Structural Violence and Maternal Healthcare Utilisation in sub-Saharan Africa: A Bayesian Multilevel Analysis

Simona Joseph Simona

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BA Sociology with Psychology

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School of Social and Political Sciences
College of Social Sciences
University of Glasgow

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Abstract

Considerable advances have been made in medical sociology and other population health-related subject areas to understand structural sources of disparities in health outcomes. We know that structural factors are the 'fundamental causes' of disease and illness. However, few studies focusing on structural conditions have considered maternal healthcare especially in sub-Saharan Africa. There is a dearth of knowledge regarding the effects of wider structural factors on maternal healthcare utilisation. Specifically, it is not well-known as to which dimension of the social structure is strongly associated with maternal healthcare and what specific combinations of factors influence adequate use of maternal healthcare in sub-Saharan Africa. This study was conceived to fill this gap in literature. The study focuses on community and country-level inequalities in gender relations, human rights violations and globalisation as the three dimensions of structural violence that are consequential to maternal healthcare in sub-Saharan Africa. I also consider individual level maternal characteristics that are associated with maternal healthcare utilisation.

The analysis pools data of 245,955 respondents from the most recent Demographic and Health Surveys (DHS) and several other international datasets. I apply separate three-level Bayesian multilevel models on women who have had births five years prior to the recent DHS, nested in 17,000 communities, which are nested in 35 sub-Saharan African countries. On each aspect of structural violence, I estimate four models predicting the odds of having four or more antenatal care visits, institutional delivery and postnatal care based on a set of individual, community and country-level variables.

Overall, the results indicate that inequalities in gender relations and disrespect for human rights are negatively associated with adequate use of maternal healthcare in sub-Saharan Africa. The relationship between globalisation and maternal healthcare is conditional on the specific dimension of globalisation. In comparison with other dimensions of globalisation, social globalisation is the most significant predictor of adequate maternal healthcare. These results help to underscore the importance of contextual factors in understanding women's utilisation of maternal healthcare in sub-Saharan Africa

Author's Declaration

I declare that, except where explicit reference is made to the contribution of others, that this thesis is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution.

Printed Name: **SIMONA SIMONA**

Signature:

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Chapter One – Introduction and the Research Problem

1.1. Background Information

The paradigm shift of research into the determinants of health and healthcare has gained ground from depicting a simplistic and coherent story that disease and illness are predominantly the consequences of bio-medical, behavioural and lifestyle mechanisms to a more broader outlook which considers structural conditions as the major determinants of health (Bloom, 2002; Marmot, 1986; Labonté and Schrecker, 2007). A wide expanse of studies in such disciplines as public health, medicine, social epidemiology, human geography and medical sociology are responsible for this evolution. Societal mechanisms such as socioeconomic status (Link and Phelan, 1995; Coburn, 2000), social gradient in health (Vincens et al., 2018), social capital (Blaxter et al., 2000; Kawachi and Kennedy, 2002), and social stratification (Reynolds and Ross, 1998; House et al., 2013, 2005) have been some of the important constructs as determinants of health and healthcare inequalities. Through this effort, it is well-known now that people of higher education status, richer and otherwise advantaged, have better health outcomes compared to those with poor socio-economic backgrounds (Dalstra et al, 2002). We also know that at any point in the societal hierarchy, people have on average better health than those below them and worse health than those above them (Eckersley, 2015). Furthermore, it is established that 'group membership, social trust or degree of social cohesion, are associated with better health status' (Blaxter, 2000: 1140).

Beyond these intermediate relationships, the influence of macro-structures and population health have equally received a fair share of attention especially in the recent past. In these studies, the Marxist inspired political economy approach is dominant where institutions of medicine are conceived as channels that serve to buttress the overarching socioeconomic systems in order to maintain the status quo of health inequalities in society (Collyer, 2018). This approach has also been used by studies focusing on transnational influences on the national agenda and the interplay these have with health and healthcare indicators. Indeed, some scholarship in this line of work have concluded that international macroeconomic

policies like structural adjustment programmes (Thomson et al., 2017; Daoud et al., 2017), trade liberalism (Blouin et al., 2009; McNamara, 2017) and foreign aid[1](Burns et al., 2017) championed by international monitory organisations have negative effects on health. Neoliberal globalisation has equally been explored extensively in its many manifestations and a considerable number of studies link it to negative health outcomes using different pathways (Bergh and Nilsson, 2010; Martens et al., 2010; Mihalache-O'Keef and Li, 2011). A potent argument is one that conceives international neoliberal policies to influence a plethora of intervening factors such as income inequalities, regional wars, women and sex trade, mass migration and the 'brain drain' which in turn affect population health (Shahmanesh, 2007).

In this thesis, I sought to contribute to this body of work by extending the paradigm shift to topics that have rarely received attention in empirical studies in the social sciences. I explore the relationship between structural conditions and maternal healthcare utilisation in sub-Saharan Africa. Structural conditions are social, economic, cultural and historical forces larger than an individual which operate at the community, country and global levels. Structural conditions in Giddens's popular conception, can be both constraining and enabling human agency (Giddens, 1976). I focus on the constraining part of structural conditions in this study and I conceptualise it as structural violence. The American physician and anthropologist Paul Farmer is known for popularising the concept of structural violence in health research, medical anthropology to be specific. He refers to it as a situation where social forces constrain agency to the extent of inhibiting better human health and healthcare (Farmer, 2005).

For this study, I intended to holistically represent structural violence in all the levels of its manifestations. Structural violence is a function of collective consciousness, which means it can only exist at a meso or macro levels. To capture the influence of structural violence on maternal healthcare at both levels, I have particularly concentrated on the community and country level characteristics. In this regard, my focus is on inequalities in gender relations,

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[1] In this case conceived as secondary sector FDI (manufacturing)

human rights violations and globalisation. In this thesis, I consider these to be examples of structural violence. Gender relations is regarded as a function of cultural gender norms prevailing in a particular community and it is conceptualised as the meso level. Human rights violations and globalisations are regarded as country characteristics and are therefore, macro level characteristics.

I posit that the likelihood of an expecting mother to utilise maternal health care in sub-Saharan Africa is shaped at least in part by broader and interacting structural conditions external to them. I use structural violence as an orienting framework to ground my analysis. I argue that structures which prevent deserving women from accessing and utilising adequate maternal health care are indeed 'violent'. The 'violence' is built within the social structure and it stems from unequal distribution of power and resources. I examine the community and country level effects of these dimensions on maternal health care utilisation.

The paradigm shift in health research to the emphasis on structural factors as major determinants of health is a recognition that individual biographies are embedded in broader social contexts and that human action cannot sufficiently or be wholly explained by individual social actors' choices and preferences without reference to social conditions through which such action occurs. Like David Lewis (1986) has argued:

> Any event that we might wish to explain stands at the end of a long and complicated causal history. We might imagine a world where causal histories are short and simple; but in the world as we know it, the only question is whether they are infinite or merely enormous. (1986:214)

This reflects the complexity of human systems. They have a layered existence whereby one system exists within other independent systems and are driven by multiple and diffuse interactions between their components (Eckersley, 2015).

A three-level dataset of 245,955 individuals nested within 17,470 communities which are in turn nested within 35 sub-Saharan African countries was linked from several sources to enable the empirical work of this thesis. The individual and community level data is from the most recent Demographic and Health Surveys (DHS) while the country level data is from

a variety of sources including World Development Indicators (WDI), World Governance Indicators (WGI), KOF globalisation index and Freedom House. I employ a Bayesian multilevel modelling analysis and the Markov chain Monte Carlo (MCMC) Methods to estimate the odds of utilising maternal health care in sub-Saharan Africa. Bayesian multilevel models have an advantage of estimating the effects of one level on the outcome variable while controlling for the variations in the other levels. They also can determine relative variations in the outcome variable attributable to specific levels of the explanatory variables (Tom et al., 2012). Thus, I use this technique to not only explore the factors influencing maternal healthcare utilisation but also determine the level mostly associated with cross-national variations in maternal health care utilisation. The Bayesian framework is more advantageous than the frequentist approach in the analysis of cross-national non-sample data. This is because it does not rely on the thought experiment of repeated sampling which is crucial to frequentist statistics but impracticable for cross-national studies (Jackman, 2009). Instead, the Bayesian approach relies on subjective probability whereby uncertainty is attached to the researcher's state of knowledge about data and parameters of interests (DeGroot and Schervish, 2012; Jackman, 2009; Gill, 2014a). Thus, making the Bayesian approach a more appropriate basis for inference when the data involved is non-repeatable, as is the case in this study.

The remainder of this introductory chapter will provide the context in which this thesis was produced. I discuss how research into the influence of structural factors on health and healthcare have been conceptualised in sociology, noting how certain dimensions of structures have not been adequately addressed in extant empirical research and how this thesis contributes to these debates. I argue that while enormous progress has been made in understanding structural sources of health and healthcare disparities, this thesis takes a holistic approach by linking the three-level factors and studying their effects on use of maternal healthcare utilisation. Further, this thesis discusses the often-neglected research paradigm and their philosophical assumptions and linking them to appropriate theoretical mechanisms and cross-national methodological approaches. I then outline the translation of these ideas into concrete research questions and offer some thought on how the questions will be answered in the thesis. After outlining the research questions, I then discuss the

choice of sub-Saharan Africa as the area of focus in this study. The last section details the contents of the remaining chapters of the thesis.

1.2. Contextualising the research problem

The sociological study of health has always been based on how the individual's position on the social hierarchy influences their susceptibility to illness and how it also affects access to healthcare in order to minimise the consequences of illness (De Maio, 2010). French sociologist and philosopher Emile Durkheim was perhaps the first to illuminate the role played by external social forces in determining individual health outcomes. In his study of suicide, Durkheim demonstrated empirically how the broader social conditions can influence one of the most personal and private acts, the taking of one's life. We see in Durkheim's work that such a decision isn't personal after all, but the result of the level of social integration or social regulation in a community (Fournier, 2013). Durkheim's other work on the concept of social facts is equally an important foundation for studies which emphasises structural sources of poor health and healthcare outcomes. Durkheim defines social facts as things which exist external to an individual but have coercive power by virtue of which they can exercise control (Durkheim, 1951). With social facts, Durkheim would forever be married to a sociological version that considers individuals as subjects of a coercive social structure with diminished agency. Durkheim's formulations are buttressed by many structural functionalist followers whose research focus on structural conditions as the fundamental cause of health and illness. Chapter six gives further examples in this regard.

On the other hand, the agency-centric tradition which is rooted mainly in the works of German sociologist Max Weber reject the notion of 'structural constraints' as determinants of human actions (Sztompka, 2014). Instead, the emphasis is on individual agency. Accordingly, as Weber postulates, the focus of scientific inquiry is (should be) on this 'acting' individual. Of course, Weber also acknowledges that this action is still structurally oriented in the sense that the 'meanings' from which individual actions ensue consider the behaviour of others. Because rationality and intentionality take precedence, it follows that Individual characteristics supersede social conditions in determining human action in the agency-centric tradition, even if those characteristics are shaped by socio conditions.

I don't propose to end the structure vs. agency debate in this thesis and although structural factors are the focus here, I do so with recognition of the viability of individual human action and biographies in determining maternal healthcare. This approach parallels the work of the American sociologist C. Wright Mills on sociological imagination in the 1950s when he developed the notion of encompassing broader social structures in understanding phenomena without neglecting individual characteristics. Mills saw sociology as a subject interested in the interconnections between individual biographies, social structures and politics (De Maio, 2014). The sociological study of health hinges on this formulation. In fact, contemporary medical sociologists conceptualise health not only as a social construct because society shapes how people define and respond to health and illness (De Maio, 2014) but also as intrinsically sociological, in the sense that social conditions determine levels of population health (Marmot and Wilkinson, 2006). Thus, from a sociological perspective, social determinants of health and health care are better studied in a duality fashion that structure and individual capabilities as well as the interactions thereof. This is the approach taken in this thesis. I return to this point in due course to detail the methodological underpinnings. Suffice it to say that this is a more nuanced approach because we know that human society is a complex, adaptive and dynamic system which could not adequately be explained by single-level factors, be they macro-structural or otherwise.

A contemporary discourse in medical sociology on the relationship between structural factors and health ought to consider not only associations between various social and behavioural factors and people's health but should also have an interdisciplinary approach in doing so (Karvonen et al., 2018). I argue that global health brings an important outlook to current debates in medical sociology. Global health is a developing field which is interdisciplinary in nature. The application of global health to health research and practice has emphasised on placing a priority on improving health and achieving health equity for all people world-wide (Koplan, Bond, Merson, Reddy, Rodriguez, Sewankambo et al, 2009). This viewpoint is consistent with the transformationalist perspective of globalisation which regards globalisation as "the intensification of world-wide relations which link distant relations in such a way that local happenings are shaped by events occurring many miles away and vice-versa" (Giddens, 1990: 60). In this regard, social conditions which determine

health and healthcare inequities everywhere in the world could be vast and interconnected in scope extending from individual biographies to the global political economy (2005; 2011). A global health approach would, therefore, require focusing on both international interdependence in health and how historical, cultural, environmental, economic and political processes on a world-wide scale determine population health at different levels.

Among global health's major remit is a departure from international health, which primarily focuses on improving health in developing countries (Koplan, Bond, Merson, Reddy, Rodriguez, Sewankambo et al, 2009), to a consideration of what Bozorgmehr (2010) calls, supra-territorial determinants – which links SDH anywhere in the world but not necessarily everywhere. This is very important because it enables us, within the global health trajectory, not to necessarily deal with universal transnational issues but to have a deep description of reality anywhere which may or may not be influenced by global forces (Bozorgmehr, 2010). This means that emphasis can be on the commonalities and/or differences between countries at different levels of development and with different social, political and economic systems, and the resulting need for context-specificity (Rowson, Willott, Hughes, Maini, Martin, Miranda et al, 2012).

The present study uses both the sociological approach and global health to study structural factors influencing inequities in maternal healthcare in sub-Saharan Africa. It recognises that Socio-structural factors are embedded within the historical, social, cultural and political systems of society and considers these, as structural violence to the extent that they constrain people from acquiring resources that can enable them to live longer and healthy lives. It is motivated by the disproportionate burden of maternal health mortality and the sub-optimal progress made by the sub-continent in combating major health threats and the urgent need to reverse the phenomenon.

In this regard, a better understanding of population health and healthcare requires an investigation of interacting multilevel factors adopting different causal pathways. This is what I seek to accomplish in this thesis. I conceptualise structural factors as the result of aggregated individual activities and focus on their influence on maternal healthcare utilisation without neglecting the role played by individual demographic characteristics. I

achieved this by including factors operating at different levels, from individual demographic characteristics up to broader macro-structural factors in my analysis. I employ a sociological approach to understand whether variability in maternal healthcare utilisation are due to an individual woman's demographic characteristics or their position on the social hierarchy. I extend this to include factors that go beyond the relational environments and delve into cross-national variability in maternal healthcare utilisation. I also leverage an emerging field of global health and address the influence factors transcending national boundaries. In this realm, the study focuses on human rights violations and globalisation and their influence on maternal healthcare both directly and indirectly.

Another issue that arises as we focus on macro-structures is the concept of culture and the role it plays in the broader picture of the social determinants of health and healthcare. The WHO commission on the social determinants of health (2008) positions culture in the context of structural determinants of social hierarchy and inequity but not as major influence on health and well-being (Eckersley, 2015). This position is endorsed by Wilkinson and Pickett (2010), one of the most influential books in social determinants of health. They believe that inequality comes first, and it is the major problem which influences culture and not the other way around. This controversy of whether to consider culture as an important determinant of health is still going on. Many scholars regard culture to be indispensable as a social determinant of health (Eckersley, 2015). I argue that culture is multifaceted, and it matters what aspect of it is being applied in a research environment. In sub-Saharan Africa where communities are the corner stone of thought and life (Mawere and Mubaya, 2016), culture reflects normative community values and norms which guide the everyday life of people. Embedded in these cultural artefacts are power relations that may disadvantage some members of the community especially women (Tsanga, 2011). I pay attention to culture in this study in terms of how certain gendered community characteristics may influence maternal healthcare utilisation.

Sub-Saharan Africa is underrepresented in international studies focusing on structural characteristics and health outcomes. Many studies, including systematic reviews have shown that non-western societies especially Africa have been neglected in extant literature on social

determinants of health (Ichoku et al., 2013; Subramanian and Kawachi, 2004; Wilkinson and Pickett, 2006). I locate this study in sub-Saharan Africa and studying not only within and between country variability in maternal healthcare associated with intermediate factors but also disparities in the contextual influence of structural factors on use of maternal healthcare. I explore the individual, community and country contexts, including power relations embedded within them and how they cannot determine inequalities in maternal healthcare.

So far, this discussion has outlined more of substantive areas to which this thesis contributes. However, I also consider theoretical frameworks, philosophical assumptions and methods to be equally important in empirical studies. As such, this thesis engages critically with both theoretical and methodological approaches to studying structural influence on maternal healthcare utilisation.

As we focus more on the structural conditions determining health, three important theoretical issues emerge. Firstly, less emphasis on the agency of individual actors as more and more 'explanatory power' is allocated to the social structure conceptualised as a constraining force that impedes the individual's health. Collyer (2018:114) for example identifies this tendency in reference to the political economy approach to healthcare: '…in political economy approach there is little sense of how social interaction might affect the nature of the system, for emphasis is on the capacity of the system to constrain and shape social action'. This problem of whether an individual has the power to exercise and enact their own choices in the face of structural constraints is very popular and protracted in sociological discourse in the form of agency vs. structure binaries. I will be revisiting these formulations in later chapters in the study but suffice to mention that both agency and structure still have a place in sociology today. My thesis seeks to (re)emphasise this position and advance empirical and theoretical arguments to show how we can best accommodate the role of macro-structures without diminishing individual agency.

Secondly, considering increased complexity of social phenomena that has an interacting and multilevel existence, single and single-level theories are no longer adequate as the basis for describing and explaining healthcare disparities. The problem is that theoretical implications are usually operationalised on a single level and this renders a difficult to studying

complexity. In this study, I address this by utilising the concept of social mechanism and integrating a few Mertonian middle-range theories operating at different levels in one analytical approach. This approach allows us to access concepts from different theories and build causal mechanisms behind observable associations between variables in order to explain rather than to only describe social phenomena.

The third problem relates to the universality of social theory. This question is particularly important for this project because it located in sub-Saharan Africa. Considering that much scholarship led by post-colonial theory that mostly problematise geographies of knowledge generation, I position this study to benefit from theories generated in the so-called global north within the 'appropriate' postcolonial narrative. Postcolonial theory has often been critical of conventional sociology for 'othering' non-western societies and often times calls for indigenous knowledge generation in the global south (Bhambra, 2007). My argument is that any theoretical posture to rebuttal the seemingly essentialising Eurocentric sociological thought would still be subject to the same criticisms. The solution is to root our theories in relationalism as opposed to substantialism as the ontological foundations of social theory. In this regard, we minimise the effects of sociological bifurcations including global north vs. global south.

In terms of philosophical assumptions, there are many difficulties that are encountered as we study the broadened phenomena of socio-structural factors affecting health and health. Human rights for example have recently entered the health and healthcare inequality discourses and by nature, they engender moral judgement and 'subjectivity'. How do we study them without deviating from the principles of 'science' as we know it? This is exactly the problem that many scholars have identified as a hindrance to developments in human rights research and it is rooted in positivism as a dominant research paradigm in health research. Scambler (2001) for example, blames (neo) positivist approaches for lagging medical sociology from providing robust contribution to health research. Ferrie and Hosie (2018) equally problematise positivist approaches in both conceptualisation and the study of human rights. This is also true in other research areas where moral judgement is enlisted including structural violence, freedom, social justice and inequality among others. I am

equally critical of the positivist approach in this study and I argue for critical realism as the basis for quantitative methods. I also use Bayesian methods which may be regarded as compatible with many aspects of the social structure and use 'subjectivity' as their base.

I argue that a holistic study of the influence of structural factors on health and health care is unattainable without carefully 'marrying' the philosophy of the social sciences, theoretical frameworks and empirical areas of research. Many sociologists including Robert Merton (1968), John Stewart Mill (1959) and most recently De Maio (2010) and Margret Archer (2016) warned against the separation of theory from empirical research arguing that theory both drives and constrains empirical research. In sociological research this union has not been accomplished (De Maio, 2010). I recognise the need to align theory and methods and engage with the many discrepancies and contradictions within the health and medical sociology literature on the application of philosophy, theory and methods.

About methodology, Cockerham (2013), says that methodological improvement in sociology especially multilevel modelling, have raised our understanding of society and enhanced the use of theory in empirical studies. As it has already been mentioned in the background information that among the advantages of multilevel models is the capacity to estimate the relative variations in the outcome variables attributable to specific levels of the explanatory variables. This could be vital in policy engagements where a society could be disentangled in terms of the magnitude of effects its components have on an outcome of interest. This becomes important for appropriately targeted policy strategies.

Many studies which try to interrogate the relationship between structural factors and population health have emerged in the last few decades (Stuckler et al, 2010; Jacob, 2014; Kentikelenis et al, 2015). In developing countries, these studies have generally focused on global macroeconomic policies, especially those promoted by international institutions such as the world bank, International Monetary Fund (IMF) and the interplay they have with different health indicators using quantitative macro-comparative research methods (QMCR) (Maynard, Shircliff and Restivo, 2012; Pandolfelli, Shandra and Tyagi, 2014; Welander, Lyttkens and Nilsson, 2015). Other factors which have been of interest to researchers include the role of Non-governmental Organisations, political systems and globalisation in

enhancing and or inhibiting good health outcomes. Some studies find evidence supporting the hypothesis that such macro-structural variables are strongly associated with health outcomes especially in developing countries (Maynard, Shircliff and Restivo, 2012; Sattler and Shandra, 2012). Others, including Barroway (2016) report no significant relationships.

These studies have been insightful in bolstering our understanding of the dynamics and determinants of health. In sub-Saharan Africa however, these studies still leave many questions relating to health inequities within and between countries unanswered. The prominent question relates to the nature of structural conditions affecting variation in individual health outcomes and how these structural conditions are shaped by social, cultural, economic and political systems. Addressing this question requires drawing the line between the influence of individual level and that structural factors on individual level population health outcomes. This has been an important impediment to properly addressing health inequality issues in sub-Saharan Africa mainly because of problems in the conceptualisation and operationalisation of the social structure is not without confusion and lack of data to properly represent the different levels that make up the social structure (Ichoku, Mooney and Ataguba, 2012). I tackle these problems by conceptualising the social structure as structural violence and specify outcome variables as maternal healthcare utilisation. I also use several data sources in an innovative way to represent different levels of the social structure.

It is well known that health and healthcare disparities in sub-Saharan Africa results from complex interactions between a plethora factors operating at different levels (Ichoku, 2011). In this regard, I specify the factors of interest to this research in terms of gender relations, human rights and globalisation.

1.3. Sub-Saharan Africa at a glance

The choice of sub-Saharan Africa as the geographical area for this study is because of several reasons and not least among them is the sub-optimal progress in maternal and child health recorded by the sub-continent relative to other regions over the years. The Global Burden of Disease study (GBD) for instance, reveals considerable gains being made in child survival (52% decrease) and life expectancy (62 years to nearly 72 years) in the past 25 years due to

Improvements in sanitation, immunizations, indoor air quality, and nutrition among others (Wang et al., 2016). However, in sub-Saharan Africa, the World Health Organisation (WHO) reports that the risk of a child dying before completing five years of age is still highest in the WHO African Region (81 per 1000 live births), about 7 times higher than that in the WHO European Region (11 per 1000 live births) (Alkema et al., 2016).

In terms of maternal health, about 302,000 women die due to maternal-related causes in developing countries, accounting for 99% of the global maternal death estimates. An estimated 546 (66%) Maternal Mortality Rates (MMR) were registered within sub-Saharan Africa – the highest among the regions of the world (Organization et al., 2015b). The lifetime risk of maternal mortality is approximately 1 in 36 in sub-Saharan Africa, which contrasts sharply with that of developed countries, which stands at 1 in 4,900. Although there was a sustained decline of 45% in MMR between 1990 and 2015, sub-Saharan Africa is one of the regions which registered the least progress in terms of meeting the 2015 United Nations Millennium Development Goal target of a 75% reduction (Organization et al., 2015). Given this backdrop, a great effort needs to be made if the prospects of meeting an even more ambitious Sustainable Development Goal (SDG) target number 3 of 70 maternal mortality cases or less per 100,000 live births by 2030 are to be realised (Organization et al., 2015).

More than 50% of maternal death occurs within a day of birth (Roos and von Xylander, 2016). Most of these deaths occur out of avoidable and treatable complications during pregnancy and following childbirth. Deficiencies in iodine, maternal anaemia and poor diet are some of the other factors which contribute maternal mortality and stillbirths (Roos and von Xylander, 2016). Indeed, the World Health Organisation reports that maternal deaths in sub-Saharan Africa are mostly due to direct obstetric complications from haemorrhage, hypertension, sepsis and obstructed labour accounting for more than 50% of all maternal deaths. Unsafe abortions, Pneumonia and HIV/AIDS are the other causes of maternal mortality (Say et al., 2014).

Evidence shows that availability, accessibility, acceptability and quality (AAAQ) of maternal healthcare (MHC) services such as family planning, antenatal care, skilled delivery care and postnatal care are some the most important drivers of maternal and child mortality

in the world (Organization et al., 2015a; Birmeta et al., 2013). MHC helps provide health information that is necessary for healthy pregnancy outcomes (Birmeta et al., 2013). It also ensures timely management and treatment of complications to minimise maternal deaths (Tey and Lai, 2013; Alam et al., 2015). Despite the importance of MHC in ensuring the safety of both the mother and child, many women still face challenges using these key services, especially in developing countries (Say and Raine, 2007). In low-income countries, only an estimated 52% of women benefit from skilled care during childbirth compared to high-income countries where virtually all women have at least four antenatal care visits and are attended to by skilled health professionals during childbirth (World Development Indicators, 2015).

Access and utilisation of healthcare in low- and middle-income countries (LMICs) is a constant concern state governments and global health actors alike. The 1978 Declaration of Alma-Ata was intended to insure universal access to primary healthcare worldwide (World Health Organization and United Nations Children's Fund, 1978). For sub-Saharan, this was implemented via the Bamako Initiative of 1987 (principle of community involvement) which ensured partial exemption or targeted free health care provision for the poorest population (Audibert and Mathonnat, 2013). This policy has resulted into significant improvements but still fell short of the Millennium Development Goals, especially in relation to maternal health (Das, 2018). The fact that universal health coverage is among the 2030 Sustainable Development Goals indicates the failure of the total free care provision and user fee exemption policies (UFEPs), which frequently cited as options to improve healthcare access and utilisation in sub-Saharan Africa (Robert et al., 2017; Robert et al. 2012).

The sub-continent's high poverty levels cannot be left out in any discussion about poor health and healthcare outcomes. Despite remarkable progress in the reduction of extreme poverty amounting to about 36% from 1990 to 2015, sub-Saharan Africa is the only continent which saw an increase in people living in poverty from 278 million in 1990 to 413 million in 2015 (World Bank, 2018). The failure to reduce poverty in sub-Sharan Africa has often been due to several inter-related factors. Support from the International Monetary Fund and World Bank for countries with crippling debt has been contingent on governments adopting painful

structural adjustment programmes (SAPs). The SAPs had a negative influence on the health sector of most countries. It is evident that these programmes could have widened health inequalities in the region as they led to a reduction in public health expenditure and the introduction of out-of-pocket fees in public hospitals (Sitali, 2007; Seshamani, 2003; Sanders and Chopra, 2005).

Institutions of governance in sub-Saharan Africa are often weak to provide checks and balances on the ruling governments. This has opened corruption and weakened channels of accountability to citizens and thus, fuelling unequal distribution of resources which may not prioritise healthcare. Conflict and civil wars have not been helpful either. They have affected several sub-Saharan African countries with devastating consequences for health and healthcare (Sanders and Chopra, 2005).

The social and cultural fabric of sub-Saharan Africa which is mainly patriarchal in nature, with rigid cultural and social norms has often an obstacle for women to seek, access and use maternal healthcare services (Simona et al, 2018; Adjiwanou and LeGrand, 2014). The decision-making process to seek maternal healthcare may seem personal but it is embedded in social mechanisms larger the concerned individual actors including such things as masculinity ideologies or cultural beliefs (Say and Raine, 2007).

We can see from this discussion that the decision-making process of a single woman in a sub-Saharan Africa to attend antenatal care or deliver in a health facility is impacted by several combinations of factors most of which lie outside her own sphere of influence. We have seen how poor health systems, lack of poor governance, corruption and lack of accountability, economic stagnation and rigidity in cultural and social norms are all negatively affecting health and healthcare. In this regard, disparities in maternal healthcare utilisation in sub-Saharan Africa, are determined by unequal power relationships interacting across social, political, economic and cultural factors at different levels including individual, household, community, country and global (Soors et al, 2013). These results into unequal access to resources, capabilities and rights which leads to inequalities in access and utilisation of maternal healthcare.

In this thesis, I seek to understand these relationships which inhibit utilisation of maternal healthcare in sub-Saharan Africa. I concentrate on the influence of structural conditions and in view of capturing the levels of complexity in which these factors operate. In order to incorporate cultural and structural determinants of maternal healthcare utilisation, the structure is defined broadly to encompass community social status and country-level characteristics. My understanding is that access to capabilities, resources and rights improves the chances of individual women to not only use maternal healthcare but also to fight the constraining structural conditions. For this reason, agency and individual level characteristics play a very important role in this study.

The study rooted in the sociological perspective and it is expected to add to theoretical and substantive debates in sociology, population health and global health among other fields. The study bares a holistic outlook whereby it illuminates the link from philosophy of science to theory to research methods especially as it relates to cross-national methods.

1.4. Research Questions and Objectives

The overarching aim of this study is to examine the influence of structural factors along the continuum of maternal health care in sub-Saharan Africa (antenatal care visits, delivery care and postnatal check-ups for mothers and newly-born babies) and to assess the effects of specific combinations of country, community and individual level factors on cross-national variations in maternal health care. Specifically, the study answers the following questions.

1. What is the nature of existing literature studying the influence of structural factors on maternal healthcare? What are the opportunities and challenges in this research?
2. What is the relationship between gender relations and maternal healthcare? How does this relationship vary along the continuum of maternal healthcare and what components of gender relations are most important in explaining variations in maternal healthcare? How do the effects of contextual factors compare with individual level factors?

3. How relevant is the rights-based approach in explaining maternal healthcare? Are civil and political liberties more important than socioeconomic entitlements in explaining maternal healthcare?

4. Does globalisation influence maternal healthcare in sub-Saharan Africa. What is the nature of the effect and what component of globalisation is most important?

The aim of the first research question was to systematically review the literature and examine the nature of structural conditions studied and the methods used. Studies reviewed are drawn from a series of database searches and are selected using a set criterion. Results of the systematic review were used to inform the empirical chapters in terms of scope, theory and methods.

The second research question seeks to investigate the relationship between gender relations and maternal healthcare. The analysis includes several measurements of gender relations and it is expected to reveal effects of each of these measurement on indicators of maternal health care. The analysis also establishes which level of operation between individual and contextual is most important.

In the third research question, the rationale was to establish whether the rights-based approach is important in explaining maternal health care in sub-Saharan Africa. Civil and political rights and socioeconomic entitlements are two important competing rights and I explore which component is most important here.

Globalisation is an important topic in almost all fields today. I use the fourth research question to understand the relationship the components of globalisation have with maternal healthcare. The components are broken down into economic, social and political globalisation.

1.4. Structure of the Thesis

Cockerham (2013), holds that methodological improvement in sociology especially multilevel modelling, have raised our understanding of society and enhanced the use of theory in empirical studies. While this statement may be true for the developed world, it may be less true for developing societies especially sub-Saharan Africa. For this reason, I began

my research by conducting a review of multilevel studies in a systematic fashion so as to explore the nature of previous research on maternal healthcare utilisation in sub-Saharan Africa in terms of their substantive, theoretical and methodological approaches. I concentrate on studies that use multilevel models because they best suited to estimate the effects of structural factors on individual level outcomes. Multilevel models are complex, varied and relatively new. It was, therefore, important to explore their use on this topic to form the basis of my research in order to not only avoid repetition but also make a significant contribution to the body of knowledge. I report the results of this assessment in chapter two and I approach it by exploring the literature, identifying limitations in extant multilevel studies and use lessons from this chapter for the entire thesis. Although only multilevel models are examined here, this should not be misconstrued as trivialising or neglecting single level studies. This is a methodological choice rather than a quality assessment one. In any case, single level studies are referenced throughout the thesis.

Chapter Three grounds the study in sociological theories relevant to medical sociology and population health. Theories give a lifeline to sociological studies. They help us understand how social phenomena work and it provides guidance and direction to research projects. In this study, I try to reflect the complexity and multilevel nature of social phenomena by anchoring my theoretical framework in a few perspectives. The study is pivoted on structural violence and I spend some time in this chapter to develop this concept in terms of definition and applications to key concepts that underpin this thesis including gender relations, human rights and globalisation. Structural violence operates at structural or contextual level, I use an eclectic approach that integrates structural violence with other micro theories that could explain individual level agency, in order to reflect a multilevel structure, I try to emphasise in this study. I find Bourdieu's theory of capital and Amartya Sen's capability approach to be most appropriate for this purpose. The complexity of social phenomena renders single-level defined theory inadequate whatever the level they operate on. But in order to explain maternal healthcare utilisation using several theories, I create a social mechanism that puts adequate utilisation of as the desired outcome that results from a complex interplay of factors in the context of the social structure. I have also argued in the same chapter that theory is sometimes constrained by the substantialist view of society which is rooted in the substance

of things as the foundation of the world. I argue that relationalism is a much more plausible ontological foundation for us to adequately represent social phenomena.

Chapter Four covers the research design and methods. It links the selected research paradigms, with its assumptions to the chosen methods. I detail the Bayesian framework which is the basis of my analysis. I argue that the Bayesian approach is better choice for multilevel cross-national studies, especially those with small-N at the highest-level. It avoids certain frequentist assumptions that may make it difficult to specify such models. I also argue for critical realism as a research paradigm and I discuss in detail why it may be a preferred paradigm of choice in this study in comparison with the positivist paradigm which is almost ubiquitous in quantitative social science research. Strong normative connotations which is reflected in the analysis of structural violence, human rights violations and even globalisation present one of the challenges to positivism. Other challenges of positivism for this study which are explained include the insistence of positivism on a *priori* theorising and inclinations to causality. The foundation for the Bayesian modelling process applied to all the empirical chapters is detailed in this chapter.

In Chapter Five, I cover data and data management. This study implements a novel way of examining the influence of structural factors on maternal healthcare by combining Demographic and Health Survey (DHS) datasets from 35 surveys in sub-Saharan Africa and merging the data with selected variables from the World Bank Indicators and several other datasets. I discuss the data acquisition process and preparation. I utilised different packages in R to clean and manage the data. I document those processes and justify the choices made and the challenges such data infrastructure possess to cross-national research. I discuss missing data as well as other data quality assessments including validity and reliability and response rate. The DHS is the focus of the chapter and I detail the sampling processes, sampling weights and measurements of variables, including variable transformations in this dataset. I have run all descriptive statistics for the data in this chapter so that the subsequent empirical chapters have concentrated only substantive modelling processes.

Empirical results begin in chapter six running through to chapter eight. I have already stated that I delineate the chapters into gender relations, human rights and globalisation. The sixth

chapter examines the influence of gender relations on maternal healthcare. Gender relations are defined using several factors and the aim is to establish which factor(s) are most important in predicting maternal health utilisation in sub-Saharan Africa. Like in all the other empirical chapters that follow, I discuss the relative effect of individual, community and country level factors on maternal healthcare utilisation in order to identify which level best explains cross-national variations in maternal healthcare utilisation. The chapter also discusses the extent to which the relationship between gender and maternal healthcare varies along the maternal healthcare the continuum.

Chapter Seven deals with how civil and political liberties on one hand and socioeconomic entitlements on the other influence maternal healthcare utilisation. Many scholars have objected to the emphasis on civil and political liberties over socioeconomic entitlements in much scholarship. This chapter empirically combines the basic components of human rights and measures their association with maternal healthcare. This analysis helps us to examine the extent to which the human rights-based is effective in explaining maternal healthcare. Also, through this analysis, I distinguish which type of rights are important predictors of maternal healthcare utilisation. The rights-based approach and the capability approaches are both discussed in chapter seven to illuminate their complementarity rather than competitiveness. I argue that looking at these theories in this manner helps in empirical approaches which utilises the two approaches.

Globalisation is a popular subject in the world today and it has been a subject of much scholarship in health research for the two decades. There are basically two angles of looking at globalisation and health. The first argues for the connectedness of the world whereby illness and diseases spread very quickly across the world due to improved travel industry and other technologies. In this viewpoint, globalisation is securitised, and the global health promotion machinery is focused on ways to curb diseases from their sources as a matter of security threats. The other side looks at globalisation as a matter of global health inequalities whereby unequal power relations are reflected in the distribution of resources across the world. These inequalities are manifested by inequities in prevalence rates of illness and disease across the world with disproportionate disadvantages in the poorer countries. The second angle is the focus of Chapter Eight. It seeks to establish how globalisation affects use

of maternal health in sub-Saharan Africa. I delineate the concept of globalisation into three types: economic, social and political globalisation. Of course, these terminologies are not without criticisms. I problematise them in the chapter as well and makes suggestions about best approaches.

Chapter Nine concludes the study. I revisit the motivations and contextualisation of this research. The chapter also summarises key findings, situates them in the literature and suggests future research in view of the findings from this study. The findings are discussed by chapters, which also answers the research questions. Limitations of the study are also discussed here including the overall contributions of the study to the body of knowledge.

1.5. Conclusion

This chapter provides a background context in which the study is situated. I recognise the progress made by extant research in expanding the 'fundamental cause' of disease and illness by their focus on more structurally oriented 'upstream' factors. I argue that these studies have neglected healthcare especially in sub-Saharan Africa. I put emphasis in a holistic approach that considers the theoretical, methodological and substantive perspectives to be equally important in sociological research. I try to represent the complexity of social phenomena by using multilevel models that captures individual, community and country-level characteristics.

My attempt to use a holistic approach may at times appear to compromise the depth of my analysis in favour of breadths. The length of the thesis provides enough space and I have made every effort to engage critically with the topics of this thesis as much as possible. But if this effort still does seem less satisfactory in this regard, I submit that it is a conscious choice of mine to prioritise breadth and the thesis should be considered in that context.

Chapter Two – Researching the Influence of Structural factors on Maternal Healthcare in sub-Saharan Africa: A Systematic Review of Multilevel Models

2.1. Introduction

Systematic literature reviews aim to provide a systematic, transparent ways of gathering, synthesising and appraising the findings of studies on a topic or research question (Khan et al., 2011). They are popularly employed by health practitioners to inform policy because they tend to minimise the limitations of acting on the findings of a single study (Jesson et al., 2011). This study uses a systematic review method in the context of mapping out areas around the selected subject which needs further investigation (Petticrew and Roberts, 2008). Contrary to traditional literature review, systematic reviews have the advantage of applying rigorous scientific methods to the process of reviewing the literature which are fully described and narrated just like other primary studies. This process makes systematic reviews produce less biased conclusions compared to traditional reviews and as such, they are seen to be more comprehensive, objective and reliable (CRD, 2008; Petticrew and Roberts (2008).

This chapter presents a systematic review of the literature on structural factors influencing maternal healthcare disparities in sub-Saharan Africa. The aim is to provide a comprehensive background information upon which the thesis is built. The chapter sketches out the gaps in knowledge in terms of the types of structural factors, maternal healthcare indicators, theoretical frameworks and methods applied in previous studies. In this chapter, I first discuss the rationale behind the selection of multilevel modelling studies as the focus of this chapter, then I follow the systematic review process from data collection up to the discussion of results. At the end, I concentrate on the lessons learnt and gaps in the literature that I address in the remaining chapters of this thesis.

2.2. Contextualising the study

I have stated earlier that sub-Saharan Africa still bears the heaviest burden of maternal mortality among the regions of the world has been established and that most maternal deaths

occur during childbirth and the first one month of postpartum, which makes the pregnancy and childbirth periods crucial for the survival of mothers and new-born babies. It is for this reason that maternal healthcare (MHC) services such as antenatal care, skilled delivery care and postnatal check-ups for mothers and babies are crucial in the prevention of maternal and child mortality in the world (Tey and Lai, 2013; Alam et al., 2015; Birmeta et al., 2013). MHC helps provide health information that is necessary for healthy pregnancy outcomes (Birmeta et al., 2013). It also ensures timely management and treatment of complications to minimise maternal deaths (Tey and Lai, 2013, Alam et al. (2015)).

Despite the importance of MHC in ensuring the safety of both the mother and child, many women in sub-Saharan Africa still face challenges using these key services, where for example, only an estimated 52% of women benefit from skilled care during childbirth (Say and Raine, 2007). Studies have established a plethora of factors that prevent women from seeking health care during pregnancy and childbirth. These factors are located at different levels, including the individual, heath systems and structural levels. Individual-level socio-economic factors associated with use of maternal healthcare include maternal age (Magadi et al., 2007) mother's education (Rutaremwa et al., 2015), religion (Pallikadavath et al., 2004), family composition (Gabrysch and Campbell, 2009) wealth (Tey and Lai, 2013; Rutaremwa et al., 2015), information availability (Stephenson et al., 2006) place of residence (Tey and Lai, 2013; Say and Raine, 2007), mothers' occupation (Gabrysch and Campbell, 2009) health knowledge (Stekelenburg et al., 2004) and decision- making power (Li, 2004) among others.

At the health system level, factors such as distance to the health facilities (Rockers et al., 2009; Galaa and Daare, 2008; Onah et al., 2006), perceived quality of healthcare (Galaa and Daare, 2008; Onah et al., 2006) cost (Tann et al., 2007), promptness of care (Onah et al., 2006), availability of medicine, equipment and emergency care (Gabrysch and Campbell, 2009; Onah et al., 2006; Mbonye and Asimwe, 2010) are important in determining maternal healthcare in sub-Saharan Africa. While structural-level factors may include gender norms (Adjiwanou and LeGrand, 2014), poverty (Yebyo et al., 2015), cultural beliefs (Say and Raine, 2007) government share of healthcare spending (Kruk et al., 2007) and Gross National Income per capita (Magadi et al., 2007). Current research shows that individual

socioeconomic characteristics, social-cultural characteristics and place of residence are intertwined and have a mutually reinforcing relationship (Magadi et al., 2007). This suggests high degrees of dependencies among people living in one geographical area. For example, people with similar socioeconomic status are likely to live in the same community, attract particular health amenities and have shared sociocultural characteristics. Add to this the fact that national, regional and neighbourhood level influences have a high propensity of coexistence (Rutaremwa et al., 2015).

We know that determinants of use of maternal healthcare extend beyond individual socioeconomic status and health systems characteristics (Stephenson et al., 2006). In fact, such lower level determinants of health and healthcare may just be symptoms of 'upstream' structural factors imbedded within local communities and broader social institutions. For example, the influence of women's autonomy and decision-making powers on maternal healthcare operationalised at an individual level have often been discussed within the framework of dominant masculinity ideologies or cultural beliefs in particular spaces (Say and Raine, 2007). The same may be true with health systems whose dysfunctionality may be a direct consequence of the failure of political and governance systems far removed from their level of operation.

However, despite many studies examining the relationship between structural factors and maternal healthcare utilisation in continental sub-Saharan Africa, it is still not clear a) whether structural and area conditions influence maternal healthcare utilisation distinctive of health determinant associated with individual socio-economic status; b) What structural factors are consistently associated with maternal healthcare utilisation and c) What pathways link structural factors and maternal health care utilisation.

Multilevel models have generally been regarded as 'gold standards' if the objective of the research inquiry is to examine the effects of high-level factors on outcome variables while controlling for individual characteristics because they can determine the magnitude of variance in the outcome variable attributable to factors at each level of operation (Stephenson et al., 2006). Therefore, to delineate the individual and structural influences on maternal healthcare utilisation, we systematically review only multilevel studies that have included

socio-economic status at the individual-level. This distinguishes our study from previous reviews (Thaddeus and Maine, 1994; Say and Raine, 2007; Gabrysch and Campbell, 2009; Moyer and Mustafa, 2013) which either were not entirely systematic, did not particularly focus on sub-Saharan Africa, did not include all the indictors of maternal health care utilisation or did not exclusively target studies using multilevel modelling.

Understanding the nature of structural factors influencing individual women's utilisation of MHC is critical for the implementation of policy strategies aimed at bolstering the use of MHC services especially in low resource countries. This is because structural factors provide a holistic way of looking at determinants of health outcomes. Additionally, they also provide a better platform for theoretical developments aimed at understanding the relationships between the broader social structure and individual characteristics. This approach has the potential to ultimately explain the less optimum utilisation of maternal healthcare and high maternal mortality in sub-Saharan Africa.

This systematic synthesises results from extant multilevel studies that examine individual and contextual factors influencing MHC utilisation in sub-Saharan Africa. The aim is to investigate the relationship between structural/contextual factors and maternal healthcare utilisation in sub-Saharan Africa and how multilevel models are applied to study this relationship. The review is intended to identify gaps that may exist in literature and to suggest further research in view of observed limitations. Specifically, the review seeks to address the following questions with respect to existing literature:

1. How are multilevel techniques applied to study relationships between structural factors and maternal healthcare utilisation?

2. What kind of structural factors are associated with maternal healthcare utilisation and what pathways of influence do they follow?

3. Is there enough evidence to suggest that structural factors have more explanatory power on maternal healthcare utilisation compared to individual-level factors?

4. What theoretical underpinnings (if any) do previous studies follow to explain the relationship between structural conditions and maternal healthcare utilisation?

Before the development of the protocol, a scoping review was conducted in a number of journals and systematic review databases in order to identify existing and on-going systematic reviews that have similar scope with the current review. This was done to avoid duplication of reviews. The systematic review databases searched included the Database of Abstracts of Reviews of Effects (DARE), the Cochrane Database of Systematic Reviews (CDSR) and PROSPERO (International Prospective Register of Systematic Reviews), the Campbell collaboration website and the Database of Promoting Health Effectiveness Review (DoPHER). Four reviews which had some elements of maternal healthcare were identified. However, the earlier three (Thaddeus and Maine, 1994; Say and Raine, 2007; Gabrysch and Campbell, 2009) were limited by their non-systematic nature and none of them was particularly focused on SSA. The fourth one (Moyer and Mustafa, 2013) had some relevance to this study, although it only focused on facility delivery and included variables operationalised only at the individual level. It was searched to identify any papers that met the criteria for selection in this study. All in all, none of the completed or on-going systematic reviews addressed the review questions being pursued here.

2.3. Methods

As a matter of good practice, this review was aligned to the Centre for Reviews and Dissemination (CRD) guidelines for conducting systematic reviews in healthcare (Moher et al., 2009). The process involved searching the electronic literature, identifying articles corresponding to the inclusion criteria and selecting them for extraction and analysis. As much as possible, this protocol adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Protocols (PRISMA-P) 2015 statement checklist (Moher et al., 2015).

2.3.1. Inclusion criteria

2.3.1.1. Types of studies

Although previous studies have used a variety of techniques to examine the relationship between structural factors and health variations, this review searched only for studies utilising multilevel modelling (MLM) designs. MLM designs are relatively new advances in quantitative research methods and best suited to study the relationship between structural conditions and population health because they allow for a simultaneous examination of the impact of individual level and group level variables on individual level outcomes (Roux, 2002; Subramanian, 2004). They also accommodate an analysis of observations that are correlated or clustered along spatial, non-spatial, or temporal dimensions (Blakely and Subramanian, 2006). The application of MLMs in such data structures helps to remedy both atomistic and ecological fallacies. This is the reason MLM designs were selected for this review. Studies that used any type of MLM techniques and focused on a single or multiple sub-Saharan African countries were eligible for selection.

2.3.1.2. Publication status

Although the development of MLM designs began in the 1990s, their application in empirical studies in social and health research increased, mainly from the early 2000s onwards. Therefore, studies published in refereed journals between 2000 and January 2017 were included. It was assumed that this period would capture all significant empirical studies applying MLMs in sub-Saharan Africa. Materials published in non-refereed journals, book reviews, unpublished working papers, government reports, qualitative studies, dissertations, published comments, expert opinions, media briefings, editorials and book reviews were excluded. The review included only studies published in the English language.

2.3.1.3. Participants and setting

The review included studies that were implemented in any sub-Saharan Africa country, as it is defined by the World Bank Group (World Bank, 2017), focusing on maternal healthcare utilisation. This review excluded studies which targeted sub-Saharan citizens in the diaspora.

2.3.1.4. Outcomes

The review was restricted only to studies that used any of the maternal healthcare utilisation indicators outcome variables. The indicators of maternal healthcare utilisation include skilled delivery care, antenatal care and use of contraceptive methods.

2.3.1.5. Determinants

High-level determinants of maternal healthcare utilisation in MLM studies were considered as structural factors and these included factors clustered at the community, regional or national levels. Characteristics such as community socioeconomic status, social norms, social cohesion, social exclusion, social capital, and national level economic development status, poverty levels and health expenditure were among eligible structural factors.

2.3.2. Information sources

To avoid bias and in order to reflect the multidisciplinary nature of the subject of this review, literature searches were performed across a variety of databases divided into social sciences and health/medical sciences:

2.3.2.1. Social sciences

- International Bibliography of the Social Sciences (ProQuest)

- Social Science Research Network—SSRN eLibrary

- Science Direct

- ASSIA: Applied Social Sciences Index (ProQuest)

- Sociological Abstracts (ProQuest)

- Google scholar

2.3.2.2. Health and biomedical sciences

- Ovid, MEDLINE

- Ovid, EMBASE

- PubMed,

- WHO Library Database (WHOLIS),

- African Health line

- African Index Medicus

- Wiley Online Library, (AIM),
- Web of Science,

- Cumulative Index to Nursing and Allied Health Literature (CINAHL)

- Scopus

2.3.3. Literature search strategy

This review employed four sets of terms representing the outcome indicator variables, the structural indicator variables, MLM filters and the filter for sub-Saharan African countries in the search strategy. The search filter for sub-Saharan African countries was adapted from work by Pienaar et al., 2011, who developed it for clinical studies conducted in an African environment. The filter comprised sub-Saharan African country names and truncated terms such as "southern Africa". North African countries and language filters were removed from the original list accordingly. Table 2.1 below reports an example of the search strategy adopted for this review.

2.3.4. Data extraction and management

A search was conducted databases using the strategy above, to identify potential records for the review. All extracted entries were screened by examining titles and abstracts and all relevant records with potential of meeting the criteria for inclusion were exported to EndNote

X7 for data management. Full texts were extracted using the EndNote platform and those, which could not be found, were searched manually through the University library platform. Full texts were assessed against the inclusion criteria. Studies excluded from the review at this stage along with reasons for exclusion were recorded and retained by the researcher. The search also included hand searching reference lists of relevant articles to identify other articles of value. Records fitting the inclusion criteria were then exported to excel to record the detailed general publication information (author(s), year of publication and type of journal), characteristics of studies (design, population, sample size and procedure, country, explanatory and outcome variables of concern) and summary results (whether or not structural factors significantly influenced maternal healthcare utilisation and recording the intra-class correlation). The search was conducted on the 16th of April 2017.

At the end of my search, I contacted a few of the prominent scholars in this field to review the final list of included studies. This was done to ensure that all the relevant studies meeting the criteria for selection were included (Pratley, 2016). It is particularly important to do this when a single reviewer is involved in the selection process.

Table 2. 1 Example of search strategy

Maternal healthcare indicator terms	"Maternal healthcare" OR "access to healthcare" OR "availability of healthcare" OR "utilisation of healthcare" OR "health service coverage" OR "skilled birth attendant" OR "skilled delivery care" OR "facility based delivery" OR "antenatal care" OR "postnatal care" OR "maternal health".
Structural factors	"Structural factors" OR "social determinants" OR "contextual factors" OR "determinants" OR "neighbourhood status" OR "community factors" OR "structural violence" OR "social structure" OR "social norms" OR "sociocultural factors" OR "economic development" OR "governance" "gender inequality" OR "predictors" OR "health systems"
Multilevel models filters	"Multilevel" OR "multilevel models" OR "multilevel modelling" OR "MLM" OR "hierarchical models" OR "hierarchical linear models" OR "HLM" "Variance component" OR "Intraclass correlation" OR "ICC" OR "random effects" OR "mixed models" OR "mixed effects"

Filter for sub-Saharan African countries	("Africa" OR Africa* OR Angola OR Benin OR Botswana OR "Burkina Faso" OR Burundi OR Cameroon OR "Canary Islands" OR "Cape Verde" OR "Central African Republic" OR Chad OR Comoros OR Congo OR "Democratic Republic of Congo" OR Djibouti OR "Equatorial Guinea" OR Eritrea OR Ethiopia OR Gabon OR Gambia OR Ghana OR Guinea OR "Guinea Bissau" OR "Ivory Coast" OR "Cote d'Ivoire" OR Kenya OR Lesotho OR Liberia OR Madagascar OR Malawi OR Mali OR Mauritania OR Mauritius OR Mozambique OR Namibia OR Niger OR Nigeria OR Principe OR Reunion OR Rwanda OR "Sao Tome" OR Senegal OR Seychelles OR "Sierra Leone" OR Somalia OR "South Africa" OR Sudan OR Swaziland OR Tanzania OR Togo OR Tunisia OR Uganda OR "Western Sahara" OR Zaire OR Zambia OR Zimbabwe OR "Central Africa" OR "Central African" OR "West Africa" OR "West African" OR "Western Africa" OR "Western African" OR "East Africa" OR "East African" OR "Eastern Africa" OR "Eastern African" OR "North Africa" OR "North African" OR "South African" OR "Southern Africa" OR "Southern African" OR "sub Saharan Africa" OR "sub Saharan African" OR "sub-Saharan Africa")

2.3.5. Risks of bias and quality assessment

Poor quality assessment of studies has a considerable negative impact on the results of systematic reviews. As such, this systematic review appraised all studies in accordance with the Quality Assessment Tool for Quantitative Studies developed by the Effective Public Health Practice Project (Armijo-Olivo et al., 2012). Accordingly, the assessment considered selection, the appropriateness of study designs, whether there were stated confounders, whether there were variables which had been controlled for, reliability and validity of data collection tools, the appropriateness of the units of analysis and the type of variables included.

In cases of missing data, attempts were made to contact the primary authors of articles concerned. This was done in situations where, for example, study designs, explanatory or outcome variables were unclear or missing. When there was no success in obtaining the missing data, data were reported accordingly, and the implication thereof elucidated in the discussion section of the review.

2.3.6. Data analysis and presentation

Heterogeneity in the study population, selected countries, outcomes and the nature of higher-level explanatory variables was observed. As such, meta-analysis was not possible for this synthesis. Instead, narrative systematic review was employed as the method of reporting

findings. A table was created with six columns to be used to report the name of first author and reference in column 1. Contextual/structural factors that were found to be influencing maternal healthcare after controlling for individual level variables in column 2. Individual factors from adjusted models including contextual factors were reported in column 3. Column 4 reported the Intra-class correlation (ICC) which is an inferential statistic measuring variability within higher-level factors influencing maternal healthcare utilisation. It is used here to determine the importance of contextual factors in relation to individual characteristics in influencing use of maternal health care. Column 5 indicates the nature of the outcome variable investigated in the research and the last column shows the direction of significant structural factors in relation to the outcome under consideration. Finally, column 6 shows the direction of the structural factors reported in terms of how they affect maternal healthcare utilisation.

2.4. Results

2.4.1. Search results

The electronic data search process from the research platforms above yielded a total of 1,654 potentially relevant records. Twenty-seven additional records were identified from the reference lists and citation checks of included studies. After searching for duplicates, 996 were discarded and 658 records were screened using titles and abstracts. Following this stage, 551 irrelevant manuscripts were excluded from the review and the remaining 107 records were fully assessed with respect to the illegibility criteria and among these, thirty-nine were selected. The main reason for exclusion was not focusing on sub-Saharan Africa, not using multilevel modelling techniques, using primarily qualitative methods and having an outcome variable other than maternal healthcare. After quality assessment for confounding and appropriate control of variables, six were excluded and the remaining 33 records were eligible for inclusion in the study. Figure 2.1 below is a flow diagram, which reports the process from article identification to inclusion.

2.4.2. Study characteristics

Apart from a few entries (Kruk et al., 2010; Benefo, 2010; Worku et al., 2013; Ndao-Brumblay et al., 2012; McTavish et al., 2010), all the reviewed studies used the Demographic and Health Surveys (DHS) data from a standard survey implemented in more than 91 countries worldwide. The publication by McTavish and others (McTavish et al., 2010) is the only study using the World Health Survey (WHS) and controls for the national level socioeconomic characteristics when investigating the relationship between national female literacy and maternal healthcare use. Table 2.2 reports the distribution of selected studies across nine sub-Saharan African countries including some cross-national studies, which used a combination of sub-Saharan African countries as a unit of analysis.

