The Economic Consequences of COVID-19 on Households in Low- and Middle-Income Countries: A Mixed-Method Systematic Review

Mini-dissertation submitted by Mamello Rantseuoa
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PREAMBLE

PLAGIARISM DECLARATION

I, *Mamello Rantseuoa*, hereby declare that the work on this dissertation is based on my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree in this or any other university.

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Signature: M. RANTSEUOA

Date: 1 June 2022

DEDICATION

I dedicate this piece of writing to all advisors, decision-makers and/or policy-makers within the field of public health.

May we consider the findings within this systematic review. Let us restore trust in public health, recognize all the mistakes made, and endeavour to do better as we move on to address future public health emergencies of international concern. ***Focused*** protection on the vulnerable remains a good point of departure, even for economic considerations.

ABSTRACT

Emerging as a global health crisis, the novel Coronavirus disease 2019 (COVID-19) pandemic has become a great threat to the stability and prosperity of economies and households worldwide. With the World Health Organization (WHO) declaring COVID-19 a Public Health Emergency of International Concern (PHEIC) in the earlier months of 2020 (WHO, 2020), COVID-19 has spread rapidly throughout the world- at a pace that has demanded an understanding of COVID-19 that goes beyond the clinical and pharmacological interventions that have since been put in place. COVID-19 has demanded a need for robust study and implementation of public policy, as well as, personal interventions that would work to contain the spread of the virus. COVID-19 has not only adversely affected the health of individuals- it has also adversely affected the economic standing of households worldwide. These adverse effects show that without active means of rapid mitigation, households in LMICs especially, will continue to experience great economic distress. Now, mitigation cannot start without a well-grounded understanding of the problem at hand. This is what this systematic review aims to address.

This study aims to locate, appraise and synthesize the best available evidence relating to the economic impact of COVID-19 on households in low- and middle-income countries, through a mixed-methods narrative systematic review. Evidence from both qualitative and quantitative papers will be combined in a single synthesis. This will be done by adopting an "integrated" mixed-method synthesis methodology, whereby both forms of data- quantitative and qualitative-have been combined into a single mixed-methods synthesis. The quantitative data will be grouped into themes and then presented alongside the qualitative findings (which fall under similar themes) in a mixed-methods synthesis.

Upon completing the review, it was found that the COVID-19 pandemic has reduced household income for households in LMICs, whilst also introducing an increased degree of volatility to it as well. The pandemic has also led to disruptions to education and employment, thereby disproportionately affecting the poor more than the well-off, as the former, due to structural constraints, failed to transition to online means of education and employment. There was also an increase in household food insecurity, as well as, female poverty. In order to cope, households have since reduced their consumption, and tapped into some of their savings and investments, amongst other forms of coping mechanisms. In response to this economic shock, many governments across LMICs have offered aid in the form of water and food parcels, as well as, cash transfers.

It can therefore be said that households in LMICs have been hard-hit and left in worser economic conditions than they were in prior to the COVID-19 pandemic. This is mainly due to the loss of household income as a result of the lockdown measures that were introduced- which made it difficult for many informal workers to have means of generating income during the period of the pandemic. The fall in remittances also contributed to the loss of total household income. In response to this, policy-makers and practitioners in LMICs need to tailor their social protection policies in a way that prioritises the implementation of pro-poor policies that work to "soften the (economic) blow" of the COVID-19 pandemic, particularly for the (economically) vulnerable. They also need to put in place policies which support and protect the incomes of existing informal forms of employment.

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I am also thankful to Mutsawashe Chitando for sharing some helpful thoughts on how to approach my thesis, and Lee Ngakagaae for the banter, support and laughs since our undergraduate days!

Above all else… *unto Him that is able to do exceedingly abundantly above all that we ask or think, according to the power that worketh in us*, to God be the glory. Indeed, He enables.

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LIST OF ABBREVIATIONS

Abbreviation	Description
COVID-19	Coronavirus Disease 2019
ECDC	European Centre for Disease Prevention and Control
FAO	Food and Agriculture Organisation
FIES	Food Insecurity Experience Scale
GRADE-CERQual	Grading of Recommendations Assessment, Development and Evaluation- Confidence in the Evidence from Reviews of Qualitative research
HICs	High-Income Countries
LMICs	Low- and Middle-Income Countries
MeSH	Medical Subject Headings
NIDS	National Income Dynamics Study
NSNP	National School Nutrition Programme
PHEIC	Public Health Emergency of International Concern
RCT	Randomised Control Trials
SAM	Social Accounting Matrix

SSA	Sub-Saharan Africa
SRD	Social Relief of Distress
UIF	Unemployment Insurance Fund
WHO	World Health Organisation

PART A: RESEARCH PROTOCOL

1. INTRODUCTION

1.1 Background

Emerging as a global health crisis, the novel Coronavirus disease 2019 (COVID-19) pandemic has become a great threat to the stability and prosperity of economies and households worldwide. With the World Health Organization (WHO) declaring COVID-19 a Public Health Emergency of International Concern (PHEIC) in the earlier months of 2020 (WHO, 2020), COVID-19 has spread rapidly throughout the world- at a pace that has demanded an understanding of COVID-19 that goes beyond the clinical and pharmacological interventions that have since been put in place. COVID-19 has demanded a need for robust study and implementation of public policy, as well as, personal interventions that would work to contain the spread of the virus (Omtzigt & Pople, 2020).

In their analysis of falling living standards in 9 developing countries, Egger et al. (2021) found that 50-80% of their sample populations in Bangladesh, Burkina Faso, Colombia, Ghana, Kenya and Rwanda reported loss of income during the COVID-19 pandemic. Furthermore, 48% of households in rural Kenya and 69% of Bangladeshi households without agricultural land were forced to miss meals or reduce meal sizes in order to cope with the pandemic (Egger et al., 2021). Luckily for the households in the South Asia, the pandemic hit during their "post-harvest" period, so these household's food in-take was not severely impacted (Egger et al., 2021). However, outside of the South-Asia context, households in other low- and middle-income countries (LMICs) still experienced high levels of food insecurity.

Not only has there been impacts to consumption (via food insecurity), but also the COVID-19 pandemic has caused significant disruptions to education in the relatively poorer countries (Sanchez-Paramo & Narayan, 2020). School closures carry high economic costs which fall inequitably on the vulnerable populations (Omtzigt & Pople, 2020), such as those found in LMICs. For instance, there have been school closures in Nigeria, as a result of the pandemic and this has affected almost 7 million children who are enrolled in the national school feeding programme (Omtzigt & Pople, 2020). The adverse effects span beyond immediate or short-term impacts on health and nutritional deficiencies. Sanchez-Paramo & Narayan (2020) found that such challenges could contribute to the long-term effects of unequal access to opportunity, poverty, as well as, lowered productivity. Not only has COVID-19 led to the further impoverishment of the country's poor, however, COVID-19 has also introduced a new class of the "new poor", given that job loss rates in the industry and services sector were significantly higher than in the agriculture sector, where you would find many of the poor being employed (Sanchez-Paramo & Narayan, 2020).

The cost and impact of COVID-19 on households spans beyond household member health- there are costs for diagnosis, as well as, treatment, in the instances where there is no health coverage by the government or a private health insurance scheme in place (Ataguba, 2020). Even for those households that have coverage, they can still experience other related costs of care, such as co-payments which are not covered in their health package (Ataguba, 2020). This is of particular interest for a lot of African countries, for instance, whereby out-of-pocket health spending still exceeds 70% of current health spending (Ataguba, 2020). It is from this angle that one can begin to understand how a disease such as COVID-19 can exacerbate the financial burden of health costs (and therefore, spending) in households. For instance, Davies et. al.

(2020) found that in India, the COVID-19-induced lockdown caused a significant economic shock to a lot of households as well.

All in all, COVID-19 has contributed to the impoverishment of many households in LMICs, whereby, for the purposes of this paper, impoverishment refers to "…processes of household asset depletion and income loss that cause consumption levels to fall below minimum needs" (Alam & Mahal, 2014). As such the primary goal of this paper is to synthesise recent evidence on the economic impact of COVID-19 on households in LMICs. The overarching research question upon which this review is based is: what has been the economic consequence of the COVID-19 pandemic on households in LMICs and what has since been the experience and response of these households to this economic shock.

Whilst this may not need any explicit justification, it is still worth mentioning. COVID-19 was selected as the disease of focus due to it being a major source of morbidity and mortality in LMICs whereby the severity and long-term effects thereof are likely to also have economic implications (Evans & Over, 2020)- which forms a primary concern in the discipline of public health (Institute of Medicine, 1988).

This review adds to the body of literature by synthesising a large number of recent studies conducted between 1 March 2020 and 30 September 2021, on the economic consequences of COVID-19 on households in the LMICs across all continents. In addition to that, this paper has adopted a mixed-method approach to its synthesis- thereby qualifying a lot more pieces of evidence to form a part of the review.

1.2 Problem Statement

The duration and scale of impact of COVID-19 has been found to vary widely within and across countries, and even over time (Sanchez-Paramo & Narayan, 2020). It is for these reasons that it becomes very important to closely monitor the impact of this virus on households in LMICs, especially when designing the policy response (Sanchez-Paramo & Narayan, 2020).

As one would expect, the impact of the pandemic has been much more hard-felt in households in LMICs than in the more developed countries which may have access to various forms of social and economic protection (Sanchez-Paramo & Narayan, 2020). For instance, it has been found that the lower the per capita GDP of a country, the more likely it is for the household to report inconsistencies in the receipt of wages, as well as, food shortages (Sanchez-Paramo & Narayan, 2020). In a recent World Bank paper (Josephson et al., 2020) whereby pre-Covid survey data was combined with current survey data from four countries in Sub-Saharan Africa, it was found that 77% of the population (coming from those four countries alone) were estimated to live in households that have since experienced a loss of income as a result of COVID-19.

The COVID-19 pandemic has also led to a global economic recession which has meant that there has been setbacks caused on programmes that had made progress towards the United Nations' Sustainable Development Goals for 2030 (Osendarp et. al., 2021). Pandemic related economic contractions caused disruptions even to household nutrition and threatened food security in many LMICs (Osendarp et. al., 2021). This has since caused many to fall into extreme poverty.

The COVID-19 pandemic has also come with heightened fears around the virus, as well as, many public health interventions which have called for social distancing (Osendarp et. al., 2021). This limit on mobility has thus affected the consumption and working habits of many households- the impact of which has been felt at a significantly higher degree amongst the economically vulnerable citizens in LMICs (Osendarp et. al., 2021). To this end, based on survey data from 30 000 households in LMICs, Osendarp et. al. (2021) highlights that the economic effects of this pandemic have been experienced differently between the rich and poor countries. They found that in the richer countries, the economic impact of the pandemic has been softened by government protection programmes, household savings and employer compensations (Osendarp et. al., 2021)- protection programmes which are not commonly found in many LMICs. Due to the absence of these safety nets in the context of many LMICs, the economic impact of COVID-19 has had more adverse effects to the welfare of households in LMICs, than those in richer countries.

Limitations around mobility have also placed limitations on individuals' ability to work and earn a living- especially for those working in the informal sector (Ataguba, 2020). Given that informal workers across Africa alone account for roughly 89% of all employment in Sub-Saharan Africa (SSA) (Ataguba, 2020), this does begin to put in view the level of strain and economic burden that has been placed on households in SSA as a result of this COVID-19-induced public health intervention. One of the features of informal employment is that one does not have income protection, which is yet another factor to consider when speaking to the severity of the aforementioned impact (Ataguba, 2020).

Changes occurring at the macro-level, such as export-oriented firms being unable to export their goods, also affected households. Ataguba (2020) found that the decline in the global price of oil, for instance, led to the devaluing of the Naira. The impact of currency devaluation on Nigerian households, therefore, would be reduced purchasing power of the income that they have available to them, to meet both their medical and non-medical costs.

The unfavourable economic impact of COVID-19 on households in LMICs, shows that without a rapid mitigation of the economic impact of this pandemic, the adverse effects experienced by households in these countries could lead to further economic distress and even crippling impacts that persist for decades into the future. Now, mitigation cannot start without a well-rounded understanding of the problem at hand. This is the gap that this systematic review aims to fill.

1.3 Rationale

It is expected that the study findings would make a much needed contribution to the better understanding of household economic experiences in LMICs during the COVID-19 pandemic and the response of these households to this economic shock. The review will use a mixed-method approach- of which the rationale behind that decision will be provided in the "Methodology" section of the paper. The paper will also focus solely on *economic* consequences to the household.

The paper has considered the economic impact that has been experienced specifically at the household-level, because "... when assessing the cost of illness, decisions about treatment and coping mechanisms are based on negotiations within the *household*, illness costs are incurred

by *caregivers*, as well as, the sick, and the costs fall on the *household* budget." (Russel, 2004, Lund et al., 2019).

Household-level analysis of the economic impact of COVID-19 in LMICs is also important due to a number of reasons:

1. "Catastrophic health expenditure is usually measured at the household level." (Lund et al., 2019),
2. "Households are usually the unit in the economy that experience intergenerational transmission of poverty." (Lund et al., 2019) and;
3. "It is at the household level, that one can observe the erosion of assets over time." (Lund et al., 2019).

The study should ultimately inform policy and also provide insights into what should be some of the key focus-areas of consideration, when managing a pandemic such as COVID-19, particularly from the perspective of a household's economic welfare.

2. AIMS AND OBJECTIVES

2.1 Aim

Provide a quantitative and qualitative synthesis of the existing evidence on the economic impact of COVID-19 to households in LMICs using a range of indicators.

2.2 Study Objectives

1. Describe the direct and the indirect economic consequences of COVID-19 to households in LMICs - namely, the economic consequences as it pertains to unemployment, gifts and remittances, household food security, school closures and the impact on education and female poverty.
2. Discuss the coping strategies that have been employed by households in response to the economic consequences.
3. Provide context-informed policy recommendations on how to mitigate the economic impact of COVID-19 on households in LMICs.

3. METHODS

A mixed-methods narrative approach will be applied to this systematic review.

By employing a mixed-methods approach to the synthesis of the data, it means that this review will be informed by both qualitative and quantitative studies in order to generate evidence and to guide decision-making.

3.1 Eligibility criteria

Studies will be selected according to the criteria outlined below.

3.1.1 Inclusion Criteria

COVID-19-induced economic consequences to individuals and firms (as these consequences/impacts translate directly to the household)

3.1.2 Exclusion Criteria

Non-economic consequences/impacts; economic consequences at country-level (with no explicit mention of how the consequence affects individuals/the household); economic consequences/impacts which fall outside of the period March 2020 to September 2021; countries not classified as LMIC by the World Bank; studies not published in English.

a. The World Bank's classification of "lower- to middle-income" countries as at 1 July 2021, is any country with a GNI per capita in current USD that falls between $1046 to $4095 (Hamadeh et al., 2021).

Studies which have been conducted as *forecasts* or *future estimates*, as opposed to *actual* economic consequences (such as a lot of the literature that was published in the early stages of the pandemic), will also be excluded from the synthesis.

The rationale behind these eligibility criteria is to ensure that the results produced are directly in line with the research question of interest, thereby increasing the likelihood of producing reliable and reproducible results- should one want to conduct their own study, based on a similar research question.

3.2 Information sources

The study will rely on electronic databases that are freely available through the University's library, and searches will be conducted from 8 November 2021.

Literature search strategies will be developed using Medical Subject Headings (MeSH) and text words related to the economic consequences of COVID-19 on households in LMICs. I will search PubMed, CINAHL, SCOPUS, Cochrane Library, Web of Science, Google Scholar, EconLit and Sabinet African Journals. The reason for searching so widely for this literature is due to the novelty of the world-wide impact of COVID-19, and consequently, the literature around its economic impact being scant.

I will also search PROSPERO for any on-going or recently completed systematic reviews that may be in-line with my research topic. As any relevant studies come up, I will check them for any relevant cited articles.

3.3 Search strategy

I will search for both qualitative and quantitative studies. There will be no limits placed on the study design or language when conducting the search, although only studies published in English will be included in the final systematic review due to resource constraints. Limits will also be placed on dates.

The specific search strategies will be created in consultation with a Health Sciences Librarian, and the Economics Librarian where necessary, who both have expertise in systematic review literature search. Reference lists of retrieved articles will also be searched to identify additional publications, to ensure literature saturation (Saunders et. al., 2018).

A draft PubMed search strategy is included in Appendix 1. After the PubMed strategy is finalized, it will be adapted to the syntax and subject headings of each of the aforementioned electronic databases (Cates et al., 2001).

In the event of the current search strategy resulting in a limited output, truncation will be incorporated in the search method, whereby truncation refers to the search method whereby symbols are used to substitute letters or words in order to help with broadening the search (University of Hawaii at Manoa Library, 2021). In the case of PubMed, for instance, truncation would be used by including an asterisk (*) at the end of a root term (minimum of at least four characters) (University of Hawaii at Manoa Library, 2021). A similar approach of broadening the search in other databases will be followed, should the implemented strategy for that particular database lead to few results. In completing the search strategy, Boolean operators will also be used to link the key search terms.

3.4 Study Records

3.4.1 Data management

This review will use EndNote 20 as the reference manager.

A shareable library will also be created such that any interested individual can have direct access to the articles that were used in this synthesis. Moher et. al. (2015) highlights the point that it is important for the methodology of a systematic review to be reproducible. Therefore, all steps taken in finding, retrieving and synthesising study findings will be recorded. The search history from the various electronic databases will be tabled as shown in Appendix 2, for record keeping.

3.4.2 Selection Process

Once the searches have been carried out across the aforementioned electronic databases, and exported to EndNote, there will be records removed even *before* the "screening" stage of the selection process- duplicate records will be removed and records marked as "ineligible" by EndNote20 will also be removed. Thereafter, the studies will undergo a screening process, whereby records will be screened against the pre-specified inclusion and exclusion criteria above. The first stage of screening will be reviewing the articles by titles and abstracts. For those titles that appear to meet the inclusion criteria, full texts will be obtained. Where there is any uncertainty, full texts will also be obtained to provide clarity.

The second stage of screening will now take place, which will be an assessment of the articles by full text and this will be the final assessment for eligibility. Reasons for exclusion will also be recorded. The entire screening process is shown in the PRISMA flow diagram, which forms Appendix 3 of this protocol.

3.5 Risk of bias in individual studies

The potential for bias to enter the selection process is significant and thus needs to be well-documented. There is, therefore, a need to counter biased reporting because by not doing so, it will lead to a systematic review that reflects inaccurate outcomes (Institute of Medicine, 2011). Each eligible study will be systematically appraised for risk of bias using predefined criteria as outlined by the Institute of Medicine (2011). Appendix 4 provides the exact line items that will be considered in this process of appraisal.

All papers which are found to show bias will be flagged, and in the meta-aggregation part of the synthesis, findings from these papers will be highlighted as being findings coming from a biased paper (the domain of bias will also be specified), and where necessary, explicit comment

will be made regarding the limitation of that particular finding in its contribution to the overall interpretation of results.

3.6 Data Synthesis

By including diverse forms of evidence (both quantitative and qualitative data), mixed-method systematic reviews try to maximise the findings, and the ability of those finds to inform policy and practice (Pearson et. al, 2015). The approach this paper will take will be one of mixed-methods, whereby evidence from both qualitative and quantitative papers will be combined in a single synthesis. This will be done by analysing qualitative and quantitative data separately. This will then be followed by a narrative discussion of the "total" results (Pearson et. al., 2015). This segregated approach, introduced initially by Sandelowski et.al. (2013), will assist in contextualising the findings reported in any of the quantitative papers, thereby generating reasons behind some of the statistics observed. This will be of direct relevance to policy makers and other practitioners who seek clear and succinct information around the economic impact of COVID-19 on households in LMICs and the response of households to the economic shock. Such an approach will assist with decision-making.

This segregated approach is also shown in Appendix 5 of the protocol, by way of a diagram.

3.7 Quality Assessment of the Included Studies

The GRADE-CERQual (Grading of Recommendations Assessment, Development and Evaluation- Confidence in the Evidence from Reviews of Qualitative research) approach will be used to assess the quality (or certainty) of evidence and the strength of recommendations of the selected studies. This will help inform the extent to which findings are a reasonable representation of the economic consequences of COVID-19 on households in LMICs (Lewin et. al., 2018). The various dimensions of this tool can be found in Appendix 6.

By using the GRADE-CERQual approach to the quality assessment of the evidence that will form a part of this systematic review, it ensures that the evidence and conclusions used in the synthesis of this review are of a high quality, thereby making the resultant policy recommendations of the review more convincing.

3.8 Strengths & Limitations

The main strength of this systematic review is two-fold- the subject-matter, as well as, the methodology used to synthesise the data. On the point of subject-matter, the economic impact of COVID-19 on households in LMICs is of immediate relevance. Given the plethora of studies being conducted on the topic, it may be quite difficult and time-consuming for practitioners to read and glean insights from most of the papers that are published on this topic. A systematic review approach to the research question solves this problem.

On the point of a mixed-methods approach- this approach is also not yet popular in the world of systematic reviews, thereby giving policy makers and other practitioners access to findings which are unique and wouldn't be readily obvious if the systematic review took a quantitative-only or qualitative-only approach to the synthesis of the data.

Limitations of the paper include the narrow focus of the review topic, as well as, the absence of a meta-analysis being conducted on the quantitative data. On the point of a narrow focus-

the paper does acknowledge that the economic burden of illness (in general) will always span beyond the household i.e there are economic impacts worthy of consideration and discussion even at the firm and national economies level. This reality still stands true even for COVID-19. However, in addition to the reasons provided above regarding the motivation behind households being chosen as the subset of interest, the narrow focus also has its benefits, in that it allows for the review not to compromise on depth in exchange for breadth. A compromise on this front would limit the usefulness of the overall findings of the review. On the point of there being no meta-analysis conducted- this is not ideal, from the perspective that there has been no actual statistical combination of comparable studies- which may make the review miss some important insights also worthy of consideration.

4. ETHICAL CONSIDERATIONS

4.1 Ethical Approval

The proposed review does not conduct any work that requires primary data, and nor does it involve human or animal subjects. As such, it does not require approval from the Ethics Committee. The approval to conduct the proposed review will, however, be sought from the Departmental Research Committee within the School of Public Health and Family Medicine at the University of Cape Town. Moreover, ethical standards in systematic reviews as stipulated by Vergnes. et. al. (2010) will be upheld.

4.2 Conflicts of Interest

No funding has been received for conducting this study. There are no conflicts of interest in putting this systematic review together.

5. PUBLICATION AND DISSEMINATION POLICY

Study findings will be disseminated through peer reviewed publications. At least one journal article will be published in an appropriate journal and a policy brief of the key findings will be written.

6. TIMELINE

Table 1 below shows the timetable in which the researcher anticipates this study will be conducted within.

Table 1: Research Time Line

Task	**Duration**
Concept Note	1 October 2021
Plan for study objectives	1 October 2021
Research protocol	8 November 2021
Draft 1 of literature review	17 December 2021
Final draft of literature review	14 January 2022
Journal manuscript	4 February 2022

Policy brief	11 February 2022
Submission admin	18 February 2022

7. BUDGET

No financial costs are anticipated to be incurred for any component of this study. The University of Cape Town has institutional access to all the relevant electronic databases that will be needed for the purposes of this academic research, and all software used for analysing data and the writing of this paper will be freely provided by the University of Cape Town as well.

