(1):30-8.

355. Brooke-Sumner C, Selohilwe O, Mazibuko MS, Petersen I. Process Evaluation of a Pilot Intervention for Psychosocial Rehabilitation for Service Users with Schizophrenia in North West Province, South Africa. Community mental health journal. 2018;54(7):1089-96.