The barriers and facilitators created by Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa: A metasynthesis of evidence.

Abstract

Background: Maternal mortality (MM) has been a continuous menace in Africa. Africa alone is responsible for about two-thirds of the total deaths caused by maternal mortality. The implication of Healthcare Management System (HMS) has been reported, however, not much emphasis has been placed on the barriers or facilitators created by HMS in addressing MM in Africa. Thus, this study aims to fill that gap.

Research Method: In adherence with the PRISMA framework, a predetermined search strategy was implemented to identify original research works published within the past decade and half, utilizing four advanced electronic databases including CINAHL, Medline (via PubMed), PsycInfo, and ProQuest. The collected information was categorized into distinctive themes and subsequently integrated to form innovative perspectives.

Findings: A total of 6 studies included revealed two broad themes viz: barriers and facilitators. Domains formulated from these themes include health system barriers and facilitators, socio-cultural barriers and facilitators, and policy-related barriers and facilitators. This synthesis highlights the various factors affecting maternal mortality rate with relation to HMS. Community mobilization and health education can help overcome socio-cultural barriers. Access to obstetric care and a functional referral system are essential for improving skilled pregnancy care.

Conclusion: This review exposed the barriers which can be changed, and also the facilitators which can be improved as created by HMS. By leveraging on the facilitators, it is believed that SDG-3.1 (reducing MM) will record significant gains in Africa.

Keywords: *Barriers, Facilitators, Maternal mortality, Sustainable Development Goal (SDGs), Healthcare management systems, Africa.*

INTRODUCTION

1.1 Introduction/Background

Maternal mortality entails any deaths from problems during pregnancy or childbirth or within 42 days of childbirth (World Health Organisation, 2023), (Shortell et al, 1993). According to UN inter-agency estimates, there was a 34% decrease in the worldwide maternal mortality ratio (MMR) between 2000 and 2020, with numbers falling from 342 to 223 deaths per 100,000 live births (UNICEF, 2023). The comparable annual average decline rate is 2.1%. Achieving the Sustainable Development Goals (SDG) goal of 70 maternal deaths per 100,000 live births by 2030 will require an annual rate of reduction of 6.4%, which is significant but only about one-third of the current rate (UNICEF, 2023). Africa alone accounts for about 70% of the total burden of MM (WHO, 2023). The increased rates of maternal deaths in some parts of the globe serve as an example of how socio-economic differences have encouraged unequal access to high-quality healthcare services. For example, according to data from 2020, high-income countries had a maternal mortality rate (MMR) of 12 per 100,000 live births, compared to low-income countries 430 deaths per 100,000 live births (UNICEF, 2023).

Several factors have been linked to the causes of pregnancy related deaths. Musarandega et al. (2021) in their large systematic review of the causes of MM between the years 2015 to 2020, they found out that obstetric haemorrhage, hypertensive disorders of pregnancy, and sepsis were the leading causes of maternal mortality in Sub-Saharan Africa. This was in tandem to previous studies done in the global context (Say et al., 2014). Majority of these deaths occurs either during the first trimester, delivery and shortly after delivery, or a week after delivery (Centre for Disease Control and Prevention, 2019).There are professional and logistic problem that accelerate the rate of MM in Africa. For example, when childbirth is assisted by an unskilled person, whether at home or in a primary healthcare facility that is ill-

equipped, or when there are not enough medical supplies available or it is not possible to get blood transfusion services, bleeding is a possibility (Musarandega et al., 2021; Taye-Makuria et al., 2017). Additionally, due to cultural norms, long distances, and transportation difficulties, receiving medical care and getting to a hospital in considerable time in complicated instances may take longer (Diallo et al., 2020; Said et al., 2020).

Non-obstetric causes of MM have also been documented. In a previous retrospective study done in Zambia, Ahmed et al. (1999) identified the top three non-obstetric causes of MM to be malaria (30%), tuberculosis (25%), and chronic respiratory diseases (22%). In a more recent study, Kansara et al. (2019) in a single centre study in Nigeria puts the top three most common non-obstetric causes of maternal death to be hepatic diseases (viral hepatitis was common), respiratory diseases, and infectious diseases. When compared to a larger multi-centre study in Nigeria, Adeniran et al. (2019) puts the top three prevalence non-obstetric causes of MM to be cancer, hepatic diseases, and HIV/AIDS. This suggests that infectious diseases which are largely preventable contribute to the lingering problem called MM in Africa.

Tolossa et al. (2022) in their insightful piece maintained that adequate antenatal services were essential to detecting pregnant women that are high risk of MM. To this end, the World Health Organization has recommended at least eight essential antenatal visits throughout the span of pregnancy (Gebremeskel et al., 2015). However, diagnostic errors on the part of healthcare providers have further contributed to the high MM rate burden. For example, Menéndez et al. (2020) in their study in Mozambique provided evidence of diagnostic errors committed by healthcare providers in about 38% of the 91 women in the study. The diagnosis blunders were all significant deviations. While the sensitivity for non-obstetric infections was 48%, it was 17% for puerperal infections, which had a 50% positive predictive value. Although the eclampsia sensitivity was 100%, the positive predictive value was only 33%. Over the course of a decade, the performance of clinical diagnoses did not improve; in fact, for some diagnoses, like puerperal infection, it deteriorated. Menéndez et al. further

suggest that poor quality of diagnostic equipment and lack of trained personnel were a significant part of the problem. This suggests a healthcare management system problem which is often not on the spot light in many African contexts.