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APPENDICES

Appendix 1: Draft PubMed search strategy

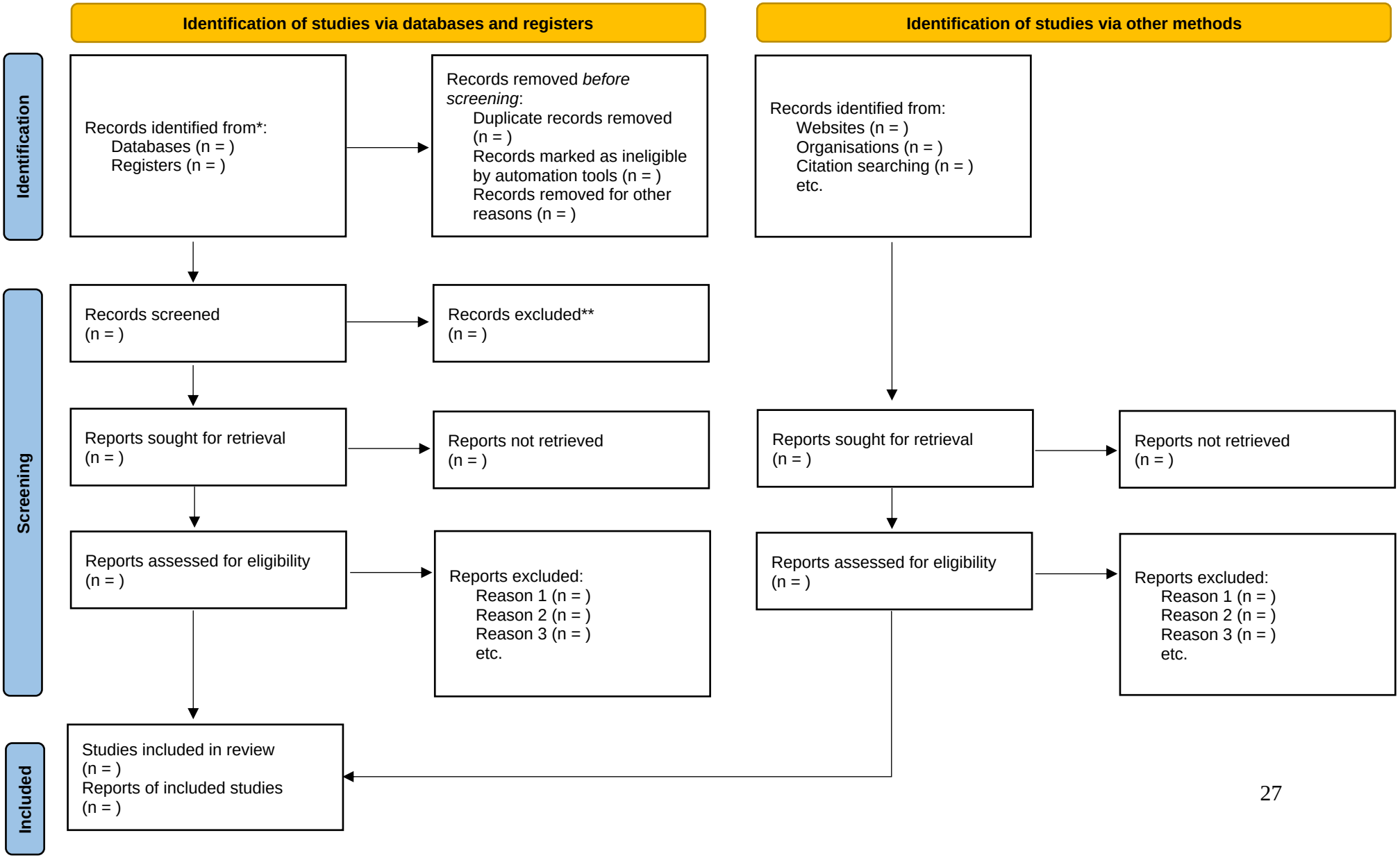
[COVID-19[MeSH] OR SARS-CoV-2 OR coronavirus OR coronavirus 2019 OR corona OR coronavirus Disease OR SARS-2 OR SARS covid 2 OR severe acute respiratory syndrome coronavirus 2] AND [economic consequences OR direct economic consequences OR indirect economic consequences OR economic burden OR economic impact OR asset consequences] AND [LMICS OR low- and middle-income countries] AND [household OR household experience OR family unit OR home OR family OR asset consequences OR experiences] AND [Income loss OR catastrophic spending OR catastrophic health expenditure OR loan OR borrowing OR coping strategies]

Appendix 2: A summary of the database searches is set out below.

Database searched	Search terms	Results	Used
PubMed			
CINAHL			
SCOPUS			

COCHRANE LIBRARY			
WEB OF SCIENCE			
GOOGLE SCHOLAR			
EconLit			
Sabinet African Journals			

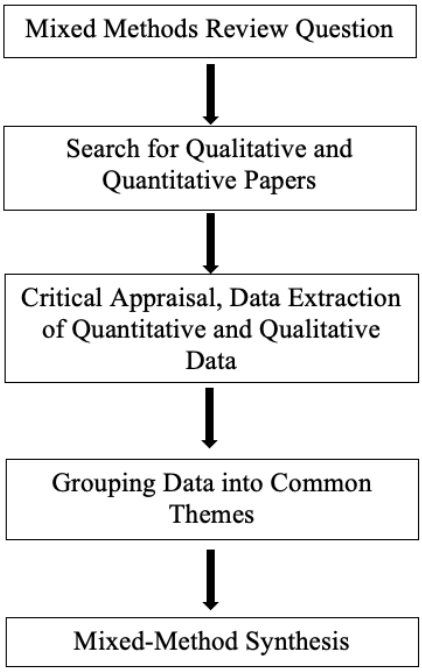
Appendix 3: PRISMA Flow Diagram for Study Selection (Page et. al., 2021)



Appendix 4: Institute of Medicine Standards for Assessing Risk of Bias (Types of Reporting Bias) (Institute of Medicine, 2011)

Type of Reporting Bias	Definition
Publication Bias	The publication or non-publication of research findings, depending on the nature and direction of the results
Selective outcome reporting bias	The selective reporting of some outcomes but not others, depending on the nature and direction of the results
Time-lag bias	The rapid or delayed publication of research findings, depending on the nature and direction of the results
Location bias	The publication of research findings in journals with different ease of access or levels of indexing in standard databases, depending on the nature and direction of results.
Language bias	The publication of research findings in a particular language, depending on the nature and direction of the result-
Multiple (duplicate) publications	The multiple or singular publication of research findings, depending on the nature and direction of the results
Citation bias	The citation or non-citation of research findings, depending on the nature and direction of the results

Appendix 5: Integrated Synthesis (*adapted from Sandelowski et. al.*) (Pearson et. al., 2015)



Appendix 6: Concepts and definitions of the GRADE-CERQual approach to quality assessment of cumulative evidence (Lewin, 2018)

Component	Definition
Methodological limitations	The extent to which there are concerns about the design or conduct of the primary studies that contributed evidence to an individual review finding
Coherence	An assessment of how clear and cogent the fit is between the data from the primary studies and a review finding that synthesises that data. By 'cogent', we mean well supported or compelling
Adequacy of data	An overall determination of the degree of richness and quantity of data supporting a review finding
Relevance	The extent to which the body of evidence from the primary studies supporting a review finding is applicable to the context (perspective or population, phenomenon of interest, setting) specified in the review question

PART B: LITERATURE REVIEW

1. INTRODUCTION

The economic impact of COVID-19 on households is an important analysis to conduct as it helps one understand another consequence of the disease, outside of what is known in the clinical and epidemiological analyses, which is equally as important. Conducting this analysis of the economic consequences of disease helps inform policy in that the total size of economic loss is recognized, with the various channels which contributed to this overall effect, clearly highlighted and recognised. Although insufficient as the sole measure employed to set priorities and resource allocation in health, whereby one would still need to conduct cost-effectiveness analyses as well, studies on the economic consequence of disease assist in identifying channels through which the cost of the disease can be reduced or mitigated (WHO, 2009).

An economic impact analysis of COVID-19 on households in low- and middle-income countries (LMICs) provides another dimension to the health policy dialogue around the pandemic- it highlights the *consequences of the interventions* that have since been put in place in LMICs in order to limit the spread of the virus and simultaneously asks the question, *"**... was this the best approach for households in LMICs?***", whose primary economic activity for generating income is much different to their counterparts in high-income countries (HICs). This study addresses policy decisions around the pandemic response in LMICs, and more specifically, encourages a more context-informed response to the pandemic.

The aim of this entire study is to provide a quantitative and qualitative synthesis of the existing evidence on the economic impact of COVID-19 to households in LMICs.

In light of this aim, the structured literature review will have the following five objectives:

1. To provide an empirical overview of the current published literature on the economic impact of COVID-19 to households in LMICs, in order to identify the similarities, differences, as well as any gaps in the literature that provide opportunity for future research
2. To provide foundational knowledge on the economic impact of COVID-19 globally, and more specifically, in LMICs
3. To identify and compare the various methodologies employed in the measurement of the economic impact of COVID-19 to households in LMICs
4. To provide an overview of the coping strategies employed by households in LMICs in response to the economic shock that has been associated with the COVID-19 pandemic

1.1 Literature Search Strategy

I searched for both qualitative and quantitative studies. There were no limits placed on the study design or language when conducting the search, although only studies published in English have been included. The studies have been sourced from PubMed, CINAHL, SCOPUS, Web of Science, Google Scholar, EconLit, Sabinet African Journals, as well as relevant websites (such as the World Health Organisation) which house important literature around this thesis topic.

The specific search strategies (which can be found in the appendix section of this thesis, under "Appendix 1") have been created in consultation with a Health Sciences Librarian who has expertise in systematic review literature search. Reference lists of retrieved articles have also been searched through, to identify additional publications, to ensure literature saturation (Saunders et. al., 2018).

The aforementioned search strategy is specifically for the *structured* literature review, which is slightly different (and includes different information sources) to the *systematic* literature review, whose actual search strategy has been outlined in the protocol of this study and will be mentioned again in the manuscript that is to follow this structured literature review. The search strategy for the former is exactly as stated in the protocol section of this paper, whereby it includes studies found in PubMed, CINAHL, SCOPUS, Web of Science, Google Scholar, EconLit and Sabinet African Journals ***only***.

1.2 Inclusion and Exclusion criteria

Inclusion and exclusion criteria have also been outlined, in order to narrow the focus of the studies included in this research paper, and to ensure that only papers that pertain most directly to the research question, are the studies that are selected for review.

Inclusion Criteria: COVID-19-induced economic consequences to individuals and firms (as these consequences/impacts translate directly to the household)

Exclusion Criteria: non-economic consequences/impacts; economic consequences at country-level (with no explicit mention of how the consequence affects individuals/the household); economic consequences/impacts which fall outside of the period March 2020 to September 2021; countries not classified as LMIC by the World Bank; studies not published in English.

- The World Bank's classification of "lower- to middle-income" countries as at 1 July 2021, is any country with a GNI per capita in current USD that falls between $1046 to $4095 (Hamadeh et al., 2021).

1.3 Quality Criteria

The GRADE-CERQual (Grading of Recommendations Assessment, Development and Evaluation- Confidence in the Evidence from Reviews of Qualitative research) approach has been used to assess the quality (or certainty) of evidence and the strength of recommendations of the selected studies. This has helped inform the extent to which findings are a reasonable representation of the economic impacts of COVID-19 on households in LMICs (Lewin et. al., 2018). The various dimensions of this tool will be explicitly outlined in the manuscript section of this paper.

By using the GRADE-CERQual approach to the quality assessment of the evidence (that will form a part of the *systematic* literature review, that is to be found in the manuscript section of this paper), one ensures that the evidence and conclusions reached in the synthesis of this review are of a high quality, thereby making the resultant policy recommendations of the review more convincing.

1.4 Bias Criteria

The potential for bias to enter the selection process is significant and thus needs to be well-documented. There is, therefore, a need to counter biased reporting because by not doing so, it will lead to a systematic review that reflects inaccurate outcomes (Institute of Medicine, 2011). Each eligible study will be systematically appraised for risk of bias using predefined criteria as outlined by the Institute of Medicine (2011). The results of the bias checks will be included in the appendix section of the manuscript.

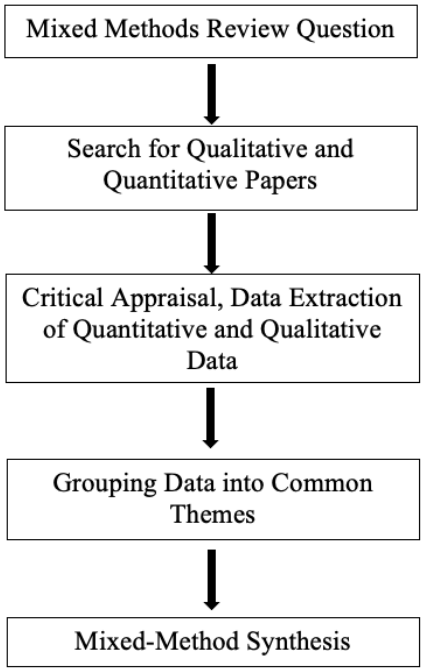
All papers which are found to show bias will be flagged, and in the meta-aggregation part of the synthesis (which is to be found in the manuscript), findings from these papers will be highlighted as being findings coming from a biased paper (the domain of bias will also be specified), and where necessary, explicit commentary will be made regarding the limitation of that particular finding in its contribution to the overall interpretation of results.

1.5 The Conceptual Framework for the Systematic Literature Review

By including diverse forms of evidence (both quantitative and qualitative data), mixed-method systematic reviews try to maximise the findings, and the ability of those finds to inform policy and practice (Pearson et. al, 2015). The approach this paper will take will be one of mixed-methods, whereby evidence from both qualitative and quantitative papers will be combined in a single synthesis. This will be done by searching for qualitative and quantitative studies first. This will then be followed by conducting a critical appraisal and bias assessment in order to assess the quality of the included studies. Thereafter, relevant findings will be extracted from the quantitative and qualitative studies. Lastly, a mixed-method synthesis will be done whereby these findings will be grouped according to the common themes that they each fall under. This integrated approach, introduced initially by Sandelowski et.al. (2013), will use the qualitative papers to assist in further contextualising the findings reported in any of the quantitative papers, thereby generating further reasons behind some of the statistics observed. This will be of direct relevance to policy makers and other practitioners who seek clear and succinct information around the economic impact of COVID-19 on households in LMICs and the response of households to the associated economic shock. Such an approach will assist with decision-making.

This integrated approach is shown below, by way of a diagram and is essentially the conceptual framework that will be adopted to glean insights from the included studies. Findings from these studies, using this conceptual framework, will be more formally and explicitly outlined in the manuscript section of this thesis.

Figure 1: Integrated Synthesis (adapted from Sandelowski et. al.) (Pearson et. al., 2015)



2. THEORETICAL REVIEW: The Virology & Epidemiology of COVID-19

Towards the end of 2019, a novel coronavirus was discovered in Wuhan, the stretched out capital of Hubei province in central China. It's rapid spread resulted in an epidemic across China, followed by what would be a Global Pandemic. In the beginning of 2020, the World Health Organisation declared COVID-19, which is the short-form of coronavirus disease 2019, a Public Health Emergency of International Concern (PHEIC) (WHO, 2020). This section of the structured literature review will seek to discuss the virology and epidemiology of the coronavirus disease, in order to generate a solid foundational knowledge on it, and help one begin to understand the impact that it has had on communities worldwide.

2.1 Virology

Virology refers to the study of the nature of viruses including "... the *distribution*, biochemistry, physiology, molecular, biology, ecology, evolution and *clinical aspects of viruses*" (Nature, n.d.). By considering and understanding the virology of the SARS-CoV-2 virus which causes Coronavirus Disease, particularly the *distribution* and *clinical aspects* of the virus, one will begin to have more insight into the actual risks that have come with this pathogen and the potential danger that it has posed to communities worldwide. For the purposes of health economics, insights from the virology of a virus helps develop strategies and policies that are not virus-blind and risk-blind. It enables policy makers to incorporate the peculiarities of a virus, which for the purpose of this study is SARS-CoV-2, which allows for a more targeted approach to virus (and disease) management.

Below, therefore, lies a brief discussion of the virus, and the various variants of concern which developed over time.

2.1.1 Delta Variant (B.1.617.2 lineage)

The Delta variant was first discovered in India in December 2020, and quickly became the dominant variant globally for an extended period of the pandemic. This variant was more transmissible than its predecessor, the Alpha variant (Katella, 2021). This was also seen in the United Kingdom (UK), where the COVID-19 infections caused by the Delta variant increased, whilst the COVID-19 infections caused by the Alpha variant fell, with the secondary household infection rate from Delta being 13.6%, which was much higher than Alpha's secondary household infection rate of 9% (Public Health England, 2021). The United States of America (USA) also reported similar findings, with their household infection rate of the Delta variant being 53% (Dougherty et al., 2021). This increased rate of virus transmission from the Delta variant also came with the infected experiencing a greater degree of severe disease and hospitalisations than their counterparts who were infected by the Alpha variant (Twohig et al., 2022). Twohig et al. (2022) actually found that of the 40 000 study participants included in their cohort study, the risk of hospitalisation within two weeks of testing was higher in the Delta-infected than the Alpha-infected.

2.1.2 Omicron Variant (B.1.1.529 lineage)

The Omicron variant was first discovered in Botswana and South Africa in November 2021. Much like the Delta variant, the Omicron variant in South Africa was found to exhibit high transmission rates (WHO, 2022). This was also seen in the USA, whereby the latest infections of COVID-19 in late December 2021 were found to be as a result of the Omicron variant (CDC, 2022).

In comparison to the Delta variant, Omicron was found to replicate a lot more, however, much less virulent than its predecessors (WHO, 2022). In the UK, the rise in Omicron cases outpaced that of the Delta variant, even though the great majority of the COVID-19 cases at the time were predominantly caused by the Delta variant (UK Health Security Agency, 2021). This observation was also supported by the fact that the secondary household infection rate from Omicron was 19%, which was much higher than Delta's secondary household infection rate, which was found to be between 8-13.6% (Peacock et al., 2022, HKUMed, 2021, Public Health England, 2021). A similar observation was made in South Africa, where the ratio of reinfections to primary infections was higher with the Omicron variant, than the Beta and Delta variants (its predecessors) (Pulliam, 2021). Similar observations were found in Qatar, as well (McIntosh et al., 2022).

2.1.3 Other Variants

Whilst not officially classified as variants of concern, there were other variants which developed over the course of the pandemic. Some of them have been outlined below.

2.1.3.1 Alpha Variant (B.1.1.7 lineage)

The Alpha variant was first discovered in the UK towards the end of 2020. This is the variant that preceded the Delta variant. It quickly became the dominant variant in many countries, due to the large number of mutations that it had (ECDC, 2020, NERVTAG, 2020). In terms of severity, many studies have found that the Alpha variant was roughly 50-75% more transmissible than its predecessors (ECDC, 2020), with the secondary infection rate also being higher as well (Davies et al., 2021, Volz et al., 2021). Davies et al. (2021) and Challen et al. (2021) argue that those affected by the Alpha variant experienced an increased disease severity, whereas, Frampton et al. (2021) did not find that in their cohort study based in the UK.

2.1.3.2 Beta Variant (B.1.351 lineage)

The Beta variant was first discovered in South Africa towards the end of 2020 as well (Tegelly et al., 2021). In terms of its evolutionary development, the Beta variant was found to be different from the Alpha variant but shares some commonalities, particularly when it comes to the spike protein mutations of the Alpha variant (Wu et al., 2021). The B.1.351 lineage also included a mutation in the spike protein, which was found to affect one's immunity, whether it be immunity gained from prior infection or vaccination (Greaney et al., 2021). It has, however, since declined in prevalence globally.

2.1.3.3 Gamma Variant (P.1 lineage)

The Beta variant was first discovered in Japan towards the end of 2020 as well, from travellers who came from Brazil (Faria et al., 2021). Much like the Beta variant, the Gamma variant also came with mutations that threatened immunity and carried the potential for higher transmissibility rates. The Gamma variant also spread to the USA, however, it has also since declined in prevalence globally (Faria et al., 2021).

Now, given the virology of this disease, this is how the virus infects individuals and gets transmitted from one person to another.

2.2 Transmission Mechanism of COVID-19

Person-to-person transmission has been identified as the main mode of virus transmission (Meyerowitz et al., 2021). This has mainly been when respiratory particles from one infected individual travels to another, when those individuals are within close range to one another (whereby a "close range" has been stated as anything within two metres). The virus is transmitted to the other individual when the infected individual coughs, sneezes or does any activity that involves respiratory secretions such that the other individual's mucous membranes are contaminated.

Transmission can also occur through the hands, when a person touches a contaminated surface and then the individual proceeds on to touch their eyes, nose or mouth (WHO, 2022). Another mechanism of transmission is through the airborne route (Morawska & Milton, 2020), particularly in spaces that are enclosed and/or poorly ventilated (Lu et al., 2020), however, both these modes of transmission have not been found as the main modes of transmission (Klompas et al., 2020, Chagla et al., 2021, Nature, 2021).

2.3 Epidemiology

When speaking about the epidemiology of a disease, one is referring to the incidence, distribution and potential of control of a particular disease (CDC, 2012). Much like the rationale for understanding the virology of a virus in the health economics context, the epidemiology of a disease helps policy makers understand how effective certain interventions have been in controlling a particular disease, and *what have been the costs associated with such strategies and interventions*- with the latter being the crux of what this entire study is all about.

This section of the structured literature review will, therefore, outline the burden of COVID-19 disease globally (and in LMICs, specifically), whilst the rest of the structured literature review, particularly in the *empirical review* section, will provide insights into what the (economic) costs have been as a result of strategies that have been employed thus far, in order to curb the spread of the virus.

2.4 Geographic Distribution of COVID-19

The Coronavirus Disease (COVID-19) has led to a global health burden that has spared few, if any, groups of people. The disease has led to unprecedented morbidity and mortality in communities across the globe, with cases increasing as the disease persists in its existence. In considering the data from the European Centre for Disease Prevention and Control (ECDC) (2021), the cases reported since 31 December 2019 till the 5th week of 2022 come in at 394 483 957 COVID-19 cases globally, of which 5 753 799 have succumbed to death (ECDC, 2022). This makes the COVID-19 mortality rate 1.46%. Europe (France, United Kingdom, Russia, Germany and Italy) and North America (United States of America, Mexico, Canada, Cuba, Costa Rica) have been the hardest hit, with South America (Brazil, Argentina, Colombia, Peru, Chile) and some regions in Asia (India, Turkey, Iran, Indonesia, Japan) following, in terms of the continents that have been most affected by the pandemic (Johns Hopkins University & Medicine, 2022, Worldometer, 2022).

The cases have been reported in the following manner, as grouped by continents:

Africa:

10 981 255 cases were reported across Africa, which accounts for 2.78% of the global cases. It has been found that the top 5 countries within this continent that have contributed the most to the cases reported in Africa are South Africa, which accounts for 33% of cases; Morocco, which accounts for 10.45% of cases; Tunisia, which accounts for 8.60% of cases; Ethiopia, which accounts for 4.25% of cases and Libya, which accounts for 4.10% of the cases reported (ECDC, 2022).

In terms of deaths, 4.19% of the global deaths can be attributed to Africa. South Africa (39.74%), Tunisia (11.06%), Egypt (9.51%), Morocco (6.48%) and Ethiopia (3.05%) being the countries contributing most significantly to this death rate on the African continent (ECDC, 2022).

Asia:

89 025 448 cases were reported across Asia, which accounts for 22.57% of the global cases. It has been found that the top 5 countries within this continent that have contributed the most to the cases reported in Asia are India, which accounts for 47.48% of cases; Iran, which accounts for 7.39% of cases; Indonesia, which accounts for 5.07% of cases; Philippines, which accounts for 4.06% of cases and Israel, which accounts for 3.62% of the cases reported (ECDC, 2022).

In terms of deaths, 20.76% of the global deaths can be attributed to Asia. India (42.09%), Indonesia (12.1%), Iran (11.12%), Philippines (4.56%) and Malaysia (3.22%) being the countries contributing most significantly to this death rate on the Asian continent (ECDC, 2022).

America:

140 739 279 cases were reported across America, which accounts for 35.68% of the global cases. It has been found that the top 5 countries within this continent that have contributed the most to the cases reported in America are the United States of America, which accounts for 54.36% of cases; Brazil, which accounts for 18.85% of cases; Argentina, which accounts for 6.12% of cases; Colombia, which accounts for 4.25% of cases and Mexico, which accounts for 3.67% of the cases reported (ECDC, 2022).

In terms of deaths, 44.27% of the global deaths can be attributed to America. The United States of America (35.43%), Brazil (24.82%), Mexico (12.16%), Peru (8.13%) and Colombia (5.34%) being the countries contributing most significantly to this death rate on the American continent (ECDC, 2022).

Europe

151 126 846 cases were reported across Europe, which accounts for 38.31% of the global cases. It has been found that the top 5 countries within this continent that have contributed the most to the cases reported in Europe are France, which accounts for 13.67% of cases; the United Kingdom, which accounts for 11.78% of cases; Russia, which accounts for 8.59% of cases; Turkey, which accounts for 7.9% of cases and Italy, which accounts for 7.5% of the cases reported (ECDC, 2022).

In terms of deaths, 30.65% of the global deaths can be attributed to Europe. Russia (19.05%), the United Kingdom (8.98%), Italy (8.44%), France (7.76%) and Germany (6.74%) are the countries contributing most significantly to this death rate on the European continent (ECDC, 2022).

Oceania:

2 610 424 cases were reported across Oceania, which accounts for 0.66% of the global cases. It has been found that the top 5 countries within this continent that have contributed the most to the cases reported in Oceania are Australia, which accounts for 90.59% of cases; Fiji, which accounts for 2.43% of cases; French Polynesia, which accounts for 1.9% of cases; Guam, which accounts for 1.43% of cases and Papua Guinea, which accounts for 1.43% of the cases reported (ECDC, 2022).

In terms of deaths, 0.12% of the global deaths can be attributed to Oceania. Australia (60.59%), Fiji (11.72%), French Polynesia (9.17%), Papua New Guinea (8.61%) and Guam (4.31%) are the countries contributing most significantly to this death rate on the Oceania continent (ECDC, 2022).

Other:

705 cases have also been reported from an "international conveyance" in Japan, which accounts for 0.00018% of the global cases (ECDC, 2022).

In terms of deaths, 0.01% of the global deaths can be attributed to the international conveyance in Japan (ECDC, 2022).

2.5 The Burden of Disease of COVID-19 in LMICs Specifically

Having outlined the global burden of COVID-19, this section will now narrow our focus down to LMICs specifically i.e. what has been the burden of COVID-19 in LMICs. This will ultimately help assess whether the interventions employed were commensurate with the risk at hand.

