

**Title: An Evaluation of mhGAP training for primary healthcare workers  
in Mulanje, Malawi**

**By**

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Date: 15/08/2015

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## ABSTRACT

**Introduction:** There is a large treatment gap for people with mental disorders in Africa and other low resourced countries, estimated to be between 70% and 90%. The treatment gap is mainly due to the lack of trained mental health professionals and inadequate mental health service resources in Africa. There has been a growing global movement championed by the World Health Organisation (WHO) to integrate mental health into primary health care as the most effective way of reducing this treatment gap. This study aimed to investigate the impact of WHO Mental Health Gap Action Programme (mhGAP) training and supervision on primary health workers' knowledge, attitudes, confidence and detection rate of major mental disorders in the district of Mulanje, Malawi.

**Method:** The study was a quantitative evaluation using a quasi-experimental method (single cohort pre- and post-measures) and an interrupted time-series design. Forty three primary healthcare workers from Mulanje, Malawi completed pre- and post- training questionnaires assessing knowledge, attitudes and confidence regarding the assessment and management of major mental disorders. Rates of diagnosis of major mental disorders were obtained from clinic registers for 5 months prior to and 7 months following training.

**Results:** The results showed a significant change on knowledge and confidence scores but not attitudes. The mean knowledge score showed a statistically significant increase from 11.8 (standard deviation [SD]: 0.33) before training to 15.1 (SD: 0.38) immediately after training;  $t(42) = 7.79, p < .01$ . Mean knowledge score was also significantly higher six month post training (13.9, SD: 2.52) than before training;  $t(42) = 4.57, p < .01$ . Similarly, the mean confidence score increased significantly from 39.9 (SD): 7.68) before training to 49.6 (SD: 06.14) immediately after training;  $t(84) = 8.43, p < .01$ . Mean confidence score was also significantly higher six month post training (46.8, SD: 6.03) than before training;  $t(84) = 6.60, p < .01$ . There was no overall significant difference in mean CAMI scores before, immediately after and 6 months after training in all four of the CAMI components. The F-test statistic and P-value for Authoritarianism, Benevolence, Social Restrictiveness and Community Mental Health Ideology were:  $F_2, 126, 0.05 = 2.5; p = .09$ ,  $F_2, 126, 0.05 = 0.1; p = .9$ ,  $F_2, 126, 0.05 = 0.03; p = 1.0$  and  $F_2, 126, 0.05 = 0.04; p = 1.0$ , respectively. In the months January to May 2014 (before training), median number of cases per month was 77 (inter quartile range [IQR]: 65-87) whereas after training (months June to December) median number of cases was 186 (IQR: 175-197) showing a significant increase in median number of cases before and after the training;  $p = 0.001$ .

**Conclusion:** The results show clear improvements in the knowledge, confidence and detection of severe mental illness in primary care in Mulanje and demonstrate the potential for narrowing the treatment gap by rolling out mhGAP training nationally in Malawi. The findings of this study add to the growing evidence for policy makers of the effectiveness of mental health training and supervision of primary care workers in a resource-constrained country. Further research is needed to evaluate factors that may lead to change in health worker attitudes, to evaluate training and supervision programmes using more robust evaluation designs, such as randomised controlled trials, and to assess the scale up of mhGAP programmes at larger population levels.

# Contents

- CHAPTER 1: INTRODUCTION..... 11
  - 1.1 Background ..... 11
    - 1.1.1 Global burden of mental disorders and treatment gap ..... 11
    - 1.1.2 Malawian context ..... 12
    - 1.1.3 Mental health in primary care ..... 15
    - 1.1.4 Malawian Health Sector Reform and the WHO mhGAP programme..... 20
  - 1.2 Rationale ..... 22
  - 1.3 Aim ..... 23
  - 1.4 Objectives ..... 23
  - 1.5 Null hypotheses ..... 24
  - 1.6 Alternative hypotheses..... 24
- CHAPTER 2: STRUCTURED LITERATURE REVIEW ..... 26
  - 2.1 Objective of the review..... 26
  - 2.2 Search Method..... 27
  - 2.3 Number of studies located ..... 27
  - 2.4. Results..... 27
    - 2.4.1 Quantitative studies..... 32
    - 2.4.2 Qualitative studies ..... 43
  - 2.5 Model of Integration..... 45
  - 2.6 Conclusion..... 47
- CHAPTER 3: METHOD ..... 50
  - 3.1 Study Design ..... 50
  - 3.2 Study population..... 51
  - 3.3 Training ..... 52
  - 3.4 Supervision..... 54
  - 3.5 Participants ..... 55
  - 3.6 Sampling ..... 56
  - 3.7 Data Collection..... 56
    - 3.7.1. Baseline data collection ..... 56
    - 3.7.2 Data on knowledge, attitudes, confidence and detection rate ..... 57
    - 3.7.3 Field notes..... 57

3.8 Procedure.....	58
3.8.1 Baseline Data .....	58
3.8.2 Mental Disorders.....	58
3.8.3 Knowledge, Attitudes and Confidence .....	59
3.9 Research Instruments.....	59
3.9.1 Demographic questionnaire.....	60
3.9.2 Attitudes.....	60
3.9.3 Knowledge .....	62
3.9.4 Confidence .....	62
3.10 Withdrawals and drop-outs.....	63
3.10 Data management and analysis.....	63
3.10.1 Hypotheses and analytical approach.....	63
3.10.2 Time Series analysis for Number of Cases.....	64
3.11 Presentation of results.....	64
3.12 Dissemination of results .....	65
3.13 Ethical Considerations .....	65
3.13.1 Protocol Approval .....	65
3.13.2 Informed Consent.....	65
3.13.3 Risk to participants .....	65
3.13.4 Confidentiality.....	66
3.13.5 Possible Constraints .....	66
CHAPTER 4: RESULTS .....	67
4.1 Baseline.....	67
4.2 Demographics .....	69
4.3 Knowledge .....	70
4.4 Confidence .....	71
4.5 Attitudes .....	72
4.6 Interrupted time series analysis .....	73
4.7 Major observations during supervision .....	77
CHAPTER 5: DISCUSSION .....	79
5.1 Main findings for each objective .....	79
5.2 Relationship of the study findings with literature.....	80

5.3 Weakness of the Training package .....	85
5.4 Strengths of the Mulanje Model.....	86
5.5 Limitations of the study .....	88
5.6 Future research.....	89
5.7 Recommendations for policy and practice .....	92
5.8 Conclusion.....	94
APPENDICES.....	100

## **Appendices**

Appendix 1: Amended EPHPP Quality Assessment Tool

Appendix 2: Supervision Form

Appendix 3: Demographic Data Form

Appendix 4: Community Attitudes towards the Mentally Ill Scale

Appendix 5: Pre- and Post- Knowledge Test

Appendix 6: Pre- and Post- Knowledge Test Answers

Appendix 7: Confidence Scale

Appendix 8: Information Sheet

Appendix 9: Consent Form

Appendix 10: CAMI scoring

## **List of Tables**

Table 1. Staffing and resources in district health facilities in Malawi.....	14
Table 2: Identified studies for review.....	29
Table 3: Kenya training Module.....	33
Table 4: Malawi HSAs Training module.....	35
Table 5: Percentage differences in psychiatric histories quality from first to second evaluation.....	37
Table 6: Percentage differences in diagnosis quality from first to second evaluation .....	37
Table 7: An example of a time series analysis.....	51
Table 8: Baseline characteristics of study participants.....	70
Table 9: Knowledge test mean scores and Standard Deviation.....	69
Table 10: Confidence test mean scores and Standard Deviation .....	70
Table 11: Full CAMI test mean scores and Standard Deviation.....	72
Table 12: CAMI sub-scales test mean scores and Standard Deviation.....	73
Table 13: Major observations during supervision.....	78

## **List of Figures**

<b>Figure 1:</b> Map of Malawi.....	13
<b>Figure 2:</b> Map of Malawi Showing the position of Mulanje.....	51
<b>Figure 3:</b> Distribution of knowledge scores before, immediately after and 6 months after training.....	70
<b>Figure 4:</b> Distribution of confidence scores before, immediately after and 6 months after training.....	72
<b>Figure 5:</b> Number of cases per month in each health centre.....	74
<b>Figure 6:</b> Total number of cases per month.....	74
<b>Figure 7:</b> Box and whiskers plot of number of cases 6 months before and after training.....	75
<b>Figure 8:</b> Change in Median Number of Cases over Time.....	76
<b>Figure 9:</b> Percent increase in median number of cases by clinic.....	77

## **List of abbreviations**

CHAM	Christian Health Association of Malawi
DALYs	Disability-adjusted life years
DMHT	District mental health team
EHP	Essential Health Package
EPDS	Postnatal Depression Scale
GBD	Global Burden of Disease
HSA	Health surveillance assistants
HSSP	Health Sector Strategic Plan
LMIC	Low and middle-income countries
MeHUCA	Mental Health Users and Carers Association of Malawi
mhGAP	Mental Health Gap Action Programme
mhGAP-IG	mhGAP Intervention Guide
MNS	Mental and neuropsychiatric disorders
NGOs	Non-governmental organisations
PHW	Primary Health Care Workers
POW	Program of Work
UI	Uncertainty intervals
RFA	Risk factor assessment
SCID	Structured Clinical Interview for DSM-IV
SMMHEP	Scotland Malawi Mental Health Education Project
SRQ	Self reporting Questionnaire
WHO	World health organisation
ZMH	Zomba Mental Hospital

# CHAPTER 1: INTRODUCTION

## 1.1 Background

### 1.1.1 Global burden of mental disorders and treatment gap

Mental disorders pose a significant public health burden. According to the latest estimates from the Global Burden of Disease study (GBD), mental and substance use disorders contribute to as much as 7.4% of all disability-adjusted life years (DALYs) worldwide (Whiteford et al., 2013). This is far beyond the combined disease burden caused by HIV/AIDS, diabetes, tuberculosis or transport injuries and demonstrates how serious mental disorders have become and the challenge posed to global health. From 1990 to 2010 there was an increase of 37.6% in the burden of mental and substance use disorders (Whiteford et al., 2013). Much of this increase has been attributed to population growth and ageing. Another important finding from the GBD study is the large number of people who commit suicide every year, estimated to be at approximately 877,000. The World Health Organisation (WHO) predicts depression to become second leading cause of disability in the world by the year 2030 with only ischaemic heart disease above it (Siddiqi & Siddiqi, 2007). Almost 75% of the burden of disease caused by Neuropsychiatric disorders lies in low and middle-income countries (LMIC) (Whiteford et al., 2013). This poses a major challenge since most of these countries have neither the personnel nor the resources to deal with such a burden.

There is a large treatment gap of more than 50% for people with mental disorders in all nations of the world (Demyttenaere et al., 2004). This gap is even higher in Africa and other low resourced countries, reaching between 70% and 90% (Patel et al., 2010). What this means is that between 70% and 90% of people in Africa who require services for mental, neurological and substance use

disorders receive no treatment. This is despite growing evidence that it is possible to provide cost effective interventions or treatment for many mental disorders in low-income settings (WHO, 2010). Mental health is given low priority in most African countries as evidenced in lack of policy, legislation and service plans. The WHO Mental Health Atlas of mental health resources showed that only 48.7% of low-income countries have a mental health policy as compared to 77.1% of high-income countries (WHO, 2011). Stigma also continues to inform public and policy makers' opinions. There are insufficient resources available to mitigate the large burden of mental, neurological and substance use (MNS) disorders. Moreover, the little resources that are available are not equally distributed or used efficiently. In most low-income countries, the total health budget for mental disorders is less than 1% (WHO, 2011).

The situation is further worsened by lack of trained mental health professionals. According to the WHO atlas 2011, the number of psychiatrists, psychiatric nurses and psychologists in Africa is at 1 per 2 million people, 1 per 164,000 people and 1 per 2.5 million people respectively. Moreover, the median rate of psychiatrists per 100,000 population is at 0.54, 2.03 and 8.59 in lower-middle income countries, upper-middle income countries and high income countries respectively (WHO, 2011).

### 1.1.2 Malawian context

Malawi is a low income, agricultural based landlocked country in southern Africa with an estimated total population of 17,280,000 (WPR, 2015). It covers a total area of 118,484 square km and it is bordered by Tanzania, Mozambique and Zambia. Administratively, it is divided into Northern, Central and Southern regions. Figure 1 shows a map of Malawi with its regions.

**Figure 1: Map of Malawi**



Source: <http://www.ezilon.com/maps/images/africa/political-map-of-Malawi.gif>

The Health care system in Malawi is divided into three levels (Primary, secondary and tertiary). The primary level comprises health posts and health centres, the secondary level district hospitals and the tertiary level the specialist hospitals. The Ministry of Health (MOH) owns fifty per cent of the health facilities whilst 16% are owned by Christian Health Association of Malawi (CHAM). Other private providers, non-governmental organisations (NGOs), statutory corporations and companies own 20%, 7%, 5% and 2% of health facilities respectively (MOH, 2011).

A health post is the smallest health unit and is staffed by one or two health surveillance assistants (HSA). HSAs are village-based health workers who hold only a secondary school certificate, have no formal medical training, but undergo an 11-week course in integrated management of most common illnesses. HSAs serve an average catchment area of 2000 people. Next in the structure is a health centre. A health centre is usually comprised of a nurse and a medical assistant. Medical assistants have a certificate in medical sciences obtained after a two years training in medical sciences. They serve a catchment area of about 22,500 people. More difficult cases are referred up to a district hospital. These are available in 25 of the 28 districts in the country. Last in the hierarchy is a tertiary level. This is where cases that have failed to be treated at the district level are referred to. Tertiary hospitals are usually staffed by specialists in various conditions. Table 1 shows summary of the health structure in Malawi.

**Table 1. Staffing and resources in district health facilities in Malawi**

Facility type	Staffing	Training received	Catchment population
<b>Health post</b>	Health Surveillance Assistants	<ul style="list-style-type: none"> <li>• Secondary school certificate</li> <li>• 11-week course in integrated management of common illnesses</li> </ul>	2,000
<b>Health Centre</b>	Nurses and medical assistants	<ul style="list-style-type: none"> <li>• Certificate in medical sciences</li> <li>• Certificate in nursing and midwifery</li> </ul>	22,500
<b>District hospital</b>	Nurses, clinicians and doctors	<ul style="list-style-type: none"> <li>• Diploma in nursing and midwifery</li> <li>• Diploma in medical sciences</li> <li>• BSC in nursing and midwifery</li> <li>• BSC in medical sciences</li> </ul>	500,000-600,000
<b>Tertiary</b>	Nurses, clinicians and specialist in different health fields	<ul style="list-style-type: none"> <li>• BSC in nursing and midwifery</li> <li>• BSC in medical sciences</li> <li>• Medical bachelor &amp; bachelor of surgery (MBBS)</li> <li>• Different specialist degrees</li> </ul>	2 Million to 15 Million

Malawi has only three main specialist psychiatric institutions located in each of its three regions. In the south is Zomba Mental Hospital (ZMH), which is the main referral psychiatric institution in the country. The hospital has 333 beds and provides care for an average of 1,500 patients per year (Kauye, 2007). In the central region, is the small Bwaila psychiatric unit. This is located in Lilongwe and is part of a large tertiary hospital called Kamuzu Central Hospital. Bwaila psychiatric unit has 30 beds (Kauye, 2007). The northern part of Malawi has a missionary psychiatric hospital named St John of God. It has 50 beds and mainly runs a community mental health programme. The total number of psychiatric beds in Malawi is 400 for the whole population (approximately 2.56 beds per 100,000 population)(WHO, 2011).

Apart from the lack of psychiatric service infrastructure, Malawi has among the least human resources for mental health. According to Psychology in Africa (PIA), the country has only 2 psychiatrists, no professional social worker and only one occupational therapist at Zomba Mental Hospital (PIA, 2013). Moreover, there are no neurologists and only 2 psychologists in the country (PIA, 2013). Even though a number of psychiatric nurses are being trained every year, the majority are taken up by other nursing activities. This leaves only a few psychiatric nurses to practise mental health activities (Kauye, 2008). For the few who are able to provide mental health care in the community, their activities are usually hindered by medication and transport problems. As a result most primary care units have only one outreach clinic over two months conducted by psychiatric nurses.

### 1.1.3 Mental health in primary care

The problem of lack of trained mental health personnel in Africa is further compounded by the high prevalence of mental, neurological and substance use disorders among primary care attendees.

The prevalence of mental, neurological and substance use disorders ranges from 15% to 45% among primary care attendees in Africa (Kauye, Jenkins, & Rahman, 2014). In Malawi, 28.8% of primary care attendees have been reported to have a common mental disorder (Wright, Common, Kauye, & Chiwandira, 2013). In a more recent study, prevalence of depression among patients in two health centres in southern Malawi was found to be 30.3% (Udedi, 2014). Another study found a weighted prevalence of 30.4% (95% CI 22.8–38.1%) for any current depressive episode for Malawian rural women with infants (Stewart et al., 2010). According to the Malawi Health Sector Strategic Plan 2011-2016, the contribution of mental illness to the total burden of disease in the country is at 4% (MOH, 2011). Despite the high prevalence of mental health problems among primary care attendees, the majority are not identified or misdiagnosed. This can be partly due to lack of knowledge and skills among primary healthcare workers to detect such problems.

There has been a growing global movement to integrate mental health into primary health care as the most effective way of addressing the global burden and reducing the treatment gap for people with mental disorders in resource-constrained settings. The Lancet series on global mental health stressed the need to scale up mental health services through integration of mental health into primary care (Lancet, 2007). Collins et al. (2013) renewed the call to scale up mental health services, arguing that this approach can enable quick access to mental health services that are affordable and minimize stigma and discrimination (Collins, Insel, Chockalingam, Daar, & Maddox, 2013).

Primary care is a system of generalist health care provision that offers the first entry stage for an individual into a country's health structure. Primary care offers the first assessment and treatment and refers those who require more specialised help to secondary or tertiary facilities. Primary care facilities act as the first link in the referral system and typically serve a specific catchment area. This

makes them easily accessible (Funk, Saraceno, Drew, & Faydi, 2008). In many countries in Africa including Malawi, primary care services are usually provided by health centres or dispensaries with an estimated catchment population of about 10,000 people and are usually staffed by nurses or medical assistants. At most, these have only some basic training in mental health. This makes it difficult for most people to access mental health services near their home, as these health centres are not equipped to detect and manage mental health problems. As a result, individuals with mental health problems have to rely on district hospitals or psychiatric institution, which are usually located far away and impose substantial travel and other costs.

There is therefore growing consensus that the best way the health system in Malawi and other low resource countries can provide adequate care to the entire population is by integrating mental health into primary care. Primary healthcare workers need to have skills for assessing, diagnosing and treating mental disorders. They also need to have skills to refer appropriate cases to the secondary level. This can enable more people to receive the help they need hence reducing the mental health treatment gap that exists. According to Collins et al. (2013), the incorporation of core packages and screening into the daily activities of primary health care is a grand challenge in global mental health (Collins et al., 2013).