Sample sizes for included studies have a wide range because of heterogeneity in the nature of these studies. Some studies for example only focused on a small population of a rural population (Benefo, 2010; Kruk et al., 2015; Debelew et al., 2014) while some others pool data in a cross-national design making the total sample size disproportionately large (McTavish et al., 2010; Elfstrom and Stephenson, 2012; Magadi et al., 2003). However, all the selected studies have sample sizes adequate to represent populations under investigation.

| Records identified through database searches (n=1,954) | | Additional records identified through other searches (n=27) |

Number of records after removal of duplicates (n=658)

| Records screened (n=658) | → | Records excluded after screening titles and abstracts (n=551) |

| Full-text articles assessed for eligibility (n=107) | → | Full-text articles excluded with reasons (n=74) |

Studies included in the analysis (n=33)

Figure 2. 1. Flow of information through different phases of systematic review

Table 2. 2 Distribution of studies by county

Country	Count	Percent
Nigeria	6	18.2
Ethiopia	6	18.2
SSA/Africa	5	15.2
Tanzania	4	12.1
Ghana	3	9.1
Mali	2	6.1
Zambia	2	6.1
Mozambique	2	6.1
Kenya	1	3.0
Zimbabwe	1	3.0
South Africa	1	3.0
Total	**33**	**100.0**

2.4.3. The nature of structural/contextual factors influencing maternal healthcare

Table 2.3 reports the results of the systematic review in terms of the study references, factors influencing different indicators of maternal healthcare including both structural/contextual and individual-level factors studied. The ICC and the direction of structural-level influence on maternal healthcare are also reported. Pursuant to the first research question, table 2.3 shows that there are different ways in which higher-level factors are constituted in studies applying multilevel modelling in sub-Saharan Africa. However, in most studies, these factors are constituted by aggregating individual-level data to represent community characteristics often defined as clusters or PSUs in the case of DHS data (Chama-Chiliba and Koch, 2013; Masters et al., 2013; Gizachew Balew et al., 2015; Girmaye and Berhan, 2016). Apart from publications by Balew et al (Gizachew Balew et al., 2015) and Ngome and Odimegwu (Ngome and Odimegwu, 2014), which define higher-level factors as structural determinants and social contexts respectively and focus exclusively on their influence on maternal healthcare. All the other studies seek to investigate the effects of both individual and community-level factors and emphasize the importance of considering factors operating at both levels in policy strategies aimed at addressing maternal healthcare use.

Multilevel models are thus applied in order to take care of this two-level hierarchy in the concerned data structures.

Elfstrom and Stephenson (Elfstrom and Stephenson, 2012) is the only publication using three-level modelling techniques in contrast with all the other reviewed studies. Their assumption is that individual actors are nested within households, which, are in turn nested within communities, and they find evidence for the importance of that kind of hierarchical structure. Their analysis shows that community level factors of demographics and fertility norms, gender norms and health knowledge remain significantly associated with contraceptive use even after controlling for both individual and household level factors.

In terms of the nature of multilevel designs, reviewed studies indicate that they are mainly cross-sectional and utilise mainly multilevel logistic regression analysis with a few making use of multinomial and structural equation regression analysis. The lack of robust data infrastructure in sub-Saharan prohibit the use of more comprehensive analytical techniques such as longitudinal multilevel analysis.

2.4.4. Structural level factors associated with maternal healthcare

The second research question pertains to the higher-level factors associated with maternal healthcare in sub-Saharan Africa. Table 2.3 reports several contextual factors that were found to be associated with maternal healthcare after holding constant the effects of individual level factors. These have been divided into four categories including health systems, relational, socioeconomic and macro-level factors. The most common health systems level includes distance to health facilities (Adjiwanou and LeGrand, 2014; Gizachew Balew et al., 2015; Gage, 2007), quality of healthcare (Chama-Chiliba and Koch, 2013), facility capacity (Masters et al., 2013), antenatal care services (Yebyo et al., 2015) and trust in the health system (Mohan et al., 2015). The overarching direction of the relationship is that women who live near well-performing health systems are more likely to utilise maternal healthcare services.

A host of socioeconomic factors are associated with maternal healthcare utilisation at the structural level and these include religion, media exposure, place of residence, gender norms,

access to piped water, poverty women empowerment and average community wealth. Many of these factors have a consisted and predictable relationship with maternal healthcare. It is well known for instance that problematic gender norms hinder women from using maternal healthcare (Adjiwanou and LeGrand, 2014; Elfstrom and Stephenson, 2012) and that women from poor backgrounds or otherwise live in poor or disadvantaged areas are less likely to use maternal healthcare services (Dias and de Oliveira, 2015; Gizachew Balew et al., 2015; Ndao-Brumblay et al., 2012).

Relational factors, which mainly result from everyday relationships that women are involved in, also do significantly influence women's decisions to either use maternal healthcare or not. Factors such as husband approval for family planning (Stephenson et al., 2006), female autonomy (Cau, 2015), parity (Stephenson et al., 2008), number of children per PSU (Stephenson et al., 2006) and small family norm (Adjiwanou and LeGrand, 2014). These factors seem to hinge on the nature of relational institutions in sub-Saharan Africa in that women who live in areas where their individual freedoms are inhibited, have less likelihood of using maternal healthcare.

There are not many studies which focussed on macro-level factors in this review but one study which did include such factors in the analysis revealed that they have significant influence on use of reproductive healthcare services. McTavish and others (McTavish et al., 2010) investigated the relationship between national female literacy, socioeconomic position and maternal healthcare and they found that the relationship was significant. They controlled for national economic development was also significantly associated with maternal healthcare. This study gives a glimpse on the importance of considering national level and other macro structures in factors when studying individual healthcare outcomes.

2.4.5. Explanatory power of structural factors relative to individual characteristics

Review question number 3 sought to determine the extent to which structural level factors explain variations in individual maternal healthcare outcomes relative to individual-level factors. Reviewed studies have not been consistent in reporting ICC measurements which

indicate the relative importance of contextual factors versus individual-level factors in influencing use of maternal healthcare. Another and probably more important caveat in the results is that structural level factors have not been measured consistently in reviewed studies. Some variables are defined at different levels in different studies making it difficult to determine the validity of ICC in synthesised review results.

However, suffice to say that the ICC results reported in table 2.2 show that they are averaging approximately 35% indicating that contextual level factors have a substantial independent influence on maternal healthcare. Publications like that of Cau (Cau, 2015) in Mozambique and Ononokpono and others (Ononokpono, 2015) in Nigeria which focus on women's socioeconomic position, empowerment and media exposure show more impact attributed to structural factors than individual characteristics. It will be interesting to explore more what is behind such observed patterns. Other studies which show more impact of structural factors include Girmaye and Berhan, 2016 and Debelew (Debelew et al., 2014) mainly emphasising the importance of the place of residence and the health system.

2.4.6. Theoretical explanations of the relationships between structural conditions and maternal healthcare use

Review question number 4 sought to identify theoretical underpinnings that offer explanations on the relationship between structural conditions and maternal healthcare utilisation. None of the reviewed studies seem to be anchored on any theoretical foundation and no reference to social science theoretical literature is made. Most of the studies try to offer explanations necessitating the observed relationships and the role of the social structure. Probably Adjiwanou and LeGrand (Adjiwanou and LeGrand, 2014) offer the soundest explanation of the relationship between gender inequalities and maternal healthcare. They attribute the observed negative effects of gender inequalities on maternal healthcare in rural sub-Saharan Africa to problematic masculinity ideologies. This is an insightful approach because it gives a broader picture through which the observed relationship in a study could be viewed. However, they do not ground this explanation in a specific theoretical framework to aid explanations of such patterns that may appear in different contexts and which, could later be evaluated in empirical studies.

Most of the other studies attribute the observed relationships to the same factors being investigated such as socioeconomic status, lack of women empowerment, the problems in the health system and place of residence. As such, a lot of questions remain unexplored at a theoretical level. What is it about place of residence for instance, which predisposes women not to attend antenatal care or delivery in health institutions?

The reasons for the lack of theory in studies investigating the relationship between structural factors and maternal healthcare may be attributed to lack of reference to social science literature and particularly sociological theory. This phenomenon is understandable as there is very little visibility of sociologists and other social science researchers in health science research in sub-Saharan Africa, who may have better theoretical backgrounds. The field is mostly dominated by social epidemiologists and public health specialists. The lack of theoretical foundation in public health research is a problem, which has been identified even within the field of social epidemiology itself, and it is a subject of significant debate (Cutler et al., 2008).

Table 2. 3 Summary of studies included in the systematic review ordered by year of publication beginning with the latest

Study (Year)	contextual factors for adjusted models	Individual level factors for adjusted models	ICC	Outcome	Direction of structural influence
Akinyemi 2016	Problems accessing healthcare, lack of money, place and region of residence	Maternal education, partner education, decision making on own health,	[0.23]	Maternity care continuum	Women living in areas where there is less access to healthcare, lack money and located in rural areas are more likely to drop out of maternity care continuum
Gage 2016	Health system, state	Maternal education, place of residence, household wealth	[0.33]	Delivery care utilisation	Women using health systems and in states with supportive quality of MHC have higher likelihood of
Girmaye 2016	Distance to the nearest health provider	Skilled personnel preferred, awareness of providers, media exposure	[0.65]	Skilled antenatal care services	The more the distance to the nearest provider the less the likelihood to use skilled antenatal care
Terye 2016	Region with an Empty model fit	Media exposure, maternal education, partner education, work status, birth order, marital status	-----	Maternal healthcare	Usage of maternal healthcare vary by region
Afulani 2015	Socioeconomic status	Urban living, higher education, higher wealth, 4+ANC visits, ANC with a doctor, ANC in government hospital, used contraceptives	0.27	Higher quality of antenatal care	Women who live in areas with higher socioeconomic status have better chance of utilising higher quality antenatal care
Balew 2015	Religion, place of residence and media exposure	Maternal education, household wealth	[0.171, 0.19]	Planning services	Less media exposure, living in rural areas belonging to Islam and other religions lowers the probability of using family planning services at the community level
Cau 2015	Exposure to family planning messages, community women empowerment, women autonomy	Parity, maternal age, professional status, education, desired family size, women's autonomy, marital status	[0.50]	Contraceptive use	Living in communities with high percentage of access to information, more empowered and autonomous women increases the odds of using contraceptives.
Chama-Chiliba 2015	Area of residence, quality of health care	Women status, partner education, household childcare burden, quality of ANC received	[0.06, 0.11]	Utilization of antenatal care	Higher quality of healthcare is associated with insufficient ANC visits. In the rural areas this has more explanatory power than individual level factors

Dias 2015	Average community wealth and Social economic position	Female occupation, age, distance to health facility, marital status, religion, education	[0.06]	Women's use of modern Contraceptives	Women's socioeconomic position and average community wealth influence use of use of modern contraceptives
Kruk et al 2015	Village farms cash crops	Education; healthcare utilisation; media exposure; wealth index and birth during harvest season	[0.09,0.24]	Home delivery	Farming of cash crop in a village reduces the probability of home delivery
Mohan 2015	Trust in the health system, postpartum family planning usage	Women's education, forceps delivery/caesarean section, CHW's help, HIV testing for baby	[0.47]	Postnatal care use at health facility	Living in communities were women have trust in the health system increases the likelihood of postnatal care
Ononokpono 2015	Region of residence, community education, poverty, hospital delivery, media exposure	Education, women's autonomy, household wealth, occupation, religion, ethnic origin	[0.66]	Skilled antenatal care	Region, community hospital delivery, poverty and media exposure have strong independent associations with skilled antenatal care
Yebyo 2015	Place of residence, women empowerment, education levels, media exposure, ANC visits, distance to health facility	Household wealth, educational attainment, partner education, media exposure and perceived problems with transportation	0.21	Home delivery	Rural women, women living in agrarian communities, poor and those who reported that distance is a problem had higher odds of home delivery. Lower levels of ANC utilisation was also associated with home delivery.
Adjiwanou 2014	Gender norms, lack of contraceptive use, distance to health facility	Women's education, maternal age, birth order, spouse education	[0.16-0.80]	Skilled birth attendance, 4+ ANC visits and first trimester ANC	Women who live in areas where gender norms are pronounced are less likely to use skilled birth attendants and timely antenatal care in Ghana, Tanzania and Uganda
Debelew 2014	Place of residence, distance from health centre and hospital	Educational status, household wealth, husband occupation, frequency of ANC visits,	[0.55]	Birth preparedness and complication readiness	Living in rural areas and long distance to the hospital increase the likelihood of poor birth preparedness and complication readiness
Ngome 2014	Provincial level of access to healthcare, education, number of children per women	Media access, parity	-----	use of modern contraceptives	Lack of access to healthcare, more children per women and having higher education are associated with less use of modern contraceptives in a province
Ononokpono 2014	Community education, community health facility delivery and ethnic diversity	Maternal age, educational attainment, religion, ethnic origin, occupation, household wealth	[0.42]	Postnatal care	Living in communities with high proportion of educated women, those who had facility delivery, increases the likelihood of postnatal care

Masters 2013	Facility capacity	Maternal education, household wealth, female autonomy, partner education, parity	----	Maternal healthcare utilisation	Facility capacity as a community level factors is not associated with maternal healthcare utilisation
Ononokpono 2013	Community health facility delivery, community poverty	Women occupation, household wealth, women autonomy and region of residence	[0.47]	Maternal healthcare utilisation	Living in community with high facility delivery increases the chance of 4+ ANC visits while community poverty lowers the likelihood of antenatal care visits
Worku 2013	Signal functions, payment during delivery, obstetric guideline, self-sustained	Birth order, maternal education, preference for skilled provider, previous experience of ANC	[0.19]	Skilled maternal care utilisation	Payment requirement, distance to the facility are important barriers to skilled delivery. Health facility performance was also significantly associated with use of skilled maternal care.
Elfstrom 2012	Fertility knowledge, gender norms and inequalities, health knowledge	------	-----	Contraceptive use in Africa	Women living in community with higher fertility knowledge, unproblematic gender norms and have health knowledge are more likely to use modern contraceptives
Ndao-Brumblay 2012	Distance to health facility, village poverty, road network quality	Age at last childbirth, marital status, household wealth index, optimal antenatal visits, parity	[0.36]	Use of health facility for delivery	Contextual level factors were not significant in explaining variations in the use of health facility for delivery
Benefo 2010	Community interpersonal HIV communication, access to condoms, uses no other contraceptives	Age, marital status, knowledge that condoms prevent HIV transmission,	-----	Condom use	Interpersonal communication and access to condoms increases the likelihood of condom use
Kruk 2010	Community perception of the quality of local health system	Enrolled in community health insurance, parity, health beliefs, perceptions of a health system	[0.34]	Facility delivery	Positive perceptions of doctor and nurse skills and inversely negative perception of traditional birth attend skills increases the likelihood of facility delivery
McTavish 2010	National female literacy	Individual age, education, urbanicity and household income, marital/cohabitation status	-----	Use maternal health care	Mothers residing in countries with high levels of female literacy were more likely to use maternal health care
Babalola 2009	Place of residence, media exposure, small family norm	Women's Education, socioeconomic status, maternal age, ideal family size	[0.34, 0.40]	Use of maternal healthcare services in Nigeria	Urban residence and community media saturation are strong predictors of use of maternal healthcare services

Johnson 2009	Ecological zone of residence, rural/urban residential status	Household wealth, partner education, ANC Visits, maternal age, religion, birth order, education	----	Place of delivery	Apparent ecological and rural/urban inequalities in place of delivery
Kaggwa 2008	Access to piped water, exposure to family planning messages	Maternal age, household wealth, partner education, women approving family planning	[0.15]	Contraceptive use	After adjusting for individual level factors, none of contextual level factors were associated with contraceptive use in Mali
Stephenson 2008	Distance to the nearest health facility, education parity, high mean age at marriage and reporting physical violence	Place of residence, maternal age, working outside of home, exposure to HIV/AIDS information, maternal educational attainment	----	Modern contraceptive methods	Women living further away from health facilities were more likely to use contraceptive methods. Living in communities with more educated men than women reduces contraceptive use
Gage 2007	Transportation, distance to the health facility, community education, prenatal care uptake	Household poverty, lack of money, not having people to go to the hospital with, lack of female health staff, mother education	[0.35]	Use of maternal healthcare	Living closer to other women who used MHC services and having transportation increases the odds of utilising maternal health services. Staying in place with more educated women influences use of MHC
Stephenson 2006	Husband approval of family planning, number of children per PSU, community education, community facility delivery	Place of residence, parity, marital status, education, religion, exposure to family planning information, receipt of prenatal care during last pregnancy	[0.27,0.54]	Use of health facilities for childbirth	Living in communities with higher percentage of educated women and high rates of facility delivery and husband approval for family planning methods increases the likelihood of health facility delivery
Magadi 2003	inequality of in health in urban SSA	Educational level, maternal age, birth order, area of residence	----	maternal health care in SSA	Inequalities in the urban poor is more pounced in maternal health of the urban poor are more pronounced in countries where maternal healthcare is relatively good
Magadi 2000	Distance to health facility	Region, socioeconomic status, marital status, proceeding birth interval, Frequency and timing of antenatal visits	[0.03, 0.04]	Antenatal care	Use of maternal healthcare is infrequent for unwanted and mistimed pregnancies

2.5. Discussion

This systematic review used multilevel models in sub-Saharan Africa to study the influence of structural factors on maternal healthcare utilisation. This synthesis involved 32 studies that met the criteria and controlled for a few individual-level factors. Previous reviews focused on different indicators of maternal healthcare, did not particularly look at sub-Saharan Africa or did not specifically target multilevel models (Say and Raine, 2007; Gabrysch and Campbell, 2009; Thaddeus and Maine, 1994; Moyer and Mustafa, 2013).

Selected studies reflected substantial heterogeneity in terms of structural factors and outcome variables examined. Structural factors are defined as community-level factors and are mainly studied through two-level modelling techniques apart from one study that uses a three-level multilevel model. Structural/contextual factors found to be commonly associated with maternal healthcare relate to the operations of the health system, socioeconomic status of women, nature of relationships and macro elements within communities and countries.

The health system factors indicate that women who live in areas that are proximal to health facilities, provide good quality healthcare, have full antenatal care coverage and where more people trust in the health system (Rockers et al., 2009; Galaa and Daare, 2008; Gabrysch and Campbell, 2009; Onah et al., 2006; Tann et al., 2007), have a higher propensity of using maternal healthcare. This phenomenon may not be a function of health systems per se but that of the "upstream" structural factors such as the dysfunctionality in the political and governance systems whose level of operation are far removed from the health systems. This could be because healthcare delivery capacity is considerably less in developing countries compared to developed countries. This may result from low health expenditure per capita, which in 2015, was approximately $37 in low-income countries compared to around $518 and $5,251 in upper middle-income countries and higher income countries respectively (World Development Indicators, 2015). Consequently, the health professional to population ratio also less impressive as it stands at 0.2 for physicians and 1.2 for nurses and mid wives in sub-Saharan African countries, while the corresponding figures for the developed countries are 2.9 and 8.6 per thousand population (World Development Indicators, 2015).

These phenomena may account for the suboptimal performance of health systems in sub-Saharan Africa.

Urban residence or living in areas with more educated and wealthy women could enhance the propensity of using maternal health care (Magadi et al., 2003; Yebyo et al., 2015; Dias and de Oliveira, 2015; Ononokpono, 2015). Urban residence and high socioeconomic status are usually associated with good health outcomes because on one hand, better amenities are usually found in urban areas. On the other hand, wealth and educated people are likely to live in urban areas and afford health insurance or out- of-pocket payments for health care (Cutler et al., 2008; Leive and Xu, 2008; Myburgh et al., 2005).

Media exposure, gender norms, parity, female autonomy and national female literacy are a function of community gender relations and broader macro-structural underpinnings of society. Women are more likely to use maternal health care if they live in communities with high media saturation, unproblematic gender norms, more female autonomy and countries with higher female literacy (McTavish et al., 2010; Cau, 2015; Ononokpono, 2014; Babalola, 2009). Media saturations allows better access to information on the importance of antenatal care, facility delivery and postnatal check-ups for mothers and babies. Problematic gender norms and lack of female autonomy are functions of patriarchal systems, which privileges men with power over women and subordinates the status of women (Simona et al., 2018). Accordingly, gender division of labour in patriarchal societies is often such that pregnancy and childbirth responsibilities are assigned to women without accompanying social status or access to resources. Thus, making it difficult for them to use available maternal health care services.

The systematic review provides substantial evidence regarding the contribution of structural factors to maternal healthcare utilisation through the observed ICC measures. Although the study shows mixed results on discriminatory variations in maternal health care at both individual and structural levels, this should be considered in the context of broader literature which suggests that individual level factors are often "symptoms" of much more "upstream" structural factors. The relationship between individual socioeconomic factors and maternal

health care use therefore, could be heavily moderated by community and much more high-level factors.

The strength of this review lies in the fact that it is the first systematic review of literature on multilevel models studying maternal healthcare in sub-Saharan Africa. The comprehensiveness of the literature search spanning all relevant databases has given the possibility of reviewing all the relevant literature to date in order enhance our understanding of the relationships between structural factors and maternal healthcare in sub-Saharan Africa. The inclusion of the ICC measures helps to discriminate the relative difference in the magnitude of influence between structural conditions and individual characteristics on maternal health care utilisation.

The limitations of the study include the fact that most of the studies selected for this review are cross-sectional and relied on household surveys. There is a considerable problem associated with cross-sectional data and major among them is failure to provide evidence for causality. Caution should, therefore, be exercised when interpreting the findings of the review and applying the results for policy frameworks. The lack of longitudinal studies in sub-Saharan Africa exacerbates this problem but understandable in view of limited longitudinal data. The review has only focussed on quantitative studies and thus underlying reasons behind observable phenomena, which are characteristics of qualitative research/studies, has been missed in this review. Additionally, the review only focussed on studies conducted in the English language, which means that there is potential for studies reported in languages other than English to have been missed consequently.

The review restricted itself only to published literature. With the poor publishing culture in sub-Saharan Africa, it is probable that there could be a considerable number of studies in the grey literature, which could have added value to this review.

2.5.1. Gaps in literature

This systematic review was mainly conducted to identify gaps in literature and to suggest areas of further research, which have not been covered in the existing literature. Upon completion of the review, several issues were identified as gaps in the literature requiring

further investigation. They are explicated below, including ways in which they have been addressed in this thesis. They are presented in four categories reflecting constitution of structural factors, social theory and data and methods:

2.5.2. Constitution of structural factors

The systematic review indicates that higher-level factors are mostly considered contextual or simply community-level factors. This way of conceptualising higher-level factors influencing health outcomes is somewhat 'neutral', it does not engage with the likely causal directionality or pathways of observed patterns resulting from the operations of such factors. This means that such studies may not be adequately informative to inform policy dialogues. As such, this study conceptualises higher-level factors as structural conditions. It focuses mainly on those structures that are constraining on human agency and subsequently result in bad health outcomes in a holistic fashion from a smallest individual to global structures. They may relate to social, economic, cultural or policy dimensions.

The review shows heterogeneity in the constitution and allocation of variables at either the individual or community-level but the substantive social phenomena being studied are not very explicit. The focus is mainly on contextual factors and these factors are rarely considered with an in-depth analysis. In this regard, I focus on contextual factors but with specific areas of concentration in the name of gender relations, human rights and globalisation. These reflect a holistic influence on healthcare from cultural values and norms to global socioeconomic structures.

Almost all contextual factors considered in the reviewed studies are defined at the second level, which is the community level. This too simplistic to exhaust the 'nestedness' of individual women and how belonging to different levels of the social structure may predispose them to or not use maternal healthcare services. The current study considers structural factors in terms of three levels of influence including the individual, the community and the country levels.

2.5.3. Social theory

One of the main reasons for the consideration of contextual factors in health and healthcare is because of the growing recognition of a disjuncture between theory and research practice. It is therefore, expected for current research in health and healthcare to engage more with theory in order to aid understanding of the causal pathways between the broader social structure and individual health outcomes. However, the review of literature indicates that only a few studies have engaged with theory to provide likely explanations for the observed relationships between contextual factors and maternal healthcare outcomes (Adjiwanou, 2014).

This study uses structural violence as a theoretical orientation for the study to conceptualise structural factors constraining women from utilising maternal healthcare as violent. Structural violence in this sense means the harm caused by unidentifiable 'negative' elements of the social structure. Which means that if gender norms are found to be influencing non-use of maternal healthcare, then they are 'violent' because they are elements of the social system, whose existence cannot easily be traced to a particular person nor institution. Within this framework, the study recognises that structure violence is broader, and it operates from small societal elements such as the households and communities to the larger and abstract ones like national and global economic policy. In this vein, I will use theories that reflect every stage of this complexity.

I recognise that structural violence is an aspect of the social structure and that it is socially constructed. This means that it is a result of human agency. This being the case, human agency can equally alter it to the benefit of those involved. Therefore, I use micro-level theories to complement the concept of structural violence to illuminate conditions in which human agency thrives and argue that access to these resources enable people especially women to have the capability to circumvent constraining powers of the social structure. In this regard, I apply Bourdieu's theory of capital and Amartya Sen's capability theory. Details are found in the chapter that follows.

2.5.4. Data and methods

Most of the reviewed studies use DHS data. While the data is comprehensive and can be used to provide an insightful health and healthcare patterns, it has limitations of only providing individual as well as aggregated measures of community level variables. This approach may be inadequate and can hardly address wide-ranging structural factors likely to influence maternal healthcare utilisation. For this reason, this study combines the DHS with several country-level datasets including the World Bank's World Development Indicator (WDI) and the World Governance Indicators (WGIs) data. I also use Freedom House's freedom status data and the KOF Globalisation indices. These are updated every year and present the most current and accurate global development data available, and includes national, regional and global estimates. Between them, they cover many topics, but this study will only extract variables from relevant topics such as health, education, gender, civil and political liberties and globalisation to be used as explanatory variables for maternal healthcare in sub-Saharan Africa.

Just like the second level factors are not adequate to represent structural factors in terms of conceptualisation, analytically too, the use of two-level models as observed in most reviewed studies can only capture a limited dimension of a complex society. This kind of analytical approach would be adequate in research designs with limited scope. However, they may risk downplaying the substantive heterogeneity that is characteristics of not only women's lives but society at large. For example, if we neglect national context, we may be underplaying the importance of political and governance in influencing health and healthcare outcomes at the individual level. If the government doesn't fund health systems in the country, that affects use of healthcare services even for people who live in supportive community environments. This study promotes an analytical approach that accommodates more than two levels of analyses (e.g., individuals nested in communities and nested in countries).

There are very few studies in the review that look at cross-national disparities in maternal healthcare as most of them are single-country studies and sometimes they focus on specific geographical area within the country. Studies that are cross-national in scope have typically

covered not more than six countries and as such they may not be comprehensive enough to provide a comparative analysis of sub-Saharan African countries and illuminate an understanding of the relationship between broader macro structural factors and maternal healthcare in the sub-continent. This study uses data from 35 sub-Sharan African countries to study the relationship between structural factors and maternal healthcare utilisation.

None of the reviewed studies considers within-country disparities in the relationship between structural factors and maternal healthcare. However, this is important to bring out in recognition of heterogeneity inherent within sub-Saharan Africa countries in terms of geographical location, culture and level of development among others. It is expected for example that globalisation index, a variable that varies across sub-Saharan African countries, will influence access to healthcare differently in each country. Although delineating the pathways of influence exhibited by structural conditions in each country is beyond the scope of this analytical approach, it is important for this variation to be factored in order to conduct a comprehensive analysis. In this regard, the country-specific analysis is only done using descriptive analysis of the main explanatory variables and use of maternal healthcare.

The review indicates that the ICC were calculated in some but not all the studies. It is not known why this is the case, but it could be lack of technical knowhow of the ICC calculations or that their main focus was on the nature of contextual factors that influence maternal health rather than the relative effect of each level on the outcome variable. This is one of the most important contributions of this study. I use the variance partition coefficient (VPC) and the Median Odds Rations (MOR) to quantify the effects of each level of community and country-levels on maternal healthcare utilisation in sub-Saharan Africa.

2.6. Conclusion

This chapter was intendent to review the research ecosystem studying structural factors affecting maternal healthcare in sub-Saharan Africa using multilevel techniques. It is foundational for the work of this thesis as it highlights the lack of cross-national studies on the relationship between structural factors and maternal healthcare utilisation in sub-Saharan Africa.

Chapter Three - Theoretical Frameworks for Understanding Maternal Healthcare Disparities sub-Saharan Africa

3.1. Introduction

Considerable developments have taken place over the years in the main subject of sociology, which has seen not only an increased use of sociological theories in empirical studies but also a paradigm shift within sociological theory itself. Sociological theory especially in medical sociology has seen increased emphasis on the relevance of structural factors in explaining individual behaviour and action. According to Cockerham (2013), who has been very influential in contemporary sociological theory, there are two reasons that are responsible for this theoretical evolution. Firstly, it is because of a wide recognition that agency-based theories are unable to adequately address the effects of social structures on individual-level behaviour and action. Secondly, the advancements in methodological techniques especially multilevel modelling analysis which allow researchers to establish the relative effects of successive or multiple levels of social structures on individual outcomes. I agree with Cockerham and this thesis is built around these two arguments but there are a few questions that need to be raised from Cockerham's statement in relation to the present study. What is the problem with traditional theoretical approaches of studying individual health outcomes? How should we conceptualise the social structure as we examine its effects on individual health and healthcare outcomes in the light of multilevel data structures? Where does agency fit in this new (re)emphasis on the importance of the social structure in health? This chapter is dedicated to tackling these questions in relation to maternal healthcare utilisation in sub-Saharan Africa.

I argue that the emphasis on the influence of social structures on individual behaviour and action is not new in sociological discourse. In fact, classical sociology was chiefly concerned with the social structure and the place of the individual in it. I have already indicated in the previous chapter that Durkheim's ground-breaking study of suicide was in effect to demonstrate that even the most personal of phenomena such as suicide is the result of the

influence of the social world (Durkheim, 2005). Durkheim and indeed several other classical sociologists of both structural functionalism and conflict theoretical traditions, identify with the notion of the predominance of macro structures in society. The conceptualisation of the social structure so that it can be amenable to empirical research is perhaps what can be considered novel. It is commonplace to say that the social structure is one of the most difficult sociological phenomena to define, let alone study (Michie, 2014; Williams, 2003). My thesis uses the concept of structural violence, which could be an aspect of the social structure and in this chapter I detail how this concept can be used to explain the sub-optimal use of maternal healthcare in sub-Saharan Africa.

The chapter begins by briefly outlining the theoretical ecosystem in sociology in general and medical sociology in particular, beginning with the three traditional sociological perspectives of structural functionalism, conflict theory and symbolic interactionism, spearheaded by the classic theorists. These frameworks are foundational in sociological thought and since theoretical development tends to be cumulative, it is important to start with the classics which form crucial building blocks to current developments (Baert, 2007). I highlight their main arguments and criticisms emphasising classical scholars whose works have been particularly influential to modern theorising. I then stretch the developments of medical sociological theory to current debates. For this study, structural violence is an orientating framework, and I will spend time elaborating how it hinges on the concept of relationalism. Hence allowing us to properly study multilevel social relations and other social phenomena which exemplify value judgments including human rights. Throughout the chapter I refer to our structural factors of interest, inequalities in gender relations, structural violation of human rights and globalisation.

3.2. Overview of Sociological theory in medical sociology

Sociological theory had for a long time been seen in the prism of the three sociological perspectives of structural functionalism, conflict theory and symbolic interactionism. The classical sociological theorists associated with or at least believed to have a significant mark

on them are Emile Durkheim, Karl Marx and Max Weber respectively. Although there are many scholars that may satisfy the category of classics, the contribution of these three is particularly highlighted because each one of them is associated with one of the sociological perspectives.

Sociological perspectives exist because sociologists hardly agree on the most important questions that can help us understand the fundamental features of the social world (Johnson, 2008). There are also disagreements in the approaches used to study these fundamental questions. Structural functionalism is an analysis of social phenomena in terms of the functions they bring to the social system. Functionalists see society as a system of interrelated parts that work together for the well-being of the whole (Ritzer, 2011). Dysfunction in one part creates an imbalance in the whole system. Functionalism is conceptualised as a macro-level perspective because it is concerned with the overall characteristics of the social structure and the general nature of social institutions (Wallace and Wolf, 1999).

The contribution of Emile Durkheim, who is widely accepted as the founder of modern functionalism, have been important in the sociological study of society and have laid a background work for many sociological endeavours. The concept of integration was central to Durkheim's thesis whereby individuals are incorporated into the social order through conformity to societal values, norms, customs, beliefs and other modes of behaviour constituted by the collective (Durkheim et al., 1938; Fournier, 2013). He called these, social facts. According to Durkheim, social facts transcend an individual but can exercise social control over the individual. Social facts are explained by social causes and not individual ones. Suicide is one of his signature studies where he demonstrated how the social world can affect individuals, including the most personal of an individual's actions. Durkheim posits the propensity of dying by suicide is determined by an individual's level of integration to the social world and the nature of regulations governing the social world. Integration is basically the strength of attachment individuals have to society while regulation is the degree of external constraints on people (Ritzer, 2011). In Durkheim's view, both excessive and lack of the two social facts increases susceptibility to dying suicide.

Durkheim's ideas on the relationship between an individual and society and the associated outcomes is said to have inspired contemporary theories of social capital in medical sociology. Social capital is seen as a characteristic of social structure and it consists of resources embedded in social networks that can facilitate coordination and cooperation for residents of neighbourhoods and communities to certain interests (Chuang et al., 2013; Coleman, 1988). These theories generally hold that the health of individuals is protected by membership to a network of relationships of people living in a particular neighbourhood or community (De Maio, 2010). Cockerham (2013) observed that people belonging to communities or neighbourhoods with high levels of social capital are likely to have good health outcomes. I discuss social capital in detail through Bourdieu's work later in the chapter but suffice to say here that these arguments bolster the fact that structural level factors such as community social environment can have a causal impact on health and healthcare outcomes. A few empirical studies have indeed, shown that communities with high proportions of less poor and better educated women are more likely to have better use of maternal healthcare services and subsequently lower maternal and child mortality (Ononokpono et al., 2013; Stephenson et al., 2006).

Conflict theory is another structural-level theory that attempts to categorise and analyse the whole society. Karl Marx is the main figure around conflict theory. His work was mainly cantered on inequality especially under the capitalist economic system. According to conflict theory, society is characterised by conflict between different social groups with different interests (Wallace and Wolf, 1999; Ritzer, 2011). Accordingly, the ruling class is always aligned with those who own the means of production and dictate the nature of ideas or ideologies of the age.

Contemporary applications of the conflict theory to health and healthcare can be seen in the near ubiquitous concept of political economy. The political economy argument in medical sociology is that health and healthcare are commodified and sold to those who can afford it and beyond the reach or lessened access of those who cannot. Healthcare is characterised by inequalities and treated as a privilege rather than a right (Cockerham, 2013). These arguments are equally plausible in maternal healthcare utilisation. Low socioeconomic status

for example, is detrimental to maternal healthcare. Socioeconomic disadvantage in society at large is thus converted into maternal healthcare disparity through reduced opportunities for quality maternal healthcare because of greater likelihood of having long distances to health facilities and increased exposure to adverse living conditions, poverty and gender inequalities (Ononokpono et al., 2013; Yebyo et al., 2015).

Symbolic interactionism was popularised by George Herbert Mead and his student Herbert Blumer whose work focuses on the social development of the individual and the interaction between the person's internal thoughts and emotions with his or her social behaviour (Wallace and Wolf, 1999). In symbolic interactionism, the unit of analysis is the small-scale interactions and relationships. But Max Weber stands at the intellectual roots of symbolic interactionism and it is his works that is more applicable to health and healthcare in the contemporary setup. Weber emphasised the importance of what he called *vestehen* or interpretive understanding of social action in order to arrive at the causal explanations (Weber, 2009). An individual's actions are dependent on the subjective meanings they attach to the situation and considers the behaviour of others. This analysis is the basis of symbolic interactionism. But the main contribution of Max Weber to medical sociology can be found in his lifestyle arguments. In his analysis, he referred to social action which is oriented towards the reproduction of status group distinction as life choices and he observes that these life choices are constrained by the normative rules of the status group, community and the society at large, which he called life chances (Weber, 1978; Abel and Frohlich, 2012). The life choices represent agency while the life chances represent structure. Life choices and chances interact together to determine health and healthcare outcomes.

Weber's ideas on the distinction between life chances and life choices is seen by contemporary medical sociologists as an initial admission by a prominent agency-centric scholar that both structure and agency are both important in determining people's health and healthcare (Cockerham, 2013; Abel and Frohlich, 2012). This acknowledgement leads to a contemporary understanding that as individuals, we are involved in the creation of the social system that extends far beyond our face-to-face interactions through our actions and roles that we play. At the same time, those social systems that are created have an impact on our

behaviours and actions (Johnson, 2008). In other words, This approach recognises that people have free will, agency and are responsible for their own behaviour but that the social collective directions and the pressure of society to act in specified ways can overcome individual inclinations (Fournier, 2013) This view point brings together micro and macro theorising and provides a solution to the criticisms that have been levelled against both macro [2] (structural functionalism and conflict theory) and micro sociology [3] (symbolic interactionism).

Recognising the influence of both macro and micro level social worlds means that for us to fully understand the nature of macro-structures and their effect on health and healthcare outcomes, we must do so while taking into consideration micro-level factors. If we want to study the influence of culture on the individual's access to healthcare for example, we must also consider that individual's personal characteristics that may equally inhibit their ability to accessing healthcare including gender, educational status and income levels. We know that these may in fact be shaped by the individual's social environment but at the same time they can act as resources that an individual can use to attain better healthcare. Unequal distribution of these resources results into healthcare inequalities even before structural factors are fully considered. So, when Cockerham (2013) talks about a return to structural approaches as the new direction in sociological theorising, I agree but I add to saying we need to do so while bringing agency along with us.

Before we look at specific theories to be use in this study, it is important to point out a few fundamentals for the nature of sociological theorising adopted in this study. Firstly, the definition of structure or macro-level processes need to reach beyond community and national borders to a global level (Johnson, 2008). This is because globalisation has made it possible for social, economic and political mechanisms that exist beyond national borders to

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[2] Structural functionalism for example suffers from over-emphasis of order and consensus in society and the seemingly support of status quo, dominant structures and social inequalities in society. Moreover, functionalism is also criticised for failure to recognise conflict and being highly resistant to social change. Conflict theory was equally condemned for failing to recognise stability and order just like social functionalism was criticised for neglecting order and stability

[3] Symbolic interactionism and so called micro-sociological perspective has a reverse problem of assuming too much individual agency and can hardly link agency to broader social forces

have an impact on people's health just as much as the socioeconomic status of their communities and countries. Secondly, I argue for an eclectic approach to theorising. We have already established that all levels of the social world are important in studying health phenomena. However, social theory doesn't usually come in a multiple level format that supports multilevel analysis and that is why theoretical engagement in empirical sociological research has always been aligned with methodological individualism (Bunge, 1996). The problem with such theorising is not only the failure to account for the multilevel structure of social phenomena but also in paying scant attention to explanatory mechanisms. The new (or renewed) direction for medical sociology, must account for the multilevel structure, complexity in the social system and be able to go beyond variable-centered forms of theorising and enlist "mechanisms" underlying observed associations between phenomena. I suggest that the best way to do that is by employing the concept of "social mechanism". I will discuss this in more detail towards the end of this chapter.

3.3. Substantialism versus relationalism in sociological theory

There are epistemological challenges to multilevel theorising especially one that extends to the global level and none has been more consequential than the substantialism vs relationalism debate. I will deal with this debate first to lay the ground for the theoretical framework for this thesis. Substantialism is the ontological perspective invested in the substance of things as the fundamental unit of the world, for example things, objects, beings and essences (Emirbayer, 1997; Veenstra and Burnett, 2014). In this world view, any analysis must begin with these entities, which Durkheim called "things", which are static and preformed and only after that can we consider the dynamic relations in which they involve themselves. This is a perspective is the basis of traditional positivism sociology and a good part of sociological theory and modern scholarship (Emirbayer, 1997). The problem with substantialism is that it fuels sociological bifurcations. If entities are fixed and unchanging, then they generate their own actions or behaviours which will be different from other entities. From this understanding, protracted bifurcations are born and sustained including agency and structure, micro and macro, individual and society, particularism and

universalism, global south and global north among others. This may not be a complete representation of social reality because it does not depict the interrelationships and interdependencies that exists among entities. As Dépelteau (2008) argues, a theory of society that gives more weight to social relations as the fulcrum of social phenomena and its reproduction is more plausible. Moreover, this depiction of reality makes it hard to study 'universal' global phenomena such as human rights and globalisation.

To demonstrate the importance of this point, I will use the global south vs. global north dichotomy as articulated by postcolonial theory. This is because this study is situated in the global south and specifically sub-Saharan Africa. Postcolonial theory has not received much, if any, attention in medical sociology and I don't reference it here with the intention of engaging with its merits or demerits with respect to substantive application in medical sociology or population health, but with regard to its relevance in debates about knowledge generation and power relations between global north and global south. By account of traditional postcolonial theory, this work may be criticised for being 'Eurocentric', because it uses 'western' theoretical frameworks (Connell, 2006; Young, 2003). I show here that the relational approach provides a better framework through which the relationship between global north and global south should be considered.

The domain of postcolonial theory is colonialism, race and ethnicity, identity, inequality and global structures (Bhambra, 2007). It problematises conventional sociology for treating non-western societies as homogeneous, aggressive, static and singular. Accordingly, it emphasises culture, knowledge and essentialising representations of non-western societies (Connell, 1997; Chua, 2008). It is thus, critical of the enlightenment discourse and its grand narratives and universalising schemas (Go, 2013). Furthermore, it 'mounts an assault upon the entire culture of western global dominance' (Go, 2013), which also includes knowledge affiliated with 'colonial domination'. Postcolonial theory certainly has important contributions to sociology and not least among them is helping to expose its Eurocentric universalism[4].

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[4] Marx, Weber, Durkheim and many other aspects of classical sociology are criticised for portraying non-western societies as homogeneous essences, ignoring inter-group complexity and differences and transforming the non-western into a "generalised other" (Connell, 1997; Chua, 2008)

However, as Go (2013) observes, the same criticism levelled against conventional sociology can also apply to postcolonial theory itself. The idea of non-western construction of reality and knowledge generation runs into the same universalism problems that postcolonial thought is against. Non-western societies are hugely varied and any theoretical attempt to group them together is still universalism with the same pitfalls as classical sociology. Therefore, I would agree with Go (2013) when he posits that sociology and postcolonial theory are not intrinsically opposed and that the real critique of postcolonial theory against the enlightenment is not against sociology per se but traditional positivistic sociology that aims for prediction, universal laws and the separation of scientific thought and its context[5]. Indeed, the works of many contemporary postcolonial sociologists have transcended the universalism vs. particularism arguments and the sociological bifurcations of global north and global south in favour of relational narratives, connected sociologies and other approaches that are outside the traditional postcolonial critique (Go, 2013; Bhambra, 2007; Steinmetz, 1998). These scholars maintain that the focus of postcolonial theory should not only be in studying non-western societies, postcolonial social formations, or imperialism and colonialism but rather on an overarching theoretical approach that emphasises the interactional constitution of social units, processes and practices across space (Go, 2013).

My thesis takes this position and I argue that relationalism as a theoretical ontology is a vehicle that takes use to the point where we no longer emphasise bifurcations but social relations and connectivities between individuals and societies. It does not matter whether we are studying colonialism, or we are using 'European' theories, the narrative of social relations as the basis of social phenomena gives unlimited foundation to better understand the multilevel structures of our social world and to study universal global phenomena including human rights and globalisation, the two fields which have been criticised for their universalising agenda.

Relationalism is the view that the social world is a network that is deeply relational and constantly changing, more fluid than fixed where everything is at as it is because of its

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[5] I provide further details on these debates in the research design and methods chapter

location in the network (Emirbayer, 1997). In this perspective, things are not viewed to be independent but rather in terms of the connections and interactions between. In other words seeing together what before had been seen separately (Go, 2013). The relevance of this paradigm to this study is that it lays a flexible foundation for us to study anything. That it does not matter where the researchers come from, what they study, or where the theories they use come from as long as their accounts capture relations between entities. Multilevel analysis reflects relations in its essence because we know that relationships between individuals make communities and those between communities make up the nation states and so on. This perspective breaks up the notion of national methodologies which attribute the concept of society to individual nations and allows us to study the influence of wider and global social phenomena such as human rights, globalisation and structural violence on individual outcomes such as maternal healthcare.

3.4. Structural violence

After laying the foundation to the theoretical framework and establishing that we can study any subject within the prism of relationalism in the previous pages of this chapter, it is now time to connect the dots from the social structure to maternal healthcare utilisation. We do so by applying the concept of structural violence as an overarching framework. I will discuss structural violence and show how it leads to inadequate utilisation of maternal healthcare.

The concept of structural violence was first introduced to the social sciences by Norwegian sociologist Johan Galtung in his *Violence, peace and peace research* article in the Journal of Peace Research in 1969. Considering a working definition of structural violence, Galtung argued that "violence is present when human beings are being influenced so that their actual somatic and mental realisations are below their potential realizations" (Galtung, 1969: 168). From this definition, he maintains that when the "potential realisation is higher than the actual realisation, violence is by definition *avoidable* and when it is avoidable then violence is present" (Galtung, 1969: 169). He then goes ahead to illustrate the importance of 'avoidability' in structural violence by giving an example of a person who dies from tuberculosis today versus the eighteenth century. He posits that this may not be conceived

as violence then since it might have been unavoidable but dying from it today when we have all the medical resources and technology in the world then violence would be present.

Galtung distinguished structural violence from the more orthodox forms of violence he calls personal or direct. According to Galtung (1969), the difference is that structural violence is not necessitated by an aggressive actor nor is it necessarily intentional, but it has similar or worse consequences on the population. For instance, people's lives can be terminated by an active shooter or by the social and political environment that inhibits access to health care. In both cases the outcome is the same but the circumstances that have brought the outcome are different. Galtung (1969) maintains that it is personal or direct violence when an active shooter is involved, and it is structural violence when death is caused by the social and political environment. The *structural* comes from the fact that it is embedded in large-scale historical processes of social and economic inequalities that shape individual choices and actions (Farmer, 2005). *Violence* because of the harm that is associated with it whereby it hampers complete realisation of somatic and mental potential (Galtung, 1969).

In medical and public health issues, the concept has been applied and popularised by physician and medical anthropologist Paul Farmer in his numerous studies on the spread of health, human rights and poverty in developing countries. Farmer defines the term as "suffering, structured by historically given (and often economically driven) processes and forces that conspire – whether through routine, ritual or as is more commonly the case, the hard surfaces of life – to constrain human agency" (Farmer, 2005: 40). Farmer's conceptualisation of structural violence places power in the social structure which uses it to impose limitations upon groups of people and constrain them from achieving the quality of life that would have otherwise been possible. These limitations are broad, but they are historical, social, political, economic, legal, religious and cultural in nature (Gultung, 1969).

Although the definition of structural violence does not implicate any direct perpetrator of the *violence* as is the case with direct violence, its distribution is often patterned in a systematic and logical manner (Ho, 2007). What this entails is that structural violence is not an accident, but it is clearly orchestrated by human agency, directly or otherwise (Farmer, 2005). Exploitation is an important factor in structural violence whereby some people benefit more

than others out of the interactions and relationships occurring in the social structure. As a result, power structures are born and distributed across society, albeit unevenly. The problem is that those with power have a bigger stake in the distribution of resources in society than those without it (Ho, 2007). The inequalities that ensue in terms of poverty, lack of access to education, lack of access to maternal healthcare and maternal mortality among others are primarily outcomes of the uneven distribution of resources. The additional layers and multiple dimension of structural violence are just additions to this fundamental framework and manifest themselves in terms of socioeconomic, gender and even global inequalities.

Indeed, it has been demonstrated for a long time that social structures and social institutions cause more harm to individuals who are poor, weak and inferior measured on different strands such as race, gender, religion and wealth (Farmer et al., 2013). In this sense, social forces create a conducive environment for the poor and the weak to not only be more susceptible and exposed to illness (Kreiger, Rowley, Herman, Avery and Phillips, 1993) but also have limited access to health care services (Farmer, 2005). This according to Lee (2016) is what makes structural violence a collective responsibility just like any other type of violence. Because societal structures are "what we choose while deciding as a society, as every society does, how to distribute or not to distribute, or how to share or not to share, the collective income and wealth that society produces" (2016: 110).

For maternal healthcare utilisation in sub-Saharan Africa, structural violence offers a unique perspective. Since structural violence is a product of human decisions and not a naturally occurring phenomenon, it is avoidable. Indeed, several statistics that show a disproportionately higher maternal mortality in sub-Saharan Africa are indicative of this fact (Alkema et al., 2016). The structural violence question therefore is not why women die from maternal health complications but rather why is maternal mortality more prevalent in sub-Saharan Africa and among certain categories of women? Also, why is it much harder for these women to utilise maternal healthcare services? This thesis argues that there is no one person that directly prevents women from accessing and utilising maternal healthcare, rather the problem is combination of structural conditions including socioeconomic inequalities, institutionalised gender norms that lowers the status of women and unequal distribution of

resources[6] at both the national and global level. The harm which is caused by structural violence is the failure by women to use maternal healthcare. Socioeconomic inequalities for instance, may lead to women having no opportunities to receive an education, secure a job and have stable income which will in turn affect their utilisation of maternal healthcare (Simona et al., 2018).

3.5. Structural violence and gender relations

Gender norms could be categorised as part of what Galtung (1990) called cultural violence and he defined it as "any part of culture than be used to legitimise violence in its direct or structural form" (Galtung, 1990: 291). Social norms that help to buttress gender inequalities that disadvantage women can be categorised as *violence* in Galtung's typology. Indeed, in sub-Saharan Africa, where the gender division of labour assigns women with pregnancy and childbirth responsibilities, the burden becomes unbearable with limited access to resources. Cultural expectations could be helping to perpetuate women's vulnerability. Gender identities are part of social norms and rules governing social behaviour and they are internalised through the process of socialisation. Gender performances are acts of conformity to biological givens but doing so especially in patriarchal societies is often an affirmation of inequalities in access to social and material resources (Calasanti, 2010).

Gender relations are generally unchallenged in society because they are legitimised by social institutions and deviance is usually met by direct or indirect sanctions such that people are compelled to oblige and sustain them even at their own expense (West and Fenstermaker, 2016). Women who have been raised in such environments may look up to men to make decisions about antenatal care visits, hospital delivery and postnatal care. However, this may be counterproductive because the man also may be conforming to his own cultural expectations to leave pregnancy and childbirth issues up to women. This may result into sub-optimal utilisation of maternal healthcare which would in turn compromise the health of the mother and unborn child.

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[6] They can be economic, social or cultural, synonymous with Bourdieu's capital theory

Culture is a factor that explains how individual agency is constrained by shared values and norms (Eckersley, 2015). Some cultural practices throughout the world systematically discriminate against women when they are denied the right to vote, they have lower wages than men, targeted for lower to no education, victims of domestic violence and excluded from employment opportunities. In sub-Saharan Africa, community solidarity is usually seen as more important than individual choices in the spirit of *ubuntu* (Mawere and Mubaya, 2016). This means cultural norms that disadvantage women may be upheld as a matter of sustaining community integrity at the expense of individual freedom.

Cultural discourses around the world may help to exacerbate the problem that is imposed by culture on disadvantaged members of society. For example, cultural differences could diminish even the idea of women's rights violations. Abuses against women in certain cultures are often protected by arguments which frame any attempt aimed at fighting problematic cultural norms as cultural ethnocentrism– which is the view that discourages judging a culture based on the values of one's culture. This view is against the universalism of human rights and that rights are culture-specific and culturally determined.

Most women in sub-Saharan African have less access to resources and this makes them dependent on men. Because the cultural system which is universally considered supreme in the community buttresses their subordination, they can only use maternal healthcare with the permission of their partners. Lack of resources worsens the situation because often times it requires money to visit health facilities especially in rural areas where there can be long distances to health facilities.

3.6. Structural violence, human rights and maternal healthcare

Human rights violations can also be considered as structural violence hindering adequate utilisation of maternal healthcare in sub-Saharan Africa. The question that needs to be addressed here is how structural violence becomes a violation of human rights and how these violations affect utilisation of maternal healthcare. It is common knowledge that the rights-based approach has gotten much traction in global maternal healthcare discourse (Das, 2018). As such, maternal healthcare is a human rights issue without question (Freedman, 2001).

Chapter seven details empirically how human rights affect maternal healthcare utilisation in sub-Saharan Africa, this section looks at the theoretical foundations of those associations and how they are connected to the concept of structural violence.

Human rights are universal guarantees protecting individuals and groups against actions that interfere with fundamental freedoms and human dignity (Ratsma and Malongo, 2009). They are international norms that are binding in all countries that have accepted them and they provide ethical and legal frameworks for individuals, communities and governments. Human rights are broadly categorised as civil and political on one hand and economic, social and cultural rights on the other. Civil and political rights include but are not limited to the right to life, freedom of movement, right to liberty and security, freedom of opinion, freedom of assembly, freedom from slavery and forced labour and freedom of thought among others. Economic, social and cultural rights may include right to work, right to social security, right to adequate standard of life, right to health and the right to education (Assembly, 1948).

From the definition of structural violence above, we have seen that the discrepancy between the potential and actual somatic and mental realisations is crucial to the presence of violence. Upholding human rights is the ideal or potential situation and societies where human rights violations exists meet the first criterion of structural violence. However, those violations would not be structural violence if they were unavoidable (Gultang, 1969). Human rights violations are avoidable because they are all ratified by nation states who have pledged to uphold them. States may not be motivated to commit to something they know is unattainable in their territory. Additionally, human rights violations just like structural violence, also stem from unequal distribution of power whereby those who wield it tend to distribute societal resources in a manner that benefits the agency of some at the expense of and inhibiting the agency of others. For example, state governments have the power to render civil and political freedoms to their supporters and denying them to opposition groups. When lack of human rights violations constrain agency to the extent fundamental human needs cannot be attained, structural violence becomes a violation of human rights (Ho, 2007). Economic, social and cultural rights such as the right to education, the right to health, the right to employment and better standard of life could demonstrate the existence of violence by equally asserting how avoidable power inequalities produce violent results. These rights are usually referred to as

"second generation" and they are often rendered invisible by institutionalised social and economic inequalities (Evans, 2016). But they are of great importance to the realisation of human dignity and better standard of living. If they are not met, humans may face severe threats to health and life that would compromise realisations of their mental and somatic potential (Liebenberg, 2005). Deprivation of these rights impacts negatively on development in society because affected the population may not participate effectively in the political, economic and social life. In this regard, poverty is a function of deprivation of socio-economic rights.

Poverty is not an isolated concept. It is created in the interaction process between people and between societies. The economic exchange and transformation of the world tends to benefit some while impoverishing others and the disparity between the two groups is increasing (Pogge, 2001). Although there has been a significant reduction in extreme poverty from 36% in 1990 to about 10% in 2015, in the world, statistics still show staggering disparities across the regions of the world. For example, poverty levels have increased to up to 41% in sub-Saharan Africa during the same period. Many scholars have emphasised the role played by structural violence in this inequality by linking global institutions and macroeconomic policies to poverty disparities between countries (Pogge, 2005; Frank et al., 1967). This will be discussed in detail in the following section. Here I want to briefly deal with why poverty is a structural violation of human rights.

In *Development as Freedom*, Sen (1999:74) sees poverty as "the failure of basic capabilities to reach certain minimally acceptable levels, where basic capabilities are understood as basic freedoms, such as the freedom to avoid hunger, disease, illiteracy and so on". For Sen, the full realisation of agency which is the possession of basic capabilities, is the opposite of poverty and this is possible in the presence of economic and social inequalities which constrain it. Therefore, in Gultang's definition of structural violence, the discrepancy between the potential realisation of basic needs and the actual realisation is comparable to the gap between prevailing rights and potential rights. In this sense, structural violence is directly applicable to the human rights discourse.

Maternal health just like health in general is driven by cultural and social contexts in which it exists, which could range from the most intimate to the macroeconomic policies of international institutions (Freedman, 2001). Much more so in a globalised world where people are connected. It motivates the need to drive an understanding about what human well-being really is and how to arrive at it. Human rights are relevant to maternal healthcare because they provide women with the opportunity for full realisation of agency. Socioeconomic rights for example, provide capabilities for women to use maternal healthcare throughout the maternal health continuum from pregnancy to postnatal care. Capabilities may entail adequate education, employment security and a steady income. Furthermore, the political and social environment in which they live should provide civil and political liberty and ensure rights such as freedom of movement, freedom of expression and freedom to participate in the electoral process. In this regard, the human rights perspective may be used in terms of empowerment and agency for better use of maternal healthcare (Ratsma and Malongo, 2009), accountability for those with the responsibility to guarantee rights (Ratsma and Malongo, 2009) and litigation when the human rights have been abrogated (Dunn et al., 2017).