As highlighted above, the COVID-19 pandemic has had tragic consequences on the health of individuals across the globe, having claimed the lives of more than five million people worldwide. In response to this pandemic, health officials worldwide have instituted public

health measures in order to control the spread of the virus which has had ruinous effects in a significant number of households worldwide. In trying to prevent the chains of transmission, governments from HICs, as well as, LMICs have introduced social and physical distancing measures, which have required individuals to limit their contact with another, and instead, rely on virtual modes of staying in touch. Whilst noble in its intent, Barnett-Howell et al. (2021) found that the burden of COVID-19 in LMICs (as well as the dominant age profile in many LMICs) did *not* warrant the lockdown strategies that were put in place. Barnett-Howell et al. (2021) find that these lockdown and social distancing strategies were more beneficial for HICs than LMICs.

In supporting their claim above, Barnett-Howell et al. (2021) found that the cost of leaving the COVID-19 pandemic uncontrolled in a high-income nation such as the United States of America, is high (Barnett-Howell et al., 2021). However, the dollar cost of leaving the COVID-19 pandemic uncontrolled in a LMIC such as Pakistan or Nigeria, was found to be very small (Barnett-Howell et al., 2021). The reason for this difference is due to the differences in demographic risk profiles between HICs and LMICs. The former has a comparatively older population with lower birth rates, whilst the latter has a comparatively younger population with higher birth rates (Barnett-Howell et al., 2021). The significance of demographics, as it relates to COVID-19, is that the disease has been found to have more life-threatening outcomes in older populations than in younger populations. This therefore means that greater precautions need to be taken in HICs, as HICs have a higher mortality risk when it comes to COVID-19, whilst the precautions taken in LMICs need not to have been as stringent, given that LMICs carry a lower mortality risk when it comes to COVID-19 (Barnett-Howell et al., 2021). Furthermore, as will be shown in the *systematic* literature review- the economic opportunity cost of the lockdown measures is greater in LMICs than in HICs, whereby households in the latter can still maintain their livelihoods and welfare whilst social distancing and under lockdown conditions, whilst the same cannot be said for households in the former.

As highlighted above in the section that addresses the global distribution of COVID-19, it is abundantly clear that LMICs have not been as affected by COVID-19 as the HICs. On the entire continent of Africa (which is home to 54 countries), only 2.78% of global *cases* are attributable to it, with only 4.19% of global *deaths* coming from Africa as well (ECDC, 2022). A great majority of countries in Africa are classified as LMICs. A similar observation is made in Asia whereby, when one isolates India (which is the Asian country that reported the highest number of cases and deaths), other Asian countries contribute much smaller to the total number of Asian (and therefore global) cases and deaths. For instance, after India, the biggest contributor of COVID-19 cases in Asia is Iran (which accounts for 7.39% of Asia's cases, and 1.67% of global cases), Indonesia (which accounts for 5.07% of Asia's cases, and 1.14% of global cases) and the Philippines (which accounts for 4.06% of Asia's cases, and 0.92% of global cases) and Israel (which accounts for 3.62% of Asia's cases, and 0.82% of global cases) (ECDC, 2022). All of these countries are classified as LMICs by the WHO .

In America, it is the USA that has contributed to more than 50% of the continent's cases, and 19.39% of global cases (ECDC, 2022). The USA is classified as a HIC, according to the WHO. Brazil and Argentina, which are classified as LMICs by the WHO, are the next biggest contributors to America's cases and account for 18.85% and 6.12% of America's cases, and 6.73% and 2.18% of global cases, respectively (ECDC, 2022). Colombia and Mexico also make up the countries in the top contributors to the American continent cases, whereby Colombia accounts for 4.25% of the cases in America and Colombia, 3.67% (ECDC, 2022). The former's contribution globally sits at 1.52%, with the latter's contribution being 1.31%

globally. Both countries are also classified as LMICs by the WHO. Similar trends are observed in Europe as well- it is the HICs (France, UK, Italy) contributing most significantly to the number of cases in Europe and the number of cases observed worldwide. Oceania also shows similar observations, with Australia, a HIC, accounting for 90.59% of the region's COVID-19 cases, which is 0.6% of global cases (ECDC, 2022).

When it comes to the burden of disease in LMICs specifically, and the contribution of COVID-19 cases from LMICs to global numbers, it becomes abundantly clear that the pandemic has not impacted on countries uniformly or to the exact same degree i.e. some countries were more affected than others- in this case, *HICs were more affected than LMICs*, as HICs have been found to be the key contributors to COVID-19 cases (and deaths) globally.

2.6 The Link Between the Disease Burden and Economic Implications

The epidemiological burden of COVID-19 has been an unprecedented phenomenon experienced widely across the globe. As stated above, COVID-19 has affected more than 394 million individuals across the globe, with close to 6 million succumbing to death. The majority of cases and deaths have come from high income countries (ECDC, 2022), however, LMICs have also suffered illness and death, *as well as*, a sizeable economic shock (Egger et al., 2021). This is all in the context of many LMICs that are already economically strained in that they are catering for the double burden of both *infectious* and *chronic* disease within their countries (Abegunde & Stanciole, 2006).

This section of the structured literature review will explicitly outline the link between disease burden and economic impact, thereby making it explicitly clear how COVID-19 can also come with an economic shock for countries and the households within them.

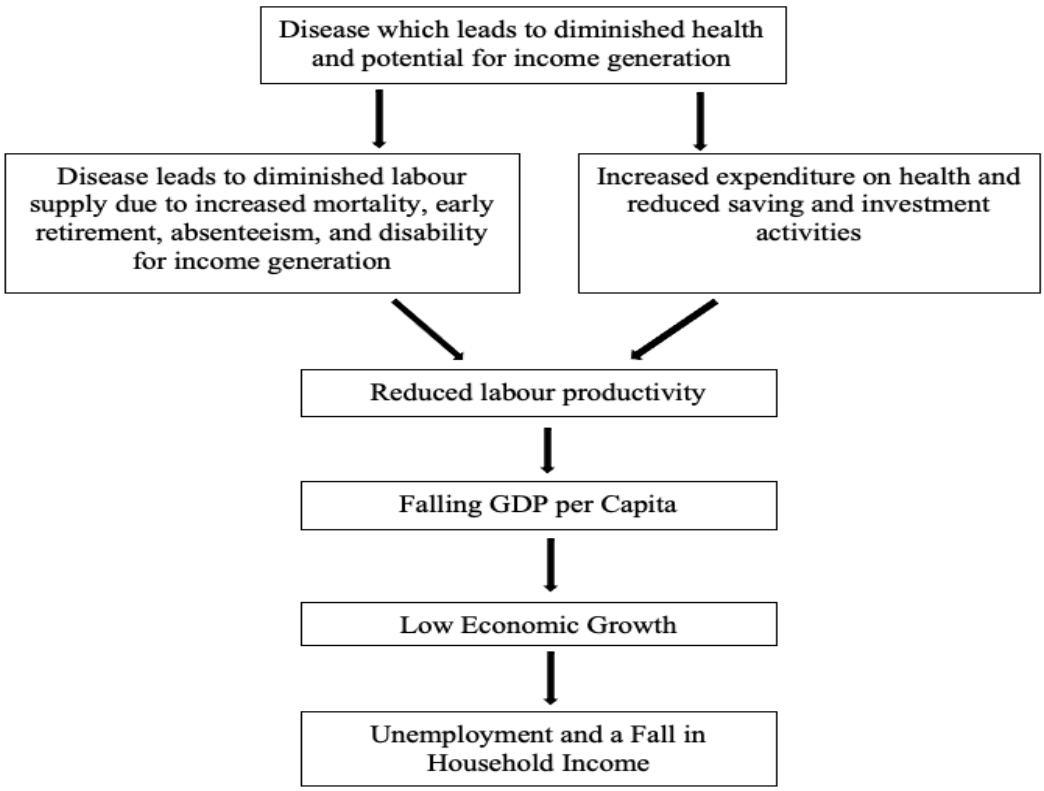
There are various channels through which diseases can impact upon the economy of a country. Disease in general, has been found to incapacitate the affected individual, in that the individual loses both their health and their potential to be productive (Abegunde & Stanciole, 2006). This ultimately means that a disease poses a challenge to a household's income, savings, and the ability of household members to invest in other activities. At the country-level, disease reduces the country's average life expectancy and ultimately the economic productivity within the country, thereby adversely affecting the country's labour supply (Abegunde & Stanciole, 2006). This has the potential of leading to a fall in both the GDP and GNI of a country, due to a lower national output contributing to a lower national income (Abegunde & Stanciole, 2006). Disease in children, in particular, affects their schooling, which can ultimately affect the child's potential to earn labour income in the future.

In contrast, the absence of disease allows an individual to maintain and even improve their productivity potential, thereby reducing workdays lost. This therefore means that household income, savings and investment activities can be maintained and even improved. At the country level, economic productivity can also be maintained and even improved as workers can continue producing at the required level of national output, which contributes to maintaining the country's national income (Lopez-Cassanovas, 2005). Good health in children also positively affects the child's educational attainment levels and future potential for generating income. The absence of disease also enables households to save on the costs that are involved in treating illness (out-of-pocket spending), which ultimately protects a lot of households from poverty (Lopez-Cassanovas, 2005). Though mentioned separately, the aforementioned

channels that link disease burden to economic impact are interlinked- both directly and indirectly.

Figure 1 below, has been included to highlight the causal mechanism explained above in a more succinct manner.

Figure 2: The general (and high-level) link between a disease and the economy



From both the summary and Figure 1 above, it is clear that there ***is*** a causal mechanism that exists between a disease and the economy i.e. the occurrence of a disease can lead to an actual economic shock, that can also be personally experienced at the household level.

3. METHODOLOGICAL REVIEW: Measurement of the Economic Impact of Disease

When speaking about the economic impact of a disease, one is speaking about the financial effect or consequence that an individual or entity bears, as a result of an occurrence of a disease (The University of Alabama at Birmingham, n.d.). In this section of the structured literature review, one will consider how the economic impact of a disease is generally measured. This will then be followed by the WHO Guidelines on how the economic impact of a disease *should* be measured and then lastly, we will consider the methodologies that have dominated the COVID-19 domain, particularly in the included studies that inform much of the literature of this entire study.

3.1 How the Economic Impact of a Disease is Measured

The economic impact of disease can be approximated by calculating the cost that is associated with a specific channel through which the disease impacts on the economy. However, it has been found that an estimate of national income, such as GDP, is widely used as the link between a disease and its impact on the economy (Abegunde & Stanciole, 2006).

The two main approaches to estimating the economic impact of a disease rely on the foundational analysis of cost-benefit. That is, estimating the economic impact of a disease can be done in one of the following ways:

1) The cost perspective - this involves calculating the economic cost of not intervening (Abegunde & Stanciole, 2006)
2) The benefit perspective - this involves calculating the additional benefit accruing from an intervention or multiple interventions (Abegunde & Stanciole, 2006)

In considering the literature, the approaches taken to measure the economic impact of disease (particularly chronic disease) can be summarised into one of the following three categories:

1) The "cost of illness" methods (Abegunde & Stanciole, 2006)
2) The "full-income" method which combines national income with some value of health gains (Abegunde & Stanciole, 2006)
3) The economic growth and growth accounting models which focus mainly on how disease affects labour supply (Abegunde & Stanciole, 2006)

3.2 The World Health Organisation (WHO) Framework for Measuring the Economic Impact of a Disease

In response to the growing number of studies that aim to conduct an economic impact analysis of disease, the WHO sought to design a conceptual framework that provides the necessary channels of economic impact that should be considered, when conducting such a study. This was done to improve the consistency and coherence in these studies of health. They also address some of the common pitfalls that a lot of researchers fall into when conducting such studies, which ultimately affects the interpretation and quality of their results. Below lies a summary of the WHO Guideline, as well as, some extra considerations that should be accounted for, when conducting a study of this manner.

In measuring the economic consequences of disease, there have been both macroeconomic-level methodologies (those that will measure the economic impact of diseases for society as a **whole**), as well as, microeconomic-level methodologies which focus more on the economic impact of diseases for a subset of the population, such as households, firms or the government. The methodology adopted, therefore, depends on the subset of interest (WHO, 2009). Due to the scope of this review, in that it focuses solely on the economic impact of disease at the *household*-level (and not more generally, at the national level), this methodological review will focus on methods of measurement that should be applied at the *household*-level only.

As a conceptual foundation, the WHO does outline that the basis of economic consequence of disease should be how disease (or injury) adversely affects the "key direct determinants of economic welfare" (WHO, 2009), where these key direct determinants of economic welfare are:

- Health (WHO, 2009)

- The consumption of goods and services that don't have to do with health i.e non-health goods and services and leisure (WHO, 2009)

With regards to the more predominant methodologies that have been adopted by many researchers thus far, whereby researchers are not explicitly clear about which of the domains of economic welfare their studies are considering or addressing - the WHO has pushed back against such. The WHO states that when researchers do not specify which of the domains of economic welfare their studies are considering, this results in studies that do not have understandable economic meaning.

The WHO has also emphasised the need for specifying a clear and appropriate counterfactual, when conducting an economic consequence study- whereby the *appropriate* counterfactual will be informed by the study's particular research question. They propose that a prevalence-based methodology may be more appropriate for a study that seeks to work out the total *current* economic consequence of an illness, whereas an incidence-based methodology is better suited for calculating *expected* economic consequence of an illness in the *future* (WHO, 2009).

In short, a prevalence-based methodology would involve an assessment of new and pre-existing disease in a particular year, whereas an incidence-based methodology would involve new cases only, when calculating the economic consequence of a disease (WHO, 2009).

3.3 Analysis of the Economic Consequences of Disease at the Household Level

Disease usually leads to an increase in household spending on health goods and services, and in some cases, leads to a fall in time spent in generating an income that allows an individual to participate in the economy in consuming market goods. This often leads to households lowering their consumption of non-health goods and services and/or employing coping strategies (used in order to mitigate the economic cost associated with illness), such as tapping into their savings or liquidating their assets (and by so doing, reducing their future consumption possibilities as they have reduced their opportunities to bring about both financial and physical capital) (WHO, 2009). In addition to the aforementioned adverse economic effects of illness, disease can also lead to changes in how non-market activities are consumed i.e. an individual may have to give up leisure time in order to be a caretaker for an ill household member (WHO, 2009).

Illness, especially when it leads to death or the serious impairment of the household's bread winner, can cause younger children to drop out of school in order to generate income and contribute to the household income. When school-going children drop out, this may also lead to future household consumption being compromised, as dropping out of school adversely affects the opportunities available to them for generating an income. This is just one avenue through which illness adversely affects consumption in households in LMICs- both in the present and in the future, as shown in Indonesia (Gertler & Gruber, 2002), Vietnam (Wagstaff, 2007) and the Western Balkans (Mendola et al., 2007).

3.4 Measuring and valuing the economic consequence at the household level

Given the analysis immediately above, the WHO provides a framework on the various variables that researchers should include in calculating the economic consequence of illness at the household level.

These variables are:

1. The impact of illness and injury on the household (WHO, 2009)
2. Household spending on health (WHO, 2009)
3. Loss of labour and productivity (WHO, 2009)
4. Effects on human, physical and financial capital formation (WHO, 2009)
5. Non-market impacts (WHO, 2009)
6. Loss of economic welfare (WHO, 2009)

The details of each of these dimensions can be accessed in the "WHO Guide to Identifying the Economic Consequences of Disease and Injury" document (WHO, 2009).

3.5 How the Economic Impact of COVID-19 Specifically Has Been Measured Thus Far

Out of the 42 articles which have been included for the purpose of the systematic literature review, only 31% (13/42) adopted a quantitative approach in looking at the economic impact of COVID-19 on households in LMICs. The other 69% (29/42) adopted a qualitative (narrative) approach in studying the economic impact of COVID-19 to households in LMICs. With the narrative approach, researchers have relayed their study findings by way of a written account of the lived experiences of households in LMICs, without measuring and testing any of their findings quantitatively.

This section of the methodological review will, therefore, focus on the quantitative studies, and outline the exact methods used. This will assist in ascertaining how the economic impact of COVID-19 in LMICs has been measured (quantified), and how this compares to the WHO Guidelines on carrying out studies of such a nature.

3.5.1 Methodologies of the included quantitative studies

Egger et al. (2021) in their paper on falling living standards in nine developing countries during the COVID-19 pandemic, used sixteen (16) original household surveys from several African countries in order to answer their research question, considering both rural and urban settings. They compared surveys administered during the pandemic to those administered pre-pandemic.

Adjognon et al. (2020) in their paper on food security during the pandemic in West Africa, analysed household phone survey data to measure the Food insecurity Experience Scale (FIES), as defined by the United Nations Food and Agriculture Organisation (FAO). The FIES was their chosen outcome of interest for measuring food insecurity. They then compared the FIES measured prior to the COVID-19 pandemic to the FIES measured during the pandemic.

Their estimates were based on a difference-in-differences framework. So essentially, Adjognon et al. (2020) compared the difference in food security estimate between urban and rural settings *before* the peak of the pandemic to the difference in food security estimate between urban and rural settings *post* the peak of the pandemic.

Briggs and Kattey (2020), in their paper on the effect of the COVID-19 lockdown on monthly earnings, used a cross-sectional survey to generate findings for their research question. Statistical tests, such as the Chi-square, were used to look for differences and p-values generated for tests of statistical significance.

Das et al. (2020) in their paper on severe food insecurity during the COVID-19 lockdown period, also used a cross-sectional survey to capture household experiences.

Nwosu and Oyenubi (2021) relied on a decomposition analysis using the fifth wave of the National Income Dynamics Study (NIDS) dataset to glean insights relating to income-related health inequalities as a result of COVID-19 in South Africa. They used concentration curves and indices to measure these income-related health inequalities and decomposed the income-related health inequalities during the pandemic in order to work out the contributors to the observed inequality.

Arndt et al. (2020) used input-output tables that have been expanded to a Social Accounting Matrix (SAM) to capture the indirect effects of the lockdown policies. The SAM then helped to bring about "a highly disaggregated linear multiplier model", which then allowed for assessing the impact of lockdown policies on supply and demand. This was all done to measure the impact of the COVID-19 pandemic lockdowns on income distribution and food security in South Africa.

Barnett-Howell et al. (2021), in their paper on costs and benefits of social distancing in HICs and LMICs, used a "compartmental epidemiological model" to work out COVID-19 transmission, in order to answer their research question.

Hamadani et al. (2020) used an interrupted time series to compare data collected prior to the pandemic to data collected during the pandemic to measure the immediate impact of the lockdown on socioeconomic conditions in Bangladeshi households.

Janssens et al. (2021) analysed weekly financial household data to measure the short-term economic impact of the pandemic on low-income households in Kenya by using fixed effects regressions at the household level and then testing for significant differences between the average of the pre-pandemic period and the average of the post-pandemic period, in order to assess changes in income and expenditure levels since the start of the pandemic.

Josephson et al. (2021) in their paper on the socioeconomic impacts of COVID-19 in low-income countries, used longitudinal data from phone surveys to find the socioeconomic impact of the pandemic in low-income countries. They then used econometric methods to get more specific effects when comparing countries and differences between rural and urban regions, amongst other considered factors. Statistical tests were conducted, and confidence intervals calculated to work out the significance of the results.

Mahmud and Riley (2021) in their paper on the immediate impact of the COVID-19 lockdown on economic outcomes and well-being in rural Uganda, used household surveys to measure the extreme economic shock that came with the COVID-19 lockdown for households in rural Uganda. They also use several estimated models to measure the effect of the lockdown on households.

Mueller et al. (2021) in their paper on food insecurity and COVID-19 risk in LMICs, used longitudinal surveys to measure food insecurity and risk of COVID-19 in LMICs.

Osendarp et al. (2021) used modelling tools (MIRAGRODEP general equilibrium model, the Lives Saved Tool, and Optima Nutrition) to measure the impact of the COVID-19 pandemic on maternal and child health in LMICs.

It is clear that there exists a noticeable extent of methodological heterogeneity when it comes to the measure of the economic burden caused by COVID-19 to households in LMICs. Most papers have taken a qualitative approach (69% of the included studies), whilst the few that have tried to quantify the effects of the pandemic to households in LMICs, have used methodologies which vary from one another, as well as, the WHO's guidance. It also appears that official (and complete) economic impact analyses of COVID-19 have not yet been done- especially those that are in-line with the WHO guidelines. This alone is a gap in the literature, which presents an opportunity for future studies.

4. EMPIRICAL REVIEW: The Economic Consequences of COVID-19 on Households in Low- and Middle-Income Countries

This section of the structured literature review will shed light on the actual experiences of households in LMICs during the COVID-19 pandemic. This section will be split into six (6) brief sections, that outline the various ways in which households were economically impacted upon by the pandemic. These sections are namely: unemployment, gifts and remittances, household food security, school closures and the impact on education and female poverty. The empirical review will also highlight the coping strategies that households adopted in response to the economic shock that came with the pandemic, as well as, touch on the social protection programmes that were introduced during this period, as well.

4.1 Unemployment

A large majority of people working in the informal economy in India experienced a sudden loss of income, as a result of the COVID-19 pandemic. This led to catastrophic effects in households that were already struggling to make ends meet, even prior to the start of the pandemic. The reason for these job losses- whereby 92.5% of labourers in India lost 1 to 4 weeks' worth of work (Chaudhary et al., 2020)- was as a result of some of the measures taken by the government to curb the spread of the virus (Chaudhary et al., 2020). Many migrant workers (and locals) also feared that these measures would lead them to running out of food by the time the lockdown is put to an end and might not even get their jobs back even once the pandemic is over (Chaudhary et al., 2020). Chaudhary et al. (2020) finds that in India, the lockdown severely impacted those workers who rely on a daily wage, 49.2% of whom indicated that they did not have ration (subsidised food items), whilst 39.4% indicated that their remaining ration would last about 2 weeks (Chaudhary et al., 2020). Whilst it can be argued that a significant proportion of India's workforce (and by extension, its households) has been living "hand-to-mouth" even prior to the pandemic, Chaudhary et al. (2020) does highlight that COVID-19 has led to a such a spike in unemployment that approximately 76.2% of the total workforce has now been placed at risk of falling *even deeper* into poverty, as a result of the income loss.

In a country that is largely dominated by the informal economy, such as India, the impacts on employment and household income emanating from non-pharmacological interventions, such as lockdowns, have been significant. Prinja et al. (2020) also found that the pandemic affected the income of households in India, and the resultant household consumption. In Thailand, Kumthom and Porntip (2020) note that the COVID-19 pandemic has placed a significant burden on many individuals who are already facing financial constraints, and that many of the

Thai depend on a daily wage, and therefore any day that passes without work, has led to significant consequences for them and their households (Kumthom & Porntip, 2020).

The lockdown measures have not been the only contributor to falling household incomes in LMICs. Another challenge, particularly for countries that are dependent on global supply chains, such as the clothing industry in Bangladesh and the flower industry in Kenya (Rohwerder, 2020), has been the closure of borders (Ikwegbue et al. 2021). This has affected a lot of local industries and businesses. Chaudhary et al. (2020) states that in India, Micro, Small and Medium enterprises, which created more than 90% of the jobs in the country, experienced increased risk of "severe cash crunch"- a risk which also impacted the workers, and therefore, their households as well. Erinle et al. (2021), in considering the experiences in Pakistan, states that 83% of businesses reported being negatively affected by the pandemic, thereby causing workers in Pakistan to also face adverse financial effects of the pandemic as well. In Ethiopia, vegetable farm owners reported losses in income, as well as, labour supply (Erinle et al., 2021). Erinle et al. (2021) also found that in India, much like the experience in Ethiopia, there were challenges that vegetable farm owners faced, with respect to reduced demand for their produce, challenges with transportation to the markets and difficulties in securing labour. This affected the incomes of those households whose primary source of income was through sales. A lot of street vendors (who are also business owners in their own right) across LMICs were also affected by the pandemic (Braam et al., 2021). The lockdown measures restricted mobility, thereby leading to a reduced demand for their goods and services (as many people were now working from home (Abdullah et. al., 2020)) and the restricted hours wherein they were legally permitted to trade and generate an income also meant that their potential for generating an income was reduced (Adefisoye & Adefisoye, 2020). All this occurred whilst the cost of food items in retail stores and transportation costs increased (Adefisoye & Adefisoye, 2020)- changes which adversely affected the households in LMICs.

There was also a widespread loss of income in other LMICs in Asia and Africa. Braam, et al. (2021) notes that their study respondents in Somalia reported either a loss in income and/or a loss in their job. In Mogadishu and Baidoa (Somalia), unemployment increased significantly. In April, only 8.1% of study participants had reported either being unable to go to work or being newly unemployed (Braam et al., 2021). By September, the numbers had shot up to show that two-thirds of the population had been affected by either unemployment or under-employment, which led to a significant fall in household income, with internally displaced persons being disproportionately affected (Braam et al., 2021). In Iraq, 89% of internally displaced persons who were also survey respondents also reported losing their jobs or livelihoods and 44% of survey respondents reported facing challenges with rent payments (Rohwerder, 2020). In Rwanda, employees were found to be "disengaged" from work due to the lockdown measures introduced (Oni & Omonona, 2020). On the contrary, live-in domestic workers in the Middle East and Southeast Asia, experienced an increase in paid labour, however, this came at the cost of increased workload given that members of the household were now working from home (Lucas, 2020). Given that the employers of these domestic workers now faced an increased risk to their own income, as a result of the pandemic, this also meant that the domestic workers *also* faced an increased risk of job insecurity (Lucas, 2020). Across the Americas, Asia, South Africa and in Europe, other domestic workers were unable to continue working given that school closures now meant that their own children were now primarily at home and were in need of being taken care of as well (Lucas, 2020).