Integrating mental health into primary care has a number of potential advantages. Firstly, it can reduce stigma which is usually associated with mental illness (Funk et al., 2008). Most secondary and tertiary healthcare facilities usually have special wards or stand-alone specialized mental health services. As such most people might be afraid of visiting such facilities for fear of being labelled as 'Mad' or 'Insane' as it becomes obvious that you are mentally ill when you visit them. On the other hand, primary care services are general healthcare services, not attached to specialist units or

associated with any specific conditions. This makes it easy for people to seek help for mental illness without the fear of being labelled or stigmatised.

Secondly, integration of mental health into primary healthcare has the potential to improve access to mental health care. Most patients first go to their nearest primary health care clinic when they have a problem. Such facilities are usually located near their homes and can make it easy to access mental health care without worrying of indirect costs such as transportation and the time lost travelling long distances.

The third advantage is improved health outcomes for people with mental illness. Mentally ill people are known to have high rates of comorbid physical health problems (Funk et al., 2008; Kauye et al., 2014). Including mental health assessment into the general assessment of patients done by primary healthcare workers can ensure provision of holistic care as both the physical and mental aspect of health are dealt with at the same time. This can lead to better health outcomes for patients and reduce unnecessarily frequent visits to primary healthcare facility due to the inability of primary healthcare workers to diagnose an underlying psychological cause of a physical health problem. In the long run, this can reduce the work overload at primary healthcare facilities. Improved outcomes can also be achieved because people with mental illnesses are closer to their social support systems and can easily be monitored, followed up and integrated back into the society.

Lastly integrating mental health into primary care can improve human resources available for mental health (Jenkins, Kiima, Okonji, et al., 2010). This is because primary healthcare workers can be trained to identify, assess and manage mental illnesses. Patients with mental illness can be

assessed and managed at the primary care level without the need for specialists such as psychiatric nurses, psychiatrists or psychologists. Considering the shortage of specialised mental health personnel, training primary healthcare workers in the assessment and management of mental illness may be the best way of reducing the workload for specialised mental health personnel and closing the mental health treatment gap.

For integration to be successful, there is need to train primary healthcare workers in the detection and management of mental disorders. Primary health care workers need to be equipped with skills to be able to make accurate diagnoses, prescribe appropriate medication, offer counselling and Psychoeducation and make appropriate referrals to the secondary level (Funk et al., 2008). According to WHO, established primary care teams should be trained in service settings with training programmes focusing on diagnosis, management and follow-up (WHO, 2010). Training programmes should equip primary healthcare workers with knowledge, skills and motivation to assess, treat and manage mental, neurological and substance use disorders with available resources. WHO also stresses the need for basic psychotropic drugs to be readily available at primary care level for effective integration to occur. Several studies have demonstrated the importance of training for effective integration of mental health into primary care in Africa (F. Kauye et al., 2011), Kenya (Jenkins, Kiima, Okonji, et al., 2010), South Africa (Lund et al., 2012), Uganda (Kigozi, 2007), Ghana (Bhana, Petersen, Baillie, Flisher, & Consortium, 2010), Tanzania (Mbatia & Jenkins, 2010), and Nigeria (Abdulmalik et al., 2013; Makanjuola, Doku, Jenkins, & Gureje, 2012).

Apart from training, adequate supervision of primary healthcare workers is crucial for successful and sustainable integration (Funk et al., 2008). Primary healthcare workers require support, advice and guidance from mental health specialists to be able to manage and treat mental disorders.

Evidence from Brazil has shown that training alone is not sufficient to improve detection among primary care providers, and regular ongoing supervision is essential (Goncalves, 2013).

#### 1.1.4 Malawian Health Sector Reform and the WHO mhGAP programme

Over the years, Malawi has undergone a number of changes to create an environment that provides equal opportunity for everyone to access health services. The integrating of various health activities into primary care is one of such changes and it has been included in the Malawi Health Sector Strategic Plan (HSSP) 2011-2016. The plan calls for integration of Essential Health Package (EHP) service delivery at all levels (MOH, 2011). Mental health interventions form a part of the EHP (2011-2016). Among other things, the HSSP plans to expand mental health community outreach through various interventions.

As part of its commitment to mental health integrated care, the Ministry of Health in Malawi is working with the Scotland Malawi Mental Health Education Project (SMMHEP) to integrate mental health into primary health care through the establishment of a District level mental health improvement project. The Scotland Malawi Mental Health Education Partnership (SMMHEP) is a UK registered charity working with Malawian Professionals to try and improve the capacity of mental health service in Malawi. SMMHEP is funded by the Scottish Government, the Tropical Health Education Trust, the Salisbury Fund and private donations. SMMHEP's initial work involved providing undergraduate psychiatry teaching to the medical school in Blantyre. In recent years students exposed to this teaching have been inspired to pursue a career in psychiatry. SMMHEP has therefore now progressed to helping facilitate post-graduate specialist training in psychiatry in Malawi. SMMHEP is also now focusing on helping develop the mental health training of Primary Health Care in Malawi.

The project focuses on implementation of a WHO Mental Health Gap Action Programme (mhGAP) training package to be used by specialist clinical officers and psychiatric nurses for training primary care health workers in the detection and treatment of major mental disorders. In the implementation of the WHO mhGAP in Malawi, the core conditions in the training package focus on moderate to severe depression, alcohol and drug use disorders, schizophrenia, bipolar affective disorder and delirium. This training package will be delivered to primary health care workers in Mulanje in year one (2014) as a pilot district; in two further districts in year two (2015) and in two additional districts in year three (2016).

The WHO mhGAP uses a cascaded 'train the trainers' model of training to scale up services for mental, neurological and substance use disorders in LMIC. The WHO mhGAP Intervention Guide (mhGAP-IG) was designed to be used by non-specialists in health facilities at primary care and district levels (WHO, 2010). It contains evidence-based interventions to identify and manage 10 priority conditions and serves both as a teaching and implementation tool. The conditions contained in the guide are psychosis, alcohol and drug use disorders, depression, bipolar disorder, dementia, developmental and behavioural disorders, medically unexplained complaints, epilepsy and suicide. The guide includes a Master Chart with brief descriptions of the common presentation of conditions covered, directing workers to the priority condition to be assessed. WHO teaching materials, including PowerPoint presentations, role plays and videos, have been made widely available to facilitate the training of trainers and supervisors who will in turn deliver training modules. Each module covers one priority condition and comprises two sections. The first is in the form of an algorithm with multiple decision points and gives guidance on assessment and management. The second provides intervention details which cover both psychosocial and

pharmacological treatment (WHO, 2010). The WHO recommends that the mhGAP-IG is adapted by countries to suit the local context, resources and priorities.

## 1.2 Rationale

Although there are examples of effective training in mental health in primary care settings using a ‘train the trainers’ model in Malawi (Kauye et al., 2014; Wright et al., 2013), mhGAP training covering a broader range of priority conditions has not been implemented. This study, therefore, set out to determine whether or not this is a useful and effective model to improve detection of mental disorders in primary care and potentially contribute to scaling up mental health services in Malawi.

Until this time very few studies have been conducted in this area. One of the studies already conducted in Malawi measured effectiveness of a mental health training intervention for health surveillance assistants (HSAs) using a curriculum designed and developed by mental health experts from UK and Malawi (Wright et al., 2013). HSAs are the lowest cadre of primary health workers with no formal medical training, but undergo an 11-week course in integrated management of most common illnesses. The training intervention left out medical assistants and nurses in primary health centres who form a backbone of primary health workers (PHW). A more recent study in Malawi used a randomised control trial to assess impact of a mental health intervention on diagnoses of common mental disorders in primary care (Kauye et al., 2014). The training used a toolkit adopted from a similar training in Kenya (Jenkins, Kiima, Njenga, et al., 2010). The module on mental disorders was structured around good practice guidelines updated and adapted from the precursor to mhGAP, namely the WHO 1996 primary care guidelines on mental disorders in

primary care. However, intervention was designed to only measure a change in the rate of diagnoses of common mental disorders, namely depression and anxiety disorders by PHW.

The current study aimed to determine the feasibility and effectiveness of using the mhGAP training by assessing the knowledge, attitude, confidence and detection rate of Moderate severe disorders (moderate-severe depression, psychosis and alcohol and drug use disorders) of Primary healthcare workers (nurses & medical assistants) in Mulanje, Malawi. Nurses and medical assistants had not previously been evaluated with this group of disorders in Malawi. Filling this knowledge gap could potentially contribute to achieving scale-up of mental health services in Malawi.

### 1.3 Aim

To investigate the impact of training and supervision on primary health workers' knowledge, attitudes, confidence and the detection rate of major mental disorders in Mulanje, Malawi. Mulanje acted as a pilot district for the further roll out of the mhGAP programme in Malawi.

### 1.4 Objectives

- To conduct a structured literature review of studies which have evaluated mental health training and supervision interventions for primary healthcare workers in sub-Saharan Africa.
- To determine changes in knowledge, attitude and confidence of primary healthcare workers as a result of the mhGAP training immediately after and 6 months post.
- To determine whether training and supervision increases the number of people diagnosed with mental disorders by primary healthcare workers in Mulanje.

### 1.5 Null hypotheses

- There will not be a statistically significant change in knowledge, attitudes and confidence levels of primary healthcare workers in Mulanje district after the implementation of the training compared to baseline scores.
- There will not be a statistically significant change in knowledge, attitudes and confidence level of primary healthcare workers in Mulanje district at 6 months after the implementation of the training, compared to baseline scores.
- There will be no statistically significant increase in the number of cases of mental disorders detected by primary healthcare workers in Mulanje after the implementation of the training.

### 1.6 Alternative hypotheses

- There will be a statistically significant change in knowledge, attitudes and confidence levels of primary healthcare workers in Mulanje district after the implementation of the training.
- There will be a statistically significant change in knowledge, attitudes and confidence level of primary healthcare workers in Mulanje district at 6 months after the implementation of the training compared to baseline scores.
- There will be a statistically significant increase in the number of cases of mental disorders detected by primary healthcare workers in Mulanje after the implementation of the training.



## CHAPTER 2: STRUCTURED LITERATURE REVIEW

### 2.1 Objective of the review

The objectives of the structured literature review were to identify studies that evaluated mental health training and supervision interventions for primary healthcare workers in Sub-Saharan Africa, to assess the quality of those studies, to identify evidence that integrated mental health care leads to better outcomes in Sub-Saharan Africa, to identify models of integration of mental health into primary care that have been used in Sub-Saharan Africa and to examine aspects of integration that have been implemented successfully. It should be noted that this is not a systematic literature review, but a structured literature review. The latter uses many of the methods of a systematic review, namely transparent search methods, inclusion criteria and extraction of data, but does not include the additional steps normally taken in a systematic review such as contacting authors to obtain additional studies, hand searches and searches of grey literature.

To be included in the review, studies had to:

1. evaluate specific training and supervision interventions for primary healthcare workers,
2. be conducted in sub-Saharan Africa,
3. be published in academic peer reviewed journal articles,
4. be published in English.

Studies were excluded if they did not focus on evaluation of training and supervision interventions for primary healthcare workers, were not conducted in Sub-Saharan Africa and were published in languages other than English.

## 2.2 Search Method

Three electronic databases (PubMed, Academic Search Premier, and Google scholar) were used to search for published peer-review journal articles for the structured review. The Database search was conducted from December 2014 to February 2015. The following search terms were used: 'mental health' and 'primary care' and 'Sub-Saharan Africa,' or equivalent terms. The language restriction was English. There was no restriction by date of publication.

## 2.3 Number of studies located

277 articles were found using the method described above. The second step was to look at all titles and abstracts of identified articles in order to screen for relevance. After the screening, 29 full articles were chosen to be included in the final review. For PubMed, Hinari was used to be able to access full articles for free. Of the 29 full articles that were reviewed, a further 19 were excluded as they were commentaries, expressing views toward task shifting or plans for integration, but did not evaluate specific training Interventions for integrating mental health into primary care. Therefore 12 studies were included and evaluated in the final review (see Table 1 for studies chosen).

## 2.4. Results

Very little research has been conducted on implementation and evaluation of interventions for integrating mental health into primary care in Africa. This is evidence from the lack of intervention studies in the searched databases. Only 12 studies were found to directly evaluate a mental health intervention in primary healthcare with three of the studies evaluating the same intervention but using different methodologies.

The 12 studies identified to be in the final review directly evaluated mental health interventions for integrating mental health into primary care were conducted in different countries in Sub-Saharan Africa. Six studies were done in Kenya (Jenkins, Kiima, Njenga, et al., 2010; Jenkins, Kiima, Okonji,

et al., 2010; R. Jenkins et al., 2013; Jenkins et al., 2012; Rachel Jenkins, Caleb Othieno, Stephen Okeyo, Dan Kaseje, et al., 2013; Othieno et al., 2013), two in Malawi (Kauye et al., 2014; Wright et al., 2013), 3 in South Africa (Honikman, van Heyningen, Field, Baron, & Tomlinson, 2012; Petersen, 1999; Sokhela, 1999) and 1 in Nigeria (Odejide et al., 2001). The dates of publication were 1999 to 2014.

All the six Kenyan studies identified in the literature search evaluated a national mental health training programme for primary healthcare workers but using different methods. Of the six articles done in Kenya, two (Jenkins, Kiima, Njenga, et al., 2010; Jenkins, Kiima, Okonji, et al., 2010) describe the overall genesis, design, content and implementation of the national CPO training programme, and the before and after measures of knowledge and attitudes. Another article, describes the evaluation of the primary care training programme by a pragmatic cluster RCT in Nyanza province, based on 100 randomised PHC clinics and 1200 GHQ positive patients followed up for 12 weeks for health, social and QOL outcomes (Rachel Jenkins, Caleb Othieno, Stephen Okeyo, Dan Kaseje, et al., 2013). The last 3 articles describe subsequent qualitative studies from some health workers and clients who had previously taken part in the cluster RCT in Nyanza province (R. Jenkins et al., 2013; Jenkins et al., 2012; Othieno et al., 2013).

**Table 2: Identified studies for review**

Author	Date	Country	Title	Sample	Intervention	Study Design	Result
Jenkins, et al	2010	Kenya	Integration of mental health into primary care in Kenya	1,000	Kenyan national CPO training programme on detection and management of mental disorders	Quasi-experimental approach (single cohort with pre- and post-measures)	Mean knowledge score change from 42% to 77% for the first 1,000 participants.
Jenkins et al.	2010	Kenya	Integration of mental health into primary care and community health working in Kenya: context, rationale, coverage and sustainability	1859	Kenyan national CPO training programme on detection and management of mental disorders	Qualitative written feedback from course participants	Participants perceived a range of benefits including improve assessment and treatment
Jenkins et al	2012	Kenya	Exploring the perspectives and experiences of health workers at primary health facilities in Kenya following training	10 intervention facilities & 10 control facilities (N= 1000)	Kenyan national CPO training programme on detection and management of mental disorders	Focus group discussion	Increased counselling, diagnostic and communication skills in participants from the intervention than control
Jenkins et al	2013	Kenya	Short structured general mental health in service training programme in Kenya improves patient health and social outcomes but not detection of mental health problems-a pragmatic cluster randomised controlled trial	468 and 478 intervention and control groups respectively	Kenyan national CPO training programme on detection and management of mental disorders	A pragmatic cluster randomised controlled trial	Greater rate of accurate clinic detection in intervention group than control group (Greater than 5% in intervention group versus 0% in control group)

Jenkins et al	2013	Kenya	Health system challenges to integration of mental health delivery in primary care in Kenya- perspectives of primary care health workers	10 from Intervention & 10 from Control	Kenyan national CPO training programme on detection and management of mental disorders	Focus group discussion	A number of health system weaknesses identified e.g. drug supply, lack of supervision from district level and health management information system.
Othieno et al.	2013	Kenya	Perspectives and concerns of clients at primary health care facilities involved in evaluation of a national mental health training programme for primary care in Kenya	20	Training based on a curriculum and teaching materials developed through a partnership of WHO Collaborating Centre and Kenya partners	Focus group (2 focus groups with 10 participants each)	Enhanced communication, diagnostic and counselling skills were noticed by clients in primary health workers (PHW) from the intervention group as compared to control group
Wright et al	2013	Malawi	Integrating community mental health within primary care in southern Malawi: A pilot educational intervention to enhance the role of health surveillance assistants	271	Training of 271 health surveillance assistants (HSAs) in mental health	Quasi-experimental approach (single cohort with pre- and post-measures)	Statistically significantly increase in mean knowledge score from 8 (standard deviation [SD]: 2.29) before training to 13 (SD: 2.29) after training; $t(265) = -26.797, p < .0005$ . Also statistically significantly increase in mean confidence score from 26 (SD: 9.53) before training to 34 (SD: 5.29) after training $t(206) = -10.039, p < 0.0005$
Kauye & Jenkins	2014	Malawi	Training primary health care workers in mental health and its impact on diagnoses of common mental disorders in primary care of a developing country, Malawi: a cluster randomized controlled trial	1296 per arm 2600 in total	Mental health Training for PHW using toolkit adopted from Kenya.	Randomized controlled trial	Significant differences between the intervention & control Arm in the rates of diagnosed cases of depression [9.2% v. 0.5%, odds ratio (OR) 32.1, 95% confidence interval (CI) 7.4–144.3, $p < 0.001$ ], anxiety (1.2% v. 0%, $p < 0.001$ ) and malaria (31% v. 40%, OR 0.62, 95% CI 0.43–0.89, $p = 0.01$ ) (Kauye et al., 2014 p. 1)
Odejide et al	2002	Nigeria	Integrating mental health into primary health care in Nigeria: management of depression in a local government (district) area as a paradigm	62	A mental health training for PHW using World Psychiatric Association (WPA) guidelines.	Focus group discussions	Improvement in prescription of anti-depressant medication after training according to participant's answers

Petersen	1999	South Africa	Training for transformation: reorienting primary health care nurses for the provision of mental health care in South Africa	6	Mental health Orientation programme for PHW	Observations and recordings; interviews; and focus group	Improvement in problem identification, counselling, problem management and relationship skills.
Sokhela	2000	South Africa	The integration of comprehensive psychiatric/mental health care into the primary health system: diagnosis and treatment	6 Primary care clinics surrounding Umtata, South Africa	Mental Health training for PHW in detection and management of common mental disorders	Record reviews of history taking, diagnosis, pharmacological treatment and referral	89% completed histories 63% correct diagnoses 92% prescription of correct medication
Honikman et al.	2012	South Africa	Stepped Care for Maternal Mental Health: A Case Study of the Perinatal Mental Health Project in South Africa	6,347	Routine screening of pregnant women for mood disorders	Screening using Postnatal Depression Scale (EPDS) and a risk factor assessment (RFA) Self-reporting questionnaire	6,347 (90%) women screened for maternal mood disorders at 6-10 weeks post-partum 79.9% able to cope after intervention

### 2.4.1 Quantitative studies

Six of the twelve studies identified in the review were quantitative. Out of the five quantitative studies, two were quasi experiment (pre-post measures) (Jenkins, Kiima, Njenga, et al, 2010 & Wright, Common, Kauye, & Chiwandira, 2013), two Randomized controlled trial (Kauye, Jenkins, & Rahman, 2014, Jenkins et al, 2013), one Record reviews of history taking, diagnosis, pharmacological treatment and referrals (Sokhela, 1999), and one Screening using Postnatal Depression Scale (EPDS) and a risk factor assessment (RFA) Self-reporting questionnaire (Honikman, van Heyningen, Field, Baron, & Tomlinson, 2012).