3.7. Structural violence, globalisation and Maternal healthcare

Although the common narrative of globalisation may be in terms of increased interdependencies and the diffusion of post-industrial technologies across the world, its ideological and socio-political dimensions may present a different picture. Ideologically globalisation is seen as a creation of the global monoculture that reshapes diverse cultures to resemble western industrialised capitalist societies (Srikantia, 2016). The concept of "development" is the centrepiece of this narrative whereby non-western societies are encouraged to aspire to the 'western' way of life which promises a better standard of life, education, women's rights, freedom, technology and democracy among other things (Sachs, 1997). This framing of non-western societies as places which require "development" feeds into international economic integration, which can be regarded as the method used by global financial institutions to liberate diverse cultures and rescuing them from economic stagnation

and poverty. This is the socio-political dimension of globalisation, which I would argue is also an exemplification of the concept of structural violence.

This dimension of globalisation is considered by some scholars to have been appropriated by the powerful to bolster global economic hegemony dominated by international institutions like the WTO, the IMF, and the World Bank that impose a development model designed to benefit transnational corporations over workers; foreign investors over local businesses; and wealthy countries over developing nations (Srikantia, 2016). The hegemonic paradigm could be further highlighted by the proliferation of foreign direct investments, trade liberalism and foreign debt. These seemingly well-conceived packages to help poor countries have often resulted into worsened situations and the opposite intended consequences. Moyo (2009) gives detailed treatment of this discussion). Unfair agreements are often the case because third world countries which are the major recipients of these financial regimes are often disproportionately underrepresented in the executive boards of these international organisations responsible for the distribution of financial resources. Sachs for example, observes the G7 despite representing only 14% of global population, have 56% votes on the IMF Executive Boards (Ho, 2007). In Paul Farmer's definition, structural violence is evident here as these global institutions could be conceptualised as historically given and economically driven forces conspiring to constrain human agency.

The world systems theory contributes to a better understanding of the structural violence of globalisation. It posits the capitalist world economy developed first in Europe and other developed regions and was accompanied by full development and dominance in the global market trade creating global economic stratification which disadvantages most nations (Wallerstein, 1979). That global capitalist world system perpetuates a global division of labour whereby countries are divided in three successive zones each performing a specialised function in a complex hierarchical system. The core countries (First World) monopolise high-tech, high-profit enterprises, the semi-periphery nations (Second World) performs inter-mediate functions of transport, local capital mobilization, and less complex, less profitable forms of manufacturing and lastly, the periphery (Third World) which specializes in primary production of agricultural commodities and raw materials (McCormick, 1990).

Proponents of the world systems theory argue that the unequal trade relationship resulting from division of labour distorts the domestic economy of many third world countries in many ways including reducing economic growth and increasing income inequality which in turn impacts on the well-being for a large portion of the population (Gereffi, 1989). The relationship also creates a dependency syndrome among developing nations for finished goods which they are not able to produce and according to Frank et al., (1967), this dependency has always been characterised by a continued lowering of prices for the periphery's primary goods relative to processed goods. As a result, the state's ability to raise revenues is weakened and the resulting lack of revenues affects the funding of health and other basic social service programs (Shandra et al., 2004).

The effects of globalisation on health and healthcare are pivoted on transnational business organisations and macroeconomic policies propagated by the IMF and World Bank (Shandra et al., 2005). FDI in the third world countries was ordinarily supposed to contribute to development by facilitating the creation of jobs, expanding local production and improvement of technology. However, it is suggested by some scholars that FDI exacerbates the underdevelopment of third world countries through erosion of tax avenues as multinational cooperation in third world countries are usually offered tax holidays and other economic incentives such as cheap labour for attraction purposes (Shandra et al., 2004). The result is the failure of third world countries to adequately support health sector including better maternal healthcare services.

Macroeconomic policies affect healthcare in third world countries in terms of the international debt crisis that most of them have been grappling with since the 1970s. Foreign debt expansion and austerity measures dictated by lending institutions offer challenges to already constrained economies of third world countries. This makes it particularly difficult for most countries to prioritise service delivery to address maternal healthcare challenges. Some studies have confirmed the hypothesis that debt dependency has a positive relationship with poor health outcomes (Frey and Field, 2000). Also, globalization often comes with structural adjustment programs (SAPs) that impose conditions for getting loans from international organizations. SAPs have had negative effects on health because they usually

demand privatisation of public services to for-profit organisations, a reduction in the labour force and reductions in public spending for health and education (Schoepf et al., 2000). All these are factors constrain the use of maternal healthcare services in sub-Saharan Africa.

Structural violence is a product of the social structure, which also often times renders it invisible (Ho, 2007). The location of individuals on the social hierarchy is critical in determining the extent to which agency would be constrained and subsequently how much they are negatively impacted by structural violence. We know that women in sub-Saharan Africa occupy lower socioeconomic status and therefore are likely to be mostly affected by the inequalities in the global financial policies because they are already disadvantaged by sociocultural factors within communities which gives them a subordinate status. Gender inequalities, human rights violations and globalisation are different manifestations of structural violence resulting from social relations occurring at the individual, community, country and global levels. In societies like sub-Saharan Africa where the social division of labour dictates that women are largely responsible for pregnancy and childbirth-related issues, it is plausible that structural violence would impact on their utilisation of maternal healthcare services negatively.

Going back to the importance of both structure and agency and Weber's conceptualisation of life chances and choices, I established that despite being constrained by external forces individuals do have some element of choice in their behaviour and actions affecting health. I would argue that this is also true for women in the maternal healthcare continuum. The only question is what makes some women have the choice to decide and do that which is healthy for them and their baby? The theoretical question would be "what theory permits for individual agency in the face of structural violence?". I argue that Bourdieu's theory of capital lays a better foundation for understanding agency and the role of individuals in the social reproduction of better maternal health status. Then for reducing the effects of structural violence and improving agency in the utilisation of maternal healthcare, I return to the capability approach developed by Amartya Sen.

3.8. Bourdieu and the theory of capital

To understand Bourdieu theory of capital, it is important to begin from his other equally popular theory of field. Bourdieu sees society not as a seamless totality but as a system of many fields including social, economic, political, religious, scientific, healthcare power fields in which people act and are acted upon. Fields have their own emergent regulatory principles that influence the behaviours and actions of social actors who have either tacitly or explicitly agreed to them (Bourdieu and Wacquant, 1992). Capitals are a wide variety of material and symbolic resources that are objects of struggle within a field and that also position agents in the field. There are a variety of interdependent capitals in society and they include economic, cultural and political capital. According to Bourdieu, the unequal distribution of capital forms a fundamental system of inequality in society (Abel and Frohlich, 2012). Therefore, those who have access to capital have enhanced agency to make decisions about the direction of their lives.

Economic capital is the form of financial materials such as income, financial stocks and material assets such as property and livestock. It is a fundamental factor in determining social hierarchy and is influential in other types of capital (Bourdieu, 1986). It follows that women who have access to economic capital have a high standing in societal hierarchy and have a unique command of power and privilege. As such, they would be empowered to make decisions and take action according to their rational desires which would include utilisation of maternal healthcare during pregnancy up to postpartum. It means they can use money or convert other resources into money to use to access maternal healthcare services such as transport, accommodation and food during the time they are vising health facilities.

Social capital may be referred to in terms of resources embedded within social relationships with other people that can be mobilised to achieve certain ends (Burnett and Veenstra, 2017; Bourdieu, 1986). Membership to a group or social network which privileges its members with certain collectively owned resources affords one this kind of capital. According to Bourdieu, each person who belongs to a certain social network accumulates resources such as information, knowledge, social contacts and material goods. Membership to organisations, clubs, church or a well-to-do family would be an example of having social capital. However,

inclusion to these social networks is not automatic though. It is a consequence of what Eriksson calls "investment strategies" (Eriksson, 2011). It is difficult to establish meaningful relationships without these resource investments (Portes, 1998). In maternal healthcare, women who have social capital may get material and moral support from their social networks to bolster their ability to access health facilities especially in rural areas. They would also use their networks as sources of information and knowledge about the importance of antenatal care and skilled birth deliveries. It is probable that social networks enhance maternal healthcare utilisation.

Cultural capital in Bourdieu's view is people's symbolic and information resources for action (Bourdieu and Wacquant, 1992; Abel and Frohlich, 2012). Cultural capital exists in three forms: in an embodied state (skills, knowledge), objectified (books, machines, instruments) and institutionalised (educational qualifications, vocational training) (Bourdieu and Wacquant, 1992; Abel and Frohlich, 2012). The source of cultural capital is the process of socialisation and as such, cultural capital varies cross social group, status and class (Abel, 2008). A person's educational qualification is an important aspect of cultural capital although it's not so restricted as other forms of social learning of cultural imperatives are equally important. Indeed, in maternal healthcare, having higher educational qualifications could mean having the knowledge about the importance of maternal healthcare. It could also mean being employed and thus having the resources and the decision-making authority to use maternal healthcare.

It should also be noted that the forms of capital are interrelated and conditional on each other (Abel and Frohlich, 2012). The presence of one form may induce the other form and one form of capital may not be enough to result in desirable action without the other form(s). For example, higher educational attainment is essential to acquiring economic resources such as money and property. Indeed, the correlation of education and wealth is ubiquitous in the literature. Also, having knowledge about the importance of antenatal care visits is in the sphere of cultural capital, may not help women to attend antenatal care unless they have the money to use for transportation, which is essentially economic capital.

Habitus is another concept of great importance to Bourdieu. It "reflects the social dispositions and beliefs acquired and stored by social actors over time as they move through social space, encounter different people and fields and reason their way through complex situations" (Veenstra and Burnett, 2014). Habitus is itself intangible, but it informs and gives coherence to actions and practices of individuals across different spheres of life. It depends on the amount and nature of capital that is accessible to an individual and family in the past and present (Abel and Frohlich, 2012). Habitus links structure and agency in the sense that it influences people's actions but is a product of the social structure. In relation to maternal healthcare, it means that for women to engage in actions that prioritises their health in the maternal healthcare continuum, they need to have built a social predisposition and beliefs that support those actions over time. That kind of predisposition depends on the amount of resources (capital) they have access to. If they do not have access to capital, they would not be expected to possess the habitus required to adequately use maternal healthcare in the face of structural violence.

3.9. The capability approach

Having established and understood what is required to have a better chance to circumvent the negative influence of social conditions through Bourdieu's work, the next question is how women exercise agency to use capital to utilise maternal healthcare. Understanding agency as the social choices made and operated within the limits of social structure (Hays, 1994), we can argue that agency is at work when women use different forms of capital to access and use maternal healthcare services (Abel and Frohlich, 2012). But doing so may need constraining social conditions in society to change. For this, Hays 1994's structurally transformative agency is required. This is the kind of agency that can modify negative social conditions for better health promotion. Bourdieu's conceptualisation of agency in the theory of capital by contrast may only result into empirically observable (re)production of inequalities in health and healthcare (Abel and Frohlich, 2012).

Structurally transformative agency may require for example "new community structures that allow for increased autonomy in community health matters" (Abel and Frohlich, 2012:239).

Other examples may include a robust education system that empowers young women with an education that would enable them to acquire jobs or become formidable entrepreneurs to support themselves and their families. The capability approach is the theoretical framework that could explain the kind of agency required for this kind of structural modifications and social change to avert the effects of structural violence.

The capability approach was introduced by economist Amartya Sen and it has been prominent in his series of papers and books from the publication of "Equality of What?" in 1980. Many scholars have written about Sen's distinction mark which is the significant role he played in moving development economics away from emphasising maximisation of income and wealth towards issues of personal well-being, agency and freedom (Clark, 2005). In the capability approach, Sen posits that well-being should not only be about the availability of the means of living such as income but also access to actual opportunities for better "functionings and capabilities" (Sen, 2009: 253). Functionings are basically things an individual can do or be such as being healthy, happy and participating in the life of society. Capabilities refer to the freedom a person has to be and do what they desire (Sen, 1992). In other words, a functioning is an achievement while a capability is what gives someone the ability to achieve.

The capability approach accentuates the promotion of basic rights and freedoms as central to well-being (Nussbaum, 2004). As such, well-being as well as development, hinges on the elimination of barriers to achieving freedom which in Sen's view include poverty, poor economic opportunities, neglect of public facilities, and lack of access to health care, clean water, basic education or gainful employment (Sen, 1999c). Sen sees capabilities and freedoms to be prerequisites for the public's active participation in bringing about social change in their communities and society at large. This is what links the capability approach to sociological discourses of agency and structure, especially the concept of structurally transformative agency (Abel and Frohlich, 2012). The capability theory stresses on individual empowerment to be active participants agents of change in their own terms both at individual and collective levels (Ruger, 2004).

The difference between functionings and capabilities means that it is not just the end which is important but also the means to achieve that. Capabilities give people the freedom to make choices about their desired functionings. For Sen, well-being is not just about realised functionings but the freedom to choose from a set of alternative functionings (Abel and Frohlich, 2012). In capability theory, resources or capital are understood as means to an end of realising free-chosen objectives. Social injustice in the capability perspective applies not only in the distribution of capital but also to the range of capabilities available. Women who have capabilities have better chances of not only realising their intended goals in life but also have claim to structurally transformative agency allowing them to fight against the social structures that tend to constrain those capabilities. Capabilities give them the freedom of choice with regards to what they want to do and what they want to be.

Sen's capability theory articulates well the difference between functionings and capabilities and the fact that the social structure often constraints the individual's ability to have access to capabilities but does not fully articulate the constraining factors to capabilities (Stewart, 2005). In this regard, as Abel and Frohlich, 2012 posit, Bourdieu's capital theory serves as a good companion to the capability theory because it presents economic, social and cultural capital as the resource which is often unequally distributed in society and this acts as the constraining force to achieving certain functionings of interest to people. Social inequalities are thus measured with respect to the freedom people have to make choices according to their desires. People are discriminated against and oppressed if their freedom of choice is limited or curtailed. The freedom of choice depends on how easily they can access resources, which in this case are economic, social and cultural capital Accordingly, if equality is to be achieved, the freedoms people have to do and be what they desire should be equally distributed (Sen, 1992).

Empirical studies carried out by Sen and others based on the assumptions of the capability approach, have confirmed the idea that income does not necessarily equate to growth in standard of life (Sen, 1985; Robeyns 2000) and thus supporting the assumption that other measures of well-being are plausible. It is probable that empowerment of women through provision and access to economic, social and cultural capital will enable them acquire the

capabilities to achieve better maternal healthcare and minimise risk of maternal mortality by attending antenatal care during pregnancy, delivering in health facilities and having adequate postnatal care and check-ups after delivery. They would have better chances of having structurally transformative agency that enable them to participate in activities that may bring about change to the problematic cultural norms that subordinates them. By so doing, enabling them to live fulfilling lives and bolstering their well-being.

Like many other conceptual concepts, the operationalisation of Sen's capabilities in empirical studies is problematic and this has been a major critique of the capability approach (Burroway, 2011). This study assumes that those who have access to economic, social and cultural capital will have better utilisation of maternal healthcare. Capital may include but not limited to higher education, wealth, money, knowledge, employment and autonomy (Saith, 2001). Communities which reflect higher proportions of women with these resources are also assumed to be enabling structurally transformative agency and thus women who live in such communities are assumed to have adequate utilisation of maternal healthcare. At the country level, the same is hypothesised to be the case whereby women who live in countries with characteristics that enable the acquisition of capital at the individual level have better chances of utilisation maternal healthcare compared to those who don't.

The application of multilevel theoretical frameworks in this study extends several other studies that have looked at factors influencing maternal healthcare either at the individual level or/and community levels (Ononokpono et al., 2013; Yebyo et al., 2015). It also extends findings of those studies that have only applied the capability model only theoretically and not empirically (Stewart, 2005; Abel and Frohlich, 2012) by combining it with Bourdieu's capital theory within the broader perspective of structural violence and thus making adequate theoretical contribution to medical sociology.

3.10. Social mechanism

The biggest problem with the application of the concept of structural violence in empirical health research has been the operationalisation of the concept. Farmer (2005) acknowledged this problem when he pointed out how broad his use of the concept is and the challenges that

broadness can pose in empirical studies. My argument is that the problem instead, is the use of structural violence as the only theory in studying health and healthcare. It may indeed not be adequate because it is mostly applicable in studying structural phenomena and may be unamenable to individual agency. Using structural violence as an orienting theory and combining it with micro-level theories that can apply to individual agency is a better option. This means the social mechanism should show how structural violence operating at collective levels constrains agency and inhibits the use of maternal healthcare. At the same time, the social mechanism needs to indicate the circumstances through which women can not only circumvent the problematic social conditions and utilise maternal healthcare but ways in which they would acquire the kind of agency that would enable them to also participate in changing the structural violence of their society. This study is rooted in this understanding. I heed to Farmer's emphasis on the need for researchers to seek solutions for localised problems in the larger matrix of individual, culture, historical and political economy (Farmer, 1999).

Social mechanisms can be considered as the building blocks of middle range theories (Hedström et al., 1998) and Merton (1968: 43) defines them as 'social processes having designated consequences for designated parts of the social structure'. Arthor Stichcombe puts it more succinctly:

> Mechanisms in a theory are defined as bits of theory about entities at different level than the main entities being theorised about which serve to make higher-level theory more supple, more accurate or more general (1993:24)

There are three things that social mechanisms bring to sociological theory of today and to the current study in general. Firstly, the search and incorporation of social mechanisms into sociological theory in empirical studies help us to explain phenomena rather than just test theories. Secondly, it helps deal with increased complexity of social phenomena by allowing us to use multiple theories or extract aspects of theories that are applicable for the phenomena at hand. Thirdly, it helps us properly account for the indirect causal pathways between social structural and individual outcomes by theorising intervening mechanisms.
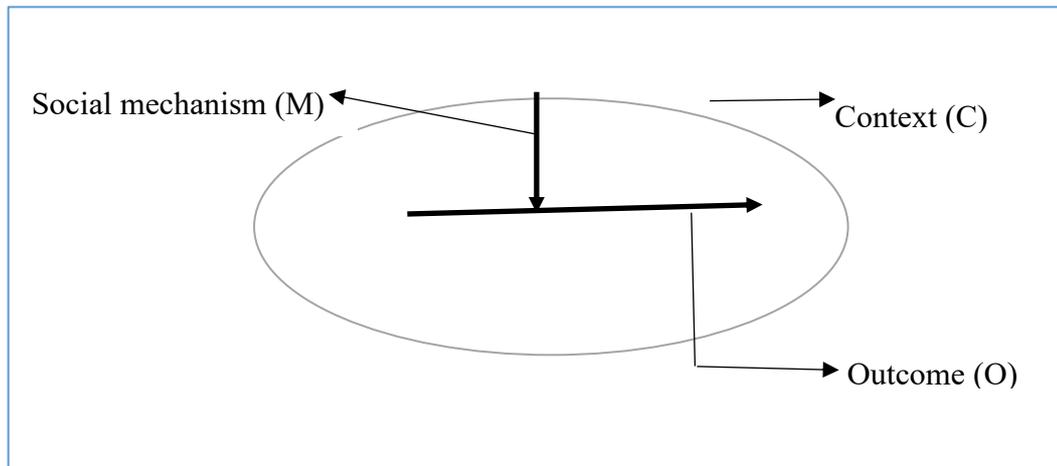
Figure 3.1. Social mechanism model explaining maternal healthcare utilisation: Adapted from Pawson, 1996

In this study, social mechanisms motivated me to integrate different theories operating on different levels to account for individual-national and cross-level variations in maternal healthcare utilisation in sub-Saharan Africa. The theoretical contributions are linked by the proposed social mechanisms, which extends the current knowledge about maternal healthcare utilisation and allows for the generation of theoretical implications that are evaluated and discussed in empirical chapters.

Figure 3.1 shows the social mechanism for adequate utilisation of maternal healthcare used to link theoretical frameworks in this study. Adequate maternal healthcare utilisation: having four or more antenatal care visits during pregnancy, delivering in health institutions and having postnatal check-ups for the mother and new-born baby are the outcomes (O). The social mechanism (M) covers structures and resources which prevent (or enable) adequate utilisation of maternal healthcare in sub-Saharan Africa. These structures and resources are located both at structural and individual levels. National and community characteristics and resources such as availability of well-functioning health facilities, gender equity, good education levels and high levels of wealth are among the social mechanisms that enhances good maternal outcomes. Individual level mechanisms are the resources that helps individuals to access and utilise maternal healthcare regardless of the social context in which

they live (Pawson, 1996). These may include educational advancements, employment, income, having adequate skills, social networks and exposure to the mass media.

The social context (C) is the enabling social environment or conditions needed to fire into place some social mechanisms needed to increase the odds of utilising maternal healthcare in sub-Saharan Africa. These conditions could be the motivational aspects of the social structure (Giddens, 1995). In the conception of this study, we could say the opposite of structural violence because they enable, instead of inhibiting human agency.

3.11. Conclusion

In this chapter, I explored the concept of structural violence, which is an orienting theory for this study. I defined it from the perspective of Johan Gultang who traces it in the discrepancy between potential and actual somatic and mental realisations. Accordingly, violence is present when there is this discrepancy, but it has to be avoidable. I argue that with this definition structural violence is present in collectivities such as communities, national states and the world at large. It could be induced by several factors such as culture, national social, economic and political characteristics and global financial and political institutions.

Individual agency against the constraining nature of structural violence is possible through access to resources that are conceptualised by Bourdieu as economic, social and cultural capital. Capital enables women to have the necessary networks, financial resources and the knowledge to adequately use available maternal healthcare. I argue that capital may be enough to circumvent the influence of the structural violence and sustain inequalities in maternal healthcare utilisation but may be inadequate to transform the oppressive social structures in society. Structural transformative agency that is rooted in Sen's capability theory may be necessary to address structural violence through active participation of empowered women. The capability theory adds the aspect of freedom for a person to do what they desire. The elimination of barriers to freedom is crucial to ensure that people have the capabilities they need to fight against structural violence. Capabilities and freedoms are the prerequisites for social change.

However, before discussing structural violence I considered the historical perspectives of sociological theory in medical sociology and sociological bifurcations such as agency and structure, micro and macro and others have at least in part been retrogressive in theoretical developments. I discussed the three traditional sociological perspectives and arrived at a position which considers both structure and agency to be important in sociological discourse. I then dealt with the two concepts of substantialism and relationalism to lay the background work for the study of structural violence. Sociology and many other social sciences have been uncomfortable with subjects like structural violence and human rights which call for moral judgements. I have argued that the problem instead lies in the substantialism vs. relationalism debate. Considering social phenomena from a relationalism perspectives not only allows for the study of not only subjects with moral judgement connotations such as structural violence and human rights but also those that have been criticised to being universal applicability such as human rights and globalisation.

Chapter Four - Research Design and Methods

4.1. Introduction

Regarding research designs, King et al. (1994) posits that:

> The researcher 'must have the flexibility of mind to overturn old ways of looking at the world, to ask new questions, to revise research designs appropriately, and then to collect more data of a different type than originally intended' (p.12)

The statement by King et al. (1994) reflects a general phenomenon that research design is neither rigidly systematic nor a blueprint of a mechanical process of data collection and analysis. That is to say that the research process does not typically follow preordained linear rules but instead sometimes 'data can discipline thought' (King et al,1994:13). Yin (1989) also argues that research design is a logical and not a logistical problem. Therefore, research design has little to do with the research procedure. Its function is to ensure that the evidence obtained from the research process addresses the research problem logically and as unambiguously as possible (De Vaus and de Vaus, 2001). Addressing research questions in empirical research involves using the immediate data to describe, explain or predict phenomena which are not directly observable. This is where 'scientific' methods come in. Their goal is to adhere to a set of public rules and procedures and make inferences that go beyond the data which has been collected[7].

I adhere to King et al. (1994) 's formulation on research design in this chapter and emphasise not the systematic nature of my approaches nor alignment with traditional methods, but the best available methods that adequately address the research questions at hand. That's why I begin this chapter by reiterating the research questions.

Since there are many approaches to answering research questions and even many more research questions that could be asked on a similar subject, Margret Archer advises that social scientists must provide their ontological stand points at the onset because these 'regulate what we allow into our work and what we keep out of it' (Archer, 2016: 426). I

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[7] Although qualitative research may not subscribe to the use of *inference*, this is the case whether the methods used are either qualitative or quantitative because both methods aim to use the data and learn about the world. King et al, 1994 elaborate this viewpoint in detail

therefore, discuss the research paradigms in which this work is situated immediately after the research questions. Research paradigms are precursors of research methods. In the second section, I discuss the methods that were used to address specific research questions and link them to the orienting framework of structural violence.

Each research question is discussed separately in the form of a chapter in the rest of the thesis and some specific details relating to the analysis will be found in corresponding chapters. This chapter is dedicated to discussing the general principles that underpin the selection of methods used as well as the technical procedures of statistical analysis that were followed. Since the study relies mostly on the use of multilevel models, this chapter also justifies the selection of multilevel models, particularly in relation to the study of structural factors and disparities in maternal healthcare utilisation in sub-Saharan Africa. The chapter will also discuss diagnostics for model misspecifications as well as statistical techniques employed in the study including Bayesian inference and its justification.

4.2. Research questions and research paradigm

4.2.1. Research questions

This study was aimed at investigating the influence of structural violence on maternal healthcare disparities within and between sub-Saharan Africa. Specific research questions seek firstly, to examine the ecosystem of literature studying the influence of structural factors on maternal healthcare utilisation. Secondly, to understand the relationship between gender relations and maternal healthcare utilisation and how this relationship varies along the continuum of maternal healthcare from antenatal to postnatal care. Thirdly, to discuss ways in which the rights-based approach explains maternal healthcare and whether civil and political liberties are more important than socioeconomic entitlements in explaining maternal healthcare utilisation. Finally, the study addresses the extent to which globalisation influence maternal healthcare utilisation.

Having decided on research questions, there are two important questions that should follow: What are the methods to be employed in addressing these questions and what is the justification for use of the chosen? Justification of the choice of methods is something that

hinges on the paradigm the researcher(s) identifies themselves with (Crotty, 1998). I deal with these in the next section.

4.2.2. The research paradigm

Going back to Archer's sentiment about the importance of philosophy in social research, she went on to put it more emphatically in the same article:

> It is unavoidable that each researcher brings their ontology to the investigation of any topic. This can be implicit or explicit, but it is one or the other because all research conceptualizes the social—or any part of it—in a particular way, welcoming certain concepts and ignoring or rejecting others, viewing causality from a specific perspective and presenting the results accordingly (Archer 2016: 426).

In this study, a research paradigm is defined as the researcher's worldview. It describes a 'perspective, thinking or school of thought, or a set of shared beliefs, that informs the meanings or interpretations of research data (Kivunja and Kuyini, 2017: 26). Like Archer has indicated, the research paradigm defines the researcher's philosophical orientation which has significant implications in the decision-making process of the research, including the questions of why, how and what to study. A paradigm is composed of four elements, namely ontology, epistemology, methodology and axiology (Lincoln and Guba, 2007; Kivunja and Kuyini, 2017). Ontology is the study of the nature of reality or being (Crotty, 1998). It examines the researcher's underlying belief system regarding the nature of social phenomena they are investigating (Kivunja and Kuyini, 2017). Epistemology is concerned with the bases of human knowledge: its nature, form and how it can be acquired (Cohen et al., 2002). It focuses on the nature of knowledge the researcher can possibly acquire to extend, broaden and deepen their understanding of their chosen field of research (Kivunja and Kuyini, 2017). Methodology is basically the strategy or plan of action which lies behind the choice and use of methods chosen for the study (Crotty, 1998). Lastly, axiology, which is the philosophical approach for defining, evaluating and understanding concepts of right and wrong behaviour relating to the research (Finnis, 2011). In other words, it is concerned with the role of values and morals in social sciences (Bunge, 1996).

This discussion of the research paradigms validates Archer's position because the researcher selects specific methods to investigate a certain problem based on what the researcher knows

or assumes about the nature of the reality or truth they want to know and how knowledge about it can be acquired.

I have already indicated that the recognition of multilevel structures and how these structures affect individual behaviour and action is the main premise of this thesis. The underlying assumption is that individual persons (women in this case) are nested across their communities and countries. Which means that their everyday life is not only influenced by their own individual agency alone but also their position relative to the social, cultural, economic and political structures of their community, country and the world at large. These hierarchical structures can either be manifest and easily quantifiable such as neighbourhoods, education levels, employment levels, level of economic development and health expenditure. Some other structures, however, may be latent and beneath the surface of observable phenomena (Scambler, 2001), but still holding potent power to influence individuals. These may include such abstractions as problematic gender norms, social exclusion, power inequalities and human rights violations. The modelling objective for this study includes these attributes because they contribute to our understanding of structural violence of the community and that of the nation state (Gultang, 1969). These structures may be experienced subjectively by individuals in different communities and countries. Moreover, if we are to explain structural violence, we should also research on how women may circumvent its influence in order in enhance their agency, and this brings in an aspect of emancipation to the process.

An appropriate ontological and epistemological foundation for the work of this nature must accommodate a complex and intertwined view of reality including both manifest and latent phenomena, morals and values and different geographical location. I argue that the positivist paradigm that has been dominant in quantitative social science for many years falls short in this score and may therefore, be problematic for the current study. I demonstrate this with reference to our four elements of the research paradigm (ontology, epistemology, methodology and axiology).

4.2.2.1. The positivist paradigm

Ontologically, the positivist paradigm is aligned with objectivism. It is a philosophical position that social phenomena and their meaning exist independent of social actors (Bryman, 2016). It is a typical ontological position for the natural sciences to which positivism is associated because natural phenomena are generally rigid and unchangeable. This may be inappropriate ontological position for this study. I mainly look at the influence of structural characteristics on individual actors. These characteristics may exist outside individual consciousness and confront social actors as external realities, but they are not pre-given, and individuals do play a role in their (re)creation. I have shown in Chapter Three how it is possible for disadvantaged women to challenge existing problematic structural fundamentals both as individuals and as a collective conditional to having access to relevant resources (capital) enabling them to do so.

The other area where the positivist paradigm possesses some challenge for this study is on epistemology. The positivism uses empirical epistemology. Although there are different strands of positivism, they are all rooted in the philosophy of empiricism which posits that knowledge comes from sense-data inputs such as our ability to observe regularities (Giddens, 1995; Cruickshank, 2012). This makes positivism less compatible with analyses which seek to combine observable and non-observable data. It also tends to skew towards providing proof for causal directionality. That is, use of the scientific method would guarantee certainty in knowledge, with the outputs of science being an accurate reflection of reality (Cruickshank, 2012). Logical positivism on one hand for example defines science as an inductive method whereby the observation of an empirical regularity leads to the conclusion that one is observing a relation of cause and effect. It holds that the world consists of regularities that are detectable and thus the researcher can infer knowledge about the real world by just observing it (Giddens, 1995). The empirical positivism on the other hand is based on hypothetico-deductive logic and it argues for a more robust approach to science which goes beyond empirical observations to postulate an existence of unobservable causal law and then deduce from this law a prediction that an observable fixed pattern with occur in a particular manner. If one observes observable patterns as predicted then the hypothesis is corroborated, otherwise it is falsified or refuted. Therefore, in either form of positivism

causal and effect assumptions are prominent and analytical statistics are used as tools to ground these causality assumptions (Cruickshank, 2012).

However, the position of positivism that statistical methods are tools which provide support for causal explanations as opposed to evidence of relationships or associations has been problematised in methodological literature (Porpora, 2001). Indeed, other than in some methods such as longitudinal studies, randomised clinical trials and experimental studies where some justification can be made for causal inference, quantitative methods are evidential rather than explanatory or causal tools. In most part, this study uses cross-sectional data which cannot be used to analyse cause and effect assumptions and as such analytical statistics are used here as tools to determine associations between concerned variables. Which makes it opposed to typical positivist assumptions.

In terms of methodology, positivists commit to a priori theorising and treats data as providing empirical verification of theoretical claims (Babones, 2013). The problem here is twofold. One has to do with the approach in terms of whether we should start from theory to data collection and the other, the philosophical justification of deriving evidence from theory. I am discussing the former here and the later will be discussed below.

August Comte argued that theories were the bedrock of his methodological preferences of observation, experimentation and comparative methods. Indeed, in positivism researchers need to proceed from a theoretical standpoint. He indicated that theories direct our choice to pursue one fact rather than another (Giddens, 1995). Therefore, the positivist research process would typically begin with a theoretical formulation, followed by the deduction of hypotheses from the theories which are tested with data and are verified or falsified depending on whether one is using Comteian logical positivism or Popperian empirical positivism respectively (Babones, 2013). This approach is unattainable in studies like this one which are cross-national because it is almost impossible to draw new data for new studies. Which means it almost a given that cross-national researchers have to look at whether they have available data before considering any research questions. Indeed, for this study, I began by having a cursory look at the available data and then created mechanisms of explanations by integrating a few Mertonian middle-range theories. There is nothing

wrong with this approach either methodologically or theoretically, but it is certainly not positivism. Like Babones (2013) observes, the positivistic assumption of beginning with theory in cross-national and most observational studies seems disingenuous.

Additionally, positivist approaches tend to emphasise control into experimental and observational studies. For example, the control and experimental groups and the use of modelling techniques that tend to control for the influence of covariates. These are important techniques because they allow researchers to combine all factors and hence provide precision over inferences. The problem with this approach, however, is that it tends to severely restrict the ability to evaluate or measure contextual factors (Luke, 2004).

Axiologically, positivists believe that the researcher should be separated from the research process and that value judgements should be put at bay. I believe that how researchers deal with their value judgements throughout the research process from conceptualisation of the topic to data analysis is important. I recognise the controversy that may come with the inclusion of moral and value judgements in social research because of the 'subjectivity' connotation that comes with them, which scholars try to avoid in favour of 'objective' scientific inquiry. In fact, this point has been the main reason why certain topics that invoke normative moral judgements like human rights, structural violence and social justice have not been popular in the social sciences for a long time until now (Morgan, 2009).

However, it is almost ubiquitous now in social science that normative neutrality is not constraining and that it may even be impossible to achieve because the whole research enterprise is engrained with unavoidable subjective choices (Morgan, 2009, Gill, 2014). Values shape the social behaviour of all members of society, social researchers included (Bunge, 1996). But of course, moral sensitivities to certain topics, should not be confused with lack of critical engagements with the subject matter. This is what the Germany sociologist Max Weber meant when he distinguished between the concepts of 'value relevance' and 'value neutrality' in sociology. In that, sociologists should allow themselves to be influenced by values at the point of subject selection, but to remain 'value- free' during the research process and in their pursuit of conclusions. I therefore, state from the outset that moral and value judgement played an important role in my choice to study structural violence

and maternal healthcare utilisation in sub-Saharan Africa. I recognise that pregnancy and childbirth are not diseases, I do not believe any women deserves to die at any point throughout the maternal healthcare continuum. My desire to see a significant reduction in maternal mortality in the most affected regions of the world sparked my interest in this field and motivated me to pursue academic research in this field. Having said that, my discussion of the remaining parts of this chapter will be relative to the research paradigm of choice.

This consideration coupled with the others already explained drive this study away from a typical positivist paradigm. Social constructionism is a popular post-positivist ontological position which has as its foundation a recognition that the social world is inherently different from the material world and is a human social construction and is in a constant state of change (Bryman, 2016). It is based on a relativist philosophy and it holds that all knowledge is relative to one's location within particular social norms and an interpretivist epistemology which emphasises the subjective meanings of social actions. Social research in this perspective is therefore a concerted effort of uncovering and interpreting the meanings underlying social phenomena. Qualitative research methods have largely been inspired by this orientation. Although they engage with theories the typical approach interpretive researchers informed studies is to understand the meanings attached to human actions. Theory may be the product and not the starting point. The use of quantitative methods and the cross-national nature of the current study makes the interpretivist approach inappropriate.

4.2.2.2. Critical realism

Considering the limitations of the other epistemological foundations, critical realism is argued to be most compatible for the current study for several reasons. Firstly, just like positivism and social constructivism, critical realism embodies theoretical assumptions about the nature of the natural and social worlds, and this determines the kind of methodology it employs. However, critical realism has the advantage of being able to incorporate important insights from other differing paradigms whilst bringing forward its own distinctive tenets (Porpora, 2001). For example, Roy Bhaskar, who is widely considered the founder of critical realism argued paralleling the hypothetico-deductive method of positivism, that unobservable causal laws interact in contingent ways to produce observable

events (Bhaskar, 1975). However, unlike in positivism where observable events are seen to enlist certainty and concrete knowledge, critical realism holds that observable phenomena do not necessarily amount to certainty in knowledge. This is because the sphere of observable events was not permanent but subject to change overtime and also the theories which precede any empirical scientific investigation are still fallible interpretations that are subject to criticism and revision or replacement in the future (Cruickshank, 2012). Which means like Porpora (2001) posits, the truth that scientists hold is always provisional, and it must be allowed to be contested.

According to critical realism, what lies beneath observable events are unobservable social structures and the task of science, whether human, health or social is to employ theory to study and interpret how these social structures operated in an open system to produce different kinds of manifest patterns (Cruickshank, 2012). This study represents social structures as structural violence which in essence are constructed as having constraining powers inhibiting individual women to use maternal healthcare services which subsequently results into poor maternal health outcomes. These structures are social, economic, cultural and political in nature and operate at different levels. Accordingly, the study uses theories such as structural violence, capital theory and capabilities approach to interpret the manifestations of unobservable phenomena which in this case is structural violence.

Secondly, critical realism does not only accommodate latent structures as has been problematised above but also speaks to the negative enactments of structures to the extent that it is often referred to as the philosophy of emancipation (Porpora, 2015). Bhaskah, 2008 argued that the 'critical' part of critical realism represents the fact that in addition to applying knowledge positively, one may also use the knowledge to criticise any illegitimate practices. In this sense, critical realist-based studies can be used positively to develop policies against the marginalised and also as a way of criticising notions and practices that lead to such marginalisation with such criticisms based on an "objective" account (Cruickshank, 2012). It rejects the claims of value neutrality prominent in positivism. This standpoint is used in this study not only to expose structural mechanisms that constrain women from using maternal healthcare but also to advance policy frameworks aimed at minimising the negative influence of such structures.

Porpora (2001) holds that realism is humanism. He regards an individual as not only an agent but a moral one with experiencing and volitional characteristics. It recognises that structure can be enacted in a multiplicity of ways. For instance, although constraining, it can also be enabling and even motivational (Porpora, 2001). A recognition of individual agency makes critical realism more versatile and enables a holistic assessment of the position of individual actors in a constraining, enabling or motivational social system. This is the position this study takes. It investigates the constraining power of structure on individual actors while at the same time recognising individual abilities to determine their own course of action when certain resources are available.

4.3. The research strategy

This study adopted the retroductive research strategy which is aimed at explaining observed regularities by discovering appropriate mechanisms and context in which they operate (Blaikie, 2009). This strategy is chosen because it reflects the overall premise of this study, that is, that social phenomena are interwoven between layers of social reality and that studying social phenomena must equally account for those multiple layers. This is also the ideal purpose of the subject of sociology as postulated by Ray Pawson:

> The basic task of sociological inquiry is to explain interesting, puzzling, socially significant outcome patterns between events or happenings or social properties. Explanation takes the form of positing some underlying mechanisms which generates these outcomes and thus consists of propositions about how the interplay between agency and structure has constituted these outcomes (Pawson, 1996:301).

I articulated the social mechanism for this study in theoretical framework in Chapter Two where I indicated that the outcome is adequate use of maternal healthcare. The mechanism is the structural violence and regularities are the combination of factors operating at the individual, community and country levels that influences the outcomes both in terms of the (re)production of maternal healthcare disparities and the existence of structurally transformative agency to disrupt structural violence. The regularities include both observed and unobserved regularities within the context of the social structure.

In terms of research question number one for example, gender relations are the result of structural and cultural violence. Disparities in maternal healthcare utilisation are due to

unequal distribution of resources, which are economic, social and cultural capital. In order for a good outcome to be achieved, structural and cultural violence have to be circumvented. In the second research question, the context is the social structure, which could both be constraining and motivating. The specific social mechanism is structural violence manifested through lack of civil liberties and socioeconomic entitlements. Also known as human rights violations. The regularities are both observable and unobservable variables. In the last empirical question, globalisation is the structural violence within the context of expanded social structure and different variables making up globalisation are the observed regularities. The outcome is still adequate maternal healthcare utilisation.

Since the task of the researcher in the retroductive strategy is to test the model by establishing whether the combination of this mechanism operating the social structure context, we need to articulate how we connect social mechanisms and selection and analysis of evidence. This is addressed in the following section

4.3.1. From social mechanisms to data or is it the other way around?

'Admittedly, social science data often have special problems. But the standards and procedures used to link the data with theory are often unnecessarily shaky and unconvincing – even after taking into account these difficulties' (Lieberson and Horwich, 2008: 12). This quotation raises an important issue in social science research. How do we move from social mechanisms or theories to evidence? Or for that matter even the other way around. The problem postulated by Lieberson and Horwich, 2008 here is that in the social sciences, theories are sometimes rejected[8] by evidence (data) even when they are correct, and evidence sometimes support theories when they are supposed to be rejected. Furthermore, different types of data can result in contradictory conclusions on the same social phenomena. Moreover, and probably more commonly, some aspects of the theory may get confirmed while other aspects are falsified by the same data.

This problem is reminiscent of the 'problem of induction' in philosophy of science attributed to Davide Hume, the English philosopher. Hume's problem of induction is premised on the

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[8] Rejection here doesn't mean the very well-articulated concepts of type I or II errors in statistics but about the relationship between theory and data

gap between the information provided by empirical observations and the content of scientific theories (Howson and Urbach, 2006). Basically, the problem hinges on the fact that for empirical observations to guarantee that the theories derived from them inductively are true or correct, the observed regularities they claim must be uniform in all circumstances in the future. In other words, only if the assumption of the uniformity of nature is true would evidence or empirical observations be properly used to evaluate theories. As such it is generally aggregable in the philosophy of science that this is not possible and hence there is no solution to the problem of induction (Howson and Urbach, 2006). But this is not without several attempts to find a solution to the problem.

Karl Popper is one of the prominent philosophers who resisted the idea that there is no solution to the problem of induction, and he attempted to solve the problem with his falsification approach we have met already in the chapter. He argued that while scientific theories cannot be decisively proven from empirical evidence, empirical observations may sometimes refute them, hence his famous falsification philosophy. He also postulated that theories can sometimes be verified through empirical observations and when this is the case, we can say a theory is corroborated. 'Corroboration' in Popper's view is a validation for merits of the theory (Howson and Urbach, 2006). However, Popper's theory doesn't solve the problems raised by Lieberson and Horwich, 2006 as articulated above.

As Lieberson and Horwich, 2006 observe the biggest problem is not because the theories do not explain the social phenomena, but because the procedures we use to link data and theories are problematic. My attempt to go around the data and theory problem in this thesis is the use of probabilistic induction, which is the philosophy behind Bayesian Inference. If absolute truth is unavailable, our best position is to be sure about how certain our explanations are somewhere between the spectrum of right and wrong depending on the quality of our data which can be adjusted when new evidence appears. In other words, 'theories must be judged in terms of their probabilities in the light of evidence' (Lieberson and Horwich, 2006: 7).

4.3.2. Bayesian inference

The Bayesian approach to research can be described as a sequential learning approach which involves pooling non-sample (also called prior information) with sample data to produce new posterior subjective probability statement about the parameters of the statistical model (Western and Jackman, 1994). This entails that there are two aspects of Bayesian inference that are distinguishable from the frequentist perspective and these include the concept of subjective probability and the existence of prior information which combines with data to make statistical inference.

Subjective probability refers to a person's belief or judgement about the likelihood that a specific outcome of an event will be obtained (DeGroot and Schervish, 2012). Subjective probability is thus a personal statement of confidence rather than a fact characterising an object in the external world (Western and Jackman, 1994). This means that not only may different people have different subjective probabilities, but the same person's subjective probability may change over time as new information becomes available. This formulation is the thrust of most criticisms against Bayesian methods as it will be seen in due course. The mathematical theory of probability, however, is correct and can be usefully applied regardless of whether the type of probability used in a particular problem is subjective or objective (Carlin and Louis, 2009). Subjective probability is a hallmark of Bayesian statistics because inference begins with an assessment of uncertainty about the parameters which the researcher assigns before observing the data. This is the prior information and it is represented in terms of a probability distribution, thus called prior distribution which is then combined with the data to form a posterior distribution. It is from this posterior distribution that inferences about concerned parameters are reached.

With regard to inference for parameter, the frequentist and Bayesian frameworks differ in terms of what sort of things probabilities should be assigned to. In frequentist statistics, only the data are assumed to be random variables with associated probability distributions, parameters are assumed to be fixed and their associated probability (p) values and confidence intervals are based on long-run frequency properties under repeated sampling of the data (Lunn et al., 2012; Searle et al., 2006). In a Bayesian perspective, both data and unknown

parameters can be assigned probability distributions and then Bayes' theorem is used to learn about probabilities of unknown parameters and observable events.

Bayes' theorem is the mathematical rule for using data to update one's probabilities about models in a rational, systematic way (Cowles, 2013). The likelihood associated with a particular model is the probability of observed data under that model. Bayes' rule combines the prior probabilities with the likelihood to compute the posterior probabilities for the respective models. Posterior probabilities are available only after the data are observed (Cowles, 2013; Ntzoufras, 2011). The equation below represents Bayes' theorem:

$p(\theta|y) \propto L(\theta;y)p(\theta)$

Where $p()$ now denotes a probability density and not just the probability of an event. The above equation in words would be, the posterior distribution of a model $p(\theta|y)$ is proportional to the likelihood times prior distribution. The symbol "|" is read as "given" or "conditional on". The symbol "$\propto$" means "is proportional to".

Applying Bayesian inference in practical terms to this study, I began with the social mechanism which is articulated in the third chapter. That is the model that I hoped would explain adequate maternal healthcare utilisation. I then needed to formulate a prior distribution over the unknown parameters of the model. But it was constructed before the data is acquired. After the data is received, I then apply Bayes' Rule to obtain the posterior distribution for these unknown parameters and hence taking account of both the model and the evidence. It is from this posterior distribution that predictive statistics are computed for future observations.

4.3.3. Rationale for Bayesian inference

There are several arguments for preferring the Bayesian framework as opposed to the classical or frequentist approach in this study. I will first discuss general arguments and then move on to the context of multilevel models, the main technique in this analysis. Multilevel models will be discussed in general first before the rationale for the use of Bayesian multilevel modelling in this study is given.

Although the incorporation of prior information is usually discussed in relation to the disadvantages of Bayesian estimation, this approach provides for an intuitive, natural and principled way of doing scientific research. Scientific knowledge is in many respects cumulative and the Bayesian approach offers a unique opportunity for this to happen because it provides a solid theoretical framework to build on previous research results instead of starting from scratch with each study. This process is then iterated with new information that becomes available whereby the previous posterior distribution is treated as a prior in the new study.

Another reason is that, it provides for inferences that are conditional on the data and are exact without reliance on normality of error assumptions or asymptotic assumptions. This is because Bayesian analysis is based on the combination of prior information and data which results into the posterior distribution from which parameter estimates are derived for inferential purposes (Hamaker and Klugkist, 2011; Lynch, 2007). Non-dependency on normality offers Bayesian approaches the flexibility suitable to specify models based on small samples and complex data structures with limited high-level units as it has been used in this study.

Bayesian estimation also provides for credible intervals which have a better and easier interpretation in the Bayesian approach, the same interpretation, which is usually erroneously given to the frequentist approach. The 95% sure interpretation for instance is a natural in the Bayesian framework (Jackman, 2009).

Moreover, the relatively new posterior simulation methods facilitate estimation of a wide variety of previously intractable Bayesian models. It is true that Bayesian methods offered little to applied researchers until a little more than 2 decades ago because complex integration problems arising in the marginal and posterior inference were numerically unworkable (Western, 1999). McMC methods as discussed below provide a more efficient approach to this problem and the availability of enormous computing power have made Bayesian analysis more accessible through different platforms including the `MLwiN` engine used in this study called from R.

4.3.4. Criticisms of Bayesian inference

As already discussed, Bayesian analysis is predicated on the belief in subjective probability where our uncertainties about parameters are quantified in a prior distribution before the data are observed. Then Bayes' theorem is used to update the prior distribution with the resulting posterior distribution which reflects a blend of information in the prior and the data (Carlin and Louis, 2009). Prior distributions are descriptions of relative likelihood of events are derived from different sources including the researcher's past experiences, literature review, opinions of subject-area experts or personal intuition.

Because of their seemingly rudimentary nature, prior distributions have been the major subject of criticisms against the Bayesian approach in that they bring subjectivity into 'science' which is one of the reasons they have been unpopular especially in the social sciences (Lynch, 2007). The Bayesian response to this criticism has been multifaceted. First, that subjectivity is unavoidable in statistics. The choice about variable specifications, sampling density, error distributions, functional form and significance threshold (α) at which to declare "statistically significant" in classical statistics are non-objective (Jackman, 2009; Gill, 2014a; Gelman and Hennig, 2017; Lynch, 2007). Therefore, given this ubiquitous subjectivity in all scientific data analysis, it is reasonable to prefer the Bayesian subjective framework as an inferential paradigm because at the very least, both prior information and posterior uncertainty are given with specific and overtly stated model assumptions.

The second response is that priors are often inundated by data especially in social science research. As Lynch (2002) posits, prior distribution generally contributes to the posterior once, whereas data enters into the likelihood function multiple times such that as n approaches infinite, the influence of the prior distribution becomes non-significant and negligible.

Third, priors can be made to contribute little information to the posterior by specifying noninformative priors which removes the need for larger quantities of data to overwhelm them. Unlike informative priors[9], non-informative priors are ones in which little new

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[9] Gill 2014 gives a good treatment of different types of priors including power priors, elicited priors, hybrid priors and non-parametric priors among others

explanatory power about the unknown parameter is provided by intention. They approximately assign equal weight to all possible values of the parameter (Lynch, 2007) and the family of which include uniform, proper and improper priors.

Fourth, the influence of priors can be evaluated upon modelling the data to show whether the posterior inference is sensible. In other words, data analysis in the Bayesian approach does not end with the calculation of the posterior $p(\theta|y)$, rather the model is then checked by comparing the implications of the fitted model to the empirical evidence (Gelman and Shalizi, 2013) and if discrepancies are observed, it may be indicative of model inadequacies which should motivate expansions and changes to be made to the model. So, even if informative priors are used in the analysis, they can hardly introduce any more subjectivity than could be included by any type of analysis.

Because the subjectivity of the prior distribution is largely a philosophical criticism in nature and cannot be conclusively adjudicated, the rationale for the choice of the Bayesian inference (at least as it applies in this study) should be a pragmatic one. That is, the research questions and the nature of the available data to answer them readily lend themselves to a Bayesian approach. Also, that unlike previously when Bayesian methods were unattainable due to inadequate computing power, the development of McMC techniques and increased computing efficiency bolsters their applicability. I delve into the suitability of the Bayesian approach particularly for this study in the next section.

4.4. Statistical techniques

Statistical analysis is the process of data reduction with the aim of distilling underlying systematic effects from the 'noise' inherent in all cases of observations (Gill, 2014). Although this maybe too simplistic, the essence of what happens is very close to it - using models to separate results out of murky data. However, the procedures for arriving at the desired (or undesired) meaningful patterns from an abundance of data are often multiple and sometimes conflicting. I posit that the Bayesian framework possesses important data analysis qualities that should make it more desirable in comparison with the frequentist tradition. This section describes the technical aspects of implementing Bayesian inference as the main method of parameter estimation that was used in this study. It is important to note Bayesian

statistics is a complete subject which cannot be exhausted in a brief section of a thesis. The aim here is only to provide a brief introduction which should be foundational to the Bayesian multilevel modelling used in the study. I, however, start with discussing multilevel modelling techniques in general.

4.4.1. Multilevel modelling

The standard sampling design on which statistical models and analytic packages are based is simple random sampling with replacement. It is assumed in this sense that elements are selected independent of each other with every element having the same chance of being selected (Tom et al., 2012; Raudenbush and Bryk, 2002). Due to the complexity of most surveys including the Demographic and Health Surveys (DHS) which are discussed in the next chapter, the use of simple random sampling with replacement is not feasible. As highlighted above, the DHS uses a two-stage cluster sampling design, which selects households in the second stage after clusters (PSUs) are selected in the first stage. Although this sampling method is random and cost-effective, it violates the assumption of independence. When one cluster is selected for example, that increases the chance of households belonging to that cluster to be sampled and on the other hand, if a cluster is not selected, the chance of households belonging to that cluster being selected is non-existent. This process leads to dependent observations because individuals belonging to the same community are likely to exhibit similar characteristics, experiences and way of life. Statistical models that ignore this dependency may underestimate standard errors and thus make erroneous inferences (Tom et al., 2012; Heeringa et al., 2017; Carle, 2009).

This kind of data structure is called hierarchical, nested or multilevel data structure in which individuals are nested within multiple levels of the higher-level grouping variable (Finch et al., 2014). In this case, individuals are nested within clusters which are enumeration areas or PSUs. This is what has motivated the use of multilevel modelling techniques, which are better suited to deal with nested data structures because they recognise the existence of such data hierarchies by allowing for residual components at each level in the hierarchy. In this regard, the residual variance is divided into the variance of the group-level residuals and that of the individual-level residuals. The group residuals represent unobserved group

characteristics that affect individual-level outcomes. It is these unobserved variables which lead to correlation between outcomes for individuals from the same group (Goldstein and Leckie, 2011; Kreft et al., 1998; Tom et al., 2012; Raudenbush and Bryk, 2002).

The use of multilevel modelling in this study is however, not only for purposes of correct inferences but for various other reasons too. Firstly, the substantive interest in measuring contextual effects of community and country-level factors on maternal health care utilisation in sub-Saharan Africa. Secondly, to simultaneously model group effects with the effects of lower-level predictors to identify the relative impact of each of the levels on the outcome variable. This has been used in this study when investigating whether the effects of country-level factors on cross-country variations in maternal healthcare is larger than that of community and individual-level factors. This is done by the application of random effects in addition to fixed effects commonly used in ordinary least squares regression (Clark and Linzer, 2015; Gelman et al., 2005; Raudenbush and Bryk, 2002). Finally, to infer the results to the population of women in sub-Saharan Africa who fall in the category of those studied in this thesis. Inference is made possible by the fact that higher-level units in multilevel models are assumed to have come from a random sample of the possible population and this is true about the community-level data drawn from the DHS. The Bayesian framework is used to justify this approach at the country-level, even if the units may not have been selected through random sampling as explained below.

Multilevel logistic regression models are used in this study to examine the probability p_{ijk} of a woman i in the community j and country k having adequate maternal healthcare utilisation[10].

This analysis is represented by:

$logit(p_{ijk}) = \beta_0 + \beta X_{ijk} + u_{jk} + v_k$

where X_{ijk} is the vector of explanatory variables at individual, community and country levels, ujk is normally distributed with variance σ_u^2; vk is normally distributed with σ_v^2.

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[10] In terms of specific outcome variables, that would be the probability of having 4+ ANC visits, institutional delivery and postnatal care

In terms of variances used to understand the relative importance of the general contextual factors of community and country characteristics, I used the median odds ratios (MOR) and the variance partition coefficients (VPC). The MOR is on the same scale as the odds ratios and is interpreted as the median value of the odds ratios between individuals from units at high or low risk when randomly choosing 2 individuals from different units. In this study, that would be the odds of having inadequate utilisation of maternal healthcare that are determined by unexplained factors at the community and country levels.

The VPC provides information on the share of the variance at each level of operation. The VPC at each level was calculated using the latent method. It assumes a threshold model and approximating the level-1 (individual) variance by $\pi^2/3$ (≈ 3.29) (Dundas et al., 2014; Merlo et al., 2005; Goldstein et al., 2002; Rodriguez, 2008).

$$VPCcountry = \frac{\sigma^2_{u(3)}}{\sigma^2_{u(3)} + \sigma^2_{u(2)} + \pi^2/3}$$

and

$$VPCcommunity = \frac{\sigma^2_{u(2)}}{\sigma^2_{u(3)} + \sigma^2_{u(2)} + \pi^2/3}$$

4.4.2. Bayesian multilevel modelling

As already indicated, this study specifically applied Bayesian multilevel modelling to estimate parameters and there are several advantages of doing so in this study in comparison with the frequentist multilevel models.

The data structure of this study is arrived at by combining different sources of data as articulated in the next chapter. The country-level data which represents the third-level unit of this analysis are derived mostly from national official statistics and are a representation of all available observations from sub-Saharan Africa - a population of interest and not only a random sample of that population. This kind of data has been described elsewhere as "nonstochastic" and it raises problems for frequentist inference because it relies on an assumption that parameter conclusions were derived from a sampling process that was

repeated a large number of times (Western and Jackman, 1994). This is the basis of such important frequentist probability theories such as the law of large numbers[11] and the central limit theorem[12]. In the current study, it is impracticable for this assumption to hold with country-level data because 'repeated sampling' will not possibly yield different a sample. Given the manner of data collection and compilation, frequentist methods would be unrealistic.

