CENTER FOR PRIMARY CARE AND PUBLIC HEALTH

BARTS AND THE LONDON SCHOOL OF MEDICINE AND DENTISTRY

QUEEN MARY, UNIVERSITY OF LONDON

USER FEES EXEMPTION POLICY FOR MATERNAL HEALTH CARE IN SUB-SAHARAN AFRICA: IMPACT ON EQUITY IN ACCESS AND UTILIZATION OF MATERNAL HEALTH SERVICES

MASTER OF SCIENCE IN GLOBAL PUBLIC HEALTH AND POLICY
DISSERTATION (ICM7105)

BY

ACKIM JOSEPH SANKHANI

(150457389)

SUPERVISOR

Dr. ELIAS KONDILIS

WORD COUNT

(13,158)

DECLARATION

I, Ackim Joseph Sankhani (Dr.) declare with all certainty and confidence that this dissertation is a product of my work done under the guidance and supervision of my dissertation supervisor, and it has neither, whether in part or in complete form, submitted before for attainment of the same degree or a similar one at this university or elsewhere.

Signature:  Date: 10 August 2017

Ackim Joseph Sankhani

(Global Health Student, 2016/2017)

Dissertation supervisor

Signature:  Date: 10 August 2017

Dr. Elias Kondilis

(Center for Primary care and Public Health, Queen Mary, University of London)

DEDICATION

I dedicate this paper to my beloved wife, Shalom Agness Sankhani and my son, Nathan Sankhani, and all my brothers and sisters including my pastors. Many thanks for your unwavering support.

ACKNOWLEDGEMENT

I am very grateful to Cannon Collins Educational and Legal Trust, and The Simon and Deirdre Gaskell Scholarship at Queen Mary, University of London for granting me full sponsorship for my postgraduate studies in Global Public Health and Policy. It has been an honor and a great opportunity to study at this prestigious university under your assistance

Many thanks should also go to the entire teaching team and management at Center for Primary Care and Public Health, an academic institute under the umbrella of Barts and The London School of Medicine and Dentistry, for equipping me with great knowledge, skills and attitudes in Global Public Health and Policy course. You are such a wonderful and, a highly skilled and knowledgeable academic team.

To my supervisor, Dr. Elias Kondilis, I am very thankful for your support and guidance throughout the dissertation process. It has been an honor and a great pleasure to have you as my supervisor and your assistance at every stage of this paper has been very fruitful and impressive.

I would like also to extend my gratitude to my classmates for your love, support and care you have shown throughout the year. You are the best team I have had and you have made my postgraduate training at Queen Mary University of London so amazing and memorable, and my stay here in London as smooth as possible.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
CBA	Controlled Before and After
CS	Caesarean Section
DHS	Demographic and Health Survey
EPOC	Cochrane Collaboration Effective Practice and Organization of Care
GDP	Gross Domestic Product
GRADE	Grades of Recommendation, Assessment, Development and Evaluation
HIV	Human Immunodeficiency Virus
IMF	International Monetary Fund
ITS	Interrupted Time Series
MDGs	Millennium Development Goals
PED	Price Elasticity of Demand
PNC	Postnatal Care
RCTs	Randomized Controlled Trials
SAPs	Structural Adjustment Programs
SDGs	Sustainable Development Goals

UNICEF	United Nations Children's Fund
WHO	World Health Organization

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Introduction

Knowing that user fees are inequitable, inefficient and a huge hindrance to healthcare access, there has been a global movement calling upon governments more especially in developing countries to abolish user fees in public health facilities. Following the adoption MDGs, many developing countries with high maternal mortality rate especially in Sub-Saharan Africa started removing user fees for maternal healthcare in order to reduce maternal morbidity and mortality. Since then, accumulating evidence indicates that the user fees exemption policy has increased women access and utilization of maternal health services across all socioeconomic strata. However, a question still remains whether user fees exemption policy as a pro poor policy has equitably increased access and utilization of maternal health services across all socioeconomic strata.

Objectives

To assess the evidence of the impact of user fees exemption policy on equity in access and utilization of maternal health services by women's educational level, income status and area of residence.

Methods

A systematic literature search of primary studies was conducted in PubMed/Medline, Web of Science and Embase. Instead of EPOC criteria, scoping study method which does not discriminate studies based on their design and methods was used to identify and select studies for possible inclusion. Only studies that evaluated the impact of the policy across women's educational level, income status or by area of residence (rural or urban) were included. Data from eligible studies was extracted using a customized data extraction form and the quality of the evidence from each study was assessed using GRADE criteria. Due high heterogeneity of

the studies, no meta-analysis was done and narrative synthesis method was used to analyze and report the study findings.

Findings

Only 9 studies were eligible for inclusion: two ITS, two CBAs, two non CBAs and three simple cross-sectional studies. The quality of evidence was low due to study designs and methodological flaws. Although current evidence demonstrates that user fees exemption policy has increased access and utilization maternal health services across all socioeconomic strata, the findings from this review predominantly show that the policy has benefited women who are rich, well-educated and living in urban areas much more than women who are poor, less educated and living in rural areas. The user fees exemption policy has actually failed to significantly reduce inequities in maternal health care access and utilization.

Conclusion

While the existing evidence demonstrates that user fees exemption policy increases women access and utilization of maternal health services, its impact on equity shows that women in higher socioeconomic status continue to enjoy better and disproportionate access to maternal healthcare than women in lower socioeconomic status. As a pro poor policy, user fees exemption policy is not enough on its own to guarantee equity in access but other equally important supply and demand side factors should be considered too. Due to low quality of evidence, more robust study designs and methods that account for temporal trends are needed to assess the actual policy impact on equity.

Key words: User fees exemption policy, equity, maternal health services, socioeconomic status, Sub-Saharan Africa

CHAPTER ONE

1. BACKGROUND

1.1 **Introduction**

Every day, 830 women die from preventable pregnancy related causes and 99% of all maternal deaths occur in developing countries (WHO, 2015). Sub-Saharan Africa (SSA) alone account for at least 60% of these deaths (United Nations, 2015; WHO, 2015). The major contributing factor to high maternal mortality in developing countries is lack and unequal access to maternal health services especially skilled delivery services and emergency obstetric care (United Nations, 2015; WHO, 2015). Hence, improving women access to maternal health services is regarded as one of the key strategies to reducing maternal morbidity and mortality in low and middle income countries (DFID, 2004; United Nations, 2015). It is actually estimated that about 74% of maternal deaths can be averted if all women have access to maternal health services (Wagstaff, 2004).

There are several barriers that women face when accessing maternal health services in developing countries (Houweling *et al*., 2007). Some of them include inadequate medical supplies, poor quality of care, lack of information, high out of pocket payments, transportation costs and socio-cultural issues (Houweling *et al*., 2007; Say and Raine, 2007). However, high out of pocket payments in form of user fees has been one of the biggest hindrances to access maternal healthcare in low and middle income countries (Houweling *et al*., 2007; Yates, 2010). Although some have argued that user fees increase revenues for healthcare, improve quality of service delivery and deter unnecessary consumption of health services (Litvack and Bodart, 1993; Diop *et al*., 1995; Akashi *et al.*, 2004), several studies including systematic reviews have shown that user fees are highly inefficient, ineffective, inequitable and regressive means of financing healthcare system (James *et al.*, 2006; Yates, 2009, 2010; Robert and Ridde, 2013).

In a quest to improve maternal health and subsequently accelerate their progress towards achieving Millennium Development Goals (MDGs) more particularly MDG number 5 (reducing maternal mortality by 75% by 2015), many developing countries including African countries started removing user fees for maternal health services (Hatt *et al.*, 2013; Richard *et al.*, 2013; Dzakpasu *et al*., 2014). Since user fee exemption policy began, accumulating evidence shows that the policy has increased women access to and utilization of maternal health service in developing countries (Hatt *et al*., 2013; Dzakpasu *et al*., 2014; McKinnon *et al.*, 2015). As a result, there has been a growing momentum worldwide calling countries that still charge user fees in public health services to abolish them (Van Lerberghe, 2008; Robert and Ridde, 2013), with first priority given to maternal and child health services (Yates, 2010). However, what is not clearly evident is whether the user fee exemption policy apart from increasing accessibility and utilization has also improved equity. In fact, studies are reporting conflicting results on whether the policy has managed to reduce inequality or not (McKinnon, *et al*., 2015; Leone *et al*., 2016). Hence, this systematic review was conducted to review current evidence on the impact of user fees exemption policy from equity perspective.

1.2 **Introduction of user fees in public healthcare system**

1.2.1 Defining user fees

There is no standard definition of user fees and different authors tend to define user fees differently (James *et al.*, 2006). User fees can be defined as 'official charges levied at the point of service use without risk sharing' (Lagarde and Palmer, 2011) or as 'contributions to costs by individual users in the form of a charge per unit of service consumed, typically in the form of cash' (Reddy and Vandermoortele, 1996). In health care system, user fees may include consultation fees, registration fees, fees for drugs, fees for medical supplies or any charges for any health service provided (Akin *et al*., 1987; Lagarde and Palmer, 2011). It is important to distinguish user fees from other forms of out of pocket payments (direct payments by the health

service users at the point of service delivery) such as cost-recovery and cost-sharing because the meaning of these terms are usually confused with the meaning of user fees (Reddy and Vandermoortele, 1996). Unlike user fees, where the quantity and the quality of health service are considered, in cost-recovery, charges are in general regardless of the type and volume of health service provided (Reddy and Vandermoortele, 1996). In cost-sharing, instead of paying full costs as it is with user fees, the user just pays part of medical expenses because the other part is covered by insurance fund (Reddy and Vandermoortele, 1996).

1.2.2 Economic recession and Structural Adjustment Programs

User fees were introduced in 1980s as part of austerity measures in response to economic crisis that affected many developing countries (Gilson and Mills, 1995; Hutton, 2004). The economic downturn was mainly due to substantial price drops of exports of many low and middle income countries which severely contracted their Gross Domestic Product (GDP) (Hutton, 2004; James *et al.*, 2006). As a result, in many developing countries especially in Africa, public deficits and foreign debts increased to unprecedented levels (Hutton, 2004). According to Hutton (2004), the only viable strategy to service the outstanding debts and finance essential domestic needs, was to solicit loans from outside. However, many developing countries could not borrow money from foreign banks because of poor credit rating and high interest rates. So, World Bank and International Monetary Fund (IMF) became the key providers of these loans. Still, these loans had conditionalities attached to them which gave IMF and World bank a leverage to influence domestic policies. These conditionalities were summed in one package called Structural Adjustment Programs (SAPs) which among many included budgetary cuts on social expenditure including healthcare (Hutton, 2004).

Following implementation of SAPs, expenditure on healthcare drastically dropped in many developing countries (Hutton, 2004). In 1990s, the total health expenditure per capita was less than what was spent in 1980s in most of these countries (Hutton, 2004). For instance, in

Tanzania total health expenditure per capita decreased from *US$7.00* in 1980 to *US$*2.00 in 1990 (Hutton, 2004). The budgetary cuts on health expenditure resulted in decline of the quantity and quality of health service delivery in public health facilities (de Ferranti, 1985). As a result, people's health worsened in many low and middle income countries, characterized partly by high maternal and infant mortality rates (McGow, 1995; Hutton, 2004). In order to improve public health service delivery, there was a great need to find a quick and feasible way of supplementing government revenues for healthcare (Akin *et al*., 1987; Hutton, 2004). Therefore, introducing of user fees in public health facilities appeared to be the best strategy to improve health service provision (Akin *et al*., 1987; Hutton, 2004).

1.2.3 Implementation of user fees

In the context of contracted economies, collapsed state of health care systems and SAPs imposed by World Bank and IMF, many developing countries especially African countries had no other choice but to implement user fees in their public health facilities (Hutton, 2004). In Africa, the policy was established and propagated through Bamako initiative which was launched in Mali in 1987 (Ebrahim, 1993; Hutton, 2004). The Bamako initiative was sponsored by World Health Organization (WHO) and United Nations Children's Fund (UNICEF), and acted as the vehicle for World Bank and IMF to implement, promote and monitor user fees implementation process in Africa (Hutton, 2004). The initiative essentially hinged on three principles: to promote and strengthen community participation in running and management of primary healthcare, to ensure sustainable drug supply system and community participation in financing primary healthcare through user fees channels (Ebrahim, 1993; Hutton, 2004)

1.2.4 The rationale of user fees

The key proponents of user fees were the World Bank and IMF (Akin *et al*., 1987; Hutton, 2004). Both theoretical judgements and empirical literature by then showed that introducing user fees for curative services was appropriate if not the only practical solution to improve

health service delivery in public health facilities (Hutton, 2004). World Bank and IMF actually endorsed user fees on grounds that low quality of health services not necessarily the cost was the major hindrance to improving accessibility and utilization of health services (Akin *et al*., 1987; Hutton, 2004). Their argument in favor of user fees was based mainly on two widely referenced studies conducted in Philippines (Akin, 1985) and Malaysia (Heller, 1982) which demonstrated that the demand for health care was largely price-inelastic, meaning increasing price of health service or introduction of user fees would not necessarily reduce people's demand for healthcare. In other words, despite user fees, health service users would still be willing and able to pay for health services. There were four main reasons also known as goals why user fees were justified and implemented in public health services (Akin *et al*., 1987; Hutton, 2004)

The first goal which was a primary objective was to *mobilize revenues* for health care to supplement governments' meagre resources (Akin *et al*., 1987; Hutton, 2004). With understanding that demand for healthcare is price inelastic, it was estimated that user fees will be able to generate enough income amounting to 15-20% of a health facility operational costs (Akin *et al*., 1987). The second goal was to *promote and improve efficiency* in health service delivery and consumption (Akin *et al*., 1987; Hutton, 2004). The first argument was based on assumption that setting higher user fees at higher level of health care system will increase utilization of health services at lower level (Akin *et al*., 1987). However, this depends on quality and quantity services provided at the lower level (Hutton, 2004). If the quality is poor people would still bypass the lower and seek health care at higher level (Hutton, 2004). The second argument for efficiency was that user fees will deter frivolous use of health services (demand induced moral hazard), disregarding other cost barriers like transportation costs which are already significant limitations to unnecessary use of health services in many low income countries (Gilson, 1997; James *et al*., 2006). The third objective was to *improve equity* in

healthcare access and utilization based on assumption that the revenues collected from richer segments of society when they preferentially access care at secondary and tertiary levels will be used to cross-subsidize the health services used by the poor at primary level (Akin *et al*., 1987; Hutton, 2004). The last but not the least was to *improve the quality of health service*, based on assumption that if the expenditure of user fees is decentralized to the point of service use, then the revenues can be used to improve quality of services provided (Hutton, 2004). However, the success of the last two goals depends on political will, proper administrative system, transparency and accountability which are not always guaranteed in many developing countries (Hutton, 2004).