#### 2.4.1.1 Measures

The six quantitative studies used different measures to assess impact of a mental health training intervention for integrating mental health into primary care. Three of the six quantitative studies measured changes in the mean scores of either knowledge or confidence or both to determine an impact of a mental health training intervention. All the three studies showed a significant improvement in the measured variables after a mental health training intervention as compared to before.

One of the three studies was done in Kenya evaluated a national mental health training programme for primary healthcare workers. The training was based on a curriculum and teaching materials developed through a partnership of WHO Collaborating Centre and Kenya partners. The training uses WHO primary care guidelines adopted for Kenya (Jenkins, Kiima, Njenga, et al., 2010). It is participatory and uses short lectures, role-plays, and group discussion as part of the teaching methodology. The training has 5 modules delivered in 5-days (See table 2).

**Table 3:** Kenya training Module

<b>Unit</b>	<b>Title</b>	<b>Contents</b>
Unit 1	Introduction	Mental health and mental disorders, contribution to physical health, economic and social outcomes
Units 2	Core skills	Communication skills, interviewing and assessments, mental state examination, diagnosis, investigations, case formulation, care planning, psychosocial support, breaking bad news, psychosocial rehabilitation, medication management, and management of violence
Unit 3	Causes, presentation and management of neurological conditions	Epilepsy, dementia, Parkinsonism, headache and delirium
Units 4	Psychiatric disorders	Symptoms, bio-psycho-social causes, bio-psycho-social consequences and management of psychiatric disorders
Unit 5	Health and other sector system issues of policy	National health sector strategic plan, mental health policy, reproductive health and mental health, child health and mental health, malaria and mental health, HIV and mental health, mental health legislation, role of community health workers, traditional health practitioners, health management information systems, roles and responsibilities

The training was embedded into an already existing training delivery system of Kenya and it was aligned to health workers' everyday duties. Evaluation of the training included pre and post

knowledge questionnaires and examination of pre and post routine data. Results showed a mean knowledge score change from 42% correct answers at the first assessment to 77% correct answers at the follow-up assessment for the first 1,000 participants. A visit by a senior psychiatric nurse to 15 health facilities that participated in the training also showed improvement in communication skills, history taking and therapeutic relationship of the trained primary health workers.

Another study done in Malawi also measured effectiveness of a training intervention through a change in mean scores on knowledge and confidence questionnaires given to participants before and after a training of 271 HSAs in mental health (Wright et al., 2013). The curriculum used in the training was designed and developed by mental health experts from UK and Malawi with input from members of Mental Health Users and Carers Association of Malawi (MeHUCA). The training ran for three days and it was conducted in two phases. The first phase comprised of unit one and two and was delivered on day one and two. Phase two, made up of unit 3 was conducted six months later and it was also intended for HSA's to share their six months experience after the first phase (See Table 3).

**Table 4:** Malawi HSAs Training module

<b>Unit</b>	<b>Title</b>	<b>contents</b>
Unit 1	Understanding mental health and mental illness	Stress–vulnerability model, the impact of mental health problems, help-seeking behaviour and the organization of care for people with mental health problems
Unit 2	Skills for working with individuals with mental health problems	Mental health needs and treatments and the enactment of an enhanced Mental Health First Aid approach
Unit 3 (6/12 later)	Working with communities	Mental health promotion, stigma eradication, promoting rights of people with mental illness and mobilizing community resources

In total, 10 sessions were conducted, with 271 HSA’s trained. More than one third (68%) of the group trained were females.

Evaluation of the training involved participants filling in pre and post knowledge and confidence questionnaires. The pre-training questionnaires were given prior to the commencement of the training while the post questionnaires were intended to be administered on day 3 after six months but was given instead after 12 months because of delays in funding.

The mean knowledge score showed a statistically significantly increase from 8 (standard deviation [SD]: 2.29) before training to 13 (SD: 2.29) after training;  $t(265) = -26.797, p < .0005$ . Mean confidence score was also significantly increase from 26 (SD: 9.53) before training to 34 (SD: 5.29) after training  $t(206) = -10.039, p < 0.0005$  (Wright et al., 2013).

In addition to the quasi-experimental model, the study also used mental health promotion Activity form and client intervention report form to assess how the programme had impacted on the HSA's daily practice. The two tools showed the HSAs to have used a number of interventions including suicide or self-harm assessment (61 (46%)), Non-judgemental listening (81 (61%)), giving information and reassurance (73 (55%)) and encouraging help seeking behaviour (81 (61%)).

The next quantitative study reviewed was conducted in Umtata, South Africa and measured the impact of the training on actual practice of PHW through record reviews (Sokhela, 1999). Twenty registered nurses from five PHC clinics in South Africa participated in the training. The training took 63.5 hours and it included: a 45 minutes lecture, role plays, group tasks and discussions. Emphasis was made on practical skills. The Material used in the training comprised of a 14-page manual for facilitators and a 238-page manual for trainees. Evaluation of the training was based on record reviews in order to assess its impact on actual practice. The first evaluation was done at 6 months and second at 12 months after implementation. Fifty four histories were collected in total and evaluated by two psychiatrists. Results showed a large improvement from the first to the second evaluation, in psychiatric history taking, axis diagnosis, and prescription of short and long-term medication (89% completed histories, 63% correct diagnoses, 92% prescription of correct medication). Table 4 below summarises percentage differences in the psychiatric histories quality from first to second evaluation:

**Table 5:** Percentage differences in psychiatric histories quality from first to second evaluation in South Africa

<b>Classification</b>	<b>First Evaluation</b>	<b>Second Evaluation</b>
Complete information Entered	2	33
Minor Omission	34	56
Major Omission	56	11
Not rated	8	0
<b>Total</b>	<b>100</b>	<b>100</b>

Table 5 summaries percentage differences in diagnosis quality from first to second evaluation

**Table 6:** Percentage differences in diagnosis quality from first to second evaluation in South Africa

<b>Diagnosis</b>	<b>First Evaluation</b>	<b>Second Evaluation</b>
Correct	37	43
Could differ	2	20
Possible	11	15
incomplete	5	11
In-appropriate	15	11
Not-Rated	5	0
Not-attempted	25	0

A study done in Malawi used a different measure to assess impact of a training intervention for primary healthcare workers. The study used a randomised controlled trial design and measured rates of depression diagnosed cases between the intervention and control arm (Kauye et al., 2014). The intervention was based on the Kenyan tool kit which has been described earlier (Jenkins, Kiima, Njenga, et al., 2010). The toolkit was piloted and adapted for Malawi before being implemented. The major changes that were made were inclusion of treatment algorithms and changes to the role plays. The role plays were done in Chichewa (national local language) and depicted situations in Malawi. In the control group, primary health workers went through a training based on an already existing syllabus that had been employed for many years in Malawi to train health workers in mental health. The training was delivered in 3 days. The lectures in the training covered different mental disorders including anxiety disorders, delirium, substance abuse and mood disorders. The

study was based on a hypothesis that the training would result in more clients being diagnosed with common mental disorders in the intervention group and reduce instances where a patient is given a wrong physical diagnosis instead of a mental disorder diagnosis.

The results showed significant differences between the intervention and control arm in the proportion of diagnosed cases of depression [9.2% v. 0.5%, odds ratio (OR) 32.1, 95% confidence interval (CI) 7.4–144.3,  $p < 0.001$ ], anxiety (1.2% v. 0%,  $p < 0.001$ ) and malaria (31% v. 40%, OR 0.62, 95% CI 0.43–0.89,  $p = 0.01$ ). In short, the intervention group contained more correct diagnoses of common mental disorders than the controlled group.

Another Randomised control trial was done in (Kenya Jenkins et al., 2013) to also evaluate the national CPO training programme for primary healthcare workers already described in another study above (Jenkins, Kiima, Okonji, et al., 2010). The aim of the study was to assess the impact of the national training on the rate of accurate detection of mental disorders and client outcomes. The intervention group comprised of 49 clinics while the control group was assigned 50 clinics. 468 clients in the intervention group and 478 in control group were followed for three months to assess the rate of accurate detection. The results showed Greater rate of accurate clinic detection in intervention group than control group (Greater than 0 in 5% of cases in intervention group versus 0% in control group).

The last quantitative study, conducted in South Africa, routinely screened all women on their antenatal visits for maternal mood disorders using the Edinburgh Postnatal Depression Scale (EPDS) and a risk factor assessment (RFA) self-reporting questionnaire (Honikman et al., 2012). The project was implemented in Western Cape Province of South Africa at Mowbray Maternity Hospital. It

aimed at integrating mental health into antenatal care. All MOH midwives were given a training to screen women as they come for their antenatal visits. There was also an on-site counsellor who offered counselling to the women who screened positive and referred them to an on-site psychiatrist if more specialised intervention was needed. The results show that as much as 6,347 (90%) women were screened for maternal mood disorders at 6-10 weeks post-partum. This had a positive bearing on most of the screened women (87.8%) who reported an improvement in their mood following the intervention.

#### *2.4.1.2 Assessing the quality of Quantitative studies*

The quality of the reviewed articles was assessed using the Effective Public Health Practice Project Quality Assessment Tool for Quantitative Studies. The tool is used to rate the quality of studies on a number of parameters and identifies risk of bias. The tool can be found at <http://www.ephpp.ca/> (see appendix 1 for a copy of the tool). The tool assesses a study on eight parameters namely: selection bias, study design, confounders, blinding, data collection methods, withdrawals and drop-outs, intervention integrity, and analysis.

The tool also comes with a dictionary to assist in the use of the tool and to enable correct assessment of reviewed studies. For this review, five parameters of the tool were used to determine the quality of the articles included in the review. The five parameter used in this review are study design, confounders, data collection methods and withdrawals and drop-outs. Some parameter like blinding were left out because they apply more to experimental design which is not present in the reviewed articles.

#### *2.4.1.2.1 Selection bias*

The selection bias component consists of two items. The first item assesses the representativeness of selected individuals in a study in relation to the targeted population while the second assesses the percentage of participants who agreed to take part in the study. Out of the six quantitative studies reviewed, five were seen as having a strong rating on selection bias (Jenkins, Kiima, Njenga, et al., 2010; Jenkins, Kiima, Okonji, et al., 2010; Rachel Jenkins, Caleb Othieno, Stephen Okeyo, Dan Kaseje, et al., 2013; Kauye et al., 2014; Wright et al., 2013). A study is given a strong rating if participants were a representative sample of the studied population and 80-100% of the selected participants agreed to be in the studies. In the study done by Jenkins et al. (2010) all the 1000 participants selected to be in the study completed it. In Kauye, Jenkins, & Rahman (2014) 18 of the 20 health centres in the targeted area were chosen as unit of randomisation. A complete enumeration of medical assistants (22) from the chosen health centres were included in the study and they completed it. In Wright, Common, Kauye, & Chiwandira (2013) every health centre in the chosen clusters was included and participants were chosen randomly from these centres. In the study done by Honikman, van Heyningen, Field, Baron, & Tomlinson (2012) 90% of 6,347 women were offered mental health screening 6–10 weeks post-partum. Similarly in Jenkins, Kiima, Njenga, et al. (2010) study, the number of participants chosen were a representative sample of the targeted population of primary healthcare workers in Kenya. The last quantitative study can be considered weak since it looked at clinical records of only 6 primary health care workers to determine effectiveness of a training intervention (Sokhela, 1999). The study could have been made stronger if the number of participants was increased.

#### *2.4.1.2.2 Study design*

Two studies were quasi experiments (single cohort pre-post). In this type of study there is no control group and one group is tested before and after an intervention. Out of the three, one was designed in such a way that the participants were tested before and then immediately after an intervention (Jenkins, Kiima, Njenga, et al., 2010). These studies have a moderate quality rating because by testing participants immediately after an intervention, the authors were able to control for some confounders that can influence the results. However, it is difficult to know whether the impact of the evaluation is sustained for a longer period of time and unless the study has a separate control group, as in a randomised control trial, one can't rule out the possibility of the change being by chance. In the second quasi experiment study, the participants were tested before and 12 months after the intervention (Wright et al., 2013). This study can be rated as weak since there are a number of confounding factors that can influence the results between the two point rather than the intervention itself. Examples of confounding can be other similar projects running in the area or a natural occurrence which might affect the post intervention results.

Two of the quantitative studies were randomized controlled trials (Kauye et al., 2014). This study was seen as strong rating for a number of reasons. Firstly, randomisation was used to assign participants into the control and intervention group. Secondly method used to generate a random allocation sequence was described by the author. According to the author, "the health centre was chosen as the unit of randomization and pair matching was carried out according to average daily attendance rates" (Kauye et al., 2014 p. 2). Similarly in the randomized control trial done in Kenya, clinics were randomly assigned to the intervention and control group (Jenkins et al, 2013).The method was also appropriate as the random allocation was done by a statistician who was not aware of the identity of the health centres/clinics and was not part of the studies. A randomized

controlled study also helps to control some of confounders that can affect a study as the control group is used for comparison.

Another study used record reviews of history taking, diagnosis, pharmacological treatment and referral as a way of assessing impact of a training intervention on practice (Sokhela, 1999). This study can be given a medium quality rating as it was based on the review of actual records of the participants who were involved in the training. However, as in other mentioned studies, there might still be some confounders that can influence the records after the training.

The Honikman et al study used the Edinburgh Postnatal Depression Scale (EPDS) and a risk factor assessment (RFA) self-reporting questionnaire to routinely screen women for mood disorder as they came to their antenatal visits (Honikman et al., 2012). This study was as having a medium rating. Firstly, is because it used tools that are reliable and validated for use in the study population. Secondly, it screened every woman coming for antenatal. However, the study did not provide the proportion of women screened before the intervention was introduced.

#### *2.4.1.2.3 Data collection tools*

The quality assessment tool for quantitative studies also looks at whether the data collection tools used in a study are reliable and valid. In Jenkins, Kiima, Njenga, et al (2010), there was no mention of the tool which was used hence making it very hard to determine reliability and validity of the study. Kauye & Jenkins (2014) can be given a strong rating as far as data collection tools are concerned. The study used the SRQ and the Structured Clinical Interview for DSM-IV (SCID). Both tools were validated in Malawi before being used. The validation process involved translation and back translation and piloting. Wright, Common, Kauye, & Chiwandira used two questionnaires in the study; one assessing knowledge and the other confidence (Wright et al., 2013). The two

questionnaires were piloted and tested before the study hence a strong rating for the data collection tools in this study. Similarly, the tools used by Honikman et (2012) (EPDS and risk factor assessment (RFA)) were validated for use in South Africa. Sokhela (2000) used record reviews of history taking, hence no any independent tool was used.

#### *2.4.1.2.4 Withdrawals and drop-outs*

In all reviewed articles there was no mention of participants dropping out of the study. This is a weakness and undermines the quality of the studies as it affects the generalizability and the statistical power of the study. Hence all the studies have a weak rating on this aspect.

#### *2.4.2 Qualitative studies*

Five qualitative studies were identified in the review. Out of the five studies, four were done in Kenya as part of series of studies evaluating a national mental health training programme for primary healthcare workers. The studies are qualitative analysis of consecutive participants in the national training programme, followed a few years later by specific focus groups with participants from the Nyanza province RCT (R. Jenkins et al., 2013; Rachel Jenkins, Caleb Othieno, Stephen Okeyo, Julyan Aruwa, et al., 2013; Jenkins et al., 2012; Othieno et al., 2013). The studies concentrated on various areas, including getting opinions of clients on the quality of mental health services offered in primary care clinics where the training intervention has been implemented (Othieno et al., 2013), exploring experiences and opinions of primary healthcare workers after a mental health training (Jenkins et al., 2012), exploring benefits that participants perceived from the mental health training (Jenkins, Kiima, Okonji, et al., 2010) and Identifying Health system challenges to integration of mental health delivery in primary care (Rachel Jenkins, Caleb Othieno, Stephen Okeyo, Julyan Aruwa, et al., 2013).and exploring impact of training on practice (Odejide et al.,

2001). All the 5 studies show a positive impact of integrated mental health care in Sub-Saharan Africa.

The first qualitative study reviewed was done in Nigeria and found that participants saw an improvement especially in prescription of anti-depressant medication after a mental health training (Odejide et al., 2001). The study was an evaluation of a training aimed at equipping primary healthcare workers with the skills for recognising and managing depression. The training used a module based on the World Psychiatric Association (WPA) guidelines adapted for the Nigeria context. In order to assess whether the training had any effect on practice, self-administered questionnaires and focus group discussion were employed. The focus group was comprised of participants who took part in the training.

The second qualitative study was done in Kenya to discover opinions of clients on the quality of mental health services offered in primary care clinics where a mental health training intervention had been implemented (Othieno et al., 2013). The intervention has already been described (Jenkins, Kiima, Njenga, et al., 2010). The first focus group was comprised of clients from clinics where the intervention was done while the second focus group comprised of clients coming from clinics where the training wasn't implemented. Participants from intervention group noticed an improvement in communication counselling and diagnostic skills among their PHW, compared to participants in the control group.

Another article evaluating the same Kenyan national mental health training as the study above aimed to discover experiences and opinions of primary healthcare workers following the mental health training (Jenkins et al., 2012). The study used 2 focus groups conducted eight months after

the training. The first focus group was made up of 14 primary health workers from the intervention group while the second focus group comprised of 11 primary health workers from clinics that had not received the training. According to the results, participants from intervention group were more knowledgeable about the different mental illnesses and acknowledge that the prevalence of mental disorders in their clinics was high. This was not the same among participants from the control group who showed lack of such knowledge. Other skills noticed in the intervention group were improved counselling, diagnostic and communication skills. These were lacking in the controlled group.