This criticism about frequentist statistics has been objected to with an argument that the data can be treated as if it was repeatable owing to the fact that the social world randomly draws observations from a set of all possible observations, which has been called "superpopulation" (Babones, 2014). That the data are just one realisation of all the possible data that could have been collected under the same circumstances. Like Western and Jackman postulate, this idea is more speculative compared to positive knowledge sampling procedure and the conclusions drawn from such incidences may be questionable (Western and Jackman, 1994).

The other point is what Western and Jackman (1994) describe as 'weak data' which is characteristic of cross-national data. They argue that these data are weak because they are often based on small sample sizes[13]. Small sample sizes in relation to the number of parameters being estimated are problematic because they reduce the power of models and result in biased estimates. This is significant in multilevel models and there are a number of studies that have flagged the detrimental effects of small sample size at higher levels. Bryan and Jenkins (2015) for instance, argue that the small number of countries in most multi-country data sets limits the ability of multilevel models to provide robust conclusions about 'country effects'. They conducted Monte Carlo simulations analysis on the performance of multilevel estimators as the number of countries vary and indeed, they find that statistical

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[11] a theorem that describes the result of performing the same experiment a large number of times. According to the law, the average of the results obtained from a large number of trials should be close to the expected value, and will tend to become closer as more trials are performed

[12] It states that, under certain conditions, the means of repeated samples from continues variables will always have an approximately normal distribution even if the individual values of the variable itself do not have a bell-shaped histogram (Pryce, 2005)

[13] Other reason is collinearity which is characteristic of cross-national data. The reason for this is because the explanatory variables are often causally related (Western and Jackman, 1994; Bryan and Jenkins, 2015)

estimations are only well defined in situations where there are large numbers of both individual and higher-level units. They suggest that users require the minimum 25 countries for continuous outcome variables and 30 for categorical outcome variables to have robust estimations. Similar findings were established by other scholars like Stegmueller (2013) and Maas and Hox (2004). These studies were focused on the frequentist maximum likelihood estimation in comparison with a Bayesian approach and they all recommend the use of Bayesian methods in cases where the sample size for higher-level units are small. This study conforms with their recommendations.

Another advantage of Bayesian multilevel approach is the ability to handle more complex models which would be difficult or impossible to handle with the classical approach including multiple parameters with varying intercepts and slopes at different levels (Gelman and Hill, 2007). For the most part, this study uses complex three-level modelling procedure with varying slopes and intercepts.

The other advantage of the Bayesian multilevel modelling which is related to the small high-level sample size is the possibility of obtaining a negative estimate for the variance of a random effect. This is feasible with the use of maximum likelihood estimation and yet statistically unattainable (Hamaker and Klugkist, 2011). This problem is naturally solved by the Bayesian framework because the entire posterior distribution will lie in the parameter space which means that estimated parameters will always be within the sample space.

Given the advantages of the Bayesian approach and the robustness of models resulting from its use as indicated by several simulation studies (Browne and Draper, 2000; Maas and Hox, 2004; Bryan and Jenkins, 2015; Rodriguez and Goldman, 2001), it was an intuitive choice for this study. It is even much more so because of the availability of `MLwiN` as the engine through which the models are specified, which allow for Bayesian estimation of multilevel models using McMC techniques, making it an easy to use and attractive alternative to the frequentist approach. Bayesian estimation opens up possibilities that are difficult or impossible within the classical context but may be valuable to the researcher using multilevel modelling (Hamaker and Klugkist, 2011).

4.4.3. Modelling approaches

All the empirical chapters of this thesis use three-level multilevel models for the three outcome variables (antenatal care visits, institutional delivery and postnatal care for mothers and new-born babies) with a three-level structure of individuals nested within communities which are nested within countries. For each outcome variable, four models were constructed to represent multilevel analysis. The first is an unconditional, "empty" or "null" model, which only contains the intercept but without predictor variables. It is specified to decompose the random effects existing between community and country levels. The VPC which is explained above was estimated to determine the magnitude of between community and country-level variability to determine the magnitude of cross-country variation in maternal healthcare attributable to country, community and individual level factors (Merlo et al, 2006). The models which follow the first depends on the nature of the topic under investigation. In Chapter Six where all the levels of analysis are relevant to the research question, model two contains the individual-level factors and the last model has country level variables. The remaining chapters have the country level as the unit of analysis and that's why they have country level variables in model 2.

Both fixed and random effects are produced. In this study, fixed effects are the average associations of individual, community and country-level variables on maternal healthcare and these are represented in this study as posterior odd ratios (OR) with 95% credible intervals. Random effects are measures of variation in maternal health are use across communities and countries. Measures of random effects included the VPC and he MOR as explicated above.

4.4.4. Markov chain Monte Carlo (McMC) algorithms

McMC algorithms are the most commonly used approaches for parameter estimation in the Bayesian framework. The purpose of McMC techniques is to sample from complex sampling distributions such as multidimensional posterior distributions. The basic principle of McMC techniques is that if an iterative chain of computer-generated values is set-up carefully, run long enough, then empirical estimates of integral quantities of interest can be obtained from

summarising the observed output (Gill, 2014). The McMC approach thus represents moving throughout the entire support of the posterior distribution and sampling from one or more dimensions of it. The "Markov chain" portion entails the process of sampling a new value from the posterior distribution given the previous one while the "Monte Carlo" part stands for the random simulation process (Lynch, 2007). It is therefore an iterative process that produces a Markov chain of values that constitute a sample of draws from the posterior.

As Cowles (2013) indicates, the responsibility to ensure that Bayesian analysis is done well is placed on the researcher and there are a few technical aspects of the estimation that are crucial. First, the parameter estimates must converge and second, the autocorrelations between different iterations must be low (Finch et al., 2014). Third, after burn-in, the remaining samples must represent the entire support of the posterior distribution and fourth, the remaining samples after discarding the burn-in iterations must be adequate to make the estimation of posterior as precise as possible.

While it is widely acknowledged that McMC convergence assessment is hardly attainable and that it can only be guaranteed by mathematical analysis, this study implemented a series of McMC diagnostics which helped to identify problems with McMC samplers, provide some protection against invalid inferences and increase confidence in the McMC estimation reliability. I discuss model checking in general in the following section and each empirical chapter reports the specific analysis of diagnostic assessments conducted specific to the chapter.

4.4.5. Model checking and comparison

After fitting a model to a given dataset, the researcher must be concerned with whether the fit is adequate and the assumptions made by the model are justified (Carlin and Louis, 2009). This is no different from what happens in all kinds of model building including frequentist ones. In this study, which uses McMC algorithms, a potentially serious modelling problem is deciding when convergence has been achieved. This means the point at which it is reasonable to believe that the samples are truly representative of the underlying equilibrium distribution of the Markov chain. The results from an McMC analysis are not reliable until

the chain has reached its equilibrium distribution and has enough time to mix sufficiently (Gill, 2014).

The problem is that it is possible to misjudge the required length for the burn-in-period and assert convergence before the Markov chain has reached equilibrium distribution. Statisticians have discussed McMC algorithm convergence determination in terms of two areas. The first is theoretical, whereby the Markov transition kernel of the chain is analysed in order to predetermine the number of iterations required to arrive at convergence with some specified tolerance (Cowles and Carlin, 1996; Gill, 2014). According to Cowles and Carlin (1996), the downside of this approach is that it involves too complex mathematics and laborious calculations that needs to be repeated for every model that is analysed. Therefore, McMC methods mostly use the second approach which basically applies diagnostic tools to the output created by the algorithm. The general idea here is to monitor the performance of the chain as part of the estimation process and determining when to stop it after a sufficiently large number of iterations and then remove a proportion of the early values. The diagnostic tests are then applied on the resultant distribution. If these tests indicate that the equilibrium distribution is not achieved by the Markov chain, the chain is run for a longer period and then retested. This process is repeated until the researcher is satisfied that there are no longer convergence issues (Gill, 2014).

There are several such diagnostic tests and a thorough treatment of most of them can be found in Cowles and Carlin (1996). They are all predicated on the null hypothesis of convergence, which means they are designed only to measure non-convergence (Lunn et al., 2012). Many Bayesian textbooks advise that more than one diagnostic test is used in any analysis. Since this study uses `MLwiN`, I have made use of the default diagnostic tests in the software, which are the Raftery-Lewis and the Brooks-Draper tests. However, there is a provision for the software to allow for the chain results to be passed into the coda package in R and this makes it possible to access other diagnostic tests. As such, I also used the Geweke test for most of the McMC estimates done in the study. I will briefly explain the three diagnostic tests here.

The Raftery-Lewis test was developed in Raftery and Lewis (1991). The method applies to a single chain and a particular quantile of the distribution. It is designed to assess both convergence to the equilibrium distribution and the bounds for the accuracy of estimated quantiles of functions of concerned variables (Best et al., 1995). Originally, the user would be expected to provide the desired quantile to be estimated (2.5th percentile for example), degree of accuracy for the estimation of this quantile (±0.005 for example) and the probability of achieving this degree of accuracy (0.95% for instance) (Gill, 2014b; Cowles and Carlin, 1996). The MLwiN software used in this study produces a diagnostic Nhat which is used to estimate the length of Markov chain needed to estimate a given quantile to a specific accuracy. In MLwiN 2.5% and 97.5% are the two default quantiles calculated in the diagnostic test for all parameters (Browne and Rasbash, 2009). In this regard, if the software produces the estimate chain (Nhat) which is less than the default number of iterations (5000 in MLwiN) or that specified by the user for the two quantiles of a given parameter, the diagnostic would be deemed satisfied. If the reverse is the case on the other hand, additional number of iterations would have to be specified and the process repeated until the ideal diagnostic is achieved.

The Brooks-Draper diagnostic is based on the mean of the distribution. Basically, it is used to estimate the length of Markov chain required to produce an estimate of the mean accuracy to k significant figures. The MLwiN software produces Brooks-Draper diagnostic (Nhat) which is the number of iterations needed to estimate the mean within two significant decimal figures (Browne and Rasbash, 2009; Hox et al., 2017). This number is also compared with the specified number of iterations. If the Brooks-Draper Nhat in the MLwiN output is smaller than the specified number of iterations, then the diagnostic is satisfied. Otherwise it is not.

Geweke (1992) developed a diagnostic test that is based on time-series methods. The test is more suitable for single chains when a researcher is interested in the convergence of the mean of a certain function of a variable of interest (Gill, 2014). This diagnostic compares the location of the sampled parameter on two different time intervals of the chain, one from the early part of the chain and the other of the late non-correlated era. He suggests conducting a difference of mean test and if the mean values of the parameter in the selected intervals of

chain are close to each other, we can conclude that convergence has occurred. If they differ significantly then the conclusion is that the chain has not converged (Gill, 2014). The coda package in R used in this study produces the Z-scores for each monitored variable and by default compares the first 10% to the last 50% of the samples. If the absolute values of the Z-score for each parameter show statistical significance, then it is safe to conclude that the two samples do not arise from the same distribution, that means no evidence of convergence (Gill, 2014). In this situation, the first 10% of iteration could be dropped and then re-applying the test in the remaining iterations. This process could be repeated until there is evidence of convergence.

For model comparison, I make use of the deviance information criterion (DIC). It is basically the Bayesian version of the Akaike information criterion (AIC). As such, it designed to favour models with a high likelihood of making good predictions just like its counterpart (Spiegelhalter et al., 2014). According to Spiegelhalter et al., 2014, the DIC is basically calculated by adding 'goodness of fit' to 'complexity'. It was used in this study for model compression because it is more appropriate in assessing hierarchical models with prior information as is the case for this study. In all empirical analysis in this thesis, four models are specified starting with null models which only contain the intercept and the outcome variable. I use the DIC to examine whether adding higher-level factors results into better fit. This analysis is used to add to our understanding of the relative effects of factors operating at different levels on our outcome variable.

4.5. Conclusion

This chapter begins by situating the study in the epistemological framework of critical realism which is argued to be an alternative for the ubiquitous positivism in quantitative research. It argues that critical realism provides an underpinning that is well suited for research that takes structural violence as an orienting framework. Not least among the key principles of critical realism that makes it more appropriate for this kind of study as opposed to positivism and social constructivism is its assumption that knowledge is not limited to that which can be directly measured but also contains phenomena that cannot be manifestly observed (Coburn, 2004). Thus, the study of structural violence conceptualised at any level

from sociocultural characteristics which can hardly be observed to global economic policies which may be amenable to direct measurement becomes possible under this epistemology (Stanford, 2017).

I then discuss the methods for this study which are rooted in Bayesian framework. I detail the rationale for the use of Bayesian approach including the problem of relationship between theory and evidence which leads to the introduction of probability induction, the prerequisite for Bayesian statistics. The rest of the chapter discusses the technical implementation of models applied in the empirical chapters of the thesis.

Chapter Five - Data and Data Management

5.1. Introduction

It is important to first discuss the data used throughout the thesis and how different data sources where accessed, organised and merged to inform the analysis. This is the purpose of this chapter and it will be divided into four sections. The first is to discuss the data sources, the rationale for their selection and process of merging them to make one dataset. The main data source for the study is the Demographic and Health Surveys (DHS). It is complemented by several others from different archives including the World Development Indicators, The World Governance Indicators, the Freedom House and the KOF Globalisation index. The outline of variable measurements is given for both outcome and explanatory variables. I also document data compilation processes in details which sometimes include key R packages used. It is important to note however, that each of the empirical chapters will contain their own methodology sections specific to those chapters which would provide more nuanced details accordingly.

5.2. Data sources

5.2.1. The Demographic and Health Surveys (DHS)

5.2.1.1. Overview

The Demographic and Health Surveys (DHS) are nationally representative population-based cross sectional survey of women and men of reproductive age (15-49 year for women and 15-59 years for men) designed to provide information on a number of measures including fertility, family planning, mortality, nutrition, maternal and child health, HIV/AIDS, domestic violence and other health indicators, at national level for both rural and urban areas of DHS countries. The DHS are funded mainly by the United States Aid for International Development (USAID) in collaboration with other donors and participating countries. Technical support is provided by the DHS program, formally MEASURE DHS. The DHS program is implemented by ICF International and have since 2013 been joined by partners

Blue Raster, The Futures Institute, Johns Hopkins Bloomberg School of Public Health Centre for Communication Programs (JHUCCP), PATH, and Vysnova, EnCompass and Kimetrica. The DHS program has provided technical assistance to more than 300 surveys in more than 90 countries since the DHS inception in 1984 (DHS Program, 2018).

The main purpose of the DHS is to provide policy-makers, program planners and researchers in DHS participating countries with a database sufficient to allow them to make informed policy and program choices; to expand the international health and population databases; to advance survey research methodology for the collection and processing of demographic and health data; and to help participating countries develop the technical skills and resources necessary for conducting their own demographic and health surveys (Fabic et al., 2012; Fisher and Way, 1988).

Although, there are different types of surveys implemented by the DHS program such as the AIDs Indicator Survey (AIS), Malaria Indicator Surveys (MIS), Service Provision Surveys (SPA) and the Key Indicator Surveys (KIS) (DHS program, 2018), this study only makes use of the standard DHS (to be interchangeably referred to simply as DHS in this study). The DHS are the largest and most comprehensive health surveys in sub-Saharan Africa. Their most important characteristics relevant for this study is adherence to standardised sampling design, questionnaire construction and implementation procedures across all participating countries. This characteristic enables the surveys to be comparable across countries and over time.

The individual and community-level analysis (level 1 and 2) pools data from 35 Demographic and Health Surveys (DHS) conducted between 2006 and 2015 in sub-Saharan Africa[14]. The inclusion criterion for countries was availability of comparable DHS data on maternal healthcare variables (antenatal care visits, delivery care and postnatal care for mothers and new-born babies). The country-level (level 3) data are drown from World Development Indicators (WDI) of the World Bank Data Bank and several other sources. The

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[14] Angola, Benin, Burkina Faso, Burundi, Cameroon, Chad, Congo, Congo DR, Cote d'voire, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe

sample was restricted to selected DHS countries. I provide details of each dataset below including the data generating process and how they have been used in this study.

The DHS data for each country are stored on the DHS program website[15]. The data for each country is stored using six files which contain Individual, man, birth, couple, child and household recodes. This study makes use of the individual recode because it captures data about interviewed women in sampled households and enlists information to be used to measure maternal healthcare utilisation (antenatal care, institutional delivery and postnatal care) as well as independent variables at individual and community levels. Data were downloaded from the website in separate folders, each containing data and meta data for one country. I exported data into RStudio for data management. DHS data is standardised across DHS countries, meaning that they have the same type of variables and this quality enabled me to join data from all the 35 countries to make one main dataset. Of course, I examined each of the datasets to ensure uniformity among key variables in terms of measurements of categories. In situations where this was not the case, I transformed the variables to make them uniform across the sample. After ensuring that the variables were measuring the same things and have common variables, I merged the data by combining the individual country datasets. An `R` package called `dplyr` was useful in the merging of the main dataset. The main dataset initially contained 443,544 observations. I excluded women who did not give birth in the 5 years prior to the survey. The data were restricted to the most recent birth for the reasons elucidated below. I also removed data points for those who gave birth through caesarean section because they would distort the postnatal care outcome variable as it is obvious that they would be seen by health personnel after birth. After cleaning and exclusion of some missing data points, the final data contained 245,955 women respondents. Fig. 5.1 below shows the location of the countries used in this study on the African map.

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[15] https://dhsprogram.com/data/available-datasets.cfm

Figure 5. 1. sub-Saharan African countries included in the study

5.2.1.2. Sample and sampling methods

The DHS sample is typically representative at national level, for urban and rural areas, the regional level and sometime at state/provincial or district level. The surveys have large sample sizes (usually between 5,000 and 30,000 households) and are typically conducted about every 5 years (DHS Program, 2018). The standard DHS collects data using four core questionnaires: household, individual women, individual men and biomarker questionnaires. A household questionnaire is used to collect information about characteristics of the household's dwelling units and demographic profile of every usual member of the household and visitors. Information such as age, sex, relationship to the head of the household, education, parental survivorship, residence and birth registration is collected (DHS Program, 2018). It is also from this questionnaire that members of the household who are eligible for individual interviews using an Individual Woman's or Man's Questionnaire are identified.

The women and men questionnaires collect data on background characteristics, reproductive behaviour and intentions, contraceptive use, antenatal, delivery and postnatal care, breastfeeding and nutrition, children's health, status of women, HIV and other sexually transmitted infections. The Biomarker Questionnaire collects biomarker data on children, women, and men. There are also additional modules which contain special topics that are not covered in the core questionnaires and are often included at the request of participating country. These modules cover information such as domestic violence, female genital cutting, maternal mortality, fistula and out-of-pocket health expenditure (Corsi et al., 2012).

The first thing in the DHS sampling procedure is the identification of the sampling frame, which is basically the list, map of any specification of sampling units for the entire population from which the study sample is drawn (Lohr, 2010). Since the construction of a new sampling frame can be very expensive, DHS surveys often use an adequate pre-existing sampling frame which is officially recognized. For almost all countries, the most recent population census serves this purpose. Census sampling frames are generally the best available sampling frame in terms of coverage, cartographic materials and organization (ICF International, 2012).

 After the sampling frame is identified, all enumeration areas (EAs) or primary sampling units (PSUs) and their measures of size for the entire population in a country are grouped into homogeneous subgroups, or strata (for example, urban/rural or by geographic region) to allow for a representative sample to be drawn from each stratum (ICF International, 2012). A two-stage cluster sampling was used to select respondents for the DHS. The selection of the PSUs from each stratum is the first stage of the sampling process. The second stage is the random selection of households to be interviewed from a list of households in the selected PSUs or clusters. All eligible people are interviewed in a household, women in the case of this study.

Sample size determination in the DHS usually depend on the funding and the precision desired by the government at a certain level. If the government requires precision at a regional and district level, then a larger sample size would be required, which would make the survey more expensive. The DHS guarantees precision at the national level. DHS

sampling attempts to balance methodological sampling concerns against cost effectiveness. More details of the DHS sampling process can be found in the sampling and household listing manual (ICF International, 2012).

5.2.2. World development indicators (WDI)

World Development Indicators (WDI) are the primary World Bank collection of development indicators, compiled from officially recognised international sources. These are the most current and accurate global development data available and they provide national, regional and global estimates[16] (The World Bank, 2018). The WDI database is released annually by the World Bank late each year, it contains statistics up through the previous calendar year and is freely available online along with supporting interpretive book of key tables (Babones, 2014). As of 2018, the statistical reference includes data on around 1,400 indicators covering more than 220 countries and territories with some data indicators extending up to Table 5.1: Description of Sample Data of DHS 2006-2015 in sub-Saharan Africa 50 years back. The main indicators covered include economic policy, debt, finance, education, infrastructure, labour and social protection, environment, poverty, health, public and private and trade (Babones, 2013).

The WDI primarily organises countries according to income levels and these are low, lower middle, middle, upper middle and high. The database also designates all countries of the world one of the six regional labels of the World Bank (in the parenthesis are numbers of countries categorised as such): North America (3), Latin America and Caribbean (42), East Asia and Pacific (37), Middle East and North Africa (21), Europe and Central Asia (58) and Sub-Saharan Africa (48).

For the purposes of this study, I have selected data series from 35 out of 48 sub-Saharan African countries, corresponding to countries with available DHS data. Country-level variables selected from the World Bank Data Bank include the countries' GDP per capita purchasing power parity, gender inequality index, population size, female secondary school enrolment and female literacy rate.

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[16] https://databank.worldbank.org/source/world-development-indicators

5.2.3. Freedom house

Freedom House is a non-governmental organisation that has been publishing a freedom in the world report on the state political rights and civil liberties for over 190 countries since the early 1970s[17]. Their methodology mirrors the 1948 Universal Declaration of Human Rights (UDHR), premised on the universality of standards of civil and political across the world – that these standards apply to all countries and territories irrespective of geographical location, ethnic or religious composition or level of development (Freedom House, 2019).

The freedom score is based on the events and activities happening in a particular country for the concerned time period. The score is arrived at by consensus and deliberated over a series of meetings involving of more than 130 analysts, advisers and staff with a global representation. They use a suite of data sources including newspapers, academic research, NGO reports, professional contact and on-the-ground research. An element of subjectivity may be unavoidable, but the ratings process emphasises methodological consistency, intellectual rigour, balanced and unbiased judgement. The fact that it has been used in many studies also shows their trustworthiness among academic scholars.

Freedom status ratings are derived from 25 questions representing political rights and civil liberties. The questions address electoral process, political pluralism and participation, functioning of government, freedom of expression and belief, rule of law, associational and organisational rights and personal autonomy and individual rights (Freedom House, 2019). The overall scores of both political rights and civil liberties add up 100 points[18]. This study uses these overall average ratings of 1 to 100 to represent the degree of freedom or freedom status in a country. In the empirical analysis, they are standardised with the mean of 0 and standard deviation of 1 for easy comparability and interpretations as indicated below. The freedom status variable in this study represents civil and political liberties and is applied in

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[17] https://freedomhouse.org/

[18] Political rights accounts for 40 points from 10 questions while civil liberties account for 60 questions derived from 15 questions. Ratings are also constructed between the range of 1 and 7. 1 representing the greatest degree of freedom while 7 representing the smallest degree of freedom

chapter seven which looks at the influence of civil liberties and socioeconomic entitlements on maternal health care.

5.2.4. World governance indicators (WGI)

The World Government Indicators (WGI) are research datasets summarising cross-country indicators of the quality of governance from 31 different sources capturing governance perceptions from non-governmental organisations, commercial business information providers, public sector organisations, surveys of households and firms worldwide[19]. The WGI are implemented by the World Bank and consist of six composite indicators of governance including voice and accountability, governance effectiveness, political stability, regulatory quality, rule of law and control of corruption (Kaufmann et al., 2011). They use unobserved components model statistical methodology to standardise the data from different sources to make it comparable and then aggregate weighted averages of the individual source variables to create composite indicators. Margins of error are also constructed to reflect the imprecision inevitable in governance measurements (Kaufmann et al., 2011).

5.2.4. KOF Globalisation Index

The KOF Globalisation Index is housed by the KOF Swiss Economic Institute. It was first introduced by Dreher (2006) and updated in Dreher et al. (2008). It measures globalization along the economic, social and political dimension for almost every country in the world since 1970. It now gets released on a yearly basis. The details of what the dimensions of globalisation are measuring are included in chapter eight where is data is used. The methods for calculating the indices are complex but they are available on the methods documentation on the Swiss Economic Institute Website[20].

I use this data to measure globalisation in this study because it is comprehensive, with more than 40 variables for almost all countries in the world. It is publicly available, and it is the most widely used globalization index in the academic literature (Potrafke 2015). A list

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[19] https://datacatalog.worldbank.org/dataset/worldwide-governance-indicators
[20] https://ethz.ch/content/dam/ethz/special-interest/dual/kof-dam/documents/Globalization/2018/Method_ 2018 _2.pdf

documenting studies that use the KOF Globalisation Index is available at http://globalization.kof.ethz.ch/papers/. The data used in the study covered the period between 1970 and 2016.

5.3. Measurements

These are building blocks of all quantitative data analysis. They include operationalisation of variables, which means turning raw data series into a format that can be analysed using statistical techniques (Babbie, 2015). Measurements require choices that have to be made by the researcher whether consciously or unconsciously in this section, I discuss measures for both outcome and explanatory variables.

5.3.1. Measures of maternal healthcare utilisation

All the empirical chapters of this study used three separate dichotomous outcome variables as indicators of maternal healthcare utilisation. These include antenatal care (ANC) visits, facility delivery care and postnatal check-ups for mothers and new-born babies, measured at an individual level. Outcome variables were derived from the DHS data as follows:

Antenatal care visits in the DHS were measured by the question which asked all women who had given birth in the last five years prior to the survey how many times they received antenatal care during the pregnancy. The question specifically referred to their most recent birth. Count responses were given, and I recoded the variable into a binary of at least three times and four or more times for purposes of providing uniformity with other outcome variables. There are a few studies that have defined antenatal care this way (Ononokpono et al., 2013; Simona et al., 2018). I considered the World Health Organisation (WHO) recommendations of four or more ANC visits per pregnancy in delineating the categories. Coverage of 4+ ANC visits is also one of the core maternal health indicators for global monitoring and reporting of Sustainable Development Goals (SDGs) (Moran et al., 2016). If a woman made at least three antenatal care visits, this was recoded as "0", and if they made four or more antenatal care visits, this was recoded as "1".

For facility delivery care, the DHS asked women where they delivered their baby(s) for the most recent birth. Many options were given which included public hospital, private hospital, public clinic, private clinic or home among others. The variable was recoded to either home "0" or institutional delivery "1". Institutions in this case include both public and private.

About postnatal care, women were asked whether they and their baby(s) were checked within the first one month of delivery and their responses were also recoded into a binary variable taking the value of "0" if they were not checked and the value of "1" if they were checked. Only the most recent birth was considered, and all previous births were excluded. The preference for the most recent birth was because information on maternal health care tends to be more accurate for most recent births compared to that given for other previous births (Kistiana, 2009).

A pooled distribution of indicators of maternal healthcare utilisation in sub-Saharan Africa is reported in figure 5.2 below. The boxplots show the overall patterns of proportions of four or more ANC visits, institutional delivery and postnatal care. The figure reports the range of between 22% to 86% for 4+ ANC visits with the median of approximately 54%. The position of the median indicates that there are more data points above it and the variability is relatively large. Institutional delivery shows much smaller variability indicated by the median which seems more centred and the range of between 16% and 93% with an outlier. Postnatal care has the biggest variability of between 4.5% and 85% with the median of 52%.

Country level distribution of maternal healthcare indicators is reported in figure 5.3. The figure shows that the performance of sub-Saharan African countries in maternal healthcare depends on the specific indicator of maternal healthcare. For antenatal care, Ghana is the best performing country where more than 80% of pregnant women attended antenatal care in their previous pregnancy prior to the survey. Ghana is followed by Swaziland, Sierra Leone and the Gambia averaging between 77% and 80%.

However, institutional delivery and postnatal care indicators posit that Malawi and Zimbabwe are the better performing countries respectively. Malawi is followed by Rwanda, Namibia and Benin on institutional delivery while Zimbabwe is followed by Lesotho, Sao

Tome and Togo. In terms of least performing countries, Ethiopia, Burkina Faso and Chad seem to be consistently recording low level of maternal healthcare utilisation across the continuum of antenatal care institutional delivery and postnatal care.
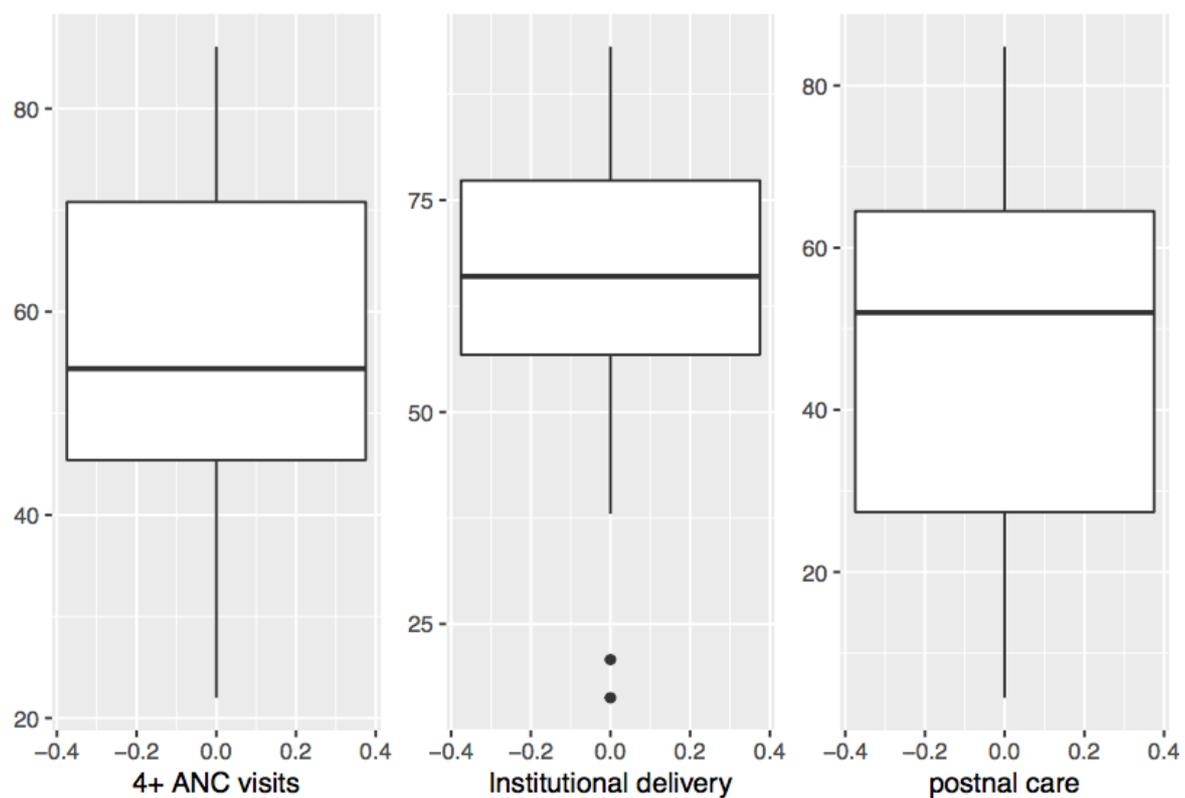
Figure 5. 2. Boxplots of pooled maternal healthcare indicators
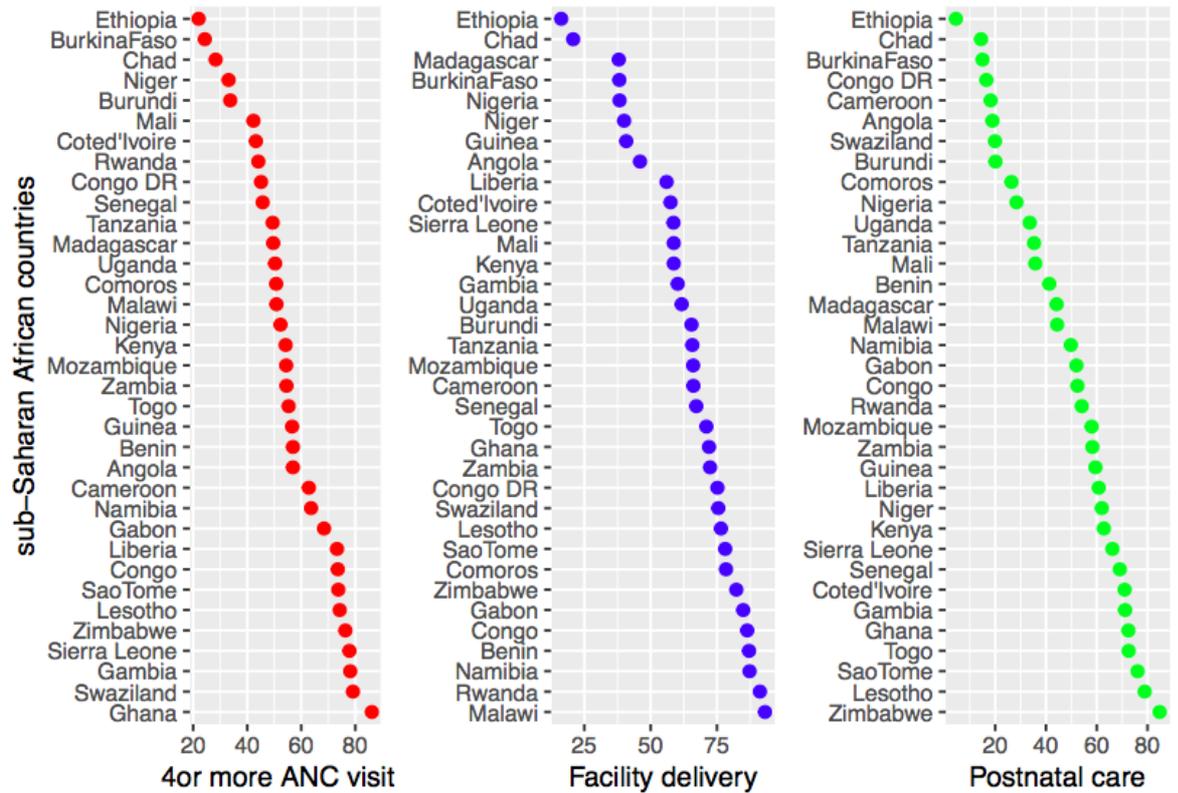
Figure 5. 3. Maternal healthcare utilisation indicators by country

5.3.2. Individual-level explanatory variables

The main explanatory variables for this study include those which represent structural violence at the community and country levels. The variables were chosen in view of theoretical frameworks used in each chapter and explanations about the links between explanatory and outcome variables are given in specific empirical chapters. Each chapter also reporting the coding decision for the most important variables. Chapter six for example makes use of several individual level variables and the coding processes on that level are thus reported there. All the coding values for the variables are reported in table 5.2 and coding decisions were made by the author mostly in alignment with previous studies.

5.3.3. Community-level variables

Except for place of residence and geographical regions, the DHS does not capture variables that can describe the characteristics of the communities. The primary sampling units (PSU) in the surveys or clusters are administrative units that are used as a proxy for the communities

in this study (Ononokpono et al., 2013). There is a total of 17,000 PSUs in the present study. Community factors have been calculated by aggregating individual women's characteristics within their clusters. PSUs are used to represent communities and neighbourhoods because they are the most consistent measure of communities across all DHS surveys and many previous studies have defined communities in a similar manner (Ononokpono et al., 2013; Wiysonge et al., 2012; Adjiwanou and LeGrand, 2014; Yebyo et al., 2015).

The aggregates were computed using the mean values of the proportions of women in each category of a given individual variable. Since the aggregate values may not have pragmatic meaning, the aggregate values of clusters were categorised into groups of 'Lower' and 'Higher' proportions based on national median values. The median was used because all the community aggregates were not normally distributed. I used the same procedure for all the community factors. Community level calculations were conducted using the `dplyr` package in `R`.

For this study, table 5.1 presents sampled countries, year of completion of data collection, final sample per country, number of communities in a country, median number of respondents per community and range of respondents in a community. As indicated above, the surveys were conducted between 2006 and 2015. The total number of respondents per country ranged between 1445 Sao Tome and Principe and 20192 Nigeria. The number of communities in the sample ranged from 104 for Sao Tome and Principe and 1612 for Kenya. The median number of respondents per community is between 7 and 21.

Table 5. 1 Description of DHS data

Country	Survey year	n	Number of Communities	Median number of respondents per community	Range of Respondents in community
Angola	2015-16	8947	625	15	1-26
Benin	2011-12	9111	750	12	2-31
Burkina Faso	2010	3960	210	17	2-49
Burundi	2010	4916	376	13	4-21
Cameroon	2011	7655	580	13	1-34
Chad	2014-15	11104	626	18	3-40
Congo	2011-12	6463	384	17	4-39
Congo DR	2013-14	11293	540	21	9-38
Cote d'Ivoire	2011-12	5431	352	14	4-37
Ethiopia	2011	7764	650	13	1-26
Gabon	2012	4143	336	12	1-34
Gambia	2013	5385	281	17	2-72
Ghana	2014	4294	427	9	1-33
Guinea	2012	4999	300	16	6-41
Kenya	2014	14949	1612	9	1-25
Lesotho	2014	2596	400	6	1-17
Liberia	2013	5348	322	16	5-32
Madagascar	2008-09	8569	600	14	4-31
Malawi	2015-16	13448	850	16	4-27
Mali	2012-13	6723	585	16	2-30
Mozambique	2011	7623	611	12	2-33
Namibia	2013	3974	600	7	1-18
Niger	2012	7680	480	16	3-39
Nigeria	2013	20192	904	20	3-55
Rwanda	2014-15	5955	492	12	3-23
Sao Tome	2008-9	1445	104	12	3-48
Senegal	2010-11	8151	392	20	5-47
Sierra Leone	2013	8524	435	19	5-43
Swaziland	2006-7	2136	275	7	1-18
Tanzania	2015-16	7050	608	11	1-18
Togo	2013-14	5016	330	14	2-34
Uganda	2011	4909	712	12	1-25
Zambia	2014-15	9353	722	13	3-26
Zimbabwe	2015	4833	400	12	2-25

5.3.4. Country-level factors

The country level variables as indicated above are the country's gender inequality index, female employment rate, national female literacy rate and the human development indicator is used as a control variable. Gender inequality index is measured on a scale of 1 to 6, 1 being the most equal country and 6 being the worst. Female employment rate is the percentage of female employment relative to the female population aged 15 and above in a country. National female literacy rate is the percentage of females aged 15 and above in a country who can read and write. The human development index is the composite indicator of life expectancy, education and per capital income. Countries are ranked on a scale of 0 to 1, 0 being the HDI and 1 being the highest. All country level measurements are for the year 2015 and it was for the purpose of corresponding appropriately with the DHS data which ended in the same year.

Table 5. 2 Operationalisation of individual and community level variables

Variable	Operational definition
Outcome variables	
ANC Visits	0 = At least 3 ANC visits, 1=4 or more
Place of delivery	0 = Home, 1 = Institutional delivery
Postnatal care	0 = No, 1 = Yes
Individual-level Variables	
Maternal age	<20, 20-34, 35 or more
Child's birth order	1, 2, 3, 4 or more
Educational attainment	0=none (no education), 1=primary (1-7 years), and 2=higher (8+ years)
Marital status	1=married or in union, 2=widowed, 3=divorced 4=not living together
Household wealth	1=poorest, 2=poor, 3=middle, 4=rich, 5=richest
Employment status	0=Not employed, 1=Employed for cash, 2=Self-employed agriculture
Insurance coverage	0=No, 1=Yes
Condoning violence	A positive response to any of the following wife-beating justifications: goes out without telling him, neglects children, argues with him, refuses to have sex with him, burns food (0=No, 1=Yes)
Sexual autonomy	Whether they can refuse sex; 0=No, 1=Yes
Negotiate sex	Whether a woman can ask a partner to use a condom: 0=No, 1=Yes
Family type	Whether a woman has co-wives: 0=Single, 1=No, 2=Yes
Community-level variables	
Community education	Aggregated values of community level female education measured by the proportion of women with a minimum of primary level of education: 0=Low education, 1=Medium, 2=High
Community distance problem	Aggregated values for proportion of women with problems accessing health facility due to distance in the community: 0=Low, 1=High
Community money problem	Proportion of women with problems accessing health facilities due to lack of money: 0=Low, 1=High
Community polygynous marriages	Proportion of women in polygynous marriages in the community: 0=Low, High=1
Community female-headed households	Proportion of female headed households in the community: 0=Low, 1=High
Community media exposure	Proportion of women in the community who are exposed to either radio, television or newspaper. Based on a composite measure: 0=Low. 1=High
Community decision-making authority	Proportion of women in the community with decision making authority in the community: 0=Low, 1=High
Area of residence	1=urban, 2=rural

5.4. Data quality

National surveys in developing countries especially sub-Saharan Africa are prone to incomplete or partial reporting responses. Additionally, complicated and long questionnaires such as those used in the DHS inevitably allow scope for inconsistent responses to be recorded for different questions. The DHS however, has a reputation of producing high quality reliable data because of the rigour directed towards the sampling design, structure and development of the questionnaire, training and supervision of interviewers, data processing and analytical procedures (Pullum, 2008). It is for this reason that the principal quality indicators such as response rates and missing data are not so much of a problem for the DHS. They are discussed below. The other national level datasets that I have used are basically official national statistics which are either exist as facts or are modelled datasets. They have no issues with missing nor low response rates.

5.4.1. Response rates

Response rates are calculated for all DHSs which includes data from household interviews, women and men's questionnaire. I am only concerned with the women's questionnaire here because it is the basis of the data being used in this study. This translates into a *unit nonresponse* in which the entire observation is missing as opposed to *item nonresponse* which will be discussed later as missing data. The response rate is calculated by taking the number of interviewed women as the enumerator and the number of illegible women in the household as the denominator. Since the data is collected from different sub-Saharan African countries which were also implemented in different years, it is impossible to get the overall response rate for the data used in this study. Response rates are reported in the DHS final reports for all countries. High response rates are desirable because they induce fewer chances of significant response bias than low response rates (Babbie, 2015). As I have indicated already, the DHS has generally very high response rates [21] because of the rigour applied in

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[21] Not all countries are English speaking, so some reports are written in other languages. Examples of response rates for women's questionnaire from English speaking countries include 98.2% in Zambia (20132014), 92.3% in Namibia (2013), 99.9% in Rwanda (2014-15), 95.0% in Ethiopia (2011), 96.2% in Zimbabwe (2014), 97.3% in Ghana (2014), 97.7% in Malawi (2015-16), 96.2% in Kenya (2014), 97.6% in Liberia (2013), 97.1% in Lesotho (2014), 97.6% in Nigeria (2013), 90.7% in the Gambia (2013), 93.8% in Uganda. The section on sampling weights explains how the non-responses were dealt with in the DHS.

the data collection process. Although the mechanism of non-response is the most important factor (see the missing data section), these DHS non-response rate could be described as very good by Babbie (2007). The main reasons advanced for non-responses is failure to find respondents despite several recall visits to the households.

5.4.2. Missing data

Missing data or missing values in this thesis is defined as data points which are not stored for a variable in the observation of interest (Harrell Jr, 2015). This could arise for many reasons including not knowing or not interested in providing an answer to a question. The problem of missing data is ubiquitous is quantitative research and they can have a significant effect on the conclusions that are drawn from the data. Missing data can reduce statistical power which is the probability that the test will reject the null hypothesis when it is false. Missing data can distort the representativeness of the sample and subsequently bias parameter estimates.

The effects of missing data on research findings, however, depends on the 'missingness mechanism' prevalent in the concerned dataset. Rubin (1976)) classified the mechanism of missing data according to the reasons behind their missingness. There are basically three types of missing data including missing completely at random (MCAR), missing at random (MAR) and missing not at random (MNAR). MCAR occurs when the probability of missingness is the same for all cases. This means that the reasons for missingness are completely unrelated to the values of the other variables or the non-missing data elements in the variable for the missing data (Harrell Jr, 2015; Gelman and Hill, 2007). This includes cases where a respondent would omit a response to a question for reasons unrelated to a response she would have given or to any of her characteristics. Thus, MCAR does not apply when people from certain demographic elect not to answer a certain question because then, missingness will be correlated with that demographic characteristics. Where MCAR applies, deleting missing values does not bias parameter estimates (Gelman and Hill, 2007). MAR is said to be a more general, realistic and a much broader class than MCAR. In this

case, the probability that a value is missing depends on values of variables that were actually observed (Harrell Jr, 2015). In other words, given the values of other available variables, respondents having missing values are only randomly different from other respondents. The key element about MAR is that the values of the missing data can somehow be predicted from some of the other variables being studied and this is why MAR and MCAR are often called ignorable non-responses (Harrell Jr, 2015; Gelman and Hill, 2007)

MNAR is probably the most problematic of all because it means that the probability of missingness varies for reasons that are unknown. The tendency for values to be missing in this case are a function of data that are not recorded, and this missing information also predicts the missing values. MNAR occurs for instance, when respondents from a lower income bracket of the sample are less likely to answer a question on income. This kind of missingness is no longer at random and it is also often called nonignorable non-response. (Harrell Jr, 2015).

Missing data is not often a problem for the DHS. It was difficult to determine the mechanism of missingness and since the percentage of missingness was minimal (not more than 4%) for all variables, a complete case analysis was used to deal with missing values. The total number of respondents included in the analysis is excluding missing values. I have a table of descriptive statistics with missing values, but it is not included in the thesis.

5.4.3. Sampling weights

Sampling weights are "adjustment factors applied to each case in tabulations to adjust for differences in probability of selection and interview between cases in a sample, either due to design or happenstance" (Rutstein and Rojas, 2006: 12). They are usually needed in survey research especially one that uses multistage sampling like the case with the DHS. The sampling process may be disproportionate to ensure that enough numbers of cases from each sub-population are selected for inclusion on the study (Babbie, 2015). This often involves under sampling or oversampling certain areas or sub-groups in order to meet estimation thresholds. But when it comes to tabulation of results we need to revert to the actual representation of the data. This is where we apply sampling weights (Rutstein and Rojas,

2006). Sampling weights also cover for non-responses. For instance, if a certain percentage of selected respondents have not completed the survey and the percentage vary across subgroups, then sampling weights will correct for this. They are calculated after the data is collected.

The DHS data comes with sampling weights already calculated for households and individuals. In the DHS, the household weight is technically the inverse of its household selection probability multiplied by the inverse of the household response rate. But of importance to this study is the individual weights because they apply to the data used in this study. Individual sampling weights of a respondent is her household weight multiplied by the inverse of the individual response rate of her individual response rate group (Rutstein and Rojas, 2006).

For this study, I use weights only on descriptive statistics. There are a few reasons why sampling weights may not be appropriate especially for multilevel studies that use data from different sources. According to Fuller 2009, using unweighted estimators of regression introduces bias only when the inclusion of units in the sample is correlated with the outcome variable conditional on the explanatory variable. Measures of associations were calculated between all the explanatory variables and the outcome variables. There were no problematic correlations to cause this concern (Fuller, 2011). Additionally, weighting may be problematic in regression analysis because it has the potential of inflating the variances of the coefficient estimators especially in situations where the variability of the sampling inclusion is bigger (Skinner and Mason, 2012). This is expected to be true for this study because it uses data from 35 different countries. Moreover, the fact that data for this study is from different sources and that the highest-level data (level 3) has no weights, may introduce bias (Carle, 2009). Given the potential for error and lack of guidelines for incorporating weights in this kind of data, statistical models used unweighted data. This should be taken into consideration when interpreting results from this study. This notwithstanding, the DHS is one of the most credible, representative and high response datasets in developing countries. Therefore, bias resulting from non-response rates and non-representativeness is likely to be minimal.

5.4.4. Merging the DHS and WDI datasets

The purpose of bringing together different data sources was to establish the multilevel structure, representing the individual, community and country-level variables, which is crucial for this study. Individual-level variables were derived from the DHS and the community-level variables were aggregated from individual-level variables also from the DHS. Community level aggregation methods and procedures are explained in the methods sections of the empirical chapters. The DHS data for each DHS participating country are stored on the DHS program website. Each country has six files which contains Individual, man, birth, couple, child and household recodes. This study makes use of the individual recode which captures data about interviewed women in sampled households and enlists information to be used to measure independent variables at individual and community level. The datasets were downloaded from the website in `Stata` format and exported to `R` where they were merged using the `dplyr` package into one main dataset. The main dataset contained 443,544 observations.

I excluded women who didn't give birth in the past 5 years prior to the survey. The data was restricted to the most recent birth for the reasons that have been elucidated above. I also removed data points for those who gave birth through caesarean section because they would distort the postnatal care outcome variable as it is obvious that they would be seen by health personnel after birth.

The country-level variables were sourced from different archives as already explained. Merging with the DHS was done by first cleaning all the country level data and defining country variable to match with the DHS data country variables and then I used the `dplyr` package to merge the data with the rest of the DHS data

5.4.5. Statistical software

All the analysis in this study is done in `R` computing language version 3.4.4 (R Core Team, 2017). There are several packages that have been used from preparation of data through

implementation of statistical procedure up to type setting and production of the final thesis. Data preparation and management relied mostly on the `dplyr` package as I have mentioned. Recoding of variables was done using the `car` package (Fox and Weisberg, 2011). The `e1071`(Meyer et al., 2017) package was used to measure skewness among country-level continuous variables. Specific packages that were used for analysis include `lme4`(Bates et al., 2015) and `nlme` (Pinheiro et al., 2018). The package `R2MLwiN` (Zhang et al., 2016) was used for Bayesian multilevel analysis.

This study also leveraged tools which make reproducibility of research reports possible from data acquisition to report writing. Within the `R` environment for statistical computing, `RMarkdown` (Allaire et al., 2018) together with `knitr` (Xie, 2018) were used to weave together narrative text with code to produce a formatted PDF output. Visualisation is done using the `ggplot2` package (Wickham, 2009). The final document was exported to word for final formatting.

5.4.6. Sample characteristics

Appendix A presents descriptive statistics for the pooled sample data of 245,955 respondents in sub-Saharan Africa at individual level in relation to maternal health care. The results show that most of the respondents were aged between 20 and 34 (67.39%) at the time they were giving their most recent birth. About education, most of women interviewed had no education (39.47%). About one-third attained primary education and a quarter had reached up to secondary or tertiary education. A large proportion of women were in the first and second quintile of the wealth index and the lowest proportion of respondents were in the highest wealth quintile. One-third of women were unemployed while 39.61% were in formal employment with 26.88% being employed in the agricultural sector.

The study also shows that gender-based inequalities were still concerning in sub-Saharan Africa as 41% and 46% are in the category of lower sexual empowerment and problematic wife beating attitudes respectively.

The community level factors indicate that the majority of the population in sub-Saharan Africa reside in the rural areas (68%) and that there are more people in communities who find the distance to health facilities to be problematic. Community education is seeming to be evenly distributed as the communities with low, medium and higher education are all approximately 33%. The rest of the summary measurements including at country level are included in the table

5.4.7. Ethical considerations

This study is based on existing DHS data and publicly available world development indicators. Both have fewer ethical implications because they do not include any identifier information. The DHS surveys are approved by the Institutional Review Board of the ICF International in Calverton, Maryland, USA and specific ethics committees in participating countries. The surveys are conducted by well-trained research assistants who administer informed consent before respondents are interviewed and information is obtained anonymously and confidentially. The data is stored by the DHS Program based in Maryland United States and procedures to acquire and use the data are documented on their website. Permission to use the DHS data was granted without conditions. The data set for Uganda required additional request to be made to the Statistics Bureau of that country. A request was made through email and permission to use the data was subsequently granted. This website can be used to for verification: https://www.dhsprogram.com/. All the other country-level datasets are all freely available on websites I have shared already.

5.5. Conclusion

This chapter was intended to give an outline of all the datasets used for this study. I explain how the datasets are acquired. I also discuss variable construction for all the levels used in the analysis including the coding process. For the DHS which are the main data for this analysis, I explain the sampling procedures and data quality mechanisms. I also outline the merging process of arriving at the final data. Finally, the brief summary statistics are offered.

Chapter six: A Bayesian Multilevel Modelling of Gender Relations, Women Empowerment and Maternal Healthcare Utilisation in sub-Saharan Africa

6.1. Introduction

In the theoretical framework section, I have shown how culture is a cardinal part of the social system that have an impact on health and healthcare. Culture can be defined as a system of values and symbols shared by people in a particular society that tend to give meanings to everyday experiences and to influence behaviour and actions (Mansyur et al., 2009). Culture influences societal norms and values which become part of social institutions such as the family, education system, religion and the state. The social institutions in turn, reinforce societal norms (Mansyur et al, 2009). From the definition, culture does not conjure any negative connotation as the influence it has on behavioural patterns could be positive. Culture becomes problematic and 'violent' only when it is used to justify or legitimise direct structural violence (Galtung, 1990). Therefore, outside structural violence, culture is harmless and perhaps even necessary. This chapter focusses on an aspect of culture which could be considered as a reinforcement or justification of structural violence, that is, inequalities in gender relations. I aim to understand the influence of gender-based inequalities on maternal healthcare utilisation. Women empowerment relates to the agency of women to utilise maternal healthcare despite structural violence. As such, I also assess whether women empowerment results into adequate use of the continuum of maternal healthcare.

Structural violence is unavoidable suffering structured by social, economic, historical and political entities to constrain human agency (Farmer, 2005). We have observed already that at the core of structural violence, is unequal distribution of power that is in turn used to distribute societal resources. We have also established that health outcomes of any kind, result from complex societal arrangements operating at the individual, meso and macro levels. Individual levels often include psychological, demographic and interpersonal processes as they are interpreted and acted upon by the individual. Therefore, although

gender relations and women empowerment are mostly associated with the meso level, it is almost impossible to study the relationships between these factors and maternal healthcare without considering factors at all levels that may influence or confound with the relationships (Mansyur et al, 2009). For this reason, three-level multilevel logistic regression models are constructed to account for the influence of individual, community and country-level characteristics on maternal healthcare utilisation. These levels represent the individual level, which are demographic characteristics, at the meso level are cultural norms and social institutions and other groups or collectivities while the macro level are structural or global characteristics.

The chapter begins by highlighting pathways through which gender relations would be associated with maternal healthcare utilisation. This is followed by a discussion of women empowerment as a channel by which women may confront constraining elements of sociostructurally context and enhance the propensity of utilising maternal healthcare in sub-Saharan Africa. This discussion is done by way of analysing previous studies in these areas and with particular reference to the African culture. Because a presentation of the structure of the data used for this analysis with regard to acquisition and the preparation process has already been made in the previous chapter, I only briefly discuss the data structures and refer the reader to the relevant chapters for details. The modelling procedure is provided accordingly in the methods section. I generally use Bayesian multilevel models for analysis. Results are presented next through tables and visualisations from the analysis. The discussion of implications and conclusions will end the chapter.

6.1.1. Gender relations and maternal healthcare utilisation

Gender is basically relational because men and women gain their social identities and power in relation to one another (Calasanti, 2010). Gender relations are dynamic constructed power relations between men and women institutionalised in social processes to which people orient themselves to gender ideals (West and Fenstermaker, 2016; Calasanti, 2010). Almost all societies are arranged on the basis of gender such that popular ideals of manhood and womanhood result from and affirm gender division of labour. Socially constructed gender division of labour as well as intrinsic social norms define role expectations, obligations and

relationships between men and women (Nankinga et al., 2016). These social formulations and norms are reinforced by sanctions embedded within social institutions to ensure conformity and dissuade deviance (Blanc, 2001). Examples of inequalities in gender relations considered in previous research include gender division of labour, gender norms, polygamous family types, intimate partner violence, sexual empowerment and practices that limit women's movements and interactions with other people (Adjiwanou and LeGrand, 2014; Tolhurst et al., 2009; Singh et al., 2012, 2015; Nankinga et al., 2016; Kritz and Makinwa-Adebusoye, 1999). Most of these studies in sub-Saharan Africa trace gender inequalities in the patriarchal superstructure that has the aim of reproducing male dominance and the subordination of women (Adjiwanou and LeGrand, 2014).