1.3 **The global movement against user fees**

1.3.1 Criticisms and evidence against user fees

Despite the purported benefits of user fees of ensuring an efficient and effective operation of healthcare system, the policy received a lot of criticisms worldwide especially by civil society organizations, the academia and other stakeholders (Hutton, 2004; Robert and Ridde, 2013). The plethora of opponents started to grow when evidence against user fees started to increase (Hutton, 2004; James *et al*., 2006). Even global institutions like WHO, World Bank and UNICEF which initially and unanimously supported the implementation of user fees began to shift their positions (Hutton, 2004; James *et al.*, 2006; Van Lerberghe, 2008; Yates, 2010). Accumulating evidence showed that user fees policy was failing to achieve its intended goals (Gilson, 1997; Hutton, 2004; Yates, 2009;).

Although user fees policy managed to improve access to and utilization of health services in some countries, in many developing countries it did not (Hutton, 2004; James *et al*., 2006). Instead of promoting and improving equity in healthcare access and utilization, the policy rather widened the inequity and the most affected were the poor people (Gilson, 1997; Yates, 2009). The amount of revenues collected was also lower than the anticipated figures (Gilson,

1997; Hutton, 2004). Instead of raising 15-20% of healthcare operational cots as previously projected (Akin *et al*., 1987), the user fees policy managed to achieve an average of 5% and 6.9% according to Gilson (1997) and Pearson (2004) respectively. This was particularly due to high administrative costs associated with user fees collection, mismanagement of revenues, theft and failure of user fees to direct service users to cost effective services (Hutton, 2004; Yates, 2009). It also failed to ensure efficiency in health service delivery because of administrative issues like costs and unnecessary provision of services (supply induced moral hazard) (Gilson, 1997). In terms of quality, to some extent user fees improved availability of medical supplies especially at health facilities where revenues were retained and spent on provision of health services (Hutton, 2004). However, in most public health facilities the quality of health services still remained poor (Hutton, 2004). Despite all arguments in favor user fees, in many low and middle income countries the policy failed to achieve its intended goals and literally worsened the very same health care problems it aimed to address (Gilson, 1997; James *et al.*, 2006; Robert and Ridde, 2013).

1.3.2 User fees reforms in developing countries

The increase in HIV/AIDS and Tuberculosis burden in global south around 1990s forced many developing countries to embark on healthcare financing reforms and user fees was the center of these reforms (Richard *et al.*, 2013). But the momentum for user fees reforms in public health facilities grew after the adoption of MDGs (Hutton, 2004; Hatt *et al.*, 2013). In order to improve the healthcare access and achieve health related goals (MDGs 4, 5 and 6), many developing countries started removing user fees in public health facilities especially for primary healthcare services (Ridde and Morestin, 2011; Hatt *et al.*, 2013). Because of budget constraints, many low income countries targeted maternal and child health services as priority areas for user fees removal (Yates, 2010; Meessen *et al.*, 2011; Richard *et al.*, 2013). Now more than a decade since the implementation of MDGs and now in era of SDGs, a good number

of countries in SSA have partly or completely removed user fees for maternal and child health services and some have extended the scope to include other health services (Meessen *et al.*, 2011; Richard *et al.*, 2013).

Following removal of user fees in public health facilities, many developing countries including African countries have experienced a huge improvement in healthcare access and utilization and there is now sufficient evidence though of low quality that user fees removal increases access and utilization of health services (Lagarde and Palmer, 2011; Ridde and Morestin, 2011). As such, there have been calls from international community asking governments of developing countries to abolish user fees in healthcare as one of strategies towards achieving universal health coverage (Van Lerberghe, 2008; Yates, 2010; Robert and Ridde, 2013). Those countries which cannot afford to abolish user fees for all services are advised to employ exemptions for certain groups of people or services (Yates, 2010). However, the identification of beneficiaries should not be based on *means testing* 'an administrative mechanism that identifies an individual's income for purposes of establishing eligibility for benefits or services at no charge or reduced charge' (Leighton, 1995), because there is sufficient evidence that this is not an effective method to protect the poor from impoverishing costs of healthcare (Leighton, 1995; Ridde, 2008). Rather, countries are advised to exempt easily identified groups like children and women regardless of their income status or easily identifiable services like maternal health services or child health services to be provided to everyone irrespective of his or her income status (Yates, 2009, 2010; Ridde and Morestin, 2011). Available evidence shows that targeting population groups or particular health services, is an effective and efficient way of ensuring equity in healthcare access and utilization (Yates, 2010; Ridde and Morestin, 2011).

1.4 **User fees and economic theories in healthcare market**

1.4.1 Demand for healthcare and the role of prices

The argument that user fees are highly regressive and must be abolished in public health facilities is credible even when economic principles of price and demand are taken into account. Demand is defined as the amount of goods that consumers are willing and able to buy at a given price (Andargie, 2008). In classical and neo-classical economic theory, when the price of particular commodity or service rises (assuming all things remain constant), the demand for that commodity or service decreases and when the price drops, the demand increases (Andargie, 2008). This economic theory can also apply to healthcare market, meaning (in ordinary terms) if the price of the health service increases (other things remaining equal), the demand for that health service is expected to decrease and if the price drops, demand is expected to increase (Andargie, 2008). As such, assuming all things remain constant, the introduction of user fees is expected to reduce demand for the healthcare while removal is expected to increase the demand for healthcare. This simple analogy to some extent validates arguments against user fees for health services.

Nonetheless, in health care market, the relation between price changes and quantity of health services demanded is not that straight forward especially if quality of services is factored in (Hatt *et al.*, 2013). For instance, there is evidence though insufficient that introducing or increasing user fees with simultaneous quality improvements increases health service utilization (Litvack and Bodart, 1993; Diop *et al*., 1995). It is also reported that if the price and quality of services drop simultaneously, the impact on the quantity of health services demanded is not even known (Hatt *et al.*, 2013). Similarly, in South Africa, user fee removal on mobile clinics did not increase the demand of mobile health services (Wilkinson *et al.*, 2001). However, there is enough evidence which shows that introducing or increasing user fees results in substantial reduction in demand for health services while removal or decreasing user fees

increases the demand for health services (Lagarde and Palmer, 2008, 2011; Ridde and Morestin, 2011).

1.4.2 Price elasticity of demand and its role in healthcare market

Price Elasticity of Demand (PED) is a measure of how demand for a particular product or service changes in response to changes in its price (Andargie, 2008). According to Andarge (2008), demand becomes price inelastic if the percentage change in price of product or service results into smaller or minor percentage change in quantity demanded and it becomes elastic if the percentage change in price results in larger percentage change of quantity demanded. As general rule, If PED is inelastic; a rise in price will lead to people spending more, while a fall in price will lead to people spending less. If PED is elastic, a rise in price will lead to people spending less, while a fall in price will lead to people spending more (Andargie, 2008).

The initial evidence which was widely used to support user fees as means of generating revenues was that the PED for health services was relatively inelastic (Heller, 1982; Akin *et al*., 1985). This meant that the introduction of user fees would not result in significant drop in demand for health services. In other words, the majority of people would still be willing and be able to pay for health services regardless of user fees. This evidence would not be surprising because healthcare market is different from other forms of market (Andargie, 2008). Healthcare is vital need and you cannot just forgo it as one would with other non-healthcare products (Andargie, 2008). So, regardless of how costly the healthcare might be, it means the users would still find ways to raise income to pay for health services when they are ill otherwise they risk dying. Nevertheless, this occurs when there is no substitute or alternative (Andargie, 2008; Hatt *et al*., 2013). If an alternative of acceptable quality is present for instance traditional birth attendants, then pregnant women would prefer TBAs if they are cheaper (Hatt *et al*., 2013). But often, comparable alternatives or substitutes are minimal or rare in healthcare market because this is highly regulated market, with limited freedom of entry or exit (Andargie, 2008).

So, it means most of times an individual has limited if not no choice when it comes to purchasing healthcare and no matter how catastrophic medical expenses are, he has to find means to square the bill. At the end, the poor people are the ones who are usually disadvantaged and continue to remain below poverty line because of impoverishing medical costs (aka medical poverty) (McPake, 1993)

On the contrary, since 1980s to date, there are several studies that have shown that PED for most of health services (preventive or curative or inpatient or outpatient services) is highly elastic (Reddy and Vandermoortele, 1996). This means despite prevailing circumstances, introduction or increasing user fees for health services is more likely to lead to substantial decline in number of its users. So, even though healthcare is vital need, health service users are very responsive to price changes (Reddy and Vandermoortele, 1996). Thus, they are more likely to forgo healthcare if they cannot afford it which is contrary to initial evidence. For instance, health service utilization in Kenya decreased by almost 50% after introduction of user fees in 1989 (Mwabu *et al*., 1995) while in Mozambique the utilization of services in primary healthcare units decreased by 50% after introducing consultation fee (Reddy and Vandermoortele, 1996). Of course, it is important to highlight that the degree of price elasticity varies from one service to another, with preventive services being generally more price elastic than curative services (Reddy and Vandermoortele, 1996).

1.4.3 Price elasticity of demand for healthcare between the poor and the rich

Although price elasticity of demand for health services is generally elastic regardless of income status, studies have shown that PED is more elastic for the poor than the rich people (McPake, 1993; Gertler and van der Gaag, 1990; Mwabu and Mwangi, 1986). The poor people are more responsive to price changes in healthcare market and they are more likely to forgo treatment than the non-poor counterparts (McPake, 1993; Reddy and Vandermoortele, 1996). This means introducing user fees for healthcare is more likely to keep the poor people away from accessing

the health services than the rich people. For example, after introduction of user fees in 11 clinics in 1993 in Zambia there was 64% reduction in outpatient attendance and greatest decline was among the poor people (Kahenya and Lake, 1994).

The fact that PED is higher among the poor than the non-poor people might not be surprising because in addition to user fees, poor people face other significant barriers to access healthcare such as transportation costs, drug costs, informal fees and other non-healthcare costs (Ensor and Cooper, 2004; James *et al.*, 2006). In this case, it means introducing user fees especially in a country where income inequality is high, is a detrimental policy to the health of the poor people (Reddy and Vandermoortele, 1996; James *et al*., 2006). As such, user fees are unlikely to reduce inequality but rather promote it. On other hand, user fees removal, is likely to reduce the inequality gap between the rich and poor in access to and utilization of health services including maternal health services. This analysis is supported by current evidence which shows that user fees removal or exemption for health services including maternal health services increases access and utilization (Lagarde and Palmer, 2011; Dzakpasu *et al*., 2014). Hence, the global momentum to remove user fees in public health services as a first step towards universal health coverage is largely justified.

.

CHAPTER TWO

2. STUDY RATIONALE AND OBJECTIVES

2.1 **Rationale**

The reason developing countries have implemented or are implementing user fee exemption policies for maternal health services is to improve equity or reduce inequities in access and utilization of maternal healthcare with ultimate goal of reducing maternal mortality rate (Hatt *et al.*, 2013; McKinnon *et al*., 2015; Leone *et al*., 2016). In other words, user fees exemption policy is a pro poor policy and its targets are poor and marginalized women who have been denied essential maternal health services for decades due to impoverishing user fees (Asante *et al.*, 2007; Leone *et al.*, 2016). Even though there is sufficient evidence that removal of user fees has resulted in improvement of women's access and utilization of maternal healthcare in general (Hatt *et al*., 2013; Dzakpasu *et al*., 2014), that does not automatically mean it has also improved equity in relative terms. As much as evaluating the effectiveness of user fee exemption policy for maternal healthcare is important as it is in any social policy or public health policy impact evaluation, knowing its impact on equity is also fundamental (McPake, 1993). So, as a pro poor policy, the most important question to address is whether user fees exemption policy has equitably increased women's access to and utilization of maternal health services across all socioeconomic strata. Knowing its actual impact on equity in relative terms is very crucial because according to *law of inverse of care* coined by Hart (1971), the wealthy and healthy people who usually have least healthcare needs are more likely to receive healthcare than poor and sick who need healthcare most. In fact, there is evidence from national surveys data and program evaluation reports that community or social interventions usually do not reach the poorest and socially marginalized people because they are usually invisible, socially excluded and powerless to participate in decision making (Kabeer, 2010; Mumtaz *et al.*, 2014). Hence, conducting systematic review of available literature on whether the user

exemption policy has reduced inequality or not in access and utilization of maternal healthcare has very vital policy implications for developing countries in terms of whether the policy should be scaled up or improved or even revoked.

At the writing of this paper there was no systematic review that has comprehensively or specifically looked at the impact of user fee exemption policy on equity in healthcare access and utilization, let alone in maternal health services. This is more likely due to lack of primary studies that assessed the impact of the policy on equity as also alluded to by authors of recent systematic reviews (Hatt *et al.*, 2013; Dzakpasu *et al*., 2014). To highlight the lack of primary studies assessing equity effects, Hatt and co-authors (2013) said 'equity effects of removing user fees, however, are less clear as few studies have examined effects across wealth or income subgroups, especially with maternal health lens'. The last and recent systematic review that tried to include equity aspect in its objectives was published in 2014 (Dzakpasu *et al*., 2014) and only found one subnational study done in Ghana which showed that user fees exemption policy for maternal healthcare (facility based deliveries) benefited the poor and less educated women more than the rich and well educated women although the results could not be attributed directly to policy change (Penfold *et al.*, 2007). The author was actually surprised by the dearth of evidence on the impact of user fees removal policies on equity considering that the actual goal of such policies is to improve equity in maternal healthcare access and utilization. According to Dzakpasu and colleagues (2014), 'not examining actual impacts on inequality risks a lack of awareness of unintended effects such as increasing inequality and fails to quantify the degree to which user fees as opposed to other factors act as a barrier for the poor'. However, since the publication this review, a number of primary studies of different designs and methods have been published which have primarily looked at the impact of the policy on equity as far as maternal healthcare access and utilization are concerned.