One of the primary roles of healthcare management systems in lowering maternal mortality is to improve access to high-quality maternal health services (Correa et al, 2020). In Nigeria, through the National Health Insurance Scheme (NHIS) and the Midwives Service Scheme (MSS), the Nigerian government has worked to increase access to reproductive health care (Federal Ministry of Health Nigeria, 2017). However, these efforts have been hampered by a number of issues, including a lack of funding, inadequate infrastructure, and a shortage of trained medical personnel (Federal Ministry of Health Nigeria, 2017). Poor tracking and data gathering relating to pregnant women have been linked to increasing maternal mortality in Africa (Lusambili et al., 2019). A winning model is succeeding in Sierra Leone, the District Health Information System 2 (DHIS2) has been used to enhance maternal and infant health outcomes by allowing medical professionals to find and close gaps in the provision of maternal and infant health services (WHO, 2016). In a scoping review conducted by Byrne and Sæbø (2022), they found that the routine use of DHIS2 data is linked to better data quality, more readily available data for decision-making, and improved efficiency of the health system. The study also brought attention to the difficulties and impediments to the regular use of DHIS2 data, such as a lack of technical expertise, inadequate training, and a lack of funding. To maximize the possible advantages of DHIS2 data for health systems,Byrne and Sæbø stressed the necessity of addressing these issues. Another of this innovation was the mobile health (mHealth) established in many African countries with high prevalence of MM, such as Nigeria, Sierra Leone, and Liberia (Sondaal et al., 2016). This innovation was facilitated by healthcare managements with the intention of reducing maternal mortality. Bossman et al. (2022) in their study maintained that mHealth interventions have the potential to improve maternal and child health outcomes in Sub-Saharan Africa and Southern Asia by enhancing access to healthcare services, encouraging

healthy behaviour change, and enhancing the standard of care provided. The long-term effects on outcomes for maternal and child health in these countries is yet to be determined. There are no papers distinctly addressing the barriers and facilitators caused by Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa.

This paper focuses on understanding the barriers and facilitators created by Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa. The primary outcome directly related to SDG Target 3.1 was: maternal mortality (SDG Indicator 3.1.1). Secondary outcomes were included by the author because of their influence on maternal mortality: skilled healthcare personnel and antenatal care coverage. Identifying the barriers and facilitators created by Healthcare Management Systems (HMS) could contribute to an accelerated progress toward achieving the SDG 3 by 2030.

1.2 Defining the Research Question

Framing a research question is an important component in research writing. Tawfik et al. (2019) maintains that this component should follow a logical process in line with the research design. While Higgins et al. (2011) believes the 'PICO' (population, intervention, comparison, and outcomes) framework sits well with quantitative studies, Methley et al. (2014) and Tawfik et al. (2019) maintained that the SPIDER (sample, phenomenon of interest, design, evaluation, and research type) framework provides enough specificity for studies seeking to gain an in depth understanding of a phenomenon. This study seeks to gain an in-depth understanding of the factors (barriers and facilitators) created by Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing MM in Africa. Hence a qualitative approach that utilizes the SPIDER framework will be employed to define the research questions for this study. See appendix 1.

This paper which is a systematic review is geared to answer the following questions:

a) What are the barriers created by Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa?
b) What are the facilitators created by Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa?

RESEARCH METHODOLOGY

2.1 Introduction

Research methodology, according to Crotty (1998), is the process a researcher uses to arrive at a finding or result. This process must be clearly stated in order for other researchers to confirm the findings of the study if they use a similar procedure (Kivunja & Kuyini, 2017). Regardless of the researcher's worldview or paradigm, according to Guba (1981), the research methodology should logically support the inquiry. Broadly classified world views are positivism, which is adopted by quantitative researchers; interpretivism, which is mainly adopted by qualitative researchers; and pragmatism, which is adopted in mixed-methods research (Levers, 2013). Within this framework exists four main paradigmatic elements, which, according to Lincoln and Guba (1985), are: methodology, epistemology, ontology, and axiology.

2.2 Research paradigm

Epistemology can be defined as “a way of understanding and explaining how I know what I know” (Crotty, 1998, p. 3). It is simply put as an inquiry into the nature of reasoning (Schwandt, 1997). The value system of a researcher must be clearly defined, and this is based on the axiology of the researcher. Kivunja and Kuyini, (2017) posit that axiology is the ethical moral placed on each element of a research including the findings and how it came about. Mertens (2015) maintains that researchers who use the positivist lens adopts the

beneficent axiology aimed at maximizing benefit with minimal associated risks. The interpretivist on the other hand uses a balanced axiology to present their findings in line with their values (Kivunja & Kuyini, 2017). “Ontology is the study of being” (Crotty, 1998, p. 10) and “raises basic questions about the nature of reality and the nature of the human being in the world” (Denzin & Lincoln 2005, p. 183). This is closely related to epistemology because it deals with the reality of truth telling. Creswell (2007) maintained that the perception of truth is influenced by the social environment as well as the experiences an individual have had. Positivists who subscribe to the ontology of realism hold that there is a singular, overarching truth that informs all of human endeavour and can be discovered through experimentation (Hiller, 2016; Searle, 2015). Interpretivists on the other hand, adhere to the ontology of relativism because they think that different truths exist and that they rely on the social context being considered (Chalmers et al., 2005).