Inequalities in gender relations are often detrimental to access and utilisation of maternal healthcare both directly and indirectly. Gender division of labour, which is so defined by society, assigns women with exclusive responsibility to nurture maternal roles. In most cases this means being solely responsible for pregnancy and childbirth-related issues. In situations where women occupy subordinate positions and have limited access to economic resources this responsibility is consequential to maternal healthcare outcomes. This is an indirect pathway between societal gender norms and use of maternal healthcare (Yamin et al., 2015). A much more direct association is that of gender ideologies limiting access to economic, social and cultural capital to enable them to properly use the maternal healthcare continuum (Adjiwanou and LeGrand, 2014). I discuss this relationship further below under empowerment. Otherwise, gender relations reflect women's position relative to that of men in society especially in terms of resource control, sexuality and reproduction. As explained by (Adjiwanou and LeGrand, 2014), the control of women and girls' sexuality and reproduction is at the core of unequal gender relations and is central to the denial of equality and self-determination of women.

Evidence shows that gender relations both between and within men and women are strongly associated with health outcomes (Bottorff et al., 2011). Researching the influence of gender relations on any health or healthcare outcomes is a recognition of the importance of gender dynamics and circumstances under which they interact to influence opportunities and constrains. It is for this reason that Connell et al, 2017 called for increased attention gender

relations in health research although there is still limited uptake (Bottorff et al., 2011). I have indicated already that most research in sub-Saharan Africa and other developing countries conceptualise gender relations and the status of women within a broader narrative of patriarchal ideologies which privileges men with power (Nankinga et al., 2016; Balk, 1994). However, this study is apart from previous ones because of the manner in which it considers a holistic treatment of contextual factors including those operating at the community and country levels. Studies that focus only on single-level individual factors underestimate the complexity of social phenomena. They can only provide partial explanations of the relationships between gender relations and maternal healthcare utilisation. Structural conditions in which constructions of gender relations are embedded, are broad and determining their effects on maternal healthcare may not be appropriate without representing wider social contexts within which they occur. In this study, I sought to utilise three-level multilevel models to help me achieve this objective.

Another addition this study brings is that of the conceptualisation of inequalities in gender relations. Most previous studies conceptualise women empowerment and gender inequalities as unitary with emphasis on decision-making authority (Morgan et al., 2017; Tolhurst et al., 2009; Singh et al., 2012, 2015). Some studies have examined the effects of community factors which mostly include poverty, ethnic origin and area of residence among others (Stephenson et al., 2006; Ononokpono et al., 2013). Indeed, they have shown that social and community level factors influence maternal healthcare utilisation. I conceptualise gender relations in terms of individual and structural factors that limit human agency while empowerment as capabilities enhancing individual agency to resist structural constraints. I operationalise inequalities in gender relations as permissive gender norms regarding violence, family types and household headship. Norms regarding violence have a direct effect on maternal healthcare utilisation by limiting mobility, control over resources and inducing perceptions of vulnerability and loss of self-control in victims (Sarkar, 2008; Adjiwanou and LeGrand, 2014).

Family type is a function of culture and it represents polygyny or the practice of men marrying more than one wife. This practice has been associated with poor health outcomes for women and children (Amey, 2002; Bove and Valeggia, 2009). This is because polygyny

exacerbates vulnerability to sexually transmitted diseases and mental health problems due to permission of a multiplication of sexual partners and emotional neglect respectively (Bove and Valeggia, 2009). A few studies on household headship on the other hand, indicate that women from female-headed households are more likely to have better health outcomes compared to those from male-headed households (Adhikari and Podhisita, 2010). This is plausible because household heads have control over resources and if it is women, it is expected that they would channel the resources for better healthcare.

These operate at the individual and community levels. This extends previous multilevel studies that have only focused on one- or two-level models by including and controlling for country-level variables and by interpreting both measures of variance and measures of associations among variables. In doing so, I was able to delineate the variance of the structural conditions in which women are located to identify which among the individual, community and country-level factors have the greatest effects on maternal healthcare utilisation. This is important because it allows for an understanding of the patterns and distribution of contextual factors that influence maternal healthcare to bolster context-based interventions aimed at enhancing maternal healthcare.

6.1.2. Women empowerment and maternal healthcare utilisation

Women empowerment has, in the recent past emerged as important theme in discourses of maternal healthcare utilisation in sub-Saharan Africa and other developing countries. There are many variants of women's empowerment definitions but the most commonly used are those of Sen (1994) and Kabeer (1999) who both define the term as the acquisition of capabilities to make decision by those who were previously denied those capabilities. This definition reflects the presence of constraining power that has to be overcome in order for the capabilities to materialise. Decision-making authority about one's life and control over resources are key to empowerment. There are different other terms that have been used to refer to empowerment including agency, women's status and autonomy (Pratley, 2016). Agency refers to the individual's ability to exercise power or freedom of choice to pursue and achieve that which they value, free from the constraints of the social structure (Sen, 1985; Bhattacharya, 2006). Women's status is measured relative to others and it can be defined as

respect given to women and powers available to them (Bloom et al., 2001). Finally, autonomy is mostly synonymous with agency, it can be defined as the ability to make independent decisions, to manipulate the environment and control the environment (Dyson and Moore, 1983). Some scholars also see autonomy as the ability to obtain information and using it to make decisions that affect the outcomes of their families and society (Hanmer and Klugman, 2016; Dyson and Moore, 1983).

The social structure with its norms and values governing social behaviour, sometimes allow for certain outcomes to be obtained and for others to be reproduced regardless of agency (Kabeer, 1999). When this happens, freedom of choice is constrained, and certain individuals may obtain or experience the outcome which they don't value or desire. This is a typical case of structural violence as we covered it in the theory chapter. Women who fail to realise their goals have deep rooted structural constraints on their ability to make choices and this reflects lack of empowerment, agency or autonomy. For example, women may desire to deliver in the hospital but if they don't have resources to use for transportation to a health facility, then they are disempowered. Empowered women have access to resources to enable them to achieve their desired goals.

There are several dimensions of empowerment and I will discuss them relative to Bourdieu's capital theory, that is, social, economic and cultural dimensions. In Bourdieu's theory, social dimensions would mean access to social resources through membership to certain networks, reliance on social support and close relations with friends and family members (Malhotra et al., 2005; Pratley, 2016). Economic dimension regards control over material in form of money or property that can easily be leveraged for health purposes (Malhotra et al., 2005; Kabeer, 1999). Cultural dimension of empowerment has to do with access to symbolic and information resources to be used as the basis for action (Dyson and Moore, 1983). Other dimensions that are not used here include legal and political and Pratley (2016) gives more details on these.

The different kinds of dimensions have been used to examine the relationship between empowerment and health outcomes, mostly by way of aggregating different indicators into one index. This method has been criticised for disregarding the multidimensionality of

empowerment (Pratley, 2016). My argument is that this may actually be a right procedure because theoretically the three dimensions are interrelated and interdependent. We have seen from Bourdieu's capital how different types of capital can instigate one another and at the same time dependent on one another. Moreover, disaggregating empowerment into single factors may be insufficient to fully represent such a complex concept as empowerment.

Several indicators have been used in previous studies to represent women empowerment including decision-making authority, attitude towards domestic violence, labour force participation, autonomy, freedom of movement (Chol et al., 2019; Singh et al., 2012, 2015; Sado et al., 2014; Malhotra et al., 2005). Mostly they find that women empowerment is associated with adequate use of maternal healthcare. For example, low status of women, characterised by lack of social independence and autonomy, lack of freedom of movement, no or little participation in household decision making and negative attitudes towards women's rights is associated with low uptake of health services and poor health outcomes (Schuler et al., 1997; Steele et al., 2001; Steele and Goldstein, 2006). Like in gender relations, these formulations have been conceptualised within a broader narrative of patriarchal superstructure and poverty dominant in literature on sub-Saharan Africa and developing countries (Balk, 1994). However, without unpacking the sources of constraining social conditions in the relationship between women empowerment and health care uptake, our analysis may obscure variability between and within societies which may help representations of social categories and essentialism rather than scientific facts.

This is what this study sought to do, and this chapter serves as the first empirical chapter to analyse the influence of broader social conditions on maternal healthcare utilisation in sub-Saharan Africa. Accordingly, it starts with gender relations and women empowerment using several indicators and delineated on individual, community and country levels.

6.2. Methods

The data for this chapter are from the demographic and health surveys (DHS) and the World Bank indicators (WDI), which are both detailed in the previous chapter. The previous chapter also articulated maternal healthcare indicators as outcome variables and most of the independent variables including the coding processes. This section explains the selected

individual, community and country level variables selected to address the influence of gender relations, women empowerment and maternal healthcare utilisation. Since structural violence happens at the group level, main emphasis is on the community level variables for this analysis. However, individual level variables are informative both substantively and as control variables.

6.2.1. Individual level variables

The main individual level variables measuring inequalities in gender relations and women empowerment include permissive domestic violence norms, sexual autonomy, ability to negotiate sex, maternal education, household wealth, employment and insurance coverage. Permissive domestic violence norms are represented by whether the respondents condones violence or not. The DHS asks a series of questions to women on whether wife beating is justifiable if a wife a) goes out without telling her husband b) neglects children c) argues with the husband d) refuses to have sex with the husband and e) burns the food. I constructed a composite binary variable with *yes* if she responded in affirmative to any of the five questions and *no* if she provided a negative response. Sexual autonomy and ability to negotiate sex included women's responses to questions on whether the they can refuse sex and whether they can ask a partner to use a condom respectively. The responses were *yes* for an affirmative answer and *no* for negative responses. In all the above variables, the reference category is *no*.

Maternal education was defined as a highest level of education attained by respondents and was recoded as *no education*, *primary education* and *secondary or higher education*. The reference category is *no education*. *Household wealth* is a wealth index variable in the DHS which is a composite measure of a household's cumulative living standard. The index is calculated using principal component analysis (PCA) based on ownership of selected household assets such as television, radio, refrigerator and bicycles; materials used for house construction and types of water and sanitation facilities. The index places individuals on a continuous scale of relative wealth which is divided into five quintiles: *poorest*, *poor*, *middle*, *rich* and *richest*. I renamed the categories representing quintiles in this study as *first*, *second*, *middle*, *fourth* and *fifth* quintile and used *poorest* as the reference category.

Employment status in the DHS has a series of classifications ranging from unskilled to skilled professionals. In this study, the responses were recoded into *formally employed* (professional or technical or managerial or clerical or sales or services or skilled manual workers), *self-employed (agriculture)* and *unemployed*. The reference category is *unemployed*. Finally, insurance coverage which is derived from the question asking women whether they had any health insurance cover and the response categories are either *yes* and *no* – which is also a reference category.

Maternal age is defined here as mother's age at the most recent birth was included as a control variable because it is one of the variables appearing to be associated with maternal healthcare in the literature (Tolhurst et al., 2009). Maternal age was calculated by subtracting the century month code (CMC) of the date of birth of the child from the CMC of the date of birth of the respondent. Maternal age was categorised in three intervals <20, 20–34 and 35–49 years representing teenage, youths and adults age groups.

6.2.2. Community level factors

I have mentioned in the data management chapter that the DHS does not capture variables that can describe the characteristics of the communities and therefore, uses the primary sampling units (PSU) in the surveys as communities this study. Community factors were defined to reflect gender inequality and women empowerment in communities and these variables include community education, community employment, community money problems, community polygynous family, community female-headed households, community media exposure and community female decision-making authority. Studies such as Ononokpono et al. (2013); Stephenson et al, 2006; Wiysonge et al. (2012); Adjiwanou and LeGrand (2014); Mezmur et al. (2017) and Yebyo et al. (2015) have used similar calculations for the community-level variables.

Community education is the aggregate value of the individual level maternal education variable based on the proportion of women with secondary and higher education within the PSU (community). The variable was categorised into three categories to represent communities with *low*, *medium* and *high* proportions of secondary or higher educational attainment.

I use *low* as the reference category. Community distance problem was derived from the question in the DHS which asked women whether a series of factors would be a significant problem for them in seeking medical care. Distance to the health facility was one of them. The community variable was constructed as a proportion of women in a PSU who responded in affirmative to the question. The variable was recoded and given 2 categories of *high* and *low* as the reference category. Community money problem was another factor that was asked if it was a significant problem for respondents. In this study, the community money problem variable was constructed as the proportion of women in the community who find money to be a hinderance to their ability to visit health facilities. The variable was also divided into 2 categories *low* and *high*, with low being the reference category.

About community polygynous families, it was measured using a question that asked women whether their husbands or partners had other wives. The community variable is calculated by getting the proportion of women in the community who were in polygynous relationships or marriages. The 2 resultant categories are *high* and *low*, with low being the reference category. Community female-headed household is aggregated variable of female-headed households and it is defined as the proportion of female-headed households in the community and *low* is the reference category. Community media exposure was derived from the individual responses for exposure to radio or television. It was constructed as the proportion of women in the PSU with lower exposure to the mass media. Low exposure to the media is the reference category here.

Decision-making authority was measured as a composite variable based on the respondents' participation in household decision-making process. In the DHS women were asked about the person who usually makes the final decision about a) how women's earnings are used; b) respondent's health; c) large household purchases; d) visits to family or relatives and e) what to do with the money the partner earns. A binary variable was constructed where women who make decisions whether alone or together with their partners are considered to have higher decision-making authority and those whose partners or other people make those decisions are considered to have less authority. The community decision-making variable was constructed by calculating the proportion of women with no authority in a PSU and *low* proportions of women with authority is the reference category.

Area of residence is used as a control variable because it can be an important factor on the intersection of the relationship between gender relations and maternal healthcare and thus, may confound that relationship (Tolhurst et al., 2009). Each of the PSUs were classified as either being in the rural or urban area of the respective countries. I used those classifications also, with urban residence as the reference category.

6.2.3. Country level factors

The country level variables for this chapter were gender inequality index and national female literacy rate, with human development index as the control variable. Explanations for these variables have already been given in the previous chapter but suffice to reiterate that gender inequality index is measured on a scale of 1 to 6, 1 being the most equal country and 6 being the worst. National female literacy rate is derived from the WDIs and it is an indicator to evaluate educational attainment at the national level. Female literacy rate is the percentage of females aged 15 and above in a country who are able to read and write and can understand a simple short simple statement regarding their everyday life. The human development index is the composite indicator of life expectancy, education and per capital income. Countries are ranked on a scale of 0 to 1, 0 being the lowest HDI and 1 being the highest. Country level data was extracted as continuous data and it was standardised for this analysis. Standardisation of continuous variables is important to aid the interpretation of relationships in the regression analysis. All country level measurements are for the year 2015 and this was for the purposes of corresponding appropriately with the DHS data which ended in the same year.

6.2.2. Modelling approaches and estimation

Chapter Five details all the theoretical and technical underpinnings of Bayesian inference as well as diagnostic tests that were conducted in all the empirical chapters. To reiterate, estimates for parameters were obtained using the Markov chain Monte Carlo (McMC) Methods in `MLwiN` via `R2MlwiN` package (Zhang et al., 2016) in the `R` environment. `MlwiN` uses a combination of Gibbs sampling and Metropolis-Hastings sampling to extract samples from the posterior distribution of unknown parameters but Metropolis-Hastings is

the default sampling technique for non-normal outcome variable (Browne and Rasbash, 2009). McMC methods allow for specification of the prior distribution which is then combined with the likelihood function produced by the data to create the posterior distribution. McMC methods do not aim to find simple point estimates for the parameters of interest as in frequentist likelihood methods. Instead, they make several simulated random draws from the joint posterior distribution of all parameters and use the draws to make a summary of the underlying distributions (Browne, 2015; Gill, 2014). From these random draws, it is then possible to calculate the posterior mean and standard deviation (SD), as well as density plots of the complete posterior distribution and quantiles of this distribution allowing for the construction of credible intervals.

Because of limited background information and lack of related previous studies, this study uses uninformative uniform prior distribution with large variances (mean = 0, variance = 10^6) for regression parameters and inverse gamma (0.001, 0.001) for precision parameters. One chain was specified running for 55,000 iterations with a burn-in length of 5,000 iterations in order to achieve convergence. The convergence of chains was assessed by the Raftery-Lewis, Brooks-Draper diagnostic as well as the Geweke diagnostic tests as articulated in Chapter five. Inspection of trace and auto-correlation plots was also done. The Bayesian Deviance Information Criterion (DIC) was used to evaluate the goodness of fit of the models (Gelman and Hill, 2007; Lynch, 2007; Browne, 2015).

Four models were specified for each of the outcome variables and are reported in table 6.1 to 6.3. Model 1 is the null or empty model which contains only the outcome variable. Model 2 includes the individual level variables (maternal age, educational status, household wealth, employment, sexual autonomy, insurance coverage and condoning violence). Model 3 includes community-level variables (community education, community decision-making authority, community distance to health facility problem, community polygamous marriages, community female-headed households, community money problem, community media-exposure and area of residence) and Model 4 has the country-level variables (gender inequality index, national female literacy rate and human development index).

I report the posterior odds ratios and 95% Bayesian credible intervals (CrI) for each of the variables in all models except for the null. Statistical significance is determined by non-inclusion of "1" in the 95% (CrI). Both the fixed and random effects are reported. Fixed effects are the average associations of individual, community and country-level variables on maternal health care and these are represented as log odds ratios and 95% confidence intervals. Random effects are measures of variations in maternal health care use across communities and countries. To measure random effects, I used the variance partition coefficient (VPC) which measures the proportion of variation in the outcome variable that occurs between groups versus the total variation present. Higher VPC values show that a greater share of total variation in the outcome variables is attributable to higher level membership (Merlo et al., 2005).

6.3. Results

6.3.1. Multilevel analysis

Fixed and random effects of individual-level, community and country-level variables are presented in tables 6.1 to 6.3, each representing one of the indicators of maternal health care as outcome variables (ANC visits, institutional delivery and postnatal care). Table 6.1 presents the results of 4 models analysing the odds of having adequate antenatal care visits during pregnancy. Model 2 which represents individual-level variables, indicates that maternal age, educational status, employment status, sexual autonomy, insurance coverage and condoning violence are all associated with having adequate antenatal care visits. Women aged 20 years and above, those who are educated up to primary or higher levels, those who are in employment, can refuse or negotiate sex and have health coverage are more like to have adequate care of 4 or more visits to health facilities during pregnancy. It has also been established that women who condone violence are significantly less likely to have adequate antenatal care. Model 3 includes contextual factors at the community level. Female empowerment indicators including community education, community media coverage and community decision-making authority are related to use of antenatal care. Women living in communities where a higher proportion of women have an education and those living in communities where a higher proportion have media exposure are more likely to use antenatal

care services. The same is true for communities with a high proportion of women having decision-making authorities within their families.

As expected, economic and distance barriers related to service use are negatively associated with ANC visits. Women residing in clusters in which a high proportion of women considered the lack of money and distance to be a major problem in healthcare access were less likely to use antenatal care services. Inequalities in gender relations variables including the proportion of female-headed households and polygamous marriages in a community show interesting results whereby women who live in communities with high proportions of polygamous marriages are less likely to have adequate antenatal care while those who live in communities with high proportions of female-headed households are more likely to have adequate antenatal care use. All the individual level variables that were associated with antenatal care use in the first model remained so even after controlling for the effects of community-level variables.

Model 4 includes contextual factors at both country and community levels. It shows that only maternal age at the individual level, community polygamous marriages lose significance when country-level variables are introduced. Place of residence shows a surprising notion: women who live in rural areas are less likely to use adequate antenatal care but after controlling for country-level factors, it is found the relationship between area of residence and antenatal care visits is no longer significant. At the country-level, the results show that apart from the female literacy rate, none of the other variables are significantly associated with antenatal care use. For female literacy rate, the results show that a one unit increase in female literacy, increases the odds of antenatal care use by a factor of 1.46.

Table 6.1 also reports the variance partition coefficients (VPCs), which show that the proportion of unexplained variation in antenatal care attributable to the community and country level factors is significantly large, 19.0% and 15.4% respectively. Antenatal care variations across communities and countries remained significant even in model 4 which controls for all the factors. The median odds ratio (MOR) for the unadjusted model at both community and country-levels are substantial, 2.53 and 2.31 respectively. These values

confirm the importance of contextual factors in explaining the odds of having adequate antenatal care visits.

Table 6.2 presents analyses of the odds of having institutional delivery among women in sub-Saharan Africa. The results show similar patterns as the antenatal care uptake. All individual level variables are consistently associated with institutional delivery even after controlling for community and country-level variables. However, it is interesting to note that for maternal age, women who are more than 20 years are less likely to deliver in health facilities when the opposite was the case for most models of antenatal care visits. Additionally, women who are employed in agriculture have consistently reduced odds of delivering in institutional facilities compared to those who are unemployed. All community-level variables are associated with institutional delivery including community polygamous marriages and place of residence which unlike in the antenatal care model, they are consistently negatively associated with institutional delivery. The country-level variables are all not significantly associated with facility delivery.

The VPC indicates that unlike antenatal care, the variations in the odds of institutional delivery are explained by the contextual factors more than individual factors. This is the case even after controlling for all the factors. The MOR from the variances are also very high for both the country level (MOR = 3.79) and the community level (MOR = 5.650) indicating greater contextual-level variations in institutional delivery.

Table 6.3 reports the analyses of the odds of postnatal care for both mothers and new-born children in sub-Saharan Africa. For the individual-level factors, maternal age is not significantly associated with postnatal care in all the models while justification of violence against women is only associated with postnatal care after country-level variables are controlled for. It shows that women who justify violence against women in certain circumstances are less likely to have postnatal check-ups for themselves and their babies. All the other variables are positively associated with postnatal care. All community level factors are associated with postnatal care apart from place of residence and community female-headed households and they remain so even after country-level variables are introduced. Country-level variables hold no significance apart from employment rate

whereby a unit increase in female employment increases the odds of having postnatal care by a factor of 1.36.

The VPC results from table 6.3 also indicate greater variation in the odds of postnatal care being attributed to community level (VPC = 24.2%) and country level factors (VPC = 28.2%). The large values of MOR are equally indicative of the significance of community and country level factors in explaining the odds of having postnatal care.

Table 6. 1 Posterior odds ratios for multilevel logistic regression for Gender relations and antenatal care in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Individual-level				
Intercept	0.85	0.49	0.34	0.31
Maternal age(years)				
<20		1	1	1
20-34		1.06(1.01,1.09)	1.04(1.00,1.08)	1.01(0.79,1.06)
35-49		1.05(1.01,1.10)	1.04(1.00,1.09)	1.05(0.96,1.12)
Educational status				
No education		1	1	1
Primary		1.43(1.17,1.26)	1.30(1.26,1.35)	1.41(1.34,1.49)
Secondary/higher		1.95(1.87,2.03)	1.72(1.64,1.79)	1.83(1.71,1.96)
Household wealth				
First		1	1	1
Second		1.22(1.17,1.26)	1.16(1.12,1.20)	1.12(1.06,1.19)
Middle		1.49(1.43,1.55)	1.33(1.28,1.39)	1.40(1.31,1.49)
Fourth		1.84(1.76,1.92)	1.52(1.45,1.59)	1.70(1.57,1.84)
Fifth		2.82(2.67,2.96)	2.06(1.94,2.18)	2.41(2.18,2.65)
Employment				
Unemployed		1	1	1
Self-employed (agriculture)		0.99(0.94,1.02)	1.02(0.98,1.06)	1.03(0.97,1.10)
Formally employed		1.20(1.17,1.24)	1.18(1.14,1.21)	1.24(1.18,1.29)
Insurance coverage				
No		1	1	1
Yes		1.30(1.21,1.38)	1.27(1.19,1.36)	1.63(1.47,1.82)
Sexual autonomy				
No		1	1	1
Yes		1.07(1.04,1.10)	1.05(1.02,1.08)	1.10(1.04,1.15)
Negotiate sex				
No		1	1	1
Yes		1.26(1.22,1.29)	1.23(1.19,1.26)	1.23(1.18,1.29)
Condone violence				
No		1	1	1
Yes		0.93(0.91,0.97)	0.95(0.92,0.98)	0.93(0.86,0.98)
Community-level				
Community education				
Low			1	1
Medium			1.49(1.41,1.57)	1.75(1.58,1.93)
High			1.60(1.49,1.72)	1.21(1.61,2.01)
Community distance problem				
Low			1	1
High			0.91(0.87,0.95)	0.84(0.78,0.90)
Community money problem				
Low			1	1
High			0.85(0.83,0.88)	0.80(0.77,0.84)

Variable	Model 1	Model 2	Model 3	Model 4
Low			1	1
High			0.95(0.91,0.99)	0.99(0.92,1.06)
Community female-headed households				
Low			1	1
Higher			1.16(1.11,1.20)	1.21(1.14,1.29)
Community polygamous marriage				
Low			1	1
High			0.95(0.91,0.99)	0.99(0.92,1.06)
Community media exposure				
Low			1	1
High			1.25(1.19,1.31)	1.17(1.08,1.25)
Community decision-making authority				
Low			1	1
High			1.20(1.15,1.25)	1.27(1.19,1.36)
Residence				
Urban			1	1
Rural			0.94(0.90,0.99)	1.01(0.94,1.09)
Country-level				
Gender inequality index				1.23(0.90,1.75)
National female literacy				1.46(1.11,1.81)
Human development index				1.36(0.84,1.81)
Random effects				
Country-level				
Variance (SE)	0.773(0.192)	0.613(0.166)	0.527(0.136)	0.497(0.162)
VPC (%)	15.4	11	11.9	11.3
MOR	2.31	2.11	2	1.96
Community-level				
Variance (SE)	0.950(0.018)	0.653(0.014)	0.628(0.015)	0.629(0.016)
VPC (%)	19	14.3	14.1	14.2
MOR	2.53	2.16	2.13	2.13
DIC	288,175.95	218,025.83	217,563.73	194,711.81

Table 6. 2 Posterior odds ratios for multilevel logistic regression for Gender relations and institutional delivery in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Individual-level				
Intercept	1.30	0.00	0.21	0.57
Maternal age(years)				
<20		1	1	1
20-34		0.81(0.78,0.85)	0.88(0.76,0.83)	0.80(0.76,0.84)
35-49		0.78(0.74,0.83)	0.76(0.72,0.80)	0.76(0.72,0.81)
Educational status				
No education		1	1	1
Primary		1.60(1.54,1.66)	1.40(1.35,1.46)	1.41(1.35,1.46)
Secondary/higher		3.09(2.94,3.26)	2.48(2.35,2.62)	2.43(2.31,2.57)
Household wealth				
First		1	1	1
Second		1.44(1.38,1.51)	1.32(1.26,1.37)	1.30(1.24,1.35)
Middle		1.96(1.87,2.06)	1.56(1.49,1.64)	1.52(1.45,1.60)
Fourth		3.33(3.15,3.52)	2.11(1.99,2.24)	2.07(1.95,2.19)
Fifth		8.50(7.89,9.16)	3.70(3.41,4.00)	3.62(3.35,3.91)
Employment				
Unemployed		1	1	1
Self-employed(agric)		0.75(0.71,0.78)	0.82(0.78,0.86)	0.82(0.78,0.86)
Formally employed		1.09(1.05,1.14)	1.05(1.01,1.09)	1.04(1.00,1.09)
Insurance coverage				
No		1	1	1
Yes		1.68(1.54,1.84)	1.66(1.52,1.82)	1.78(1.62,1.96)
Sexual autonomy				
No		1	1	1
Yes		1.11(1.07,1.15)	1.08(1.04,1.12)	1.08(1.04,1.16)
Negotiate sex				
No		1	1	1
Yes		1.34(1.29,1.39)	1.28(1.24,1.34)	1.27(1.23,1.32)
Variable Model 1		Model 2	Model 3	Model 4
Condone violence				
No		1	1	1
Yes		0.89(0.85,0.91)	0.90(0.87,0.93)	0.89(0.86,0.92)
Community-level				
Community education				
Low			1	1
Medium			2.14(1.98,2.32)	2.19(2.02,2.37)
High			3.06(2.76,3.41)	3.09(2.79,3.44)
Community distance problem				
Low			1	1
High			0.54(0.51,0.58)	0.53(0.50,0.57)
Community money problem				
Low			1	1
High			0.86(0.83,0.89)	0.87(0.84,0.89)

Variable	Model 1	Model 2	Model 3	Model 4
Low			1	1
High			0.84(0.79,0.90)	0.83(0.78,0.89)
Community female-headed households				
Low			1	1
Higher			1.18(1.12,1.24)	1.16(1.09,1.24)
Community polygamous marriages				
Low			1	1
High			0.84(0.79,0.90)	0.83(0.78,0.89)
Community media exposure				
Low			1	1
High			1.51(1.41,1.61)	1.52(1.42,1.63)
Community decision-making authority				
Low			1	1
High			1.20(1.13,1.28)	1.22(1.14,1.29)
Residence				
Urban			1	1
Rural			0.54(0.50,0.59)	0.56(0.52,0.60)
Country-level				
Gender inequality index				1.24(0.81,1.85)
National female literacy				0.65(0.35,1.31)
Human development index				0.94(0.64,1.26)
Random effects				
Country-level				
Variance (SE)	1.953(0.501)	1.682(0.453)	1.388(0.386)	1.589(0.496)
VPC (%)	22.9	25.8	22.9	25.2
MOR	3.79	3.44	3.08	3.33
Community-level				
Variance (SE)	3.294(0.054)	1.559(0.033)	1.379(0.029)	1.412(0.033)
VPC (%)	38.6	23.9	22.7	22.4
MOR	5.65	3.29	3.07	3.11
DIC	210,306.11	155,932.28	154,131.68	136,879.32

Table 6. 3 Posterior odds ratios for multilevel logistic regression for Gender relations and postnatal care in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Individual-level				
Intercept	0.89	0.38	0.28	0.28
Maternal age(years)				
<20		1	1	1
20-34		1.03(0.99,1.08)	1.03(0.99,1.08)	1.00(0.94,1.06)
35-49		1.01(0.96,1.07)	1.01(0.96,1.06)	0.98(0.90,1.06)
Educational status				
No education		1	1	1
Primary		1.27(1.22,1.33)	1.20(1.16,1.26)	1.33(1.25,1.42)
Secondary/higher		1.53(1.45,1.60)	1.40(1.34,1.47)	1.52(1.41,1.64)
Household wealth				
First		1	1	1
Second		1.18(1.13,1.23)	1.13(1.09,1.18)	1.10(1.02,1.17)
Middle		1.33(1.27,1.39)	1.22(1.16,1.28)	1.21(1.12,1.31)
Fourth		1.53(1.45,1.61)	1.31(1.24,1.39)	1.30(1.20,1.43)
Fifth		1.90(1.79,2.02)	1.50(1.40,1.60)	1.52(1.37,1.70)
Employment				
Unemployed		1	1	1
Self-employed(agric)		1.52(1.45,1.60)	1.02(0.98,1.06)	1.50(1.40,1.61)
Formally employed		1.30(1.26,1.35)	1.27(1.23,1.32)	1.26(1.20,1.33)
Insurance coverage				
No		1	1	1
Yes		1.32(1.23,1.41)	1.29(1.20,1.39)	1.25(1.13,1.39)
Sexual autonomy				
No		1	1	1
Yes		1.16(1.12,1.20)	1.15(1.11,1.19)	1.19(1.13,1.25)
Negotiate sex				
No		1	1	1
Yes		1.14(1.10,1.18)	1.12(1.09,1.16)	1.11(1.06,1.17)
Variable Model 1		Model 2	Model 3	Model 4
Condone violence				
No		1	1	1
Yes		0.98(0.95,1.02)	0.99(0.95,1.03)	0.90(0.85,0.95)
Community-level				
Community education				
Low			1	1
Medium			1.31(1.20,1.44)	1.56(1.37,1.77)
High			1.42(1.26,1.60)	1.49(1.28,1.72)
Community distance problem				
Less problems			1	1
More problems			0.78(0.73,0.83)	0.69(0.63,0.76)
Community money problem				
Less problems			1	1
More problems			0.85(0.82,0.87)	0.82(0.78,0.86)

Variable	Model 1	Model 2	Model 3	Model 4
Low			1	1
High			1.01(0.95,1.08)	0.92(0.84,1.01)
Community female-headed households				
Low			1	1
Higher			1.05(0.99,1.11)	1.00(0.92,1.08)
Community polygamous marriage				
Low			1	1
High			1.01(0.95,1.08)	0.92(0.84,1.01)
Community media exposure				
Low			1	1
High			1.34(1.25,1.43)	1.39(1.27,1.53)
Community decision-making authority				
Low			1	1
High			1.24(1.16,1.31)	1.23(1.12,1.34)
Residence				
Urban			1	1
Rural			1.00(0.94,1.08)	1.02(0.93,1.14)
Country-level				
Gender inequality index				1.59(0.87,2.77)
National female literacy				1.36(1.03,1.69)
Human development index				1.13(0.71,1.49)
Random effects				
Country-level				
Variance (SE)	1.952(0.541)	1.927(0.497)	1.856(0.470)	1.951(0.620)
VPC (%)	28.2	28.6	28	28.8
MOR	3.79	3.76	3.67	3.79
Community-level				
Variance (SE)	1.670(0.029)	1.511(0.031)	1.494(0.030)	1.534(0.035)
VPC (%)	24.2	22.5	22.5	22.6
MOR	3.43	3.23	3.21	3.26
DIC	205,673.38	168,224.21	168,029.25	153,391.18

6.4. Discussion

This chapter sought to examine the influence of gender relations and women empowerment on maternal health care utilisation and the role played by contextual factors in this relationship. Gender relations and female empowerment are formulations that are influenced by social, cultural and economic factors (Sado et al., 2014) and are in turn reflected mainly by women's interactions with intimate partners, households, community and society at large (Kane et al., 2016). Maternal health care in developing countries is akin to sexual and

reproductive health which as De Francisco et al. (2007) describes is shaped by the nature of intimate relationships, family structures, community institutions and relations within a society. To adequately explain variations in maternal healthcare utilisation, it is important to capture this complexity in the analysis. I used three-level multilevel logistic regression models to represent individual, community and country level measures of gender relations and female empowerment. The findings of this study provide evidence of direct linkages between these measures and the three most basic indicators of maternal health care uptake, antenatal care, institutional delivery and postnatal care. The study deepens our understanding of the importance of contextual gender and empowerment factors on maternal healthcare utilisation. In particular, the study found that women who live in communities where there are more women with primary or higher education, decision making authority, exposure to the media and minimal distance to health facilities are more likely to consistently use maternal health care, from antenatal to postnatal care.

The study finds evidence of substantial clustering at both the community and country levels. Both the VPC and MOR confirm that contextual level factors are responsible for more variations in institutional delivery and postnatal care than individual-level variables. Individual level factors still explain greater variation in antenatal care coverage albeit with significant contextual-level variance. Clustering evidence indicates the presence of homogeneity among women from the same communities and countries, suggesting that they are shaped by common sociocultural fundamentals.

At the individual level, education, employment, media exposure, autonomy and being from a female-headed household are predictors of consistent use of maternal health care in sub-Sharan Africa. There are many studies that have reported significant relationships between several gender related factors and use of maternal health care in sub-Saharan Africa, some of which corroborate our results albeit in different contexts (Ononokpono et al., 2013; Onah et al., 2006; Gage, 2007; Adjiwanou and LeGrand, 2014; Stephenson et al., 2006). These studies either use individual countries, a few selected countries or do not focus on broader contextual influences of gender-related factors on maternal health care.

The results are also corroborated by Ahmed et al. (2010) who use multiple countries and found empowerment and education to be significantly associated with maternal health care, measured as contraceptive use, skilled birth attendance and attending at least four antenatal care visits in developing countries. Adjiwanou et al, 2018 equally finds a significant relationship between education and maternal health care utilisation.

Maternal health, throughout the continuum of pregnancy care, including attending a recommended number of antenatal visits, having skilled delivery care and postnatal check-ups is central to woman's health which leads to reduced maternal mortality and have positive implications for society as a whole. The results raise important implications across the SSA society as to the social mechanisms that contribute to the observed associations. It shows that health care disparities are embedded within the social and cultural fabric and is based on gender relations and socio-economic status. The pathways between high socio-economic status and healthcare utilisation are obvious as the person who has wealth and is educated is most likely to reside in places which are proximal to health facilities and is also most likely to have health insurance or afford out-of-pocket payments for healthcare (Leive and Xu, 2008; Myburgh et al., 2005; Cutler et al., 2008; Baum et al., 1999). Gender inequality in the form of lack of decision-making authority among women, affects levels of emotional, sexual and physical well-being as well as mobility to healthcare facilities and hence poor health outcome (Matthews et al., 1999; Steele et al., 2001; Steele and Goldstein, 2006).

The community and country level factors that are found to be significantly associated with maternal health care buttresses notions of the impact of up-stream factors in individual level decision-making processes. This would be the result of structural factors embedded within local communities and broader social institutions existing at the country and international level. In fact, individual level determinants of maternal healthcare utilisation may just be symptoms of structural factors embedded within local communities and broader social institutions. For example, the influence of female empowerment and decision-making powers on maternal healthcare operationalised at an individual level have often been discussed within the framework of dominant and broader masculinity ideologies or cultural beliefs in particular spaces (Say and Raine, 2007). The same may be true with health systems whose dysfunctionality may be a direct consequence of political and governance systems far

removed from their level of operation as I have already noted above. Indeed, some studies have found evidence of the significant role played by structural factors in influencing maternal healthcare utilisation in sub-Saharan Africa.

Limitations of the study include the use of pooled analysis which combined the 35 countries of sub-Saharan Africa. It is probable that effect sizes resulting from the pooled analysis may not represent what pertains within individual countries included. Also, the constitution of community level variables which was done by aggregating individual level variables using the PSUs may potentially have created atomistic fallacy (Roux, 2002) whereby inferences at the high level are made using lower level data. Recall bias is also one of the potential problems although it was minimised by the focus on exclusively the most recent birth of the five years prior to the survey.

The strengths of this study lie in the use of several factors to measure gender relations and female empowerment at three-levels, providing a cross-national evidence of the magnitude of their associations with use maternal health care. It is also worth noting that unlike some previous studies (Ononokpono et al., 2013) that have relied on one variable to represent maternal healthcare utilisation, this study uses the whole continuum beginning with antenatal care up to postnatal check-ups for mothers and new-born children. The use of Bayesian McMC estimation which minimises bias to estimation especially in multilevel models with countries occupying the highest level in the analysis (Stegmueller, 2013; Bryan and Jenkins, 2015). This provides a better separation of the effects of individual and contextual factors on women's utilisation of MHC, which is critical for the implementation of policy strategies aimed at bolstering the use of MHC services especially in low resource countries. Isolating the effects of contextual conditions provides a better platform for theoretical developments that are crucial for understanding the relationships between the broader social structure and health outcomes. This may ultimately help us explain why there are protracted disparities in health and healthcare outcomes in sub-Saharan Africa.

6.5. Conclusion

This chapter addressed the impact of gender relations and women empowerment on maternal healthcare in sub-Saharan Africa. I used several variables at the individual, community and

country-level to represent gender relations and women empowerment. The results show that in addition to several individual level factors, community education, community decision-making authority, community exposure to the media and community distance to health facilities are important predictors of maternal healthcare utilisation. In other words, women living in communities in which most women have primary or higher education, decision making authority, exposure to the media, live closer to health facilities are more likely to use maternal healthcare services. At the country level, education in form of higher literacy rates among women was found to be positively associated with use of maternal healthcare.

The findings from this study also generally attributes cross-national variations in maternal healthcare to contextual factors. This means that apart from specific individual, community and country levels factors that are found to be associated with indicators of maternal healthcare, the findings in this chapter help to re(emphasise) the importance of contextual factors in terms of understanding as well as bolstering maternal healthcare utilisation in sub-Saharan Africa.

Chapter Seven – A Multilevel Analysis of Civil liberties, Socioeconomic Entitlements and Maternal Health Utilisation in sub-Saharan Africa

7.1. Introduction

The human rights-based approach (HRBA) to health and health care has been the subject of much scholarship since the 1948 Universal Declaration of Human Rights (UDHR). Article 25 of the UDHR which bestows on everyone with "the right to a standard of living adequate for them to enjoy good health and well-being including food, clothing, housing, medical care, social services and the right to security in the event of circumstances beyond their control such as unemployment, disability, sickness, widowhood, old age or any other lack of livelihood" (Assembly, 1948). However, the emphasis on the rights-based approach by scholars and practitioners alike seems to have been upscaled post 2015 Millennium Development Goals (MDGs), especially in relation to maternal health care (Das, 2018). This is due to the sub-optimal progress gained in reducing maternal mortality in the past few decades, particularly in developing countries. The MDG number 5, was a commitment to improving maternal health by the United Nations (UN) member states, to be measured by a three quarters reduction in maternal mortality. Although there was a decline of 44 percent in maternal mortality between 1990 and 2015, it was by far less than the total reduction needed to achieve the three-quarters reduction target for MDG number 5.

The insufficient progress was at least partly attributable to weak and underdeveloped health systems and lack of political commitment to improving women's health (Maclean, 2010; Hunt and Bueno de Mesquita, 2010; Das, 2018). The failure of the health system and lack of commitment within the political space are both matters of governance rather than of medical science, cultural norms or individual biographies of members of society. Political good will and good governance are required to distribute national resources to health systems to enable them to provide adequate healthcare services to the people. The involvement of political actors in the healthcare systems accentuates the main gist of this thesis, which is, that health and healthcare are a function of broader social, economic, political and cultural

phenomena, most of which is structural in nature. The rights-based approach is relevant to this discourse because it is rooted in the strength of the human rights framework to create political and social benchmarks to assess the process and outcomes of development and to underscore the power hierarchies that will lead to social and economic injustices (Yamin and Maine, 1999). Since universal access to reproductive rights is recognised as part of the economic and social rights of the United Nations since 2001 (Yamin, 2013), there are standard benchmarks which countries are supposed to follow in the quest to guarantee access to maternal healthcare to their citizens. Additionally, the UN technical guidance on rights-based approaches identifies obligations, duty bearers and remedies to the violations of rights as a matter of international law (Yamin, 2013) such that there are standard prescriptions on how these rights should be met and by who in each country. These give pressure to national political leaders to conform to the requirements of the international society and institute measures to meet those requirements and consequently, improve maternal healthcare.

Maternal healthcare utilisation is highly correlated with positive maternal healthcare provision. It is therefore, expected that when maternal healthcare provision is improved, so too should utilisation. However, there are still a few questions that are not adequately addressed in the extant literature regarding the relationship between rights and health, specifically maternal healthcare utilisation. For instance, human rights are basically divided into civil and political on one hand and economic and social rights or basically socioeconomic rights on the other. It is not known as to what the influence of these would be on maternal healthcare utilisation in sub-Saharan Africa and which one of the two basic types is a more important predictor of maternal healthcare utilisation. The distinction between the two basic types of human rights in terms of their relationship with maternal health is important because it highlights which branch should be prioritised to reduce maternal health morbidity and mortality. This chapter attempts to address these questions. It begins with a discussion of the benefits of a human rights approach to maternal health

7.1.1. The benefits of a rights-based approach to maternal healthcare

Three aspects of the human rights approach necessary to shaping a human rights approach to health and health care are worthy exploring. They include the indivisibility of political

and civil rights and the socio-economic rights 2) active agency by those vulnerable to human rights violation; and 3) the powerful normative role of human rights in establishing accountability for protections and freedoms (London, 2008).

There has been concerns by scholars that the international community has prioritised civil and political rights which has led to their considerable achievements at the expense of socioeconomic rights or entitlements (Farmer, 2005). The importance of recognizing the indivisibility of civil and political rights and socio-economic rights therefore means that health policy-makers can spend as much time considering and developing health policies in terms of obligations to fulfil the right to health, as they do in developing elaborate and potentially impressive commitments to eradicating discrimination or violations of dignity. However, some scholars have argued that in fact civil liberties and political rights are indivisible not as way of pushing the recognition of socioeconomic rights but of achieving them (Lockwood, 1996). Because where civil and political rights thrive, so do socioeconomic rights. Socioeconomic rights may depart from passive freedoms of protection from, to require the active provision of facilities and services by the state of which health care in one as Steiner et al. (1996) posits, but their success requires an environment which guarantees civil and political rights. National governments designate deserving and undeserving claimants of rights and this distinction depends on the extent to which governments are accountable to the population (London and Schneider, 2012). Accountability is possible only with a vigorous and well organised civil society which is also only possible in a society that respects civil and political rights (London, 2008).

The rights-based approach is not only confined to the link between civil and political rights and socioeconomic entitlements, agency is another critical element in the rights-based approach. The right to health and health care for example, cannot be left to governments alone to address, a human rights approach seeks to give voice to those who are vulnerable and enable them to change their conditions for better outcomes. In this framework, rights are not only universal standards that should be followed by states, but a medium through which the suffering of people by the state, individuals acting in response to the social structure or the social structure itself, is ameliorated. This formulation recognises the fact that the government is not the only entity capable of inflicting suffering on vulnerable populations,

individuals and the social system also are. Thus, individuals, groups, and communities whose rights have been or are likely to be violated should have choices and capabilities enabling them to claim their rights to better conditions (London, 2008; Cornwall, 2002; Allison, 2002; Stuttaford, 2004). This is where the rights-based approach is complemented by the capability approach as highlighted by many proponents of both the rights-based and the capability approach (Birdsall, 2014; Vizard et al., 2011; Sen, 2005; Nussbaum, 2003; Marks, 2005). The capability and the human rights approach have a common motivation of fostering the dignity and freedoms of the individual. The capability approach highlights the critical importance of substantive freedoms and opportunities of individuals and groups while the human rights approach highlights the importance of values such as freedom, dignity and respect, equality and none discrimination, participation and autonomy and the arrangements that are needed to protect and promote these (Vizard et al., 2011). In practical terms, what people can positively achieve is influenced by economic opportunities, political liberties, social powers and the enabling conditions of good health, basic education and encouragement and cultivation of initiatives. The institutional arrangements for these opportunities are also influenced by the exercise of people's freedoms through the liberty to participate (Sen, 1999a). This is what links human rights and freedoms to good social, economic and health outcomes.

The capability approach is also relevant in the last element of the rights-based approach. Although the relevance of accountability in the rights-based approach has already been seen. It is important to note that the rights-based approach provides powerfully normative set of criteria by which to judge right and wrong (Group et al., 2002). Defining who is a rights holder, who is a duty bearer, and what the nature of the obligation is, allows a much clearer opportunity to establish accountability (typically of government) for the realization of rights and creates a range of mechanisms to hold governments accountable (London, 2008). However, we have established that people's rights are not always violated by the government. In cases where violation is the health or social system outside the sphere of government, the capability approach provides a competent complement. People who are empowered by capability functionings may be better able to confront the conditions of their suffering and claim their rights.

We have seen that according to the rights-based approach, the link between civil rights and socioeconomic entitlements, the concept of agency and government accountability are important elements in achieving certain entitlements such as health care and good health outcomes. There are still debates in literature whether in fact civil liberties contribute to attainment of socioeconomic entitlements such as health and health care (Morris, 2006). Additionally, we have seen that the social system though community agency, as well as individual agency is important in ameliorating the suffering of individual persons. Finally, accountability has been seen to be essential in countering the human rights violations of governments and the social system as a whole. There are no studies which deal with these issues especially in low resource societies like sub-Saharan Africa. This study fills the gap in literature by answering these questions in relation to maternal health care utilisation.

Inequalities in maternal health care in sub-Saharan Africa could be manifestation of limited freedoms because societal gender division of labour assigns responsibilities of pregnancy and childbirth to women, whom at the same time occupy subordinate positions and have limited access to resources as I have indicated already in this thesis. Beyond cultural norms and social power relations, it is also established that women die during childbirth because of specific governmental failures (Yamin, 2013). Rights and freedom approaches to maternal health care offer strategies and tools to address root causes of maternal morbidity and mortality (MMM) within and beyond health systems as well as the other violations of women's sexual and reproductive health and rights across their lives including formative gender inequalities and structural violence against women (Yamin, 2013). Many researchers call for further studies linking civil and political rights to specific outcomes (Birdsall, 2014). I use multilevel models in order to not only delineate the effects of country and community level factors but also to control for individual level. I will also establish the amount of variance in maternal health care explained by each of the three levels.

7.1.2. Human rights and freedom

As indicated in the theoretical framework chapter, very few works have been as influential as the works of Nobel prize winner Amartya Sen is shifting attention from material indicators of well-being to more freedom-oriented perspective. Sen roots his freedom approach to

development in his support of the market system of economics and their capability to expand income, wealth and economic development in contrast to market restrictions which restrains people's freedom to make transactions and exchange and thus hamper development prospects (Sen, 1999b). The freedom-based approach gives citizens the liberty to participate in any activity (economic or otherwise) of their choice without interference from national or international "guardians" neither by political rulers, religious authorities nor cultural experts (Sen, 1999b). He argues that freedom can hardly be realised without explicit valuations, that it should be open to public scrutiny and criticisms. It is this point that makes political freedom even more important because it provides an opportunity for "citizens to discuss and debate and to participate in the selection values in the choice of priorities" (Sen, 1999b). Media freedom, freedom of communication, freedom of assembly and freedom to choose and leave an employer are all encompassed in here.

Sen goes on to argue that freedom to participate in activities of concern requires knowledge and this is how freedom feeds into other sectors such as education "since participation requires knowledge and basic educational skills, denying the opportunity of schooling to any group say female children-is immediately contrary to the basic conditions of participatory freedom" (p.32). He also posits that political and civil liberties also help to prevent economic disasters. A governing group in multiparty democracy with free and fair elections and free media has added incentives to prevent famines because not doing so would entail serious political consequences. Without freedom guarantees and uncensored public criticisms, governments do not suffer any negative consequences for their failure to provide for their citizenry. Thus, according to Sen 1999, freedom is invaluable as it has enormous potential to bolster well-being.

Sen's views on freedoms and rights as he would also admit[22] are not completely new and yet the concept of "rights" seem to permeate the social, political and intellectual agenda only in the late twentieth century which Bobbio (1995) considers as the 'age of rights'. The reasons for this have been varied with some viewing human rights as a potential multinational

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[22] He traces freedom overtones in the works of early Greek philosopher Aristotle and his focus on "flourishing" and "capacity" and also in the Scottish enlightenment economist Adam Smith with his analysis of "necessities" and conditions of living.

platform from which to confront the negative effects of neoliberal globalisation, raising questions about the social obligations of international corporations (Freeman, 2002). Others see human rights as means to bring people together in a fragmented society (Klug, 2003) while some see in freedom and human rights the promise of an elusive concept of universalism (Taylor, 1995). But whatever the motivation may be there is an increased optimism in the capacity of freedom-based approaches to foster peace, security, economic development and general well-being (Burroway, 2011). No wonder the past few decades has seen an upsurge of interest in several academic disciplines including sociology, political science, public health, economics and law among others. The overarching theme throughout much of this body of knowledge is that human rights improve health and well-being.

Anthropologist and physician Paul Farmer, however, holds that the basic problem is human rights discourse is the presupposition of equality in society which according to him, does not exist. "Local and global inequalities mean that the fruits of medical and scientific advances are stockpiled for some and denied to others" (Farmer, 2005). It is in this regard that further contextual investigations to analyse the pathways of inequalities are merited. This chapter offers this analysis from a sociological perspective which is one of the importance field well-positioned to unpack both human rights abuses and the discourses they generate. It allows us to situate human rights abuses within broader analyses of power structures and power relation. I do this here by leveraging international data infrastructure on both rights and health in order to study not only the effects of civil liberties and freedom on use of maternal health care but also the interactions between them and socioeconomic status which Sen argues is very important to ensure a holistic view of freedom.

7.1.3. Sociology and human rights

The link between sociology and human rights is traced in T.H Marshall's 1950 work on *citizenship and social class* in which he defined citizenship as "a status bestowed upon those who are full members of the community. All who possess the status are equal with respect to the rights and duties with which the status is endowed". The modern nation state was central to Marshall's conceptualisation of citizenship because it is charged with the responsibility of providing civil, political and social rights to the populations (Hynes et al.,

2010). Marshall mainly focused on the role played by social rights in moderating the tension between capital and citizenship, and the possibility that equality of status (via citizenship) may override the material inequalities of social class (Morris, 2006). The concept of citizenship, however, was criticised because of its failure to articulate the position of non-citizens, indicating a stack difference between human rights and citizenship. It was also criticised for the implicit understanding of liberal capitalism. But the biggest hurdle for the sociology of human rights was negotiating universalism, an issue seen as being beyond the scope of national sociologies in which the boundaries of the national state were assumed to correspond to society (Hynes et al., 2010).

Marshall notes the importance of civil rights in the battle for social rights. The intensely individual nature of civil rights was turned to address collective interests (Marshall et al., 1950) in the development of economic and social rights. The interdependence of different rights is also an issue that emanates from Marshall's work. Turner makes a great contribution as he was preoccupied with the evasion of questions about a universal ontology. He argues that citizenship should take into account the globalisation of social relations and the differentiation that is increasingly becoming common place in the social system (Turner, 1990, 1993; Morris, 2006). He thus promoted both the universalism and particularism of rights. The Universal aspects of rights is further linked to modern institutional developments which are said to transcend the level of national state and have a globalising scope whereby different social context and regions became networked across the globe (Giddens, 1990). He argues that foundational grounding for the sociology of human rights should be in the universality of embodied vulnerability. Human rights are an institution that is specific to cultural and historical context just like any other. The other problem Turner engaged with is Sociology's neglect of normative theory, which he argued should be endorsing human rights while studying them.

Frameworks of thinking about rights in the broader context of structural inequality which entails protection from harm emanates from different sources. The tension between civil liberties and social rights has prevented sociological engagement. Woodiwiss (2005) argues that sociologists must acknowledge that the individual and the social or collective are in fact mutually constitutive of one another. He argues that rights are constructed through a relation

between the individual and the structural, the human and the social rather than the individual being ontologically prior to the social. This construction brings back Mill's sociological imagination to the sociology of human rights whereby questions of values, wellbeing, change and uncertainty, are founded in the relation between structure and biography. Human rights thus become pivotal to this study and it brings together the sociology of rights and the sociology of human rights.

7.2. Methods

7.2.1 Country level variables

This analysis is based on the Demographic and Health Surveys (DHS) and several other international data sets. As usual, the DHS data will contribute individual and community level variables for this analysis. The DHS data and the World Development Indicators from the World Bank Data Bank have already been discussed in chapter five. This chapter includes new variables on country freedom status from freedom house[23] and governance effectiveness from the World Governance Indicators of the World Bank[24]. Both are used as indicators for civil and political liberties. Female secondary school enrolment derived from the World Bank indicators is the proxy for socioeconomic entitlements. Freedom House data is already introduced in Chapter Five.

Freedom status ratings are derived from 25 questions representing political rights and civil liberties. The questions address electoral process, political pluralism and participation, functioning of government, freedom of expression and belief, rule of law, associational and organisational rights and personal autonomy and individual rights (Freedom House, 2019). The overall scores of both political rights and civil liberties add up 100 points[25]. This chapter uses these overall average ratings of 1 to 100. They are standardised in the analysis with the

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[23] https://freedomhouse.org/
[24] https://datacatalog.worldbank.org/dataset/worldwide-governance-indicators
[25] Political rights accounts for 40 points from 10 questions while civil liberties account for 60 questions derived from 15 questions. Ratings are also constructed between the range of 1 and 7. 1 representing the greatest degree of freedom while 7 representing the smallest degree of freedom

mean of 0 and standard deviation of 1 for easy comparability and interpretations as indicated above.

This chapter uses the voice and accountability (VA) dimension of the WGI. The VA captures people's perceptions of the extent to which the country's citizen are able and free to engage in the selection of their government, together with freedom of expression, freedom of association and media freedom. The WGI measures are reported in standardised normal distribution and in percentile rank terms. This chapter uses the standardised format ranging from -2.5 to 2.5 for better comparability with other variables from the WBI and also for easy interpretation. Data used here is for the 2016 iteration in order to be as close to the survey years of the DHS data as possible.

7.2.2. Community level variables

At the community level, education, autonomy, distance to health facilities and place of residence are used. These community level variables are considered as control variables for this chapter and they are selected because they are important predictors of maternal healthcare utilisation as observed above. Women's autonomy which is often used interchangeably with women empowerment or women decision-making authority for example, is selected because it signifies the agency of individuals.

7.2.3. Individual level variables

At the individual level, I controlled for maternal educational status, female autonomy and distance to health facilities. These variables are already defined in previously chapters.

7.2.4. Statistical analysis

The Bayesian multilevel models were used to estimate parameters because of the nature of the data structure and the need to determine the relative influence of contextual factors on maternal health care utilisation indicators. In this chapter, the interest was to assess the effects of civil liberties, voice and accountability and female secondary school enrolment which are operationalised at the country-level, on antenatal care, institutional delivery and postnatal care. I was also interested in measuring community autonomy and community

education measured at the community level. Markov chain Monte Carlo (McMC) methods are used in the estimation of parameters. Modelling specifications and diagnostics are as articulated in chapters five and six above.

Just like in the previous chapter, I specify four models on each outcome indicator. The first model in each table will consists of an empty or null model. It is intended for comparisons with the subsequent models. The second model contains the country-level factors specified as country freedom status, voice and accountability and female secondary school enrolment. In the third model, I introduce the community-level factors: community education, community media exposure, distance and place of residence. The relevant individual-level control variables of maternal education, educational status and female decision-making autonomy.