2.2 **Aim and objectives**

In order to assess the impact of user fees exemption policy on equity, the aim and objectives of the systematic review were as follows:

Study aim:

- ✓ To assess the impact of user fees exemption policy on equity in access to and utilization of maternal health services

Specific objectives:

- ✓ To assess the effect of user fees exemption policy on utilization of maternal healthcare by income status
- ✓ To assess the effect of user fees exemption policy on utilization maternal healthcare by educational level
- ✓ To assess the effect of user fees exemption policy on utilization of maternal healthcare between rural and urban areas

CHAPTER THREE

3. METHODOLOGY

3.1 **Approach to systematic reviews of social policy studies**

User fees policy is very complex social policy (Ridde and Morestin, 2011). Its content, context, the actors, implementation process and impact vary within and across countries (Ridde *et al.*, 2012; Richard *et al.*, 2013). In contrast to clinical or public health interventions whose impact can be sufficiently assessed by positivist research techniques like the standard randomized controlled trials (RCTs), social policy studies are very complex and require application of both qualitative and quantitative study methods in order to generate reliable and sound evidence (Ridde and Morestin, 2011; Dzakpasu *et al.*, 2012). This means social policy evidence is diverse and complicated and cannot be adequately synthesized by applying Cochrane-style of reviews which are very restrictive and exclude qualitative studies even quantitative studies that fall short of gold standard RCTs (Mays *et al*., 2005). Realizing RCTs limitations, there is now an increasing pressure from policy makers and health practitioners for more inclusive forms of reviews that are syntheses of high quality evidence stemming from both qualitative and quantitative research in order to effectively and efficiently address contemporary health challenges that are diverse and complicated (Dixon-Woods *et al.*, 2005; Mays *et al*., 2005). Following methodological approach of recent systematic reviews (Ridde and Morestin, 2011; Dzakpasu *et al*., 2014), this review deviated from Cochrane-style and took more inclusive approach in terms study designs and methods.

3.2**. Approach to study selection**

In this review as also observed in recent reviews, no study was excluded based on its methodology and study design. Had it been the aim of the review was to assess the effectiveness of policy intervention, probably the review would have been restricted to RCTs, Controlled

Before-and-After studies (CBAs) and Interrupted Time-Series studies (ITS) which are recommended study designs by Cochrane Collaboration Effective Practice and Organization of Care Group (EPOC) criteria in order to have precise estimate of policy effect (EPOC, 2002). However, besides effectiveness, EPOC inclusion criteria are not recommended for synthesizing other type of evidence, like equity issues reviewed in this paper (Ridde and Morestin, 2011). EPOC criteria are also very restrictive and are usually not recommended to review evidence on complex social policies like user fees (Mays *et al*., 2005). Rather, scoping study method which is not very restrictive is recommended for reviewing the impact of such complex social policies (Arksey and Malley, 2005). The scoping study method takes a broader and deeper approach in study selection and includes all relevant studies regardless their designs and methodologies (Arksey and Malley, 2005; Ridde and Morestin, 2011). Since user fees removal is a broad, deep and complex social policy, and studying it demands inclusion of wide range of studies (Ridde and Morestin, 2011), a scoping study method was more applicable to this review for selecting studies. Hence, the systematic review included any relevant study regardless of the design and robustness of the methodology as long as it met the inclusion criteria.

3.3 **Approach to assessing equity**

According to the International Society for Equity in Health, equity is defined as 'the absence of potentially remediable, systematic differences in access and use of one or more aspects of health services across socially, economically, demographically, or geographically defined population groups or subgroups' (Macinko and Starfield, 2002)**.** In order to review the evidence on impact of user fee exemption policy on equity in terms of maternal health care access and utilization, a three step approach proposed by Zere and co-authors (Zere *et al.*, 2010, 2011, 2012) was used.

3.3.1 Type of maternal health services

The first step was to identify maternal health service whose distribution should be assessed. This systematic review focused on antenatal care (antenatal visits), health facility delivery (delivery conducted by skilled birth attendant), caesarean sections and post-natal care (general). These maternal health services were chosen because they are key areas targeted by SDGs and previously by MDGs as there is overwhelming evidence that improving women access to these services substantially reduces maternal morbidity and mortality (United Nations, 2015; WHO, 2015). Access to and utilization of antenatal care and skilled delivery care have long been used by WHO and other global health institutions as key indicators for assessing a country's progress in improving maternal and child healthcare while rates of caesarean sections are regarded as key indicators of women's access to life saving emergency obstetric care and as a proxy for assessing the quality of care (WHO, 2005, 2015; United Nations, 2015).

3.3.2 Equity variables

The second step was to determine which equity stratifiers will be used to examine the impact of policy on equity in access and utilization of maternal health services. In as much as other equity stratifiers like age, occupation status and religion were also important, the author decided to choose three most important and commonly used equity stratifies namely: income status (economic status), educational level and place of residence (rural or urban) (Ahmed *et al.*, 2010; De Allegri *et al.*, 2011; Moyer and Mustafa, 2013). Income status was categorized according to wealth quintiles (poorest, poor, middle, rich and richest) or just poor and rich depending on the available data. Educational level was classified as: no formal education, primary level, secondary level and above or educated and least educated according the type of data as well. These equity stratifiers were chosen because they are key factors which influence women access to and utilization of maternal health services (Ahmed *et al.*, 2010; Moyer and Mustafa, 2013). Available evidence shows that income inequality or poverty has been the major

precipitating factor for all health inequalities including maternal health, with those in higher income groups benefiting much more from healthcare than those in lowest income groups (Houweling, 2007; Say and Raine, 2007; Silal *et al.*, 2012). Educational level is another critical factor as there is substantial evidence that the well-educated women have better access to maternal health services (about 5 times more) than the least educated (Ahmed *et al.*, 2010). Place of residence is also a crucial factor because it influences an individual's opportunities and exposure to healthcare services, with those in urban areas because of availability and affordability of maternal health services, having better access than those in rural areas (Gabrysch and Campbell, 2009).

3.3.3 Analytical method

The last step was to assess the degree of equity or inequality. Since this review was descriptive with no meta-analysis, simple comparisons using rates of access and utilization which is one of methods proposed by Gulliford (2003) to measure equity, was used to assess equity across women of different socio-economic strata. Depending on findings of primary studies, both absolute measures (difference in rates of access across socioeconomic strata) and relative measures (ratio in rates of access across socioeconomic strata) of comparisons were used to assess effects on equity.

3.4 **Approach to data synthesis**

The fact that the review adopted scoping study method for selecting studies, there was high probability of high heterogeneity (a measure of study variability) among the studies which potentially precluded any possibility of meta-analysis. Even the recent Cochrane Collaboration review by Lagarde and Palmer (2011) though they used EPOC criteria for study selection, they could not do meta-analysis because of diversity of study contexts and outcome measures. Instead they took a narrative approach to synthesize the evidence (Lagarde and Palmer, 2011). This systematic review as well used narrative synthesis method to synthesize or analyze the

evidence. Narrative synthesis is broadly defined as 'a process in which a narrative (as opposed to statistical) approach is used to synthesize evidence extracted from multiple studies' (Mays, *et al*., 2005). This method is recommended for systematic reviews in three situations: before carrying out meta-analysis, instead of meta-analysis whereby the experimental or quasi-experimental studies that are included are not similar and where the review questions demand or dictate the inclusion of broader range of studies of different designs and methods. So, the last situation was more applicable to this review (Mays *et al*., 2005).

3.5 **Assessing quality of evidence**

Considering the possibility of high heterogeneity of the included studies, it was crucial to assess the quality of the evidence of these studies. In any study including systematic reviews, assessing quality of evidence is important because it determines whether the study findings are credible or not (GRADE, 2004). In this review, Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) was used to assess the quality of evidence across studies. This method evaluates the quality of evidence based on four criteria namely: study designs (observation and randomized studies), quality of study (methods and execution), consistency of results (similarities of estimates of effect across studies) and directness (generalizability of findings) (GRADE, 2004) (see appendix A and B). This is one of the most commonly used method to assess the quality of evidence because it is explicit, systematic, clear and can be applied across wide range studies including systematic reviews (GRADE, 2004).

3.6 **Inclusion and exclusion criteria (table 1)**

3.6.1 <u>User fees policy</u>

This review was about user fee exemption policy for maternal healthcare and any study which assessed its impact on equity was potentially eligible for inclusion. However, studies which assessed partial exemptions where women still have to pay certain percentage of medical costs like user fee subsidy policy in Burkina Faso (Meessen *et al.*, 2011), were excluded because

partial user fees exemptions resemble cost-sharing while the focus of this study was only on user fees not cost-sharing. Similarly, the studies that assessed pilot projects of user fee exemption policies were also excluded because pilot projects are tightly controlled and are more experimental which means their results do not reflect actual or expected outcomes in natural setting (Ridde and Morestin, 2011). Studies that assessed the impact of other forms of financing maternal health care such as vouchers, subsidized insurance, or cash transfers were also excluded.

3.6.2 Study design and methods

This review included all potential studies regardless of their design (observational or randomized controlled trials) and methodology (qualitative or quantitative) provided they were primary studies published in peer reviewed journals. It was primarily restricted to studies conducted in African countries, SSA countries in particular. Any studies done outside Africa were not eligible. There was no restriction in terms of the study scale of policy impact whether it was assessed at national level or subnational level. However, studies that assessed the policy impact at a single health facility (except regional or district or provincial health facilities) were not eligible because of limitations in generalizability of the findings either at national or subnational level. The were no restrictions for study duration or period. As long as the study assessed the outcome of interest, it was eligible for inclusion.

3.6.3 Type of intervention

Maternal health care comprise different kinds of health services and countries have implemented different exemption policies (Hatt *et al.*, 2013). Some countries exempt women for all maternal health services while other exempt women from selected health services like delivery services, emergency obstetric services or caesarean sections (Hatt *et al.*, 2013). As a result, the review placed no restrictions to the type of maternal health service that was assessed.

3.6.4 Measured outcomes

The review included studies that assessed impact of policy on maternal health services across women of different socioeconomic status. The main focus was on studies that looked at utilization according to educational level, income level or between rural and urban areas. Any study that reported any of these outcomes was eligible for inclusion. However, only studies that reported these outcomes quantitatively were included. All studies that only reported general impact of the user fee exemption policy on utilization of maternal health services without breaking it down according to socio-economic caste as indicated above were excluded.

Table 1: Eligibility Criteria

Inclusion criteria	**Exclusion criteria**
Studies assessing full user fees exemption policies	Studies about other form of maternal health financing like vouchers, cost-sharing and cash transfer
Studies of any design (observational or randomized controlled trials) and methods (qualitative and quantitative)	Studies that assessed the impact of the policy on other equity stratifiers like age, occupation status, religion and ethnicity
Studies that assessed the policy impact across educational level, income level and area of residence	Studies that just assessed general policy impact without breaking it down across socioeconomic strata
Any study regardless of study scale and duration	Facility based studies except those done at a district or regional health facility
Studies about maternal health services especially antenatal care, delivery care, caesarean section or postnatal service	Studies that assessed other health services including reproductive services
Studies done in Africa	Studies that assessed other aspects of equity other than access and utilization like quality of care, maternal health outcomes, changes in household out of payments
Primary studies published in peer reviewed journals	

3.7 **Literature search strategy**

The study search period for this review ran from 05 April 2017 to 17 May 2017. Three key international electronic databases: PubMed/Medline, Web of Science and Embase were

searched to identify primary studies for inclusion. Initially, google scholar was used to scope the literature and identify some search terms. PubMed/Medline was chosen because it is a free search engine, comparatively easier to run literature search, contains vast amount of literature and it is one of the most common electronic databases used by physicians and health professionals (Greenhalgh, 2010, p.25). It is actually a flagship electronic database for journal articles in health sciences (Greenhalgh, 2010, p.15). Web of Science and Embase are also good bibliographic databases and sometimes may contain journal articles not published in PubMed/Medline (Greenhalgh, 2010, p. 16, 25).

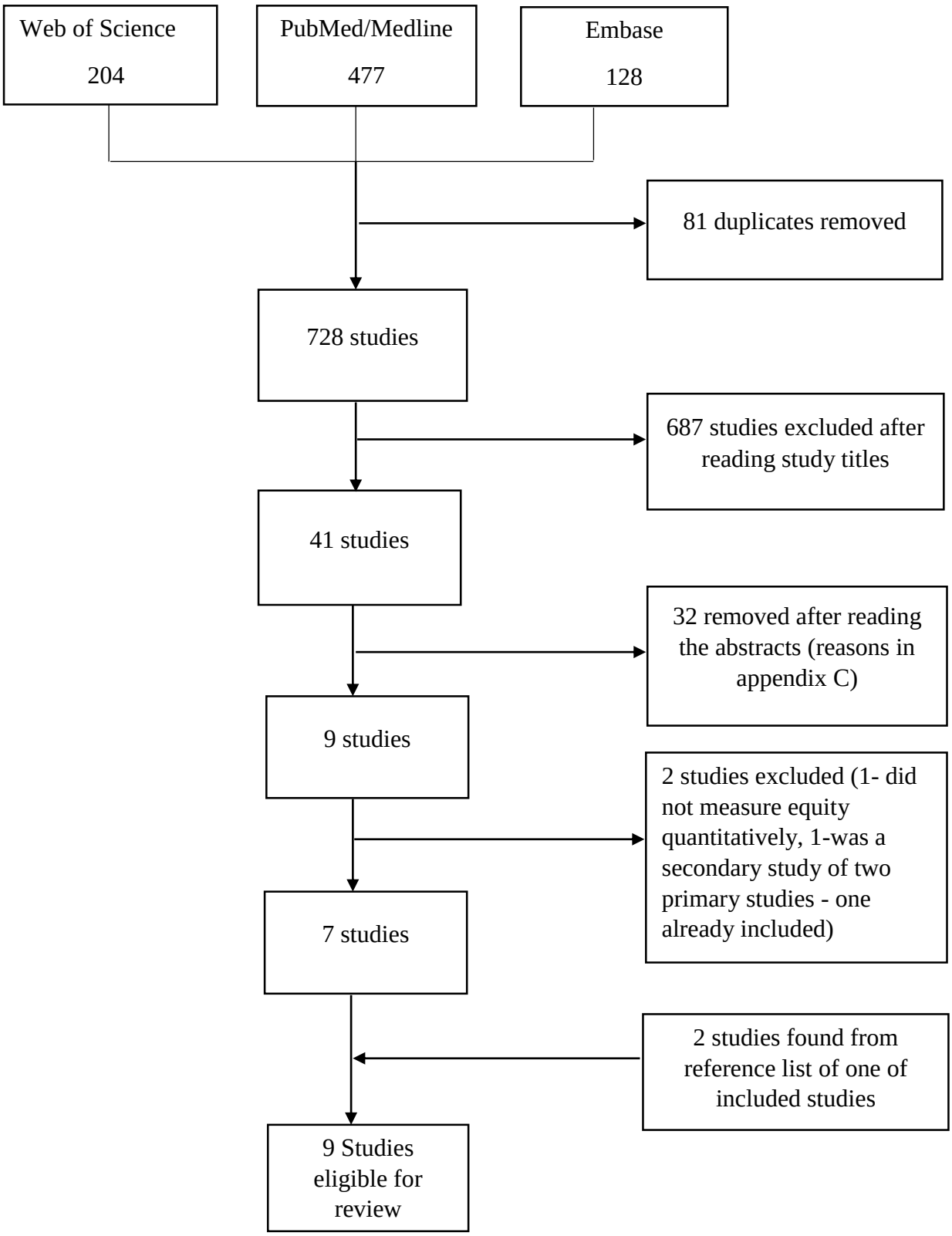
There was no restriction to publication period or dates during the search process although majority of studies on user fee removal were published in 21st century. This is so because all African countries that relied on user fees except South Africa started abolishing or exempting user fees after adoption of MDGs (Richard *et al.*, 2013). The search was limited to studies published in English Language only. Several combinations of search terms were tried in all three electronic databases to determine the volume of the literature on the subject and also to identify relevant key search terms for final search. Finally, after fine tuning the search terms, the following search terms were used in all three electronic databases to identify potential studies for inclusion: (user fee remov* OR user fee exempt* OR user fee eliminat* OR user fee abolition OR user charges) AND (maternal health OR utilization OR inequity OR delivery services OR inequality OR health care).