The third qualitative article evaluating the Kenyan national mental health training used qualitative written feedback from course participants.(Jenkins, Kiima, Okonji, et al., 2010). 200 health workers involved in the training participated in the study. The feedback showed a numbers of benefits that participants perceived from workshop including improve assessment and treatment. This can be seen in the comment of one of the participants below:

*“This course is very beneficial; it has enable me to deal with mental illness in the community. It gives me ideas on how to identify, advice and treat people with mental illness, give information to the relative, and if necessary refer for further management. Other stakeholders in the community e.g. schools, churches should also be trained, to create awareness that mental illness is like any other illness, and not witchcraft. The medical workers need frequent training to update them to handle the growing burden of mental illness” (Jenkins, Kiima, Okonji, et al., 2010 p. 7).*

The last qualitative study in Kenya also recruited participants from the Nyanza randomised controlled trial. Two focus group discussions were conducted with 10 participants from intervention group and 10 participants from the control group. A number of health system weaknesses were identified as challenges to integrating mental health into primary care. These included: drug supply, lack of supervision from district level and lack of a proper health management information system

## 2.5 Model of Integration

From the review a number of models for integrating mental health into primary care were identified. The most widely used form of integrating mental health into primary healthcare is

training of primary healthcare workers using various curricula and teaching materials. Supervision in the reviewed studies involved monthly visits to health centres involved in a mental health training (Jenkins, Kiima, Njenga, et al., 2010) and clinical practice observation (Wright et al., 2013). Some of the widely used curricula and teaching materials are those developed by WHO (Jenkins, Kiima, Njenga, et al., 2010; Jenkins, Kiima, Okonji, et al., 2010) and World Psychiatric Association (WPA) (Odejide et al., 2001) and adapted for use in different countries. Most of these trainings have been embedded into routine training delivery systems of different countries using such a model (Jenkins, Kiima, Njenga, et al., 2010; Kauye et al., 2014). Another model that can be seen is screening for mental illness in primary care using different validated tools (Honikman et al., 2012). Some of the tools that have been used for screening are the Edinburgh Postnatal Depression Scale (EPDS) and a risk factor assessment (RFA) self-reporting questionnaires.

A major benefit of screening as compared to only training PHW to use their clinical skills to diagnose, is that it can enable a large group of people to be reached and provided with appropriate mental health services. This is because each and every patient coming to a primary health care facility can be screened with a particular tool to see if they have a mental disorder and this can greatly reduce chances of missing mental patients. However, screening alone without equipping PHW with the necessary skills to diagnose, manage and refer mental disorders can have little impact. In addition screening patients in a population with low prevalence represents an inefficient use of resources and can carry substantial opportunity costs. The most effective way of integrating mental health into primary care may be to combine the two models. PHW can be trained on how to diagnose and treat different mental disorders and at the same time, a screening tool for detecting a variety of indicated mental disorders can be used in primary care settings.

## 2.6 Conclusion

The 12 studies on the whole showed improvement in a number of outcomes when introducing training and supervision of primary care staff in mental health in sub-Saharan African countries. These outcomes include knowledge and confidence improvement for primary healthcare workers; increased rates of diagnosis for mental disorders, improvement in skills such as history taking, communication, counselling, prescription of medication and follow up for primary healthcare workers; improved outcomes for mentally ill patients such as quick access to appropriate mental health care, improved mood and better coping.

However there are some limitations in the quality of the current evidence, shown particularly by the dearth of studies that attempt to control for confounding in the evaluation of their interventions. Most of the studies evaluated an intervention before and after a specified period of time. They did not take into account that a number of other factors rather than the intervention itself can influence the follow up results hence the need to take steps to reduce or eliminate them. Thus although there is substantial emerging evidence for the effectiveness of integrated primary mental health care services, there is need for further studies, particularly studies that can attempt to control for confounding, and present more robust evidence to policy makers.

Moreover only one of the studies reviewed looked at stigma and attitudes as one of measures for the effectiveness of a mental health intervention. The World health organisation bemoans stigma as one of the major barriers to effective mental illness treatment (WHO, 2011b). Most societies hold attitudes of the mentally ill as threatening and incurable (Corrigan & Watson, 2002). Such attitudes encourages stigma and discrimination to mental illness (Corrigan & Watson, 2002). Studies support that stigma toward mental health in Africa is widespread (Kapungwe et al., 2011;

Monteiro, 2015). Misconceptions about mental illness is the major cause of negative attitudes towards the mentally ill which in turn lead to stigma (Corrigan & Watson, 2002). This stigma manifests in people with mental illness being treated differently, excluded and even brutalized. Therefore, reducing negative attitudes that people have toward mental illness can help in reducing stigma and discrimination towards the mentally ill.

Studies done in Sub-Saharan Africa have shown existence of negative attitudes and stigmatized behaviour among health professionals towards mental illnesses and those suffering from them. A study done in Zambia looked at the attitude of primary health care workers, clinical officers and nurses, towards the mentally ill in Zambia using a pilot tested structured questionnaire (Kapungwe et al., 2011). Two districts were chosen to be in the study. Out of 111 health workers interviewed, 68.4 % reported being uncomfortable in treating the mental patients, 71.5% thought mental patients should be restricted with handcuffs and 74.7% thought that mental patients should neither be permitted to bear children nor work.

Another study done in western Nigeria, evaluated medical doctors' attitudes towards people with mental illness (Adewuya & Oguntade, 2007). Out of the 312 doctors who participated in the study, 64.1% expressed high social distance towards the mentally ill and most perceived the mentally ill as dangerous (Adewuya & Oguntade, 2007). Both studies indicate that cultural enshrined beliefs towards mental illness and the mentally ill exist in health professionals hence the need to also target attitudes when designing, implementing and evaluating a mental health intervention.

The literature support the notion that integration of mental health into primary health care is the best way of scaling up mental service provision in Africa. The following are some lessons that can be drawn from the literature:

- Given the right support knowledge and skills, primary healthcare workers can effectively detect and manage mental illnesses
- Training and supervision are complimentary. For effective integration supervision is just as important as training
- The mostly common form of integration is training of primary healthcare workers using various teaching curricula. The WHO mhGAP is the most widely used training package with good results.
- For integration to be successful and sustainable, trainings have to be embedded into routine training structure of health system.
- Training materials need to be adapted for the population it is intended for
- Much of the intervention for primary healthcare workers have focused on improving knowledge and detection rate while ignoring attitude as an important variable

## CHAPTER 3: METHOD

### 3.1 Study Design

The study employed a quantitative quasi-experimental approach (single cohort with pre- and post-measures), with an interrupted time-series design. In quasi-experimental studies, measurements are made before and after an intervention to determine an effect (Harris et al., 2006). In this type of study there is neither randomization nor a control group. Quasi experiments offer unique insights on the effect of an intervention (Harris et al., 2006). Using this design it is possible to determine whether an effect occurs immediately, whether there is a delay between intervention and effect and whether the effect goes away after a certain period of time.

The major weakness of this design is that it is difficult to infer causality with the same level of confidence as a Randomised Controlled Trial (RCT). This is because there might be other confounding variables other than the intervention itself affecting the outcome. Quasi experimental designs can be valuable if there is an ethical or logistical challenge to randomisation and using a control group. Due to logistical challenges in the roll out of the Mulanje mhGAP training programme, it was not possible to randomise clinics. The use of interrupted time series analysis was an alternative way of making the study strong and eliminating some confounders while working within the constraints of the training intervention.

An interrupted time-series design was used to study changes in the detection of cases of mental disorders. In an interrupted time series, multiple measurements are made before and after the introduction of the independent (treatment/intervention) variable X. This is illustrated in Table 6 below:

**Table 7: An example of a time series analysis**

Time - 4	Time - 3	Time - 2	Time - 1	X	Time +1	Time +2	Time +3	Time +4
# of cases (4 Months before)	# of cases (3 Months before)	# of cases (2 Months Before)	# of cases (Month before)	<b>Intervention</b>	# of cases (Month after)	# of cases (2 Months After)	# of cases (3 Months after)	# of case (4 Months after)

With multiple measurements both before and after an intervention most confounding variables are controlled as they are unlikely to be present throughout the various measurements. By studying the pattern of changes in the multiple measurements, paying particular attention to what happens to the series precisely at the point of change from no intervention to intervention, it is possible to learn something about the effect of the intervention if any.

### 3.2 Study population

The study was conducted in Mulanje district where the mhGAP training was piloted. Mulanje is a district in the Southern Region of Malawi close to the border of Mozambique. It has a total population of 550,721 people, 558 villages and 131,000 households. The main economic activity in Mulanje is tea growing.

**Figure 2: Map of Malawi Showing the position of Mulanje**



Source: <http://www.snipview.com/q/Malawi%20geography-related%20lists>

Baseline data collection reviewed revealed that the district has one district hospital, 18 health centres, 3 dispensaries and 45 primary healthcare workers (22 medical assistants, 22 nurses and 1 clinical technician).

### 3.3 Training

A training package was delivered by a district mental health team (DMHT) to primary healthcare workers and included presentations, tutorials, role play and direct clinical supervision. The DMHT in all 5 districts that had been chosen for the SMMHEP/MoH project comprised one specialist psychiatric clinical officer with a BSc in psychiatry and 3 or 4 specialist psychiatric nurses with a certificate/diploma in psychiatry.

Prior to the training in the district, training was conducted of the DMHT. The DMHT training package had three modules:

- 1) Four day Update on Core Conditions (moderate-severe depression, alcohol and drug use disorders, and psychosis including delirium and mania). The 4-day training was aimed at updating DMHT's knowledge and skills in assessing and treating the mentioned conditions. The mhGAP materials to be delivered to PHW in the 2 days training were taught during the 4 days update training.
- 2) Two day Training of Trainers (TOT). This was meant to equip the DMHT with the skills for delivering the mhGAP training package to primary health workers. These included: how to deliver the lectures, conduct role plays and video demonstrations.

3) Two day training on supervision skills prior to conducting monthly supervision for the first 3 months post-training. The latest version of the teaching materials is available from Dr Sheila Gilfillan. [sheila.gilfillan@gmail.com](mailto:sheila.gilfillan@gmail.com)

Training of the DHMT was provided by experienced mental health professionals involved in adapting the training materials to Malawi settings. The mental health professionals comprised of 3 psychiatric clinical officers from Zomba Mental Hospital and 1 nurse lecturer from Malawi College of Health Sciences. The mental health professionals were monitored by a consultant psychiatrist from Scotland who is a certified mhGAP Trainer.

The DMHT in turn delivered a 2-day training package to primary healthcare workers in Mulanje, together with on-going support and supervision (for three months supported by SMMHEP and then through normal outreach clinics thereafter). The training package used mhGAP teaching materials with minor modifications to make them country specific. The modifications included formulation of role plays and videos that depicted the Malawian context. For example all videos used were in Chichewa, which is the local language.

The aim of the training was to improve the detection and management of major mental illness and substance use disorders in primary care. The core conditions were moderate- severe depression, alcohol and substance misuse, schizophrenia, bipolar affective disorder and delirium. The last 3 were taught under the umbrella of 'psychosis'. These conditions were decided in agreement with the ministry of health as they were seen to be the major disorders at primary health level in Malawi. In the training, there were also discussions about rational ordering of psychotropic drugs at both facility levels as well as about strengthening existing referral pathways.

To avoid disrupting services at health centres, half of the participants were trained first for two days and then the other half after the first group for another two days. This meant that when one primary health worker at a particular health centre was attending the training, the other health worker at the same health centre was carrying on with daily duties.

A member of Mental Health Users and Carers association of Malawi (MeHUCA) was present during all training sessions. MeHUCA is a registered patient advocacy organization that was established on 27th February, 2010. The association comprises of people who have or had mental illness before and their carers (guardians). Some of the aims of the association are promoting the welfare of the mentally ill, promoting equality and rights for mental patients and fighting stigma and discrimination against the mentally ill. A MeHUCA film depicting people who had a serious mental illness but are fully cured and are now productive members of the society was shown as a part of the training. The aim of involving a member of MeHUCA was to try to change the stigma and negative attitudes that some primary healthcare workers might hold towards mental patients. Evidence exist that stigma and negative attitudes towards the mentally ill are prevalent among health professionals (Adewuya & Oguntade, 2007; Kapungwe et al., 2011). One of the best means of reducing stigma against the mentally ill is through direct personal contact with people who have or who had mental illness (WHO, 2012).

### 3.4 Supervision

The DMHTs were already involved in on-going supervision of staff in primary care through weekly mobile outreach psychiatry clinics to health centres. These health centres are each scheduled for a visit approximately once every 2 months. A specialist mental health clinical officer, 1 or 2 nurses and patient attendant travel with staff from other specialties and usually visit 2 or 3 health centres

in an afternoon. Outreach clinics are usually done on a Thursday of every week. Because of logistical difficulties concerning fuel and vehicle availability and the need to consolidate learning immediately post-training, SMMHEP funded monthly outreach visits for supervision to each health centre for 3 months. Thereafter supervision was conducted through scheduled outreach clinics every month. A recent change in fuel allocation system appeared to address the logistical difficulties. Supervision included a facility check-list, direct clinical supervision through observed interviews if possible and also discussion of difficult cases. Apart from writing in their normal clinical registers, the participants were provided with a hard backed register in which staff also recorded clinical details of cases to be discussed. Supervisors used mhGAP teaching materials and extracts from the mhGAP-IG, adapted for Malawi, as the basis for supervision of both observed interviews and discussion of complex cases (**See appendix 2 for supervision tool**).

During supervision visits, every PHW was supervised individually. The supervision began with PHWs making a presentations of their experiences both positive and negative in implementing the programme. If clients were available, the DMHT could observe while a PHW assessed and managed the client. After the client was gone, the DMHT discussed with the PHW where they thought they did better or not. If clients were not available, the DMHT and the PHW discussed cases recorded in registers.

### 3.5 Participants

43 out of 45 primary healthcare workers took part in the study. The other 2 were invited but didn't show up for the training. The primary health workers were recruited from all 18 health centres in Mulanje. The primary healthcare workers consisted of 20 medical assistants, 22 nurses and 1 clinical technician.

### 3.6 Sampling

The study involved a complete enumeration of the study population. 45 primary healthcare workers in 21 health centres under Mulanje District Health Office were invited to take part. Forty three participants showed up for the training and they all agree to take part in the study. To avoid loss to follow up due to transfer, resignation or retirement, the names, corresponding codes and contact details of all participants were written down on a separate piece of paper on the training day.

Records in primary care were in the form of a standard register which listed all patients seen together with basic demographic data, diagnosis and diagnostic codes. These systems were already in place before the training intervention took place. For mental health there were 2 diagnoses corresponding to 2 codes. These are acute and chronic mental disorders and they correspond to codes 20 and 21 respectively. It was noted in some facilities that although the prescribed diagnostic codes were extremely limited some healthcare workers included a more descriptive diagnosis of the condition seen e.g., depression, stress reaction and then used a prescribed code. There were already plans by the Ministry of Health to introduce more detailed forms with all the ICD-10 diagnosis. Sampling was total number of cases in primary care registers for the 6 months prior to and the 6 months following training. The investigator thus used the total number of cases identified by primary healthcare workers each month irrespective of how it was coded. This was done to easily compare before and after training data. It was anticipated that mhGAP training would increase the number of mental health cases and possibly also the number of instances in which a more descriptive diagnosis is used.

### 3.7 Data Collection

#### 3.7.1. Baseline data collection

The baseline preliminary visit was done to gain a clearer understanding of how mental health services operated at the District and Primary Care levels, as well as to discuss training needs and operational aspects of the project. The researcher also examined information systems and explored potential barriers to the successful implementation of the project. The baseline data collection involved qualitative open interviews with District health officer, district nursing officer, psychiatric clinical officer and psychiatric nurses. There were also meetings with pharmacy technicians, clinical Co-ordinator responsible for allocating Clinical Officers and Medical Assistants within the hospital and in the health centres, Psychiatry Clinic Attendant and Registration Officers

### 3.7.2 Data on knowledge, attitudes, confidence and detection rate

Data regarding primary healthcare workers' knowledge, attitudes and confidence were collected pre- and immediately post- training intervention and then again at 6 months after training. Data collection also included the number of mental disorders detected per month by primary healthcare workers in each health centre found in clinical registers. Moreover, during the course of the 3 months following training, field notes were taken by the researcher, based on observations of supervision and clinic visits. The point of collecting these field notes was to get a clear qualitative picture of what was happening on the ground during training and supervision.

### 3.7.3 Field notes

During each supervision visit, the investigator kept some field notes in a note pad as he was observing what was happening in various health centres. The main issues that the investigator was interested in were challenges and complaints that PHW had, availability of drugs and how the training was being implemented.

## 3.8 Procedure

### *3.8.1 Baseline Data*

The investigator scheduled appointments/meetings with all necessary personnel. He then went to meet each person separately in order to discuss and have different perspectives on how things operated before the training.

### *3.8.2 Mental Disorders*

The investigator used clinical registers available at each health centre to collect data on number of cases of mental disorders detected by primary health workers in the 5 months before the implementation of the training (January to May 2014). With permission from Mulanje district health officer, the investigator visited all the 21 health centres in Mulanje and asked for their clinical registers. The visit to collect pre-training data was done for a period of 2 weeks in July 2014. The investigator recorded all mental disorder diagnoses, including both description and code, per month as well as the total number of all other diagnoses. The major difficulty that the investigator found was that before the training, there were only a very small number of more descriptive diagnoses. Only two diagnoses of acute and chronic psychosis were used to encompass all the conditions that the health workers encountered. There was a change in the way the primary healthcare workers registered their data after the training as they started using more descriptive codes such as schizophrenia, depression, mania etc. This made it difficult to compare pre training data with post training data since they were recorded differently. To solve this problem, the investigator used total number of cases identified by the primary healthcare workers in each month of interest as a unit for analysis. No names were written and the confidentiality of all patients in the registers was maintained. The same procedure was followed in January 2015 to collect data for the seven months after the training (June-December 2014).

### *3.8.3 Knowledge, Attitudes and Confidence*

To assess primary health workers' knowledge, attitudes and confidence level, participants were required to fill in questionnaires before and immediately after the training. On the training day, the investigator first gave every participant a study information sheet and an informed consent form. Participants were given 10 minutes to go through the information sheet and consent form and were given a chance to ask the investigator any questions or seek clarification on any point. It was stressed by the investigator that participation in the research was not mandatory or in any way related to the training. All the participants consented to take part in the study. The participants were then given 30 minutes before commencement of the training to complete three pre-training questionnaires assessing attitudes, knowledge and confidence. Each participant was allocated a code number that they were asked to write on the questionnaires to allow the pre- and post-intervention questionnaires to be paired for analysis. The participant name/code number combination was known only to the participant and to the investigator who was not directly involved in the delivery of the course. Immediately after the training, the participants were given another 30 minutes to complete the same questionnaires. After 6 months, the researcher visited all the health centres and administered the same questionnaires to the same participants. Names, corresponding codes and contact details of all participants were written down on separate piece of paper on the training day to easily follow them in case of a transfer, resignation or retirement.

### **3.9 Research Instruments**

Four self-administered questionnaires were used in the study to collect demographic information of participants and assess attitude, knowledge and confidence. All questionnaires were in English. Local language translations for the information and consent forms or the questionnaires was not

done as all the participants were qualified health workers who were able to understand, read and write English. Moreover, all of the training, monitoring and evaluation were conducted in English.