Adjognon et al. (2020) found that in Mali, in both urban and rural households, respondents reported a loss of income due to a household member having lost their job due to COVID-19,

and less than half (with no statistical difference between urban and rural households) anticipated an even further income loss in the future due to COVID-19. A closer look at these numbers revealed that approximately 16% of urban households struggled to meet their rent payment, whilst only 5% of rural households were met with a similar challenge. In a population-based survey in urban Dhaka (capital of Bangladesh), Das et al. (2020) found that 65% of survey participants reported loss of employment, whilst 30% reported a loss in income. On the flip side, farmers in rural Bangladesh reported challenges in the selling and transportation of their goods due to the higher transport costs and lower labour supply. As a result, this meant that these rural farmers, who are dependent on this form of self-employment for their income, suffered financial loss and food waste, despite the retail price of food items increasing in the cities (Das et al., 2020). It is thus clear that both rural and urban households faced their own unique set of challenges as a result of the pandemic.

4.2 Gifts and Remittances

Households in LMICs experienced a notable fall in income as a result of the COVID-19 pandemic. However, this time around this was due to the fact that there was a significant decrease in gifts and remittances received from overseas workers, whereby in some households, these very gifts and remittances formed a significant proportion of the total household income (Lucas, 2020). In Myanmar, for instance, 70% of the rural households rely on remittances for their income (Lucas, 2020).

Household gifts and remittances were affected due to the peculiar nature of the COVID-19 pandemic (in comparison to other pandemics of the past), in that it did not offer counter-cyclical effects whereby home countries (LMICs) were affected, whilst overseas countries were insulated from the economic effects that came with it. Of course, one could argue that the economic shock would be comparatively greater in LMICs (given the socio-economic realities that generally persist, such as lower-paying forms of employment), however, it is well understood that the COVID-19 pandemic was *global* in it's impact, and therefore, even overseas workers were adversely (and severely) impacted (Lucas, 2020). Given this unique reality, it therefore meant that overseas workers had to reduce the amounts of gifts and remittances given to their families back in their home countries. In their study of Somalia, Braam et al. (2021) state that gifts and remittances had already decreased by roughly 36% by April 2020, and that this number grew to about 50% by September 2020.

4.3 Household Food Security

Rural versus Urban divide

The COVID-19 pandemic also led to an increased risk in food insecurity amongst households in LMICs. In the context of Mali, Adjognon et al. (2020) found that the increased risk in food insecurity was heterogeneous between the urban and rural areas. From self-reported reports of how Malians perceived their own food security since the inception of the pandemic, Adjognon et al. (2020) found that the pandemic had severely reduced the food security of households in Mali, with urban households being more affected than rural households. The reason rural areas in Mali were not severely impacted is due to the fact that the pandemic surged in March, which is actually the off-season in Mali's agricultural cycle (Adjognon et al., 2020).

In considering the rural population in West Africa, Rohwerder (2020) found that these households were protected from the economic impact of the pandemic as many of these households relied on subsistence farming for their needs- much like a lot of the households in

Mali. In Bangladesh, Rohwerder (2020) states that less than 50% of urban respondents and 50% of rural respondents had sufficient income to meet their food needs. Some households had to rely on savings, credit from the grocery shop or even reduce food consumption in order to cope (Rohwerder, 2020). A similar outcome is observed in Ethiopia and Nepal (Rohwerder, 2020). Rohwerder (2020) states that food insecurity was most prevalent amongst "... daily wage labourers, cash crop producers, people with less diversified livelihoods, those who sourced food in the market, households that did not have food stocks, and households with low education levels, a chronically ill member, or female-headed households" (Rohwerder, 2020).

The pandemic introduced a significant number of Nepal's and Bangladesh's population to immediate poverty (Singh et al., 2021). This is similar to a study conducted in Baidoa and Mogadishu, Somalia, where the participants in the qualitative study mention that there was a noticeable decline in the economic situation within their communities (Braam, et al., 2021). In the Bangladesh case, this consequence of poverty is coming about in a context whereby extreme poverty was rare prior to the COVID-19 pandemic- thereby highlighting the severity of the impact of the COVID-19 pandemic on the economic status of many households in LMICs (Das et al., 2020). In Bangladesh, Das et al. (2020) found that most of the food insecure households were those who did not own a lot of assets and lived in households that were more crowded. They also found that most of the food insecure households were those where the head of the household had lesser years of education (Das et al., 2020). From the literature, it becomes clear that higher educational attainment (from the household head) and having wealth can be protective against food insecurity. Interestingly, Mueller et al. (2021) found that studies that have disaggregated pandemic effects on food security by the gender of the head of the household have been inconclusive- some studies from Ethiopia, Nigeria, Malawi, and Uganda have concluded that female-headed households from these countries have higher prevalence of food insecurity than male-headed households. Mueller et al. (2021) then contrast those findings with those from other case studies to conclude that the differences between female-headed households and male-headed households as it pertains to the prevalence of food insecurity, are insignificant (Mueller et al., 2021).

Food insecurity in LMICs was also exacerbated by the spike in food prices. For instance, the food insecurity in Nepal was largely fuelled by the unexpected increase in food prices due to the unprecedented disruptions in food supply during the lockdown period (Singh et al., 2021). As a result, many families faced deep poverty as their available household income now had a reduced purchasing power. Many Nepalis households were already food insecure even prior to the COVID-19 pandemic, which therefore meant that the effects of the pandemic entrenched them even deeper into food insecurity and poverty (Singh et al., 2021). Other study participants highlighted that the food insecurity in Nepal was also driven by "... border closure, transportation disruption, and lack of food stock" (Singh et al., 2021). The increase in food prices was also experienced in Ethiopia, which also affected the poorer Ethiopian households the most (Rohwerder, 2020).

This increased risk in food insecurity was not only unique to the lower income countries. Lucas (2020), also finds that even in middle income countries, food insecurity was found, particularly in the poorer regions of the country, due to the precariousness of their incomes, amongst other socio-economic challenges.

4.4 School Closures and Impact on Education

Given that education is a key determinant for development, growth and future prosperity and success, challenges in education are challenges in educational attainment, and thus a threat to an individual's potential for future economic success. It is from that understanding that school closures and their impact on education has been considered as an economic consequence of COVID-19 to households.

The COVID-19 pandemic has impacted schools and school-going children. The impact on schools and school-going children has had unintended consequences, such as a higher rate of school drop-out's (Favara et al., 2021). The danger of dropping out, particularly for the girl-child is that it puts young girls at an even higher risk of getting married and having children in their youth, which ultimately impacts their future earnings potential and socio-economic status (Favara et al., 2021). Furthermore, school closures have led to many school-going children not being able to benefit from the school's feeding programme (Rohwerder, 2020). When considering the realities in Thailand whereby 60% of all pre-primary and primary school students rely on these feeding schemes (Mayurasakorn et al., 2020), one begins to understand how school closures can also increase food insecurity for many school-going children. A majority of the literature highlighted impacts on the African context, specifically.

Toyin (2021) notes that almost 40 million school-going students were affected by school closures across Nigeria. In narrating the Nigerian context, Toyin (2021) states that the transition from in-contact learning to e-learning was almost impossible in Nigeria, due to the lack of facilities and infrastructure that would make that mode of learning a reality. Some of the issues include unsteady electricity supply, poor provision of Wi-Fi and mobile data being very expensive for many parents (Toyin, 2021). The challenges in navigating the new modes of learning were even more significant for students who had disabilities, such as children who had visual or hearing impairments (Toyin, 2021). The unique challenges experienced by these disabled learners necessitate in-contact learning and it was found that remote instruction had a deleterious impact on the progress that many of them had made over the years (Toyin, 2021). This therefore widens the gap between the abled and disabled students- it shows that disabled students face the double-burden of the general adverse effects of school closures on all children, *as well as*, the halt in their own personal and educational development as students who have additional needs. This caused many to regress in their academic performance (Toyin, 2021). Toyin (2021) does also note that there were teachers who saw an improvement in some of their disabled students, however, Toyin (2021) does also highlight that these were children coming from relatively more privileged households.

Braam, et al. (2021) also notes that the COVID-19 pandemic affected the education of over 1 million children in Somalia. Braam et al. (2021) found that 92% of study respondents to a survey by the Norwegian Refugee Council highlighted that they experienced a negative impact as a result of schools and Madrasas closing in Somalia. In Ethiopia, many students who had stopped going to school earlier on in the year, were still, in mid-October 2020, waiting for schools to reopen (Favara et al., 2021).

Students from institutions of higher learning in South Africa have also been affected- with the degree of impact varying according to the socio-economic status of the household a student comes from (Makumbe, 2020). Students who were reliant on libraries, campus WiFi, residence rooms and University labs, suddenly faced the challenge of not having access to these amenities, as a result of the lockdown measures introduced (Makumbe, 2020).

4.5 Female Poverty

Poverty has been defined as a lack of resources that prevents individuals from engaging in basic activities such as staying alive and living in good health, procreating, having social interactions and having knowledge which is also shared with others (Adefisoye & Adefisoye, 2020). Now, when referring to *female* poverty, one speaks to the reality of women being more economically disadvantaged relative to their male counterparts i.e., women experiencing a higher degree of poverty than men (Adefisoye & Adefisoye, 2020). This is due to factors such as gender inequality, low educational attainments, and roles that women assume as child-bearers and caregivers which make them more vulnerable to wage discrimination (Adefisoye & Adefisoye, 2020).

Though it can be argued to be more of a social issue, rather than an economic one, female poverty is actually also an economic consideration based on two main points- firstly, female poverty stems from economic challenges such as inequality in employment, education and food security (Adefisoye & Adefisoye, 2020), and in order to address it (female poverty) one has to address these challenges first. Secondly, challenges around female poverty are strongly driven by gender-blind economic policies which are aimed at poverty reduction (Adefisoye & Adefisoye, 2020) - a factor which actually exacerbates the problem of female poverty if not carefully planned and executed.

In LMICs, the informal sector is largely dominated by women, with other women also found working in vulnerable contexts such as domestic work or other types of home-based forms of employment (Lucas, 2020). Hidrobo et al. (2020) found that economic impacts, such as the loss of employment, were likely to affect women more than men, even though women already earn less than men. There was an increased and disproportionate load of care that women had to assume as a result of the pandemic (Hidrobo et al., 2020)- an aspect that further impedes their ability to actively participate in the economy and generate income of their own for the household. Women traders in LMICs were also barred from working as a result of the lockdown restrictions, which increased food insecurity in their households (Rohwerder, 2020). Female respondents in LMICs were 15% more likely to lose their jobs during the pandemic. This is higher than the likelihood of 12% that was reported for men (Rohwerder, 2020). However, Rohwerder (2020) also reports that women were more likely (19%) to receive government support than men (13%).

These observations were not only unique for adult females- younger females also bore the brunt that came with the pandemic, though in a different manner. Favara et al. (2021) found that with children staying home as a result of school closures, households relied on *traditional* gender roles which required the girl-child to bear an increased load of household chores- a responsibility which their male counterparts were not generally expected to take on. Young men would usually be found working in the family business, instead (Favara et al., 2021). This disproportionate allocation of household chores can have effects on the current academic performance of the girl-child, and their future educational attainment level.

School closures have also contributed to the issue of the existing gender-wage gap amongst adults. Women, who are commonly the primary caregivers within the household, were now forced into the predicament of maintaining their work commitments, whilst taking on additional responsibility in the home since the children were not going to school- a balancing act which usually results in women having to cut back on paid work (Gromada et al., 2020). A similar observation was made in middle-income countries as well, whereby women and girls were found to be particularly vulnerable to the economic challenges that came with the

pandemic as well, as they generally found themselves in unreliable and insecure circumstances in society, more than men (Lucas, 2020). Women in middle-income countries are the ones that generally carry the burden of unpaid labour within their households as well, which also bars them from participating in the economy and generating their own income (Lucas, 2020).

In response to the challenges mentioned above, below lies some of the coping strategies adopted by many households in LMICs

4.6 Coping Mechanisms/Household Response

4.6.1 Food Consumption

Many households in LMICs started to change their food preferences in order to cope with the economic shock that came with the pandemic. Many started to consume cheaper foods, such as "... starchy staples, cereals, oils and/or non-perishable ultra-processed foods" (Osendarp et al., 2021) and consumed less nutrient-rich foods such as fruit, vegetables, meat and fish (Osendarp et al., 2021), as seen in many Nepalis households (Singh et al., 2021). Well-to-do families in Nepal relied on their existing food stock to get by (Singh et al., 2021). Singh et al. (2021) also found that a lot of households in Nepal started rationing their foods or started missing some meals, in order to cope with the loss of income. A similar response was observed in households in Bangladesh (Singh et al., 2021). Rohwerder (2020) found a similar outcome in Iraq, whereby individuals coped through reducing their food consumption and tapping into their savings and/or taking out loans in order to survive. Mueller et al. (2021) highlights a similar coping mechanism for Nigerian households, in that a majority of the households relied more heavily on reducing their food consumption, followed by relying on other sources of income from additional activities, where they were able to earn an income. Das et al. (2020) also found that most of the households in Bangladesh relied on either borrowing money or reducing their food consumption in order to cope. The reason for such observations in households in LMICS is due to the fact that LMICs tend to have labourers who rely on daily wages from informal sectors that provide little to no job security, and insurance, amongst other things (Singh et al., 2021). So given that their base-line economic status is one that is poor and one that doesn't offer much protection, it means that when there is a severe economic shock, as was the case with the COVID-19 pandemic, these households would be less resilient to the impact and are thus forced to employ the coping mechanisms which have been stated above.

In Bangladesh, Das et al. (2020) note that of the households who participated in their cross-sectional survey, 27% of rural households with mild/moderate food insecurity adopted financial coping mechanisms whilst 32% of rural households with mild/moderate food insecurity adopted *both* financial and food compromised coping mechanisms. In considering urban households, Das et al. (2020) note that 61% of them adopted both financial and food compromised coping mechanisms. Of those households who participated in the cross-sectional survey and were classified as facing severe food insecurity, nearly 90% of them implemented both types of coping mechanisms (Das et al., 2020). It is therefore clear, from the literature, that financial coping strategies were limited in their ability to protect households in Bangladesh from economic distress- both rural and urban Bangladeshi households had to rely on financial coping strategies, *and* they had to adjust their food/consumption patterns too. A similar outcome was found in rural Uganda. Mahmud and Riley (2021) found that households in rural Uganda that were included in their study, relied on reducing their food spending by 40%, using nearly 50% of their savings and increasing their borrowing by 100% (Mahmud & Riley, 2021).

Adjognon et al. (2020) found that in Mali, households decreased their time spent in the following locations: "grocery and pharmacy, retail and recreation parks, transportation stations, and workplaces…" amongst other locations (Adjognon et al., 2020). Adjognon et al. (2020) also found a marginal increase in time spent in places of residence. This follows from the experience of many, as a lot of people (even those outside of Mali) were restricted to their homes as a result of the lockdown measures, which interrupted both mobility and economic activities worldwide. Rohwerder (2020) found that in order for women in Kenya to cope with the economic shock that came with the pandemic, many of them stopped buying sanitary towels (financial coping strategy) *and* skipped meals in order to survive. In Mali, however, Adjognon et al. (2020) found no differences in food-related behaviours, such as "stockpiling food, frequency of visits to food markets or grocery stores, or self-reported struggle to buy food". Whilst on one hand, one can justifiably argue that the Mali experience was just an outlier and that the other pieces of evidence hold more weight, it should be understood that the Mali experience serves as a reminder of the nuances that exist in coping mechanisms i.e. how a household chooses to cope with the economic shock of the pandemic is not clear cut and universal in its nature- it is a function of many factors that will differ from household to household. For example, in rural Uganda, there was no finding that they sold off any of their livestock- actually, household members were found to increase their labour supply in their farms (Mahmud & Riley, 2021). From this example alone, it becomes clearer how coping mechanisms from households are not all the same.

4.6.2 Economically Disadvantaged Households versus Economically Advantaged Households

Other households and communities in LMICs employed other coping mechanisms. Those from disadvantaged households, particularly in the Mushar community in Nepal "... relied on the natural environment around them…" (Singh et al., 2021) to meet their food needs. Many communities started fishing, both for consumption and for selling in the markets, in order to generate income (Singh et al., 2021). In instances whereby low-income households needed more than what the natural environment could offer, individuals would borrow money from their landlords and those of a higher socio-economic status within their local communities (Singh et al., 2021). This was all done to meet their food requirements for their families. A participant from the Saptari district (Nepal) even mentioned that the landlord would provide her with rice, pulse, other foodstuffs, and some money for her family (Singh et al., 2021). Singh et al. (2021) also found that given the lengthiness of the pandemic lockdown, many workers found it increasingly difficult to continue borrowing from their landlords, citing borrowing costs and financial constraints from the landlords themselves, as the main source of their hesitancy. In Thailand, coping strategies to address the rise in food insecurity included "Pun Sook" boxes, which were food parcels that were put together by many laypersons in Thailand in order to help the needy within the local communities (Kumthom & Porntip, 2020).

4.6.3 Savings/Loans/Investments

Households in LMICs also survived through changing their savings, investments and borrowing behaviours. Janssens et al. (2021) found that household spending on food in Kenya remained at the same level as it was before the pandemic affected the country. In order to cope, however, households in Kenya reduced the number of gifts and remittances (by 36%) that they gave to their families; they delayed their loan repayments and reduced the amount of money lent to others. This reduction in remittances is due to the fact that wage workers in urban areas were also significantly impacted by the pandemic and the lockdown that came with it. Total weekly household spending in Kenya also fell by 24% (Janssens et al., 2021), and this may

have been the natural consequence of the lockdown i.e. how households were now no longer paying for transport and schooling expenses (Janssens et al., 2021). This was also a cost-saving that can be used to understand how some Kenyan households were able to maintain their spending on food. Kenyan households were also found to save less, especially in the initial weeks of the pandemic (Janssens et al., 2021). Similarly, Rohwerder (2020) found that many households in LMICs, from urban areas specifically, tapped into their savings, as a coping strategy.

Janssens et al. (2021) found no evidence that Kenyan households used any of their savings or borrowed any money to cope with the effects of the pandemic, if anything, it was found that households in Kenya borrowed less (Janssens et al., 2021). There was also no evidence in the Kenyan context to support that households sold their livestock as a coping strategy. A surprising observation coming from Kenyan households is that there was a decrease in the amount of money they were withdrawing from their savings during the period of the pandemic. A similar behaviour was observed in rural Uganda (Mahmud & Riley, 2021). The reason for this may be that Kenyan households may choose to leave much of their savings for a later stage, when times may be even worse economically (Janssens et al., 2021). Another possible explanation for this observation of Kenyan households reducing the amount of money they were withdrawing from their savings, may be due to the fact that the households that were found to show this behaviour already had savings at baseline, and therefore, by the time the pandemic hit, they had a saving habit that enabled them to hold on to their money for as long as was possible given their newfound financial challenges (Janssens et al., 2021). This is supported by the finding that households with negative savings (loans) were found to be less able to survive completely based on their own income- they were more vulnerable to borrowing even more (Janssens et al., 2021).

Egger et al. (2021) indicate that households in LMICs end up using a lot of their savings and start selling off some of their assets in order to cope with the economic shock that has accompanied the pandemic. Some rural households in Uganda were found to be selling their land and other assets in order to survive (Mahmud & Riley, 2021). In Bangladesh, a majority of the households increased their borrowings or tapped into their savings as a means of surviving, over and above the state assistance that they may have already received (Mueller et al., 2021). A similar observation was made for Nigerian households (Mueller et al., 2021). Adjognon et al. (2020) found that in Mali there were small, but statistically significant differences in saving patterns, as well as, investments in durable goods between the urban and rural households in Mali, with bigger changes being reported more from urban households than the rural.

4.6.4 No Coping Strategy

In their study of households in Ethiopia, Malawi, Nigeria and Uganda, Josephson et al. (2021) found that most of both rural and urban households did not employ any coping strategies. In Uganda, most of the households relied mostly on asking for help from family members or simply did not do anything, as part of their coping mechanism (Josephson et al., 2021). Of the households in LMICs that participated in the Das et al. (2020) cross-sectional survey, 20% of the households actually didn't adopt any coping strategies at all- most of these households were food secure, whereas the others were mildly or moderately food insecure. This brings to the fore the importance of context, when analysing coping strategies i.e. households that were considered well-off at baseline, did not need to employ any strategies to survive, and that is why one observes no change in their consumption, savings or investment patterns.

Part of the coping strategies adopted by many households, involved assistance coming from the government. Below lies some insights into what governments did in response to the economic shock that affected many households within their countries.

4.7 Social Protection

There was a series of social security programmes introduced in LMICs in order to provide assistance to vulnerable households.

In South Africa, Mukumbang et al. (2020) note that the South African government adopted various social security schemes in order to alleviate the economic burden that was associated with the COVID-19 pandemic, especially for poor households. The COVID-19 Social Relief of Distress (SRD) grant of R350 ($20) was administered to all unemployed South Africans, and the value of both the child and social support grants were increased (Mukumbang et al., 2020). Whilst South African households were catered for, it remains unclear how asylum-seekers, refugees, and undocumented migrants in South Africa were catered for (Mukumbang et al., 2020). Households in South Africa, which are made up of such individuals, were placed in an even tougher predicament, given that they had to carry the double burden of not being able to acquire income from any kind of labour (due to the lockdown measures), as well as, not being explicitly considered by the government in their social protection schemes (Mukumbang et al., 2020). Households made up of asylum seekers and special-permit holders did not receive their Unemployment Insurance Fund (UIF) payments (Mukumbang et al., 2020), despite the fact that they were paying the mandatory taxes prior to the COVID-19 pandemic. This then shows that in South Africa, some households received some financial protection from the economic impact of the COVID-19 pandemic, whilst others bore the full burden of the economic shock.

The South African government did also provide food packages to address the threat of food insecurity in households in South Africa (Mukumbang et al., 2020). They also ensured that school-going children continued to have access to the school feeding schemes, even when schools remain closed (Nwosu & Oyenubi, 2021). Similar to the aforementioned grants administered by the government (the SRD grant and UIF payments), asylum-seekers, refugees, and undocumented migrants in South Africa were not catered for, as one would need the national ID or special permit in order to access these grants and these groups of people are generally highly unlikely to be in possession of such documentation (Mukumbang et al., 2020).

In Uganda, the government assistance from the government increased slightly, for rural households (Mahmud & Riley, 2021). Chile, Liberia, India and Costa Rica have also found other means of providing support to vulnerable schoolchildren by providing them with take-home food parcels that are either distributed at collection-points or delivered to them (Rohwerder, 2020). In response to the increase in food insecurity, the government of Bangladesh introduced a programme whereby food items were being sold at a subsidised price for the poorer households (Das et al., 2020). There was also a cash transfer scheme aimed at the extremely poor households, whereby each household would receive roughly US$30 to alleviate the economic impact of the pandemic (Das et al., 2020). Abdullah et. al., (2020) argues that the government in Malaysia has been swift in their response to the economic impact of COVID-19 through the announcement of an economic stimulus plan. Kumthom and Porntip (2020) note that the Thai Government put in place social security measures that were aimed to alleviate the effects of the pandemic on the Thai economy. Kumthom and Porntip (2020) also

note that temporary charity tents were put up in Thailand, where food was being given out to people who were in need.

5. SUMMARY

It is well understood that the COVID-19 pandemic has had ruinous economic effects on households across the globe, however, the impact in LMICs has gone beyond illness- households in LMICs have had their economic welfare severely threatened. It appears that the major channel through which households in LMICs have been adversely affected is through the loss of employment, which has led to a loss in income. The COVID-19 pandemic has also threatened the food security of many households in LMICs, particularly those that are headed by women. It has also been seen that households have not all responded in the exact same manner to the economic shock- some have reduced consumption, savings and investments, whilst others have maintained their consumption and savings behaviour. For those who have been severely impacted by the pandemic, governments have introduced social protection programmes that have attempted to bridge the gap. Some of these programmes have been in the form of direct cash transfers, whilst some others have been aid coming in the form of food and water parcels.

When one considers the epidemiology of COVID-19, the literature points to the importance of demographic risk profiles being accounted for when assessing the overall risk of a virus, and therefore, the response that needs to be instituted in order to control its spread. According to the literature, due to the differences in demographic risk profiles between HICs and LMICs, there was no need to introduce interventions as stringent as lockdowns in LMICs, due to their net negative overall outcome i.e. introducing hard lockdowns in LMICs led to more ruinous effects than the alternative of not intervening at all, due to the fact that a lot of LMICs would not/were not affected as severely by the COVID-19 pandemic as their counterparts in HICs, where the population is generally much older, and therefore, much more vulnerable to the virus.

When one considers the methodological review of the literature, it can be seen that there was no consistent method used to measure the economic impact of COVID-19 to households in LMICs. The WHO published a conceptual framework for researchers to follow when conducting health studies of this nature, however, this guideline has not yet been adopted amongst researchers working on the COVID-19 topic. This, therefore, points to a gap in the literature around COVID-19, in that there is still a need for a complete economic impact analysis to be done for this disease, in particular. Generally, much of the COVID-19 literature is dominated by qualitative studies, whilst studies which adopt a quantitative approach are scant. This provides an opportunity for studies to be conducted that explicitly quantify the cost of COVID-19 to households, and even the country, as a whole.