Lastly, bibliographies of all potentially eligible studies were also reviewed to look for other studies that were possibly missed. Once the potential studies were identified, they were validated by my supervisor to determine if they indeed met the inclusion criteria. Because of limited time and lack of opportunity, it was not possible to engage experts in user fees or find two independent reviewers to confirm the eligibility of retrieved papers. Nevertheless, the study supervisor had to confirm that all included studies met eligibility criteria.

3.8 **Literature search results**

The literature search process as shown in a flow chart (figure 1), generated a total of 728 studies. A total of 687 studies were excluded by just reading the study titles. The majority of these studies were about user fees but they were excluded either because the study question was not about user fee exemption or the type of health services assessed was not maternal healthcare. Hence, only 41 articles were regarded as potential studies for further review. Of the 41 studies, 32 studies were excluded after reading the abstracts and the reasons are appended in appendix C**.** That means only 9 studies qualified for reading the full article. After reading the full article, two more studies were excluded as shown in figure 1. Thus, only 7 studies were found eligible for inclusion from these three electronic databases. Following a review of the reference lists of the 7 studies, two other studies were found, making a total of 9 studies eligible for inclusion.

Figure 1. Study selection process



3.9 **Data extraction and analysis**

Data extraction was done using a customized data extraction form (see appendix D). In summary, the extracted information included the study design, study setting (country), study methods, measured outcomes and the study findings. To contextualize the studies, information about the nature of user fee exemption policies that these studies assessed was also extracted. Mainly, the extracted information included specific country where the policy was implemented, the year of implementation, geographical coverage, maternal health services covered and the targeted health facilities (public and/or private). In terms of study results, information on the impact of user fee exemption policy on access and utilization of antenatal care, health facility delivery, caesarean sections and postnatal care among women of different educational level, income status and area of residence (rural or urban) was extracted. It is important to point out that not all study results were extracted but only those results that were relevant according to the objectives of this review. For instance, one study in addition to access and utilization also assessed the impact of policy on equity on household expenditure. As much as this information was also very important in equity assessment, it was not extracted because it was not in line with the study objectives. There were also instances where certain results were left out due inaccuracies or lack of clarity which otherwise could have been extracted if the author had addressed these issues. Nevertheless, almost all the results (from all included studies) that managed to answer the objectives of this review were extracted. Finally, after data extraction, the extracted data were compiled into different tables. These tables which are presented in results section (chapter four) include information on study characteristics, measured outcomes, effects on equity, quality of studies and the nature of user fees exemption policy that the eligible studies evaluated.

Due to high heterogeneity of study designs, methods, contexts and outcome measures, the study results were analyzed or synthesized narratively. As stated above, narrative synthesis method

is recommended when the study design, methods and outcomes of included studies vary widely. To assess quality and the strength of evidence as stated above, GRADE criteria was used. The paper focused mainly on the study designs and the study methods. The consistency of results was not taken into account as a measure of quality of strength of evidence because the studies varied a lot in their designs and methods. So, considering the high heterogeneity of studies, it was very likely for these studies to be inconsistent in their findings. Had it been the study designs and methods were similar then consistency of results could have been included as criterion for evaluating quality of the evidence.

CHAPTER FOUR

4. RESULTS

4.1 **Description of studies**

In total, 9 studies met the inclusion criteria (figure 1), 7 from three electronic databases and 2 (Penfold *et al.,* 2007; Dzakpasu *et al.,* 2012) from reference list of one of included studies (Johnson *et al*., 2016). These studies were conducted in four different countries which implemented different user fees exemption policies for maternal health services as shown in table 2. Two studies were done in Mali (El-Khoury *et al*., 2012; Fournier *et al.*, 2014), one study (McKinnon *et al*., 2015) was done in three countries (Senegal, Sierra Leone and Ghana), one study (Leone *et al.*, 2016) was done in two countries (Burkina Faso and Ghana) and five studies (Penfold *et al.*, 2007; Dzakpasu *et al.*, 2012; Ganle *et al.*, 2014; Asante-Sarpong *et al.*, 2016; Johnson *et al*., 2016) were conducted in Ghana.

As shown in table 3, two studies (McKinnon *et al*., 2015; Leone *et al*., 2016) were CBAs, two (Penfold *et al.*, 2007; Johnson *et al*., 2016) were simple non-controlled before and after studies (non-CBAs), two (Dzakpasu *et al.*, 2012; Fournier *et al.*, 2014) were ITS studies and three (El-Khoury *et al*., 2012; Ganle *et al.*, 2014; Asante-Sarpong *et al.*, 2016) were cross-sectional studies. None of qualitative studies found was eligible for inclusion. All the studies except one (Penfold *et al.*, 2007) were published within the last five years . This is more likely the reason the recent systematic review (Dzakpasu *et al*., 2014) just found only one study (Penfold *et al*., 2007) that assessed policy impact on equity. This means that there has been little if any literature about the impact of the user fee exemption policy on access and utilization of maternal health services from equity perspective despite the fact that African countries started exempting user fees for maternal health services in 1990s (Dzakpasu *et al*., 2014). Five of the studies assessed the impact of the policy at national level while four studies were subnational

(at regional or district level). Eight studies were population based studies (using data from either demographic or household surveys) and only one (El-Khoury *et al*., 2012) was a health facility based study.

In terms of maternal health services (table 4), one study evaluated the policy effect on health facility deliveries and caesarean sections (Leone *et al*., 2016), five assessed only health facility based deliveries (Penfold *et al.*, 2007; Dzakpasu *et al.*, 2012; McKinnon *et al*., 2015; Asante-Sarpong *et al.*, 2016; Johnson *et al*., 2016) and two assessed only caesarean sections (El-Khoury *et al*., 2012; Fournier *et al.*, 2014). Only one study managed to assess the impact of the policy on antenatal care, health facility based deliveries and caesarean sections (Ganle *et al.*, 2014). Of note, none of the studies evaluated the impact of the policy on postnatal care. Two studies assessed the impact of the policy on equity in utilization by educational level, wealth status and area of residence, two by education level and wealth status, three by wealth status only and two by area of residence (rural versus urban).

Table 2. The nature of user fees exemption policies

Country	**Geographical coverage**	**Policy Year**	**Maternal health services covered**	**Targeted health facilities**
Ghana	Subnational* (2003-2005) National (2005)	Sept 2003	All maternal services (ANC, normal deliveries, CS & PNC)	Public, not-for-profit and some for-profit health facilities
Mali	National	Jun 2005	Caesarean sections	Public health facilities
Senegal	Subnational** (2005) National (2006)	Jan 2005	All maternal services (ANC, normal deliveries, CS and PNC)	Public health facilities
Sierra Leone	National (2010)	April 2010	All maternal services (ANC, normal deliveries, CS and PNC	Public health facilities

ANC (antenatal care), CS (caesarean section), PNC (postnatal care)

* Initially implemented in four most deprived regions (central, Northern, Upper West and Upper East)

** Initially implemented in five most deprived provinces (Kolda, Ziguinchor, Tambacounda, Matam & Fatick)

Table 3. Description of studies

Study	Study setting	Study design	Study period	Study scale	Methods	Measured outcomes
Leone *et al*., 2016	2 countries (Burkina Faso and Ghana)	CBA	1990-2014	National level	Cases (removed user fees): Ghana and Burkina Faso Controls (no removal of user fees): Cameroon, Nigeria & Zambia Data sources: 4 consecutive DHS for both cases and controls Analysis: Difference in Difference (DD) approach	Rates of health facility births and caesarean sections before and after user fee removal stratified by educational level, wealth status and area of residence (rural or urban)
Johnson *et al*., 2015	Ghana	Non-CBA	1990-2008	National level	Data sources: 4 consecutive DHS (1993, 1998, 2003 & 2008) Trends in health facility births measured across 4 maternal health policies: Full cost recovery, (before June 1998), free ANC policy (June 1998-August 2003), free delivery policy (Sept 2003 –June 2007) & NHIS (post Jun 2007)	Trends in rates of births by skilled birth attendants according to women wealth status (poorest, poor, middle, rich & richest)
Ganle *et al*., 2014	Ghana	Cross-sectional	2003-2007	National level	Data: Maternal health Survey (2003-2007) Descriptive data analysis	Rates of utilization of ANC, delivery care and CS by educational level, wealth status and area of residence (rural or urban)
El-Khoury *et al*., 2012	Mali	Cross-sectional	Feb to Sept 2010 (8 months)	National level	Health facility based survey 25 randomly selected health facilities plus DHS, 16 health centers and 9 hospitals	Rates of CS according to wealth status (poorest, poor, middle, rich & richest)

McKinnon *et al*., 2015	Three countries (Ghana, Senegal & Sierra Leone	CBA	2003-2013	National level	Cases (removed user fees): Ghana, Senegal & Sierra Leone Controls (not removed user fees): Tanzania, Mozambique, Congo Brazzaville, Ethiopia and Guinea Data sources: at least 2 DHS over the study period, DD analysis	Change in utilization of facility based delivery services across wealth quartiles (poorest, 2nd 3rd , richest) and educational level
Fournier *et al*., 2014	Mali	ITS	2003-2012	Subnational (1 region)	Data: CS registration system from 5 districts Monthly measurement of CS rates (30 months pre-policy & 83 months post policy)	Monthly CS rates of women living in rural and urban areas
Penfold *et al*., 2007	Ghana	Non-CBA	2002-2005 and 2004 - 2005	Subnational (2 regions)	Data sources: cluster house hold survey from Volta and Central regions Observation window: Volta-6 months pre policy & 6 months after, Central-18 months pre-policy & 18 months after policy	Rates of facility based deliveries across educational levels and wealth status (poorest, poor, average, rich & richest)
Asante-Sarpong *et al*., 2016	Ghana	Cross-sectional	Sept - Dec 2013	Subnational (1 region)	Household based population survey in two districts (one largely rural and the other largely urban)	Proportion of facility based deliveries between rural and urban areas
Dzakpasu *et al*., 2012	Ghana	ITS	2004-2009	Subnational (1 region)	Longitudinal data from two cluster randomized clinical trials in 7 districts of Brong Ahafo, Monthly rates of facility based deliveries	Trends in health facility based deliveries across women of different wealth status (in quintiles)

DHS (Demographic and Health Survey), ANC (Antenatal care), CS (caesarean section), NHIS (National Health Insurance Scheme), DD (difference in difference)

Table 4. Type of assessed maternal health service and the chosen equity stratifier

Study	**Type of maternal health service assessed**	**Equity stratifier measured**
Leone *et al*., 2016	Health facility births and Caesarean sections	Educational level: No education, primary secondary & above Wealth in quintiles: Poorest, poor, middle, rich and richest Residential area: Rural and urban
Johnson *et al*., 2015	Health facility deliveries	Wealth in quintiles: Poorest, poor, middle, rich and richest
Ganle *et al*., 2014	Antenatal care, health facility deliveries and caesarean sections	Educational level: No education, primary secondary and above Wealth in quintiles: Poorest, poor, middle, rich and richest Residential area: Rural and urban
El- Khoury *et al*., 2012	Caesarean sections	Wealth in quintiles: Poor, poorest, middle, rich and the richest
McKinnon *et al*., 2015	Health facility deliveries	Wealth in quartiles: Poorest, 2nd, 3rd and richest Educational level: No education, primary, secondary and above
Fournier *et al*., 2014	Caesarean sections	Residential area: Rural and urban
Penfold *et al*., 2007	Health facility deliveries	Educational level: No education, primary, secondary and above Wealth in quintiles: Poorest, poor, middle, rich and richest
Asante-Sarpong *et al*., 2016	Health facility deliveries	Residential area: Rural and urban
Dzakpasu *et al*., 2012	Health facility deliveries	Wealth in quintiles: Poorest, poor, middle, rich and richest

4.2 **The quality of evidence**

None of the included studies was RCT which is regarded as gold standard study design to produce credible and reliable evidence. As shown in table 3, two studies were ITS, two were CBAs, two were non-CBAs and three were just simple cross-sectional studies. The strength of CBA and ITS studies was the ability for the researchers to estimate effects or changes that were attributable to policy by controlling for underlying temporal trends (time and seasonal variations) which are major confounders to estimate true effect of the policy. In non-CBAs, the authors still measured outcomes changes by assessing pre and post policy periods. However, with this type of study design, it was difficult to attribute the changes to policy effect because of time and seasonal variations which would also account for observed changes. For cross sectional studies which were just one-off and after policy assessment, it was even more difficult than non CBAs to attribute observed changes to policy effect because, in addition to failing to adjust for temporal trends, they did not even assess pre-policy trends, rendering the quality of their evidence very poor. Therefore, only 4 of 9 studies tried to estimate the actual effect of user fees exemption policy (Dzakpasu *et al.*, 2012; Fournier *et al.*, 2014; McKinnon *et al*., 2015; Leone *et al*., 2016).