7.3. Results

7.3.1 Background characteristics of participants

The distribution of the dependent variables across selected sub-Saharan countries appears in the fourth chapter. Figures 7.1 to 7.3 plot correlations between the main independent variable, country freedom status and each of the indicators of maternal health care. The results show that country freedom status is moderately and positively correlated with all the indicators of maternal health utilisation. The correlation coefficients were .22 for antenatal care, .26 for institutional delivery and .52 for postnatal care. I find statistically significant correlations only on the relationship between freedom status and postanal care which also report the highest correlation coefficient.

7.3.2. Freedom status, socioeconomic entitlements and antenatal care

A pooled Bayesian multilevel analysis was applied to understand the relationship between country freedom status and maternal health care utilisation in sub-Saharan Africa. Four models were specified for each of the outcome variables. Table 8.1. reports the results of the influence of country freedom status, voice and accountability, female secondary school enrolment and antenatal care visits. Human development indicator is included as a country level control variable. Freedom status is found to be significantly associated with antenatal

care throughout the three models. The interpretation is such that for one standard deviation increase in the country freedom status, the odds of having four or more antenatal care visits increases by a factor of 1.01-1.30 after relevant factors are controlled for. The presence of civil and political liberties in a country, therefore, seems essential in encouraging more visits to health facilities during pregnancy. Although the relationship may not be very strong, there is evidence pointing to the fact that living in countries that promote human rights is more likely to improve the chances of attending antenatal care visits.
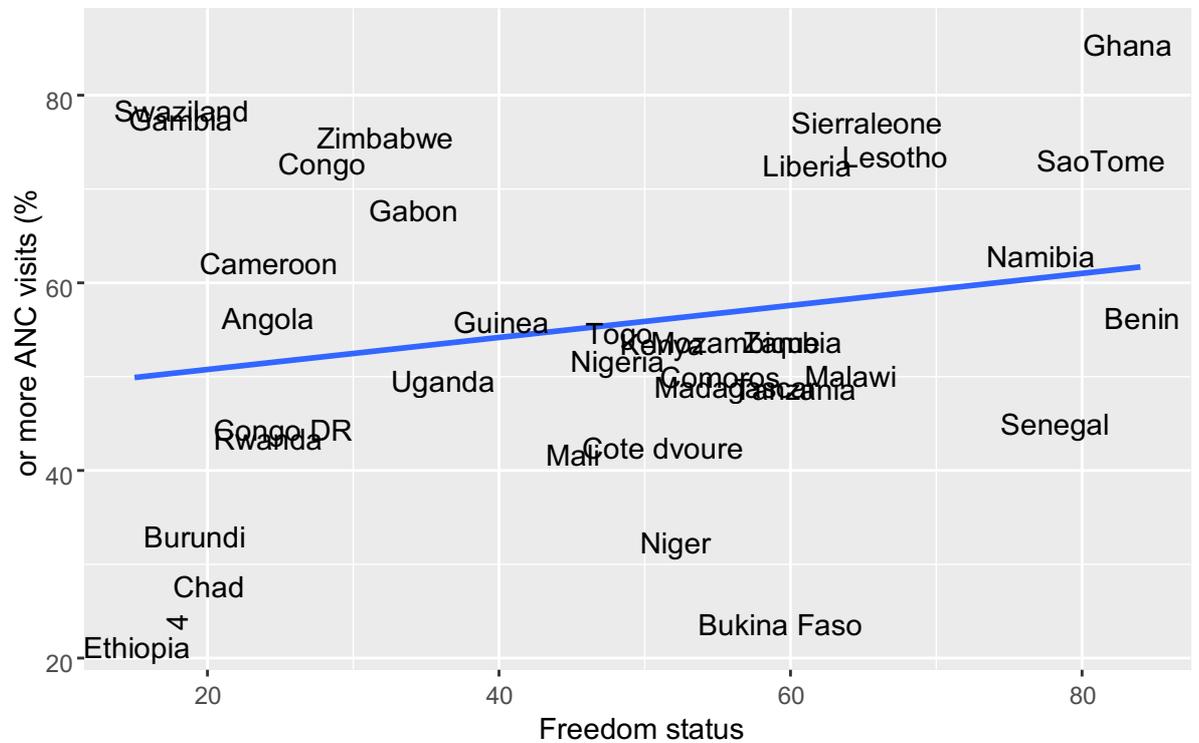
Figure 7. 1. Freedom status and antenatal care visits (cor =.22)

Girl child education is another factor that seems to improve the odds of attending antenatal care at the country level. It was found that living in countries with higher secondary school female enrolment increased the odds of antenatal care. For one standard deviation increase in secondary school enrolment in a country, the odds of having four or more antenatal care visits to health facilities increase by a factor of 1.31-1.72. Education has always been an important predictor of antenatal care at the community level in sub-Saharan Africa

(Ononokpono et al., 2013). This finding suggests that the promotion of education for females at the country level is also important in ensuring adequate antenatal care visits among pregnant women. Voice and accountability seem to only be significantly associated with antenatal care before community and individual level variables are controlled for. The reason for this could be that voice and accountability is not a strong predictor of antenatal care in sub-Saharan Africa, and that community and individual level factors provide better explanations of variations in antenatal care. The opposite is the case with human development which becomes negatively associated with antenatal care after community and individual level factors were introduced into the model. This may suggest the presence of cross-level interactions whereby the relationship between human development and antenatal care is moderated by other community and individual level factors.

In terms of control variables, education, distance to health facilities and women autonomy and place of residence are significantly associated with antenatal care at the community level. Women who live in communities that have a high proportion of educated women have increased odds of attending antenatal care compared to those who don't. Those who live in communities that have a high proportion of women who find it difficult to visit health facilities on account of distance have decreased odds of visiting health facilities during pregnancy. As expected, residing in communities in which a high proportion of women have autonomy increases the odds of having adequate antenatal care. Finally, rural residence decreases the odds of having four or more antenatal care visits when individual and country level factors are controlled for. All individual controlling variables are associated with antenatal care.

The analysis also considered the relative importance of different levels of variable operation and their impact on antenatal care. VPCs and MORs were calculated for all models for this purpose. Individual-level factors seem to contribute more to cross-national variations antenatal care compared to structural factors – community and country level factors. The results indicate that 15.2% and 19.0% of variance in antenatal care is explained by country and community-level factors respectively. The VPCs are significantly large which indicates the importance of community and country-level factors in explaining the cross-country variations in antenatal care in sub-Saharan Africa. MORs also buttress the importance of

contextual factors because they are way above 1 in all the models indicating the large influence of higher-level factors in antenatal care. It is interesting to note the significant drop in the VPC values when country and community-level factors are introduced. This phenomenon indicates that community factors and country level factors are important predictors of antenatal care.

In terms of model comparison, the DIC indicates a considerable reduction as the explanatory variables at each level are being added. This indicates that model fit is improving with additional variables being added to the model and the final three-level model (4) is a better predictor of antenatal care compared to the rest of the other models.

Table 7. 1 Posterior odds ratios for multilevel logistic regression for Civil liberties, socioeconomic entitlements and Antenatal care in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Country-level variables				
Intercept	1.45(1.30,1.62)	0.71(0.63,0.80)	0.90(0.71,1.06)	0.47(0.43,0.52)
Freedom status		1.12(0.97,1.23)	1.23(1.10,1.33)	1.19(1.01,1.30)
Female secondary school enrolment		1.43(1.29,1.56)	1.60(1.37,2.05)	1.54(1.31,1.72)
voice and accountability		0.49(0.43,0.56)	1.00(0.82,1.21)	1.09(0.92,1.41)
Human development		1.31(1.15,1.51)	0.79(0.72,0.93)	0.92(0.70,1.06)
Community controls				
Community education				
Low			1	1
Medium			2.10(1.99,2.21)	1.60(1.52,1.67)
High			3.35(3.08,3.44)	1.84(1.73,1.98)
Community distance problem				
Low			1	1
High			0.78(0.75,0.81)	0.88(0.85,0.93)
Community autonomy				
Low			1	1
High			1.23(1.19,1.28)	1.17(1.14,1.19)
Residence				
Urban			1	1
Rural			0.63(0.61,0.66)	0.86(0.82,0.90)
Individual controls				
Educational status				
No education				1
Primary				1.35(1.31,1.38)
Secondary/higher				1.87(1.81,1.95)
Distance				
Less problems				1
More problems				0.87(0.85,0.90)
Autonomy				
No				1
Yes				1.17(1.14,1.19)
Random effects				
Country-level				
Variance (SE)	0.76(0.19)	0.44(0.12)	0.42(0.12)	0.43(0.12)
VPC (%)	15.2	9.32	9.61	9.91
MOR	2.3	1.88	1.86	1.87
Community-level				
Variance (SE)	0.95(0.057)	0.99(0.02)	0.66(0.01)	0.62(0.01)
VPC (%)	19	20.97	15.1	14.2
MOR	2.53	2.58	2.17	2.12
DIC	288,168.99	270,625.48	269,179.56	229,089.90

7.3.3. Freedom status, socioeconomic entitlements and institutional delivery

The effects of country freedom status and socioeconomic entitlements on institutional delivery was estimated using multilevel models reported in table 7.2. Country freedom status is again showing to be an important predictor of maternal health care utilisation. Country freedom status is associated with institutional delivery in the sense that women living in countries with higher freedom scores are more likely to deliver in health facilities. For a one standard deviation increases in the country's freedom status, the odds of delivering in a health facility are expected to increase by a factor of 1.17-1.53 after controlling for relevant community and individual level variables.
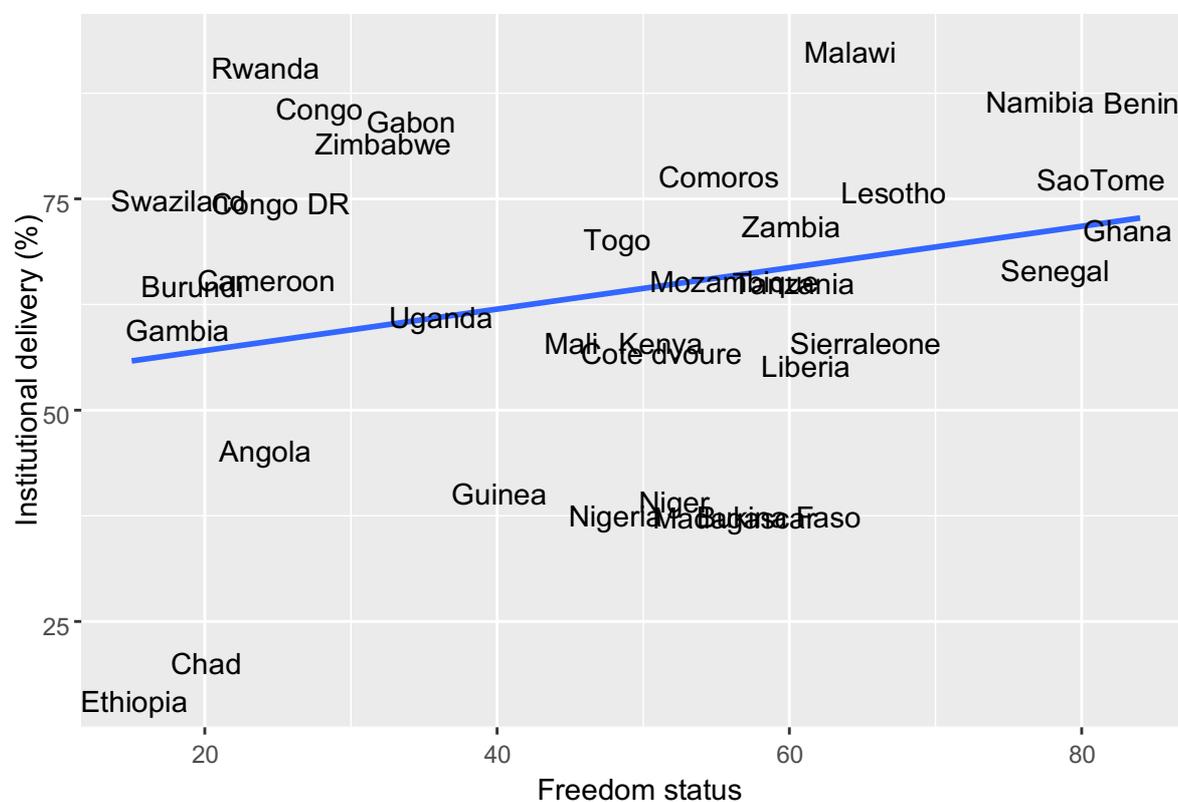
Figure 7. 2. Freedom status and institutional delivery (cor = .26)

Education and voice and accountability are significantly associated with institutional delivery only in model 2 but loses significance when control factors at both community and individual levels are introduced. As indicated above, this could be a result of cross-level interactions or multicollinearity where there is a shared explanatory power among predictor variables. Control variables are human development index at the country level, distance to health facilities, place of residence at the community level. At the individual level, they

included maternal age, educational status, female autonomy and distance. All of them were found to be significantly associated with institutional delivery.

Community autonomy is found to be significant here in the sense that women who live in communities in which women have higher decision-making autonomy have higher propensity of delivering in institutions compared to those who don't. It is a logical finding because it is expected that women who have higher decision-making authority have a bigger say in ways that resources are distributed within the household. They are indeed most likely to prioritise their health and that of their babies to deliver in health facilities where they and their babies have a higher chance of survival because they will be attended to by skilled personnel. Community education is also an important predictor of institutional delivery. Women who live in communities with high proportion women who are educated up to primary and secondary or higher have better odds of delivering in health facilities than those who don't. Distance to health facilities also is an important predictor of facility delivery in the sense that women who live in communities with high proportion of women who considered distance to be a major problem in healthcare access have decreased odds of delivering in health facilities. For residence as in other findings, rural residence reduces the odds of delivering in health facility. It is expected that there are either very few health facilities or are located in distant places where most women may not reach due to limited resources. Apart from maternal age, all the other individual level variables are associated with institutional delivery.

Just like in the antenatal care case, the VPC and MOR were calculated to estimate the relative magnitude of variation explained by country and community-level factors and it was discovered that the combined explanatory power of these structural factors was larger than individual level factors. The results show that 22.68% and 38.66% of cross-national variation in institutional delivery is accounted for by country and community level factors respectively. These values remain higher throughout the modelling process even after community and individual level variables are introduced. The MOR also shows values that are considerably larger than 1 indicating the importance of contextual factors in explaining cross-national variations in institutional delivery.

Civil and political liberties measured by freedom status at the country-level remain significant predictors of facility delivery. In comparison with education, the measure of socioeconomic entitlement, we see that civil and political liberties are most important predictors of institutional delivery. It is interesting that country level secondary school female enrolment is no longer a significant predictor when the outcome variable is institutional delivery. It could be because the two variables are not uniformly distributed. Some countries have higher secondary school female enrolment and at the same time have very lower proportions of institutional delivery. We can see this in Figure 7.2 where countries like Burkina Faso and Madagascar are performing relatively well on the freedom status scale but not so well when it comes to institutional delivery. This could explain the inconsistencies in the nature of the relationship between secondary female enrolment and use of maternal health care.

Model comparison shows an improvement in model fit as the variables are different levels are being added. This means a complete three-level model is a considerably better predictor of institutional delivery compared to other models.

Table 7. 2 Posterior odds ratios for multilevel logistic regression for civil liberties, socioeconomic entitlements and institutional delivery in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Country-level variables				
Intercept	2.41(2.09,3.03)	1.89(1.60,2.34)	3.21(2.66,3.91)	1.83(1.60,2.15)
Freedom status		1.38(0.19,1.52)	1.29(1.11,1.41)	1.33(1.17,1.53)
Female secondary school enrolment		1.57(1.238,1.79)	1.22(0.99,1.41)	1.19(0.90,1.62)
Voice and accountability		0.73(0.58,0.95)	1.27(0.98,1.49)	1.72(1.40,2.08)
Human development		1.33(1.13,1.57)	0.83(0.75,0.92)	0.81(0.66,1.15)
Community controls				
Community education				
Low			1	1
Medium			3.87(3.64,4.09)	2.45(2.30,2.67)
High			10.29(9.62,11.01)	3.88(3.56,4.23)
Community distance problem				
Low			1	1
High			0.48(0.46,0.51)	0.81(0.78,0.84)
Community autonomy				
Low			1	1
High			1.22(1.15,1.29)	1.10(1.07,1.13)
Residence				
Urban			1	1
Rural			0.28(0.26,0.30)	0.50(0.47,0.53)
Individual controls				
Educational status				
No education				1
Primary				1.46(1.41,1.56)
Secondary/higher				2.75(2.63,2.87)
Distance				
Less problems				1
More problems				0.81(0.79,0.84)
Autonomy				
No				1
Yes				1.10(1.07,1.13)
Random effects				
Country-level				
Variance (SE)	1.93(0.49)	1.41(0.37)	1.05(0.28)	1.22(0.33)
VPC (%)	22.68	17.49	17.86	20.78
MOR	3.76	3.1	2.66	2.87
Community-level				
Variance (SE)	3.29(0.05)	3.36(0.06)	1.54(0.03)	1.36(0.03)
VPC (%)	38.66	41.69	26.19	23.17
MOR	5.64	5.75	3.27	3.04
DIC	210,315.11	198,551.46	196,751.45	163,466.40

7.3.4. Freedom status, socioeconomic entitlements and postnatal care

The last maternal health care indicator analysed was postnatal care. Country freedom status posits highest effect sizes on postnatal care in comparison with both antenatal care and institutional delivery and the significant relationship is shown throughout the four models. Women living in countries with higher freedom status scores are more likely to receive postnatal check-ups for them and their newly born babies. The results indicate that a one standard deviation increase in country freedom score, increases the odds of postnatal care by a factor of 1.66-2.48. Postnatal care happens at the end of the pregnancy and childbirth continuum. It is, therefore, surprising that in relation to postnatal care, freedom status is positing higher effect sizes compared to the other indicators at the beginning and middle of the continuum. But it does make sense because at this stage the baby has been born and many people especially in rural Africa may no longer see the importance of visiting health facilities. Going for checks-ups under these circumstances may reflect how safe women feel and the trust they have in the healthcare system and the governance structures in general. These are likely to be present only in countries which are more inclined to freedom and whose government is accountable to the population. Otherwise, civil or political unrest and lack of accountability on the part of government would most likely discourage women from undergoing postnatal care check-ups.

Secondary school female enrolment was not significantly associated with institutional delivery but has a significantly positive effect on postnatal care. Women living in countries with higher secondary school enrolment have a higher propensity of postnatal care. In that one standard deviation increase in secondary school female employment increases the odds of postnatal care by a factor of 1.28-1.52. School enrolment is consistent across the three models. There is a logical argument to this finding. High rates of female secondary school enrolment in a country means more women are education up to at least primary school level. Since education is highly correlated with employment status, this would mean that most women are not only likely to know the importance of postnatal care because of their education, but also to have control over resources, which ultimately makes them have power

to make decisions about their lives. Several studies have shown that such women are more likely to have check-ups after birth compared to those who don't.

Voice and accountability is associated with postnatal care when all other variables are controlled for. It shows that women who live in countries where people have freedom of speech and higher governmental accountability are more likely to have postnatal care. This finding is rather strange because it is usually expected that a predictor variable would be significant before other variables are introduced and not the other way around. One explanation is that the association could be moderated by some other community or individual level variables. Higher voice and accountability scores mean that national governments put the interest of the people and that people have a bigger say in what happens in their country. Such countries could be expected to prioritise certain important sectors like quality health care. In which health facilities would be accessible and well-equipped with adequate skilled personnel to undertake check-ups. It is expected that such facilities would encourage adequate use of their services by the population.

Community autonomy and educational status are other important factors that are found to positively influence postnatal care. Women who live in communities with more women with decision making authority and in communities with more educated women are more likely to receive postnatal care compared to those who don't. Of course, the importance of female decision-making authority and education as predictors of postnatal care is not too different from other indicators of maternal healthcare utilisation. When women have the freedom to make decisions in households, it is plausible that their health and that of their children will be prioritised. On the other hand, when there are more educated women in the community, they are more likely to understand the importance of postnatal check-ups and share information with one another which could indeed, result in higher odds of postnatal care in the community. Distance to health facilities and place of residence at the community level were equally found to be associated with postnatal care just like in other models. Maternal age, distance to health facilities, female autonomy and educational status measured at the individual level are also predictors of postnatal care.

Just like in other models, relative importance of factors at the three levels were measured using VPCs and MORs and indeed for postnatal care, cross-national variations are attributable to structural level factors (community and country-levels) compared to individual level factors. The VPC for country level factors is 27.4% which means that is the amount of cross-national variation in postnatal care attributable to country level factors while that of community-level factors is 24.45%. The combined contextual level factors explain more than 50% of variations in postnatal care. These values help to underscore the importance of contextual factors in maternal health care. In this analysis, model comparison is also performed using the DIC which indicates that comparatively, model four that has three-level predictor variables is a better than the initial models.
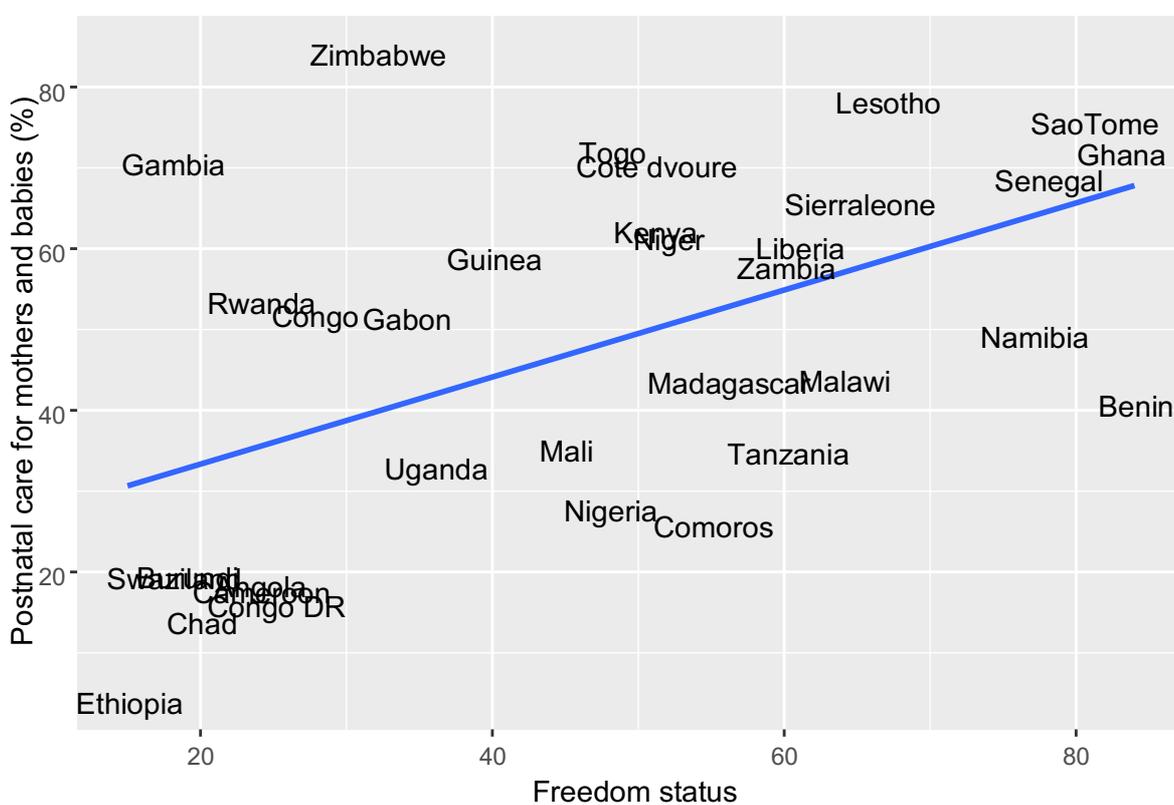
Figure 7. 3. Freedom and postnatal care (cor = .52)

Table 7. 3 Posterior odds ratios for multilevel logistic regression for civil liberties, socioeconomic entitlements and postnatal care in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Country-level factors				
Intercept	0.82(0.74,1.04)	0.70(0.60,0.81)	0.48(0.42,0.54)	0.41(0.32,0.57)
Freedom status		1.33(1.10,1.52)	1.72(1.35,2.00)	1.89(1.66,2.48)
Female secondary school enrolment		1.23(1.00,1.34)	1.20(1.03,1.43)	1.41(1.28,1.53)
Voice and accountability		0.86(0.70,1.00)	0.88(0.69,1.11)	1.25(1.11,1.51)
Human development		0.78(0.68,1.00)	0.66(0.58,0.78)	0.80(0.67,0.98)
Community controls				
Community education				
Low			1	1
Medium			1.79(1.69,1.92)	1.45(1.35,1.58)
High			2.59(2.45,2.80)	1.77(1.60,1.92)
Community distance problem				
Less problems			1	1
More problems			0.74(0.70,0.78)	0.81(0.77,0.86)
Community autonomy				
Low			1	1
High			1.32(1.25,1.38)	1.13(1.10,1.16)
Residence				
Urban			1	1
Rural			0.84(0.79,0.90)	1.03(0.93,1.08)
Individual controls				
Educational status				
No education				1
Primary				1.24(1.19,1.28)
Secondary/higher				1.48(1.41,1.54)
Distance				
Less problems				1
More problems				0.86(0.83,0.88)
Autonomy				
No				1
Yes				1.13(1.10,1.16)
Random effects				
Country-level				
Variance (SE)	1.87(0.50)	1.58(0.44)	1.29(0.36)	1.31(0.39)
VPC (%)	27.4	24.12	21.22	21.58
MOR	3.69	3.32	2.95	2.98
Community-level				
Variance (SE)	1.67(0.03)	1.68(0.03)	1.50(0.03)	1.47(0.03)
VPC (%)	24.45	25.65	24.67	24.22
MOR	3.43	3.44	3.22	1.18
DIC	205,651.72	189,817.10	189,523.38	174,088.32

7.4. Discussion

This chapter addressed the influence of civil and liberties and socioeconomic entitlements on maternal health care in sub-Saharan Africa. Civil liberties and socio-economic entitlements are important part of the guiding framework of the human rights-based approach to health and health care. The goal of the rights-based approach to health is to support and sustain good outcomes by analysing and addressing the inequalities, discriminatory practices and unjust relations in line with the UDHR and other international human rights treaties, which are often at the heart of health and healthcare problems. Measurements of civil and political rights are freedom status derived from Freedom House and voice and accountability derived from the WGI. Socioeconomic entitlements are measured by female secondary school enrolments from the World Bank's WDI.

Using Bayesian multilevel models, consistent relationships were found between country-level freedom status and all indicators of maternal healthcare. Suggesting that countries which guarantee civil and political liberties to citizen are more likely to also have higher utilisation of maternal healthcare. The relationship between civil liberties and maternal health care utilisation is straightforward to explain as it reflects the bedrock of the human rights framework. The success in implementing human rights obligations, including health care, depends on the willingness by state governments to build a health system based on the human rights approach. Accountability as articulated by London and Schneider (2012) is an important element in the state's willingness to prioritise human rights obligations. Civil and political liberties encourage strong parliamentary oversight on the executive branch of government in a manner that supports the poor and underprivileged in society and in ways that increases leverage for the health and health care sectors. Civil liberties also support strong civil society mobilisation and reinforcing community agency to pressure governing authorities to advance health rights to poor communities (London and Schneider, 2012; Cornwall, 2002; Allison, 2002).

Female secondary school enrolment was also fairly consistently associated with indicators of maternal health care except for institutional delivery. Education is an important part of

the socioeconomic entitlements as well as the capability approach. At the country level, recognising education as an entitlement provides a platform for citizens and the civil society at large to demand education friendly policies such as free education and gender equality in access to education. This would result in high literacy levels in a country, including that of women. We already know educated women are not only expected to understand the risks associated with failure to use maternal health care services but also are more likely to have the resources and decision-making authority essential to access and utilise maternal health care in SSA (Simona et al., 2018; Stephenson et al., 2006; Ononokpono et al., 2013). In other words, education offers women the capability functionings to circumvent the conditions of vulnerability and claim their rights. In this case the right to maternal health care services.

Community agency is essential in both the rights-based and capability approach to maternal health care utilisation because on one hand it enables women in the community to fight elements of subjudication by the cultural and social system and on the other hand, it gives people and groups the freedom and capabilities to make choices about their own health and health care (Vizard et al., 2011). In this study, community autonomy and education were analysed, and it was found that they were both associated with use of maternal health care utilisation at all stages of the maternal healthcare continuum. The fact that community education and autonomy which are two important indicators of capability theory were found to be associated with maternal healthcare utilisation together with civil and political rights speaks to the credibility of the rights-based and capability approach integration because their complementarity seems to be supported by empirical evidence (Birdsall, 2014; Vizard et al., 2011).

Amartya Sen's position that the two concepts (capability and human rights) go well with each other as long as they are not combined within each other's territory seems to hold in empirical examination (Sen, 2005). Martha Nussbaum, who is equally a significant proponent of the capability approach also acknowledges the link between capabilities and human rights when she posits that 'capabilities and closely related to rights but the language of capabilities gives important procession and supplementation to the language of rights' (Nussbaum, 2003). Indeed, supporters of the human rights-based approaches also conceptualise the relationship between human rights and capabilities in a similar fashion.

Stephen Marks for example, sees capabilities as starting points of the human rights approach (Marks, 2005).

Moreover, the findings also signify a validation to Bourdieu's capital theory. Education is an example of cultural capital, in its *embodied* and *institutionalised* form. In Bourdieu's view, this means having skills, knowledge and educational qualifications (Bourdieu, 1986; Bourdieu and Wacquant, 1992; Abel and Frohlich, 2012). I have already shown in several places in this thesis, how education bolsters access and utilisation maternal healthcare. However, speaking in relation to Bourdieu who emphasises the conditional nature of capital, we can imagine education and skills feeding into employment acquisition which would in turn bolster the decision-making autonomy of such women in the community. Decision-making autonomy just as we discussed in theoretical framework, is the fulcrum of structurally transformative agency which promotes not only the reproduction of the status quo but a transformation of social structure to allow for social justice and a disruption of structural violence against the disadvantaged in the community.

The relative importance of structural factors (community and country level factors) have been validated in this chapter. In institutional delivery and postnatal care, the combined relative effect of community and country level factors were more than that of individual level factors. This was the case notwithstanding the fact that individual level factors always have more explanatory power. This suggests that the paradigm shift in studying health and health care that emphasises the effects of broader "upstream" factors is in the right place (Phelan et al., 2004, Phelan et al, 2010). Community clustering suggests that people living in the same community have more in common than differences. They share the same health facilities and more importantly similar cultural norms and values. The same applies to people of the same country, there are some characteristics that are inherent to them all and these will distinguish them from people of different nationalities. It is indeed important to focus on such characteristics because they are likely to result into target specific policies to bolster maternal health care utilisation which could have a much higher chance of success in reducing maternal mortality.

Sociologically, this chapter points to two things. Firstly, the application of a Bayesian multilevel logistic regression approach addresses the methodological challenges that have been associated with the sociological study of human rights especially quantitative macro comparative and cross-national research. Turner 1990, Woodwiss 2005 and Giddens 1990 advocate for an integration of the individual and the collective to avert the universalism/particularism problem in sociological studies of human rights. However, doing so in conventional cross-national quantitative methods possess problems because some studies like this one do not regard selected countries as samples of a larger universe. Which means that statistical assumptions upon which quantitative analysis is built are violated as articulated in the methods. This study avoids that problem by applying of Bayesian multilevel modelling methods which are best suited to study such data structures because they don't rely on conventional statistical assumptions (Jackman, 2009). Secondly, the chapter paints a familiar picture about the structure vs. agency dichotomy vis-à-vis maternal health care utilisation. The choices individual women have to use maternal health care services are a function of community capabilities. In other ways the social structure outside their control determines the extent to which they will exercise their right to care during pregnancy and childbirth. This raises the need to reemphasise the need for focussing on the broader social conditions in improving maternal health in sub-Saharan Africa.

The limitations of this chapter are not different from any study of this nature and magnitude. Being a cross-sectional study, it only provides relationships and associations between variables and not cause and effect. However, cross-sectional data is the best there is especially in low resource countries like sub-Saharan Africa. Recall bias is another weakness that is often discussed in analyses which use data collected through survey methods. This is the case in this study. Recall bias is taken to mean the likely failure for research respondents to recall information properly due to the time lapse between relevant events and the interview. That respondents are more susceptible to reporting inaccurate information when there is longer time difference. This may be true for this study, but it should be noted that the study deals with life changing events of pregnancy and childbirth and therefore the possibility of forgetting when such matters are involved is slim. Also, that the DHS is credible because it is conducted under the auspices of the ministries of health in DHS countries. It is the basis

of many important prevalence statistics such as HIV/AIDS, TB, Malaria and immunisation coverage among others reported by international organisations, including the United Nations (UN). As such, they are conducted with enormous rigour by well trained personnel.

7.5. Conclusion

This chapter looked at the influence of civil and political liberties and socioeconomic entitlements on maternal health care in sub-Saharan Africa. Civil liberties and socioeconomic entitlements are major themes of the human rights-based approaches to health and healthcare, which emphasises the negative impact of inequalities, discriminatory practices and unjust relations on health outcomes.

Freedom status and voice and accountability are proxies for civil and political liberties while female secondary school enrolment represents socioeconomic rights at the country level. The results indicated that freedom status and secondary school enrolment are largely positively associated with maternal healthcare utilisation in sub-Saharan Africa. Indeed, women who live in countries where human rights are upheld have higher chances of utilising maternal healthcare. These results underscore the health benefits of upholding civil, political and socioeconomic rights. The results presented in this chapter renders credence to the argument that freedom opens room for strong people, parliamentary and civil society oversight holding governments accountable which in turn results into better provision of social, health and economic services to the larger population.

Chapter Eight - Globalisation and Maternal Healthcare Utilisation in sub-Saharan Africa: A Multilevel Analysis

8.1. Introduction

The empirical chapters of this thesis so far have considered gender relations, women empowerment and human rights violations as factors affecting adequate utilisation of maternal health care in sub-Saharan Africa. We have established that these factors are a function of both local and global social and economic structures that are designed to disadvantage women in terms of access and utilisation of maternal healthcare. However, the debate about the importance of structure to population health outcomes is broad, it extends beyond gender and human rights. Globalisation and its determinants of health and healthcare have equally dominated the literature. This final empirical chapter discusses the role of economic, social and political globalisation on maternal health care utilisation in sub-Saharan Africa.

Research in the world systems and dependency theory traditions suggest that unequal exchange relationships between the core and periphery countries result in the underdevelopment of the latter. It has been argued that Economic linkages between developed and developing countries through trade, foreign direct investments and aid have been detrimental to health and quality of life in developing countries (Bradshaw and Huang, 1991; Shandra et al., 2005, 2004). The rationale behind this formulation is that globalisation indeed increases the rate of economic growth but at the same time increases income inequality which adversely affects well-being for most people in developing countries (Wallerstein, 1974; Frank et al., 1967). Proponents of dependency theory argue that trade between the core and peripheral nations does not help this process because it is based on an unequal framework – the exchange of raw materials for processed goods and with long-term decline of prices for primary goods relative to finished goods. This results in weakened abilities to raise revenues by peripheral states and the lack of revenue limits the state's health expenditure which would affect the funding of health programmes, recruitment and motivation of health personnel, provision of adequate health facilities and other social

services that enhances life chances for many people (Frank et al., 1967). The quality of maternal healthcare is equally affected by lack of delivery care facilities and a cadre of lowly paid and demotivated staff.

However, some empirical studies have concluded that globalisation is good for public health, social development and developing countries' food security (Bergh and Nilsson, 2010; Martens et al., 2010; Mihalache-O'Keef and Li, 2011; Bahadur, 2011; Mukherjee and Krieckhaus, 2012), raising protracted interdisciplinary debates about the benefits of globalisation on health. The mechanisms and pathways that make globalisation have a positive influence on population health are mainly economic in nature. Indeed, globalisation has been found to stimulate economic growth through increased employment opportunities, reduction of prices for consumer goods, encouragement of entrepreneurship and improved economies of scale in production among others (Cornia, 2001). The precondition for this would be competitive domestic markets, strong regulatory institutions, moderate asset concentration and widespread access to public health services.

Globalisation can be linked with maternal health care utilisation through different pathways. The established association between globalisation and economic growth for example, implies improved education levels and employment status in the population. It is well known that women who are educated, employed or otherwise those who live with partners who are in the higher socioeconomic status bracket, are more likely to utilise maternal healthcare (Simona et al., 2018; Stephenson et al., 2006; Ononokpono et al., 2013). Urbanisation is another factor that has been linked to globalisation (Goryakin et al., 2015). We know that in urban areas, the distance to health facilities is not such a big problem compared to rural areas. We also know that access to information about the dangers of delivering in homes and not visiting hospitals during pregnancy in urban areas. All these are drivers of positive maternal health care utilisation.

Many studies on the role of globalisation in health have often been criticised for their conceptualisation of globalisation as solely an economic process (Goryakin et al., 2015). Recently there has been a move to a broader definition of globalisation that also captures the social and political aspects. Keohane and Nye (2000), formulated a more widely accepted

measurements of globalisation which includes the three dimensions: a) economic: long distance flows of goods, capital and services as well as information and perceptions that accompany market exchanges, b) political: the diffusion of government policies internationally, and c) social: the spread of ideas, information, images and people. The KOF index of globalisation was created by Dreher et al. (2008) to include the three and some more sub-dimensions. For all dimensions, the index was formulated using comprehensive data sets from 1970 to 2015.

Social and political globalisation have implications on the use of maternal health care in sub-Saharan Africa through the extent to which information is spread across the population and the impact of integration of global norms respectively. Social and cultural globalisation involves media freedom and cross-border movements of people and cultures. It is probable that women who have better exposed to technology, internet, mobile phones and tourists are likely to value maternal health services and use them more than those who aren't. Political globalisation on the other hand, has to do with participation in international norms and may also be a positive driver of maternal health care utilisation. Political globalisation is a precursor to greater economic integration by encouraging trade between countries (Dreher, 2006). Although the relationship between political globalisation and maternal health may not be straightforward, it is conceivable that those who live in countries that uphold international norms would use maternal health care services better than those who are not. This is what makes inclusion of the non-economic measures of globalisation important.

This study makes use of the relatively new measurement and its different aspects to investigate the role of globalisation in maternal health care utilisation in sub-Saharan Africa. It is important to include all the different aspects of globalisation in the analysis because they capture different dimensions that may not be related to each other, making it possible to delineate which aspects may be responsible for women's propensity to use maternal health care services. There are a few other studies that have used these measurements to study child mortality and obesity (Tausch, 2016; Goryakin et al., 2015).

8.2. Methods

8.2.1. The data

The data used in this chapter is the same as in all the empirical chapters of this thesis. The individual and community-level analysis (level 1 and 2) pools data from 35 Demographic and Health Surveys (DHS) conducted between 2006 and 2015 in sub-Saharan Africa. The DHS data, World Development Indicators (WDI) and the KOF Globalisation index are explained in detail in Chapter Five. Suffice it to reiterate that the country data which forms the main explanatory variables for this chapter are derived from the KOF globalisation index at the KOF Swiss Economic Institute[26]. The globalisation indexes are from 1 up to 100 and the countries with higher scores are the most globalised ones and the ones with lower score are the least globalised. The definitions and measurements of the component variables of globalisation are described below. For comparability and interpretation purposes, these measures were standardised to the mean of '0' and standard deviation of '1' in the analysis.

8.2.2. Measurements and variable operationalisation

The dependent variables are measures of maternal health care utilisation and have been described fully in chapter five. They include antenatal care visits, institutional delivery and postnatal care for mothers and newly born babies.

Globalisation is the main explanatory variable in this chapter. It is one of the most difficult concepts to measure for empirical research. Arribas et al. (2009) posits two reasons which make globalisation difficult to measure. The first being that it is too multifaceted, and this brings enormous complexity because it encompasses cross-national cultural, social, political and economic interactions. Adequate measurements would have to include all the aspects of globalisation. However, this may not always be possible because of the scarcity of data amenable to statistical analysis. The second reason is increased openness among countries whereby it almost assumes direct or indirect connectivity of all individuals in a manner that

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[26] https://kof.ethz.ch/en/forecasts-and-indicators/indicators/kof-globalisation-index.html

abolishes all possibility of remoteness. It is difficult to enlist measurements precise enough to capture this level of detail.

As mentioned above, globalisation has commonly been measured in economic terms like foreign direct investment or total imports and exports (Goryakin et al., 2015). This approach doesn't cover many aspects of this complex concept. This is the reason why this study uses what is considered to be the most comprehensive measures of globalisation. In this study, globalisation is delineated into four components including total, economic, social and political.

Total globalisation: This is an aggregation of the economic, social and political components of globalisation. It is measured using the KOF Globalisation indicator (Dreher et al., 2008). Note that because it is an aggregation of all the components of globalisation, it will not be included in multilevel analysis with the other components as doing so will obviously introduce multicollinearity.

Economic globalisation: This is the composite measure which is a component of the KOF globalisation index. It comprises trade in goods and services (as a percent of GDP), foreign direct investments (% of GDP), portfolio investments (% of GDP), international debt (% of GPD), international reserves and international income payments (% of GDP). Others are trade taxes and tariffs, capital account openness and investment restrictions (Dreher et al., 2008; Goryakin et al., 2015).

Social globalisation: The main measure is the KOF globalisation index and it is based on

the international voice traffic, transfers, international tourism foreign population, migration (% of total population), patent applications, international students, high technology exports, trade in cultural goods, McDonald restaurants (per capita), telephone subscriptions, international airports, television ownership, press freedom, internet, gender parity and expenditure on education (Dreher et al., 2008; Dreher, 2006; Goryakin et al., 2015).

Political globalisation: The main measure in the KOF Globalisation index which is created from the number of embassies, participation in UN peace keeping missions, presence of international NGOs, international treaties signed and number of partners in investment

treaties. This component is designed to measure the degree of a country's international political engagement (Dreher, 2006; Goryakin et al., 2015)

In this chapter, we control for important variables that may have strong association with maternal health care utilisation or may be intervening in the relationship between globalisation and maternal health care localisation. These variables are defined at both community and individual levels and they include distance to health facilities, exposure to the media (newspapers, radio and television) and place of residence (whether rural or urban). As noted above, urbanisation is an important factor in globalisation (Goryakin et al., 2015) and it conditions other factors like media exposure, distance to health facilities. That's the reason for controlling for these variables in this analysis.

8.2.3. Statistical analysis

Like in both previous chapters estimates for parameters were obtained using the Markov chain Monte Carlo (McMC) methods in `R2MLwiN` (Zhang et al., 2016) in the `R` environment. Chapters Four and Six have explained a little more about the software and statistical procedures used in this study. Just like in previous chapters, I also use uninformative uniform prior distribution for both regression and precision parameters in this chapter specifying 1 chain running for 55,000 iterations with a burn-in length of 5,000 iterations in order to achieve convergence. The convergence of chains was assessed by inspection of trace and auto-correlation plots in addition to the Raftery-Lewis, the Brooks-Draper and Geweke diagnostic tests. The Bayesian Deviance Information Criterion (DIC) was used to evaluate the goodness of fit of the models (Gelman and Hill, 2007; Lynch, 2007; Browne, 2015).

For all the indicators of maternal healthcare utilisation, four models were specified for each of the outcome variables. In all the tables, model 1 is the null or empty model which contains only the intercept and the outcome variable. Model 2 includes all the three components of globalisation (economic, social and political globalisation) which have been measured at the country-level. Model 3 includes community-level variables (community education, community distance to health facility problem, community media exposure and place of residence) and Model 4 controls for the individual level socio-demographic variables

(maternal age, educational status, distance to a health facility and exposure to the media). The tables report the posterior odds ratio (OR) and 95% Bayesian credible intervals (CrI) for each of the variables in all models except for the null where only the intercept parameters are reported. Statistical significance is determined by non-inclusion of "0" in the 95% (CrI).

8.3. Results

8.3.1. Descriptive statistics

The distribution of maternal healthcare utilisation indicators and all the community and individual level variables across sub-Saharan African countries is already given in chapter five. Figure 8.1. shows the distribution of the three components of globalisation indexes and the aggregated total globalisation across sub-Saharan African countries in 2015. It is interesting to note that the performance of countries varies in each of the globalisation indexes. Liberia, Namibia and Nigeria are the most globalised in terms of economic, social and political globalisation respectively. In terms of aggregated globalisation however, it is evident that Senegal, Namibia, Ghana and Kenya are among the most globalised countries while countries like Burundi, Chad, Comoros and Congo DR are some of the least globalised in the sub-continent.
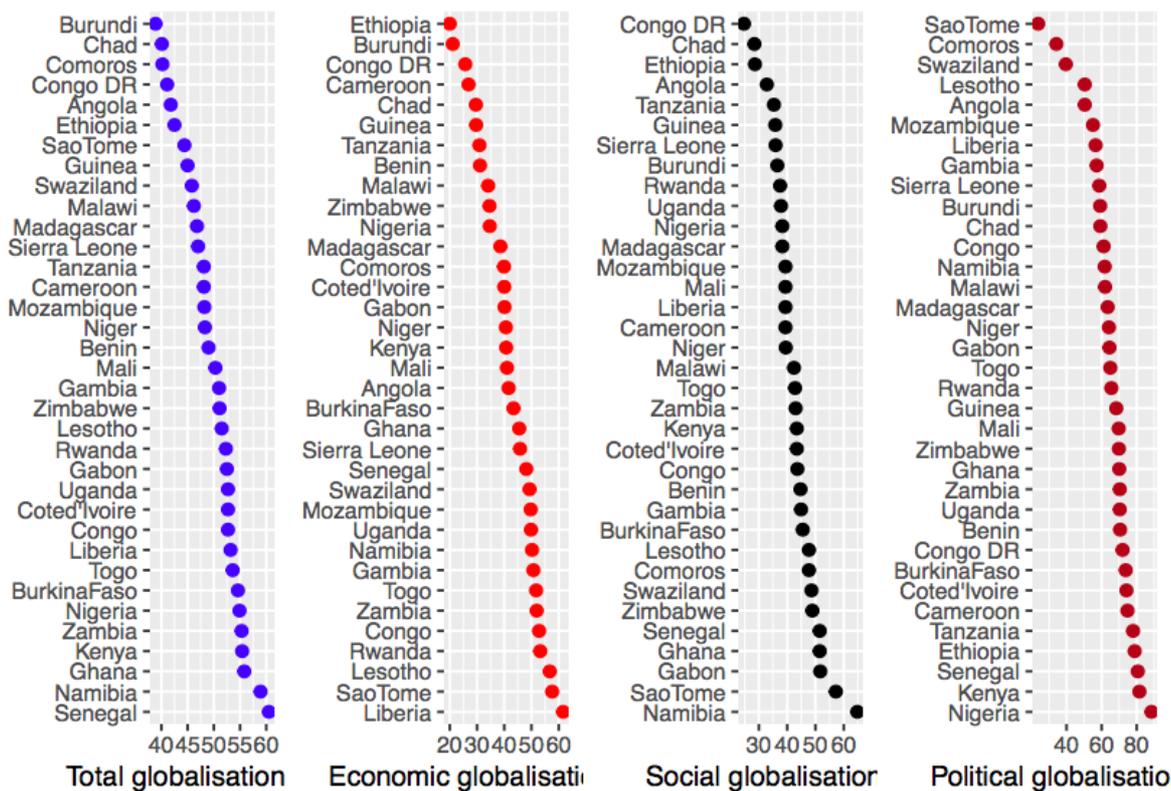
Figure 8. 1. The distribution of the four components of globalisation across sub-Saharan African countries

Figures 8.2 to 8.4 display results of the correlation between the four components of globalisation and the proportion of having four or more antenatal care visits in sub-Saharan Africa. These are pooled analyses of correlation coefficients of globalisation indexes of each of the four components and the proportions of maternal healthcare utilisation among women. All selected countries in the analysis are included but I have removed those which overlap with others to allow for clarity in the graphs. Correlation coefficients are reported and indicated on top of each graph with the linear line of fit and 95% confidence interval indicated by the shaded areas. The results here may give an indication as to how the concerned explanatory variables are associated with outcome variables.

8.3.2. Globalisation and antenatal care

The correlation analysis shows that apart from political globalisation with a negative correlation, all the components of globalisation show moderate but positive correlation with the proportion of adequate antenatal care visits. Total globalisation is not significantly

related to antenatal care while economic and social globalisation display significant relationships ($p < 0.05$) with correlation coefficients of (cor= .51) and (cor= 50) respectively. Political globalisation on the other hand, shows a negative and significant correlation ($p < 0.05$) with the proportion of 4 + more visits (cor=-.37).

The correlation analysis undertaken above does not of course indicate the extent of non-linear association between variables, neither does it enable prediction of the value of the outcome variable based on the explanatory variables. Even more importantly, issues of dependence, contextuality and heterogeneity in data as discussed above, are not captured in correlation analysis. As such, this part of analysis uses multilevel models to study the effects of globalisation on maternal health care utilisation. Fixed and random effects of each component of globalisation and maternal health care are presented in Tables 8.1–8.3.

Since this study delineates the concept of globalisation into its distinct components to determine whether the components indeed capture different phenomena, each of the components were regressed on indicators of maternal healthcare utilisation. Beginning with the impact of globalisation on antenatal care in sub-Saharan Africa reported in Table 8.1, the results indicate that economic globalisation is positively associated with antenatal care in that a one standard deviation increase in the economic globalisation index increases the odds of having adequate antenatal care visits by a factor of 1.02–1.04. Relevant community and individual level control variables are added in model 3 and model 4 respectively in order to examine confounding. The magnitude of associations, however, do not exhibit any considerable change but the parameters for the economic globalisation remain positive and significant throughout the modelling process. This result corroborates many studies that claim that economic globalisation may be good for health and well-being in developing countries.
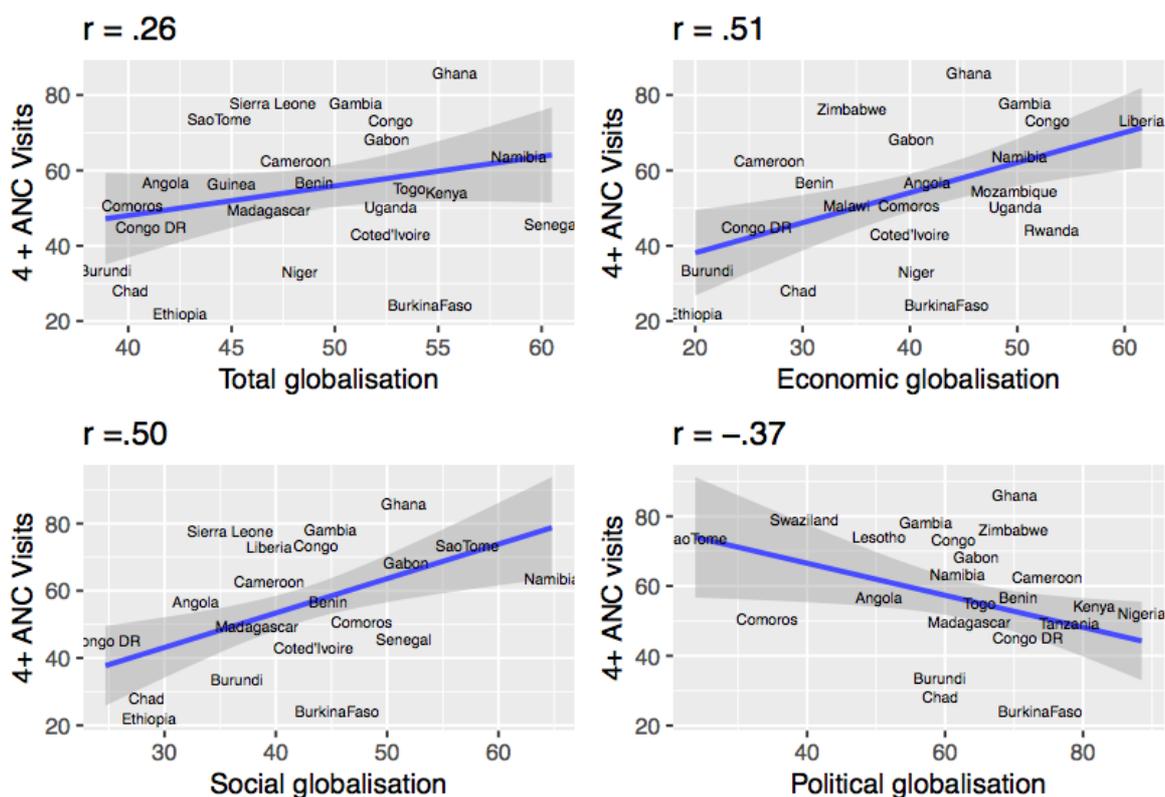
Figure 8. 2. The relationship between the four components of globalisation and antenatal care visits

Social globalisation also found to be significantly associated with antenatal care. The results here indicate that a one standard deviation increase in social globalisation increases the odds of having four or more antenatal care visits by a factor of 1.01–1.03. This means that women who live in countries with higher indexes of social globalisation are more likely to have adequate antenatal care visits. Adding community and individual level control factors does not seem to affect the magnitude of associations considerably and the results remain significant. This finding equally buttresses the notion that globalisation may not as bad for health and Well-being as some scholars may have claimed.

The relationship between political globalisation and antenatal care visits is also reported in Table 8.1. The results show that there is no relationship between political globalisation and antenatal care. Additional variables operating at both community and individual levels do not change this relationship. The same is true for the country level control variable of GDP PPP which was not associated with antenatal care in all the three models.

The VPC results indicate that 15.2% of cross-national variation in maternal health care utilisation is attributed to the country-level, while 19% is attributable to the community level factors. Both the country and community level contributions to maternal health care variations are statistically significant. The magnitude of influence decreases with the introduction of additional community and individual level variables in the models. Although the individual-level variables remain with the largest contribution to cross-national variation in maternal healthcare, this result shows a significant contribution of contextual factors in explaining variation of maternal health care utilisation in sub-Saharan Africa. The results show an improvement in terms of model fit of the estimates with more variables being added as indicated by the DIC. The DIC shows that the model fit improves with additional lower level variables suggesting that three-level models are better predictors of antenatal care compared to single or two-level models.