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PART C: JOURNAL MANUSCRIPT

The Economic Consequences of COVID-19 on Households in Low- and Middle-Income Countries: A Mixed-Method Systematic Review

ABSTRACT

Background: Emerging as a global health crisis, the novel Coronavirus disease 2019 (COVID-19) pandemic has become a great threat to the stability and prosperity of economies and households worldwide. With the World Health Organization (WHO) declaring COVID-19 a Public Health Emergency of International Concern (PHEIC) in the earlier months of 2020 (WHO, 2020), COVID-19 has spread rapidly throughout the world- at a pace that has demanded an understanding of COVID-19 that goes beyond the clinical and pharmacological interventions that have since been put in place. COVID-19 has demanded a need for robust study and implementation of public policy, as well as, personal interventions that would work to contain the spread of the virus.

COVID-19 has not only affected the health of individuals- it has also affected the economic standing of households worldwide. These adverse effects show that without active means of rapid mitigation, households in LMICs will continue to experience great economic distress. Now, mitigation cannot start without a well-grounded understanding of the problem at hand. This is what this systematic review aims to address.

This study aims to locate, appraise and synthesize the best available evidence relating to the economic impact of COVID-19 on households in low- and middle-income countries, through a mixed-methods narrative systematic review.

Methods: Evidence from both qualitative and quantitative papers will be combined in a single synthesis. This will be done by adopting an "integrated" mixed-method synthesis methodology, whereby both forms of data- quantitative and qualitative-have been combined into a single mixed-methods synthesis. The quantitative data will be grouped into themes and then presented alongside the qualitative findings (which fall under similar themes) in a mixed-methods synthesis.

Results: The COVID-19 pandemic has reduced household income for households in LMICs, whilst also introducing an increased degree volatility to it as well. The pandemic has also led to disruptions to education and employment, thereby disproportionately affecting the poor more than the well-off, as the former, due to structural constraints, failed to transition to online means of education and employment. There was also an increase in household food insecurity, as well as, female poverty. In order to cope, households have since reduced their consumption, amongst other forms of coping mechanisms. In response to this economic shock, many governments across LMICs have offered aid in the form of water and food parcels, as well as, cash transfers.

Conclusions: Households in LMICs have been hard-hit and left in worser economic conditions than they were in prior to the COVID-19 pandemic. In response to this, policy-makers and practitioners in LMICs need to tailor their social protection policies in a way that prioritises the implementation of pro-poor policies that work to "soften the (economic) blow" of the COVID-19 pandemic. They also need to put in place policies which support and protect the incomes of existing informal forms of employment.

Keywords:
Economic impact; economic consequence; COVID-19; households; LMICs; systematic review

INTRODUCTION

The COVID-19 pandemic has led to both health and economic consequences for households worldwide. Whilst the impact to health has been universal, the economic impact, particularly to households, has not been as homogeneous in its effects. Vassall et al. (2020) comments that the poor and deprived households in LMICs, who largely rely on work modes which cannot be done remotely, have suffered immense challenges as a result of the pandemic. They find that the COVID-19 pandemic, and the resultant policies around social distancing and lockdowns have led to reduced household incomes in LMICs due to adverse effects in the various industries which led to the job loss of many individuals (Vassall et al., 2020). This resulted in many households having to change their consumption behaviour in order to survive and avert the risk of food insecurity (Egger et al., 2021).

Amongst the many various economic consequences studied, there has been a keen focus on the impact of COVID-19 to household food insecurity. Adjognon et al. (2020) have found that the reduced household food insecurity has been as a result of a fall in household incomes. This, therefore, meant that households could no longer afford the same food items that they did, prior to the pandemic. Household food insecurity was also seen through the adverse effects experienced by school-going children, given that the pandemic led to school closures (Vassall et al., 2020). These school closures also affected the earnings potential of many parents. For instance, many parents had to take time off from work (and therefore lose out on paid labour) in order to take care of their children who were now primarily at home (Vassall et al., 2020). In searching the literature, the economic consequences of COVID-19 on households in LMICs was also seen in reductions in employment, reductions in remittances, and the rise in female poverty within a lot of households in LMICs. This study will consider these consequences, and work to highlight how households coped in response to this economic shock, as well as, address the ways in which governments intervened.

The aim of this study is to provide a quantitative and qualitative synthesis of the existing evidence on the economic impact of COVID-19 to households in LMICs using a range of indicators. This aim will be achieved by considering the following study objectives:

a. Describe both the direct and the indirect economic consequences of COVID-19 to households in LMICs.
b. Discuss the coping strategies that have been employed by households in response to the economic consequences.
c. Provide context-informed policy recommendations on how to mitigate the economic impact of COVID-19 on households in LMICs.

It is expected that the study findings would make a much needed contribution to the better understanding of household economic experiences in LMICs during the COVID-19 pandemic and the response of these households to this economic shock. The review will use a mixed-method approach- of which the rationale behind this decision will be provided in the "Methodology" section of this paper. The paper will also focus solely on *economic* impacts to the household. The study has considered the economic impact that has been experienced

specifically at the household-level, because "... when assessing the cost of illness, decisions about treatment and coping mechanisms are based on negotiations within the *household*, illness costs are incurred by *caregivers*, as well as, the sick, and the costs fall on the *household* budget." (Russel, 2004, Lund et al., 2019).

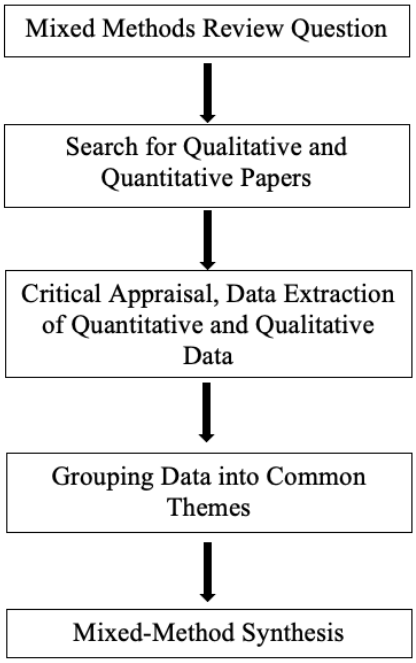
The review will start off by considering the consequences of the COVID-19 pandemic to households in LMICs with respect to employment and household food security. The review will then move on to consider the consequences of the COVID-19 pandemic as it relates to school closures and female poverty. Then lastly, the review will consider the coping mechanisms employed by households in response to the economic shock, followed by the social protection that was offered to struggling households by the governments in LMICs.

METHODS

Whilst Randomised Control Trials (RCT's) have been considered the gold standard for generating evidence on the effectiveness of a particular intervention or measuring the impact of a particular phenomenon, policy- and decision-makers are concerned about factors other than cause-and-effect questions. Decision makers are *also* concerned about the effects of their decisions i.e the lived experiences of those that are directly affected by the interventions or the policies that they have put in place (Pearson, 2015). It is for this reason that this study on the economic consequences of COVID-19 to households in LMICs has not restricted it's evidence base to RCT's alone, but has involved both quantitative and qualitative studies. This will allow decision-makers to glean insights from both study types, which, when taken together, can complement one another. This is the motivation behind the mixed-methods approach that has been adopted for this systematic review.

This study has adopted an "integrated" framework to conduct this mixed-methods systematic review. This means that both forms of data- quantitative and qualitative-have been combined into a single mixed-methods synthesis (Pearson, 2015). The reason the study has adopted an "integrated" methodology is based on the finding that both the quantitative and qualitative studies on the economic consequences of COVID-19 on households in LMICs, are similar enough to be combined (as opposed to having to do a separate synthesis for each of the study types, which is what is required when quantitative findings *differ* significantly from the qualitative findings). Therefore, the quantitative data will be grouped into themes and then presented alongside the qualitative findings (which fall under similar themes) in a mixed-methods synthesis (Pearson, 2015). This mixed-methods synthesis has been shown by way of a diagram in Figure 1, below.

Figure 1: Integrated Synthesis (adapted from Sandelowski et al., 2013) (Pearson, 2015)



Search strategy

A search was conducted for both qualitative and quantitative studies. There were no limits placed on the study design or language of the study, when the search was carried out, although only studies published in English were included in the final systematic review (due to resource constraints). Limits were also placed on dates.

The specific search strategies that have been used were created in consultation with Health Sciences Librarians, who have expertise in systematic review literature search. All search strategies (for each of the databases) have been included in Appendix 1.

Eligibility criteria for study selection

Inclusion Criteria: COVID-19-induced economic impacts to individuals and firms (as these consequences/impacts translate directly to the household)

Exclusion Criteria: non-economic impacts; economic consequences at country-level (with no explicit mention of how the consequence affects individuals/the household); economic consequences/impacts which fall outside of the period March 2020 to September 2021; countries not classified as LMIC by the World Bank; studies not published in English.

- *The World Bank's classification of "lower- to middle-income" countries as at 1 July 2021, is any country with a GNI per capita in current USD that falls between $1046 to $4095 (Hamadeh et al., 2021).*

Studies that were conducted as *forecasts* or *future estimates*, as opposed to *actual* economic consequences (such as a lot of the literature that was published in the early stages of the pandemic), has been excluded from the synthesis. This synthesis has also only considered published articles, and not any reports, policy briefs or documents of a similar nature.

The rationale behind these eligibility criteria is to ensure that the results produced are directly in line with the research question of interest, thereby increasing the likelihood of producing reliable and reproducible results- should one want to conduct their own study, based on a similar research question.

Information sources

The study has relied on electronic databases that are freely available through the University of Cape Town's library, and searches were conducted from 8 November 2021 up to 22 November 2021.

Literature search strategies were developed using Medical Subject Headings (MeSH) and text words related to the economic consequences of COVID-19 on households in LMICs. PubMed, CINAHL, SCOPUS, Cochrane Library, Web of Science, Google Scholar, EconLit and Sabinet African Journals were searched. The reason for searching so widely for this literature is due to the novelty of the world-wide impact of COVID-19, and consequently, the literature around its economic impact being scant at (the time of writing).

Selection Process

Once the searches had been conducted across the aforementioned electronic databases, and exported to EndNote, records were removed even *before* the "screening" stage of the selection process. These were duplicate records. Thereafter, the studies underwent a screening process, whereby records were screened against the pre-specified inclusion and exclusion criteria set out above. The first stage of screening was aimed at reviewing the articles by titles and abstracts. Full texts were obtained for those titles that appeared to meet the inclusion criteria. Where there was any uncertainty, full texts were obtained to provide clarity. The second stage of screening took place (which was also the final assessment for eligibility), whereby an assessment of all the articles by full text was done.

Data management

This review has used EndNote 20 as the reference manager. A shareable library has also been created such that any interested individual can have direct access to the articles that were used in this synthesis. Moher et. al. (2015) highlights the point that it is important for the methodology of a systematic review to be reproducible. The search history from the various electronic databases has been tabled as shown in Appendix 1, for record keeping.

Risk of bias in individual studies

The potential for bias to enter the selection process is significant and thus needs to be well-documented. Each eligible study was systematically appraised for risk of bias using predefined criteria as outlined by the Institute of Medicine (2011). All papers which were found to show bias were flagged, and findings from these papers were highlighted as being findings coming from a biased paper (the domain of bias was also specified) in the discussion section of this manuscript. This is done so that the systematic review does not exacerbate any distortions which may already exist in the literature on this topic (Institute of Medicine, 2011), which ultimately comprises the veracity of the conclusions reached, and therefore, the recommendations passed. A detailed description of each of the various dimensions through which bias in the individual studies has been assessed, can be found in the table below.

Institute of Medicine Standards of Assessing Risk of Bias (Types of Reporting Bias) (Institute of Medicine, 2011)

Types of Reporting Bias	Definition
Publication Bias	The publication or non-publication of research findings, depending on the nature and direction of the results
Selective outcome reporting bias	The selective reporting of some outcomes but not others, depending on the nature and direction of the results
Time-lag bias	The rapid or delayed publication of research findings, depending on the nature and direction of the results
Location bias	The publication of research findings in journals with different ease of access or levels of indexing in standard databases, depending on the nature and direction of results
Language bias	The publication of research findings in a particular language, depending on the nature and direction of the results
Multiple (duplicate) publications	The multiple or singular publication of research findings, depending on the nature and direction of the results
Citation bias	The citation or non-citation of research findings, depending on the nature and direction of the results

Quality Assessment of the Included Studies

The GRADE-CERQual (Grading of Recommendations Assessment, Development and Evaluation- Confidence in the Evidence from Reviews of Qualitative research) approach has been used to assess the quality (or certainty) of the qualitative evidence and the strength of recommendations of the included studies. This has helped inform the extent to which findings are a reasonable representation of the economic consequences of COVID-19 on households in LMICs (Lewin et. al., 2018). An in-depth explanation of the GRADE-CERQual tool and the meanings of the varying levels of confidence it yields can be found in the table below.

Concepts and definitions of the GRADE-CERQual approach to quality assessment of cumulative evidence (Lewin, 2018)

Component	Definition
Methodological limitations	The extent to which there are concerns about the design or conduct of the primary studies that contributed evidence to an individual review finding
Coherence	An assessment of how clear and cogent the fit is between the data from the primary studies and a review finding that synthesises that data. By 'cogent', we mean well supported or compelling
Adequacy of data	An overall determination of the degree of richness and quantity of data supporting a review finding
Relevance	The extent to which the body of evidence from the primary studies supporting a review finding is applicable to the context (perspective or population, phenomenon of interest, setting) specified in the review question

GRADE-CERQual Scale:

Level	Definition
High Confidence	It is highly likely that the review finding is a reasonable representation of the phenomenon of interest
Moderate Confidence	It is likely that the review finding is a reasonable representation of the phenomenon of interest
Low Confidence	It is possible that the review finding is a reasonable representation of the phenomenon of interest
Very Low Confidence	It is not clear whether the review finding is a reasonable representation of the phenomenon of interest

By using the GRADE-CERQual approach to the quality assessment of the evidence that has formed a part of this systematic review, has ensured that the evidence and insights used in the synthesis of this review are of a high quality, thereby making the resultant policy recommendations of the review more convincing.

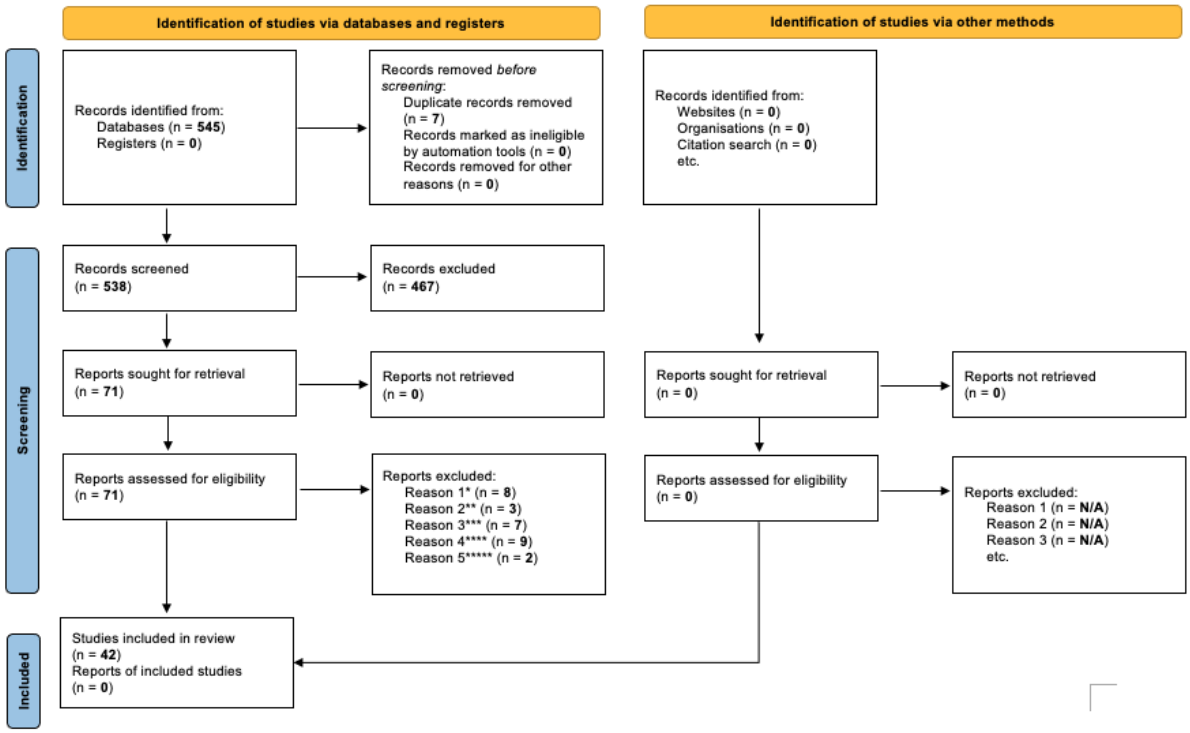
RESULTS

From the various databases that were searched, 545 studies were identified based on the specified search strategies for each database. The search strategies for each of the databases have been explicitly outlined in Appendix 1 to this manuscript. Of the 545 studies identified, 7 were removed as they were duplicate records. The first stage of screening then took place with the remaining 538 records. From the 538 records being screened, 467 were removed as

they did not meet the pre-specified inclusion and exclusion criteria. The remaining 71 studies were then taken to the second stage of screening, which included an assessment of the studies by full text. This formed the final assessment for eligibility.

Reasons for exclusion were primarily as follows: the study focused on the ***psychosocial*** (as opposed to the *economic*) impact of COVID-19 on households; the study focused primarily on the impact of the COVID-19 pandemic on ***mobility*** (as opposed to *economic* consequences, more specifically); the study focused on ***medicines and protection*** for COVID-19 (as opposed to *economic* consequences of COVID-19); and studies that investigated economic impacts ***not measured at the household-level***, or using data that is not directly relevant to the thesis question.

Figure 2: PRISMA Flow Diagram for Study Selection



*Reason 1: ***Psychosocial*** impact of COVID-19 on households
Reason 2: Impact of COVID-19 pandemic on ***mobility*
Reason 3: ***Medicines and Protection for COVID-19
****Reason 4: Economic Impact ***not measured at the household-level***.
*****Reason 5: Data not directly relevant to the thesis question

Quality Assessment Result

A quality assessment of all included studies was conducted, with all of the quantitative papers yielding a “high confidence” score. This means that the study findings of these studies did not fall short in any of the dimensions of assessing quality (methodological limitations, coherence, adequacy of data and relevance), and as such “it is highly likely that the review findings are a reasonable representation of the phenomenon of interest” (Lewin et al., 2018). In considering the qualitative papers, many of them yielded an overall medium (as opposed to high) level of confidence, primarily due to serious concerns with the methodology undertaken to reach results- in many instances, there was no dedicated methodology section in the published article. This made it difficult to then assess how the results(insights) of these qualitative studies were found or reached. However, it can be argued that the absence of a dedicated methodology section is justified in many of these articles, which were actually technical notes and reports from well-respected organisations such as the WHO & UNICEF. This ultimately makes one less sceptical of the results found, even when the overall quality assessment is not as high as it could've been. Given that there isn't one specific paper that contributes more significantly than the other in the synthesis of this review, it means that one shouldn’t be concerned about a study that doesn’t have such a high confidence-level “score”, as it wouldn’t bias the overall results. None of the included studies yielded low confidence scores based on the GRADE-CERQual Quality Assessment tool.

Below, in Table 1, lies the results from having conducted a quality assessment on each of the included studies.

Table 1: GRADE-CERQual Quality Assessment Tool Applied to Each Included Study

Author Name	Study Type	GRADE-CERQual Quality Assessment					
		Methodological limitations	Coherence	Adequacy of data	Relevance	Overall Assessment	Justification of Overall Assessment
Abdullah, J. M., et al.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Chaudhary, M., et al.	*Qualitative*	*Moderate concerns- Unclear methodology adopted*	*No or very minor concerns*	*Minor concerns*	*No or very minor concerns*	*Medium confidence*	*Moderate concerns based on methodological limitations*
Kumthom, M. and M. Porntip	*Qualitative*	*Moderate concerns- no mention as to how the study was conducted*	*No or very minor concerns*	*Minor concerns- there haven't been a lot of sources relied upon to reach the stated conclusions*	*No or very minor concerns*	*Medium confidence*	*Moderate concerns based on methodological limitations, as well as, minor concerns as it pertains to the adequacy of data*
Prinja, S., et al	*Qualitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Adjognon, G. S., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Arndt, C., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Barnett-Howell, Z., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Chackalackal, D. J., et al.	*Literature Review*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Egger, D., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Favara, M., et al.	*Qualitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Fore, H. H., et al.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*Minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations, as well as, minor concerns as it pertains to the adequacy of data used for this particular study*
Gromada, A., et al.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Gyawali, N. and H. M. Al-Amin	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Hamadani, J. D., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Hidrobo, M., et al.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Janssens, W., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Josephson, A., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*

Lucas, B.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Mahmud, M. and E. Riley	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Mayurasakorn, K., et al.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Mueller, V., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Osendarp, S., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Reardon, T., et al.	*Qualitative (Narrative)*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Rohwerder, B.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Sah, R., et al.	*Qualitative (Narrative)*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Vassall, A., et al.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Wylde, E., et al.	*Scoping Review*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Braam, D. H., et al.	*Qualitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Briggs, D. C. and K. A. Kattey	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Das, S., et al.	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Mukumbang, F. C., et al.	*Qualitative*	*Serious concerns- no dedicated section in the paper that outlines the methodology used for this research*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*Medium confidence*	*Serious concerns based on methodological limitations*
Nwosu, C. O. and A. Oyenubi	*Quantitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Singh, D. R., et al.	*Qualitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Adefisoye, T. O. and I. D. Adefisoye	*Qualitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Ikwegbue, P. C., et al.	*Qualitative*	*Moderate concerns - shortage of information regarding study selection process*	*No or very minor concerns*	*Minor concerns- only one database used for data collection with no justification provided for this decision*	*No or very minor concerns*	*Medium confidence*	*There are both moderate and minor concerns as it pertains to methodological limitations and adequacy of data, respectively*

Makumbe, D.	*Qualitative*	*Moderate concerns - shortage of information regarding study selection process*	*No or very minor concerns*	*Minor concerns*	*No or very minor concerns*	*Medium confidence*	*There are both moderate and minor concerns as it pertains to methodological limitations and adequacy of data, respectively*
Ogunlela, G. O. and R. K. Tengeh	*Qualitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Oni, O. and S. Omonona	*Qualitative*	*Minor concerns - shortage of information on conceptual framework employed*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not (severely) fall short in any of the dimensions of assessing quality*
Soyiyo, S., et al.	*Qualitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Toyin, F. C.	*Qualitative*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short in any of the dimensions of assessing quality*
Erinle, K. O., et al.	*Qualitative (Narrative)*	*Minor concerns - shortage of information regarding study selection process*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short (to a severe extent) in any of the dimensions of assessing quality*
Ehrenberg, J. P., et al.	*Scoping Review*	*Moderate concerns - shortage of information regarding study selection process*	*No or very minor concerns*	*No or very minor concerns*	*No or very minor concerns*	*High confidence*	*Study findings did not fall short (to a severe extent) in any of the dimensions of assessing quality*

Bias Assessment Result

In assessing bias within each of the included studies, bias was assessed along the varying dimensions thereof, namely, publication bias; selective outcome reporting bias; time-lag bias; location bias; language bias; multiple (duplicate) publications; and citation bias.

The results of this assessment are as follows:
There were no concerns as it pertains to ***publication bias*** as all authors published their findings, irrespective of the nature of the results or the direction in which their results went i.e each of the included studies reported *both* the "good" and "bad" that they found in their contribution to the literature around the economic consequences of COVID-19 on households in LMICs.

On ***the selective outcome reporting bias*** front, there were no studies that raised concern. A majority of the studies either declared not having received any form of funding or having no conflict of interest. Some studies did receive funding and all of them declared either that there was no competing interests or that funders were not involved in the choice of the study design, data collection and the summary and interpretation of results.

When it comes to ***time-lag bias***, all of the included studies were published no longer than one year after being written. This therefore means that the synthesis of findings from all these included studies will not be based on findings that favour one particular narrative over another. All studies were published within reasonable time frames. This may have been due to the novelty of COVID-19 and the need for studies concerning it to be published with immediate effect.

When considering ***location bias***, given that a great majority of the included studies relied more so, in some measure, on *published* literature, as opposed to grey literature, such as "... abstracts and unpublished data, such as data from trial registries, "file drawer data", and data from individual trialists" (National Academies of Sciences, Engineering, and Medicine, 2011:91), it does expose their findings to location bias. Location bias basically speaks to how the individual studies have themselves relied more on *published* studies rather than *unpublished* studies, thereby leading to the findings from published studies contributing more significantly to systematic reviews, than the unpublished studies.

In considering ***language bias***, the study selection for this systematic review was in such a way that, studies published in languages other than English were excluded from selection. Therefore, due to the exclusion criteria of this systematic review, one is not able to ascertain language bias of the included studies i.e whether or not these included studies are published in English language journals solely because the research findings support the popular narrative surrounding the thesis topic.

When it comes to ***multiple (duplicate) publications***, none of the included studies were duplicates of the other. There were articles that were found by EndNote 20 to be duplicates (at the study selection stage of this review), however, these duplicates were removed before the synthesis of this systematic review.