In terms of study methods (table 3), all studies except one used population based data like demographic and health survey (DHS) or household surveys data which are usually representative of the general population. However, only five of studies assessed the policy effect at national level. The other four studies were subnational studies conducted either at regional or district level, making generalizability of their findings difficult. Of the three cross-sectional studies, only one study reported response rate, making the representativeness of their samples very uncertain. The study time period also varied a lot among these studies from as short as 4 months to as long as 15 years. Furthermore, as indicated in table 5, some studies did not even report statistical significance

of their findings. To establish causal effects of the policy, only four studies managed to control for potential confounding factors while the rest of the studies either did not just at all or just adjusted for selected few confounders. Lastly, these studies assessed this policy in different contexts, thus complicating replication, applicability and consistency of the study findings. Hence, according to GRADE criteria, the overall strength of evidence from these studies was low (table 5).

Table 5. The assessment of quality of evidence

Measured outcome	Number of studies*	Quality assessment**	Strength of evidence
Antenatal care	1	Population based (national) No pre-policy assessment Not controlled for temporal trends No statistical significance reported Not controlled for confounding factors Quality score: weak	Very low
Health facility deliveries	7	7 - Population based 4 - National 3 - Subnational 5 - Reported statistical significance 4 - Controlled for temporal trends 5 - Before and after policy assessment 2 - Had Comparison groups Quality score: 4 moderate, 3 weak	Low
Caesarean sections	4	3 - Population based 1 - Health facility based 3 - National 1 - Subnational 2 - Reported statistical significance 2 - Controlled for temporal trends 2 - Before and after policy assessment 1 - had comparison groups Quality score: 2 moderate, 2 weak,	Low

Table design adapted from Dzakpasu *et al.*, 2014, *the number of studies that assessed the indicated maternal health service, ** quality assessment based on study methods, figures are number of studies

4.3 **Impact on utilization by income status**

4.3.1 Antenatal care

As shown in table 6, only one of the included studies evaluated the impact of user fee exemption policy on utilization of antenatal care (visits) among women of different economic status (Ganle *et al.*, 2014). This was population based cross-sectional study conducted in Ghana that used nationally representative data from Ghana Maternal Health Survey. The study reported that removal of user fees was associated with increase in number of antenatal visits across all women regardless of their socioeconomic status. The number of women attending at least one antenatal visit after removal of user fees, increased by an average of 4%, (92% in 2003 to 96% in 2007). However, the percentage of women achieving at least one antenatal visit was lower (92.6%) among the poorest group (lowest 20% in quintiles) than the richest group (98.6%). The gap inequality gap was even bigger among women achieving at least 4 antenatal visits recommended by WHO, 61.9% in the poorest group and 93.7% in richest group. Despite the observed differences, the authors reported that it was difficult to attribute these results to policy change as there was no baseline (pre-policy) data for comparison and also their inability to control for temporal trends and other confounders.

4.3.2 Health facility deliveries

Six studies examined the impact of user fees exemption policy on utilization of skilled delivery services across women of different economic status. As illustrated in table 6, three of the studies showed that the policy did not improve equity or reduce existing inequity in utilization of these services (Ganle *et al.*, 2014; McKinnon *et al*., 2015; Johnson *et al*., 2016). On other hand, three other studies reported that the policy actually reduced inequity (Penfold *et al.*, 2007; Dzakpasu *et al.*, 2012; Leone *et al*., 2016). Four of these studies were done in Ghana while the other two were

multi-country studies done in Ghana and Burkina Faso (Leone *et al*., 2016), and Ghana, Senegal and Sierra Leone (McKinnon *et al*., 2015).

McKinnon and co-authors conducted a CBA study using difference in difference approach (a quasi-experimental study design) to control for underlying secular trends in inequality by using demographic and health surveys data from Ghana, Senegal and Sierra Leone (table 3). Their findings showed that although user fees exemption policy slightly increased (in absolute terms) the number of health facility deliveries in all women despite their income status, in relative terms, the policy did not reduce inequality in all these three countries. The number of health facility deliveries just increased by 5.4 per l00 live births among women in the poorest quartile and 6.8 per 100 live births among women in richest quartile. Despite free deliveries, the results showed that the richest 20% were still almost twice more likely to deliver in health facility than the poorest 20%. Similarly, Johnson et al. (2016) in his non CBA study based on Ghana DHS data, showed that the percentage of health facility deliveries increased from 44% (pre-policy) to 54% (post policy) after user fees removal. However, the increase was only significant among the rich (81% to 97%) but not for the poorest (17% to 18%). In fact, the probability of delivering in health facility increased from 30% to 38% among the poorest women, 34% to 52% among the poor and 56% to 93% among the richest, representing a 29% differential probability gap between the poorest and the richest, and a 19% gap between the poor and the richest. Likewise, Ganle et al. (2014) also reported that user fees exemption policy in Ghana increased percentage of health facility based deliveries from 47% to 55% across all socio-economic strata of women. However, the results showed that the richest benefited most, within 92% of their deliveries occurring in hospital while for the poorest it was only 27% of deliveries. McKinnon et al. (2015) and Johnson et al. (2016) controlled for temporal trends which means their findings though not absolutely, are likely to be

attributable to policy influence. In contrast, Ganle and co-authors did not adjust for secular trends and had no baseline data for comparison, making their findings less likely to be associated with policy change.

Leone and colleagues (2016) conducted a CBA study in Ghana and Burkina Faso using DHS data and difference in difference model as well. Findings from Burkina Faso are not applicable in this review because the country implemented user fee subsidy policy not user fees exemption policy. So, only results from Ghana will be discussed. Like other studies, the percentage of women giving birth in health facilities increased from 45% to 60% after removal of user fees in Ghana. In contrast to McKinnon and co-authors (2015), the results showed that the increase in uptake of skilled delivery services was higher among poor women than the rich. The increase in health facility births that was attributable to policy was 24% points for the poorest, 34% points for the poor, 33% points for the average, 25% points for the rich and 1% point for richest. Equally, Dzakpasu and co-authors (2012) in their subnational ITS study which was done in Ghana, showed that user fee exemption policy significantly reduced inequality between the poor and the rich. Prior to policy implementation, 64.7% more women in the richest category delivered at health facility compared with poorest women but after user fee removal, the inequality gap reduced to 53.8%. Penfold et al. (2007) in his non CBA study which was also done in Ghana reported that the greatest increase in utilization of skilled delivery service was among the poor. For instance, in Volta region, utilization increased from 12.4% to 23.8% among the poorest while for the richest it increased from 80.8% to 85.0%, indicating 7.2% reduction in inequality gap. Likewise, in Central region, the in quality gap between the poor and the richest decreased by 15.9%. However, as reported by the Penfold and colleagues (2007), it was difficult to attribute these findings to policy impact because they did not adjust their results for temporal trends and other confounding factors

4.3.3 Caesarean sections

Three studies (two in Ghana and one in Mali) assessed the impact of user fees exemption policy on access and utilization of caesarean sections among women of different economic status (El-Khoury *et al*., 2012; Ganle *et al.*, 2014; Leone *et al.*, 2016). A study in Mali was a cross-sectional study which was conducted five years after policy implementation. The results demonstrated huge inequality in utilization of caesarean sections between the rich and the poor women. The rich and the richest combined accounted for 58% of all caesarean sections while the poor and the poorest women accounted for only 27% of all caesarean sections. These results are similar to what Ganle and colleagues (2014) found in Ghana. Four years after policy implementation, the percentage of women delivering by caesarean section was 15.4% among the richest women and 2.7% among the poorest women. Leone at al. (2016) as well, reported that the rich and the richest women benefited more from caesarean sections than the poor and the poorest counterparts even though the overall policy impact on utilization section was marginal. As mentioned above, the authors of the first two studies (El-Khoury *et al*., 2012; Ganle *et al.*, 2014) acknowledged that it was difficult to directly attribute their findings to the policy influence because they did not control for secular trends and they did not even have baseline data (pre-policy data) to compare with.

4.4 **Impact on utilization by educational level**

4.4.1 Antenatal care

Again as shown in table 6, only one study conducted in Ghana examined the impact of user fees exemption policy on utilization of antenatal care among women of different educational levels (Ganle *et al.*, 2014). As indicated above, the proportion of women receiving at least one antenatal visit increased by an average of 4% after user fee removal. Nevertheless, the authors reported that more educated women appeared to have benefited most. The proportion of women attending at

least one antenatal visit was 93% among women with no formal education while those with secondary educational level and above was 99.1%. The gap was much wider among women achieving at least 4 antenatal visits recommended by WHO, 68.6% for women with no formal education and 92.9% for women with secondary education and above. Although these results show that inequalities are still persistent regardless of removal of user fees, as mentioned above, the authors acknowledged that it was difficult to associate the findings directly to policy impact (Ganle *et al.*, 2014)

4.4.2 Health facility deliveries

Four studies assessed the policy impact on utilization of skilled delivery services across educational strata of women (table 6). Two studies conducted in Ghana reported that policy reduced inequality and benefited the less educated most (Penfold *et al.*, 2007; Leone *et al.*, 2016). On the contrary, the other two studies, one conducted in three countries (Ghana, Senegal and Sierra Leone) and the other in Ghana reported that the policy did not reduce inequality (Ganle *et al.*, 2014; McKinnon *et al*., 2015).

According to Penfold and colleagues (2007) subnational study, the greatest increase in utilization of skilled delivery services was among less educated women (16.4% increase) compared with more educated in Central region (5.6% increase). In Volta region, the greatest increase was among women with primary education (10.2%) compared with more educated women (8.5%). Likewise, Leone et al. (2016) reported that policy benefits accrued more to non-educated women, having 31% points of increase of health facility based deliveries attributable to policy while those women with primary and at least secondary education the percentage points of increase was 16% and 6% respectively.

On other hand, McKinnon and co-authors (2015), reported that user fee exemption policy benefited more educated than the least educated women with an increase in hospital deliveries attributable to policy of 4.6 per 100 live births among women with no education and 8.6 per 100 live births among women with at least secondary education. Their conclusion was that instead of reducing educational level related inequality the policy rather widened it. Similarly, Ganle et al. (2015) found persisting inequalities four years after policy implementation in Ghana, with only 37% of births among illiterate women occurring in health facility compared with 88% among women with at least secondary education though the results could not be directly associated to policy change.

4.4.3 Caesarean sections

Two studies which were carried out in Ghana evaluated the impact of user fee exemption policy on rates of caesarean sections among women of different educational levels (Ganle *et al.*, 2014; Leone *et al.*, 2016) (table 6) . According to Ganle and co-authors (2014), four years after policy implementation, the percentage of women who delivered through CS was 3.4% for women with no education, 6.4% for those with primary education and 14.6% for those with at least secondary education. Similarly, Leone et al. (2016) reported that well educated women benefited more from caesarean sections than the least educated ones although there was just marginal increase in CS rates after user fee removal.

4.5 **Impact on utilization between rural and urban area**

4.5.1 Antenatal care

Only one study conducted in Ghana assessed the policy impact on utilization of antenatal visit between women staying in rural and urban areas (Ganle *et al.*, 2014) (table 6). Four years after user fee removal, the study showed that women in urban areas still had more access to antenatal care than women in rural areas. The percentage of women achieving at least 4 antenatal visits was

89% in urban areas compared to 70% to rural areas. However, the result could not necessary reflect policy impact because, as stated above, this study was just a cross-sectional study with no baseline data as reference point and did not adjust for temporal trends.

4.5.2 Health facility deliveries

Three studies examined policy impact on utilization of skilled delivery services between rural and urban areas (table 6). All three studies were conducted in Ghana, one a cross-sectional but a subnational (one region) study (Asante-Sarpong *et al.*, 2016) and the others were national studies (Ganle *et al.*, 2014; Leone *et al.*, 2016). Asant-Sarpong et al. (2016) findings showed that more women in urban area (75.7%) were delivering at the health facility than women in rural areas (54.4%). Likewise, Ganle at al. (2014) reported that 86% of women in urban areas delivered at the health facility compared to only 39.2% in rural areas. In contrast, Leone and colleagues (2016) in their CBA study, demonstrated that the policy benefited women in rural areas much more with 31.5% points of increase in number of health facility births attributable to policy compared with 6.1% points of increase among women in urban areas.

4.5.3 Caesarean sections

Three studies (one in Mali and two in Ghana) assessed the policy impact of caesarean section rates between rural and urban areas. The Malian study was a subnational ITS study (2003-2012) which showed that user fee removal on caesarean sections benefited only women in urban areas with an increase from 1.7% to 5.7% whereas in rural areas there was no significant increase (just 1%) (Fournier *et al.*, 2014). Even in Ghana, four years after user fee removal, caesarean section rate was 11.3% among women living in urban areas and 4% among women in rural areas which is indicative of persisting inequalities (Ganle *et al.*, 2014). Leone at al. (2016), however, reported that the increase in number of caesarean sections attributable to user fee removal policy was higher

among women in rural areas (4.9% points of increase) than women in urban areas (1.1% points of increase).

Table 6: Study outcomes on equity in maternal health service utilization

Type of maternal health service assessed	Total number of studies	Measured equity stratifier and number of studies	Impact on equity	Overall outcome (crude)*
Antenatal care	1	Educational level: 1 Income status: 1 Rural and urban: 1	Negative Negative Negative	Did not reduce inequity Did not reduce inequity Did not reduce inequity
Health facility births	7	Educational level: 4 Income status: 6 Rural and urban: 3	Negative: 2 Positive 2 Negative: 3 Positive 3 Negative: 2 Positive 1	Mixed evidence Mixed evidence Mixed evidence
Caesarean sections	5	Educational level: 2 Income status: 3 Rural and urban: 3	Negative: 2 Negative: 3 Negative: 2 Positive 1	Did not reduce inequity Did not reduce inequity Mixed evidence

*The overall outcome is merely based on the study findings not the quality of the studies, refer to appendix E for details

CHAPTER FIVE

5. DISCUSSION

5.1 **Summary of the findings**

It important to highlight that quality of the evidence on the impact of user fees exemption policy on equity in access and utilization of maternal health service is low. This finding concurs with the findings from recent systematic reviews on the impact of user fee exemption policy on utilization of maternal healthcare conducted by Dzakpasu et al. (2014) and Hatt et al. (2013) which also reported low quality of evidence. The majority of studies in this review were highly biased due to poor study designs and methodological flaws. More importantly, more than half of included studies did not adjust their findings for temporal or secular trends in order to estimate the actual or the true policy effect. As a result, their results could not be directly attributed to policy change. Even those studies that tried to control for temporal trends still had methodological issues like lack of equivalence between intervention and control groups in case of CBA studies, and insufficient pre policy and after policy time points of measurement in case of ITS.