Within the interpretivism framework exists various methods of inquiry notably the grounded theory, phenomenology, and ethnography. Grounded theory aims to identify an emerging theory that fits, functions, and makes sense to those engaged in the process in question (Glaser & Strauss, 2017). Phenomenology is another qualitative approach that aims to capture the essence of a phenomenon by looking at it from the viewpoint of those who have encountered it (Teherani et al., 2015). Within the phenomenological approach exist two schools of thoughts which are the Husserl descriptive and the Heidegger interpretative approach (Heidegger, 1962; Husserl, 1931). A researcher must consider the ideology they subscribe to before selecting a phenomenological research methodology. Lastly, ethnography usually adopted in primarily qualitative study involves direct observation of people and places and results in a written account of common or everyday behaviours and ideas (Savage, 2000).

This study will collate and synthesize all appraised studies that used any of the qualitative approaches to produce outcomes related to the barriers and facilitators created by

Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa.

2.3 Reflexivity

In order to conduct effective qualitative research, it is crucial for the researcher to be self-aware and reflective at all times. According to Wandé Pillow (2003), reflexivity in qualitative research involves the researcher's "systematic and rigorous examination of their role in the research process, as well as their own beliefs, values, assumptions, and biases that may influence the research process" (p. 146). By doing this, the researcher can lessen the influence of their own biases and increase the validity and credibility of the study findings (Macbeth, 2001). To further ensure trustworthiness, included studies will be valued based on the reflexivity of the researcher. Clearly stated reflexivity amongst other appraisal criteria will be ranked ahead of studies that did not state theirs.

2.4 Ethical Considerations

Researchers must adhere to a number of ethical principles, including confidentiality, privacy, dignity, integrity, and voluntary permission, as stated in the World Medical Association's (2018) Declaration of Helsinki. Additionally, Beauchamp and Childress's (2001) list of the four basic ethical principles—beneficence (act in the best interest), non-maleficence (do no harm), autonomy, and justice—must be followed by researchers in the fields of health and social care. The author is conducting a qualitative systematic review that uses publicly available primary studies. Hence, it does not require any human participants. However, the authorship of the included primary studies will be protected by proper referencing of the sources. This review is under the supervision of an academic supervisor at Oxford Brookes University. Evidence of supervision contracts and records can be found in Appendices 2 and 3, respectively.

METHODS

3.1 Introduction

This chapter provides a feasible timeline of how this project will run under the project management section. It also provides a clear scrutiny of how studies were appraised and selected for review using a systematic search strategy and an appraisal tool.

3.2 Search Strategy and database searches

In order to guarantee the reproducibility of results, which in turn ensures consistency, as claimed by Yoshii et al. (2009) and Bramar et al. (2018), a clearly articulated search strategy is essential. Nevertheless, as noted by Koffel and Rethlefsen (2016) and Sampson and McGowan (2006), some systematic reviews (SR) published may not be reproducible by other researchers due to mistakes or biases in the search technique. To avoid these prejudices, the author of this research sets clear search items using the SPIDER framework as advised by Cookes et al. (2012) using the Boolean operators (“AND”, “OR”, “NOT”) to narrow or expand searches. A Critical Appraisal Skills Programme (CASP, 2021) tool was used to ensure only studies that have successfully passed through quality assurance checks makes it to the final synthesis stage. The CASP tool includes a checklist of ten things that is helpful (Singh, 2013), especially for those just starting out in research (Hoffmann et al., 2017). See appendix 4 for CASP check list used for this study.

Four scientific advanced databases: CINAHL, Medline (through PubMed), PsycInfo, and ProQuest were searched exhaustively using search items constructed from the research questions. To ensure consistency and sensitivity, the same search items were used across all four databases (Aveyard, 2019). Data saturation was achieved after an exhaustive search through the databases and a manual search through the reference list of identified studies. Horsley et al. (2011) and Richards (2008) suggest that manually checking the reference list is a time-consuming but effective way to identify and add good studies that were missed by database searches.

3.3 Search outcome

Following the original search, CINAHL (EBSCO), Medline via PubMed, PsychInfo, and ProQuest all produced results of 72, 51, 30 and 16 respectively. Hand searching yielded 2 more studies. See appendix 3 for the search strategies employed by this study. For the purpose of weeding out duplicate results, all search results were transferred to EndNote version 20 (Bramer et al., 2016). To avoid double counting, counting bias, and additional screening work, this was essential (Tramer et al., 1997). Out of the 169 studies identified 73 duplicates identified automatically and deleted. Further screening of the title and abstract for keywords excluded 29 studies. 15 more studies were excluded due to methodological differences, and another 48 failed to meet other eligibility criteria set for this study. Only 6 papers were determined to be appropriate for this review, and the methods used to do so are described using the "preferred reporting item for systematic review and meta-analysis (PRISMA) flowchart" below (Moher et al., 2009, p.2).