Whilst it is generally common to have various scholars reference each other's work when conducting their own research, it was not very common in the individual studies within this

study. This may have been due to the novelty of COVID-19 at their time of writing- there wasn't much in the literature to cross reference. As such, there is not much concern with the included studies being involved in the selective pooling of results that favour their own findings (***citation bias***).

A completed table of Bias Assessment for each of the included studies can be found in the Appendices section (Appendix 3).

Mixed-Methods Synthesis (Summary of Findings)

Below lies a synthesis of findings from both qualitative and quantitative studies that considered the economic consequences of COVID-19 on households in LMICs, grouped according to the following themes: employment, social protection, female poverty, school closures and it's impact on education, gifts and remittances, and lastly, household food security.

Employment

Loss of income

In Nepal, many workers experienced job loss and reduced personal income as a result of the lockdown measures (Sah et al., 2020). It was also found that approximately 30% of the telephone survey respondents in Nepal reported some level of income loss and 10% reported losing their job altogether, as a result of the pandemic (Rohwerder, 2020).

Rohwerder (2020) also states that it was mainly those who are migrant labourers, daily wage workers and households that have a handicapped individual, who experienced the greatest loss in income. This may have been due to the fact that a lot of blue-collar jobs, which are largely dominated by migrant labourers and daily wage workers could not be done remotely, and therefore, individuals could not continue to work under the period of the lockdown. In the case of disabled individuals, Sharma (2021) finds that there have been disabled people who have since not returned to work as their managers are aware of the additional support that they, as a disabled person will need in order to execute the daily duties, which may be contrary to the new reality that COVID-19 has introduced in the world of work. For instance, blind workers depend on physical touch to do much of their work- something that cannot, at current, co-exist with social distancing (Sharma, 2021).

Immigrant retail businesses, which have become very popular in South Africa, were negatively affected by the pandemic to such an extent that many in the West Rand region of Johannesburg reported that the likelihood of their survival beyond the pandemic lockdown is highly unlikely (Ogunlela & Tengeh, 2020). Josephson et al. (2021) finds a similar case for study participants that were running small businesses across Uganda, Ethiopia, Malawi and Nigeria. Roughly 35% of households that were participating in their study were running small businesses and a majority of these business owners reported a fall in revenue since the start of the pandemic in March/April. However, over time some of these business owners reported recovering some of their lost revenue (Josephson et al., 2021). This recovery in lost revenue may be as a result of the lockdown measures within each country being eased with the passing of time. However, a recovery of income has not been a reality for many households in LMICs. In a survey in Jordan, 58.6% of the respondents who were employed prior to the pandemic reported loss of total income since the introduction of the lockdown, with youth being the demographic that was most affected (Rohwerder, 2020). Sex workers also experienced loss of income, with the laws around this form of employment being deemed oppressive and presenting even further

challenges for the affected (Rohwerder, 2020). In Ethiopia, Rohwerder (2020) found that 55% of survey respondents stated that their household incomes had either lessened or disappeared completely due to the pandemic. This result was approximately for the first 1 to 2 months (Rohwerder, 2020). Janssens et al. (2021) also found that 86% of respondents from a study conducted in Senegal reported a fall in income, with 47% of respondents from the Myanmar cohort and 93% in Liberia reporting similar outcomes. It was found that the respondents reporting the most significant income losses were those involved in small businesses and casual employment (Janssens et al., 2021) - an outcome that is similar to that of Kenya.

Other groups of workers also reported a loss in income. Across Southeast Asia, home-based workers, who are "... workers who produce goods or services in or near their homes" (Lucas, 2020), realised that as soon as the lockdown measures were introduced in China, they experienced an increase in the price of the raw materials that they use in their production process which led to decreased profits for them (Lucas, 2020). Many who were self-employed in South Korea were hard-hit by the lockdown measures (Chackalackal et al., 2021). Business owners also faced a reduction in sales, which resulted in a fall in their income. Garment manufacturers in Vietnam, Bangladesh, India and Pakistan also experienced cancelled orders from purchases in the United States of America and Europe (Lucas, 2020). Handicrafts from Southeast Asia and Eastern Europe have also decreased in demand (Lucas, 2020). In all instances, it is clear that households experienced a loss in income as a result of the pandemic, especially if a significant portion of their sales was dependent on imports and exports. Shoe-shiners in Mexico and newspaper sellers in Peru reported not generating sufficient income in a day to cover their own transport costs (Lucas, 2020). Again, this was due to the loss of customers as a result of the restrictions placed on people's mobility by the lockdown measures. Waste pickers in South Africa, Peru, Ghana, Brazil, India and Colombia have also reported a fall in income, due to the fact that the middlemen that they usually sell to have been closed during the period of the lockdown (Lucas, 2020).

In their multi-country study, Egger et al., (2021) note that 25% of households in Kenya (and 87% in Colombia) experienced loss in income. However, these were median impacts which tend to veil the significant variation which exists within those settings. Mueller et al. (2021) also found that in their consideration of data from Bangladesh, Kenya and Nigeria, it was Kenya that comparatively suffered the greatest loss in labour income. Briggs and Kattey (2020) report that in Nigeria, the lockdown measures affected household monthly income, with women, those with secondary school education level and below, as well as, low-income workers, being affected the most. There was also a significant increase in youth unemployment and falling income, more especially in countries such as Peru and Vietnam (Favara et al., 2021). There was also a high degree of job loss in South Africa, which also contributed to the hunger crisis amongst the country's poor (Nwosu & Oyenubi, 2021). There were roughly 3 million jobs lost within the first 3 months of the lockdown. However, Arndt et al. (2020) does highlight, that households in South Africa that are dependent on government transfer payments generally had their income insulated from the effects of the pandemic, as the pandemic did not affect the government's ability to pay these out. To this end, it meant that household incomes for the most vulnerable were to some extent protected. Job loss which has also led to income loss has left many households in rural South Asia in extreme poverty, thereby severely increasing the food insecurity experienced in those households (Hamadani et al., 2020). The aforementioned findings strengthen the point that for many, the lockdown measures significantly disrupted their economic activity and removed their opportunity to generate income for their households.

Rural-Urban divide

In rural Uganda, Mahmud and Riley (2021) found that there was a 60% decline in household income since the lockdown measures were introduced. A similar outcome was observed in Bangladesh, Pakistan and Senegal (Mahmud & Riley, 2021). This decline was largely due to decreased demand for produce and lower business profits which meant lower wages earned (Mahmud & Riley, 2021). Mahmud and Riley (2021) also note that countries with the more stringent lockdown measures, are the same countries which experienced a greater degree of loss in income. This finding is consistent with that of Josephson et al. (2021), who found that in Uganda, Ethiopia, Malawi and Nigeria, some business owners were able to recover some of their lost income. As stated above, this may have been as a result of lockdown restrictions being eased with the passing of time, thereby supporting the claim that countries which experienced a greater degree of loss in income are the same countries that had the more stringent lockdown measures. Mahmud and Riley (2021) also find that of the households who own businesses, 82% have reported that they will be able to resume with their business activities once the lockdown measures have been relaxed (Mahmud & Riley, 2021).

A lot of working individuals in LMICs lost their jobs as a result of the pandemic. Most participants in the research conducted by Singh et al. (2021), based on Nepalis households, highlighted that poorer households (such as those of the Dalit ethnic group) that relied mostly on daily wages, were the most affected by the COVID-19 pandemic. This was due to the loss of employment, as well as, the closure of local businesses and markets. A similar outcome was found in rural Bangladesh, where the median monthly family income fell by more than 72%, and the percentage of households earning less than $1.9 each day increased from 0.21% to a little over 47%, from baseline to the lockdown period (Hamadani et al., 2020). In a nationally representative survey in Senegal, 86.8% of households reported a loss in income as a result of the pandemic, especially in rural homes where 91.5% of them reported having lost their income (Rohwerder, 2020). Furthermore, of those who were found to be living below the poverty line in Senegal, 93.7% of them also reported a loss in income (Rohwerder, 2020). However, Rohwerder (2020) also states that rural respondents in Senegal reported being less affected by job losses than their urban counterparts. This therefore means that their income loss emanated from other sources, and not necessarily from loss of employment specifically. A similar case is found in Bangladesh, where there were more income earners from urban slums who lost their jobs (70%) than income earners from rural households (54%) in the first week of April, as a result of the pandemic (Rohwerder, 2020). There was a 75% fall in income for respondents in urban slums, and 62% fall for respondents from rural areas (Rohwerder, 2020). Rohwerder (2020) also found that in Bangladesh, 22.9% of the population were now classified as “new poor” as a result of the pandemic, which is consistent with Gyawali and Al-Amin (2021), who report that 70% of urban Bangladeshi households reported losing more than half of their income within a couple of days of the lockdown being introduced.

In Nairobi (Kenya), Rohwerder (2020) states that 84% of respondents who are from informal settlements reported either having lower income as a result of the pandemic, or losing all their income altogether. Those who had reported complete loss of income in April were 36% of respondents, with that number increasing by 6% a month later, in May (Rohwerder, 2020). When disaggregating the loss of income, it becomes clear that the loss of income in rural Kenyan households is as a result of falling income from both formal and informal employment (Janssens et al., 2021). Income from crop sales and casual employment contributed only slightly (Janssens et al., 2021). This makes it clear that the loss of income from employment is the factor that has contributed most significantly to the economic climate within rural Kenyan households. So whilst the situation was dire in a lot of rural households, urban households

experienced an even greater loss in terms of their loss of employment, however, these urban households may have also had other safety nets that protected them from experiencing the same degree of poverty as their rural counterparts, as a result of the pandemic.

Rich versus Poor Households

Nwosu and Oyenubi (2021) found in their study of South Africa, that the pandemic disproportionately affected the economic status of the poor, in that the vulnerable population (those who are low-wage earners and those who work in the informal economy) would suffer more adverse effects through job loss in comparison to high-wage earners, as a result of the pandemic. They further mention that in the South African context, the economic impact of the pandemic was experienced more severely by the poorer segment of the population, whereby low-wage earners (those earning below 3000 ZAR) were 8 times more likely to lose their jobs during the pandemic than the higher-wage earners (those earning more than 24 001 ZAR) (Nwosu & Oyenubi, 2021). As Arndt et al. (2020) note, in their take of the South African reality, the reason for this observation may have been due to differences in levels of educational attainment, whereby South African households that had no secondary or tertiary education were found to experience a greater income shock as a result of the pandemic, as opposed to households with higher levels of educational attainment. Arndt et al. (2020) also state that low-skill forms of employment were more severely impacted rather than the forms of employment that tend to require more complex skills. This was shown in the reduction in hours worked, whereby this value was 26% for the more complex-skill forms of employment and 40% for the low-skill forms of employment (Arndt et al., 2020).

In Colombia, Chackalackal et al. (2021) state that workers in the informal sector received no customers, due to the lockdown measures and that they faced transportation challenges whereby it became difficult for them to get to work. A similar situation was observed in India, Nigeria and Mexico (Chackalackal et al., 2021). There was also an increase in child labour, in order for families to preserve themselves from the risk of food insecurity (Chackalackal et al., 2021). In Nepal, migrant workers and refugees were particularly vulnerable as they could no longer generate income from their activities in the informal sector (Chackalackal et al., 2021). Furthermore, many refugees were forced to return to their home countries as they did not have official documentation to enable them to qualify for government social security nets (Chackalackal et al., 2021).

The inconsistency in income that emanates from the informal sector- which was now adversely impacted on by the lockdown measures- destabilised a lot of households in LMICs, in terms of their household finances. This is due to the fact that in a lot of households in South Asia, such as India, Nepal and Bangladesh, a lot of households lead a hand-to-mouth life whereby many individuals rely on informal employment (Gyawali & Al-Amin, 2021). These individuals and their household depleted their resources during the lockdown periods and faced major challenges as a result of the pandemic and the economic shock that came along with it (Gyawali & Al-Amin, 2021). A similar observation of falling and unreliable income was found in other parts of Africa, and parts of Asia and Latin America too. Egger et al. (2021) state that there was a reduction in income and employment amongst citizens of countries in the aforementioned continents. The median value for households in these continents that experienced a reduction in income was 68% (Egger et al., 2021).

As Ehrenberg et al. (2021) put it, countries such as Argentina, Brazil, Columbia, India, Mexico, Peru, Russia, and South Africa, where informal sectors have a strong presence, were most

affected by the pandemic. This is understandable, given that the informal sector in LMICs is largely made up of street vendors, artisans, sex workers and other forms of employment which generally cannot be done remotely (Chackalackal et al., 2021). Informal sector workers suffered a greater loss in income than their counterparts in the formal sector or farming industries (Rohwerder, 2020). This divide between the experiences of high-wage earners and low-wage earners may be due to the fact that the former can execute their duties remotely, whilst the latter's reality is such that their form of employment cannot be replaced by "work-from-home" alternatives.

In contrast to the narrative above, in Uganda, there was a larger fall in income amongst the richer households. This was due to the fact that they rely more so on enterprise income and less so on farm produce sales i.e. the richer households are not subsistence farmers and nor do they rely on the sale of farm produce for their income (Mahmud & Riley, 2021). It was also the case in Ethiopia, that it was the richer households that reported the greatest loss in income than their poorer counterparts (Rohwerder, 2020). In their consideration of LMICs, Mueller et al. (2021) also found that the largest declines in income, spending, and wealth comes from richer households due to a large share of their incomes emanating from enterprise salaries/incomes. Mueller et al. (2021) also found that individuals from these richer households shifted their supply of labour from enterprise labour to farm labour. So households more reliant on businesses or salaries were the most hard-hit by the pandemic and the economic shock that came with it.

Household Food Security

Rural versus Urban divide

Egger et al. (2021) found that many households in LMICS were unable to meet their basic food needs. For instance, in Kenya, 48% of rural households were forced to miss meals or reduce their meal sizes in order to cope with the pandemic. The same was found for rural households in Sierra Leone (87%) and landless households in Bangladesh (69%). These observations, when compared to pre-pandemic levels, show that the level of food insecurity experienced by households in LMICs has worsened, as a result of the pandemic. In a study in rural Uganda, approximately 30% of household respondents reported that they were food insecure prior to the lockdown. Since the lockdown has started, this value has increased by 22 percentage points. This therefore means that of the households studied in rural Uganda, more than 50% of them now cannot afford to buy all the necessary food items required for their well-being, and have resorted to skipping meals as a coping mechanism (Mahmud & Riley, 2021). In Bangladesh, Das et al. (2020) found that 90% of the households that formed part of their cross-sectional survey suffered from varying degrees of food insecurity. In Bangladesh, severe food insecurity was higher in households in urban areas (42%) as opposed to households in rural areas (15%)- much like the finding in Mali (Adjognon et al., 2020).

Hamadani et al., (2020) also note a marked increase in severe food insecurity in their study population of families across urban and rural Bangladesh. This observation was as a result of reduced household income (Hamadani et al., 2020). In their study of the economic impact in rural Uganda, Mahmud and Riley (2021) found an increase in food insecurity. In considering urban households in Liberia, Philippines, Uganda, and Rwanda, Janssens et al. (2021) found that there was a reduction in food consumption. However, Mahmud and Riley (2021) found that households in rural Uganda, which were wealthier at baseline, were severely adversely affected by the lockdown measures due to these household's reliance on salaried income. From

these observations, it becomes clear that households that were reliant on subsistence farming were the ones insulated from the increased risk of food insecurity as a result of the pandemic.

Poor Households

Singh et al. (2021) found that, in Nepal, it was the poor households that underwent the most severe degree of food insecurity, as a result of the COVID-19 pandemic. The reason for this is that poor households are generally landless and heavily reliant on daily wages, and therefore do not have any "cushioning" to fall back on. Even in the presence of social security programmes that were put in place to support such households, the fact that these programmes were largely poorly funded and insufficiently implemented was now being exposed even further by the fact that households were still food insecure, even after receiving aid (Singh et al., 2021). A similar outcome was observed in South Africa (Arndt et al., 2020).

Food prices and food expenditure

The market price of food items in Baidoa and Mogadishu, Somalia also increased. This was due to the closure of airports which made it impossible for imported goods to enter the country. As a country that is dependent on imported goods, Somalia was severely affected (Braam et al., 2021). The government in Somalia did try to offset these price increases by instating tax exemptions on some food items, however, this effect was negated by the retailers stockpiling their goods (Braam et al., 2021). This increase in food prices alone led to 34% of study participants not being able to afford food items and 70% of them skipping meals (Braam et al., 2021). Mahmud and Riley (2021) also note that there has been a significant increase in the price of food items in rural Uganda as a result of the lockdown, and this increase in food expenditure is the factor that also contributed most significantly to the rise in food insecurity. The price of beans, for instance, was found to have been more than 2 times its initial price (Mahmud & Riley, 2021). There was also a price increase in other food items, such as maize flour and sugar (Mahmud & Riley, 2021). Due to the sharp decline in food spending in some households in LMICs, Mahmud and Riley (2021) found that households in rural Uganda reported increased levels of hunger. This is in line with the 34% increase in poverty that was found in rural Uganda as a result of the pandemic, 71% (compared to the baseline percentage of 53%) of the households now being classified as "poor" (Mahmud & Riley, 2021). Briggs and Kattey (2020) also found that in Nigeria, the reduction in economic activities brought about inflation in many staple food items. Briggs and Kattey (2020), however, did not here outline the causal mechanism i.e. how a dampened economy in Nigeria contributed to inflation.

Food insecurity in LMICs was also driven by other factors. Reardon et al. (2020) submits that the reason behind increased food prices during the COVID-19 pandemic was due to the food shortages- they suggest that interruptions to food supply chain logistics increased transaction costs which therefore affected consumer prices (Reardon et al., 2020, Das et al., 2020). They also cite speculative hoarding as a contributor to price hikes (Reardon et al., 2020). Lucas (2020) notes that the increase in food prices in Thailand and India has been due to stockpiling and price gouging.

In contrast to the lower income countries of which much of the literature is centred around, middle income countries did not experience much of an increase in their food prices, with the exception of crops that rely on biofuels and industrial processes to grow (Lucas, 2020).

Gifts and Remittances

Due to the fact that there was a fall in remittances and gifts, as a result of the pandemic, it did also mean that households that were more reliant on them experienced an even higher risk in food insecurity. This was seen in Nepalis households whereby Lucas (2020) found that households that depended on remittances experienced increased levels of hunger, as a result of the COVID-19 pandemic (Singh et al., 2021).

Poverty

The impact of the pandemic on food security has been widespread. Egger et al. (2021) notes that even in Colombia, the country that has the highest per capita GDP in their sample of countries (Burkina Faso, Ghana, Kenya, Rwanda, Sierra Leone, Bangladesh, Nepal, Philippines, Colombia), food insecurity was a serious threat to a significant proportion of the Colombian respondents. 87% of Colombian respondents reported a reduction in income, 49% reported a reduction in employment and 59% reported an increase in food insecurity. Unsurprisingly, even in Malawi- one of the world's poorest countries- food insecurity posed a real challenge for households (Soyiyo et al., 2020). In Malawi, the Malawian government initially introduced lockdowns without addressing the risk of hunger through perhaps considering a countervailing policy that would look to provide social protection. The absence of this social security net led to nationwide protests (Soyiyo et al., 2020). In considering the economic conditions in Malawian households, Josephson et al. (2021) state that perceived financial risk was associated with food insecurity. This implies that many of the households that were aware of their own inability to financially cater for their food needs during the period of the lockdown did actually experience heightened food insecurity in their homes. So from this finding, it becomes clear that in countries where the poverty levels are so high, as one finds in countries such as Malawi, lockdowns (without targeted social protection schemes) could entrench locals into deeper levels of poverty. This gives the insight that poorer countries, in the context of a pandemic such as COVID-19, have the double burden of preventing death from disease, and on the other hand, death that may come about as a result of increased levels of hunger due to the disturbance or halting of income-generating activities. So, over and above trying to control the spread of the virus, LMICs have to also consider the danger of losing their citizens to the very lockdowns that have been instituted to preserve their lives.

In Ethiopia and India, roughly one in every six households reported having run out of food at least once over the course of the pandemic (Favara et al., 2021). This was a 200% increase from the 2016 numbers which reflected the proportion of households struggling with food. In Peru, 13% of youngsters considered in the Favara et al. (2021) phone survey reported a similar outcome for their households, whilst the youth in Vietnam who reported the same outcome for their households only came to roughly 4%. Josephson et al. (2021) noted that there was a statistically significant increase in food insecurity in households in Nigeria since the start of the pandemic, in comparison to pre-COVID-19 times. A similar outcome was observed for the South African context too (Arndt et al., 2020).

Mueller et al. (2021) also found that in Kenya, households that were exposed to someone with COVID-19 were strongly associated with suffering severe food insecurity, and cites income loss from that particular individual as a possible reason behind this observation. It was also found that these households with increased risk were also more likely to receive assistance (Mueller et al., 2021), however, some households reported that even when they received assistance, they were still food insecure and this speaks to the possibility that the aid given wasn’t sufficient to ameliorate the household’s challenges. A similar observation was made by

Arndt et al. (2020) for the South African context as well. The major job loss that occurred particularly between February and April 2020 alone led to the sharp decline in household income of many South Africans - which also increased the risk of hunger for many households (Nwosu & Oyenubi, 2021). Erinle et al. (2021) notes that the lockdown and restrictions to mobility in India led to food scarcity, due to the fact that the COVID-19 pandemic caused delays in the food supply chains. In their study of rural Bangladesh, Hamadani et al. (2020) state that moderate and severe food insecurity increased from 5.62% to 36.45% and 2.69% to 15.35% respectively, as a result of the pandemic.

School Closures and Impact on Education

In general, school closures cause deficits in learning and the student's health (Gromada et al., 2020) - factors which will ultimately affect a student's potential for higher educational attainment and even getting the opportunity for higher-paying salaried work. In place of in-person learning, a lot of countries in LMICs adopted online learning modes of education and this has also posed several challenges for students, particularly for the ones that come from poor households. In countries such as LMICs, whereby inequalities exist between different socio-economic classes, the introduction of online learning further widened the gap whereby students from a financially insecure household experienced greater challenges in their academic performance (so a greater degree of learning deficit) than their peers who come from richer households (Mayurasakorn et al., 2020).

These were the effects of school closures in Asia -
India many students were still waiting for schools to re-open by mid-October 2020 (Favara et al., 2021). In Vietnam the impact of school closures was not as severe, as only 8% of those who were previously students chose not to return to any form of school, with most of this group being those who were finished with their studies in any case (Favara et al., 2021). Abdullah et. al., (2020) reported that almost 5 million school students and 1.2 million university students in Malaysia have been affected by school and university closures, as a result of the pandemic, and have had to rely on online learning and other virtual technologies instead. From this synthesis of literature, one notices that school closures in Asia had a negative effect on students and their educational outcomes.

These were the effects of school closures in South America -

Global trends with respect to the negative impact of school closures on students have also been found in South America. Favara et al. (2021) found that there was a significant increase in school drop-outs amongst those who were younger than 19 years of age. The school drop-out rate was highest in Peru, when comparing it to the rate found from the respondents who are from India, Ethiopia and Vietnam (Vietnam had the smallest drop-out rate) (Favara et al., 2021). School closures affected poorer school-going children disproportionately, as their households did not have the infrastructure such as a computer and internet connection in order to facilitate e-learning (Chackalackal et al., 2021). This therefore widens the future economic divide between the "haves" and "have-nots", which in the context of this review: the divide between households in LMICs and households in HICs.

These were the effects of school closures in Africa -

The pandemic has also increased the prevalence of hunger amongst many South African households, especially those that are poor. A clear indication of this manifests itself in the impact school closures in South Africa have had on school-going children who rely on the National School Nutrition Programme (NSNP) (Nwosu & Oyenubi, 2021). More than 9 million school-going children rely on this programme to meet their daily requirement of sufficient nutrition (Nwosu & Oyenubi, 2021). In their analysis of South Africa, Nwosu and Oyenubi (2021) find that the pandemic exacerbated the hunger problem amongst the poor in South Africa. They found that students who were benefiting from the National School Nutrition Programme now no longer had access to this scheme. In response to what would have been a dire consequence borne by a significant number of students, the South African government ultimately mandated that the NSNP would continue irrespective of school closures (Nwosu & Oyenubi, 2021). This helped to reduce the pro-poorness of hunger and address a level of food insecurity experienced by many households in South Africa (Nwosu & Oyenubi, 2021).

Impact by Gender

Female Poverty in Asia

As it relates to sex work in India, Rohwerder (2020) states that the lockdown measures affected thousands of sex workers, majority of which are women (Scott, 2018), due to the fact that most of their client's income was adversely affected by the pandemic. Even though sex worker incomes have also been affected by the pandemic, Rohwerder (2020) states that some sex workers were not included in any of the government's relief programmes, resulting in a lot of them being left in hunger and a state of dependence on charities. Whilst some other government initiatives and sex worker organisations sought to fill the gap (Rohwerder, 2020), it is clear how women whose primary source of income was in the sex work industry faced the double challenge of losing income from their labour, *as well as*, not receiving any form of palliative from the state.

It was also found that women in India who had disabilities were also discriminated against. Rohwerder (2020) states that these women experienced barriers to government support even prior to the pandemic, due to the requirement of needing to have disability certificates, of which many of these women did not have. This therefore made it even more difficult for them to access government support during the pandemic (Rohwerder, 2020).