Despite the study quality issues, evidence from this review as also reported in previous systematic reviews (Hatt *et al.*, 2013; Dzakpasu *et al*., 2014), shows that user fees exemption policy increases access to and utilization of maternal health services across all socioeconomic strata. However, its impact on equity in utilization varies among women of different socioeconomic status. In terms of antenatal care (antenatal visits), the actual impact of the user fee exemption policy on equity is very uncertain because of insufficient data as there was only one study which assessed this outcome. Evidence from this study which is of very low quality shows that women who are rich, well-educated and living in urban areas benefited more from the policy than women that are illiterate, poor and living in rural areas.

For health facility based deliveries, there is mixed evidence on the impact of user fees exemption policy on equity in accessibility and utilization. There is evidence though of low quality that shows that women who are rich, well-educated and living in urban areas benefited more than women who are poor, less educated and living in rural areas. In relative terms, the evidence shows that user fees exemption policy did not reduce inequality between women in high socioeconomic class and those in low socioeconomic class. On other hand, there is also evidence though of low quality too that user fees exemption policy has benefited women who are poor, less educated and living in rural areas more than women who are rich, well- educated and living in urban areas. In relative terms, the evidence actually shows that the policy has significantly reduced inequality. Nevertheless, by taking into account the evidence that is attributable to policy effect, the overall evidence on access to and utilization of health facility delivery care predominantly shows that user fees exemption policy has benefited women in higher socioeconomic status much more than women from lower socioeconomic status to the extent that it has had little or no impact in reducing inequality. On access to and utilization of emergency care (caesarean sections), available evidence which is also of low quality shows that women who are rich, well-educated and living in urban areas have benefited a lot compared to women who are poor, less educated and living in rural areas. In relative terms, the overall evidence shows that the user fees exemption policy has not managed to reduce already existing inequities in access and utilization of caesarean sections between women in higher and lower socioeconomic classes.

5.2 **Interpretation of the findings**

It might not be surprising to have mixed or conflicting evidence on the impact of user fees exemption policy on equity in uptake of skilled delivery services across women of different socioeconomic status. These inconsistencies are usually due to limitations or variations in study

designs and methodologies (McKinnon *et al*., 2015). When the heterogeneity of the studies that are included for review is high as demonstrated in this review, the chances of having conflicting or mixed evidence also increases (Dzakpasu *et al*., 2014). On other hand, having mixed evidence might also just indicate the reality of the policy effect in that context (McKinnon *et al*., 2015). Due to variation of the contexts in which the policy is implemented one would probably expect the policy to succeed in one context and fail in another context. This is usually what happens with many social or public policies because of implementation challenges like insufficient funds, shortage of supplies and inadequate workforce (Ridde and Morestin, 2011; Ridde *et al.*, 2012). User fees exemption policy is a complex social policy and its success is determined by a number of factors that are demand side or supply side orientated (Hatt *et al*., 2013; Ganle *et al.*, 2014;). There is actually evidence which shows that free health services can either reduce (Dzakpasu *et al*., 2012) or widen equity (El-Khoury, 2011) or even have no impact at all (De Allegri *et al.*, 2011) because of diversity of policy environments. Studies that showed that the policy did not reduce inequality in utilization of skilled delivery care actually pointed out poor quality of care, transportation costs, unofficial payments, lack of awareness and too much workload as major contributing factors (Ganle *et al.*, 2014; McKinnon *et al*., 2015; Johnson *et al*., 2016).

The minimal impact on access to and utilization of caesarean sections (a life-saving obstetric emergency care) and its failure to reduce inequality between women in higher socioeconomic caste and lower socioeconomic caste might not be surprising as well. In African countries, the majority of poor and less educated people live in rural areas (Houweling, 2007; Say and Raine, 2007; Annan, 2010). According to health care system structure, caesarean section which is one of major obstetric surgeries is usually done at secondary and tertiary health facilities **(**Luboga *et al*., 2009; Hsia *et al*., 2011). Unfortunately, these health facilities are not located in rural areas but rather in

urban areas which gives the rich and the well-educated women who usually live in urban areas an advantage over those women in rural areas (Houweling, 2007; Say and Raine, 2007; Moyer and Mustafa, 2013). As a result, the poor and the least educated women have limited access to caesarean sections even though they are aware that such services are free (El-Khoury *et al*., 2012; Fournier *et al.*, 2014; Ganle *et al*., 2014). Transportation costs is usually the biggest barrier that prevents women from low socio-economic position to access emergency obstetric care like caesarean section when the need arises (El-Khoury *et al*., 2012; Fournier *et al.*, 2014). As others have also pointed out, user fees constitute a fraction of financial barriers that the poor and marginalized women face when accessing maternal health services (Fournier *et al*., 2014; Johnson *et al*., 2016). For instance, in Benin, the transportation costs and others expenses (food and accommodation) incurred by patients and families were estimated to account for 11% to 54% of the total costs of obstetric complications (Bhorghi, 2003). Therefore, addressing user fees barrier (a supply side factor) without addressing equally important demand side factors is not sufficient enough to improve inequity in access and utilization of caesarean sections.

The lack of studies assessing the impact of user fees exemption policy on equity in access and utilization of postnatal and antenatal care compared with other maternal health services might not be surprising as well. In reference to previous systematic reviews (Hatt *et al*., 2013; Dzakpasu *et al*., 2014), the results showed that the majority of included studies focused on delivery services and emergency obstetric care, and there was no study that assessed postnatal care. This means the current evidence of the impact user fees exemption policy on maternal health services is biased towards delivery services and caesarean sections. Perhaps, one of the most common reasons for this bias is that improving women access to skilled delivery care and emergency obstetric care are usually regarded as key strategies of reducing maternal and neonatal mortality (DFID, 2004;

WHO; 2015). As a result, researchers and funders are more likely to focus evaluating policy impact on skilled delivery care and emergency obstetric care than antenatal and postnatal care. However, in terms of PED, antenatal services (antenatal visits) and postnatal services as preventive services, are more likely to be price elastic than delivery services and emergency obstetric care which are curative services (Reddy and Vandermoortele, 1996). This means in presence of user fees, women are more likely to forgo antenatal or postnatal care than delivery care or emergency obstetric care. Hence, knowing the actual impact of user fee exemption policy on equity in access and utilization of antenatal and postnatal services is of paramount importance.

5.3 **Implications for policy**

Evidence from previous systematic reviews although it is inadequate and of low quality has shown that user fees exemption policy increases access and utilization of maternal health services across all women regardless of their socioeconomic status (Hatt *et al.*, 2013; *et al.*, 2014). Considering the negative effects of user fees on access and utilization of health services (Lagarde and Palmer, 2008, 2011; Ridde and Morestin, 2011), perhaps this policy is a viable intervention to improve women accessibility and utilization. As mentioned above, there is enough evidence that improving women access to maternal health services especially skilled delivery services and emergency obstetric care (caesarean sections) has profound effects on reducing maternal morbidity and mortality (DFID, 2004; United Nations, 2015). In fact, this is one of key strategies recommended by WHO in order to reduce maternal deaths in high burden areas (WHO, 2015). Hence, user fees exemption policy might be a better option for the developing countries that have high maternal mortality rate and are still relying on user fees to finance health care system as the first step towards achieving universal health coverage.

Nevertheless, it is important to note that although user fees exemption policy has improved access and utilization, women in high socioeconomic positions have benefited more than women in lower socioeconomic groups. The overall evidence actually demonstrates that user fees exemption policies has not managed to reduce inequities between the well off and the worse off. Since user fees exemption policy is a pro-poor policy whose ultimate goal is to reduce inequities in health service access and utilization (Asante *et al.*, 2007; Leone, 2016), then it is not sufficient policy on its own to guarantee equitable access and utilization of maternal health services. To ensure equity, there is a need for these developing countries to go beyond user fees and address other equally important demand side and supply side factors that affect women's access to and utilization of maternal health services such availability and quality of health services, transportation costs, gender inequality, illiteracy, lack of information and improving people's living conditions (Ganle *et al.*, 2014; McKinnon *et al*., 2015). According to eco-social theory, people's health including their access to and utilization of health services is influenced by multiple factors that are social, economic, political, historical, ecological and cultural in nature (Krieger, 2001). Therefore, user fees are just one of many factors that hinder people's access to healthcare and this means removing user fees without considering other crucial social determinants of health is less likely to reduce inequities.

5.4 **Implications for future research**

The fact that evidence on impact of user fees exemption policy on equity in access and utilization of maternal health services is inadequate, mixed to some extent and of low quality, signifies the need for further but better research in this field. As described in the findings, none of the included studies was a randomized controlled trial. Randomized controlled trials would have been the best study design to assess whether user fees exemption policy improves equity or not. However, RCTs

are usually not appropriate and feasible in evaluating complex social policies like user fees exemption (Ansah *et al.*, 2009; Dzakpasu *et al*., 2014). Firstly, according to Dzakpasu and co-authors (2016), RCTs are usually limited because of lack of comparison group because user fees policy is usually a national policy. Secondly, the impact of such policies is usually assessed retrospectively as observed in the studies included for this review. Last but not the least, sometimes it may not be politically or ethically sound to conduct RCTs with such policies (Dzakpasu *et al*., 2014). Rather, quasi-experimental study designs are recommended to assess the actual impact of such policies (West *et al*., 2008; McKinnon *et al*., 2015; Leone, *et al*., 2016). The most common quasi experimental study designs that meet EPOC criteria and are usually employed to study social policies like user fees are ITS and CBA studies (Shadish and Cook, 2009; Lagarde and Pamler, 2011; Serumaga *et al.*, 2011). Interrupted time series study design is applicable when there is no comparison group, and controlled-before-and-after study is applicable when the timing and intensity of policy intervention is different across settings (Dzakpasu *et al*., 2014).

The strength of ITS and CBAs lies in the ability of the researcher to control for underlying temporal trends (seasonal and time variations) which usually confound simple cross-sectional studies in order to estimate the true or actual effect that is attributable to policy (Dzakpasu *et al*., 2014; McKinnon *et al*., 2015). Nevertheless, ITS and CBAs have some significant limitations as well. ITS require enough pre and post policy observation points to assess trends accurately although there is not consensus on the actual required number of observations (Dzakpasu *et al*., 2014). CBAs are usually limited due to lack of equivalence between comparison groups mainly because of differences in socio-economic environment or parallel interventions (Victora *et al.*, 2011). In this review there were only two ITS and two CBAs but the other five studies were just simple observational studies. Even these quasi- experimental studies still had significant limitations in

their designs and methodologies rendering them to be of low quality too. So, in order to know the actual impact of user fees exemption policies on equity in access and utilization, there is a great need of very robust ITS and CBAs with mild but non-significant methodological limitations or even RCTs if feasible. Otherwise, these simple observational studies are not reliable to answer such critical questions.

5.5 **The strengths and limitations of the review**

To the authors knowledge, this is the first systematic literature review that has attempted to review the evidence on impact of user fee exemption policy on equity in access and utilization of maternal health care in African countries. It is even the first review that has specifically looked at the impact user fee exemption policy from equity perspective. All previous systematic reviews focused mainly on impact of the policy on access and utilization in general without assessing differential impact across socioeconomic strata (Lagarde and Palmer, 2011; Ridde and Morestin, 2011; Hatt *et al.*, 2013; Dzakpasu *et al*., 2014). Assessing the impact on equity across three key socioeconomic profiles was of paramount importance because these are major factors that affect equity in access and utilization of health services (Ensor and Cooper, 2004; Ahmed *et al.*, 2010; Moyer and Mustafa, 2013). Focusing mainly on maternal health services was also very essential because this has been the primary focus of global movement on user fees removal in public health services (Yates, 2010; *et al*., 2014). Despite that, this review had some weaknesses or limitations.

Firstly, it is important to acknowledge that there is still limited literature on impact of user fees exemption policy on equity in access and utilization maternal health service. For instance, out of 11 African countries that implemented user fees exemption policies for maternal health services (Richard *et al.*, 2013), the eligible studies were conducted only in four countries (Ghana, Senegal, Sierra Leone and Mali). As other authors have also explained, the dearth of literature on this topic

is probably due to limited availability of data to assess equity, lack of funding in health financing research, lack of expertise to conduct good quality policy evaluation studies and political issues (Lagarde and Palmer, 2008; Dzakpasu *et al*., 2014)..

Secondly, in addition to assessing the impact on equity, it would have been appropriate if the review had looked at the impact of the policy on access and utilization of maternal health services in general in order for the review to be comprehensive enough. Nonetheless, this would have been unnecessary to some extent because there is already enough evidence from previous reviews that user fees removal policies including user fees exemptions increase access and utilization of maternal health services (Hatt *et al.*, 2013; Dzakpasu *et al*., 2014). Hence, repeating this assessment would be just a mere duplication of previous findings and would unnecessarily broaden the scope of this review. Since the previous reviews could not assess impact on equity sufficiently because of limited literature by then, it was appropriate for this review to look at the impact of the policy on equity only.

Thirdly, targeting only maternal health services reduced the scope of the review because the impact of user fees exemption policy on equity on other health services like child health services which are also important was not assessed. However, the majority of countries that have implemented user fees exemption policy have targeted mainly maternal and neonatal healthcare (Hatt *et al.*, 2013).

Fourthly, limiting inclusion criteria to peer reviewed studies and in African setting also reduced the number of studies for review. Perhaps, that is the reason only 9 studies were eligible. Nevertheless, based on the recent systematic review by Dzakpasu and co-authors (2014), it appears most of studies on impact of user fees exemption policy on maternal healthcare access and utilization have been conducted in Africa probably because user fee exemption policies have been

implemented in number of African countries compared with other continents. So, broadening the scope to other continents probably would not make significant difference in number of included studies.