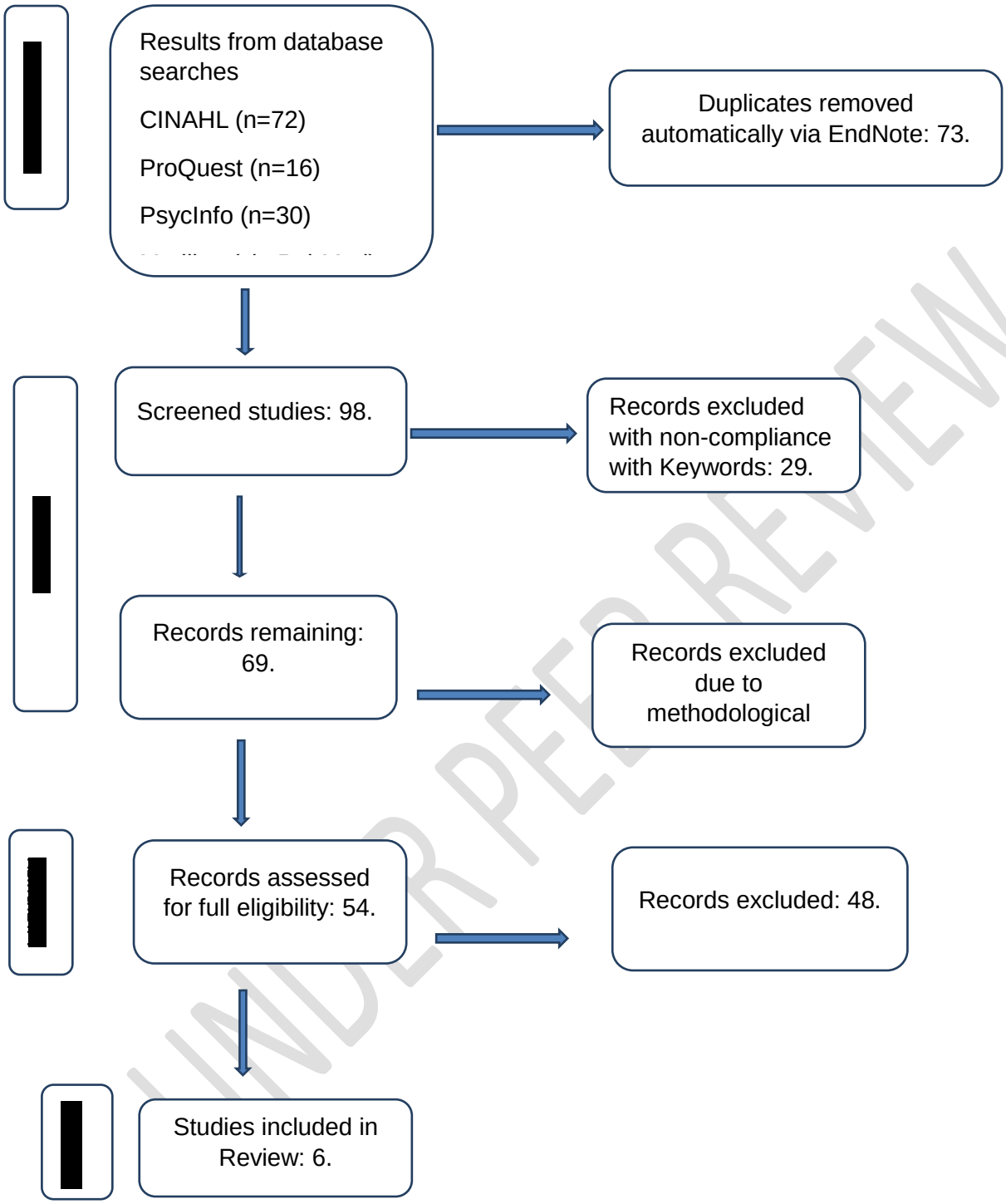

Fig. 1: PRISMA flowchart

3.4 Inclusion and Exclusion criteria

To ensure the outcome of the search items generates viable studies for this review, it was subjected to certain eligibility checks. Search outcomes were restricted to only studies published within the last fifteen years, peer reviewed studies, and studies published in English language with full text available. According to MacFarlane et al. (2022), the evidence collection should be limited to current evidence that has undergone peer review. Studies were also limited to only qualitative research. This was necessary to gain an in-depth understanding of the barriers and facilitators created by HMSs to achieving SDGs related to reducing MM in Africa.

Studies were excluded if they do not meet the inclusion criteria.

3.5 Quality and Risk of Bias Assessment

The CASP tool was used to evaluate critically the articles that database search techniques turned up. Long et al. (2020) claims that the use of the CASP instrument acts as validity check for the chosen studies. To evaluate the 6 studies, the author used a collection of 10 checklist questionnaires for qualitative studies (CASP, 2021), and for transparency's sake, the scoring method is laid out in Appendix 4. Even though researchers want a scoring system to determine the level of evaluation, the Cochrane recommendation recommends using quality assessments to divide research into three categories: low, medium, or high (Noyes et al., 2018). Moreover, the Cochrane recommendation is to have two assessors conduct the quality assessment to enhance accuracy (Noyes et al., 2018). However, a high degree of independence is required because this study is a prerequisite for a degree. Therefore, while under the supervision of a supervisor, the author conducted the evaluation independently while following best practices (Flemming et al., 2019).

3.6 Overview of Included Studies

As previously highlighted, 6 studies met the eligibility criteria for this study. The papers were from diverse regions in Africa and analysed using a qualitative research design either directly or from mixed studies. See appendix 6 for an overview of all included studies. To manage

the timeline for this project, a Gantt chart was used by the author to successfully complete this project. Wilson (2003) stressed the use of Gantt charts and added that they are a crucial tool that has proven effective over time. Furthermore, it has gained wide acceptance even in research (Slack et al., 2009). See appendix 2 for the Gantt Chart as applied to this study.