### *3.9.1 Demographic questionnaire*

A demographic questionnaire was given to participants to collect their demographic characteristics.

The demographic characteristics that were collected are sex, age, years of clinical experience, previous training in mental health, current role and current working environment and in-service training in mental health. **See appendix 3 for example of the questionnaire.**

### *3.9.2 Attitudes*

Community Attitudes toward Mental Illness (CAMI) questionnaire was used to assess the attitudes of participants towards mental illness before and after the intervention. The tool was developed by developed by Taylor and Dear (Taylor & Dear, 1981). The CAMI is self-administered questionnaire that is used to measure whether someone or a group of people holds positive or negative attitudes towards mental illness and mentally ill. It uses a five-point likert scale (strongly disagree, agree, neutral, disagree and strongly disagree) to rate someone and it consists of 40 items. The CAMI is divided into four sub-scales namely benevolence, authoritarianism, community mental health ideology and social restrictiveness (Taylor & Dear, 1981). Each sub-scale comprises of 10 statements.

1. Benevolence is a perspective of sympathising with people who have a mental illness. The more sympathy you have for the mentally ill the higher the rating on a benevolence sub-scale.
2. Authoritarianism represents a perspective of seeing mental patients as weak, less important and who deserve forced handling.

3. Community Mental Health Ideology is a view of accepting the mentally ill and mental health activities in a society.
4. Social restrictiveness is a view that mental patients are a danger to a community and should be isolated.

When calculating the CAMI, values are assigned to each item (1=strongly agree to 5=strongly disagree). Five items for each sub-scale are then reverse coded. See the CAMI scoring sheet appendix 10. A score for each subscale is obtained by adding up responses on each statement corresponding to it. A score for each subscale ranges from 10 to 50. When calculating CAMI (attitudes) for a number of participants, a mean score for each sub-scale is obtained. The higher a mean on a particular sub-scale, the more of that attribute a group has (Taylor & Dear, 1981)

The CAMI has been demonstrated to be reliable and has been used in a number of previous studies in Africa (Ukpong & Bis, 2010) used the CAMI on medical students in Nigeria to assess the kind of attitudes that they hold towards mental patients. A study in southern Ghana, used the CAMI on the urban population to assess their attitude (Barke, Nyarko, & Klecha, 2011). Another study in Cape Town, South Africa used the CAMI to assess attitudes of participants who were involved in a self-help program (van 't Hof, Stein, Cuijpers, & Sorsdahl, 2011). Although it has not yet been validated in Malawi, the CAMI was chosen because of its robust psychometric properties, the ability to comprehensively assess various aspects of attitudes towards mental health and its previous use in a similar setting in sub-Saharan Africa.

The CAMI was slightly modified to make it country specific. Words such as 'neighbourhood' in some items (h, o, p, t, x, bb, ff, jj, nn) was replaced with 'village' since neighbourhood can be seen as a

western concept of a village in Malawi. Dollar was replaced by kwacha in one item (item n) to depict the Malawian currency. **See appendix 4 for example of CAMI scale.**

### *3.9.3 Knowledge*

In order to assess the knowledge of participants the investigator used a questionnaire adapted from the WHO mhGAP pre-and-post test for mhGAP based training. Items in the knowledge questionnaire were in line with the disorders that were taught during the training. The questionnaire has 20 items related to major mental health disorders. Ten of the items are multiple choice questions while the other 10 are true and false questions. A score of 1 was assigned to every correct answer while a wrong answer got a score of 0. If a participant answered all the 20 items correctly, his/her total score was 20. The high the score the more knowledgeable a participant was. The scores were then used to calculate mean scores. **See appendix 5 for knowledge questionnaire.**

### *3.9.4 Confidence*

To assess the confidence of the primary health workers, the researcher used a confidence questionnaire that had been used in a previous study to assess the confidence of Health Surveillance Assistants towards mental health in Malawi (Wright et al., 2013). The questionnaire was chosen because it had already been validated and used in Malawi on a similar population. The questionnaire has 14 items rated on a Likert scale (very confident, confident, some confident, not confident at all). The highest possible score that a person could get was 56. The higher the score, the more confident one was. Participants were instructed to go through each statement and place a tick in the box that best describes their feeling of confidence in their ability to undertake different mental health tasks. **See appendix 7 for a copy of full questionnaire.**

### 3.10 Withdrawals and drop-outs

There were no withdrawals or drop-outs throughout the study. All health care workers did not move around in the six month of the study. This made it easy to follow them up.

### 3.10 Data management and analysis

All variables were checked for integrity and consistency before conducting any analysis using Stata version 13.1 (Stata Corp, Texas, USA). For continuous variables, summary statistics were obtained and presented either as a median (inter quartile range [IQR]) or mean (standard deviation [SD]) dependent on whether the data were normally distributed. T-test was used to test if there was significant different in the mean score for knowledge, attitude and confidence. One-way tabulation was performed on categorical variables in order to obtain proportions.

Given that the scores for the variables knowledge and confidence were normally distributed, a paired t-test and one-way analysis of variance (ANOVA) was conducted using before, 'immediately' after and after 6-month score to determine any change in these measures following the training.

#### 3.10.1 Hypotheses and analytical approach

The following analytic approach was used for knowledge, attitude and confidence scores

Let  $\mu_a$  = mean knowledge score before training; or mean confidence score before training

Let  $\mu_b$  = mean knowledge score immediately after training; or mean confidence score immediately after training

Let  $\mu_c$  = mean knowledge score 6 months after training; or mean confidence score 6 months after training

a) The following null hypothesis (that all three means were equal) was tested first using one-way analysis of variance (ANOVA).

$$H_0 : \mu_a = \mu_b = \mu_c$$

$$H_a : \mu_a \neq \mu_b \neq \mu_c$$

b) Then, the following two hypotheses for pairwise comparisons of interest were tested using a paired samples *t* test.

i) 
$$H_0 : \mu_a = \mu_b$$
$$H_a : \mu_a \neq \mu_b$$

ii) 
$$H_0 : \mu_a = \mu_c$$
$$H_a : \mu_a \neq \mu_c$$

### *3.10.2 Time Series analysis for Number of Cases*

Mean number of cases for each month have been plotted using sequence charts. Sequence charts have been developed for mean number of cases per month for each health centre in Mulanje and the total mean number of cases per month for all health centres. As the training took place in early June 2014, a decision was taken to include the case register for June in the post-training period. The final analysis therefore comprised 5 months of case register data before the training (January-May 2014) and the 7 months of case register after the training (June-December 2014). Wilcoxon Rank Sum Test was used to determine whether there was a significant increase in the number of cases in the 7 months following the training as compared to the 5 months before the training.

### **3.11 Presentation of results**

Results have been presented using summative and descriptive statistics, T-test and significance scores. The results have been summarised and tabulated.

Time series plots of mean monthly number of mental health cases have been shown and average number of cases in the 5 months prior to and 7 months after the intervention have been calculated.

### 3.12 Dissemination of results

Results will be disseminated locally within College of Medicine and Mulanje district health office.

The results will also be given to mental health unit of the Ministry of Health in Malawi. Preliminary data were presented at the 5<sup>th</sup> annual Malawi Mental Health Research and Practice Development Conference which took place on 23<sup>rd</sup>-25<sup>th</sup> March, 2015 at Sunbird Mount Soche hotel in Blantyre, Malawi. Findings will also be written up for publication both locally and internationally in peer reviewed academic journals.

### 3.13 Ethical Considerations

#### 3.13.1 Protocol Approval

The protocol for this study was approved by the UCT Health Sciences Faculty Human Research Ethics Committee (HREC Ref number 194/2014).

#### 3.13.2 Informed Consent

Participants were provided with information on the study, both verbal and written (see appendix 8 for Information Sheet). Informed written consent was obtained from participants (see appendix 9 for Consent Form). Participants were free to withdraw from the study at any time but not the training itself.

#### 3.13.3 Risk to participants

There were not any direct risks to participants who took part in the study. To avoid disrupting services at the various health centres, half of the participants were trained first for two days and then the other half after the first group for another two days. This meant that when one primary health worker at a particular health centre was attending the training, the other health worker at

the same health centre carried on with daily duties. The training programme and questionnaires did not involve asking direct personal questions and therefore there was minimal personal discomfort. Participants were free to withdraw at any time, and they were assured that no negative consequences would result from them withdrawing from the study.

#### *3.13.4 Confidentiality*

All data collected were anonymised. No names were included on the questionnaires and the participants were only identified by a code. A separate sheet was created with a list of the names of each participant and their corresponding codes. This made it easier to ensure that the correct code was paired for the same individual. The questionnaires were kept in a secure filing cabinet at the University of Malawi, College of Medicine, and entered onto password protected computers for analysis. All data extracted from clinic registers and hospital admission and discharge registers were anonymised at the time of collection.

#### *3.13.5 Possible Constraints*

Constraints included the need to consider service provision when recruiting participants for the training intervention. Local health service managers were consulted about appropriate timing of the training intervention to minimise service disruption. Provision of the training and the current study was contingent on informed consent, recruiting adequate numbers for the training sessions; as well as the recruitment of the lead training team and of the District Mental Health Team as trainers in the cascaded model. Fortunately, no major challenges were encountered during recruitment and training.

## CHAPTER 4: RESULTS

The following results were obtained from the data analysis. Results have been presented using summative and descriptive statistics, t-tests and significance scores.

### 4.1 Baseline

During the baseline qualitative data collection, most staff from the DMHT were concerned about the implications of the training and supervision for their work load, about taking on new roles and responsibilities, and about the logistics of providing training in primary care with limited psychotropic drug availability and transport issues. This can be seen in the comment of one of the DMHT member:

*“The situation with shortage of psychiatric drugs can become so bad that most of the time we fail to provide quality mental health services to our clients. Unless this is rectified, I don’t see the project working.”*

Another DMHT member kept stressing on the increased workload:

*“On a day, the primary healthcare workers can see an average of 100 to 300 patients and doing the long history taking that is required in mental health can be difficult to some”*

These were all legitimate concerns. In the longer term the hope of the training was that with improved diagnosis and treatment in primary care the DMHT’s workload may reduce and their expertise will be used more appropriately. SMMHEP refunded transport costs to the training venue for participants and supported the DMHT to travel to different health centres for the first three months of supervision.

During discussions with the pharmacy technicians in Mulanje it became apparent that there are a number of reasons why there is not a consistent and adequate supply of essential psychiatric drugs in health centres, and to a lesser extent in the hospital. These include confusion about whether or not these drugs are on the current health centre list of drugs, reluctance to order, lack of information about how many patients require the drugs and therefore what supply is needed on a month to month basis, amongst others.

As a result of discussions the DMHT undertook to make lists of patients attending hospital and health centre psychiatry clinics and the pharmacy technicians agreed to supply all health centres with chlorpromazine and amitriptyline regardless of whether they had been ordered or not. The psychiatric clinical officer and pharmacy technicians monitored the use of these drugs in health centres.

It was also noted during baseline data collection that health workers at primary care level are not allowed by ministry of health policy to prescribe and administer certain psychotropic drugs. There was a valid argument that the restriction was because primary healthcare workers did not have the skills and knowledge to prescribe such drugs. It was agreed with the district health officer that once the primary healthcare workers have such skills, he will lobby for such drugs to become available in primary health centre.

An interview with registration officers and a look into the clinical register reviewed that only two codes for mental disorders were available (Acute and Chronic mental disorders). There were plans to adopt more descriptive codes from the international classification of disorders but these had not been implemented yet. The training encouraged the use of such descriptive codes.

## 4.2 Demographics

Table 8 summarises characteristics of the study participants. Of the 43 study participants the majority (26, 60.5%) were female and median age was 34 years (inter quartile range [IQR]: 30-42). Median years of clinical experience was 5 years (IQR: 3-10) but only 3 participants (7.0%) had previous training in mental health or psychiatry. None of the study participants had any in-service training in mental health with most of the participants working either as a nurse midwife technician (19 (44.2%)) or as a medical assistant (20 (46.5%)).

**Table 8: Baseline characteristics of study participants**

Variable	Characteristic	n	%
Gender	Male	26	60.5
	Female	17	39.5
Age (years)	Median (IQR*)	34	30-42
Years of clinical experience	Median (IQR)	5	3-10
Previous Training in mental health/psychiatry?	Yes	3	7.0
	No	40	93.0
In-service training in mental health?	Yes	0	0.0
	No	43	100
Current role	Nurse midwife technician	19	44.2
	Medical assistant	20	46.5
	Clinical technician	1	2.3
	Community nurse	2	4.7
	Other	1	2.3

\* IQR: inter quartile range

### 4.3 Knowledge

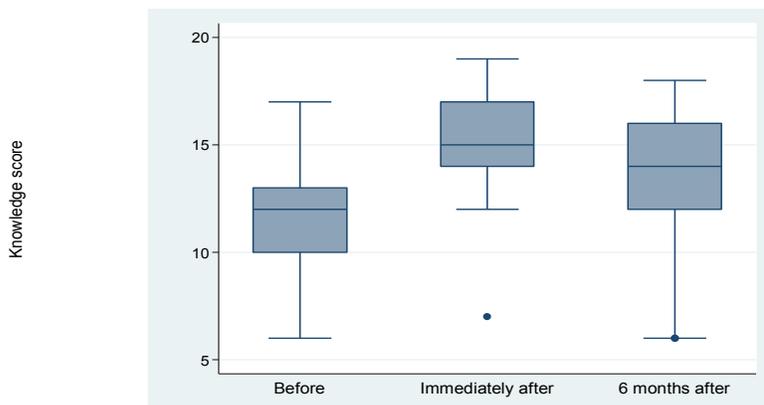
Using a paired-samples t-test, mean knowledge score immediately after and six months after training were compared to mean knowledge score before training. The mean knowledge score significantly increased from 11.8 (standard deviation [SD]: 0.33) before training to 15.1 (SD: 0.38) immediately after training; ( $t(42) = 7.79, p < 0.01$ ). Similarly, mean knowledge score was significantly higher six months after training (13.9, SD: 2.52) than before training ( $t(42) = 4.57, p < 0.01$ ) (Table 9). One-way analysis of variance (ANOVA) showed overall significant difference in mean knowledge scores before, immediately after and six months after training ( $F(2, 126, 0.05) = 22.1; p < 0.01$ ).

**Table 9: Knowledge test mean scores and Standard Deviation**

Phase	Mean	SD
Pre-training	11.8	0.33
Post-training	15.1	0.38
6 Months post	13.9	2.52

Figure 3 depicts a box and whiskers plot showing the distribution of knowledge scores before, immediately after and 6 months after training.

**Figure 3: Distribution of knowledge scores before, immediately after and 6 months after training**



#### 4.4 Confidence

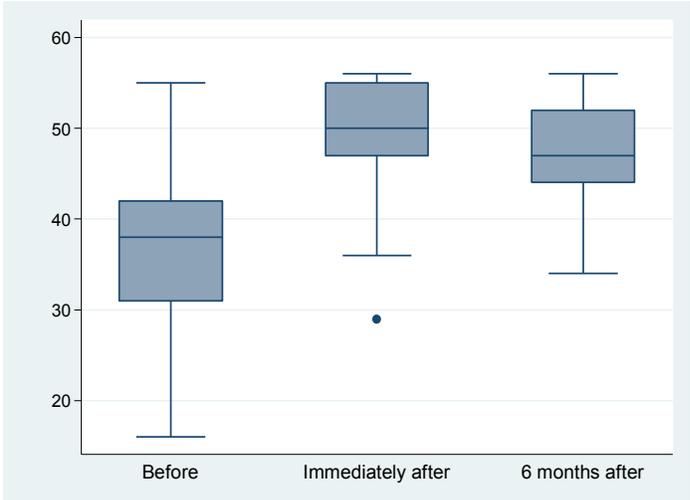
Based on a 4 scale Likert-type question coding, mean confidence score before training was 36.9 (SD 7.69). Using a paired-samples t test, mean confidence score immediately after and 6 months post training were compared to mean confidence score before training. The mean confidence score increased significantly from 39.9 (SD: 7.68) before training to 49.6 (SD: 06.14) immediately after training ( $t(84) = 8.43, p < 0.01$ ). Similarly, mean confidence score was significantly higher 6 months post training (46.8, SD: 6.03) than before training ( $t(84) = 6.60, p < 0.01$ ) (Figure 10). One-way ANOVA showed overall significant difference in mean confidence scores before, immediately after and six months after training ( $F(2, 126, 0.05) = 42.7; p < 0.01$ ).

**Table 10: Confidence test mean scores and Standard Deviation**

Phase	Mean	SD
Pre-training	39.9	7.68
Post-training	49.6	06.14
6 Months post	46.8	6.03

Figure 4 depicts a box and whiskers plot showing the distribution of confidence scores before, immediately after and 6 months after training.

**Figure 4: Distribution of confidence scores before, immediately after and 6 months after training**



**4.5 Attitudes**

The Full CAMI mean score before training and supervision was 127.3 (SD 8.93). Immediately after and 6 months after training there was a small change in in the mean CAMI score of 127.9 (SD 10.82) and 128.9 (SD 10.40) respectively. Table 11 shows full CAMI test mean scores and Standard Deviations before training, immediately after and after 6 month post training.

**Table 11: Full CAMI test mean scores and Standard Deviation**

Phase	Mean	SD
Pre-training	127.3	8.93
Post-training	127.9	10.82
6 Months post	128.9	10.40

Table 12 below summarises mean CAMI scores in the different phases of the study. One-way analysis of variance (ANOVA) showed that there was no overall significant difference in mean CAMI scores before, immediately after and 6 months after training in all four of the CAMI components. The F-test statistic and P-value for Authoritarianism, Benevolence, Social Restrictiveness and Community Mental Health Ideology were:  $F_{2, 126, 0.05} = 2.5; p = .09$ ,  $F_{2, 126, 0.05} = 0.1; p = .9$ ,  $F_{2, 126, 0.05} = 0.1; p = .9$ ,  $F_{2, 126, 0.05} = 0.1; p = .9$ .

126, 0.05 = 0.03;  $p = 1.0$  and  $F_{2, 126, 0.05} = 0.04$ ;  $p = 1.0$ , respectively. No pair-wise comparisons with t-tests were undertaken following the results from ANOVA. Thus, there was no significant improvement in attitude of health workers towards the mentally ill even after training in all four CAMI components.