Fifthly, including studies of any design might have reduced the strength or rigor of the review but if strict criteria such as EPOC was used then it could have further reduced the number of studies making them insufficient for review. Including the study of any design was necessary because user fees is a social policy which can be studied by different study designs of both qualitative and quantitative in nature (Ridde and Morestin, 2011).

Finally, restricting inclusion criteria to only studies on user fee exemption policy only, leaving user fee reduction policy as it is Burkina Faso, might have also reduced the robustness of the review. This is very true because there are indeed couple of studies that have been done in Burkina Faso on the impact of user fee reduction (subsidy) policy on equity in maternal health care access and utilization which were not included (De Allegri *et al.*, 2012; Ganaba *et al.*, 2016; Langlois *et al.*, 2016). Nonetheless, the author was more interested in user fee exemption policy because the global community is not pushing for user fees reduction or subsidy but exemption and more importantly abolition of user fees for all health services as the first step towards achieving universal health coverage (Yates, 2009, 2010; Robert and Ridde, 2013).

CHAPTER SIX

6. CONCLUSION

While there is evidence indicating that user fees exemption policy increases women's access and utilization of maternal health services across all socioeconomic classes, its impact on equity shows that the policy disproportionately benefits women in higher socioeconomic status. Despite having free maternal health services, women from low socioeconomic status continue to face challenges in accessing maternal healthcare in public health facilities. As a pro poor policy, user fees exemption policy has failed to reduce significantly inequities in maternal healthcare access and utilization. Its failure to narrow the inequality gap is an indication that user fees exemption policy is not enough on its own to address barriers that the poor and marginalized women face in accessing maternal healthcare. As much as it is an important step towards achieving universal health coverage for countries that are yet to abolish user fees for all health services and implement prepayment systems for healthcare financing, there is still a great need to address other equally important supply side and demand side barriers to maternal healthcare access and utilization. It is however worthwhile to stress that the quality of this evidence is low due to study designs and methodological flaws, and the evidence is more likely not indicative of the actual policy impact on equity in access and utilization of maternal health services as good number of studies did not adjust for temporal trends in order to estimate true policy effect. Hence, there is still a great need to conduct more robust study designs other than simple cross-sectional studies which can measure the effect that is attributable to policy like interrupted time series studies and controlled-before-and-after studies, and even randomized controlled trials if feasible.

REFERENCES

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). doi: 10.1371/journal.pone.0011190.

Akashi, H., Yamada, T., Huot, E., Kanal, K. and Sugimoto, T. (2004) User fees at a public hospital in Cambodia: Effects on hospital performance and provider attitudes. *Social Science and Medicine*, 58(3), pp. 553–564.

Akin, J.S., Birdsall, N. and De Ferranti, D.M., (1987) *Financing health services in developing countries: an agenda for reform.World bank policy study* (Vol.34). Washington DC, World Bank.

Akin J, Griffin C, Guilkey D and Popkin B (1985) *The demand for primary health services in the Third World*. Rowan and Allenheld, Totawa, NJ.

Andargie, G. (2008) *Introduction to Health Economics*. Ethiopia, University of Gondar. Available at: http://pdf.usaid.gov/pdf_docs/pnaec408.pdf. [Accessed on 10th April 2017]

Annan, K.A. (2010) *Maternal Health: Investing in the Lifeline of Healthy Societies & Economies*. Africa progress panel**.** Available at: http://www.africaprogresspanel.org/policy-papers/maternal-health-investing-in-the-lifeline-of-healthy-societies-economies/. [Accessed 25th April 2017]

Ansah, E. K., Narh-Bana, S., Asiamah, S., Dzordzordzi, V., Biantey, K., Dickson, K., Gyapong, J. O., Koram, K. A., Greenwood, B. M., Mills, A. and Whitty, C. J. M. (2009) Effect of removing direct payment for health care on utilisation and health outcomes in Ghanaian children: a randomised controlled trial. *PLoS medicine*. United States, 6(1), p. e1000007.

Arksey, H. and Malley, L. O. (2005) Scoping Studies: Towards a Methodological Framework. *The International Journal of Social Research Methodology*, 8(1), pp. 19–32.

Asante-Sarpong, H., Owusu, A. Y., Saravanan, S., Appiah, E. and Abu, M. (2016) Determinants of use of supervised delivery care under Ghana's fee exemption policy for maternal healthcare: the case of the Central Region. *BMC Pregnancy and Childbirth*. BMC Pregnancy and Childbirth, 16(1), p. 172.

Asante, F., Chikwama, C., Daniels, A. and Armar-Klemesu, M. (2007) Evaluating the economic outcomes of the policy of fee exemption for maternal delivery care in ghana. *Ghana medical journal*, 41(3), pp. 110–117.

Borghi, J., Hanson, K., Acquah, C.A., Ekanmian, G., Filippi, V., Ronsmans, C., Brugha, R., Browne, E. and Alihonou, E. (2003) Costs of near-miss obstetric complications for women and their families in Benin and Ghana. *Health policy and planning*, *18*(4), pp.383-390

Cochrane Effective Practice and Organisation of Care Group (EPOC). (2002) *Data Collection Checklist*. Available at: http://methods.cochrane.org/sites/methods.cochrane.org.bias/files/public/uploads/EPOC%20Data%20Collection%20Checklist.pdf. [Accessed 22nd April 2017]

de Allegri, M., Ridde, V., Louis, V. R., Sarker, M., Tiendrebéogo, J., Yé, M., Müller, O. and Jahn, A. (2012) The impact of targeted subsidies for facility-based delivery on access to care and equity - evidence from a population-based study in rural Burkina Faso. *Journal of Public Health Policy*, 33(4), pp. 439–453.

de Allegri, M., Ridde, V., Louis, V. R., Sarker, M., Tiendrebéogo , J., Yé , M., Müller , O. and Jahn, A. (2011) Determinants of utilisation of maternal care services after the reduction of user fees: A case study from rural Burkina Faso. *Health Policy*. Elsevier Ireland Ltd, 99(3), pp. 210–218.

de Ferranti D (1985) *Paying for health services in developing countries. An overview.*World Bank Staff Working Papers No. 721. World Bank, Washington D.C.

Department for International Development (2004) *Reducing maternal deaths: Evidence and action:A strategy for DFID*. Department for international development. Available at: http://www.eldis.org/document/A17899. [Accessed 15th April 2017]

Diop, F., Yazbeck, a and Bitrán, R. (1995) The impact of alternative cost recovery schemes on access and equity in Niger. *Health policy and planning*, 10(3), pp. 223–40.

Dixon-Woods, M., Agarwhal, S., Jones, D., Young, B. and Sutton, A. (2005) Synthesising qualitative and quantitative evidence: a review of possible methods. *J Health Serv Res Policy*, 10(1). doi: 10.1258/1355819052801804.

Dzakpasu, S., Powell-Jackson, T. and Campbell, O. M. R. (2014) Impact of user fees on maternal health service utilization and related health outcomes: A systematic review. *Health Policy and Planning*, 29(2), pp. 137–150.

Dzakpasu, S., Soremekun, S., Manu, A., ten Asbroek, G., Tawiah, C., Hurt, L., Fenty, J., Owusu-Agyei, S., Hill, Z., Campbell, O. M. R. and Kirkwood, B. R. (2012) Impact of Free Delivery Care on Health Facility Delivery and Insurance Coverage in Ghana's Brong Ahafo Region. *PLoS ONE*, 7(11). doi: 10.1371/journal.pone.0049430.

Ebrahim, G. J. (1993) The bamako initiative, *Journal of Tropical Pediatrics*. 39(2), pp. 66–67.

El-Khoury, M., Gandaho, T., Arur, A., Keita, B. and Nichols, L. (2011) Improving Access to Life Saving Maternal Health Services: The Effects of Removing User Fees for Caesareans in Mali. *Bethesda, MD: Health Systems, 20*, p.20.

El-Khoury, M., Hatt, L. and Gandaho, T. (2012) User fee exemptions and equity in access to caesarean sections: an analysis of patient survey data in Mali. *International journal for equity in health*, 11, p. 49.

Ensor, T. and Cooper, S. (2004) Overcoming barriers to health service access: Influencing the demand side. *Health Policy and Planning*, 19(2), pp. 69–79.

Fournier, P., Dumont, A., Tourigny, C., Philibert, A., Coulibaly, A. and Traoré, M. (2014) The free caesareans policy in low-income settings: An interrupted time series analysis in Mali (2003-2012). *PLoS ONE*, 9(8), pp. 1–9.

Gabrysch, S. and Campbell, O. (2009) Still too far to walk : Literature review of the determinants of delivery service use. *BMC Pregnancy and Childbirth*, 18, pp. 1–18.

Ganaba, R., Ilboudo, P. G. C., Cresswell, J. A., Yaogo, M., Diallo, C. O., Richard, F., Cunden, N., Filippi, V. and Witter, S. (2016) The obstetric care subsidy policy in Burkina Faso: what are the effects after five years of implementation? Findings of a complex evaluation. *BMC PREGNANCY AND CHILDBIRTH*, 16. doi: 10.1186/s12884-016-0875-2.

Ganle, J. K., Parker, M., Fitzpatrick, R. and Otupiri, E. (2014) A qualitative study of health system barriers to accessibility and utilization of maternal and newborn healthcare services in Ghana after user-fee abolition. *BMC pregnancy and childbirth*, 14, p. 425.

Ganle, J. K., Parker, M., Fitzpatrick, R. and Otupiri, E. (2014) Inequities in accessibility to and utilisation of maternal health services in Ghana after user-fee exemption: a descriptive study. *International journal for equity in health*, 13, p. 89.

Gilson, L. (1997) The lessons of user fee experience in Africa. *Health policy and planning*, pp. 273–85.

Gilson, L. and Mills, A. (1995) Health sector reforms in sub-Saharan Africa: lessons of the last 10 years. *Health policy*, 32(1–3), pp. 215–243.

Greenhalgh, T. (2010) *How to read a paper: The basics of evidence based medicine*.4th edn. London, Wiley-Blackwell.

Group, G. W. (2004) Grading quality of evidence and strength of recommendations. *BMJ (Clinical research ed.)*, 328(7454), p. 1490.

Hart, J.T. (1971) The inverse care law. *The Lancet*, *297*(7696), pp.405-412.

Hatt, L.E., Makinen, M., Madhavan, S. and Conlon, C.M. (2013) Effects of user fee exemptions on the provision and use of maternal health services: a review of literature. *Journal of health, population, and nutrition*, *31*(4 Suppl 2), p.S67.

Heller, P.S. (1982) A model of the demand for medical and health services in Peninsular Malaysia. *Social science & medicine*, *16*(3), pp.267-284.

Houweling, T.A., Ronsmans, C., Campbell, O.M. and Kunst, A.E. (2007). Huge poor-rich inequalities in maternity care: an international comparative study of maternity and child care in developing countries. *Bulletin of the World Health Organization*, *85*(10), pp.745-754

Hutton, G. (2004) Charting the path to the World Bank“s ”No blanket policy on user fees". A look over the past 25 years at the shifting support for user fees in health and education, and reflections on the future. *London DFID Health Systems Resource Centre*, 44(0), p. 75.

Hsia, R.Y., Mbembati, N.A., Macfarlane, S. and Kruk, M.E. (2011) Access to emergency and surgical care in sub-Saharan Africa: the infrastructure gap. *Health policy and planning*, *27*(3), pp.234-244.

James, C. D., Hanson, K., McPake, B., Balabanova, D., Gwatkin, D., Hopwood, I., Kirunga, C., Knippenberg, R., Meessen, B., Morris, S. S., Preker, A., Souteyrand, Y., Tibouti, A., Villeneuve, P. and Xu, K. (2006) To Retain or Remove User Fees? Reflection on the Current Deabte in Low- and Middle-Income Countries. *Applied Health Economics and Health Policy*, 5(3), pp. 137–153.

Johnson, F. A., Frempong-Ainguah, F. and Padmadas, S. S. (2016) Two decades of maternity care fee exemption policies in Ghana: Have they benefited the poor? *Health Policy and Planning*, 31(1), pp. 46–55.

Kabeer10, N. (2010) Can the MDGs provide a pathway to social justice? The challenge of intersecting inequalities. *Child poverty and inequality new perspectives*, p. 66. Available at: http://papers.ssrn.com/sol3/Delivery.cfm?abstractid=2039773#page=66.[Accessed 20 June 2017]

Kahenya, G. and Lake, S. (1994) *User fees and their impact on utilization of key health services*. *Summary Report of a Study Carried Out in Lusaka Urban District, January/February 1994*. Ministry of Health/United Nations Children's Fund: Lusaka, Zambia.

Krieger, N. (2001) Theories for social epidemiology in the 21st century: an ecosocial perspective. *International journal of epidemiology*, 30(4), pp. 668–677.

Lagarde, M. and Palmer, N. (2008) The impact of user fees on health service utilization in low- and middle-income countries: how strong is the evidence? *Bulletin of the World Health Organization*. Switzerland, 86(11), pp. 839–848.

Lagarde, M. and Palmer, N. (2011) The impact of user fees on access to health services in low- and middle-income countries. *The Cochrane database of systematic reviews*. England, (4), p. CD009094.

Langlois, E. V., Karp, I., De Dieu Serme, J. and Bicaba, A. (2016) Effect of a policy to reduce user fees on the rate of skilled birth attendance across socioeconomic strata in Burkina Faso. *Health Policy and Planning*, 31(4), pp. 462–471.

Leighton, C. and Diop, F. (1995) Protecting the poor in Africa : Impact of Means Testing on Equity in the Health Sector in Burkina Faso, Niger, and Senegal. (Health Financing and Sustainability (HFS) Project-Abt Associates Inc.: Bethesda MD), p. 29.

Leone, T., Cetorelli, V., Neal, S. and Matthews, Z. (2016) Financial accessibility and user fee reforms for maternal healthcare in five sub-Saharan countries: a quasi-experimental analysis. *BMJ open*, 6(1), p. e009692.

Litvack, J. I. and Bodart, C. (1993) User fees plus quality equals improved access to health care: results of a field experiment in Cameroon. *Social science & medicine (1982)*, 37(3), pp. 369–83.