3.7 Thematic analysis/synthesis

Thematic synthesis is a more suitable method for systematic reviews, drawing on the principles of thematic analysis (Boyatzis, 1998; Silverman, 1997). The data collected is then consolidated to extract the meanings generated from the participants' experiences in the studies that were included (Thomas & Harden, 2008). As opposed to quantitative systematic reviews, which employ statistical meta-analysis to merge related studies to reduce bias (Kang, 2015), Doyle (2003) maintains that meta-synthesis and meta-ethnography make use of a number of empirical studies. The sample is not comprehensive, though; rather than making predictions, the goal is to offer an interpretive explanation (Doyle, 2003). Despite this, the information gathered from the included qualitative studies are synthesized using a clear analytical strategy (Dhakal, 2022).

3.8 Trustworthiness

Although systematic reviews are frequently cited as providing the highest degree of evidence in research (Ganeshkumar & Gopalakrishnan, 2013), the calibre of the evidence produced by a systematic review depends on the calibre of the studies included (Garcia-Doval et al., 2017). The author used a transparent search strategy, which was explained in appendix 3, to guarantee transparency, reproducibility, reliability, and credibility as advised by Tricco et al. (2015). Additionally, it is believed that recognising a study's reflexivity improves its reliability and validity (Macbeth, 2001). As a result, the author considered all reviews that included information about the reflexivity of their writers, as shown in Appendix 1. As suggested by Pillow (2003), this made it possible to weigh each study according to its level of reflexivity.

FINDINGS

4.1 Introduction

All the 6 studies included have a strong link with the research questions formulated for this review (Braddick et al., 2015; Dumont et al., 2009; Hill et al., 2020; Thwala et al., 2019; Udenigwe et al., 2021; Yasin et al., 2019). Two major themes and six domains originated from the data: barriers and facilitators. See Appendix 7 for a table illustrating the studies from which the themes originated.

4.1 Barriers

Three domains originated from this theme viz: health system barriers, socio-cultural barriers, and policy-related barriers.

Health system barriers: The studies found various issues that prevent the effective delivery of maternal health services within the African health systems.

In one study, Yasin et al. (2019) found a number of obstacles in Ethiopia's health system that prevents emergency obstetric referral. These obstacles include a dearth of transportation, inadequate equipment and supplies, inadequate staffing, and poor coordination between healthcare institutions. Insufficient infrastructure, a lack of skilled staff, and subpar referral systems were all cited by Braddick et al. (2015) as significant health system barriers to the adoption of postpartum haemorrhage guidelines in Uganda. Similar to this, Dumont et al. (2009) found a number of significant health system barriers to improving obstetric care in Senegal, including a lack of qualified staff, inadequate training, and inadequate equipment. Thwala et al. (2019) discovered that the main health system barriers to the provision of emergency obstetric care in a South African district were a lack of resources, including tools and supplies, and a staff with limited capacity. In addition, Udenigwe et al. (2021) identified a number of health system barriers, including insufficient financing, inadequate training for healthcare professionals, and inadequate infrastructure, as significant obstacles to the delivery of skilled pregnancy care in rural Nigeria. Finally, Hill et al. (2020) identified poor referral systems, insufficient staffing, and a lack of appropriate transportation and

communication infrastructure as major health system barriers to facility delivery in Gombe State, Nigeria.

Sociocultural barriers: Sociocultural factors can impact how women decide whether to use maternal health services and the standard of care they receive. According to Hill et al. (2020) sociocultural practices and beliefs, such as the notion that childbirth is a natural process that should not be interfered with, some women in Gombe State, Nigeria, chose traditional birth attendants and at-home deliveries. Thwala et al. (2019) noted that sociocultural barriers to obtaining emergency obstetric care in a South African district included beliefs about childbirth held by society and culture, such as the preference for traditional healers and reluctance to seek care from male health professionals. Sociocultural obstacles to skilled pregnancy care in rural Nigeria have been identified by Udenigwe et al. (2021), including gender norms that prohibit women from making choices about their own health and the notion that pregnancy complications are brought on by spiritual factors.

Policy-related barriers: Policy-related barriers were a significant theme in four of the six studies. The lack of a national system for reviewing maternal deaths, according to Dumont et al. (2009), has hampered attempts to improve obstetric care in Senegal. According to Braddick et al. (2015), the lack of government support in Uganda resulted in insufficient funding and instruction for healthcare professionals regarding postpartum haemorrhage guidelines, which in turn had an impact on their implementation. Inadequate funding and staffing were also cited by Thwala et al. (2019) as policy-related obstacles to emergency obstetric treatment in a South African district. Finally, Udenigwe et al. (2021) found a barrier to skilled pregnancy care in rural Nigeria as poor execution of government policies. Although there were policies in place to better maternal health, they were not properly implemented, which resulted in insufficient funding and subpar service delivery.

4.2 Facilitators

Three domains originated from this theme viz: health system facilitators, sociocultural facilitators, and policy-related facilitators.

Health system facilitators: All the studies contributed to this theme. The studies discovered that better obstetric care in low-resource settings was influenced by the accessibility of necessary resources and supplies, including drugs, equipment, and blood transfusions (Dumont et al., 2009; Thwala et al., 2019; Yasin et al., 2019). Additionally, it was discovered that one of the key facilitators of high-quality obstetric treatment is the availability of motivated, well-trained healthcare professionals who can collaborate and adhere to evidence-based recommendations (Dumont et al., 2009; Thwala et al., 2019; Udenigwe et al., 2021; Yasin et al., 2019). Establishing emergency obstetric care procedures in hospitals with limited resources is crucial for ensuring consistent, high-quality care, according to Dumont et al. (2009). Similar to this, Thwala et al. (2019) emphasised the necessity of health system strengthening initiatives to enhance healthcare workers' ability to provide emergency obstetric care. Additionally, Yasin et al. (2019) discovered that efficient referral links between facilities can promote prompt emergency obstetric treatment.