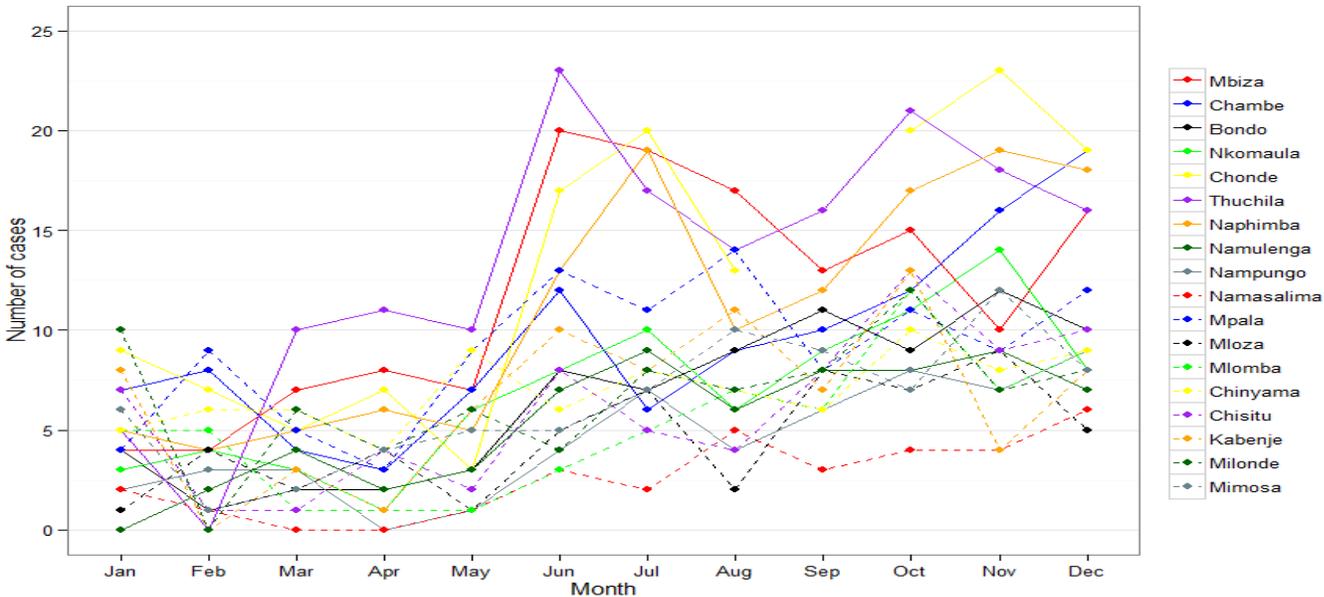
**Table 12: CAMI sub-scales test mean scores and Standard Deviation**

	Before training		Immediately after training		six month after training	
	Mean	SD	Mean	SD	Mean	SD
Authoritarianism	33.1	4.49	35.3	4.66	34.1	4.72
Benevolence	34.3	4.51	34.4	4.27	34.0	4.16
Social Restrictiveness	27.9	4.83	27.8	5.00	27.7	4.23
Community Mental Health Ideology	32.0	3.92	31.7	4.75	32.0	4.69
Full CAMI	127.3	8.93	127.9	10.82	128.9	10.40

#### 4.6 Interrupted time series analysis

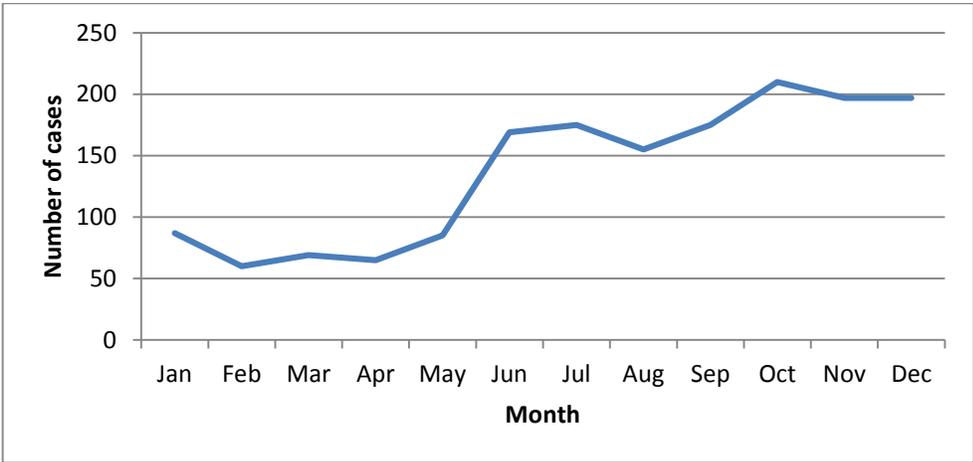
Figure 5 shows number of mental health cases per month in each of the 18 centres in the months before (Jan-May) and after (Jun-Dec) training. There was an increase in the number of cases seen by primary healthcare workers in almost all health centres following training. The majority of the increases was in Naphimba, Thuchira, Mbiza and Chonde. For example, Naphimba went from seeing 5, 4 and 5 cases in the months of January, February and March respectively to seeing 17, 19, and 18 cases in the months of October, November and December respectively. The least change in the number of cases per month was in Namasalima and Chinyama where the number of cases remained almost the same in the six months before and after the training. The figure also shows a rapid increase in the number of cases from June, which is the month when the training took place.

**Figure 5: Number of cases per month in each health centre**



In months January to May (before training), median number of cases was 77 (inter quartile range [IQR]: 65-87) whereas after training (months June to December) median number of cases was 186 (IQR: 175-197) showing a significant increase in median number of cases before and after the training; p-Value=0.001 (from Wilcoxon Rank Sum Test).

**Figure 6: Total number of cases per month**



The results can also be shown in a box and whiskers plot below

**Figure 7: Box and whiskers plot of number of cases in the months before and after training**



Figure 8 below compares median number of cases in the baseline (0-5 months pre training from January to May, 2014), in the months immediately after training (0-3 months from June to August, 2014) and 4-7 months after training (September to December, 2014) in each of the 18 health centres. The graph helps us to see the trend in each clinic over time. The figure shows an upward increase in the median number of cases from baseline to 4-7 months post training in almost all health centres except Kabenje, Mpala, and Mbiza which shows a decrease in the median number of cases from 0-3 months post training to 4-7 months post training and Thuchira in which the median number of cases remained constant from 0-3 months post training to 4-7 months post training.

Figure 8: Change in Median Number of Cases over Time

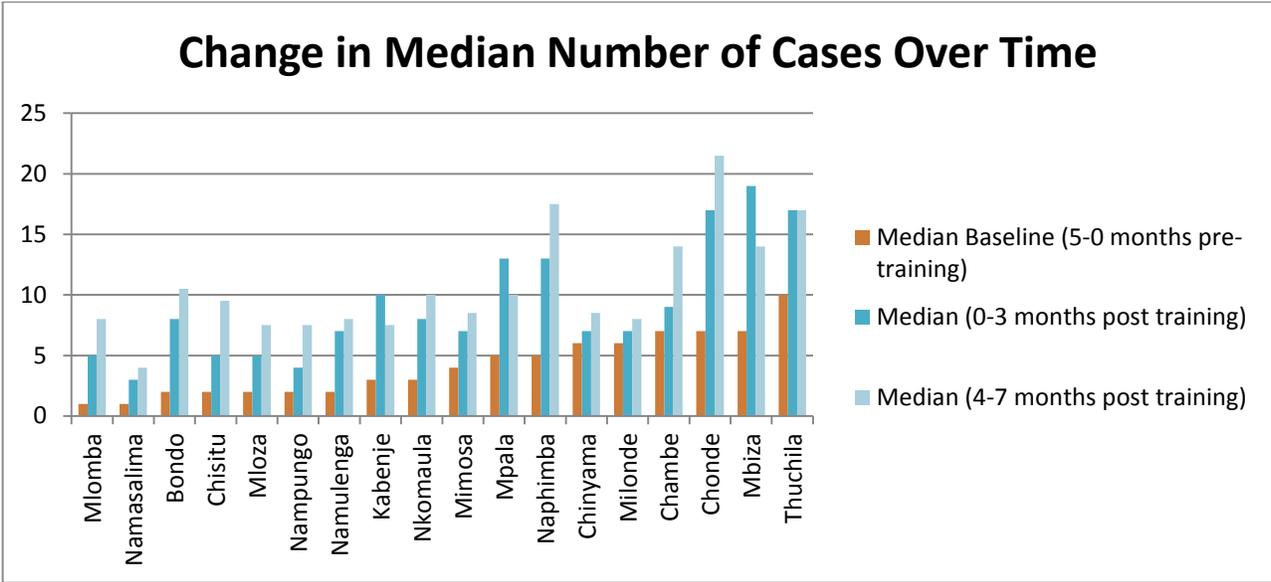
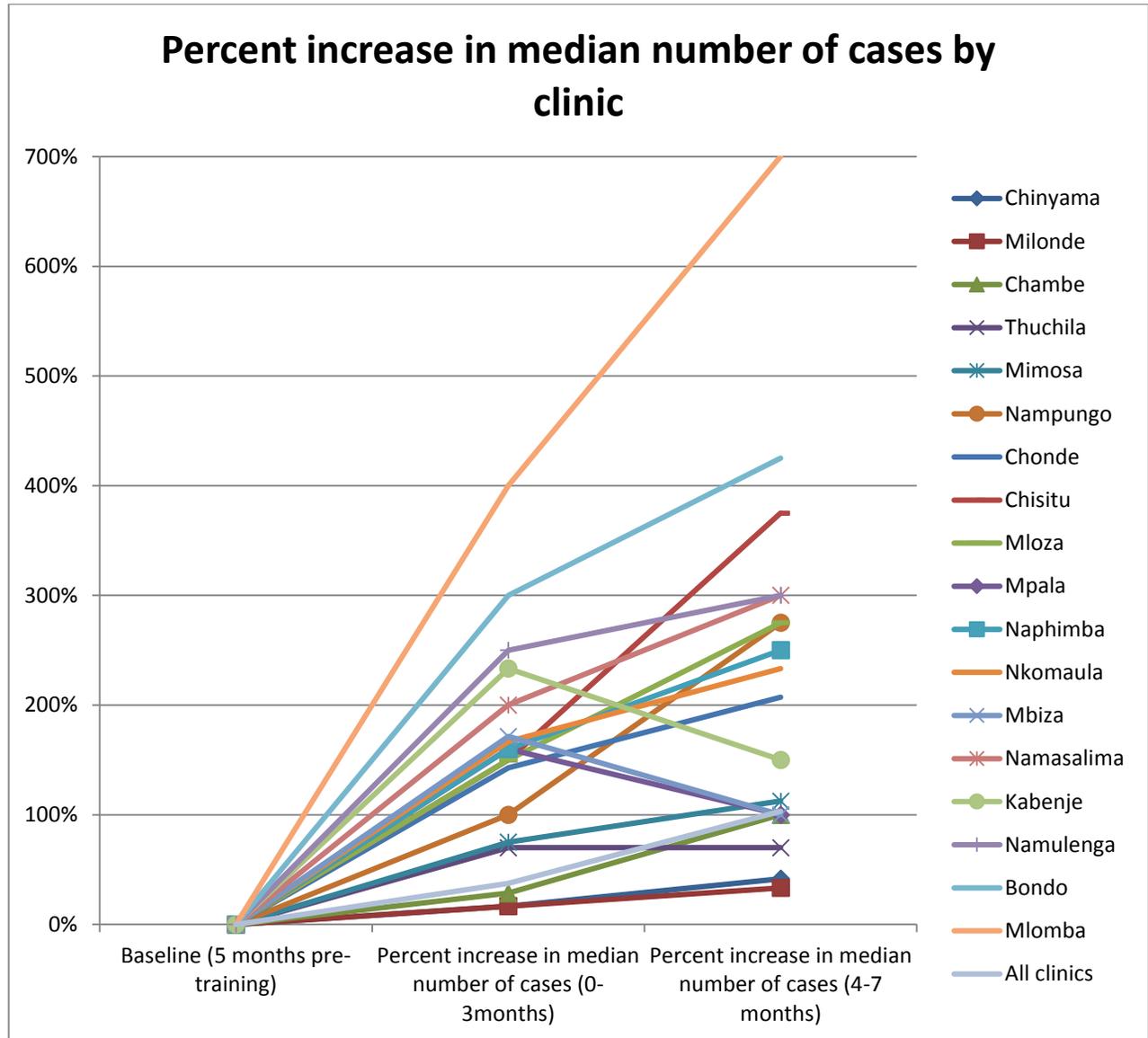


Figure 9 shows percentage increase in median number of cases by clinic. This was done by standardising the number of clinics by baseline number of cases. The percentage increase in the median number of clinics was done between the baseline period (Jan- May) and 0-3 months after training (Jun, Jul, Aug) and the baseline period (Jan- May) and 4- months post training (Sept, Oct, Nov & Dec) and graphed. The graph shows a trend that the increase in number of cases occurred in the post-training period but continued to increase further in the following 6 months in most of the clinics.

Figure 9: Percentage increase in median number of cases by clinic



The only clinics that showed a downward trend were Mloza, Mpala, kabenje and Mbiza in the 4-7 months after training.

#### 4.7 Major observations during supervision

The following observations (table 13) were made during the first three months of supervision

from the field notes collected by the researcher:

**Table 13: Major observation during supervision**

MONTHS	OBSERVATIONS
<b>FIRST MONTH</b>	<ul style="list-style-type: none"> <li>• PHWs were eager to implement the knowledge gained and practice their skills</li> <li>• The supportive nature of the supervision increased the morale of many PHW</li> <li>• Despite the great enthusiasm, most participants were waiting to offer their services to severely sick people with obvious mental health problems. This was rectified by reminding the PHWs to also identify those at risk of developing mental health problems such as severely sick people, frequent clinic attenders and those with vague physical complaints.</li> <li>• There were still some complaints by a few participants of huge caseload and limited time for effective mental health practice</li> <li>• Medication availability was much better with nearly all health centres having enough stocks of essential psychotropic drugs.</li> </ul>
<b>SECOND MONTH</b>	<ul style="list-style-type: none"> <li>• Participants were still eager to implement knowledge gained and practice their skills</li> <li>• The number of cases seen by PHWs continued to increase. The commonest cases seen were depression, psychotic disorders and substance related disorders. Depression was over diagnosed by some PHW who tended to attribute any negative experience in those seeking services to depressive reaction, even though the presentation was different. Such PHWs were reminded of what they learned during training.</li> <li>• The medication situation in most health centres was encouraging to practice mental health.</li> </ul>
<b>Third month</b>	<ul style="list-style-type: none"> <li>• PHWs continued seeing and helping cases with various mental health problems. The quality of diagnoses for depression improved significantly.</li> <li>• Cases of delirium, stress reactions to baby's sex in maternity and positive HIV status in HTC, started coming in.</li> <li>• The medication situation in most health centres continued to be encouraging promoting effective mental health practice.</li> </ul>

## CHAPTER 5: DISCUSSION

The current study was an evaluation of mhGAP training for primary healthcare workers in Mulanje, Malawi. The discussion section will present the main findings from the study, the relationship of the study findings with literature, limitations of the study, recommendations for future research and recommendations for policy and practice.

### 5.1 Main findings for each objective

The first objective was to conduct a structured literature review on studies that have evaluated mental health training interventions for primary healthcare workers in Sub-Saharan Africa. After an intensive search of three search engines and screening for relevance, only twelve studies were found to directly evaluate the introduction of a mental health training and/or supervision intervention in primary healthcare. five of the studies evaluated the same intervention but used different methodologies. This indicates a lack of evaluation studies of interventions for integrating mental health into primary care in Africa. Although the 12 studies on the whole showed improvement in a number of outcomes, there was a dearth of studies that attempt to control for confounding in the evaluation of their interventions and only one study (Jenkins, Kiima, Njenga, et al., 2010) looked at change in attitudes of primary healthcare workers as a measure for effectiveness of a mental health intervention.

The second objective was to determine changes in knowledge, attitude and confidence of primary healthcare workers as a result of the mhGAP training immediately after and 6 months post. The results showed a significant change on knowledge and confidence scores but not attitudes.

The third objective was to establish whether post-intervention knowledge, confidence and attitudes regarding the assessment and management of major mental illness amongst primary healthcare workers are retained at 6 months post-training. From the findings of the study, the increase in knowledge and confidence was retained at 6 months post-training. As with the immediate follow-up, the attitudes of primary healthcare workers at 6 months after training remained largely unchanged.

The last objective of the study wanted to determine whether training and supervision increases the number of people diagnosed with mental disorders by primary healthcare workers. On the whole, the training showed an increase in the majority of the health centres.

## 5.2 Relationship of the study findings with literature

The findings of this study are consistent with the reviewed literature where both knowledge (Sokhela, 1999; Jenkins, Kiima, Njenga, et al., 2010) and confidence (Wright et al., 2013) of primary health care workers have been found to improve significantly after a mental health training intervention. The results are also consistent with Kauye, Jenkins & Rahman (2014) who found an increased number of diagnosed mental health cases after an intervention. However Kauye, Jenkins & Rahman (2014) only looked at changes in the number of cases for depression. It is interesting that while it is possible to improve confidence and knowledge in primary care workers, their attitudes are much more difficult to change. This has been shown in this study in which no significant change in attitudes before and after the training was found. Unfortunately, only one study from sub-Saharan Africa looked at changes in attitude of health workers following a mental health training intervention. The study reported an improvement in both knowledge and attitudes in the first 1000 PHC workers trained (Jenkins, Kiima, Njenga, et al., 2010). However international

studies have produced contradicting results about the effect of a mental health training on attitudes of health workers, with most studies (Al-Khathami, Sheikh, Mangoud, Abumadini, & Main, 2003; Li, Li, Huang, & Thornicroft, 2014; McLeod, Deane, & Hogbin, 2002; Premalatha Chinnayya et al., 1990) obtaining a significant change in attitude after a mental training.

There might be a number of factors which contributed to the lack of change in attitudes of primary healthcare workers in Mulanje. Firstly, it is possible that the training package was mainly tailored towards improving knowledge of primary healthcare workers rather than changing their attitudes. As part of the training, a 30 minutes film depicting a story of someone who had a mental illness but eventually recovered and is now a very important member of society was shown. The film was then followed by a speech from a member of MeHUCA who stressed the need for primary healthcare workers to be pioneers in the recovery of the mentally ill and to distance themselves from the stigma and discrimination that are directed towards the mentally ill. The speech was followed by comments and questions from the primary healthcare workers on how it is living with a mental illness. Both the inclusion of the film and the involvement of MeHUCA was one way of trying to change the negative attitudes that some health workers might have towards mental illness. From the results, it seems that this was not enough to significantly change the attitudes of the primary healthcare workers. One suggestion is to include a unit in the training package about stigma and discrimination and its effect on recovery of the mentally ill.