In Bangladesh, women-headed households were found to be more likely to experience a fall in income in comparison to men-headed households (Rohwerder, 2020). Rohwerder (2020) also reports that women were more likely not to receive any government support than men. Hamadani et al. (2020) states that the lockdown measures severely impacted women in the rural South Asian contexts, such as rural Bangladesh. For instance, 96% of working Bangladeshi women respondents stated a fall in labour income as a result of the pandemic (Hamadani et al., 2020). Das et al. (2020) also have findings which corroborate the aforementioned evidence by Hamadani et al. (2020).

Female Poverty in Africa

Nwosu and Oyenubi (2021) found that women have been more negatively impacted by the pandemic and the economic shock that has come with it, than men. In South Africa, women

were found to be more likely to become unemployed than their male counterparts; they were found to take on more household responsibilities than men (Nwosu & Oyenubi, 2021) and therefore, they were subjected to even further economic disparities between themselves and men.

The findings by Briggs and Kattey (2020) also highlight that women in Nigeria, in particular, were hard-hit by the effects of the pandemic, and they mention that one of the reasons for this was due to women being financially dependent on their male partners, whereby since the male's income was affected, the females income was, by consequence, also affected (Briggs & Kattey, 2020). In Nairobi, Rohwerder (2020) also found that it was the women who bore the bigger proportion of economic burden that arose as a result of the pandemic- women were more likely (77%) to report skipping a meal than men (68%). A similar outcome was observed in Bangladesh too, whereby female-headed households in urban areas faced increased risk of food insecurity in comparison to their male counterparts (Rohwerder, 2020).

Social Protection

Food aid

In an attempt to cushion the effects of the lockdown on the vulnerable, the Ekiti State (Nigeria) government announced that they would have a food bank. Other local governments in Nigeria adopted a similar safety net for their own people (Adefisoye & Adefisoye, 2020). Households in Nigeria that were exposed to food insecurity were given stipends to reduce the impact to households as a result of loss of income due to the lockdown measures. Food vouchers were also given to households in order to continue to give food to school-going children who were dependent on their school's feeding schemes (Mueller et al., 2021). A debt relief programme was also introduced in order to protect those individuals who owned businesses during the period of the lockdown. This was all done to smooth out the consumption of households facing food insecurity in Nigeria (Mueller et al., 2021).

The vulnerable in South Korea (the disabled, homeless, those of refugee status, the elderly and those in low-income households) were adversely affected by the physical distancing and quarantines introduced (Chackalackal et al., 2021). Many faced challenges with shelter due to the closing of shelter homes and welfare centres (Chackalackal et al., 2021). In response to this economic shock, emergency food parcels and protective gear were distributed to the vulnerable (Chackalackal et al., 2021). Provision was also made for bank repayments whereby deadlines for repayments were extended (Chackalackal et al., 2021).

In India, the Kerala State administered an economic relief package in order to address the increased risk of food insecurity that was the reality of many Indian households (Chackalackal et al., 2021). Community kitchens were set up for people to receive free food. Stranded immigrant labourers were also accommodated- they were given new homes (Chackalackal et al., 2021). The government in Kerala State also extended loan and rent repayment deadlines to relieve households of the pressure that came with making payments (Chackalackal et al., 2021). There was also a two months advance given to pensioners within Kerala State (Chackalackal et al., 2021).

Other governments in LMICs also went beyond administering food aid in order to assist households that were struggling to make ends meet. In the aid provided, governments in Ghana and South Africa also included the provision of emergency water to those affected the most by the lockdown measures (Soyiyo et al., 2020). Ghana also introduced free electricity and tax

holidays for its citizens (Soyiyo et al., 2020). Namibia assisted their newly unemployed with income grants (Soyiyo et al., 2020).

Social Protection Challenges

Whilst the governments in many LMICs sought to provide social security for many struggling households (Fore et al., 2020), the literature does point to several obstacles that came along with some of these programmes. Singh et al., (2021) found that food relief and emergency support from both the national government and not-for-profit organisations played a crucial role in providing social security to a lot of the Nepalis, coming specifically from low-income households. However, discord between the local (governmental) parties adversely affected the distribution of these relief packages. Singh et al., (2021) reported that a lot of Nepalis experienced "... favouritism, nepotism, and partiality from local politicians and authorities during the distribution of food relief" thereby adversely affecting the poorer households which were already the most hard-hit by the pandemic (Chackalackal et al., 2021). Another challenge that was found with the relief packages in Nepal was that they were not adequate to meet food requirements for the entire period of the pandemic i.e. the packages provided, did not last for long enough, especially with the families that are of a bigger size (Singh et al., 2021). A similar reality was observed in South Africa (Nwosu & Oyenubi, 2021). Some individuals in Nepal even noted that the food provided in their relief packages was in some instances of a very poor quality (Singh et al., 2021).

A couple of challenges were found in the Bangladeshi context too.
Rohwerder (2020) notes that the economic impact has been larger in *urban* poor households in comparison to rural poor households of Bangladesh. This presented a new challenge for statesmen as the social safety nets were generally aimed at the *rural* poor, and not the urban poor. This meant that the low-income households in urban areas were not catered for in the initial stages of the pandemic, and therefore, did not have a safety net for the financial crisis that came with the pandemic (Rohwerder, 2020). Another challenge in Bangladesh was found with disabled persons. Those who are disabled in Bangladesh, and thus recipients of the disability grant, were barred from receiving further assistance in the form of COVID-relief programmes, such as food aid even when it was well-understood that the disability grant would be insufficient to support an entire household in the face of the COVID-19 crisis (Rohwerder, 2020). Much like the study participants in Nepal, respondents in Bangladesh also stated that the aid received was not sufficient to meet their needs, and that more middle-income households received cash support than the lower-income households who actually needed it more (Rohwerder, 2020). A reality that was also observed in Nepal as well (Singh et al., 2021).

The experiences in Nepal and Bangladesh were also found in other LMICs. The cash and food transfer programmes introduced in many other LMICs were said to be inefficient and ineffective in protecting households from the increased risk of food insecurity and poverty that came as a result of the pandemic (Osendarp et al., 2021). This observation is also supported by findings from Das et al. (2020) and Egger et al. (2021). Such a challenge increased the food insecurity of many households in LMICs, thereby leading to household members having nutrient-deficient diets. Government support was found to be greatly insufficient in many LMICs as well (Chackalackal et al., 2021), with the poorest in the population sometimes finding themselves not catered for- as was the result in Nigeria (Chackalackal et al., 2021). In Nigeria, approximately 3.8% of the country's poor were provided with cash relief in response to the pandemic. Of those who received aid in Nigeria, the lump sum was not even sufficient to last the household a full week (Chackalackal et al., 2021). Chaudhary et al. (2020) notes a similar observation in India as well, whereby even though the Indian government announced a

relief package, much of it was perceived as being insufficient by many workers who expected the government to provide monthly financial support. This led to a mass exodus of migrant labourers from the country's major cities, due to the job loss experienced by many and the absence of a safety net to fall back on (Chaudhary et al., 2020).

The governments in Zimbabwe and Ethiopia also provided aid to their citizens residing in rural and remote areas. This aid was in the form of cash transfers (Mueller et al., 2021). However, Mueller et al. (2021) notes that allowances were not always delivered accordingly, and as such the effectiveness of these social protection programmes was severely undermined. In Ethiopia, for instance, the early stages of the lockdown (mid-April to mid-May) showed that only 8% of households surveyed received aid from either the government, NGO's or religious institutions in the form of food and cash transfers, for the most part (Rohwerder, 2020). However, the government was the biggest provider of assistance. In their study of rural Uganda, Mahmud and Riley (2021) found that there was a significant decrease in incomes from households there, and that only 2% reported receiving any form of aid from the government. Mahmud and Riley (2021) also note that the Ugandan government did not provide much aid for struggling urban households. Financial aid wasn't a need exclusively for rural households alone- richer households were reported to have also suffered large reductions in income (Mahmud & Riley, 2021), indicating that they would have also required some form of aid. In Kenya, only 21% of the population managed to receive government assistance, and even in the context of this assistance, many households were still left vulnerable and found that the assistance was insufficient to meet their basic needs (Rohwerder, 2020). In Iraq, Rohwerder (2020) states that more than half of the internally displaced persons who were being monitored did not have access to state services. This contributed to their further descent into poverty. In response to the lockdowns, Chackalackal, et al. (2021) found that in Nigeria and Colombia, food trucks were also looted and food vendors were attacked by hungry individuals. This worked to undermine the efforts of the state.

In Malawi, the situation was entirely different, as the government did not provide their citizens with any form of social protection that would support Malawian households for the period of the lockdown (Soyiyo et al., 2020). Due to the absence of these social security programmes, Malawians started and were involved in nation-wide protest action against their government, as Malawians were conflicted between dying from the virus or dying from hunger (Soyiyo et al., 2020). The protest action may have been due to the degree of poverty that already existed amongst Malawians even prior to the pandemic, whereby household members would definitely not have any personal savings to tap into or any assets to sell in order to protect themselves against the economic shock. Malawian households *needed* some level of social security from their government.

Just as there were challenges in social security programmes in other LMICs, the experience in South Africa was not without challenges too. Whilst the South African government did introduce a transfer programme such as the National Food and Nutrition Security Plan which was aimed at addressing the food insecurity risk that a lot of households were now exposed to, this programme was found to be insufficient when it came to protecting the poor and the vulnerable (Nwosu & Oyenubi, 2021). The South African government also introduced the (SRD) grant to the value of 350 ZAR for South Africans who were unemployed. This grant was introduced to address the income loss that came with the pandemic, however, much like the transfer programmes that were put in place to address household food insecurity, this grant was also found to be insufficient to meet household needs for the period of the pandemic (Nwosu & Oyenubi, 2021). Furthermore, temporary residents, such as those having a non-

refugee status did not qualify to benefit from the SRD grant (Nwosu & Oyenubi, 2021). Immigrant business owners also did not receive any form of support from the South African government (Makumbe, 2020). Given that many South African households continued to face financial strain, even after receiving aid from the various government social protection programmes, it becomes clear that these programmes were insufficient to adequately protect the poor and vulnerable from hunger (Nwosu & Oyenubi, 2021).

Whilst the various social protection programmes faced their own challenges, it is still worth noting that without them, many households in LMICs would've not been to survive the COVID-19 pandemic and the economic crisis that came along with it. These programmes helped millions of people and their households to be more "shock responsive" (Wylde et al., 2020).

SUMMARY OF FINDINGS

Much of the literature on the economic impact of COVID-19 to households in LMICs has referred to job loss (and the resultant loss in income) as the most significant economic consequence to households in LMICs. Of interest, the literature shows that households in rural areas fared much better than their urban counterparts due to their reliance on subsistence farming and non-salaried work. It was also found that the loss in employment was much higher for the low-skill forms of employment than the high-skill forms of employment. One of the reasons for this observation is as a result of the former generally not being able to conduct remote work, whereas the latter, commonly referred to as the "laptop class", could migrate to work-from-home alternatives.

When considering household food insecurity, it is clear that the spike in food prices severely undermined the household's ability to meet their daily nutritional needs. This new reality affected poorer households the most. A significant proportion of households in LMICs were forced to reduce the amount of food items bought, and even skip meals. This brings to light the need for social security nets that will protect poor families from suffering severe hunger as a result of the pandemic and the lockdown measures that have been introduced to reduce the spread of the virus.

School closures were also part of the economic consequence of COVID-19 on households in LMICs. School closures had a severe and adverse effect on school-going children in LMICs- many dropped out and many experienced prolonged learning deficits. School closures also increased the risk of food insecurity in school-going children who rely on their school's feeding schemes to meet their daily nutritional needs. E-learning modes of schooling were adopted in some learning institutions, and this mode of learning has affected learners both in schools and learners in universities- further widening the gap between the "haves" and the "have-nots", in that students coming from richer households were able to easily transition to online learning platforms, whilst students from the poorer households faced a lot of structural challenges, such as not having wireless internet connection to complete their school work. Female poverty was also a major threat to households in LMICs. It was found that women from LMICs in Africa were more likely to lose their jobs than their male counterparts. In Asia, a similar trend was found with even some women in India being denied access to government aid, due to them not having some of the documentation that was required.

In response to the economic shock, households in LMICs employed a varying number of coping strategies from reducing their household spending, to taking out loans and even tapping

into their savings. Many households also relied on reducing food consumption or changing food preferences as their coping strategy. Some households were found not to employ any coping strategies at all. In response to the economic shock, governments across LMICs did provide aid in order to protect households from hunger and even deeper levels of poverty. Aid in the form of food parcels, water and cash transfer systems were popular amongst many LMICs. These social security programmes, however, were met with challenges which undermined the overall efforts of the state.

Overall, it can be said that the COVID-19 pandemic had dire economic consequences for households in LMICs- with the stringent lockdown measures being the root-cause of many of the challenges stated within this review.

Strengths of this review

The main strength of this systematic review has been two-fold: the subject-matter, as well as, the methodology used to synthesise the findings. On the point of subject-matter, the economic impact of COVID-19 on households in LMICs is of immediate relevance. Given the plethora of studies being conducted on the topic, it may be quite difficult and time-consuming for practitioners to read and glean insights from most of the papers that are published on this topic. A systematic review approach to the research question solves this problem.

On the point of a mixed-methods approach- the merits of this approach have been highlighted in the methodology section above. In addition to the reasons already provided, this approach is also not yet popular in the world of systematic reviews, thereby giving policy makers and other practitioners access to findings which are unique and wouldn't be readily obvious if the systematic review took a quantitative-only or qualitative-only approach to the synthesis of the data.

Limitations of this review

Limitations of the paper include the narrow focus of the review topic, the absence of a meta-analysis being conducted on the quantitative data, as well as, the quality assessment tool used. On the point of a narrow focus- the paper does acknowledge that the economic burden of illness (in general) will always span beyond the household i.e. there are economic impacts worthy of consideration and discussion even at the firm and national economies level as well. This reality still stands true even for COVID-19. However, in addition to the reasons provided above regarding the motivation behind households being chosen as the subset of interest, the narrow focus also has its benefits, in that it allows for the review not to compromise on depth in exchange for breadth. A compromise on this front would limit the usefulness of the overall findings of the review. On the point of there being no meta-analysis conducted- this is not ideal, from the perspective that there has been no actual statistical combination of comparable studies- which may make the review miss some important insights also worthy of consideration. In conducting the review, it also became evident that other countries were studied more than others, and this brings to the fore the understanding that some countries may have been underrepresented in this synthesis of the literature. Lastly, the GRADE-CERQual tool used to assess the quality of individual studies is very subjective in its determination of what makes for "high confidence" or "low confidence" studies. This, therefore, calls for more objective assessment tools to be used for assessing the quality of included studies.

Future work can look into addressing these limitations. Firstly, there is a gap as it pertains to studying the economic consequences of COVID-19 on households in LMICs for

underrepresented populations. There is also scope for this review to be taken further and include a meta-analysis that allows for statistical analysis to be conducted on a number of the included studies- this will work to improve the veracity of the claims made. There is also a need for more quantitative studies to be done on this topic- majority of the included studies included in this synthesis were qualitative in study design. There is also a need to conduct more studies on middle-income countries for this particular study topic, as much of the synthesis is based on data coming from lower-income countries.

CONCLUSION

In this study, we have conducted a mixed-methods systematic review of the economic consequences of COVID-19 on households in LMICs. This was done by consulting both quantitative and qualitative studies in order to integrate findings from both, in the form of one mixed-methods synthesis. This was then followed by conducting both a quality and bias assessment, where it was found that a majority of the papers were of a high and acceptable standard, and a majority of the included studies did not show a great degree of bias (with location bias being the only source of concern). The main findings show that there were adverse economic consequences on households in LMICs, as a result of the COVID-19 pandemic. The main economic consequences experienced are along the lines of: employment, social protection, female poverty, gifts and remittances, household food security and lastly, school closures and its impact on education. Therefore, this study concludes that households in LMICs have been, from an economic point of view, adversely impacted on by the COVID-19 pandemic.

DECLARATIONS

Ethics approval

This systematic review did not conduct any work that required primary data, and nor did it involve human or animal subjects. As such, it did not require approval from the Ethics Committee. The approval to conduct the proposed review was, however, sought from the Departmental Research Committee within the School of Public Health and Family Medicine at the University of Cape Town.

Consent application

Not applicable.

Competing interests

There are no competing interests to declare, as it pertains to this study.

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APPENDICES

Appendix 1: Search Strategies by Database

PubMed (A)
(((COVID-19[MeSH] OR SARS-CoV-2 OR coronavirus OR coronavirus 2019 OR corona OR coronavirus Disease OR SARS-2 OR SARS covid 2 OR severe acute respiratory syndrome coronavirus 2) AND (economic consequences OR direct economic consequences OR indirect economic consequences OR economic burden OR economic impact OR asset consequences)) AND (LMICS OR low- and middle-income countries] AND [household OR household experience OR family unit OR home OR family OR asset consequences OR experiences)) AND (Income loss OR catastrophic spending OR catastrophic health expenditure OR loan OR borrowing OR coping strategies)

CINAHL (B)
(MH "SARS-CoV-2") AND (MH "COVID-19") AND (MH "Economics") AND (MH "Economic Aspects of Illness") AND (MH "COVID-19 Pandemic") AND (MH "Economics, Pharmaceutical") AND (MH "Coronavirus Infections") AND (MH "Coronavirus") AND (MH "Economics, Organizations, Control")

FILTERS:
Limiters - Published Date: 20200101-20211231
Expanders - Apply equivalent subjects
Narrow by SubjectGeographic: - mexico & central/south america
Narrow by SubjectGeographic: - africa
Narrow by SubjectGeographic: - asia
Narrow by Language: - english
Search modes - SmartText Searching

SCOPUS (C)
COVID-19[MeSH] OR SARS-CoV-2 OR coronavirus OR coronavirus 2019 OR corona OR coronavirus Disease OR SARS-2 OR SARS covid 2 OR severe acute respiratory syndrome coronavirus 2 AND economic consequences OR direct economic consequences OR indirect economic consequences OR economic burden OR economic impact OR asset consequences AND household OR household experience OR family unit OR home OR family AND (LIMIT-TO (AFFILCOUNTRY,"India") OR LIMIT-TO (AFFILCOUNTRY,"China")) AND (LIMIT-TO (LANGUAGE,"English")) AND (LIMIT-TO (PUBYEAR,2021) OR LIMIT-TO (PUBYEAR,2020)) AND (LIMIT-TO (AFFILCOUNTRY,"Malaysia") OR LIMIT-TO (AFFILCOUNTRY,"Nigeria") OR LIMIT-TO (AFFILCOUNTRY,"Pakistan") OR LIMIT-TO (AFFILCOUNTRY,"South Africa"))

Cochrane Library (D)
COVID-19[MeSH] OR SARS-CoV-2 OR coronavirus OR coronavirus 2019 OR corona OR coronavirus Disease OR SARS-2 OR SARS covid 2 OR severe acute respiratory syndrome coronavirus 2) AND (economic consequences OR direct economic consequences OR indirect economic consequences OR economic burden OR economic impact OR asset consequences))

Limiters - Published Date: 01/03/2020 - 30/09/2021

Web of Science (E)
((((ALL=(COVID-19[MeSH] OR SARS-CoV-2 OR coronavirus OR coronavirus 2019 OR corona OR coronavirus Disease OR SARS-2 OR SARS covid 2 OR severe acute respiratory syndrome coronavirus 2)) AND ALL=(economic consequences OR direct economic consequences OR indirect economic consequences OR economic burden OR economic

impact OR asset consequences)) AND ALL=(LMICS OR low- and middle-income countries)) AND ALL=(household OR household experience OR family unit OR home OR family OR asset consequences OR experiences)) AND ALL=(Income loss OR catastrophic spending OR catastrophic health expenditure OR loan OR borrowing OR coping strategies)

Limiters - Published Date: 01/03/2020 - 30/09/2021

Google Scholar (F)
economic consequences of coronavirus for households in low to middle income countries

Limiters - Published Date: 2020- 2021
Search yielded 28 500 articles which are inline with the search term above, and filtered according to the aforementioned customised dates. I have resolved to consider only the top 100 search results i.e the first 100 articles that came up as part of the search results. This has been done for the sake of brevity.

EconLit (G)
(COVID-19[MeSH] OR SARS-CoV-2 OR coronavirus OR coronavirus 2019 OR corona OR coronavirus Disease OR SARS-2 OR SARS covid 2 OR severe acute respiratory syndrome coronavirus 2) AND (economic consequences OR direct economic consequences OR indirect economic consequences OR economic burden OR economic impact OR asset consequences)) AND (LMICS OR low- and middle-income countries) AND (LMICS OR low- and middle-income countries)

Sabinet African Journals (H)
CORONA VIRUS

Limiters - english / COVID-19

A summary of the database searches is set out below

Database searched	Search terms	Results	Used
PubMed	**A**	**69**	**6**
CINAHL	**B**	**196**	**4**

SCOPUS	**C**	**11**	**1**

COCHRANE LIBRARY	**D**	**117**	**0**
WEB OF SCIENCE	**E**	**2**	**1**
GOOGLE SCHOLAR	**F**	**100**	**22**
EconLit	**G**	**4**	**1**
Sabinet African Journals	**H**	**40**	**7**

Appendix 2: Bias Assessment on each of the included studies

Author Name	Type of Reporting Bias								
	Publication Bias	Selective outcome reporting bias	Time-lag bias	Location bias	Language bias	Multiple (duplicate) publications	Citation bias	Overall Risk of Bias	Justification of Overall Assessment
Abdullah, J. M., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Chaudhary, M., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Kumthom, M. and M. Porntip	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Prinja, S., et al	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Adjognon, G. S., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Arndt, C., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Barnett-Howell, Z., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Chackalackal, D. J., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Egger, D., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Favara, M., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Fore, H. H., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Gromada, A., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Gyawali, N. and H. M. Al-Amin	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Hamadani, J. D., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*

Hidrobo, M., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Janssens, W., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Josephson, A., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Lucas, B.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Mahmud, M. and E. Riley	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Mayurasakorn, K., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Mueller, V., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Osendarp, S., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Reardon, T., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Rohwerder, B.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Sah, R., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Vassall, A., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Wylde, E., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Braam, D. H., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Briggs, D. C. and K. A. Kattey	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Das, S., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Mukumbang, F. C., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*

Nwosu, C. O. and A. Oyenubi	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Singh, D. R., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Adefisoye, T. O. and I. D. Adefisoye	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Ikwegbue, P. C., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Makumbe, D.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Ogunlela, G. O. and R. K. Tengeh	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Oni, O. and S. Omonona	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Soyiyo, S., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Toyin, F. C.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Erinle, K. O., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*
Ehrenberg, J. P., et al.	*No*	*No*	*No*	*Yes*	*N/A*	*No*	*No*	*Relatively unbiased*	*Concerns came in the form of location bias*

PART D: POLICY BRIEF

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About the study: *The primary purpose of this review is to provide decision-makers with a summary of observations regarding the economic impact of COVID-19 to households in LMICs. This should help improve decision-making in hopes of achieving better health* ***and*** *economic outcomes. The review has considered the consequences of the COVID-19 pandemic to households in LMICs with respect to employment and household food security. The review has then moved on to consider the consequences of the COVID-19 pandemic as it relates to gifts and remittances, school closures and female poverty.*

Given the findings that have been highlighted in the systematic review, this paper ultimately concludes that the policy response to COVID-19 and even future pandemics in LMICs cannot be a copy and paste from the more developed nations- demographic risk profiles need to be accounted for, as well as, cost-benefit analyses which explicitly outline the opportunity costs that come with the interventions that are implemented.

HEU Policy Brief **June 2022**

The Economic Consequences of COVID-19 on Households in Low- and Middle-Income Countries: A Mixed-Method Systematic Review

What have been the economic consequences of the COVID-19 pandemic on households in LMICs and what has since been the experience and response of these households to the economic shock?

Key Points

- In introducing public health measures that aim to contain the spread of a particular virus, demographic risk profiles and cost-benefit analyses need to be conducted which explicitly outline the opportunity costs that are associated with the interventions under consideration.
- Solutions for high-income countries cannot always be directly translated into the low- and middle-income countries context, without some measure of adjustment.
- There have been severe and persisting adverse effects from the COVID-19 pandemic for households in LMICs, particularly along the lines of employment, household food security, gifts and remittances, education & female poverty.
- Households have coped by changing consumption patterns and relying on interventions from their local government.