Luboga, S., Macfarlane, S.B., Von Schreeb, J., Kruk, M.E., Cherian, M.N., Bergström, S., Bossyns, P.B., Denerville, E., Dovlo, D., Galukande, M. and Hsia, R.Y. (2009). Increasing access to surgical services in sub-saharan Africa: priorities for national and international agencies recommended by the Bellagio Essential Surgery Group. *PLoS medicine*, *6*(12), p.e1000200

Macinko, J. A. and Starfield, B. (2002) Annotated Bibliography on Equity in Health, 1980-2001. *Int J Equity Health*, 1(1), p. 1.

Mays, N., Pope, C. and Popay, J. (2005) Systematically reviewing qualitative and quantitative evidence to inform management and policy-making in the health field. *Journal of Health Services Research & Policy*, 10(suppl 1), pp. 6–20.

McGow, L. (1995) The Ignored Cost of Adjustment: Women Under SAPs (Structural Adjustment Programs) in Africa. *Fourth United Nations Conference on Women*. Beijing, China, 4-15 September

McKinnon, B., Harper, S. and Kaufman, J. S. (2015) Who benefits from removing user fees for facility-based delivery services? Evidence on socioeconomic differences from Ghana, Senegal and Sierra Leone. *Social science & medicine (1982)*. England, 135, pp. 117–123.

McKinnon, B., Harper, S., Kaufman, J. S. and Bergevin, Y. (2015) Removing user fees for facility-based delivery services: A difference-in-differences evaluation from ten sub-Saharan African countries. *Health Policy and Planning*, 30(4), pp. 432–441.

McPake, B. (1993) User charges for health services in developing countries: a review of the economic literature. *Social science & medicine (1982)*, 36(11), pp. 1397–405.

Meessen, B., Hercot, D., Noirhomme, M., Ridde, V., Tibouti, A., Tashobya, C. K. and Gilson, L. (2011) 'Removing user fees in the health sector: A review of policy processes in six sub-Saharan African countries', *Health Policy and Planning*, 26(SUPPL. 2), pp. 16–29.

Moyer, C. A. and Mustafa, A. (2013) Drivers and deterrents of facility delivery in sub-Saharan Africa: a systematic review. *Reproductive Health*, 10(1), p. 40.

Mumtaz, Z., Salway, S., Bhatti, A. and McIntyre, L. (2014) Addressing invisibility, inferiority, and powerlessness to achieve gains in maternal health for ultra-poor women. *The Lancet*. Elsevier Ltd, 383(9922), pp. 1095–1097.

Pearson, M., 2004. Issues Paper: The case for abolition of user fees for primary health services. *London: DFID Health Systems Resource Centre.* Available at: http://docs.ims.ids.ac.uk/migr/upload/fulltext/pearson2004.pdf [Accessed 11th May 2017]

Mwabu, G., Mwanzia, J. and Liambila, W. (1995) User charges in government health facilities in Kenya: effect on attendance and revenue. *Health policy and Planning*, *10*(2), pp.164-170

Penfold, S., Harrison, E., Bell, J. and Fitzmaurice, A. (2007) Evaluation of the delivery fee exemption policy in ghana: population estimates of changes in delivery service utilization in two regions. *Ghana medical journal*, 41(3), pp. 100–109.

Reddy, S. and Vandermoortele, J. (1996) User financing of basic social services: A review of theoretical arguments and empirical evidence. *UNICEF Staff Working Papers Series'.* Available at: https://static.squarespace.com/static/51b8d8a3e4b012fbeaff36db/53066dfee4b043fee9afb732/53066dfee4b043fee9afb740/1276237608032/40User%20%20Fees%20Paper.pdf [Accessed 20th May 2017]

Richard, F., Antony, M., Witter, S., Kelley, A., Sieleunou, I., Kafando, Y. and Meessen, B. (2013) Fee Exemption for Maternal Care in Sub-Saharan Africa: A Review of 11 Countries and Lessons for the Region. *Global Health Governance*, VI(2), pp. 1–190.

Ridde, V. (2008) The problem of the worst-off is dealt with after all other issues: The equity and health policy implementation gap in Burkina Faso. *Social Science and Medicine*, 66(6), pp. 1368–1378.

Ridde, V. and Morestin, F. (2011) A scoping review of the literature on the abolition of user fees in health care services in Africa. *Health Policy and Planning*, 26(1), pp. 1–11.

Ridde, V., Queuille, L., Kafando, Y. and Robert, E. (2012) 'Transversal analysis of public policies on user fees exemptions in six West African countries. *BMC health services research*, 12, p. 409.

Robert, E. and Ridde, V. (2013) Global health actors no longer in favor of user fees: a documentary study. *Globalization and health*. England, 9, p. 29.

Rossi, P.H. and Freeman, H.E. (1993). *Evaluation: A Systematic Approach*. Newbury Park, CA: SAGE Publications, Inc. Available at: https://books.google.co.uk/books?hl=en&lr=&id=QF9WBAAAQBAJ&oi=fnd&pg=PT10&dq=Rossi+PH+and+Freeman+HE.+1993.+Evaluation:+A+Systematic+Approach.+Newbury+Park,+CA:+SAGE+Publications,+Inc.&ots=9An25AjLD-&sig=_RMu1uoK0OM5_MLjEfgoz7Dvnqg#v=onepage&q&f=false [Accessed 12nd April 2017]

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 Organisation*, 85(10), pp. 812–819.

Serumaga, B., Ross-Degnan, D., Avery, A. J., Elliott, R. A., Majumdar, S. R., Zhang, F. and Soumerai, S. B. (2011) Effect of pay for performance on the management and outcomes of hypertension in the United Kingdom: interrupted time series study. *Bmj*, 342(jan25 3), pp. d108–d108.

Shadish, W. R. and Cook, T. D. (2009) The Renaissance of Field Experimentation in Evaluating Interventions. *Annual Review of Psychology*, 60(1), pp. 607–629.

Silal, S. P., Penn-Kekana, L., Harris, B., Birch, S. and McIntyre, D. (2012) Exploring inequalities in access to and use of maternal health services in South Africa. *BMC health services research*, 12, p. 120.

UN, G.A.(2015) *Transforming our world: The 2030 agenda for sustainable development*. New York, USA, 25 Septermber. IN, A/RES/70/1

United Nations. (2015) *The Millennium Development Goals Report 2015*. Available at: http://www.un.org/millenniumgoals/2015_MDG_Report/pdf/MDG 2015 rev (July 1).pdf [Accessed 25th April 2017]

Van Lerberghe, W. (2008) *The world health report 2008: primary health care: now more than ever*. World Health Organization, Geneva, Switzerland.

Victora, C. G., Black, R. E., Boerma, J. T. and Bryce, J. (2011) Measuring impact in the Millennium development Goal era and beyond: A new approach to large-scale effectiveness evaluations. *The Lancet*. Elsevier Ltd, 377(9759), pp. 85–95.

Wagstaff, A., (2004) *The Millennium Development Goals for health: rising to the challenges*. Washington DC, World Bank Publications.

West, S.G., Duan, N., Pequegnat, W., Gaist, P., Des Jarlais, D.C., Holtgrave, D., Szapocznik, J., Fishbein, M., Rapkin, B., Clatts, M. and Mullen, P.D. (2008) Alternatives to the randomized controlled trial. *American Journal of Public Health*, *98*(8), pp.1359-1366

Wilkinson, D., Gouws, E., Sach, M. and Karim, S.S.A. (2001) Effect of removing user fees on attendance for curative and preventive primary health care services in rural South Africa. *Bulletin of the World Health Organization*, *79*(7), pp.665-671.

World Health Organization and UNICEF. (2015). *Trends in maternal mortality: 1990-2015: estimates from WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division*. Available at: http://apps.who.int/iris/bitstream/10665/194254/1/9789241565141_eng.pdf [Accessed 5th May 2017]

World Health Organization. (2005) *The World Health Report 2005: Make every mother and child count*. World Health Organization

World Health Organisation. (2015). *WHO|Maternal Mortality*. Available at: http://www.who.int/mediacentre/factsheets/fs348/en/ [Accessed on 25 April, 2017]

Yates, R. (2009) Universal health care and the removal of user fees.*The Lancet*. Elsevier Ltd, 373(9680), pp. 2078–2081.

Yates, R. (2010) Women and children first: An appropriate first step towards universal coverage. *Bulletin of the World Health Organization*, 88(6), pp. 474–475.

Zere, E., Kirigia, J. M., Duale, S. and Akazili, J. (2012) Inequities in maternal and child health outcomes and interventions in Ghana. *BMC public health*. BioMed Central Ltd, 12(1), p. 252.

Zere, E., Oluwole, D., Kirigia, J. M., Mwikisa, C. N. and Mbeeli, T. (2011) Inequities in skilled attendance at birth in Namibia: a decomposition analysis. *BMC pregnancy and childbirth*, 11(May 2011), p. 34.

Zere, E., Tumusiime, P., Walker, O., Kirigia, J., Mwikisa, C. and Mbeeli, T. (2010) Inequities in utilization of maternal health interventions in Namibia: implications for progress towards MDG 5 targets. *International journal for equity in health*, 9(i), p. 16.

APPENDICES

Appendix A: Criteria for assigning grade of evidence

Study design	**Level of evidence**	**Decrease evidence if:**	**Increase evidence if:**
Randomized controlled Trials	High	-Serious limitations to quality (−1) -Very serious limitation to quality (−2) - Important inconsistency (−1) - Some (− 1) or major (− 2) uncertainty about directness -Imprecise or sparse data (− 1) -High probability of reporting bias (− 1)	- Strong evidence of association—significant relative risk of > 2 (< 0.5) based on consistent evidence from two or more observational studies, with no plausible confounders (+1) - Very strong evidence of association—significant relative risk of > 5 (< 0.2) based on direct evidence with no major threats to validity (+2) - Evidence of a dose response gradient (+1) - All plausible confounders would have reduced the effect (+1)
Observational study	Low		
Any other study	Very low		

Appendix B. Definitions of grade of evidence

Grade	**Definition**
High	Further research is unlikely to change our confidence in the estimate of effect
Moderate	Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate
Low	Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate.
Very low	Any estimate of effect is very uncertain

Developed by Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) Working Group

Appendix C. Reasons for excluding 32 studies

Number of studies	Reasons for exclusion
1	Assessed policy impact on equity in maternal health outcomes like mortality rate not on utilization
3	Assessed the impact of user fees reduction or subsidy policy not full user exemption policy on maternal health care access and utilization
4	Assessed impact of user fee exemption policy on equity in terms out of pocket payments not access and utilization of maternal health services
4	It was just a general evaluation of the impact of parallel policies (including user fees removal) aimed at improving maternal health care access
10	The studies just assessed the general impact of policy on maternal health care access and utilization without breaking it down across socioeconomic strata
10	The studies assessed the impact of user fees removal policies on equity in utilization of general services like outpatient care or inpatient care without specifying the services

Appendix D. Data extraction form

Study ID number	
Study title	
Author/s	
Year of publication	
Publication journal	
Study design	
Study period	
Objective/s	
Study setting/country	
Description of exemption policy	
Study participants/data sources	
Methodology	
Outcome measures	
Main findings	
Conclusion	
Study limitations	
Quality of evidence	

Appendix E. Study outcomes on equity in maternal health service utilization

Study	Type of maternal health service assessed	Measured equity stratifier	Results	Impact on equity
Johnson *et al*., 2015	Facility deliveries	Wealth in quintiles	44% to 54% overall increase -Poorest-17 to 18% -Non poor- 81 to 97% (15% gap) -Probability- poorest- 30% to 38%, poor 34% to 52% & richest 56% to 93%	Did not reduce inequity
Ganle *et al*., 2014	Antenatal care Health facility deliveries Caesarean sections	Educational level Wealth in quintiles Rural and urban	**Antenatal visits** (1+): 92% - 96% -poor- 92.6, urban 98.6% -illiterate 93%, Sec+ 99.1% -urban-89%, rural-70% **Facility births**: 47% to 55% -poorest-27%, richest 92% -illiterate-37%, sec 88% - Urban-39.2%, 86% **CS: also increased** - illiterate-3.4%, prim. 6.4%, sec 14.6 - Urban 11.3%, rural-4% - Rich-15.4% ,2.7% poorest	Did not reduce inequity
El-Khoury *et al*., 2012	Caesarean sections	Wealth in quintiles	-richest 40%- (58% of CS), Middle 20%(15%), poorest 40% (27%)	Did not reduce inequity
McKinnon *et al*., 2015	Health facility deliveries	Wealth in quartiles Educational level	-increased overall - Poorest- 5.4/100 births, poor 6.8/100 births - illiterate 4.6/100, sec+ 8.6/100	Did not reduce inequity
Fournier *et al*., 2014	Caesarean sections	Rural and urban	2.5fold (0.25 to 1.25) increase overall 1.7% to 5.7% for urban areas No significant change for rural areas (0.4% to 1%)	Did not reduce inequity
Asante-Sarpong *et al*., 2016	Health facility deliveries	Rural and urban	Largely urban area: 75.7%, Largely rural: 54.4%	Did not reduce inequity

			Overall, urban women 3.79 times more likely to deliver at hospital than in rural	
Leone *et al*., 2016	Health facility deliveries and caesarean sections	Wealth in quintiles, Educational level Rural and urban	**Facility births**: -from 45% to 60% (overall) - poorest (24% points increase) poor (34%), middle (33), rich (25%) richest (1%) - illiterate-31%, primary 16% sec+6% - Rural-31%, urban 6% **Caesarean sections** - minor impact (0.7% increase) - Benefited rich & well educated - Rural-5% points increase, urban 1%	Reduced inequity
Penfold *et al*., 2007	Health facility deliveries	Wealth in quintiles Educational level	**Central region**: poorest 35.5 to 55.6% richest- 83.8% to 88.0%, illiterate, 34.8% -51.2%, sec+ 85.9%- 91.5% **Volta region**: poorest 12.4% -23.8%, richest 80.8%- 85%, illiterate- 28.6% to 28.3%, primary-37.2% to 47.4% Secondary+ 75.5% to 84.0%,	Reduced inequity
Dzakpasu *et al*., 2012	Health facility deliveries	Wealth in quintiles	64.7% more richest delivered at hospital than poorest before policy (87.4% versus 22.7%), gap decreased to 53.4% after policy (96.8% vs 43.0%)	Reduced inequity