Secondly there might be some barriers that influence attitude change among health professionals. Health workers may have deep rooted negative culturally enshrined beliefs about mental illness embedded in their community. This may influence how they view the mentally ill. Mental health Community sensitization programmes may assist in breaking the stigmatized beliefs about

mental illness that a community may hold. A study found that other barriers to attitude change among general nurses including a view that treatment of mental illness is not their role, fear of the mentally ill which might lead to avoidance, lack of support and security from work, time constraints and lack of skills and knowledge about mental illness (Reed & Fitzgerald, 2005). The study further proposes collaboration with mental health nurses as one way of increasing competent and reducing fear that general nurses might have. It also suggested trainings tailored to increase knowledge and reduce stigma (Reed & Fitzgerald, 2005).

There are number of factors that can explain changes in the number of cases seen in this study. Firstly, the changes may be because of the new clinical skills that the PHW were given. It is possible that after the training, the PHW were actively looking for mental health cases. Before the training PHW were waiting for clients to show or present severe signs and symptoms of mental disorders to be diagnosed. But after the training, the PHW became aware that anyone coming to a clinic can have a mental problem even if they are not showing symptoms that one can easily identify such as aggressiveness, hallucinations or delusion. By asking a few screening questions, it is possible to detect a number of mental disorders before they become severe. A number of studies from the literature review have shown improvement in detection and diagnostic skills after a training (Jenkins, Kiima, Okonji, et al., 2010; Petersen, 1999). Another study showed improved completed histories and correct diagnosis after training (Sokhela, 1999).

The second factor can be the on-going supervision. Each and every health centre in Mulanje was visited once a month for three consecutive months after the training by the DMHT. During the outreach clinics, the DMHT just observed how the PHW were dealing with different mental health cases and provided advice and mentorship where needed. They also helped the PHW to manage

difficult cases. This arrangement was different from what was happening before the training where the DMHT could go to a health centre and start conducting a mental health clinic while the PHW were seeing patients with other conditions. The role of the DMHT changed from running clinics at health centres during outreach clinics to providing advice and mentorship. The fact that the PHW were aware that they could ask for advice and get more information from the DMHT anytime, either when they came for outreach clinics or through a phone call, might have also increased their confidence in dealing with different cases. SMMHEP sponsored the initial three months of supervision by providing transport to enable DMHT reach all the health centres. After the three months of SMHHEP sponsorship, it was agreed that the DMHT would be using their normal routine community outreach visits which were already in place before the training. This raises a bit of a concern on the sustainability of the project since before the training, the outreach visits to health centres by DMHT were very irregular. From baseline data collected, some health centres could go up to 4 or even 5 months without being visited. A number of factors including transportation problems contributed to this. A discussion was carried out with the Mulanje district health officer (DHO) on the sustainability of the project and the need for outreach clinics to continue smoothly in order to enable supervision to continue. The Mulanje DHO pledged support for the project and to ensure that transportation is available for the DMHT.

In addition, improved supply of medication at primary health centre level can also be another factor that can explain changes in the number of cases seen. The project lead to increased availability of essential psychotropic drugs in health centres in Mulanje. The district pharmacy technician agreed to supply each health centre one bottle of each essential psychotropic drugs available as a starter pack and monitor their usage. PHW were told to be ordering more drugs directly from the district

pharmacy whenever they were about to run out of the drugs given. The starter pack contained one bottle of Amitriptyline 25mg, Benzhexol 5mg, Carbamazepine 200mg, Chlorpromazine 25mg, Diazepam 5mg, and Phenobarbitone 30mg. A visit to each health centre after the training confirmed that the drugs were available. This was a positive development and it further demonstrates the impact of the training.

The number of cases might have also increased because the PHW were motivated to implement the skills they acquired. When the training was introduced and also during the first day of training, most PHW were concerned about the implications for their work load. To them the training represented just another burden. Some argued that they could see up to 300 clients per day in their clinics and including the long assessment done in mental health might not work. The PHW were assured that in a long run improved diagnosis and treatment might actually reduce their workload by reducing the number of frequent clinic attendees who might have a mental illness but failed to be detected and properly managed. The PHW were also told to reschedule some assessments to a more suitable time whenever they notice that they have a long queue but also have a client who will require much of their time. A suggestion was in the afternoons since they are less busy compared to morning times. In the end, the PHW were very interested and were motivated to try and use the skills that the training provided in their everyday practice.

Because of the use of time series analysis where multiple measurements were taken, we are able to see a trend in case identification in the months before and after training. This would have not be possible if only quasi-experiment methodology was used. The time series results shows a trend that the increase in number of cases occurred in the post-training period but continued to increase further in the following 6 months in most of the clinics. These findings compliment the results of

the knowledge and confidence tests and demonstrate that a change in knowledge and confidence of PHWs combined with supervision can lead to an increase in case identification of mental disorders. Therefore, the inclusion of time series analysis has enable us have a better understanding of the results.

Although there was an upward trend in case identification in most of the clinics, there were still some clinics with a downward trend (Mloza, Mpala, Kabenje and Mbiza). A number of reasons might explain why this happened in some of these health centres. For Mpala it can be because it is near Mulanje district hospital (just 5 km from the district hospital). It may be possible that a lot of people may prefer getting treatment from the district hospital since they can easily get to it and are assured of finding enough medication and specialists. In Mloza, one of the two PHW who attended the training was on holiday for a long period of time following training. This might also have had an effect on case identification as it was only left for one person to deal with the huge number of clients that visit the health centre. The level of motivation of PHW might also have had an impact on the number of cases of mental disorders identified. It is possible that PHWs in the affected health centre were not motivated enough to implement the skills they had acquired or couldn't retain the knowledge after some months.

### 5.3 Weakness of the Training package

The first weakness of the training package is that it left out many other mental disorders that are part of the mhGAP intervention guide and that PHW might also encounter. This includes mental disorders such as dementia, developmental and behavioural disorders and epilepsy. This means that the PHW had skills in the detection and management of some mental disorders but not all.

Including all the mental disorders that are part of the mhGAP intervention guide could have made the training stronger since PHW could have been able to detect and manage a variety of mental disorders.

Secondly, the two days given to conduct the training was not enough considering the volume of the materials that was supposed to be covered. Three days would have been ideal. By limiting the number of days to do the training, participants didn't have enough time for some more practical exercises. In some cases, the DMHT rushing through the materials to keep up with time and enable PHW travel to their respective destination at a good time.

#### 5.4 Strengths of the Mulanje Model

The findings of this study indicate that the Mulanje model has the potential to be taken to scale across Malawi. The following are the main strengths of the Model:

Firstly, the model can be easily be embedded into the routine training structure of a district. The training can be delivered in three days and can be part of continuous professional development. Similarly, supervision can be done through already existing outreach clinics. This means that a district doesn't have to put in place completely new structure for the model to work. It can be done within the already existing system.

Secondly, the training is sustainable. This is because it uses DMHT in a particular district to deliver the training package and supervision rather than using outsiders. In this way, refresher trainings and training of new primary health workers in a district can easily be done by the DMHT. By using DMHT as trainers it means the expertise stays in a particular district. The use of outreach clinics for supervision also means that the DMHT continuously monitor and mentor PHW.

Thirdly, the training uses materials that are evidence based and adapted for use in a Malawian setting. This means that we are not just importing something foreign but we are using something that is relevant to the Malawi setting. All examples used including role plays depicted typical Malawian situations.

Despite the above strengths, a number of factors are important for the success of the training. Firstly it relies a great deal on the commitment and support from the district management health team which is headed by a district health officer. The management team need to ensure that resources are available so that the DMHT is trained to deliver the material to PHW. Bringing together PHW to be trained also requires the management team to cover some expenses (transport refunds, accommodation refunds and lunch allowances).

Secondly there is a need for psychotropic drugs to be supplied to all health centres. Drug availability is a crucial part for the success of the model. Without supplying health centres with essential psychotropic drugs, the PHW cannot be able to practice the skill acquired during training and consequently the project cannot be sustained and is very likely to fail (Jenkins, et al., 2013).

Thirdly, supervision is also an integral part of the model. The sustainability of the project relies on the DMHT to be able to travel to health centres to monitor and mentor PHW. This means an active outreach community system should be in place. For examples in a study done in Kenya, participants mentioned lack of supervision and support as one of the main challenges preventing them from applying the skills learned during training (Jenkins, et al., 2013).. Transportation also needs to be readily available to carry members of the DMHT to health centres for supervision.

Fourthly the DMHT needs to be motivated and committed to deliver the training and supervise PHW. The DMHT needs to be conversant and familiarise themselves with the training material in order to install confidence in PHW. The DMHT needs to be ready to travel to different health centres constantly to supervise PHW. They also need to be readily available to offer advice and continuously mentor PHW. This entails choosing members of DMHT who are motivated to improve mental health service delivery in their district.

### 5.5 Limitations of the study

A number of limitations can be observed from the study.

Firstly, the sample size used in the study was very small to confidently generalise the finding to the whole population of Malawi. Unfortunately, it wasn't possible to increase the sample size as the researcher used a total enumeration of primary healthcare workers in Mulanje.

Secondly, the method used to evaluate the training can be susceptible to confounders. The researcher used a quasi-experiment type of research methodology. Using such methodology it is difficult to infer causality with the same level of confidence as a randomised control trial where one has both a control and intervention group (Harris et al., 2006). There might be other confounding variables other than the intervention itself affecting the outcome. An example of confounder in this case might be age, sex, or another training. The researcher tried to reduce confounders by also using an interrupted time-series design for case identification that enables multiple measurements before and after training to be made.

Thirdly, for case identification the researcher just used the total number of mental health cases per month for the 6 months before and after training instead of comparing cases for each major

disorder (Moderate-severe depression, Alcohol and drug use disorder and psychosis) that were covered in the training package. It was impossible to separate the individual disorders as only two codes (Acute and chronic psychosis) were used in clinical registers found in different health centres in Mulanje prior to the intervention. By just taking the total number of cases per month, it is difficult to rule out possibility of also including mental health disorders not covered in the training package.

Fourthly, the study was only able to assess the changes in the number of people diagnosed but not assess whether they were accurately diagnosed.

Another limitation is not being able to link each health care worker to the number of patients they saw. This makes it difficult to know if the ones who had the poor attitudes, or poor knowledge or low confidence were responsible for lower case detection rates. It may have been that increases in case detection were due to other health system factors such as increased medication supply.

Lastly, there was no way of monitoring whether all healthcare workers diligently filled HMIS form. Also the PHW were encouraged to do so during training and supervision, without a good way of monitoring, the fidelity of filling the HMIS forms can be another possible area for confounding.

## 5.6 Future research

Although this study provide a lot of insight on the impact of mhGAP training on primary healthcare workers there is still a lot of room for further research:

Firstly, there is a need to evaluate the proposed roll out of mhGAP training in the remaining four districts (Thyolo, Machinga, Nsanje and Ntcheu) in Malawi. The results for the other districts should be compared with the findings of this study to see if mhGAP training and supervision will produce similar results.

Secondly, a randomised controlled trial would be ideal to evaluate similar types of trainings. A researcher can compare results for primary healthcare workers from health centres that have undergone training and supervision with primary healthcare workers from health centres not involved in the training but from the same district. By having both an intervention and a control group, a researcher can rule out the effect of other confounders on results. Such research can strengthen evidence of effectiveness of mhGAP training and supervision.

Thirdly, further studies need to look at attitudes of primary healthcare workers towards the mentally ill and factors that predispose such attitudes. This can help to come up with mental health training packages that not only seek to improve the knowledge, confidence and detection rate but also change attitudes of primary healthcare workers towards mental illness and the mentally ill.

Moreover, the quantitative results found from this study need to be complimented by qualitative studies targeting end-users. Studies have indicated that patients' and relatives' (guardians) satisfaction with mental health services is an important measure of quality and outcome of treatment (Ruggeri, 1994). Another study discovered that enhanced health worker skills and knowledge conferred by mental health training significantly improved the outcomes for patients (Othieno et al., 2013). Therefore, there is a need for further research to ascertain attitudes, perspectives and concerns among patients and their carers towards mental health services provided at health centres that were involved in the mhGAP training. This can be done through focus group discussions with patients and carers from health centres that were involved in the training.

In addition, qualitative research can also be done to ascertain the impact of the training on primary care workers in terms of their day-to-day clinical practice. Focus group discussions can be conducted with primary healthcare workers that took part in the training and supervision. Areas of discussions can revolve around various aspects of training, benefits perceived and challenges encountered in implementing skills and knowledge acquired during training. Time and motion studies can also be used to assess the impact of new clinical skills on routine clinical practice (and potentially the opportunity cost for other health conditions) (Cofiel, Bassi, Ray, Pietrobon, & Brentani, 2013).

Moreover, future research should assess the accuracy of primary care providers' diagnoses compared to a gold standard, such as specialist clinicians' assessment rather than just assessing the changes in the number of people diagnosed. This can enable researchers to assess whether the diagnoses made by PHW after training are accurate.

Outcomes of this study have focused on knowledge, confidence, attitudes and detection. But they have not shown that the services provide actually lead to improvements in clinical outcomes for patients. The next step would be to examine whether patients who receive care in these primary care settings actually improve their clinical, social (and even economic) circumstances. This would be best evaluated using RCTs.

Lastly, future researchers can improve on the results by increasing the sample being evaluated. This can enable better generalisation of the results.

## 5.7 Recommendations for policy and practice

The findings of this study add to the growing evidence for policy makers of the impact of mental health training and supervision. The results show quite striking improvements in the knowledge, confidence and detection of severe mental illness in primary care in Mulanje and hence show the potential for narrowing the treatment gap by rolling out mhGAP nationally in Malawi. The study has demonstrated that the mhGAP training is valuable even in a country with a weak health system and inadequate medical supply by impacting primary healthcare workers with knowledge that they can use not only to identify and manage mental illness but also to refer cases to secondary level. However, there is a need to carefully monitor and evaluate the programme. The following are recommendations for policy and practice:

Firstly, policy makers need to be committed to the integration of mental health into primary healthcare by supporting the further roll out of the mhGAP training into other districts in Malawi. All primary healthcare workers in all of the 28 districts in Malawi need to go through such training and be provided with ongoing supervision in order to narrow the mental health treatment gap that exists in Malawi. This entails providing resources for training more mental health experts at a secondary level in all districts so that they can deliver the training package to primary healthcare workers from health centres. The Government should ensure that ongoing mental health training for primary healthcare workers is included in the normal routine training structure of the Malawi health system (as part of continuous professional development) and also ensure that on-site support supervision of primary health care workers by district level staff is always provided through outreach teams. This will ensure that every primary healthcare worker is trained, prevent knowledge loss among those trained over time and ensure sustainability of the trainings. This

however means strengthening both routine training structures and the outreach clinics at the district level. As observed from the study, outreach clinics are usually hindered by a number of factors including transport problems which hospital administrators and government need to look into so that an efficient transport structure exists between the primary and secondary level.

Secondly, there is a need to incorporate mental health training in the education curriculum of all health and social workers. Every health worker needs to have basic knowledge on how to detect and manage mental illness (WHO, 2008). This means making mental health a prerequisite for every health professional. Such knowledge can then be complimented by on-going mental health trainings in all hospitals and clinics.

Thirdly, mental health training should not only aim at improving the knowledge and confidence of primary healthcare workers but also at changing negative attitudes that may exist among health workers. This entails having more elements in the training package that aim at changing the overall attitude of primary health care workers so that they are able to accept and support the mentally ill. This can ensure that primary healthcare workers are comfortable dealing with people who are mentally ill and that they don't question their role in managing mental disorders.

Fourthly, the ministry of health needs to introduce a better way of recording mental health cases in clinical registers. As seen from the data collected from this study there were only a very small number of more descriptive diagnoses recorded in health centre clinical registers. Only two diagnoses of acute and chronic psychosis were used to encompass all the conditions that the health workers encountered. This makes it difficult to know the prevalence of various mental disorders as a diagnosis of chronic psychosis for example can stand for a number of specific diagnoses. This can

also make it tricky when deciding which drugs to prioritise or which mental disorder needs more intervention. There was a change in the way the primary healthcare workers registered their data after the training as they started using more descriptive codes such as schizophrenia, depression and mania. This was an important development and it further demonstrates the positive impact of the mhGAP training. The ministry of health needs to introduce new codes that correspond to the recent international classification of disorders (ICD10) (WHO, 1992) in all hospitals and health centres in order to enable better record keeping and planning for mental health services.

In addition, it is important for basic psychotropic drugs to be made readily available at a primary care level for the sustainability of the intervention. District health management teams should ensure that sufficient funds are available to purchase essential psychotropic drugs and ensure that these drugs are distributed to all primary level health centres. Each hospital pharmacy needs to involve district mental health coordinators in the decision of which psychotropic drugs to procure. Psychotropic drugs should always be included on the Essential Drug List.

Lastly, there is also the need to strengthen the communication system between primary and secondary health level so that consultation can be easily made. Every primary health centre should have a means to quickly communicate with experts at secondary level for support and advice in dealing with different cases.

## 5.8 Conclusion

The current study aimed at evaluating mhGAP training for primary health care workers in Mulanje, Malawi. The finding shows a statistically significant increase in knowledge and confidence mean scores after training and supervision (immediately after and 6 months after) as compared to before. Moreover, there was also an increase in case identification of mental disorders in the seven months

following training and supervision. However, no significant increase in the mean attitude scores was found immediately after or 6 months after training.

The study demonstrates the potential for narrowing the treatment gap by rolling out mhGAP training nationally in Malawi. The findings of this study add to the growing evidence for policy makers of the effectiveness of mental health training and supervision of primary care workers in a resource-constrained country. Further research is needed to evaluate factors that may lead to change in health worker attitudes, to evaluate training and supervision programmes using more robust evaluation designs, such as randomised controlled trials, and to assess the scale up of mhGAP programmes at larger population levels.