Sociocultural facilitators: The studies found a number of sociocultural factors that improve maternal health care utilisation and access in Africa. The significance of community participation and support for maternal health care has been noted as a key sociocultural facilitator in all the studies.

In Gombe State, Nigeria, Hill et al. (2020) discovered that locals were aware of the advantages of facility-based delivery and eager to help expectant women get access to treatment. The importance of community participation in emergency obstetric care in South Africa was also mentioned by Thwala et al. (2019). Additionally, Udenigwe et al. (2021) discovered that participation of traditional birth attendants and community-based health education programmes were crucial in supporting skilled pregnancy care in rural Nigeria. The research also emphasised the importance of cultural practises and beliefs in facilitating access to and use of maternal health care. Involving community members in maternal death

reviews in Senegal, according to Dumont et al. (2009), helped to find and address cultural practises that impeded access to maternal health care. Similar to this, Yasin et al. (2019) pointed out that Ethiopian pregnant women and health care professionals need to communicate in ways that are attentive to their cultural backgrounds. Overall, the studies emphasised the value of community engagement and cultural sensitivity in supporting maternal health care utilisation and access in Africa.

Policy-related facilitators: Three out of the six studies identified policy-related facilitators to achieving SDGs related to reducing maternal mortality in Africa. According to Udenigwe et al. (2021), policymakers in Nigeria saw government backing and the implementation of policies as crucial facilitators of skilled prenatal care. Similar to this, Dumont et al. (2009) reported that supportive policies and the participation of national and local health authorities helped Senegal implement facility-based maternal death reviews. According to Thwala et al. (2019), policies concerning staffing and equipment were crucial in allowing the provision of emergency obstetric care in South Africa. In order to achieve the SDGs for maternal health, these studies emphasise the significance of encouraging policies and government assistance. Additionally, they contend that involving regional and municipal health authorities in the implementation of policies can help remove obstacles brought on by those policies.

Some of the responses obtained from participants can be found in appendix 8.

5.0 DISCUSSION, CONCLUSION AND RECOMMENDATION

5.1 Discussion

The studies conducted in different parts of Africa show that there are various barriers and enablers to effective maternal health service delivery, thus hampering the roadmap to the 2030 SDG 3.1. Many of which are related to health management systems (HMSs). These barriers and facilitators can be categorized into health system, sociocultural, and policy-

related. This review helps to highlight these barriers and enablers and provide recommendations on minimizing these barriers and maximizing the facilitators.

Health system barriers and facilitators: Many other studies have also identified health system barriers to maternal health care delivery in Africa, such as insufficient facilities, inadequate staffing, and poor coordination between healthcare institutions (Bremnes et al., 2016; Filby et al., 2016; Jacobs et al., 2018; Koblinsky et al., 2016; Kyei-Nimakoh et al., 2017; Macdonald et al., 2019).Macdonald et al. (2019) added other barriers created by health system which has hampered the quality of care to manage high risk pregnancy. These barriers include lack of tools and materials, including the drugs, sterile delivery packs, and gloves, which are essential for providing quality postpartum care, and undesirable working conditions. On the other hand, the health system facilitators identified from this review were quite different from that identified by Grand-Guillaume-Perrenoud et al. (2021) in their systematic review using a high-income country. Grand-Guillaume-Perrenoud et al. identified health system facilitators such as availability and access to healthcare providers, positive attitude of healthcare professionals, and interprofessional relations amongst healthcare profession.

The “Health Systems Strengthening Framework” (HSSF) recommends strengthening the health system in a number of ways to get around these obstacles, including bettering governance and leadership, increasing investment in health financing, creating a skilled and motivated health workforce, enhancing health information systems, and improving service delivery (WHO, 2007, p.3). By resolving these problems, the health system may be reinforced in order to provide emergency obstetric care and deliver maternal health services more effectively, helping to reach the SDGs for reducing maternal mortality. The facilitators noticed from this study can be connected to the elements of the HSSF, such as enhancing the workforce and service provision in the healthcare industry. The Health Systems Strengthening Framework advises investing in the education and training of the health workforce, providing sufficient and appropriate resources and equipment, and creating

effective referral networks to ensure prompt emergency obstetric care in order to further facilitate these facilitators. By putting more of an emphasis on these enablers, the health system may be improved to provide maternal health services and fulfil SDGs related to maternal mortality reduction.

Sociocultural barriers and facilitators: Other studies have also emphasised sociocultural barriers to accessing and using maternal health care, such as beliefs and preferences for using traditional healers or having deliveries at home (Titaley et al., 2010; Mulondo, 2020).In many African countries, concerns about sociocultural beliefs and practises having an impact on maternal freedom are frequently noted (Amzat, 2015; Gabrysch et al., 2016).These sociocultural obstacles prevent women from accessing official health care, but they also keep them from receiving maternal health information from medical centres and specialists, which limits their understanding of pregnancy-related complications. As a result, getting assistance when needed is challenging.