Table 8. 1 Posterior odds ratios for multilevel logistic regression for globalisation and antenatal care in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Globalisation variables				
Intercept	1.15	0.2	0.24	0.1
Economic globalisation		1.03(1.02,1.04)	1.02(1.00,1.03)	1.03(1.00,1.05)
Social globalisation		1.02(1.01,1.03)	1.01(1.00,1.02)	1.02(1.01,1.03)
Political globalisation		1.00(0.99,1.00)	1.00(0.99,1.01)	1.00(0.98,1.01)
GDP per capita PPP		1.13(0.96,1.39)	1.05(0.87,1.23)	1.05(0.84,1.31)
Community controls				
Community education				
Low			1	1
Medium			1.98(1.90,2.07)	1.65(1.56,1.71)
High			2.79(2.66,2.98)	1.94(1.82,2.07)
Community distance problem				
Less problems			1	1
More problems			0.83(0.80,0.86)	0.89(0.86,0.93)
Community media exposure				
Low			1	1
High			1.44(1.37,1.49)	1.23(1.20,1.30)
Residence				
Urban			1	1
Rural			0.71(0.68,0.74)	0.77(0.74,1.80)
Individual controls				
Educational status				
No education				1
Primary				1.34(1.30,1.38)
Secondary/higher				1.91(1.84,1.98)
Distance				
Low				1
High				0.87(0.85,0.89)
Media exposure				
No				1
Yes				1.29(1.25,1.32)
Random effects Globalisation index (Country)				
Variance (SE)	0.761(0.198)	0.531(0.156)	0.384(0.099)	0.342(0.101)
VPC (%)	15.22	11.15	8.9	8.03
MOR	2.3	2	1.81	1.75
Community-level Variance (SE)	0.952(0.017)	0.950(0.017)	0.636(0.013)	0.622(0.013)
VPC (%)	19.04	19.91	14.76	14.61
MOR	2.54	2.53	2.14	2.12
DIC	288,116.80	288,157.43	286,614.83	246,968.46

8.3.3. Globalisation and institutional delivery

In Figure 8.3, I plot the relationship between the four components of globalisation and the proportion of institutional delivery in sub-Saharan Africa. There is a linear, positive and moderate correlation between 2 components of globalisation (economic and social globalisation) and institutional delivery ($p < 0.001$). Unlike in the case of antenatal care visits, political globalisation is not significantly correlated with institutional delivery. As usual, the relationship of the three components of globalisation and institutional delivery was further examined using multilevel models and the results are reported in Table 8.2.
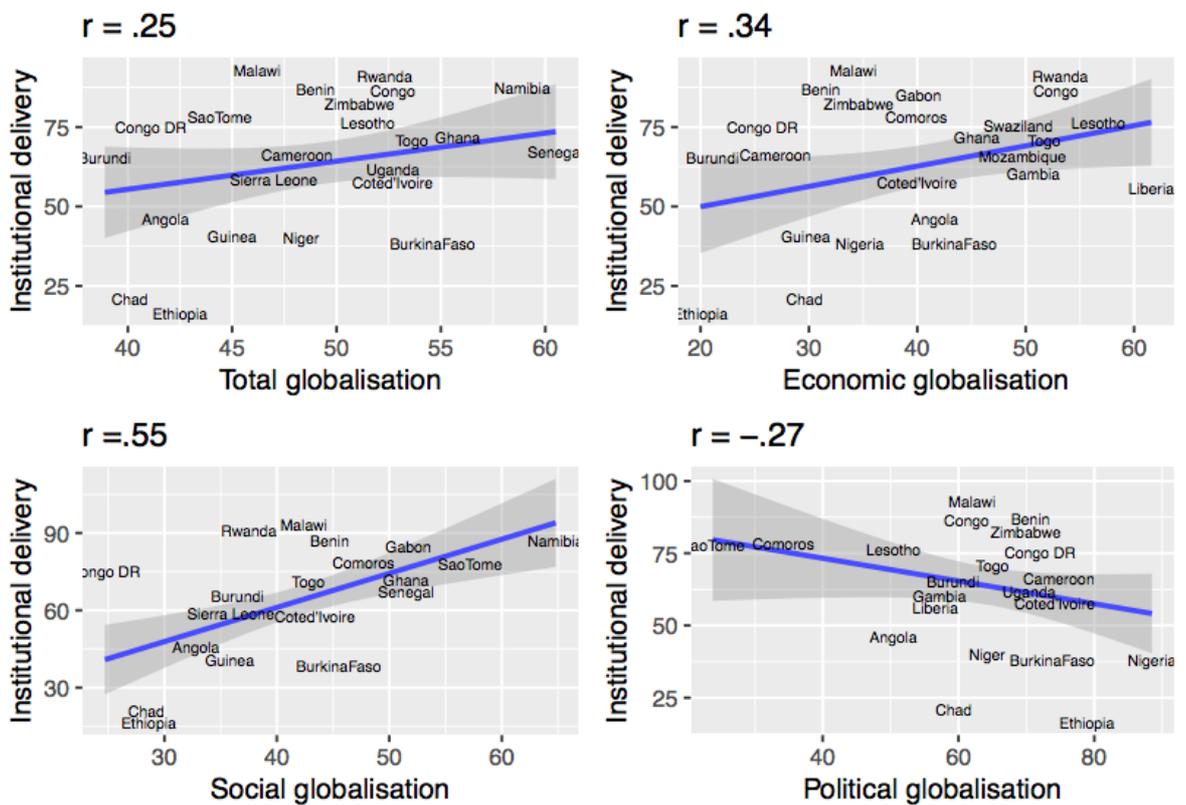

Figure 8. 3. The relationship between the four components of globalisation and institutional delivery

In this analysis, economic globalisation was not found to be significantly associated with institutional delivery throughout the three models. The results show an interesting change from what we saw in the case of antenatal care where the relationship was significant. This

result is in line with widely held views on the relationship between globalisation and population health as indicated above. It is aligned with the world systems and dependency theories which claim that globalisation is harmful to population health especially in developing countries.

The results of the relationship between social globalisation and the odds of institutional delivery are also reported in Table 8.2 and they indicate that women who live in countries that have higher indexes of social globalisation have increased odds of delivering in health facilities. For one standard deviation increase in social globalisation index, the odds of institutional delivery increase by a factor of 1.04–1.07. Only slight changes are observed when community-level and individual-level variables are introduced into the model and there are no consequential changes in the significance of the relationship between the two variables too.

This analysis has also found the relationship between political globalisation and institutional delivery not to be significant throughout the three models. As such, the results indicate that political globalisation is not associated with institutional delivery. Our control variable, GDP per capita in purchasing power parity also shows no relationship with institutional delivery.

According to the VPC, the combined contribution of community and country-level factors in cross-national variation in institutional delivery is higher than individual level contribution. Country-level factors are responsible for 27.7% variation in institutional delivery while community-level factors are responsible for 39.2%. The VPC is significant across the models. MOR also enhances this notion because they are equally large numbers that are observed. The MOR at the country-level is 2.3 and at the community level is 2.5. The significant drop in the VPC at country-level from 27.7% to 17.5% after the community level factors are introduced shows the established importance of community-level factors in determining health and well-being. The decreasing values of the DIC with additional variables indicates better fit, which also exemplifies the importance of community and individual-level variables in explaining institutional delivery in sub-Saharan Africa.

Table 8. 2 Posterior odds ratios for multilevel logistic regression for Globalisation and Institutional delivery care in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Globalisation variables				
Intercept	3.39	0.16	0.3	0.09
Economic globalisation		1.01(0.99,1.02)	0.99(0.98,1.00)	1.00(0.95,1.05)
Social globalisation		1.06(1.04,1.07)	1.05(1.04,1.07)	1.07(1.01,1.15)
Political globalisation		1.00(0.99,1.01)	1.00(0.99,1.01)	1.00(0.97,1.03)
GDP per capita PPP		1.14(0.92,0.48)	0.80(0.63,1.06)	0.87(0.60,1.25)
Community controls				
Community education				
Low			1	1
Medium			3.40(3.17,3.63)	2.47(2.31,2.67)
High			7.85(7.16,8.50)	4.11(3.77,4.48)
Community distance problem				
Low			1	1
High			0.50(0.48,0.53)	0.56(0.53,0.59)
Community media exposure				
Low			1	1
High			1.84(1.73,1.96)	1.59(1.49,1.68)
Residence				
Urban			1	1
Rural			0.33(0.31,0.35)	0.38(0.36,0.40)
Individual controls				
Educational status				
No education				1
Primary				1.47(1.42,1.52)
Secondary/higher				3.04(2.90,3.17)
Distance				
Less problems				1
More problems				0.79(0.77,0.81)
Media exposure				
No				1
Yes				1.35(1.31,1.40)
Random effects Globalisation index (Country level)				
Variance (SE)	1.829(0.498)	1.394(0.377)	1.032(0.264)	1.193(0.332)
VPC (%)	27.74	17.47	17.79	20.21
MOR	2.3	2	1.81	1.75
Community-level Variance (SE)	3.295(0.057)	3.294(0.056)	1.480(0.025)	1.419(0.028)
VPC (%)	39.16	41.29	25.5	24.04
MOR	2.54	2.53	2.14	2.12
DIC	210,330.76	210,351.99	208,208.84	175,561.42

8.3.4. Globalisation and postnatal care

The pairwise correlations between each of the four components of globalisation and postnatal care are shown in Figure 8.4. The pattern of postnatal care where countries like Zimbabwe, Ghana and Lesotho are doing well is still being demonstrated in this graph. So are the four components of globalisation which have always shown that Senegal, Liberia, Namibia and Nigeria being the most globalised countries in sub-Saharan Africa. Figure 8.4 also shows that three components of globalisation (total, economic and social) are relatively highly positively and significantly correlated with postnatal care. Political globalisation on the other hand was not significantly correlated with postnatal care.
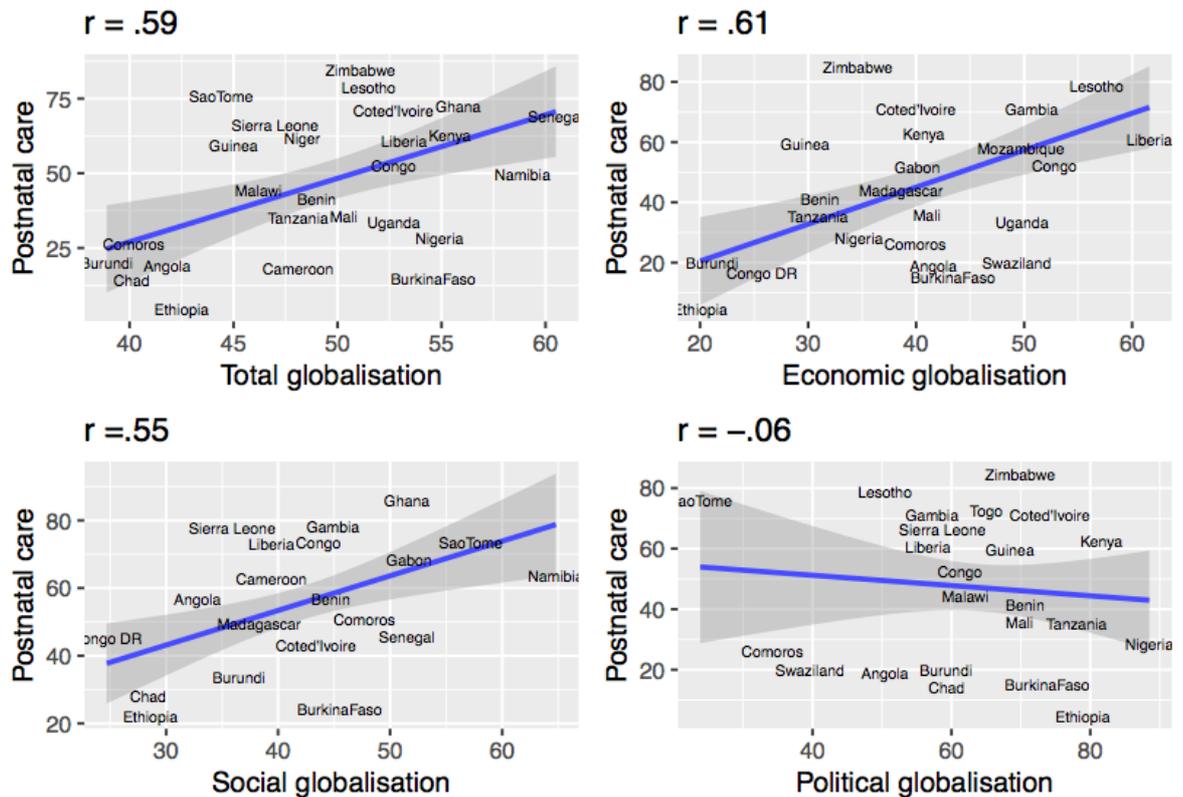

Figure 8.4. The relationship between the four components of globalisation and postnatal care

In terms of multilevel analysis, the impact of globalisation on postnatal care is reported in Table 8.3. The relationship between economic globalisation and postnatal care in sub-Saharan Africa is showing statistical significance across the different models. The

interpretation is such that a one standard deviation increase in economic globalisation increases the odds of postnatal care by a factor of 1.02–1.05. Women who live in countries that are more economically globalised are more likely to postnatal check-ps. These results seem not to be affected by controlling for community and country-level variables and the effect sizes increase slightly.

Table 8.3 also reports the impact of social globalisation on postnatal check-ups for mothers and their newly born babies and the results show that women who live in more socially globalised countries have a better chance of having postnatal check-ups when they have babies. A one standard deviation increases in the social globalisation index results into increased odds of having postnatal check-ups by a factor 1.05–1.09. The magnitude of effect does not seem to change much when control variables at community and individual levels are introduced and the overall level of significance is unaffected.

Political globalisation is only slightly significant in model 2 but when control variables are introduced, it loses significance. The results for GDP per capita PPP are surprising because they show women who live in countries with higher GDP per capita PPP have decreased odds of having postnatal check-ups. The implications of this finding are considered in detail in the discussion section of this chapter.

The country level VPC is 28% and the community level's is 24%. Together they explain cross-national variations in postnatal care more than individual-level variables. This is very important to note because it means policies that address better outcomes in maternal health care should be focused at the contextual level which are in most cases outside the control of individual women. Just like in the other models, the country-level VPC drops significantly when the community-level and country-level factors are introduced into the models. This, as already stated further signifies the importance of community level factors in explaining maternal health care in developing countries. The MOR tell a similar story and this bolsters the importance of community-level factors and multilevel models are the crucial methods of studying maternal health care in sub-Saharan Africa. The fact that the DIC is decreasing when additional variables are added shows that model fit improves when community and individual-level variables are considered.

Table 8. 3 Posterior odds ratios for multilevel logistic regression for Globalisation and Postnatal care in sub-Saharan Africa with 95% credible intervals (N = 245955)

Variable	Model 1	Model 2	Model 3	Model 4
Globalisation variables				
Intercept	0.87	0	0	0
Economic globalisation		1.04(1.02,1.05)	1.04(1.03,1.05)	1.06(1.02,1.10)
Social globalisation		1.08(1.05,1.09)	1.09(1.06,1.12)	1.08(1.03,1.14)
Political globalisation		1.01(1.00,1.03)	1.01(0.99,1.03)	1.03(0.99,1.05)
GDP per capita PPP		0.75(0.64,0.93)	0.66(0.54,0.78)	0.68(0.52,0.97)
Community controls				
Community education				
Low			1	1
Medium			1.64(1.53,1.74)	1.39(1.28,1.50)
High			2.09(1.92,2.76)	1.59(1.49,1.75)
Community distance problem				
Low			1	1
High			0.75(0.71,0.80)	0.81(0.76,0.85)
Community media exposure				
Low			1	1
High			1.49(1.41,1.59)	1.25(1.17,1.33)
Residence				
Urban			1	1
Rural			0.92(0.87,0.97)	0.97(0.92,1.02)
Individual controls				
Educational status				
No education				1
Primary				1.21(1.17,1.26)
Secondary/higher				1.42(1.36,1.48)
Distance				1
Less problems				
More problems				0.80(0.76,0.85)
Media exposure				
No				1
Yes				1.44(1.40,1.48)
Random effects Globalisation index (Country level)				
Variance (SE)	1.896(0.534)	1.003(0.258)	1.082(0.325)	0.962(0.262)
VPC (%)	27.66	16.82	18.44	16.82
MOR	2.3	2	1.81	1.75
Community-level Variance (SE)	1.668(0.032)	1.668(0.030)	1.490(0.027)	1.467(0.029)
VPC (%)	24.33	27.98	25.42	25.65
MOR	2.54	2.53	2.14	2.12
DIC	205,678.41	205,715.91	205,283.37	189,570.40

8.4. Discussion

The study examined the relationship between globalisation and maternal health care utilisation in sub-Saharan Africa. The impact of globalisation on health and health care has been a subject of much scholarship over the past several decades now. The global marketplace of goods, services, people, ideas and capital comes with defining social and economic trends that have affected health and well-being either directly or indirectly the world over. Basically, the results seem to render support to the narrative that considers globalisation as good for health and healthcare. The approach taken in this study of breaking down the concept of globalisation into its component parts has helped disentangle its effects on maternal healthcare utilisation. The impact of globalisation on maternal healthcare has not been examined this way previously. Indeed, the results indicate the impact of globalisation on maternal healthcare utilisation in sub-Saharan Africa is dependent on the specific component of globalisation. For example, I find that only social globalisation is associated with the maternal healthcare utilisation throughout the continuum of antenatal care up to postnatal care. Economic globalisation is seen as the second most important component of globalisation as it significantly associated with both antenatal care and postnatal care. Political globalisation on the other hand, does not influence maternal healthcare utilisation.

More succinctly, comparing the different components of globalisation, and at the same time including suitable adjustments for confounders and covariates at the country, community and individual levels, I find for the first time that social globalisation is consistently positively associated with the odds of maternal healthcare across the continuum. Therefore, living in countries with greater social globalisation could have maternal healthcare benefits. The relationship between economic globalisation and maternal healthcare utilisation has also shown that there is some relative merit in the attention that economic globalisation has received in the literature because it is seen to be significantly associated with two indicators of maternal healthcare utilisation. This finding aligns to some extent with Goryakin et al. (2015) who have used similar dimensions of globalisation to study obesity in developing

countries. They find that social globalisation was an important factor in predicting obesity than political and economic globalisation, although political globalisation was also found to be significant in this study. The fact that there are different outcome variables used in each of the studies could explain the differences in the findings. Furthermore, their study did not control for community level factors. It is possible that the relationship between political globalisation and in part economic globalisation was explained away by community level factors in this study.

Possible explanations for these results are traceable in the core elements that make up the indexes. Social globalisation involves cross-border cultural transfers and the openness of the mass media (Dreher et al., 2008). In other words, it is knowledge and the sharing of information that seem to have the greatest contribution on maternal healthcare in sub-Saharan Africa. We have discussed the importance of skills and knowledge in maternal healthcare in this thesis, that they help women appreciate more the need for antenatal visits, facility delivery and postnatal care. Social networks that are created by the open mass media and the internet bolsters people's engagement with others and facilitates the sharing of ideas that could be crucial for health and well-being. Bourdieu's cultural capital is premised on the idea that knowledge and education are emancipating but they can also be transmitted into employment which can be empowering to people in terms of access and utilisation of health systems. With this explanation, it is logical that social globalisation would have an impact on maternal healthcare in sub-Saharan Africa.

With regard to economic globalisation being associated with some indicators of maternal healthcare, the explanation could be that globalisation is seen as precursor of global economic growth funnelled through weakened relevance of global boundaries, greater interdependence between countries and increased adherence to international norms (Kruk, 2012; London and Schneider, 2012). Weakened borders and interdependence between nations support trade liberalism and other economic processes such as foreign direct investments, which in turn lead to economic growth and associated population health and well-being (Dreher, 2006). Adherence to international norms means greater propensity of implementing international treaties which may border on human rights obligations which

require states to deliver socioeconomic entitlements including health and health care (London and Schneider, 2012).

On the other hand, the same economic fundamentals which are responsible for economic growth and improved population health are blamed for debilitating life chances especially in developing countries. In this viewpoint, Globalisation is seen as a medium for the reproduction of global capitalism whereby economic liberalism is imposed predominantly through a global imperialist agenda (Shahmanesh, 2007). Such that although economic growth may result from globalisation, this is more likely to be the case in view of developed rather than developing countries. Also, and most importantly globalisation is strongly associated with widening inequalities within and between countries. Goryakin et al. (2015) for example, posit that macroeconomic policies propagated by the Washington consensus such as financial deregulation, privatisation and trade liberalisation are associated with higher poverty rates, poorer health outcomes and behavioural risk factors such as smoking and obesity.

This formulation was not completely supported in this study, but it may be responsible for the confounding results regarding the relationship between specific dimensions of globalisation and maternal health care utilisation in sub-Saharan Africa. Economic globalisation for example, was not found to be a relevant predictor of institutional delivery and political globalisation was not associated with any of the indicators of maternal healthcare utilisation. It is thus, difficult to conclude definitively that globalisation is either good or bad for health or healthcare and this study doesn't help in this question. However, we can say that, among the components of globalisation, social globalisation had a stronger association with maternal healthcare utilisation compared to other dimensions. Like I said earlier, this is an important finding because economic globalisation has not only been suspected to have more impact on globalisation, but it has been synonymous with globalisation.

This chapter offers a great contribution to population health studies and Sociology. Studying the impact of globalisation on cross-national variations in maternal health care using Bayesian three-level multilevel models is novel in sub-Saharan Africa. The study has

established not only the extent of the impact of globalisation on maternal health care but also shown that overall, contextual factors account for more variations in the relationship than individual factors. This is an important confirmation of the international effort to analyse factors that affect health and well-being beyond individual social actors. The study is also novel for using the definition of globalisation with its constituent dimensions of economic, social and political globalisation. Hence, offering a holistic view of globalisation especially as it applies to use of maternal healthcare in sub-Saharan Africa. To my knowledge there is no previous study that has focused on the relationship between globalisation (defining it using its three dimensions) and maternal healthcare while applying three-level Bayesian multilevel models.

Obviously, this chapter has limitations just like any other study that uses the DHS or any cross-sectional survey. The analysis is only able to determine associations between variables and not causality. It is also important to note that while causation studies will be desirable, it is difficult to obtain data in sub-Saharan Africa that will enable causality studies. The study analysed only women who have had birth within the past five years before the survey. Although this may not be a methodological weakness, it is important to bear in mind when it comes to the generalisation of this study to the population of interest and that caution is exercised in the interpretation so that it is only restricted to the specific type of women population surveyed in the study and not to the entire population of sub-Saharan Africa.

The chapter brings another dimension to the sociological body of knowledge especially with reference to cross-national studies on health and health care. Sociology has been gaining ground in multi-country or international research. This chapter which combines data from different sub-Saharan African countries is a positive contribution in that direction.

8.5. Conclusion

This chapter looked at the impact of globalisation and maternal healthcare utilisation in sub-Saharan Africa. It delineates globalisation into three components of economic, social and political globalisation. It uses Bayesian multilevel models to estimate the odds of attending antenatal care, institutional delivery and postnatal care. The results show that the impact of globalisation on maternal healthcare is dependent on the specific component of globalisation.

After adjusting for confounding, social globalisation is seen as the most relevant predictor of maternal healthcare compared to other components of globalisation. It is also established that for the most part, cross-country variations in maternal healthcare are attributable to structural factors compared to individual level characteristics

Chapter Nine - Conclusions and Future Research

9.1. Introduction

This study addressed the influence of structural factors on maternal healthcare more broadly. structural factors are expansive, but I specifically focus on gender relations, human rights and globalisation. These delineated concepts of structural conditions form the basis of empirical chapters in this study. In this concluding chapter, I consolidate the empirical chapters and discuss them in the broader context of extant literature. I start by reiterating the research context that motivated the conception of this study. I also revisit the research questions to lay the ground for a consolidated analysis. In the sections that follows, I outline major contributions that the study has made to the body of knowledge in medical sociology and population health more generally. An exploration of future research is done both in terms of what I will endeavour to accomplish hereafter in the light of the work of this thesis and in terms of general outlook of the field.

9.2.1. The research context

The study is premised on the idea that structural factors have the greatest influence on individual choices and actions, but individual agency contributes to both the social reproduction of the status quo and to overcoming the constraining power of the social structure. Both Emile Durkheim and Max Weber are foundational to this formulation. The work of Emile Durkheim in *suicide* and others demonstrated the importance of external social conditions in determining individual actions. Max Weber and other agency-centric proponents on the other hand, have emphasised the importance of individual actions in shaping the social structure (Eckersley, 2015). In his writing on lifestyles, Weber indicated that both material resources and normative rules of the community and status groups constrain people's choices and thus acknowledging the influence of social structure in determining individual action (Abel, 1991). Weber's formulation is echoed by Karl Marx when he posited that "Men make their own history, but do not make it as they please, they do not make it under circumstances chosen by themselves, but under circumstances directly found, given and transmitted from the past" (1954: 10) and Emirbayer and Mische, 1998:

1004 "There is no hypothetical moments in which agency actually gets 'free' of structure; it is not in other words, some pure Kantian transcendental free will". In this study however, Weber and other agency-centric scholars' contention about the importance of emphasising individual actions is understood to mean 'action' in the social reproduction of status and in overcoming the influence of coercive structural power. This helps the study to posit that both agency and social structure are important in determining the ability of individual women to utilise maternal healthcare services.

This understanding is almost ignored in the work of renewed emphasis in the importance of structural factors in health and healthcare due to advancements in multilevel modelling techniques and an increasing recognition of the inadequacies of single-level theory to represent structural complexity (Cockerham, 2013). I reorient this study so as to extend the emphasis in structural factors while recognising the importance of individual characteristics and human agency.

Structures are understood as social, economic, cultural forces larger than an individual which operate at the community, country and global levels. As already indicated, this study narrowed down this conceptualisation and focused particularly on gender relations, human rights and globalisation and examined the influence of these on use of maternal health care. We have seen from the work of West and Fenstermaker, 1995, that gender relations are constructed power dynamics between men and women rooted in social structure and institutionalised to which people orient their behaviours to ideal types of womanhood and manhood with important implications for life chances. The distribution of gender division of labour, authority and status in society is often the result of these processes. With household setup where resources are distributed through the bargaining processes involving both conflict and cooperation, women are usually disadvantaged (Locke and Okali, 1999; Sen, 1990). This helps to perpetuate inequalities in gender relations. The inferior status of women has got negative consequences in maternal healthcare utilisation in a society like that of sub-Saharan Africa because the gender division of labour is such that women are responsible for pregnancy and childbirth-related matters (Yamin et al., 2015). The agency of women can lead to better chances of 'bargaining with patriarchy' and it is bolstered by women's autonomy, empowerment, education and employment among other variables.

However, context is crucial to both women's agency and their capacity to use maternal healthcare and yet does not often receive thorough treatment in sociological research. It is plausible that women's use of maternal healthcare will vary by community and country characteristics. The extent of this variation in relation to gender relations was important to examine. Additionally, it was important to understand measures of inequalities in gender relations mostly associated with use maternal healthcare. Chapter Six of this study explores these and makes a significant contribution to the body of knowledge through this variant.

The rights-based approaches to maternal healthcare have recently received much attention because of insufficient progress achieved in reducing maternal mortality especially in developing countries (Das, 2018). Lack of political will and the defunct health system are some of the hindrances to improving women's health due to their secondary status in society (Maclean, 2010; Hunt and Bueno de Mesquita, 2010). Improving health systems and political commitments to citizens are the responsibility of governments. However, the government is unlikely to deliver adequate services to the population without motivation or conditions that make accountability possible. The precursor of accountability in government service delivery is the social mechanism that ensures adequate maternal healthcare services. That mechanism is rights. When people's rights are guaranteed, accountability is assured because failure to do so may attract negative consequences on the part of the ruling governments (London, 2008).

The normative criteria for right and wrong embedded in the rights-based framework, defines the duties and obligations of government to the population and thus provides mechanisms for government accountability. Establishing empirically how concreate the relationship between rights and maternal healthcare is important. Discourses of rights-based approaches to health have often neglected social economic rights because they are difficult to measure and yet scholars have argued there is a disproportionate progress recorded on civil and political rights in comparison with social and economic rights (Farmer, 2005).

Chapter Seven of this study addresses this aspect by analysing pathways in which both civil and political liberties and socioeconomic entitlements influence maternal healthcare in sub-Saharan Africa. The Chapter also recognises the importance of agency in the face of

community or state violation of human rights. In that, people who have the capabilities to resist violation are better able to claim their rights. This is where the capability approach comes in conversation with the rights-based approach. The fulcrum of the capability approach is freedom and the cornerstones of that freedom are certain functionings such as education, employment, decision-making authority and others. The assumption, therefore, is that possession of these functionings should enhance maternal healthcare utilisation among women. That's why in Chapter Seven, I proceeded to examine the influence of both forms of human rights together with essential functionings (education, decision-making autonomy and distance to health facilities) on maternal healthcare.

I have argued that the impact of globalisation on health and healthcare can be considered using two lenses. The first one looks at globalisation as a conduit facilitating the spread of diseases from one population to another with high frequency and debilitating effects. This lens does, in many ways securitise global health and it is linked to the idea of risk. The Ebola outbreak in west Africa and other emerging diseases like severe acute respiratory syndrome (SARS) are typical examples (Davies, 2010). In other words, this perspective emphasises the global universalism of vulnerability to diseases. The problem with this approach is not that it is wrong, but that it has the potential to gloss over striking global differences that exist in susceptibility to diseases and actual lived experiences (De Maio, 2014). The implications of the securitising approach are that disease is only a priority when it threatens the security of western nations (Brown, 2011). Actually, Morrall (2009) goes on to say that current global health discourse prioritises the needs of the 'worried well' in industrialised countries and not social justice and health equity for all people.

As such, this thesis aligns with the second lens of global health which considers globalisation not as a security issue but rather as an equity issue. Looking at globalisation and health as an equity issue allows us to deepen our understanding by considering the fundamental factors affecting health and healthcare, which could be bounded together as structural violence (De Maio, 2014; Farmer, 2005). In terms of utilisation of maternal healthcare in sub-Saharan Africa. This approach allows us to study the effects of *violent structures* embedded in the social, economic and political arrangements of the world either directly or indirectly. Unequal relationships between the global north and global south is often considered to be

one of the reasons behind the non-optimum performance of health systems in the south. Some scholars have argued that economic linkages between developed and developing countries through trade, foreign direct investments and aid have been detrimental to health and quality of life in developing countries (Bradshaw and Huang, 1991; Shandra et al., 2005). On the other hand, globalisation is said to have a positive effect on maternal healthcare through improved economic growth. It is understood in the broader literature that economic growth stimulates increased expenditure in the social sector such as education and health. It is also said to encourage entrepreneurship and improve employment opportunities among people. These are preconditions for better access to public health services including antenatal care, health facility delivery and postnatal check-ups for mothers and newly born babies. This thesis considers several possibilities in which globalisation could be related to maternal healthcare including community and individual level factors that could be moderating that relationship. Urbanisation and its implications for example, which is one of the factors seen to have an impact on maternal health (De Maio, 2014; Goryakin et al., 2015), is examined in terms of proximity to health facilities and media exposure. It is expected that women who live in urban areas will have better access to maternal healthcare compared to their rural counterparts.

9.2.2. Research questions again

Having discussed the context that led to the conceptualisation of this study. I now revisit the questions that I sought to address:

1. What is the nature of existing literature studying the influence of structural factors on maternal healthcare? What are the opportunities and challenges in this research?

2. What is the relationship between gender relations and maternal healthcare? How does this relationship vary along the continuum of maternal healthcare and what components of gender relations are most important in explaining variations in maternal healthcare? How do the effects of contextual factors compare with individual level factors?

3. How relevant is the rights-based approach in explaining maternal healthcare? Are civil and political liberties more important than socioeconomic entitlements in explaining maternal healthcare?

4. Does globalisation influence maternal healthcare in sub-Saharan Africa. What is the nature of the effect and what component of globalisation is most important?

I will now discuss a summary of the findings relative to the above research questions. It should be noted that the first research question seeks a literature review which was addressed by the systematic review in Chapter Two.

9.3. Summary of findings

It is established from this study that in general terms, structural contextual factors contribute to maternal healthcare utilisation in sub-Saharan Africa. The summary of the results is decomposed into the three empirical chapters but beginning with Chapter Two, which is a systematic review laying the foundation of the study. Chapter Two addresses research question number one by exploring the ecosystem of research into structural conditions and maternal healthcare in sub-Saharan Africa using multilevel methods. The results of the chapter are based on 33 studies that met the criteria for inclusion against 1,954 records that were first identified. The findings confirm the important role played by structural factors in determining use of available maternal health care services in sub-Saharan Africa. The level of educational attainment status, media exposure, decision-making authority and access to health facilities within communities were found to be some of the major drivers of maternal health care utilisation. The review reported no study that looked at the social conditions influencing cross-national variation in maternal healthcare in sub-Saharan Africa at the three levels of individual, community and country-level characteristics. Additionally, the studies presented in the review have limited theoretical discourses. The few cross-national studies reported could be problematised in terms of having fewer country level units which would likely produce unreliable estimates (Bryan and Jenkins, 2015; Stegmueller, 2013). My study considered the weaknesses in the extant literature on multilevel models and made various methodological improvements including using three-level models to capture variations at the individual, community and country levels including computing the relative impact of

factors operating at different levels on the outcome variables with the variance partition coefficients (VPC). I have used structural violence as a foundational theory in which to ground the findings of the study. Bayesian Markov chain Monte Carlo (McMC) estimation is used to address the aspect of fewer higher-level units. With this method, the study has an adequate number of countries to produce robust estimates (Bryan and Jenkins, 2015). The rest of the research findings are derived from Chapters Six, Seven and Eight.

Chapter Six which considers gender relations and maternal healthcare was intended to answer research question number two. Generally, the chapter indicates that unequal gender relations have a negative impact on maternal healthcare utilisation. The chapter reports that, in addition to several individual factors influencing maternal healthcare, urban residence, living in areas that are proximal to health facilities and living in communities with more educated women enhances the propensity of consistent use of maternal healthcare. Other gendered community conditions which were found to improve the use of maternal healthcare include having a high proportion of women with decision-making authority and having a lower proportion of women in polygamous marriages. Residence in urban areas and in communities with high female-headed households has a positive influence on facility delivery but not antenatal nor postnatal care.

At the country-level, educational status continues to show the important role it plays in maternal healthcare utilisation. National female literacy rate is significantly associated with antenatal and postnatal care in that women who live in countries with high female literacy rates have increased odds of antenatal and postnatal care. National female literacy rate was not associated with institutional delivery.

In comparison with individual level variables, contextual factors seem to have explanatory power. The Variance Partition Coefficients (VPCs) and Median Odds Ratios (MORs) indicate that generally cross-national variations in maternal healthcare are attributable mostly to contextual factors at the community and country levels. It is only with antenatal care where individual characteristics have more explanatory power compared to contextual factors. It is not known why this is the case, but a study of agency and structure reveals that individual characteristics are always embedded in structural conditions such that even if an

outcome seems to be more related to individual factors, upstream factors are always at play. As such we may conclude that inequalities in gender relations at the interplay between individual and structural factors have a negative influence on maternal healthcare utilisation.

Chapter Seven which addresses research question number three, suggests that civil and political liberties are relevant predictors across the continuum of maternal healthcare in sub-Saharan Africa. The results show that societies with robust civil and political liberties are more likely to have women use maternal healthcare. This is not a surprising result. It has been argued extensively throughout the rights-based literature that civil and political liberties provide an environment that enhances freedom of assembly and expression. This freedom allows for social movements and civil society organisations to flourish and in turn provide checks and balances to government authorities. Accountability is said to be the centrepiece of government efficiency in the delivery of socioeconomic entitlements (London, 2008) and civil and political liberties are a conduit through which the citizens are able to participate in ensuring that the political rulers are accountable and deliver on the priorities of their society (Sen, 1999b). Maternal healthcare issues are human rights issues and are part of the socioeconomic entitlements which are specified in many international human rights frameworks. It is expected that in countries which promote human rights, the political rulers will provide access to maternal healthcare services and women will have the freedom to use them.

The indispensability of civil liberties and socioeconomic entitlements has been articulated earlier. I have shown through the literature that in the case of health and healthcare, the importance of seeing these rights as one is that health policymakers can spend adequate amounts of time considering and developing health policies in terms of obligations to fulfil the right to health. Furthermore, the political rulers would also ensure that other socioeconomic entitlements such as education and employment are also realised. In fact, Sen spent some time in his *Development as Freedom* book to link freedoms to socioeconomic entitlements. For example, he argued that freedom to participate requires knowledge and educational skills. The same knowledge and skills are advantageous in the utilisation of other socioeconomic entitlements of which maternal healthcare is one.

It is probably for this reason that I find significant relationships between female secondary school enrolment (which is a proxy for socioeconomic entitlements at country-level) and two indicators of maternal healthcare. It may also be understandable that the influence of female secondary school enrolment loses significance when community factors including community education, autonomy, distance to health facilities and residence are introduced. This phenomenon speaks to the importance of community-level facts which in this case may significantly explain away institutional delivery. Indeed, this study finds that both education and autonomy at the community level contribute to adequate utilisation of maternal healthcare services. In that, women residing in communities with high proportions of women who have attained higher education will have higher odds of using maternal healthcare services. Women are also more likely to attend antenatal care, deliver in health facilities and have postnatal check-ups if they live in communities with high proportion of women with decision-making autonomy. In this chapter, community level and country level factors are the most important predictors of cross-national variations in maternal healthcare in comparison with individual level factors.

Regarding the type of human rights more important in determining maternal healthcare, the findings suggest that civil and political liberties are more important in predicting maternal healthcare utilisation in comparison with socioeconomic entitlements. Civil and political liberties were significantly associated with maternal healthcare across the continuum of care from antenatal care, through institutional delivery up to postnatal care. Socioeconomic entitlements at the national level on the other hand, was significantly associated with antenatal and postnatal care but not institutional delivery. However, this comparison may be problematised by the fact that measurements of freedom and liberties are done at the country level while education is usually measured at the individual level. The fact that community and individual level education variables are significantly associated with all the indicators of maternal healthcare utilisation with the highest effect sizes says more about the importance of socioeconomic entitlements in maternal healthcare discourses.

Cross-national variation in maternal healthcare utilisation in Chapter Seven are most attributable to higher-level factors of community and country characteristics although this is not true for antenatal care. The combined values of VPC for country and community level

factors are larger than those individual level variables. The relatively larger values reported by the MOR also stresses the importance of contextual factors in maternal healthcare utilisation in sub-Saharan Africa.

The influence of globalisation on maternal healthcare is studied in Chapter Eight in response to the last research question. the conceptualisation of globalisation is one of the most important highlights of Chapter Eight. Most studies do not delineate or unpack globalisation into its constituent dimensions. The idea of conceptualising globalisation in economic terms is ubiquitous in previous studies. This study decomposes the concept into economic, social and political globalisation. Social globalisation was found to have the most robust influence on maternal healthcare. Social globalisation is significantly associated with the continuum of maternal healthcare, from antenatal care to postnatal check-ups. The study finds that economic globalisation is associated with antenatal and postnatal care but not facility delivery. All components of globalisation, that is, economic globalisation, social globalisation and political globalisation are positively associated with better odds of postnatal care. This means that women who live in more globalised societies are more likely to have postnatal check-ups. Social globalisation was found to be more robust compared to other components of globalisation in terms of influencing the use of antenatal care in sub-Saharan Africa. The VPCs and MORs indicate that overall, contextual factors have the greatest influence on maternal healthcare utilisation in sub-Saharan Africa compared to individual factors.

9.4. Overall Contributions and Limitations of the Study

The findings of this study should be considered in the context of its limitations and strengths. The specific challenges and strengths of each chapter were detailed in the respective chapters. This section gives the overarching limitations and strengths of the entire thesis with respect to methodology, theoretical framework and policy implications.

9.4.1. Contributions

The first contribution of this thesis is in terms of the data used. The Demographic and Health Surveys (DHS) are high quality and comparable cross-sectional data based on general

population sample of sub-Saharan African countries. As such, the findings from this study could be considered to have external validity, in the sense that they can be generalised to the population of interest (Fabic et al., 2012). The study aggregates the individual DHS data to create community variables in a novel fashion that makes use of the primary sampling units (PSU) in the surveys. Yet the country-level variables were also created from several sources to make a third level in the three-level multilevel model. This approach to data management enables us to study the relative effects of individual, community and country characteristics on maternal healthcare. There are many studies which examine the influence of structural factors on maternal healthcare (Ononokpono et al., 2013; Stephenson et al., 2006) but to my knowledge none uses three-level models to examine the contextual determinants while controlling for the effects of individual factors.

One of the most contested issues in multilevel models of cross-country research is the number of the higher-level units. Both Stegmueller (2013) and Bryan and Jenkins (2015), have articulated this problem. The more widely employed estimation methods presume large sample sizes that are gathered through simple random sampling. This is hardly achievable with cross-country data like the one use in this study. I employ Bayesian Markov chain Monte Carlo estimation methods to address the problem of small N and non-sample data. The Bayesian approach provides a better basis for inference with respect to small-N because it provides for inferences that are conditional on the data and do not rely on the normality of error and asymptotic assumptions. This as I have shown in Chapter Four, is because the Bayesian analysis results into the posterior distribution from which parameter estimates are derived for inferential purposes (Hamaker and Klugkist, 2011; Lynch, 2007). This phenomenon offers Bayesian approaches flexibility suitable to specify models based on small samples and those with limited high-level units as it has been used in this study.

About non-sample data, the country-level data in this study represent the third level unit. These are a group of sub-Saharan African countries and are a representation of all available observations from sub-Saharan Africa - a population of interest and not a random sample of that population. This "non-stochastic" data is a subject of debate in the literature for cross-national studies (Western and Jackman, 1994). The Bayesian framework seem to be a better approach to address this problem because it attaches uncertainty about the data and

parameters of interest to the researcher's state of knowledge as opposed to the 'traditional' framework which relies on the thought experiment of repeated sampling which would not be feasible in nonrepeatable data (Jackman, 2009; Gill, 2014b).

This study was conceived to be holistic in the coverage of all implications of research strategies from the philosophy of social science to methodology. There are certain topics which have been difficult to study using quantitative methods because of not being in alignment with the philosophical foundations of positivism, a dominant paradigm in quantitative social science. The study of human rights for example, engenders moral judgement and 'subjectivity' which would contradict the objectivity-oriented positivism. This is exactly the problem that many scholars have identified as a hindrance to developments in human rights research and other research areas where moral judgements are enlisted including structural violence, freedom, social justice and inequality (Ferrie and Hosie, 2018; Scambler, 2001). The particularism/universalism dichotomy is another challenge to studying human rights as well as globalisation which is similarly rooted in positivism. Sociologists are usually concerned with specific social issues societies and thus are uncomfortable with the universalism attached to human rights and globalisation (Hynes et al., 2010; Go, 2013). This thesis is equally critical of the positivist approach. I argue for critical realism as the basis for quantitative methods that examines structural determinants of maternal healthcare. Unlike positivism which sees observable events as enlisting certainty and concrete knowledge, critical realism holds that observable phenomena do not necessarily amount to certainty in knowledge. It assumes that the sphere of observable events is not permanent but subject to change over time and also the theories which precede any empirical scientific investigation are still fallible interpretations that are subject to criticism and revision or replacement in the future (Cruickshank, 2012). With this understanding, scientific inquiry becomes fluid and not encapsulated by the concreteness of objectivity. This allows us to explore "non-objective subjects" like human rights, social justice and structural violence. Relational theoretical frameworks help with the universalism vs. particularism dichotomy in the sense that if the social world is considered relational, then bifurcations of any sort are discounted. Indeed, many sociologists have argued for a fresh view of sociology with an overarching theoretical approach that emphasises the interactional constitution of

social units, processes and practices across space (Go, 2013; Bhambra, 2007; Steinmetz, 1998). This is a plausible foundation for studying the effects of globalisation on maternal healthcare

In this thesis, I advance the concept of structural violence as the fundamental cause of disadvantages in well-being, including sub-optimal utilisation of maternal healthcare services in sub-Saharan Africa. Structural violence is all-encompassing, including disease-ridden environment, stigmatising social norms and barriers preventing deserved population from accessing adequate healthcare. Structural violence is difficult to identify and get rid of because there are no identifiable actors committing the violence. The violence is within structures and emerges from unequal distribution of power. Originating from the works of Johan Galtung (Galtung, 1969) and popularised by the American physician Paul Farmer (Farmer, 2005), structural violence contextualises human suffering and illuminates the role played by structures external to an individual.

I argue that inequalities in gender relations, human rights violations and globalisation, the basis of my empirical chapters can all be conceptualised as structural violence. This is because the harm attributed to these mechanisms is not direct and no actors can easily be blamed for it (Lane et al., 2004). Furthermore, another remit of structural violence that is fulfilled in the case of maternal healthcare is avoidability. Like I indicated earlier, pregnancy and childbirth are not diseases and therefore should not claim lives. These deaths are completely avoidable if the health systems were well-functioning. The disparities in maternal mortality between developed and developing countries especially sub-Saharan Africa are striking and this phenomenon also confirms avoidability. Unequal share of decision-making power over the distribution of resources is the pivotal causal mechanism of the avoidable structural disparities. Unequal gender relations sanctioned by prevailing social institutions limits women's agency to use available maternal healthcare services. In societies where the gender division of labour is such that pregnancy and childbirth are the responsibility of women, the lack of resources constrains their agency to use maternal healthcare, which subsequently, can result in negative health outcomes including maternal mortality.

I have argued that structural violence constitutes a violation of human rights because it is anchored on the distribution of power through structures whereby this power enhances the agency of some, at the same time constraining that of others. When agency is constrained to the extent that fundamental human needs are unattainable, it becomes a structural violation of human rights (Ho, 2007). Globalisation on the other hand, is synonymous with unequal exchange of relationships between developing and developed countries. Many scholars have argued that trade deficits, foreign direct investments and foreign aid have harmful implications on mortality, health and well-being in developing countries (Bradshaw and Huang, 1991; Shandra et al., 2005, 2004). Although the study largely discounts the merits of these arguments, it is important to state that only social globalisation is found to have a robust influence along the continuum of maternal healthcare.

This study didn't find globalisation to be problematic for maternal healthcare. Instead, social globalisation and in many instances economic globalisation were found to be motivational for adequate use of maternal healthcare. This finding is plausible especially with respect to specific elements which measure social globalisation including tourism foreign population, high technology exports, trade in cultural goods, television ownership, press freedom and internet availability among others (Dreher et al, 2008). These seem to be anchored on information exchange across the world. With information comes empowerment and acquisition of skills that can be used to leverage several other resources that can indeed be a positive force in maternal healthcare utilisation. However, as I highlight below these measurements may be problematic in terms of providing holistic measures of globalisation such that the positive effects that are attributed to globalisation may be resulting from problems with conceptualisation and data. This point may be supported by the fact that the odds ratios for the effects of globalisation on maternal healthcare utilisation were not found to be particularly large.

Overall, this study underscores the importance of structures in determining maternal healthcare in low resource countries. The findings suggest that efforts to bolster maternal healthcare utilisation and a reduction in maternal mortality should be directed to contextual factors including social norms and social institutions at the community and broader macro-structures such as human rights violations at the national and global level. Social

globalisation dominates both political and economic globalisation as a determinant for maternal healthcare and thus the need to consider illuminating access to information through telephone, internet connectivity, newspapers and social interactions among the world population.

The study findings also show women who have access to resources are impacted by structural violence less than those who don't. indeed, I find that education, employment, household wealth, decision-making authority and empowerment are instrumental in adequate maternal healthcare utilisation. This support for Amartya Sen's capability theory and Pierre Bourdieu's theory of capital as articulated in Chapter Three. Therefore, as much as it is important to support contextual efforts for better utilisation of maternal healthcare, empowerment of individual women is equally crucial not only for sustainable or reproduction of adequate use of maternal healthcare but also for potential disruption of structural violence that serves to constrain human agency.

9.4.2. Limitations

The data, especially from the KOF globalisation index that measures globalisation could be one source of measurement error for this study. For example, it is difficult to reduce such a complex concept like globalisation to a few measurements. The measurements of globalisation themselves may not be isolated from the global economic and social inequalities such that the measurements reflect power structures rather than the social, economic or political performance of individual countries. Structural adjustment programmes are examples of global financial policies that have the potential to affect the country's trade, portfolio investment, GDP and political engagements which are factored in to calculate the KOF globalisation index (Dreher, 2006; Dreher et al., 2008). The findings from this study should be read in the context of this problem. The effort to consider other forms of globalisation such as political and social can help to minimise the negative impact of single perspective of globalisation (Goryakin et al., 2015).

Limitations of the study include the use of pooled analysis which combined the 34 countries of sub-Saharan Africa. It is probable that effect sizes resulting from the pooled analysis may not represent what pertains within individual countries included. In other words, the study

does not examine the relationships between independent and outcome variables within each of the included countries. As such, it doesn't paint an adequate picture of structural sources of within-country variations in maternal healthcare utilisations. It is however, significant to study cross-country variations as there are many other studies that focus on individual countries across sub-Saharan Africa.

Recall bias is always one of the potential problems whenever survey data are used in studies. The argument is that there is a strong likelihood that people would forget to report past events in a survey and thus increasing the possibility of biased information being collected. In the DHS survey however, this threat is minimised by the robust training that data collectors go through and the supervision by senior staff that is required during data collection to take care of such errors in the data. Data analysis for this study was exclusively focused on the most recent birth of the five years prior to the survey. It is plausible to think that information given by respondents about recent birth event will have limited recall biases. Also, childbirth is considered a major event by most cultures, it is therefore unlikely that people will forget any information associated with it.

Like any other study that uses the DHS or any cross-sectional survey for that matter, the analysis is only able to determine associations between variables and not causality. The timing of the study is also by no means guaranteed to be representative of the time space within a country or area of concern. It is also important to note that while causation studies will be desirable, it is difficult to obtain data in sub-Saharan Africa that will enable causality studies.

9.5. Future research

There are several research directions that I would like to follow and recommend from this study. I have noted under the limitations that the measurements of globalisation may be problematic because they could be a function of global economic policies like the SAPS. Such policies could also be conceptualised as structural violence and explored further as determinants of cross-variations in maternal healthcare utilisation. This study enabled the mobilisation and management of large amounts of data for sub-Saharan Africa as well strengthened my technical skills to analyse such data. It is already established that structural

adjustment programmes have adverse effects on maternal and child health (Thomson et al., 2017). Structural adjustment programmes have been associated with stringent fiscal targets which often intel government forfeiture of parastatal companies and cuts to social expenditure. As a result, the quality and quantity of social services provided to mothers and children are compromised (Coburn et al., 2015). Social determinants of health such as income and food security are severely affected by the loss of jobs suffered by many government workers in parastatal companies (De Vogli and Birbeck, 2005). In a systematic review, Thomson et al. (2017) report that extant studies the effects of structural adjustment on child health and maternal health assess aggregate effects rather than delineating pathways. I intent to proceed by applying the methods used in this in terms of embedding the analysis in social theory in order to provide an explanation of the social mechanisms behind the observed relationships.

There are other macro-structural factors associated with maternal healthcare that need to be explored. The influence of international aid and trade liberalism for example are some of other factors that I wish to pursue. There is a long-standing debate about whether foreign aid promotes development in recipient countries (Easterly, 2009; Sachs, 2006). Proponents of foreign aid argue that the world's poorest nations are trapped in a cycle of poverty and ill health, and that aid can propel those nations into a cycle of development. On the other hand, opponents of foreign aid claim that aid has been associated with delayed development, that it fails to reach its intended recipients, and that it interferes with the incentives for recipients to solve development challenges

Another macro-structural concept worth exploring is corruption. So much has been said and anecdotal evidence exists about the role of corruption to create three-levels consisting of individual, community and country-level characteristics. I would wish to use this dataset and answer related research questions using a variety of novel methods going forward. For example, the outcome variables for this PhD research are three indicators of maternal healthcare. I have measured correlation between them, and the results validated the inclusion of all the three variables, but I have not determined the extent to which they represent the latent variable of maternal healthcare through principal component analysis. I would want to use confirmatory factor analysis and path analysis to assess the measurements of maternal

healthcare and the factors determining maternal health at the same time in a structural equation modelling format.

It would be worthwhile to conduct case studies especially of the qualitative nature to have an in-depth understanding of the decision-making processes of women vis-à-vis maternal healthcare. It would be important to assess how they interpret their role relative to that of men in patriarchal societies. For example, how do they frame gender division of labour that requires them to be responsible for pregnancy and childbirth? Do they construct this as disadvantageous? What material and non-material resources would be necessary for them to circumvent structural constraints with respect to maternal healthcare? The answers to these questions would be helpful in mapping the mapping the everyday life of women in sub-Saharan Africa, which could be the basis of emancipatory programmes to bolster maternal healthcare utilisation and reduce maternal mortality.

Appendices

Appendix A: Descriptive statistics for analysis pooled sample (N = 245,955)

Characteristics	Category	%	Mean (SD)
Individual-level factors			
Maternal age	<20	15.79	
	20-34	67.39	
	35-49	16.82	
Educational status	No education	39.46	
	Primary	34.81	
	Secondary	25.71	
Household wealth	First	23.75	
	Second	21.02	
	Middle	19.23	
	Fourth	17.95	
	Fifth	16.43	
Employment status	Unemployed	33.52	
	Self employed	26.88	
	Formally employed	39.61	
Insurance coverage	No	95.08	
	Yes	5.92	
Sexual autonomy	No	40.93	
	Yes	50.08	
Condones violence	No	54.02	
	Yes	45.92	
Community-level factors			
Community education	Low	33.3	
	Medium	33.7	
	High	33.01	
Community distance problem	Low	38.75	
	High	61.25	
Community money problems	Low	44.64	
	High	55.36	
Community polygamous marriage	Low	48.8	
	High	51.2	
Community female-headed household	Low	50.45	
	High	49.51	
Community media exposure	Low	49.69	
	High	50.31	
Community decision-making au-	Low	50.29	
	High	49.71	
Residence	Urban	31.74	
	Rural	68.26	
Country-level factors			
Gender inequality index			3.23(0.48)
Female literacy rate (%)			53.42(22.16)
Human development index			0.52(0.07)
Freedom status			46.86(19.53)

Secondary School enrolment	39.17(9.85)
Voice and accountability	23.38(16.82)
Total globalisation	49.54(5.48)
Economic globalisation	39.58(9.85)
Social globalisation	40.06(7.29)
Political globalisation	68.11(11.33)
GDP per capita PPP	3080(2802.90)

References

Abel, T. (1991). Measuring Health Lifestyles in a Comparative Analysis: Theoretical Issues and Empirical Findings. *Social Science & Medicine*, 32(8):899–908.

Abel, T. (2008). Cultural Capital and Social Inequality in Health. *Journal of Epidemiology & Community Health*, 62(7): e13–e13.

Abel, T. and Frohlich, K. L. (2012). Capitals and Capabilities: Linking Structure and Agency to Reduce Health Inequalities. *Social Science & Medicine*, 74(2):236–244.

Adhikari, R. and Podhisita, C. (2010). Household Headship and Child Death: Evidence from Nepal. *BMC International Health and Human Rights*, 10(1):13.

Adjiwanou, V., Bougma, M and LeGrand, T. (2018). The Effect of Partners' Education on Women's Reproductive and Maternal Health in Developing Countries. *Social Science and Medicine*, 197: 104–115.

Adjiwanou, V. and LeGrand, T. (2014). Gender Inequality and The Use of Maternal Healthcare Services in Rural Sub-Saharan Africa. *Health & Place*, 29:67–78.

Ahmed, S., Creanga, A. A., Gillespie, D. G., and Tsui, A. O. (2010). Economic Status, Education and Empowerment: Implications for Maternal Health Service Utilization in Developing Countries. *PloS one*, 5(6): e11190.

Alam, N., Hajizadeh, M., Dumont, A., and Fournier, P. (2015). Inequalities in Maternal Health Care Utilization in Sub-Saharan African Countries: A Multiyear and Multi-Country Analysis. *PloS one*, 10(4): e0120922.

Alkema, L., Chou, D., Hogan, D., Zhang, S., Moller, A.-B., Gemmill, A., Fat, D. M., Boerma, T., Temmerman, M., Mathers, C., et al. (2016). Global, Regional, and National Levels and Trends in Maternal Mortality Between 1990 and 2015, With Scenario-Based Projections To 2030: A Systematic Analysis by the UN Maternal Mortality Estimation Inter-Agency Group. *The Lancet*, 387(10017):462–474.

Allaire, J., Xie, Y., McPherson, J., Luraschi, J., Ushey, K., Atkins, A., Wickham, H., Cheng, J., and Chang, W. (2018). *rmarkdown: Dynamic Documents for R*. R Package Version

1.9.

Allison, M. C. (2002). Balancing Responsibility for Sanitation. *Social Science & Medicine*, 55(9):1539–1551.

Amey, F. K. (2002). Polygyny and Child Survival in West Africa. *Social Biology*, 49(1-2):74–89.

Archer, M. S. (2016). Reconstructing Sociology: The Critical Realist Approach. *Journal of Critical Realism*, 15(4):425–431.

Armijo-Olivo, S., Stiles, C. R., Hagen, N. A., Biondo, P. D., and Cummings, G. G. (2012). Assessment of Study Quality for Systematic Reviews: A Comparison of the Cochrane Collaboration Risk of Bias Tool and the Effective Public Health Practice Project Quality Assessment Tool: Methodological Research. *Journal of Evaluation in Clinical Practice*, 18(1):12–18.

Arribas, I., Pérez, F., and Tortosa-Ausina, E. (2009). Measuring Globalization of International Trade: Theory and Evidence. *World Development*, 37(1):127–145.

Assembly, U. G. (1948). Universal declaration of human rights. UN General Assembly.

Audibert, M and Mathonnat, J. 2013. Facilitating Access to Healthcare in Low-Income Countries: A Contribution to the Debate. *Field Action Science Report. The Journal of Field Actions*, Special Issue 8: 1-5.

Babalola, S., and A. Fatusi. 2009. Determinants of Use of Maternal Health Services in Nigeria—Looking Beyond Individual and Household Factors. *BMC Pregnancy Childbirth* 9:43.

Babbie, E. (2007). The *Practice of Social Research* (11th Ed). Belmont, CA: Thomson Wadsworth, 24(511):66.

Babbie, E. R. (2015). *The Practice of Social Research* (14th Ed.). Boston: Cengage Learning.

Babones, S. J. (2013). *Methods for Quantitative Macro-Comparative Research*. London: Sage Publications.

Baert, P. (2007). Conceptualising Max Weber. *International Sociology*, 22(2):119–128.

Bahadur, S. J. (2011). Globalization and Human Aspect of Development in Developing Countries: Evidence from Panel Data. *Journal of Globalization Studies*, 2(1).

Balk, D. (1994). Individual and Community Aspects of Women's Status and Fertility in Rural Bangladesh. *Population Studies*, 48(1):21–45.

Bates, D., Mächler, M., Bolker, B., and Walker, S. (2015). Fitting Linear Mixed-Effects Models Using Lme4. *Journal of Statistical Software*, 67(1):1–48.

Baum, A., Garofalo, J., and Yali, A. (1999). Socioeconomic Status and Chronic Stress: Does Stress Account for SES Effects in Health? *Annals of the New York Academy of Sciences*, 896(1):131–144.

Benefo, K. D. (2010). Determinants of Condom Use in Zambia: A Multilevel Analysis. *Studies in Family Planning*, 41(1):19–30.