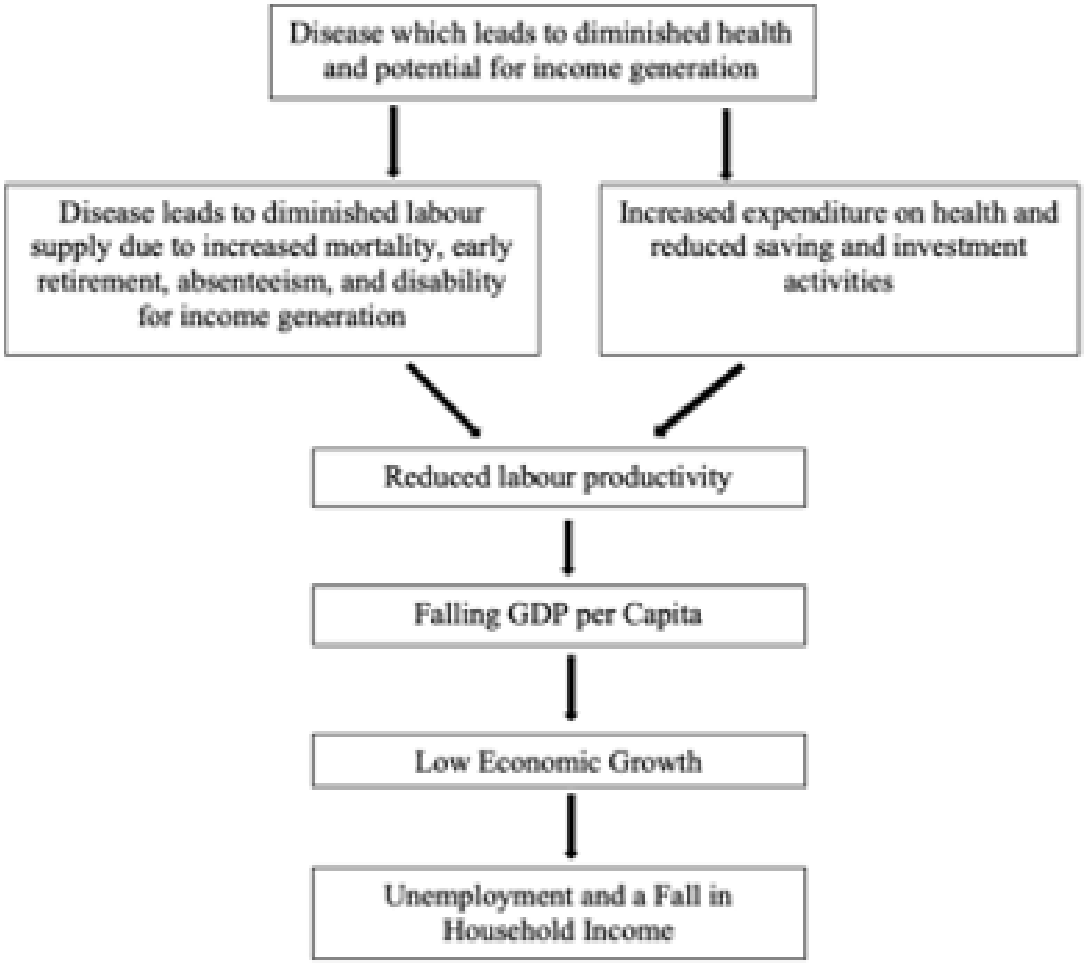
Introduction

Emerging as a global health crisis, the novel Coronavirus disease 2019 (COVID-19) pandemic has become a great threat to the stability and prosperity of economies and households worldwide. With the World Health Organization (WHO) declaring COVID-19 a Public Health Emergency of International Concern (PHEIC) in the earlier months of 2020 (WHO, 2020), COVID-19 has spread rapidly throughout the world- at a pace that has demanded an understanding of COVID-19 that goes beyond the clinical and pharmacological interventions that have since been put in place. COVID-19 has demanded a need for robust study and implementation of public policy, as well as, personal interventions that would work together to contain the spread of the virus (Omtzigt & Pople, 2020).

Whilst the virus had tragic consequences on the health of households- claiming the lives of more than five million people worldwide, the public health measures introduced to control its spread have also led to ruinous effects in a significant number of households- particularly those in low- and middle-income countries (LMICs). In trying to prevent the chains of transmission, governments from high-income countries (HICs), as well as, LMICs have introduced social and physical distancing measures, which required individuals to limit the contact that they had with one another, and instead, rely on virtual modes of connection. Whilst noble in its intent, this intervention was more beneficial for HICs than LMICs. This is essentially what the systematic review will show- that households in LMICs suffered ruinous economic consequences, as a result of the COVID-19 pandemic and the lockdown measures that came along with it.

Link Between Disease Burden And Economic Implications

Figure 1: The general (and high-level) link between a disease and the economy



From Figure 1 above, it is clear that the occurrence of a disease can lead to an actual economic shock that can also be directly experienced at the household level.

Important Consideration

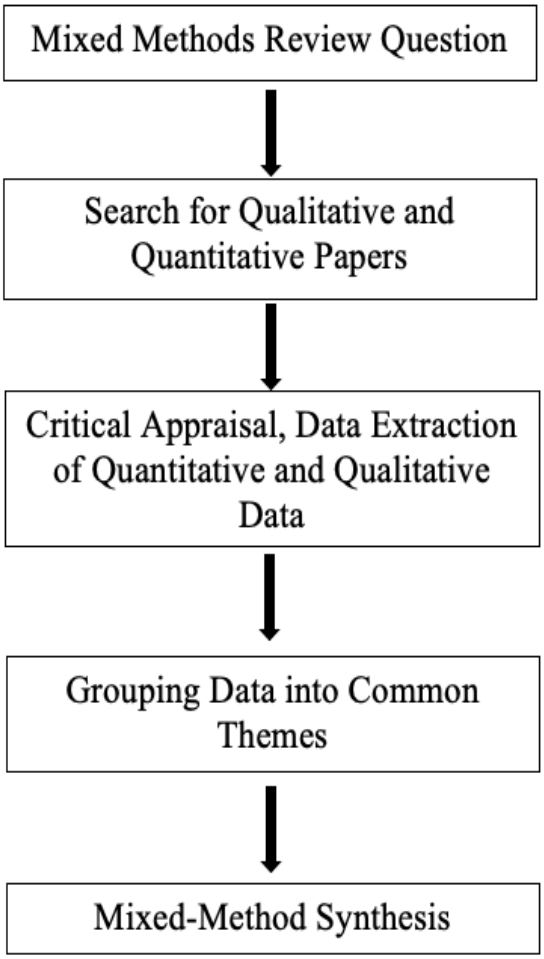
Before briefly touching on the economic challenges of COVID-19 to households in LMICs, it would be worthwhile to theoretically outline *why* the lockdown measures, whilst very beneficial for HICs, were not the best approach for the LMICs context. Given the findings by Barnett-Howell et al. (2021), the cost of leaving the COVID-19 pandemic uncontrolled in a high-income nation such as the United States of America, is high (Barnett-Howell et al., 2021). However, the dollar cost of leaving the COVID-19 pandemic uncontrolled in a LMIC such as Pakistan or Nigeria, was found to be very small (Barnett-Howell et al., 2021). The reason for this difference is due to the differences in demographic risk profiles between HICs and LMICs. The former has a comparatively older population with lower birth rates, whilst the latter has a comparatively younger population with higher birth rates (Barnett-Howell et al., 2021). The significance of demographics, as it relates to COVID-19, is that the disease has been found to have more life-threatening outcomes in older populations than in younger populations, thereby necessitating that greater precautions be taken in HICs to address the higher mortality risk, whilst the benefits of the same intervention in LMICs is not as high, given that LMICs carry a lower mortality risk (Barnett-Howell et al., 2021). Furthermore, as has been shown in the systematic review, the economic opportunity cost of the pandemic-induced lockdown measures is greater in LMICs than in HICs, whereby households in the latter can still maintain their livelihoods and welfare in the context of social distancing, whilst the same cannot be said for households in the former.

Methods

A mixed-methods narrative approach has been applied to this systematic review, whereby literature was found using pre-defined search strategies and inclusion-exclusion criteria. This approach means that this review will be informed by both qualitative and quantitative studies in order to generate evidence and to guide decision-making.

This study has adopted an "integrated" framework to conduct this mixed-methods systematic review. This means that both forms of data- quantitative and qualitative-have been combined into a single mixed-methods synthesis (Pearson, 2015). The reason the study has adopted an "integrated" methodology is based on the finding that both the quantitative and qualitative studies on the economic consequences of COVID-19 on households in LMICs, are similar enough to be combined (as opposed to having to do a separate synthesis for each of the study types, which is what is required when quantitative findings *differ* significantly from the qualitative findings). Therefore, the quantitative data was grouped into themes and then presented alongside the qualitative findings (which fall under similar themes) in a mixed-methods synthesis (Pearson, 2015). This mixed-methods synthesis has been shown by way of a diagram in Figure 2.

Figure 2: Integrated Synthesis (adapted from Sandelowski et al., 2013) (Pearson, 2015)



Key Findings

The COVID-19 pandemic led to reduced household incomes in LMICs due to adverse effects in the various industries which led to the job loss of many individuals. This resulted in many households having to change their consumption behaviour in order to survive and avert the risk of food insecurity (Vassall et al., 2020) (Sah et al., 2020). There was also an adverse effect on household food security (Hamadani et al., 2020), as reduced household incomes meant that households could no longer afford the same food items as they did, prior to the pandemic. The pandemic also led to school closures that affected the earnings potential of many parents (Favara et al., 2021). For instance, many parents had to take time off work (and therefore lose out on paid labour) in order to take care of their children who were now at home (Vassall et al., 2020). On this front, the literature also pointed to increased risks to female poverty in that the economic burden of the pandemic was disproportionately borne by women as opposed to men (Nwosu & Oyenubi, 2021). This may be in part due to the reality that most women are the primary care-givers within their households. It was actually found that women from LMICs in Africa were more likely to lose their jobs than their male counterparts. In Asia, a similar trend was found with even some women in India being denied access to government aid, due to them not having some of the documentation that was required.

School closures also increased food insecurity amongst school-going children who relied on their school's feeding schemes for meeting their basic nutritional needs (Nwosu & Oyenubi, 2021). There were also challenges with maintaining good educational outcomes, which ultimately affects a learners' future educational attainment levels, and eventually their future socio-economic status (Chackalackal et al., 2021).

In some households however, particularly the poorer ones in LMICs, it was impossible for household members to protect themselves from food insecurity. As a result they relied on food and water aid, cash transfers from the government and arrangements with their banks in order to cope with the economic shock that came with the pandemic (Mueller et al., 2021, Chackalackal et al., 2021). Whilst these intervention were much needed for many households in LMICs, there are challenges that came with these programmes which ultimately undermined the potential impact the programmes could have had in helping people.

Conclusion

It has become clear, from the body of literature, that the COVID-19 pandemic has had deleterious effects on households in LMICs. This has been seen in educational outcomes being adversely affected for school-going children, as well as, a rise in household food insecurity, due to the lower household incomes. The public health measures introduced to curb the spread of the virus have been the primary source of unemployment for many workers, as these measures greatly limited mobility within local communities and made it impossible for workers within the informal sector to generate income and secure a livelihood for their household. The adverse effects of COVID-19 were also found to be gendered, in that women from various LMICs were found to be more severely impacted upon by the COVID-19 pandemic than their male counterparts. Households within LMICs relied on changes in household consumption, as well as, interventions from the government in order to cope. It can therefore be concluded that households in LMICs have sustained a severe economic shock, as a result of the COVID-19 pandemic, and have adopted certain changes in consumption, alongside assistance from the state, in order to cope.

Policy Implications and Recommendations

The study ultimately argues that governments in LMICs need to consider the citizenry's socio-economic condition and ability to survive when introducing particular interventions. Given that a lot of households in LMICs face poverty, intentional and targeted social protection is necessary to cushion the effects of the pandemic. When a government introduces measures such as the lockdown which threaten household livelihood without off-setting this impact with some form of cash transfer, nutritious food and water parcels amongst other forms of state assistance, the government ultimately leads its own citizens into deeper levels of poverty and household economic instability. These safety nets also needed to be provided ***before*** imposing measures such as lockdowns, in order to prevent non-compliance and unrest within their countries. This is consistent with the rational consumer choice theory which highlights that individuals will always adopt the option that they deem most beneficial to them, for their survival. Any proposed intervention by the state should address the observed adverse consequences of the COVID-19 pandemic, such as the loss of employment, reduction in gifts and remittances, increase in female poverty and the increase in household food insecurity.

Governments in LMICs could also consider not introducing lockdowns within their countries altogether, especially if the mortality risk assessment does not warrant such a stringent public health measure. In such instances, food markets and other forms of informal modes of employment should

continue to be operational or not be allowed to shut down for sustained periods of time. This should allow households in LMICs, who rely on these modalities, to continue to maintain their livelihoods and support their households. In meeting the risk of disease, the government could respond by assisting the informal sector with free resources which will make their operations safe, both for themselves and their customers.

In addressing the adverse effects towards school-going individuals within the household, the government should ensure that schools maintain their feeding schemes even if schools are shut-down. Where this is not feasible, the schools should ensure that food parcels or cash or shopping vouchers are delivered to the homes of these children, in order to address the risk of food insecurity that would be the reality of many these school-going children who rely on these schemes to meet their daily nutritional needs. Similar schemes of delivering nutritious foods can be introduced for female-headed households. This could assist in addressing challenges around the rise in female poverty that was also observed during the COVID-19 pandemic.

These interventions could work together to ultimately allow the government to underwrite household economic well-being for their citizens- support which should be for all households who are in need (even for those who may not be ordinarily classified as being below the poverty line, but have been found to have also sustained some degree of income loss as a result of the pandemic).

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PART E: APPENDICES

Appendix 1: Author Guidelines for Journal Article Submission

BMC - International Journal for Equity in Health

These guidelines have been copied directly from the BMC's International Journal for Equity in Health manuscript submission guidelines.

Criteria
These short, narrowly focused articles of contemporary interest are usually commissioned by the journal. They are not mini-reviews. A Comment generally takes one of two forms:
• The first form is a discussion of an article or trial that was recently published or that is soon to be published, and that is interesting enough to warrant further comment or explanation. This type of Comment discusses specific issues within a subject area rather than the whole field, explains the implications of the article and puts it in context. Opinions are welcome as long as they are factually based.

• The second form is more editorial in nature and covers an aspect of an issue that is relevant to the journal's scope. Examples of this type of Comment could be a discussion of the impact of new technology on research and treatment, or a discussion of changes in peer review or grant application procedures and their effect on research. By their nature, the second form of Comment is less frequent.

Additional non-English language abstract
An additional non-English language abstract can be included within the article. The additional abstract should be placed after the official English language abstract in the submitted manuscript file and should not exceed 350 words. Please ensure you indicate the language of your abstract. In addition to English, we can support Arabic, Bulgarian, Bengali, Bosnian, Czech, Danish, German, Greek, Spanish, Estonian, Basque, Persian, Finnish, French, Hebrew, Hindi, Croatian, Hungarian, Indonesian, Italian, Japanese, Korean, Latin, Lithuanian, Latvian, Mongolian, Dutch, Norwegian, Panjabi/Punjabi, Polish, Portuguese, Romanian, Russian, Slovak, Slovenian, Serbian, Swedish, Thai, Turkish, Ukrainian, Vietnamese, and Chinese abstracts.

Preparing your manuscript
The information below details the section headings that you should include in your manuscript and what information should be within each section.
Please note that your manuscript must include a 'Declarations' section including all of the subheadings (please see below for more information).

Title page
The title page should:
present a title that includes, if appropriate, the study design e.g.:
"A versus B in the treatment of C: a randomized controlled trial", "X is a risk factor for Y: a case control study", "What is the impact of factor X on subject Y: A systematic review"
or for non-clinical or non-research studies: a description of what the article reports
list the full names and institutional addresses for all authors

if a collaboration group should be listed as an author, please list the Group name as an author. If you would like the names of the individual members of the Group to be searchable through their individual PubMed records, please include this information in the “Acknowledgements” section in accordance with the instructions below
indicate the corresponding author

Abstract
The Abstract should not exceed 350 words and should be structured with a background, main body of the abstract and short conclusion. Please minimize the use of abbreviations and do not cite references in the abstract.

Keywords
Three to ten keywords representing the main content of the article.

Background
The Background section should explain the background to the article, its aims, a summary of a search of the existing literature and the issue under discussion.

Main text
This should contain the body of the article, and may also be broken into subsections with short, informative headings.

Conclusions
This should state clearly the main conclusions and include an explanation of their relevance or importance to the field.

List of abbreviations
If abbreviations are used in the text they should be defined in the text at first use, and a list of abbreviations should be provided.
Declarations
All manuscripts must contain the following sections under the heading 'Declarations':
Ethics approval and consent to participate
Consent for publication
Availability of data and materials
Competing interests
Funding
Authors' contributions
Acknowledgements
Authors' information (optional)
Please see below for details on the information to be included in these sections.
If any of the sections are not relevant to your manuscript, please include the heading and write 'Not applicable' for that section.

Ethics approval and consent to participate
Manuscripts reporting studies involving human participants, human data or human tissue must:
include a statement on ethics approval and consent (even where the need for approval was waived)

include the name of the ethics committee that approved the study and the committee's reference number if appropriate

Studies involving animals must include a statement on ethics approval and for experimental studies involving client-owned animals, authors must also include a statement on informed consent from the client or owner.

See our editorial policies for more information.
If your manuscript does not report on or involve the use of any animal or human data or tissue, please state "Not applicable" in this section.

Consent for publication
If your manuscript contains any individual person's data in any form (including any individual details, images or videos), consent for publication must be obtained from that person, or in the case of children, their parent or legal guardian. All presentations of case reports must have consent for publication.

You can use your institutional consent form or our consent form if you prefer. You should not send the form to us on submission, but we may request to see a copy at any stage (including after publication).

See our editorial policies for more information on consent for publication.
If your manuscript does not contain data from any individual person, please state "Not applicable" in this section.

Availability of data and materials
All manuscripts must include an 'Availability of data and materials' statement. Data availability statements should include information on where data supporting the results reported in the article can be found including, where applicable, hyperlinks to publicly archived datasets analysed or generated during the study. By data we mean the minimal dataset that would be necessary to interpret, replicate and build upon the findings reported in the article. We recognise it is not always possible to share research data publicly, for instance when individual privacy could be compromised, and in such instances data availability should still be stated in the manuscript along with any conditions for access.

Data availability statements can take one of the following forms (or a combination of more than one if required for multiple datasets):

The datasets generated and/or analysed during the current study are available in the [NAME] repository, [PERSISTENT WEB LINK TO DATASETS]

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

All data generated or analysed during this study are included in this published article [and its supplementary information files].

The datasets generated and/or analysed during the current study are not publicly available due [REASON WHY DATA ARE NOT PUBLIC] but are available from the corresponding author on reasonable request.

Data sharing is not applicable to this article as no datasets were generated or analysed during the current study.

The data that support the findings of this study are available from [third party name] but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of [third party name].

Not applicable. If your manuscript does not contain any data, please state 'Not applicable' in this section.

More examples of template data availability statements, which include examples of openly available and restricted access datasets, are available here.

BioMed Central also requires that authors cite any publicly available data on which the conclusions of the paper rely in the manuscript. Data citations should include a persistent identifier (such as a DOI) and should ideally be included in the reference list. Citations of datasets, when they appear in the reference list, should include the minimum information recommended by DataCite and follow journal style.

Dataset identifiers including DOIs should be expressed as full URLs. For example:
Hao Z, AghaKouchak A, Nakhjiri N, Farahmand A. Global integrated drought monitoring and prediction system (GIDMaPS) data sets. figshare.
2014. http://dx.doi.org/10.6084/m9.figshare.853801

With the corresponding text in the Availability of data and materials statement:
The datasets generated during and/or analysed during the current study are available in the [NAME] repository, [PERSISTENT WEB LINK TO DATASETS].[Reference number]

If you wish to co-submit a data note describing your data to be published in *BMC Research Notes*, you can do so by visiting our submission portal. Data notes support open data and help authors to comply with funder policies on data sharing. Co-published data notes will be linked to the research article the data support (example).

Competing interests
All financial and non-financial competing interests must be declared in this section.
See our editorial policies for a full explanation of competing interests. If you are unsure whether you or any of your co-authors have a competing interest please contact the editorial office.

Please use the authors initials to refer to each authors' competing interests in this section.
If you do not have any competing interests, please state "The authors declare that they have no competing interests" in this section.

Funding
All sources of funding for the research reported should be declared. The role of the funding body in the design of the study and collection, analysis, and interpretation of data and in writing the manuscript should be declared.

Authors' contributions

The individual contributions of authors to the manuscript should be specified in this section. Guidance and criteria for authorship can be found in our editorial policies.

Please use initials to refer to each author's contribution in this section, for example: "FC analyzed and interpreted the patient data regarding the hematological disease and the transplant. RH performed the histological examination of the kidney, and was a major contributor in writing the manuscript. All authors read and approved the final manuscript."

Acknowledgements
Please acknowledge anyone who contributed towards the article who does not meet the criteria for authorship including anyone who provided professional writing services or materials.

Authors should obtain permission to acknowledge from all those mentioned in the Acknowledgements section.

See our editorial policies for a full explanation of acknowledgements and authorship criteria. If you do not have anyone to acknowledge, please write "Not applicable" in this section.

Group authorship (for manuscripts involving a collaboration group): if you would like the names of the individual members of a collaboration Group to be searchable through their individual PubMed records, please ensure that the title of the collaboration Group is included on the title page and in the submission system and also include collaborating author names as the last paragraph of the “Acknowledgements” section. Please add authors in the format First Name, Middle initial(s) (optional), Last Name. You can add institution or country information for each author if you wish, but this should be consistent across all authors.

Please note that individual names may not be present in the PubMed record at the time a published article is initially included in PubMed as it takes PubMed additional time to code this information.

Authors' information
This section is optional.
You may choose to use this section to include any relevant information about the author(s) that may aid the reader's interpretation of the article, and understand the standpoint of the author(s). This may include details about the authors' qualifications, current positions they hold at institutions or societies, or any other relevant background information. Please refer to authors using their initials. Note this section should not be used to describe any competing interests.

Footnotes
Footnotes can be used to give additional information, which may include the citation of a reference included in the reference list. They should not consist solely of a reference citation, and they should never include the bibliographic details of a reference. They should also not contain any figures or tables.

Footnotes to the text are numbered consecutively; those to tables should be indicated by superscript lower-case letters (or asterisks for significance values and other statistical data).

Footnotes to the title or the authors of the article are not given reference symbols.

Always use footnotes instead of endnotes.

References
Examples of the Vancouver reference style are shown below.
See our editorial policies for author guidance on good citation practice

Web links and URLs: All web links and URLs, including links to the authors' own websites, should be given a reference number and included in the reference list rather than within the text of the manuscript. They should be provided in full, including both the title of the site and the URL, as well as the date the site was accessed, in the following format: The Mouse Tumor Biology Database. http://tumor.informatics.jax.org/mtbwi/index.do. Accessed 20 May 2013. If an author or group of authors can clearly be associated with a web link, such as for weblogs, then they should be included in the reference.

Example reference style:
Article within a journal
Smith JJ. The world of science. Am J Sci. 1999;36:234-5.

Article within a journal (no page numbers)
Rohrmann S, Overvad K, Bueno-de-Mesquita HB, Jakobsen MU, Egeberg R, Tjønneland A, et al. Meat consumption and mortality - results from the European Prospective Investigation into Cancer and Nutrition. BMC Medicine. 2013;11:63.

Article within a journal by DOI
Slifka MK, Whitton JL. Clinical implications of dysregulated cytokine production. Dig J Mol Med. 2000; doi:10.1007/s801090000086.

Article within a journal supplement
Frumin AM, Nussbaum J, Esposito M. Functional asplenia: demonstration of splenic activity by bone marrow scan. Blood 1979;59 Suppl 1:26-32.

Book chapter, or an article within a book
Wyllie AH, Kerr JFR, Currie AR. Cell death: the significance of apoptosis. In: Bourne GH, Danielli JF, Jeon KW, editors. International review of cytology. London: Academic; 1980. p. 251-306.

OnlineFirst chapter in a series (without a volume designation but with a DOI)
Saito Y, Hyuga H. Rate equation approaches to amplification of enantiomeric excess and chiral symmetry breaking. Top Curr Chem. 2007. doi:10.1007/128_2006_108.

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Blenkinsopp A, Paxton P. Symptoms in the pharmacy: a guide to the management of common illness. 3rd ed. Oxford: Blackwell Science; 1998.

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Doe J. Title of subordinate document. In: The dictionary of substances and their effects. Royal Society of Chemistry. 1999. http://www.rsc.org/dose/title of subordinate document. Accessed 15 Jan 1999.

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ISSN International Centre: The ISSN register. http://www.issn.org (2006). Accessed 20 Feb 2007.

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Zheng L-Y, Guo X-S, He B, Sun L-J, Peng Y, Dong S-S, et al. Genome data from sweet and grain sorghum (Sorghum bicolor). GigaScience Database.
2011. http://dx.doi.org/10.5524/100012.

Figures, tables and additional files
See General formatting guidelines for information on how to format figures, tables and additional files.

Appendix 2: Copy of Ethics Approval Letter (Study Approval)

JO

Jill Olivier

To: Vuyi Mgoqi

Mon 2022/03/14 12:07

Cc: Mamello Rantseuoa; Edina Sinanovic **+2 others**

FHS013_Rantseuoa_MPHstud...
1 MB

Dear Vuyi

I trust this email finds you well. Please find attached the protocol for the MPH student Mamello Rantseuoa (RNTMAM002@myuct.ac.za), who submitted this to the SPHFM DRC for processing.

Please be advised that this protocol has been reviewed by Public Health and Family Medicine Departmental Research Committee - agreeing that the study does not require HREC review.

Title: " Systematic review of the economic consequences of COVID-19 on households in low- and middle-income countries"