The social ecological model, which acknowledges that individual behaviour and decisions are influenced by the larger social and cultural context, is consistent with the sociocultural barriers and facilitators found in this research. The concept pinpoints several degrees of impact, such as those caused by people's interactions with one another, communities, and societies (Israel et al., 1998; Sallis et al., 2008; Wallerstein et al., 2003). Accessing maternal health treatments can be hampered by sociocultural factors on a variety of levels, including personal attitudes and practises, interpersonal interactions, and larger community and society conventions. For example, the preference for at-home deliveries with traditional birth attendants in Gombe State, Nigeria, reflects both unique beliefs and habits as well as more general cultural norms (Hill et al., 2020). Similar to this, societal norms and interpersonal ties play a role in South Africa's reluctance to seek treatment from male health providers (Thwala et al., 2019). On the other hand, the sociocultural enablers identified in this study, such community involvement and support for maternal healthcare, highlight the significance of community-level elements in supporting maternal health. In Senegal, community members

participate in reviews of maternal deaths (Dumont et al., 2009), while in rural Nigeria, traditional birth attendants take part in community-based health education projects (Udenigwe et al., 2021). These examples highlight the significance of community engagement in enhancing maternal health outcomes.

Policy-related barriers and facilitators: Numerous additional studies have also highlighted policy-related obstacles to maternal health care, such as insufficient funding and ineffective policy implementation (Koblinsky et al., 2016). On the other hand, several other facilitators bordering over HMS policy were documented in other studies such as the importance of community health workers, mobile health technologies, or health insurance programs (Sipsma et al., 2012; Scheibe et al., 2020). For example, a study carried out in Ghana discovered that using a maternal health mobile application enhanced antenatal care attendance and decreased maternal death (Asumah et al., 2023).

This study has been able to contribute to existing knowledge by collating evidence that policy-related actions play a significant role in influencing MM in Africa. No study has succinctly placed emphasis on how policy has placed a challenge on or enabled the reduction of MM in Africa.

5.2 Limitations and Strength

Several strategies were employed by the author to demonstrate rigour; these strategies are already covered in the section on trustworthiness. However, it was impossible to escape some restrictions. One of them was limiting the search to papers that had only been published in English. By doing this, it's possible that excellent research that would have influenced this meta-synthesis's evidence were overlooked.

The use of qualitative meta-synthesis, which allowed for a more in-depth examination of the views of numerous stakeholders (HMSs), utilising only qualitative primary research, is one of this synthesis's main strengths. As a result, it was possible to gain a deeper understanding of the challenges and opportunities presented by HMS for enhancing maternal health

outcomes in Africa. Moreso, the strength of this study is that it enhances generalization of the results; since the studies used were gather from 5 key regions in Africa (Nigeria, Ethiopia, Senegal, South Africa, and Uganda).

5.3 Recommendation

Recommendations for further research: Future studies should concentrate on qualitative investigations that examine the viewpoints and experiences of healthcare professionals, decision-makers, and community people regarding the application of HMSs to lower maternal mortality in Africa. Infrastructure, human resources, and cultural norms are a few examples of contextual elements that have an impact on how these systems are implemented and used in such investigations. In order to increase the efficiency of HMSs in accomplishing SDGs related to lowering maternal mortality in Africa, research should also look into the effects of integrating community-based approaches with them.

To better understand the obstacles and enablers to the usage of the HMSs, future study may choose to use a mixed-methods strategy that incorporates quantitative data and qualitative interviews with healthcare professionals and policymakers. Additionally advised are comparative studies to determine how well various health management systems perform in reaching SDGs for lowering maternal mortality in Africa. These studies help pinpoint the best methods for maintaining maternal health in low-resource environments. The potential of Health Management Systems to improve maternal health outcomes in Africa can be fully realised by addressing the identified barriers and utilising the facilitators, according to policymakers and healthcare practitioners.

Recommendations for practice: Recommendations for best practice will leverage on the facilitators identified from this study. This review suggests that HMS should be developed in collaboration with local stakeholders, considering the sociocultural contexts of the target communities. By doing so, HMS can be tailored to the specific needs and preferences of the community, increasing their acceptability and effectiveness.

The review further suggests that providing adequate training and support to healthcare workers is essential to the successful implementation of HMS. Healthcare workers are critical to the success of SDG-3.1, and it is important to provide them with training on essential maternal care. Additionally, healthcare workers should be given the necessary support to address any technical challenges that may arise.

5.4 Conclusion

The aim of this review was to identify barriers and facilitators created by HMS in achieving SDGs related to reducing maternal mortality in Africa. Overall, this synthesis sheds insight on the intricate web of variables that affect skilled maternity care in low- and middle-income nations. Although sociocultural barriers provide substantial difficulties, community mobilization and health education can be extremely important in increasing the use of skilled treatment. Improving skilled pregnancy care also depends on having a working referral infrastructure and access to necessary obstetric care. Finally, to address policy-related obstacles and enable the implementation of evidence-based recommendations, strong policies and political commitment are required. The study exposes areas that may warrant further research, such as the experiences or views of healthcare professionals, decision-makers, and community members about the use of HMSs. On improving best practices, the study suggests that HMS work with regional stakeholders to individualize sociocultural approach to reducing MM in specific regions and also support healthcare professionals through proper training and resources. Policymakers and healthcare professionals may make the most of HMSs' potential to enhance maternal health outcomes in Africa and help realise the SDGs relating to lowering maternal mortality by addressing the identified hurdles and utilising the facilitators.