Bergh, A. and Nilsson, T. (2010). Good for Living? On the Relationship Between Globalization and Life Expectancy. *World Development*, 38(9):1191–1203.

Best, N., Cowles, M. K., and Vines, K. (1995). Coda* Convergence Diagnosis and Output Analysis Software for Gibbs Sampling Output Version 0.30. *MRC Biostatistics Unit, Cambridge*, 52.

Bhambra, G. (2007). *Rethinking modernity: Postcolonialism and the sociological imagination*. Springer.

Bhaskar, R. (2008). *A Realist Theory of Science*. New York: Routledge

Bhattacharya, P. C. (2006). Economic development, gender inequality, and demographic outcomes: Evidence from India. *Population and Development Review*, 32(2):263–292.

Birdsall, W. F. (2014). Development, Human Rights, And Human Capabilities: The Political Divide. *Journal of Human Rights*, 13(1):1–21.

Birmeta, K., Dibaba, Y., and Woldeyohannes, D. (2013). Determinants of Maternal Health Care Utilization in Holeta Town, Central Ethiopia. *BMC Health Services Research*, 13(1):256.

Blaikie, N. (2009). *Designing Social Research: The Logic of Anticipation*. Cambridge: Polity Press.

Blakely, T. and Subramanian, S. (2006). Multilevel Studies. *Methods in Social Epidemiology* (pp. 316–40). San Francisco: Jossey-Bass.

Blanc, A. K. (2001). The Effect of Power in Sexual Relationships on Sexual and Reproductive Health: An Examination of the Evidence. *Studies in Family Planning*, 32(3):189–213.

Blaxter, M. et al. (2000). Medical Sociology at the Start of the New Millennium. *Social Science & Medicine*, 51(8):1139–1142.

Bloom, S. S., Wypij, D., and Gupta, M. D. (2001). Dimensions of Women's Autonomy and the Influence on Maternal Health Care Utilization in A North Indian City. *Demography*, 38(1):67–78.

Bloom, S. W. (2002). *The Word as Scalpel: A History of Medical Sociology*. Oxford: Oxford University Press.

Blouin, C., Chopra, M., and van der Hoeven, R. (2009). Trade and Social Determinants of Health. *The Lancet*, 373(9662):502–507.

Bottorff, J. L., Oliffe, J. L., Robinson, C. A., and Carey, J. (2011). Gender Relations and Health Research: A Review of Current Practices. *International Journal for Equity in Health*, 10(1):60.

Bourdieu, P. (1986). The forms of capital. In R. G. Richardson (Eds) *Handbook of theory and Research for the Sociology of Education* (pp. 241-258). New York: Greenwood Press

Bourdieu, P. and Wacquant, L. J. (1992). *An invitation to Reflexive Sociology*. Chicago: University of Chicago press.

Bove, R. and Valeggia, C. (2009). Polygyny and Women's Health in Sub-Saharan Africa. *Social Science & Medicine*, 68(1):21–29.

Bradshaw, Y. W. and Huang, J. (1991). Intensifying Global Dependency: Foreign Debt, Structural Adjustment, and Third World Underdevelopment. *The Sociological Quarterly*

32(3):321–342.

Brown, T. (2011). Vulnerability is Universal? Considering the Place of Security and Vulnerability Within Contemporary Global Health Discourse. *Social Science & Medicine*, 72(3):319–326.

Browne, W. J. (2015). MCMC Estimation in MLwiN. *Centre for Multilevel Modelling, University of Bristol*.

Browne, W. J. and Draper, D. (2000). Implementation and Performance Issues in the Bayesian and Likelihood Fitting of Multilevel Models. *Computational statistics*, 15:391–420.

Browne, W. J. and Rasbash, J. (2009). *MCMC estimation in MLwiN*. Citeseer.

Bryan, M. L. and Jenkins, S. P. (2015). Multilevel Modelling of Country Effects: A Cautionary Tale. *European Sociological Review*, 32(1):3–22.

Bryman, A. (2016). *Social research methods*. Oxford: Oxford university press.

Bunge, M. (1996). *Finding Philosophy in Social Science*. New Haven: Yale University Press.

Burnett, P. J. and Veenstra, G. (2017). Margins of Freedom: A Field-Theoretic Approach to Class-Based Health Dispositions and Practices. *Sociology of Health & Illness*, 39(7):1050–1067.

Burns, D. K., Jones, A. P., Goryakin, Y., and Suhrcke, M. (2017). Is Foreign Direct Investment Good for Health in Low- and Middle-Income Countries? An Instrumental Variable Approach. *Social Science & Medicine*, 181:74–82.

Calasanti, T. (2010). Gender Relations and Applied Research on Aging. *The Gerontologist*, 50(6):720–734.

Carle, A. C. (2009). Fitting Multilevel Models in Complex Survey Data with Design Weights: Recommendations. *BMC Medical Research Methodology*, 9(1):49.

Carlin, B. P. and Louis, T. A. (2009). *Bayesian Methods for Data Analysis*. Boca Raton: CRC Press.

Cau, B. M. (2015). Community Influences on Contraceptive Use in Mozambique. *Health & Place*, 31:10–16.

Chama-Chiliba, C. M. and Koch, S. F. (2013). Utilization of Focused Antenatal Care in Zambia: Examining Individual-and Community-Level Factors Using A Multilevel Analysis. *Health Policy and Planning*, 30(1):78–87.

Chol, C., Negin, J., Agho, K. E., and Cumming, R. G. (2019). Women's Autonomy and Utilisation of Maternal Healthcare Services In 31 Sub-Saharan African Countries: Results from the Demographic and Health Surveys, 2010–2016. *BMJ open*, 9(3): e023128.

Chua, P. (2008). Orientalism as Cultural Practices and The Production of Sociological Knowledge. *Sociology Compass*, 2(4):1179–1191.

Chuang, Y.-C., Chuang, K.-Y., and Yang, T.-H. (2013). Social Cohesion Matters in Health. *International Journal for Equity in Health*, 12(1):87.

Clark, T. S. and Linzer, D. A. (2015). Should I Use Fixed or Random Effects? *Political Science Research and Methods*, 3(2):399–408.

Coburn, C., Restivo, M., and Shandra, J. M. (2015). The African Development Bank and Women's Health: A Cross-National Analysis of Structural Adjustment and Maternal Mortality. *Social Science Research*, 51:307–321.

Coburn, D. (2000). Income Inequality, Social Cohesion and the Health Status of Populations: The Role of Neo-Liberalism. *Social Science & Medicine*, 51(1):135–146.

Coburn, D. (2004). Beyond the Income Inequality Hypothesis: Class, Neo-Liberalism, and Health Inequalities. *Social Science & Medicine*, 58(1):41–56.

Cockerham, W. C. (2013). Sociological Theory in Medical Sociology in the Early Twenty-First Century. *Social Theory & Health*, 11(3):241–255.

Cohen, L., Manion, L., and Morrison, K. (2002). *Research Methods in Education*. New York: Routledge.

Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94: S95–S120.

Collyer, F. (2018). Envisaging the Healthcare Sector as A Field: Moving from Talcott Parsons to Pierre Bourdieu. *Social Theory & Health*, 16(2):111–126.

Connell, R. (2006). Northern Theory: The Political Geography of General Social Theory. *Theory and Society*, 35(2):237–264.

Connell, R. W. (1997). Why is Classical Theory Classical? *American Journal of Sociology*, 102(6):1511–1557.

Cornia, G. A. (2001). Globalization and Health: Results and Options. *Bulletin of the World Health Organization*, 79:834–841.

Cornwall, A. (2002). Locating citizen participation. *IDS Bulletin*, 33(2)

Corsi, D. J., Neuman, M., Finlay, J. E., and Subramanian, S. (2012). Demographic and Health Surveys: A Profile. *International Journal of Epidemiology*, 41(6):1602–1613.

Cowles, M. K. (2013). *Applied Bayesian Statistics: with R and OpenBUGS Examples*, Volume 98. New York: Springer Science & Business Media.

Cowles, M. K. and Carlin, B. P. (1996). Markov Chain Monte Carlo Convergence Diagnostics: A Comparative Review. *Journal of the American Statistical Association*, 91(434):883–904.

Crotty, M. (1998). *The Foundations of Social Research: Meaning and Perspective in the Research Process*. London: Sage Publications.

Cruickshank, J. (2012). Positioning Positivism, Critical Realism and Social Constructionism in the Health Sciences: A Philosophical Orientation. *Nursing Inquiry*, 19(1):71–82.

Cutler, D. M., Lleras-Muney, A., and Vogl, T. (2008). Socioeconomic status and health: dimensions and mechanisms. Technical report, National Bureau of Economic Research.

Daoud, A., Nosrati, E., Reinsberg, B., Kentikelenis, A. E., Stubbs, T. H., and King, L. P. (2017). Impact of International Monetary Fund Programs on Child Health. *Proceedings of the National Academy of Sciences*, 114(25):6492–6497.

Das, S. (2018). Maternal Health, Human Rights, and The Politics of State Accountability: Lessons from the Millennium Development Goals and Implications for the Sustainable Development Goals. *Journal of Human Rights*, 17(5):550–567.

Davies, S. (2010). *Global politics of health*. Cambridge: Polity Press.

De Francisco, A., Dixon-Mueller, R., et al. (2007). Research issues in sexual and reproductive health for low-and middle-income countries. Geneva Switzerland Global Forum for Health Research 2007.

De Maio, F. (2010). *Health and Social Theory*. London: Palgrave Macmillan Basingstoke.

De Maio, F. (2014). *Global Health Inequities: A Sociological Perspective*. London: Palgrave Macmillan.

De Vaus, D. A. and de Vaus, D. (2001). *Research Design in Social Research*. London: Sage Publications.

De Vogli, R. and Birbeck, G. L. (2005). Potential Impact of Adjustment Policies on Vulnerability of Women and Children To HIV/AIDs in Sub-Saharan Africa. *Journal of Health, Population and Nutrition*, pages 105–120.

Debelew, G. T., Afework, M. F., and Yalew, A. W. (2014). Factors Affecting Birth Preparedness and Complication Readiness in Jimma Zone, Southwest Ethiopia: A Multilevel Analysis. *The Pan African Medical Journal*, 19.

DeGroot, M. H. and Schervish, M. J. (2012). *Probability and Statistics*. Boston:Pearson Education.

Dépelteau, F. (2008). Relational Thinking: A Critique of Co-Deterministic Theories of Structure and Agency. *Sociological Theory*, 26(1):51–73.

Dias, J. G. and de Oliveira, I. T. (2015). Multilevel Effects of Wealth on Women's Contraceptive Use in Mozambique. *PLoS One*, 10(3): e0121758.

DHS Program. (2018). Who We Are? Retrieved September 18, from https://dhsprogram.com/Who-We-Are/upload/DHS-Program-Informational-Brochure.pdf

Dreher, A. (2006). Does Globalization Affect Growth? Evidence from A New Index of Globalization. *Applied Economics*, 38(10):1091–1110.

Dreher, A., Gaston, N., and Martens, P. (2008). *Measuring Globalisation: Gauging its Consequences.* New York: Springer.

Dundas, R., Leyland, A. H., and Macintyre, S. (2014). Early-life School, Neighbourhood, and Family Influences on Adult Health: A Multilevel Cross-Classified Analysis of The Aberdeen Children of the 1950s Study. *American Journal of Epidemiology*, 180(2):197–207.

Dunn, J. T., Lesyna, K., and Zaret, A. (2017). The role of human rights litigation in improving access to reproductive health care and achieving reductions in maternal mortality. *BMC Pregnancy and Childbirth*, 17(2):367.

Durkheim, E. (2005). *Suicide: A study in Sociology*. New York: Routledge.

Durkheim, E., Catlin, G. E. G., Mueller, J. H., and Solovay, S. A. (1938). *The Rules of Sociological Method*, Volume 8. New York: Free Press.

Dyson, T. and Moore, M. (1983). On Kinship Structure, Female Autonomy, and Demographic Behaviour in India. *Population and Development Review*, pages 35–60.

Easterly, W. (2009). Can the West Save Africa? *Journal of Economic Literature*, 47(2):373–447.

Eckersley, R. (2015). Beyond Inequality: Acknowledging the Complexity of Social Determinants of Health. *Social Science & Medicine*, 147:121–125.

Elfstrom, K. M. and Stephenson, R. (2012). The Role of Place in Shaping Contraceptive Use Among Women in Africa. *PloS One*, 7(7): e40670.

Emirbayer, M. (1997). Manifesto for a Relational Sociology. *American Journal of Sociology*, 103(2):281–317.

Eriksson, M. (2011). Social Capital and Health: Implications for Health Promotion. *Global Health Action*, 4(1):5611.

Evans, M. (2016). Structural Violence, Socioeconomic Rights, and Transformative Justice. *Journal of Human Rights*, 15(1):1–20.

Fabic, M. S., Choi, Y., and Bird, S. (2012). A Systematic Review of Demographic And Health Surveys: Data Availability and Utilization for Research. *Bulletin of the World Health Organization*, 90(8):604–612.

Farmer, P. (1999). Pathologies of Power: Rethinking Health and Human Rights. *American Journal of Public Health*, 89(10):1486–1496.

Farmer, P. (2005). *Pathologies of Power: Health, Human Rights, and the New War on the Poor (California Series in Public Anthropology; 4)*. Los Angeles: University of California Press Berkeley.

Farmer, P., Kim, J. Y., Kleinman, A., and Basilico, M. (2013). *Reimagining Global Health: An Introduction*, Volume 26. Los Angeles: University of California Press.

Ferrie, J. and Hosie, A. (2018). Methodological Challenges in Developing An Evidence Base, and Realising Rights. *The International Journal of Human Rights*, 22(1):5–21.

Finch, W. H., Bolin, J. E., and Kelley, K. (2014). *Multilevel Modelling Using R*. Boca Raton: CRC Press.

Finnis, J. (2011). *Natural Law and Natural Rights*. Oxford: Oxford University Press.

Fisher, A. A. and Way, A. A. (1988). The Demographic and Health Surveys Program: An Overview. *International Family Planning Perspectives*, 14(1):15.

Fournier, M. (2013). *Emile Durkheim: A Biography*. Cambridge: Polity Press.

Fox, J. and Weisberg, S. (2011). *An R Companion to Applied Regression* (2nd Ed.). Thousand Oaks CA: Sage Publication.

Frank, A. G. et al. (1967). *Capitalism and Underdevelopment in Latin America*, volume 93. New York: NYU Press.

Freedman, L. P. (2001). Using Human Rights in Maternal Mortality Programs: From Analysis to Strategy. *International Journal of Gynecology & Obstetrics*, 75(1):51–60.

Frey, R. S. and Field, C. (2000). The Determinants of Infant Mortality in the Less Developed Countries: A Cross-National Test of Five Theories. *Social Indicators Research*, 52(3):215–234.

Fuller, W. A. (2011). *Sampling statistics*, volume 560. New York: John Wiley & Sons.

Gabrysch, S. and Campbell, O. M. (2009). Still too far to walk: literature review of the determinants of delivery service use. *BMC Pregnancy and Childbirth*, 9(1):34.

Gabrysch, S., Cousens, S., Cox, J., and Campbell, O. M. (2011). The Influence of Distance and Level of Care on Delivery Place In Rural Zambia: A Study Of Linked National Data In A Geographic Information System. *PLoS Medicine*, 8(1): e1000394.

Gage, A. J. (2007). Barriers to the Utilization of Maternal Health Care in Rural Mali. *Social Science & Medicine*, 65(8):1666–1682.

Galaa, S. Z. and Daare, K. (2008). Understanding barriers to maternal child health services utilisation in northern ghana. *Journal of Social Development in Africa*, 23(2).

Galtung, J. (1969). Violence, peace, and peace research. *Journal of peace research*, 6(3):167– 191.

Galtung, J. (1990). Cultural violence. *Journal of peace research*, 27(3):291–305.

Gelman, A. et al. (2005). Analysis of Variance. Why it is More Important Than Ever. *The annals of statistics*, 33(1):1–53.

Gelman, A. and Hennig, C. (2017). Beyond Subjective and Objective in Statistics. *Journal of the Royal Statistical Society: Series A (Statistics in Society)*, 180(4):967–1033.

Gelman, A. and Hill, J. (2007). *Data Analysis Using Regression and Multilevel/Hierarchical Models*. Cambridge: Cambridge university press.

Gelman, A. and Shalizi, C. R. (2013). Philosophy and the Practice of Bayesian Statistics. *British Journal of Mathematical and Statistical Psychology*, 66(1):8–38.

Gereffi, G. (1989). Rethinking Development Theory: Insights from East Asia and Latin America. *Sociological Forum*, 4(4): 505–533.

Geweke, J. (1992). Evaluating the Accuracy of Sampling-Based Approaches to the Calculations of Posterior Moments. *Bayesian Statistics*, 4:641–649.

Giddens, A. (1990). *The Consequences of Modernity*. Cambridge: Polity press.

Giddens, A. (1995). *Politics, Sociology, and Social Theory: Encounters with Classical and Contemporary Social Thought*. Cambridge: Polity Press

Giddens, A. (1993). *New Rules of Sociological Method: A Positive Critique of Interpretative Sociologies*. Cambridge: Polity Press.

Gill, J. (2014). *Bayesian Methods: A Social and Behavioural Sciences Approach*. Boca Raton: Chapman and Hall/CRC.

Girmaye, M. and Berhan, Y. (2016). Skilled Antenatal Care Service Utilization and its Association with the Characteristics of Women's Health Development Team in Yeky District, South-West Ethiopia: A multilevel analysis. *Ethiopian Journal of Health Sciences*, 26(4):369– 380.

Gizachew Balew, J., Cho, Y., Tammy Kim, C., and Ko, W. (2015). Structural Determinants in Family Planning Service Utilization in Ethiopia: Edhs 2011 analysis. *BioMed Research International*.

Go, J. (2013). For a Postcolonial Sociology. *Theory and Society*, 42(1):25–55.

Goldstein, H., Browne, W., and Rasbash, J. (2002). Partitioning variation in multilevel models. *Understanding statistics: statistical issues in psychology, education, and the social sciences*, 1(4):223–231.

Goldstein, H. and Leckie, G. (2011). *Multilevel modeling*. New York, NY: Wiley.

Goryakin, Y., Lobstein, T., James, W. P. T., and Suhrcke, M. (2015). The Impact of Economic, Political and Social Globalization on Overweight And Obesity In The 56 Low And Middle Income Countries. *Social Science & Medicine*, 133:67–76.

Group, I. D. L. W., for Human Rights (US), P., of Cape Town. School of Public Health, U., and Care, P. H. (2002). *Dual loyalty & human rights in health professional practice: proposed guidelines & institutional mechanisms*. Physicians for Human Rights.

Hanmer, L. and Klugman, J. (2016). Exploring Women's Agency and Empowerment In Developing Countries: Where Do We Stand? *Feminist Economics*, 22(1):237–263.

Harrell Jr, F. E. (2015). *Regression Modelling Strategies: With Applications to Linear Models, Logistic and Ordinal Regression, and Survival Analysis*. Springer.

Hays, S. (1994). Structure and Agency and the Sticky Problem of Culture. *Sociological Theory*, 12(1):57–72.

Hedström, P., Swedberg, R., and Hernes, G. (1998). *Social Mechanisms: An analytical Approach to Social Theory*. Cambridge: Cambridge University Press.

Heeringa, S. G., West, B. T., and Berglund, P. A. (2017). *Applied Survey Data Analysis*. Boca Raton: Chapman and Hall/CRC.

Ho, K. (2007). Structural violence as a human rights violation. *Essex Human Rights Review*, 4(2):1-17.

House, J. S., Kessler, R. C., Herzog, A. R., Mero, R. P., Kinney, A. M., and Breslow, M. J. (2013). Social stratification, age, and health. In K. W. Schaie, D. Blazer, J. S. House and J. A. House. *Aging, health behaviours, and health outcomes* (pp.13–44). London: Psychology Press.

House, J. S., Lantz, P. M., and Herd, P. (2005). Continuity and Change in The Social Stratification of Aging and Health Over The Life Course: Evidence from A Nationally Representative Longitudinal Study from 1986 to 2001/2002 (Americans' Changing Lives Study). *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 60(Special_Issue_2): S15–S26.

Howson, C. and Urbach, P. (2006). *Scientific Reasoning: The Bayesian Approach*. Peru: Open Court Publishing.

Hox, J. J., Moerbeek, M., and Van de Schoot, R. (2017). *Multilevel Analysis: Techniques and Applications*. New York: Routledge.

Hunt, P. and Bueno de Mesquita, J. (2010). Reducing Maternal Mortality: The Contribution of the Right to the Highest Attainable Standard of Health. Retrieved September 28, 2019, from http://repository.essex.ac.uk/9719/1/reducing-maternal-mortality-contribution-right-highest-attainable-standard-health.pdf

Hynes, P., Lamb, M., Short, D., and Waites, M. (2010). Sociology and Human Rights: Confrontations, Evasions and New Engagements. *The International Journal of Human Rights*, 14(6):811–832.

ICF International. 2012. *Demographic and Health Survey Sampling and Household Listing Manual*. MEASURE DHS, Calverton, Maryland, U.S.A.: ICF International

Ichoku, H. E., Mooney, G., and Ataguba, J. E.-O. (2013). Africanizing the Social Determinants of Health: Embedded Structural Inequalities and Current Health Outcomes in sub-Saharan Africa. *International Journal of Health Services*, 43(4):745–759.

Jackman, S. (2009). *Bayesian analysis for the social sciences*, volume 846. Sussex: John Wiley & Sons.

Jesson, J., Matheson, L., and Lacey, F. M. (2011). *Doing Your Literature Review: Traditional and Systematic Techniques*. London: Sage Publications.

Johnson, D. P. (2008). *Contemporary Sociological Theory: An Integrated Multi-Level Approach*. New York: Springer Science & Business Media.

Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and change*, 30(3):435–464.

Kane, S., Rial, M., Matere, A., Dieleman, M., Broerse, J. E., and Kok, M. (2016). Gender relations and women's reproductive health in south sudan. *Global Health Action*, 9(1):33047.

Karvonen, S., Kestilä, L. M., and Mäki-Opas, T. E. (2018). Who Needs the Sociology of Health and Illness? A New Agenda for Responsive and Interdisciplinary Sociology of Health and Medicine. *Frontiers in Sociology*, 3:4.

Kaufmann, D., Kraay, A., and Mastruzzi, M. (2011). The Worldwide Governance Indicators: Methodology and Analytical Issues. *Hague Journal on the Rule of Law*, 3(2):220–246.

Kawachi, I. and Kennedy, B. P. (2002). *The Health of Nations: Why Inequality Is Harmful to Your Health*. New York: New Press.

Keohane, R. O. and Nye, J. S. (2000). Globalization: What's new? what's Not? (and So What?). *Foreign Policy*, 118:104–119.

Khan, K., Kunz, R., Kleijnen, J., and Antes, G. (2011). *Systematic Reviews to Support Evidence-Based Medicine*. Boca Raton: CRC Press.

King, G., Keohane, R. O., and Verba, S. (1994). *Designing Social Inquiry: Scientific Inference in Qualitative Research*. Princeton: Princeton university press.

Kistiana, S. (2009). Socio-Economic and Demographic Determinants of Maternal Health Care Utilization in Indonesia. Unpublished Master's Theses, the Flinders University of South Australia, Adelaide.

Kivunja, C. and Kuyini, A. B. (2017). Understanding and Applying Research Paradigms in Educational Contexts. *International Journal of Higher Education*, 6(5):26–41.

Koenig, M. A., Ahmed, S., Hossain, M. B., & Mozumder, A. K. A. (2003). Women's status and domestic violence in rural Bangladesh: individual-and community-level effects. *Demography*, *40*(2), 269-288

Kreft, I. G., Kreft, I., and de Leeuw, J. (1998). *Introducing Multilevel Modelling*. London: Sage Publications.

Kritz, M. M. and Makinwa-Adebusoye, P. (1999). Determinants of Women's Decision-Making Authority in Nigeria: The Ethnic Dimension. *Sociological Forum*, 14(3):399– 424.

Kruk, M. E. (2012). Globalisation and Global Health Governance: Implications for Public Health. *Global Public Health*, 7(sup1): S54–S62.

Kruk, M. E., Galea, S., Prescott, M., and Freedman, L. P. (2007). Health Care Financing and Utilization of Maternal Health Services in Developing Countries. *Health Policy and Planning*, 22(5):303–310.

Kruk, M. E., Hermosilla, S., Larson, E., Vail, D., Chen, Q., Mazuguni, F., Byalugaba, B., and Mbaruku, G. (2015). Who is Left Behind on the Road to Universal Facility Delivery? A Cross-Sectional Multilevel Analysis in Rural Tanzania. *Tropical Medicine & International Health*, 20(8):1057–1066.

Kruk, M. E., Rockers, P. C., Mbaruku, G., Paczkowski, M. M., and Galea, S. (2010). Community and Health System Factors Associated with Facility Delivery in Rural Tanzania: A Multilevel Analysis. *Health Policy*, 97(2-3):209–216.

Labonté, R. and Schrecker, T. (2007). Globalization and Social Determinants of Health: Introduction and Methodological Background (part 1 of 3). *Globalization and Health*, 3(1):5.

Lane, S. D., Rubinstein, R. A., Keefe, R. H., Webster, N., Cibula, D. A., Rosenthal, A., and Dowdell, J. (2004). Structural Violence and Racial Disparity in HIV Transmission. *Journal of Health Care for the Poor and Underserved*, 15(3):319–335.

Leive, A. and Xu, K. (2008). Coping with Out-of-Pocket Health Payments: Empirical Evidence From 15 African Countries. *Bulletin of the World Health Organization*, 86:849–856C.

Lewis, D. (1986). *On the Plurality of Worlds*. London: Blackwell Publishing.

Li, J. (2004). Gender Inequality, Family Planning, And Maternal and Child Care in A Rural Chinese County. *Social Science & Medicine*, 59(4):695–708.

Liebenberg, S. (2005). The Value of Human Dignity in Interpreting Socio-Economic Rights. *South African Journal on Human Rights*, 21(1):1–31.

Lieberson, S and Horwich, J. (2008). Implication Analysis: A Pragmatic Proposal for Linking Theory and Data in the Social Sciences. *Sociological Methodology*, 38(1): 1-50.

Lincoln, Y. S. and Guba, E. (2007). *Naturalistic inquiry*. Thousand Oaks: Sage.

Link, B. G. and Phelan, J. (1995). Social Conditions as Fundamental Causes of Disease. *Journal of Health and Social Behavior*, (sup1): S80–S94.

Locke, C. and Okali, C. (1999). Analysing Changing Gender Relations: Methodological Challenges for Gender Planning. *Development in Practice*, 9(3):274–286.

Lockwood, D. (1996). Civic integration and class formation. *British Journal of Sociology*, 47(3):531–550.

London, L. (2008). What is a human-rights based approach to health and does it matter? *Health and Human Rights*, 10(1):65–80.

London, L. and Schneider, H. (2012). Globalisation and Health Inequalities: Can a Human Rights Paradigm Create Space for Civil Society Action? *Social Science & Medicine*, 74(1):6– 13.

Lowe, E. J. (1987). What is the 'problem of induction'? *Philosophy*, 62(241):325–340.

Lunn, D., Jackson, C., Best, N., Thomas, A., and Spiegelhalter, D. (2012). *The BUGS book: A practical introduction to Bayesian analysis*. Boca Raton: CRC Press.

Lynch, S. M. (2007). *Introduction to Applied Bayesian Statistics and Estimation for Social Scientists*. New York: Springer Science & Business Media.

Maas, C. J. and Hox, J. J. (2004). Robustness Issues in Multilevel Regression Analysis. *Statistica Neerlandica*, 58(2):127–137.

Maclean, G. D. (2010). An Historical Overview of the First two Decades of Striving Towards Safe Motherhood. *Sexual & Reproductive Healthcare*, 1(1):7–14.

Magadi, M. A., Agwanda, A. O., and Obare, F. O. (2007).   A Comparative Analysis of The Use of Maternal Health Services Between Teenagers and older Mothers in sub-Saharan Africa: Evidence from Demographic and Health Surveys (DHS). *Social Science & Medicine*, 64(6):1311–1325.

Magadi, M. A., Zulu, E. M., and Brockerhoff, M. (2003). The Inequality of Maternal Health Care in Urban sub-Saharan Africa in the 1990s. *Population Studies*, 57(3):347–366.

Malhotra, A., Schuler, S. R., et al. (2005). Women's empowerment as a variable in international development. *Measuring Empowerment: Cross-Disciplinary Perspectives*, 1(1):71–88.

Mansyur, C. L., Amick III, B. C., Franzini, L., and Roberts, R. E. (2009). Culture and the Social Context of Health Inequalities. *International Journal of Health Services*, 39(1):85–106.

Marks, S. P. (2005). The Human Rights Framework for Development: Seven Approaches. *Reflections on the Right to Development* (pp. 23–60). London: Sage Publications.

Marmot, M. (1986). Social inequalities in mortality: the social environment. In R. G Wilkinson (Ed.), *Class and Health: Research and Longitudinal Data* (pp. 21-33). New York: Routledge

Marshall, T. H., Bottomore, T., et al. (1950). *Citizenship and Social Class*, volume 11. Cambridge: Cambridge University Press.

Martens, P., Akin, S.-M., Maud, H., and Mohsin, R. (2010). Is Globalization Healthy: A Statistical Indicator Analysis of the Impacts of Globalization on Health. *Globalization and Health*, 6(1):16.

Masters, S. H., Burstein, R., Amofah, G., Abaogye, P., Kumar, S., and Hanlon, M. (2013). Travel Time to Maternity Care and its Effect on Utilization in Rural Ghana: A Multilevel Analysis. *Social Science & Medicine*, 93:147–154.

Matthews, S., Manor, O., and Power, C. (1999). Social Inequalities in Health: Are There Gender Differences? *Social Science & Medicine*, 48(1):49–60.

Mawere, M. and Mubaya, T. R. (2016). *African Philosophy and Thought Systems: A Search for a Culture and Philosophy of Belonging*. Yaonde: Langaa RPCIG.

Mbonye, A. K. and Asimwe, J. B. (2010). Factors Associated with Skilled Attendance at Delivery in Uganda: Results from A National Health Facility Survey. *International Journal of Adolescent Medicine and Health*, 22(2):249–256.

McCormick, T. J. (1990). World Systems. *The Journal of American History*, 77(1):125–132.

McNamara, C. (2017). Trade Liberalization and Social Determinants of Health: A State of the Literature Review. *Social Science & Medicine*, 176:1–13.

McTavish, S., Moore, S., Harper, S., and Lynch, J. (2010). National Female Literacy, Individual Socio-Economic Status, and Maternal Health Care Use in sub-Saharan Africa. *Social Science & Medicine*, 71(11):1958–1963.

Merlo, J. (2014). Invited Commentary: Multilevel Analysis of Individual Heterogeneity – A Fundamental Critique of The Current Probabilistic Risk Factor Epidemiology. *American Journal of Epidemiology*, 180(2):208–212.

Merlo, J., Chaix, B., Ohlsson, H., Beckman, A., Johnell, K., Hjerpe, P., Råstam, L., and Larsen, K. (2006). A Brief Conceptual Tutorial of Multilevel Analysis in Social Epidemiology: Using Measures of Clustering in Multilevel Logistic Regression to Investigate Contextual Phenomena. *Journal of Epidemiology & Community Health*, 60(4):290–297.

Merlo, J., Chaix, B., Yang, M., Lynch, J., and Råstam, L. (2005). A Brief Conceptual Tutorial of Multilevel Analysis in Social Epidemiology: Linking the Statistical Concept of Clustering to the Idea of Contextual Phenomenon. *Journal of Epidemiology & Community Health*, 59(6):443–449.

Meyer, D., Dimitriadou, E., Hornik, K., Weingessel, A., and Leisch, F. (2017). *e1071: Misc Functions of the Department of Statistics, Probability Theory Group (Formerly: E1071), TU Wien*. R package version 1.6-8.

Mezmur, M., Navaneetham, K., Letamo, G., and Bariagaber, H. (2017). Individual, Household and Contextual Factors Associated with Skilled Delivery Care in Ethiopia: Evidence from Ethiopian Demographic and Health Surveys. *PLoS One*, 12(9): e0184688.

Michie, J. (2014). *Reader's Guide to the Social Sciences*. New York: Routledge.

Mihalache-O'Keef, A. and Li, Q. (2011). Modernization vs. Dependency Revisited: Effects of Foreign Direct Investment on Food Security in Less Developed Countries. *International Studies Quarterly*, 55(1):71–93.

Mohan, D., Gupta, S., LeFevre, A., Bazant, E., Killewo, J., and Baqui, A. H. (2015). Determinants of Postnatal Care Use at Health Facilities in Rural Tanzania: Multilevel Analysis of a Household Survey. *BMC Pregnancy and Childbirth*, 15(1):282.

Moher, D., Liberati, A., Tetzlaff, J., and Altman, D. G. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The Prisma Statement. *Annals of Internal Medicine*, 151(4):264–269.

Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., and Stewart, L. A. (2015). Preferred Reporting Items for Systematic Review and Metanalysis Protocols (Prisma-P) 2015 Statement. *Systematic Reviews*, 4(1):1.

Moran, A. C., Jolivet, R. R., Chou, D., Dalglish, S. L., Hill, K., Ramsey, K., Rawlins, B., and Say, L. (2016). A Common Monitoring Framework for Ending Preventable Maternal Mortality, 2015–2030: Phase I Of A Multi-Step Process. *BMC Pregnancy and Childbirth*, 16(1):250.

Morgan, R. (2009). Introduction: Human Rights Research and the Social Sciences. In R. Morgan & B. S. Turner (Eds), *Interpreting Human Rights: Social Science Perspectives* (pp. 1-22). New York: Routledge.

Morgan, R., Tetui, M., Muhumuza Kananura, R., Ekirapa-Kiracho, E., and George, A. (2017). Gender Dynamics Affecting Maternal Health and Health Care Access and Use in Uganda. *Health Policy and Planning*, 32(suppl_5): V13–V21.

Morrall, P. (2009). *Sociology and Health: An Introduction*. New York: Routledge.

Morris, L. (2006). Sociology and Rights–An Emergent Field. In L. Morris (Eds), *Rights* (pp. 11–26). New York: Routledge.

Moyer, C. A. and Mustafa, A. (2013). Drivers and Deterrents of Facility Delivery in sub-Saharan Africa: A Systematic Review. *Reproductive Health*, 10(1):40.

Moyo, D. (2009). *Dead Aid: Why Aid is Not Working and How there is A Better Way for Africa*. London: Penguin.

Mukherjee, N. and Krieckhaus, J. (2012). Globalization and Human Well-Being. *International Political Science Review*, 33(2):150–170.

Myburgh, N. G., Solanki, G. C., Smith, M. J., and Lalloo, R. (2005). Patient Satisfaction with Health Care Providers in South Africa: The Influences of Race and Socioeconomic Status. *International Journal for Quality in Health Care*, 17(6):473–477.

Nankinga, O., Misinde, C., and Kwagala, B. (2016). Gender Relations, Sexual Behaviour, and Risk of Contracting Sexually Transmitted Infections Among Women in Union in Uganda. *BMC Public Health*, 16(1):440.

Ndao-Brumblay, S. K., Mbaruku, G., and Kruk, M. E. (2012). Parity and Institutional Delivery in Rural Tanzania: A Multilevel Analysis and Policy Implications. *Health Policy and Planning*, 28(6):647–657.

Ngome, E. and Odimegwu, C. (2014). The Social Context of Adolescent Women's Use Of Modern Contraceptives In Zimbabwe: A Multilevel Analysis. *Reproductive Health*, 11(1):64.

Ntzoufras, I. (2011). *Bayesian Modelling Using WinBUGS*, volume 698. New York: John Wiley & Sons.

Nussbaum, M. (2003). Capabilities as Fundamental Entitlements: Sen and Social Justice. *Feminist Economics*, 9(2-3):33–59.

Onah, H. E., Ikeako, L. C., and Iloabachie, G. C. (2006). Factors associated with the Use of Maternity Services in Enugu, south-eastern Nigeria. *Social Science & Medicine*, 63(7):1870– 1878.

Ononokpono, D. N. (2015). Maternal Health Care in Nigeria: Do Community Factors Moderate the Effects of Individual-Level Education and Ethnic Origin? *African Population Studies*, 29(1):1554–1569.

Ononokpono, D. N., Odimegwu, C. O., Imasiku, E., and Adedini, S. (2013). Contextual Determinants of Maternal Health Care Service Utilization in Nigeria. *Women & Health*, 53(7):647–668.

Ononokpono, D. N., Odimegwu, C. O., Imasiku, E., and Adedini, S. (2014). Does it Really Matter Where Women Live? A Multilevel Analyaia of the Determinants of Postnatal Care in Nigeria. Maternal and Child Health Journal 53(7): 647-668.

Organization, W. H. et al. (2015a). Health in 2015: From MDGs, Millennium Development Goals to SDGs, Sustainable Development Goals. Retrieved September, 28 2019, from https://apps.who.int/iris/bitstream/handle/10665/200009/9789241565110_eng.pdf?sequence=1&isAllowed=y

Organization, W. H. et al. (2015b). Trends in Maternal Mortality: 1990-2015: Estimates from WHO, UNICEF, UNFPA, World Bank group and the United Nations Population Division: executive summary. Technical report, World Health Organization. Retrieved September, 28 2019, from https://apps.who.int/iris/bitstream/handle/10665/194254/9789241565141_eng.pdf?sequence=1

Pallikadavath, S., Foss, M., and Stones, R. W. (2004). Antenatal Care: Provision and Inequality in Rural North India. *Social Science & Medicine*, 59(6):1147–1158.

Pawson, R. (1996). Theorizing the Interview. *British Journal of Sociology*, 47(2): 295-314.

Petticrew, M. and Roberts, H. (2008). *Systematic Reviews in the Social Sciences: A Practical Guide*. New York: John Wiley & Sons.

Phelan, J. C., Link, B. G., Diez-Roux, A., Kawachi, I., and Levin, B. (2004). "Fundamental Causes" of Social Inequalities in Mortality: A Test of The Theory. *Journal of Health and Social Behavior*, 45(3):265–285.

Phelan, J. C., Link, B. G., and Tehranifar, P. (2010). Social Conditions as Fundamental Causes of Health Inequalities: Theory, Evidence, And Policy Implications. *Journal of Health and Social Behavior*, 51(1_suppl): S28–S40.

Pienaar, E., Grobler, L., Busgeeth, K., Eisinga, A., and Siegfried, N. (2011). Developing a Geographic Search Filter to Identify Randomised Controlled Trials in Africa: Finding the Optimal Balance Between Sensitivity and Precision. *Health Information & Libraries Journal*, 28(3):210–215.

Pinheiro, J., Bates, D., DebRoy, S., Sarkar, D., and R Core Team (2018). *nlme: Linear and Nonlinear Mixed Effects Models*. R package version 3.1-137.

Pogge, T. (2001). Priorities of Global Justice. *Metaphilosophy*, 32(1-2):6–24.

Pogge, T. (2005). World Poverty and Human Rights. *Ethics & International Affairs*, 19(1):1–7.

Porpora, D. (2015). *Reconstructing Sociology: The Critical Realist Approach*. Cambridge: Cambridge University Press.

Porpora, D. (2001). Do Realists Run Regressions in J. Lopez and G. Potter (Eds), *After Postmodernism: An Introduction to Critical Realism* (pp. 260–268). London: The Athlone Press.

Portes, A. (1998). Social Capital: Its Origins and Applications in Modern Sociology. *Annual Review of Sociology*, 24(1):1–24.

Potrafke, N. (2015). The Evidence on Globalisation. *The World Economy*, 38(3), 509–552.

Pratley, P. (2016). Associations Between Quantitative Measures of Women's Empowerment and Access to Care and Health Status for Mothers and their Children: A Systematic Review of Evidence from the Developing World. *Social Science & Medicine*, 169:119–131.

Pryce, G. B. (2005). *Inference and Statistics in SPSS: A Course for Business and Social Science*. GeeBeeJey Publishing.

Pullum, T. W. (2008). An Assessment of the Quality of Data on Health and Nutrition in the DHS Surveys 1993-2003. Retrieved August 23, 2019, from https://dhsprogram.com/ publications/ publication-mr6-methodological-reports.cfm

R Core Team (2017). *R: A Language and Environment for Statistical Computing*. R Foundation for Statistical Computing, Vienna, Austria.

Raftery, A. E. and Lewis, S. (1991). How Many Iterations in the Gibbs Sampler? Technical Report, Washington University Seattle Dept of Statistics.

Ratsma, Y. E. and Malongo, J. (2009). Maternal Health and Human Rights. *Malawi Medical Journal*, 21(2).

Raudenbush, S. W. and Bryk, A. S. (2002). *Hierarchical linear models: Applications and data analysis methods*, volume 1. London: Sage Publications.

Reynolds, J. R. and Ross, C. E. (1998). Social Stratification and Health: Education's Benefit Beyond Economic Status and Social Origins. *Social Problems*, 45(2):221–247.

Ritzer, G. (2011). *Sociological Theory* (11th Ed). New York: McGraw-Hill.

Robert, E., Ridde, V., Marchal, B., and Fournier, P. (2012). Protocol: A Realist Review of User Fee Exemption Policies for Health Services in Africa. *BMJ Open*, 2(1): e000706.

Robert, E., Samb, O. M., Marchal, B., and Ridde, V. (2017). Building a Middle-Range theory of Free Public Healthcare Seeking in sub-Saharan Africa: A Realist Review. *Health Policy and Planning*, 32(7):1002–1014.

Rockers, P. C., Wilson, M. L., Mbaruku, G., and Kruk, M. E. (2009). Source of Antenatal Care Influences Facility Delivery in Rural Tanzania: A Population-Based Study. *Maternal and Child Health Journal*, 13(6):879.

Roriguez, G. (2008). Multilevel Generalized Linear Models. In J. de Leuw and E. Meijer (Eds), *Handbook of Multilevel Analysis* (pp. 335-376). New York: Springer Science+Business Media, LLC.

Rodriguez, G., & Goldman, N. (2001). Improved estimation procedures for multilevel models with binary response: a case-study', *Journal of the Royal Statistical Society: Series A (Statistics in Society),* 164(2):339-355.

Roos, N. and von Xylander, S. R. (2016). Why do Maternal and New-Born Deaths Continue to Occur? *Best Practice & Research Clinical Obstetrics & Gynaecology*, 36:30–44.

Roux, A. D. (2002). A Glossary for Multilevel Analysis. *Journal of Epidemiology & Community Health*, 56(8):588–594.

Rubin, D. B. (1976). Inference and Missing Data. *Biometrika*, 63(3):581–592.

Rutaremwa, G., Wandera, S. O., Jhamba, T., Akiror, E., and Kiconco, A. (2015). Determinants of Maternal Health Services Utilization in Uganda. *BMC Health Services Research*, 15(1):271.

Rutstein, S. O. and Rojas, G. (2006). Guide to DHS Statistics. *Calverton, MD: ORC Macro*, 38.

Sachs, J. D. (2006). *The End of Poverty: Economic Possibilities for Our Time*. London: Penguin.

Sachs, W. (1997). *Development Dictionary, The: A Guide to Knowledge as Power*. London: Zed Books.

Sado, L., Spaho, A., and Hotchkiss, D. R. (2014). The Influence of Women's Empowerment on Maternal Health Care Utilization: Evidence from Albania. *Social Science & Medicine*, 114:169–177.

Sanders, D. M., Todd, C and Chopra, M. (2005). Confronting Africa's Health Crisis: More of the Same Will Not be Enough. *BMJ* 331(7519): 755-758.

Sarkar, N. (2008). The Impact of Intimate Partner Violence on Women's Reproductive Health and Pregnancy Outcome. *Journal of Obstetrics and Gynaecology*, 28(3):266–271.

Say, L., Chou, D., Gemmill, A., Tunçalp, Ö., Moller, A.-B., Daniels, J., Gülmezoglu, A. M., Temmerman, M., and Alkema, L. (2014). Global Causes of Maternal Death: A Who Systematic Analysis. *The Lancet Global Health*, 2(6): e323–e333.

Say, L. and Raine, R. (2007). A Systematic Review of Inequalities in the Use of Maternal Health Care in Developing Countries: Examining the Scale of the Problem and the Importance of Context. *Bulletin of the World Health Organization*, 85:812–819.

Scambler, G. (2001). Critical Realism, Sociology and Health Inequalities: Social Class as A Generative Mechanism and its Media of Enactment. *Alethia*, 4(1):35–42.

Schoepf, B. G., Schoepf, C., Millen, J. V., et al. (2000). Theoretical Therapies, Remote Remedies: SAPs and the Political Ecology of Poverty and Health in Africa. In J. V. Millen, A. Irwin, J. Gershman and J. Y. Kim (Eds), *Dying for growth: Global inequality and the health of the poor* (pp. 91–126). Monroe: Courage Press.

Schuler, S. R., Hashemi, S. M., and Riley, A. P. (1997). The Influence of Women's Changing Roles and Status in Bangladesh's Fertility Transition: Evidence from A Study of Credit Programs and Contraceptive Use. *World Development*, 25(4):563–575.

Searle, S. R., Casella, G., and McCulloch, C. E. (2006). *Variance Components*, volume 391. New York: John Wiley & Sons.

Sen, A. (1985). Commodities and Capabilities. Lectures in Economics: Theory, Institutions. *Policy*, 7.

Sen, A. (1990). *Gender and Cooperative Conflicts*. Number 1342. Wider Helsinki.

Sen, A. (1992). *Inequality Re-Examined*. Oxford: Clarendon Press.

Sen, A. (1999). *Freedom as Development*. Oxford: Oxford University Press.

Sen, A. (2005). Human Rights and Capabilities. *Journal of Human Development*, 6(2):151–166.

Sen, G. (1994). Women's empowerment and human rights: the challenge to policy. 363-72.

Shahmanesh, M. (2007). Neoliberal Globalisation and Health: A Modern Tragedy. *Critique*, 35(3):315–338.

Shandra, J. M., Nobles, J., London, B., and Williamson, J. B. (2004). Dependency, Democracy, and Infant Mortality: A Quantitative, Cross-National Analysis of Less Developed Countries. *Social Science & Medicine*, 59(2):321–333.

Shandra, J. M., Nobles, J. E., London, B., and Williamson, J. B. (2005). Multinational Corporations, Democracy and Child Mortality: A Quantitative, Cross-National Analysis of Developing Countries. *Social Indicators Research*, 73(2):267–293.

Simona, S., Muchindu, M., and Ntalasha, H. (2018). Intimate Partner Violence (IPV) In Zambia: Socio-Demographic Determinants and Association with Use of Maternal Health Care. *International Journal of Social Science Studies*, 6(6):42–54.

Singh, K., Bloom, S., and Brodish, P. (2015). Gender Equality as A Means to Improve Maternal and Child Health in Africa. *Health Care for Women International*, 36(1):57–69.

Singh, K., Bloom, S., Haney, E., Olorunsaiye, C., and Brodish, P. (2012). Gender Equality and Childbirth in A Health Facility: Nigeria and MDG5. *African Journal of Reproductive Health*, 16(3).

Skinner, C. and Mason, B. (2012). Weighting in the Regression Analysis of Survey Data with A Cross-National Application. *Canadian Journal of Statistics*, 40(4):697–711.

Soors, W., Dkhimi, F and Criel, B. (2013). Lack of Access to Health Care for African Indigents: A Social Exclusion Perspectives. *International Journal for Equity in Health*, 12(1):1

Spiegelhalter, D. J., Best, N. G., Carlin, B. P., and Van Der Linde, A. (2014). The Deviance Information Criterion: 12 years on. *Journal of the Royal Statistical Society: Series B (Statistical Methodology)*, 76(3):485–493.

Srikantia, J. (2016). The Structural Violence of Globalization. *Critical Perspectives on International Business*, 12(3):222–258.

Stanford, J. (2017). The Resurgence of Gig Work: Historical and Theoretical Perspectives. *The Economic and Labour Relations Review*, 28(3):382–401.

Steele, F., Amin, S., and Naved, R. T. (2001). Savings/Credit Group Formation and Change in Contraception. *Demography*, 38(2):267–282.

Steele, F. and Goldstein, H. (2006). A Multilevel Factor Model for Mixed Binary and Ordinal Indicators of Women's Status. *Sociological Methods & Research*, 35(1):137–153.

Stegmueller, D. (2013). How Many Countries for Multilevel Modelling? A Comparison of Frequentist and Bayesian Approaches. *American Journal of Political Science*, 57(3):748–761.

Steiner, H. J., Alston, P., and Goodman, R. (1996). International Human Rights in Context: Law. *Politics, Morals*, 3.

Steinmetz, G. (1998). Critical Realism and Historical Sociology. A Review Article. *Comparative Studies in Society and History*, 40(1):170–186.

Stekelenburg, J., Kyanamina, S., Mukelabai, M., Wolffers, I., and Van Roosmalen, J. (2004). Waiting too Long: Low Use of Maternal Health Services in Kalabo, Zambia. *Tropical Medicine & International Health*, 9(3):390–398.

Stephenson, R., Baschieri, A., Clements, S., Hennink, M., and Madise, N. (2006). Contextual Influences on the Use of Health Facilities for Childbirth in Africa. *American Journal of Public Health*, 96(1):84–93.

Stephenson, R., Beke, A., and Tshibangu, D. (2008). Contextual influences on contraceptive use in the eastern cape, south africa. *Health & Place*, 14(4):841–852.

Stewart, F. (2005). Groups and Capabilities. *Journal of Human Development*, 6(2):185–204.

Stuttaford, M. (2004). Balancing Collective and Individual Rights to Health and Health Care. *Law, Social Justice and Global Development Journal*, 1.

Subramanian, S. (2004). The Relevance of Multilevel Statistical Methods for Identifying Causal Neighbourhood Effects. *Social Science and Medicine*, 58(10): 1961-7.

Subramanian, S. V. and Kawachi, I. (2004). Income Inequality and Health: What Have We Learned So Far? *Epidemiologic Reviews*, 26(1):78–91.

Sztompka, P. (2014). Evolving Focus on Human Agency in Contemporary Social Theory. In T. Sztompka. *Agency and Structure: Reorienting Social Theory* (pp. 25–60). New York: Routledge.

Tann, C. J., Kizza, M., Morison, L., Mabey, D., Muwanga, M., Grosskurth, H., and Elliott, A. M. (2007). Use of Antenatal Services and Delivery Care in Entebbe, Uganda: A Community Survey. *BMC Pregnancy and Childbirth*, 7(1):23.

Tausch, A. (2016). Is Globalization Really Good for Public Health? *The International Journal of Health Planning and Management*, 31(4):511–536.

Tey, N.-P. and Lai, S.-l. (2013). Correlates of and Barriers to the Utilization of Health Services for Delivery in South Asia and sub-Saharan Africa. *The Scientific World Journal*, 2013.

Thaddeus, S. and Maine, D. (1994). Too far to Walk: Maternal Mortality in Context. *Social Science & Medicine*, 38(8):1091–1110.

Thomson, M., Kentikelenis, A., and Stubbs, T. (2017). Structural Adjustment Programmes Adversely Affect Vulnerable Populations: A Systematic-Narrative Review of their Effect on Child and Maternal Health. *Public Health Reviews*, 38(1):13.

Tolhurst, R., Raven, J., and Theobald, S. (2009). Gender Equity: Perspectives on Maternal and Child Health. In J. Ehiri (Ed.), *Maternal and Child Health: Global Challenges, Programmes and Policies* (pp. 151–166). New York: Springer.

Tom, A., Bosker, T. A. S. R. J., and Bosker, R. J. (2012). *Multilevel analysis: an introduction to basic and advanced multilevel modelling*. London: Sage Publications.

Tsanga, A. (2011). Dialoguing Culture and Sex: Reflections from the field. In S. Tamale (Ed.). *African sexualities* (pp. 57–72). Nairobi: Pambazuka Press.

Turner, B. S. (1990). Outline of a Theory of Citizenship. *Sociology*, 24(2):189–217.

Turner, B. S. (1993). Outline of a Theory of Human Rights. *Sociology*, 27(3):489–512.

Veenstra, G. and Burnett, P. J. (2014). A Relational Approach to Health Practices: Towards Transcending the Agency-Structure Divide. *Sociology of Health & Illness*, 36(2):187–198.

Vincens, N., Emmelin, M., and Stafström, M. (2018). Social Capital, Income Inequality and the Social Gradient in Self-Rated Health in Latin America: A Fixed Effects Analysis. *Social Science & Medicine*, 196:115–122.

Vizard, P., Fukuda-Parr, S., and Elson, D. (2011). Introduction: The Capability Approach and Human Rights. *Journal of Human Development and Capabilities*, 12(1):1–22.

Wallace, R. A. and Wolf, A. (1999). *Contemporary sociological theory: Expanding the classical tradition*. Upper Saddle River, NJ: Prentice Hall.

Wallerstein, I. (1974). The Modern World-System I Capitalist Agriculture and the Origins of the European World-Economy in the Sixteenth Century, with A New Prologue. Los Angeles, CA: California University Press.

Wallerstein, I. (1979). *The Capitalist World-Economy*, Volume 2. Cambridge: Cambridge University Press.

Wang, H., Naghavi, M., Allen, C., Barber, R. M., Bhutta, Z. A., Carter, A., Casey, D. C., Charlson, F. J., Chen, A. Z., Coates, M. M., et al. (2016). Global, Regional, and National Life Expectancy, All-Cause Mortality, and Cause-Specific Mortality for 249 Causes of Death, 1980–2015: A Systematic Analysis for the Global Burden of Disease Study 2015. *The lancet*, 388(10053):1459–1544.

Weber, M. (1978). *Economy and society: An outline of interpretive sociology*, volume 1. Los Angeles, CA: University of California Press.

Weber, M. (2009). *The Theory of Social and Economic Organization*. London: Simon and Schuster.

West, C. and Fenstermaker, S. (1995). Doing Difference. *Gender & Society*, 9(1):8–37.

Western, B. (1999). Bayesian Analysis for Sociologists: An introduction. *Sociological Methods & Research*, 28(1):7–34.

Western, B. and Jackman, S. (1994). Bayesian inference for comparative research. *American Political Science Review*, 88(2):412–423.

Wickham, H. (2009). *ggplot2: Elegant Graphics for Data Analysis*. New York: Springer-Verlag

Wilkinson, R. and Pickett, K. (2010). *The Spirit Level: Why Equality is Better for Everyone*. London: Penguin.

Wilkinson, R. G. and Pickett, K. E. (2006). Income Inequality and Population Health: A Review and Explanation of the Evidence. *Social Science & Medicine*, 62(7):1768–1784.

Williams, G. H. (2003). The Determinants of Health: Structure, Context and Agency. *Sociology of Health & Illness*, 25(3):131–154.

Wiysonge, C. S., Uthman, O. A., Ndumbe, P. M., and Hussey, G. D. (2012). Individual and Contextual Factors Associated with Low Childhood Immunisation Coverage in sub-Saharan Africa: A Multilevel Analysis. *PLoS One*, 7(5): e37905.

Woodiwiss, A. (2005). *Human Rights*. New York: Routledge.

Worku, A. G., Yalew, A. W., and Afework, M. F. (2013). Factors Affecting Utilization of Skilled Maternal Care in Northwest Ethiopia: A Multilevel Analysis. *BMC International Health and Human Rights*, 13(1):20.

World Bank, 2018. Piecing Together the Poverty Puzzle. Retrieved September 18, 2019, from https://openknowledge.worldbank.org/bitstream/handle/10986/30418/9781464813306.pdf

Xie, Y. (2018). *knitr: A General-Purpose Package for Dynamic Report Generation in R*. R package version 1.20.2.

Yamin, A. E. (2013). From Ideals to Tools: Applying Human Rights to Maternal Health. *PLoS Medicine*, 10(11): e1001546.

Yamin, A. E., Bazile, J., Knight, L., Molla, M., Maistrellis, E., and Leaning, J. (2015). Tracing Shadows: How Gendered Power Relations Shape the Impacts of Maternal Death on Living Children in sub-Saharan Africa. *Social Science & Medicine*, 135:143–150.

Yamin, A. E. and Maine, D. P. (1999). Maternal Morality as A Human Rights Issue: Measuring Compliance with International Treaty Obligations. *Human Rights. Q.*, 21:563.

Yebyo, H., Alemayehu, M., and Kahsay, A. (2015). Why Do Women Deliver at Home? Multilevel Modelling of Ethiopian National Demographic and Health Survey Data. *PLoS One*, 10(4): e0124718.

Yin, R. K. (1989). Case Study Research: Design and Methods, revised edition. *Applied Social Research Methods Series*, 5. Thousand Oaks, CA: Sage Publications

Young, R. J. (2003). *Postcolonialism: A Very Short Introduction*. Oxford: Oxford University Press.

Zhang, Z., Parker, R. M. A., Charlton, C. M. J., Leckie, G., and Browne, W. J. (2016). R2MLwiN: A Package to Run MLwiN from within R. *Journal of Statistical Software*, 72(10):1–43.