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# APPENDICES

## Appendix 1: Quality Assessment Tool for Quantitative Studies

### QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

#### COMPONENT RATINGS

#### A) SELECTION BIAS

**(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?**

- 1 Very likely
- 2 Somewhat likely
- 3 Not likely
- 4 Can't tell

**(Q2) What percentage of selected individuals agreed to participate?**

- 1 80 - 100% agreement
- 2 60 - 79% agreement
- 3 less than 60% agreement
- 4 Not applicable
- 5 Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

#### B) STUDY DESIGN

**Indicate the study design**

- 1 Randomized controlled trial
- 2 Controlled clinical trial
- 3 Cohort analytic (two group pre + post)
- 4 Case-control
- 5 Cohort (one group pre + post (before and after))
- 6 Interrupted timeseries
- 7 Other specify
- 8 Can't tell

**Was the study described as randomized? If NO, go to Component C.**

No Yes

**If Yes, was the method of randomization described? (See dictionary)**

No Yes

**If Yes, was the method appropriate? (See dictionary)**

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3
No	Yes		

#### C) CONFOUNDERS

**(Q1) Were there important differences between groups prior to the intervention?**

- 1 Yes
- 2 No
- 3 Can't tell

**The following are examples of confounders:**

- 1 Race

- 2 Sex
- 3 Marital status/family
- 4 Age
- 5 SES (income or class)
- 6 Education
- 7 Health status
- 8 Pre-intervention score on outcome measure

**(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g. stratification, matching) or analysis)?**

- 1 80 – 100% (most)
- 2 60 – 79% (some)

- 3 Less than 60% (few or none)
- 4 Can't Tell

RATE THIS SECTION	STRONG	MODERATE
See dictionary	1	2

**D) BLINDING**

**(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?**

- 1 Yes
- 2 No
- 3 Can't tell

**(Q2) Were the study participants aware of the research question?**

- 1 Yes
- 2 No
- 3 Can't tell

RATE THIS SECTION	STRONG	MODERATE
See dictionary	1	2

**E) DATA COLLECTION METHODS**

**(Q1) Were data collection tools shown to be valid?**

- 1 Yes
- 2 No
- 3 Can't tell

**(Q2) Were data collection tools shown to be reliable?**

- 1 Yes
- 2 No
- 3 Can't tell

RATE THIS SECTION	STRONG	MODERATE
See dictionary	1	2

**F) WITHDRAWALS AND DROP-OUTS**

**(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?**

- 1 Yes
- 2 No

- 3 Can't tell
- 4 Not Applicable (i.e. one time surveys or interviews)

**(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).**

- 1 80 -100%
- 2 60 - 79%
- 3 less than 60%
- 4 Can't tell
- 5 Not Applicable (i.e. Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	NotApplicable

**G) INTERVENTION INTEGRITY**

**(Q1) What percentage of participants received the allocated intervention or exposure of interest?**

- 1 80 -100%
- 2 60 - 79%
- 3 less than 60%
- 4 Can't tell

**(Q2) Was the consistency of the intervention measured?**

- 1 Yes
- 2 No
- 3 Can't tell

**(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?**

- 4 Yes
- 5 No
- 6 Can't tell

**H) ANALYSES**

**(Q1) Indicate the unit of allocation (circle one)**

community    organization/institution    practice/office    individual

**(Q2) Indicate the unit of analysis (circle one)**

community    organization/institution    practice/office    individual

**(Q3) Are the statistical methods appropriate for the study design?**

- 1 Yes
- 2 No
- 3 Can't tell

**(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?**

- 1 Yes
- 2 No
- 3 Can't tell

**GLOBAL RATING**

**COMPONENT RATINGS**

Please transcribe the information from the gray boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

<b>A</b>	<b>SELECTION BIAS</b>	<b>STRONG</b>	<b>MODERATE</b>	<b>WEAK</b>	
		1	2	3	
<b>B</b>	<b>STUDY DESIGN</b>	<b>STRONG</b>	<b>MODERATE</b>	<b>WEAK</b>	
		1	2	3	
<b>C</b>	<b>CONFOUNDERS</b>	<b>STRONG</b>	<b>MODERATE</b>	<b>WEAK</b>	
		1	2	3	
<b>D</b>	<b>BLINDING</b>	<b>STRONG</b>	<b>MODERATE</b>	<b>WEAK</b>	
		1	2	3	
<b>E</b>	<b>DATA COLLECTION METHOD</b>	<b>STRONG</b>	<b>MODERATE</b>	<b>WEAK</b>	
		1	2	3	
<b>F</b>	<b>WITHDRAWALS AND DROPOUTS</b>	<b>STRONG</b>	<b>MODERATE</b>	<b>WEAK</b>	
		1	2	3	Not Applicable

**GLOBAL RATING FOR THIS PAPER (circle one):**

- |   |          |                            |
|---|----------|----------------------------|
| 1 | STRONG   | (no WEAK ratings)          |
| 2 | MODERATE | (one WEAK rating)          |
| 3 | WEAK     | (two or more WEAK ratings) |

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No      Yes

If yes, indicate the reason for the discrepancy

- |   |   |
|---|---|
| 1 | Oversight                                 |
| 2 | Differences in interpretation of criteria |

**Final decision of both reviewers (circle one):**

- |   |  |
|---|--|
| 1 | <b>STRONG</b>                          |
| 2 | <b>MODERATE</b>                        |
| 3 | <b>WEAK</b>                            |
| 3 | Differences in interpretation of study |

## SUPERVISION POST-MHGAP TRAINING

<p><b>Date</b> ____ / ____ / _____</p> <p><b>ID No.</b> [ ] [ ] [ ]</p>	<p><b>Discipline of trainee:</b></p> <p><input type="checkbox"/> Clinical Health Officer</p> <p><input type="checkbox"/> Medical Assistant</p> <p><input type="checkbox"/> Nurse</p> <p><input type="checkbox"/> Other (specify) _____</p>
<b>Rater</b>	<b>Health Facility:</b>

1.	Type of case observed/ discussed (write brief outline of case)	Not observed	0
		Schizophrenia	1
		Bipolar Disorder	2
		Delirium	3
		Psychosis NOS	4
		Depression	5
		Alcohol use disorder	6
		Other	7
2.	Communication skills (e.g. respectful, empathic)	Not observed	0
		Major need for improvement	1
		Some need for improvement	2
		Adequate	3
		Good	4
		Very good	5
3.	Assessment of symptoms and diagnosis (summarise briefly)	Not observed	0
		Major need for improvement	1
		Some need for improvement	2
		Adequate	3
		Good	4
		Very good	5
4.	Risk assessment (give brief description)	Not observed	0
		Major need for improvement	1
		Some need for improvement	2
		Adequate	3
		Good	4
		Very good	5
5.	Appropriate assessment of physical health (outline what examinations/ investigations were performed if any)	Not observed	0
		Major need for improvement	1

		Some need for improvement	2
		Adequate	3
		Good	4
		Very good	5
6.	Safe prescribing of appropriate medication (give details of medication given, dose and duration)	Not observed	0
		Major need for improvement	1
		Some need for improvement	2
		Adequate	3
		Good	4
		Very good	5
7.	Appropriate use of psychosocial intervention (describe briefly, e.g. psycho-education, counseling etc)	Major need for improvement	1
		Some need for improvement	2
		Adequate	3
		Good	4
		Very good	5
8.	Appropriate follow-up plans (time until next appt, what contingency planning was done)	Major need for improvement	1
		Some need for improvement	2
		Adequate	3
		Good	4
		Very good	5
9.	Drug Availability ( <b>Tick drugs available</b> )	Antidepressants	
		Antipsychotics	
		Antiepileptic	
		Benzodiazepine	
10.	Any other comments on strengths and weaknesses / areas where further training needed		

Appendix 3: Demographic Data Form

**Demographic Data Form**

**Participant number** \_\_\_\_\_

**Please TICK the box that applies to you:**

a. Gender:     Male  Female

b. Age: \_\_\_\_\_

c. Years of clinical experience: \_\_\_\_\_

d. Previous training in mental health/psychiatry, such as diploma, certificate, BSc  
 Yes                       No

Please specify qualification and date \_\_\_\_\_

e. In-service training in mental health    Yes    No

If yes specify (organisers, place, length, date and content)

I. \_\_\_\_\_

II. \_\_\_\_\_

III. \_\_\_\_\_

f. Place of work and department (previous and current)

I. \_\_\_\_\_

II. \_\_\_\_\_

III. \_\_\_\_\_

g. Please tick **ONE** answer that best describes your current role:

Nurse Midwife technician

Medical assistant

Clinical technician

Nurse Midwife technician/psych nurse

Community nurse

Other, please specify \_\_\_\_\_

**Appendix 4: Community Attitudes Towards the Mentally Ill Scale****Community Attitudes Towards The Mentally Ill Scale**

The following statements express various opinions about mental illness and the mentally ill. Mental illnesses are medical conditions that disrupt a person's thinking, feeling, mood, ability to relate to others, and daily functioning. Please circle the response that most accurately describes your reaction to each statement. It's your first reaction, which is important. Don't be concerned if some statements seem similar to ones you have previously answered.

Please be sure to answer all statements. Please tick the box that applies to you.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
a. As soon as a person shows signs of mental disturbance, he should be hospitalized					
b. More tax money should be spent on the care and treatment of adults with mental illness					
c. An adult with mental illness should be isolated from the rest of the community					
d. The best therapy for many adults with mental illness is to be part of a normal community.					
e. Mental illness is an illness like any other					
f. Adults with mental illness are a burden on society					
g. Adults with mental illness are far less of a danger than most people suppose.					
h. Locating mental health facilities in a residential area downgrades the village					
i. There is something about adults with mental illness that makes it easy to tell them from normal people.					
j. Adults with mental illness have for too long been the subject of ridicule					
k. A woman would be foolish to marry a man who has suffered from mental illness, even though he seems fully recovered.					
l. As far as possible mental health services should be provided through community-based facilities					
m. Less emphasis should be placed on protecting the public from adults with mental illness					
n. Increased spending on mental health services is a waste of tax kwachas					
o. No one has the right to exclude adults with mental illness from their village.					
p. Having adults with mental illness living within a village might be good therapy, but the risks to residents are too great					
q. Adults with mental illness need the same kind of control and discipline as a young child.					
r. We need to adopt a far more tolerant attitude toward adults with mental illness in our society					
s. I would not want to live next door to someone who has been mentally ill					
t. Residents should accept the location of mental health facilities in their village to serve the needs of the local community					
u. Adults with mental illness should not be treated as outcasts of society.					

v. There are sufficient existing services for adults with mental illness.					
	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
w. Adults with mental illness should be encouraged to assume the responsibilities of normal life					
x. Local residents have good reason to resist the location of mental health services in their village					
y. The best way to handle adults with mental illness is to keep them behind locked doors					
z. Our mental hospitals seem more like prisons than like places where adults with mental illness can be cared for					
aa. Anyone with a history of mental illness should be excluded from taking public office					
bb. Locating mental health services in a village does not endanger local residents					
cc. Mental hospitals are an outdated means of treating adults with mental illness					
dd. Adults with mental illness do not deserve our sympathy					
ee. Adults with mental illness should not be denied their individual rights					
ff. Mental health facilities should be kept out of residential villages					
gg. One of the main causes of mental illness is a lack of self-discipline and will power					
hh. We have the responsibility to provide the best possible care for adults with mental illness.					
ii. Adults with mental illness should not be given any responsibility					
jj. Residents have nothing to fear from people coming into their village to obtain mental health services					
kk. Virtually anyone can become mentally ill.					
ll. It is best to avoid anyone who has mental problems.					
mm. Most women who were once patients in a mental hospital can be trusted as baby sitters					
nn. It is frightening to think of people with mental problems living in residential village					

**Appendix 5: Pre- and Post- Knowledge Test**

**Participant Number** \_\_\_\_\_

## Pre- and Post- Knowledge Test

<b>A. Put ✓ in the correct column.</b>	True	False
1. People with mental disorder usually cannot make decisions concerning their health		
2. People with mental disorder are best cared for in mental hospitals		
3. All people with depression should be treated by antidepressants		
4. Mental health problems are too difficult for nurses and medical assistants to treat		
5. Providing brief advice to people who have alcohol problems is effective		
6. Delirium is often mistaken for a mental illness		
7. Severe chronic depression in a mother may lead to developmental delay in her children		
8. Delusions and hallucinations occur in mania		
9. Asking people about suicidal thoughts increases the likelihood of suicide		
10. Side effects of chlorpromazine can be treated with benzhexol		

**B. Put ✓ for the correct answer. There is only one correct answer for each question.**

11. Which one of the following statements concerning depression is correct

- \_\_\_ a. Depression often presents with vague physical pain and fatigue
- \_\_\_ b. Depression often presents with delusions and hallucinations
- \_\_\_ c. Depression often presents with confusion

12. Concerning antidepressants which of the following is correct

- \_\_\_ a. The treatment should be continued even if the person suddenly becomes manic
- \_\_\_ b. The treatment should be continued for 2-3 months
- \_\_\_ c. The treatment should usually only be offered if the depression affects the person's daily functioning

13. Which of the following messages should be given to a person with depression

- \_\_\_ a. Try to reduce your physical activity as much as possible
- \_\_\_ b. Try to participate in social activities as much as possible
- \_\_\_ c. Try to sleep as much as possible

14. A 22 year old girl says that she hears voices that no one else can hear and is convinced that someone wants to hurt her. Which of the following disorders is most likely present

- \_\_\_ a. Psychosis
- \_\_\_ b. Depression
- \_\_\_ c. Mania

15. Concerning the management of acute psychosis

- a. Depot medication will be required for most cases
- b. The person needs to be followed up at frequent intervals
- c. The person should always be restrained (e.g. chained)

16. After a suicide attempt

- a. Leave the person alone resting in a quiet room
- b. Prohibit visits from family and friends
- c. Remove means of self-harm

17. Which of the following statements concerning pharmacological treatment in a person with a mental health problem is correct

- a. You usually do not need to obtain consent since the person does not understand
- b. Antiretroviral drugs can cause depression
- c. Once antipsychotic treatment starts, the person needs to continue taking the drug throughout life

18. A patient presents with sudden onset confusion, agitation and appears uncooperative and fearful. The most likely diagnosis is

- a delirium
- b psychosis
- c depression
- d bipolar affective disorder

19. When treating alcohol withdrawal with diazepam

- a it should be given by intravenous injection
- b the dose should be the same every day
- c it should be given for 10 days
- d someone with a history of seizures should be referred to hospital for the treatment

20. When managing a disturbed and aggressive patient in the clinic

- a intramuscular medication should be given immediately
- b if restraint is required pressure to the chest should be applied to ensure the person lies on the ground
- c it is important to talk calmly and ensure the physical environment is safe

## Appendix 5: Pre- and Post- Knowledge Test

# Pre- and Post- Knowledge Test

## Answers

1 False  
2 False  
3 False  
4 False  
5 True  
6 True  
7 True  
8 True  
9 False  
10 True

11 a  
12 c  
13 b  
14 a  
15 b  
16 c  
17 b  
18 a  
19 d  
20 c

**Appendix 7: Confidence Scale**

Participant Number \_\_\_\_\_

**District Mental Health Training for Primary Health Workers : Confidence Questionnaire**

**Please read through each statement and place a tick in the box that best describes your own feeling of confidence in your ability to undertake the task.**

	<b>I feel confident in my ability to:</b>	<b>Very confident</b>	<b>Confident</b>	<b>Some confidence</b>	<b>Not at all confident</b>
<b>1</b>	Recognise when a person may be experiencing a mental health problem				
<b>2</b>	Recognise when a person may be at risk of harming him/herself or others				
<b>3</b>	Identify and discuss the needs of a person with mental health problems with the person				
<b>4</b>	Identify and discuss the needs of a person with mental health problems with relatives				
<b>5</b>	Offer mental health information and support to a person with mental health problems				
<b>6</b>	Offer mental health information and support to relatives or carers of the person with mental health problems.				
<b>7</b>	Offer advice and assistance to provide counselling support for a person with mental health problems				

	<b>I feel confident in my ability to:</b>	<b>Very confident</b>	<b>Confident</b>	<b>Some confidence</b>	<b>Not at all confident</b>
<b>8</b>	Monitor the mental health of a person with mental health problems				
<b>9</b>	Offer advice on medication for a person with mental health problems				
<b>10</b>	Recognise the side-effects of medication for mental health problems				
<b>11</b>	Describe different mental health problems and how they can affect people				
<b>12</b>	Describe how different mental health problems can be effectively treated				
<b>13</b>	Describe how the stigma of mental health problems affect people with mental health problems and their relatives and carers				
<b>14</b>	Make a referral to an appropriate health professional or mental health specialist				

Thank you for completing this questionnaire

## Appendix 8: Information Sheet

### INFORMATION SHEET

**Study Title:** An Evaluation of mhGAP training for primary healthcare workers in Mulanje, Malawi.

**Purpose:** The Scotland Malawi Mental Health Education Project (SMMHEP) is working with the Ministry of Health to integrate mental health into primary health care through the establishment of a District-level mental health improvement project. Activities of the project will focus on implementation of a WHO mhGap training package to be used by specialist clinical officers and senior psychiatric nurses for training primary care health workers in the detection and treatment of major mental disorders. This purpose of the study is to evaluate the impact of the training and supervision.

**Duration:** The study will require 30 minutes of your time before and after the training to complete several questionnaires.

**Procedure:** If you agree to participate you will be asked to complete several pre and post training questionnaires. Contact will also be made at 6 months post-training and you will be required to complete similar questionnaires.

#### **Risks**

There are no major risks from participating in the study but it is possible that some might find it difficult to answer some questions, or be uncomfortable expressing their opinions, particularly if they perceive the topic areas as stigmatised. You are free to withdraw from the evaluation at any time, and there will be no negative consequences withdrawing from the study. If you withdraw from the study, you will still participate in the training and supervision.

#### **Benefits:**

There are no direct individual benefits from participating in the study but the findings will be used to determine whether or not the training is an effective model to achieve a scaling up of mental health services in Malawi.

**Confidentiality:** your identity and views will remain anonymous and will not be identifiable in any publications from the study.

**Voluntary Participation:** Your participation in this study is voluntary and you are free to

withdraw from the study at any time, without giving any reason. There will be no penalty or loss of benefits resulting from your refusal to participant.

**Further information:** Please contact Demoubly Kokota at the College of Medicine, Department of Mental Health for further information. Cell: **0991227810** email: **dkokota@gmail.com**

You can also contact:

The COMREC secretariat,  
College of Medicine Research and Ethics Committee (COMREC),  
P/Bag 360,  
Chichiri, Blantyre 3.  
Tel: 01 871911

Or you can contact:

Prof Marc Blockman, The Chairperson, Human Research Ethics Committee, Faculty of Health Sciences, University of Cape Town on telephone +27 214066338 , email: [shuretta.thomas@uct.ac.za](mailto:shuretta.thomas@uct.ac.za).

Thank you for taking the time to read this information sheet

## Appendix 9: Consent Form

Consent Form

Candidate number \_\_\_\_\_

### CONSENT FORM

Study: An Evaluation of mhGAP training for primary healthcare workers in Mulanje,  
Malawi

1. I confirm that I have read the information sheet for the above study and I have had the opportunity to ask questions.
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason.
3. I understand that my identity and my views will not be identifiable in any publications from the study
4. I voluntarily agree to take part in the above study.

Name (please print): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Researcher: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## Community Attitudes Toward The Mentally Ill

### Key to Items

	Scoring				
	SA	A	N	D	SD
<b>Authoritarianism</b>					
Pro: a, i, q, y, gg	5	4	3	2	1
Anti: e, m, u, cc, kk	1	2	3	4	5
<b>Benevolence</b>					
Pro: b, j, r, z, hh	5	4	3	2	1
Anti: f, n, v, dd, ll	1	2	3	4	5
<b>Social Restrictiveness</b>					
Pro: c, k, s, aa, ii	5	4	3	2	1
Anti: g, o, w, ee, mm	1	2	3	4	5
<b>Community Mental Health Ideology</b>					
Pro: d, l, t, bb, jj	5	4	3	2	1
Anti: h, p, x, ff, nn	1	2	3	4	5