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Appendix 1: SPIDER Framework

SPIDER Framework	Description	Keywords search
Sample	Maternal mortality in Africa	Maternal mortality OR maternal death
Phenomenon of **I**nterest	Studies related to the barriers and facilitators created by Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa.	Barriers and facilitators created by Healthcare Management Systems (HMS).
Design	Any qualitative research design on the barriers or facilitators created by	beliefs OR interview

	Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa.	
Evaluation	Studies related to the barriers or facilitators created by Healthcare Management Systems (HMS) to achieving Sustainable development Goals (SDGs) related to reducing maternal mortality in Africa.	View OR experience OR challenges
Research	Qualitative or mixed methods	Qualitative or mixed methods

Appendix 2: Gantt chart

Task	Nov., 2022	Dec., 2022	Jan., 2022	Feb, 2022	March, 2022	April, 2023
Develop research topic	√					

Resources gathering	√	√				
Writing research background				√		
Methodology				√		
Search strategy					√	
Data extraction & analysis					√	
Findings					√	
Discussion & conclusion						√
Project submission						√

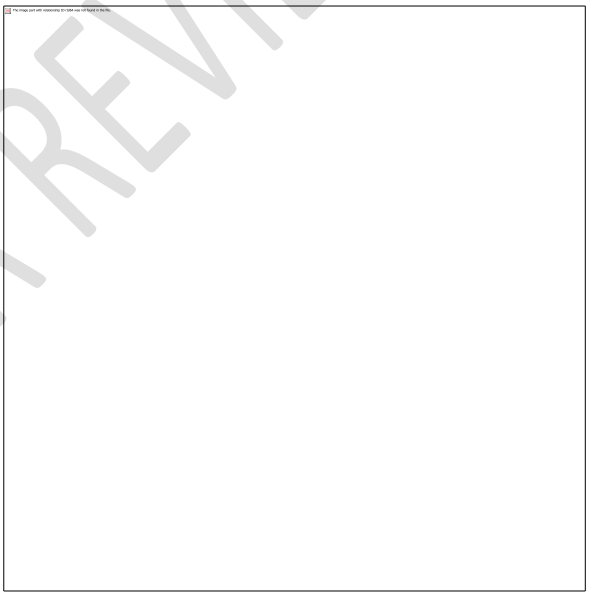
Appendix 3: Search Strategy

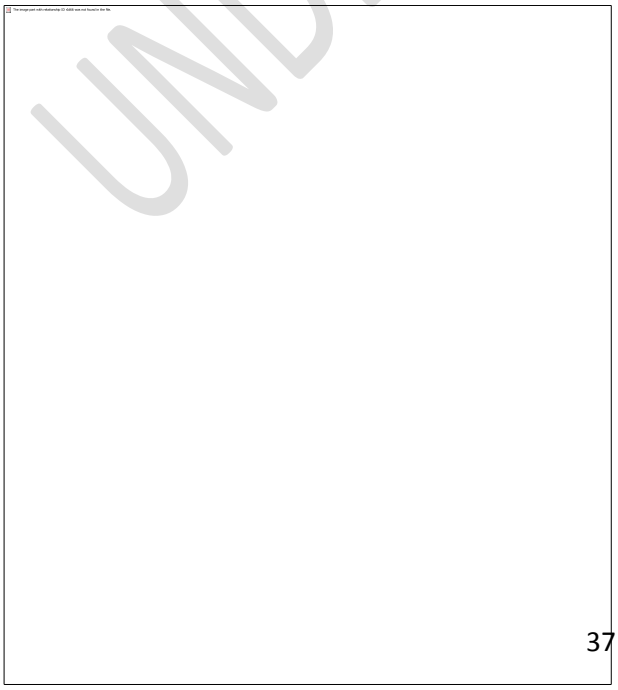
Name of Database / Restriction	Search date	Search item used	Result
CINAHL	31/03/2023	Maternal mortality AND barriers or	72

Restriction -Peer review -2008–2023 -English language -Title/abstract filter -Full text		obstacles or challenges or difficulties or issues or problems AND facilitators or motivators or enablers AND healthcare or health care or hospital or health services or health facilities.	
Medline via PubMed Restriction -Peer review -2008–2023 -English language -Title/abstract filter	31/03/2023	Maternal mortality AND barriers or obstacles or challenges or difficulties or issues or problems AND facilitators or motivators or enablers AND healthcare or health care or hospital or health services or health facilities.	51
PsycInfo Restriction -Peer review -2008–2023 -English language -Title/abstract filter	31/03/2023	Maternal mortality AND barriers or obstacles or challenges or difficulties or issues or problems AND facilitators or motivators or enablers AND healthcare or health care or hospital or health services or health facilities.	30
ProQuest Restriction -Peer review	31/03/2023	Maternal mortality AND barriers or obstacles or challenges or difficulties or issues or problems AND facilitators or motivators or	16

-2008–2023 -English language -Title/abstract filter		enablers AND healthcare or health care or hospital or health services or health facilities.	
	Total number of articles retrieved from all databases		169

Appendix 4: CASP tool (CASP, 2021)





Appendix 5: CASP Checklist for Qualitative research

Author, year	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Braddick et al., 2015	Yes	Yes	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes	Valuable
Dumont et al., 2009	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Valuable
Hill et al., 2020	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Valuable
Thwala et al., 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Moderate
Udenigwe et al., 2021	Yes	Yes	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes	Valuable
Yasin et al., 2019	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Valuable

Appendix 6: Overview of studies included.

S/N	Author/date	Aim	Location	Study Design	Author's Reflexivity	Participants/ Sample Size	Sampling	Data analysis
1	Yasin et al., 2019	Assessing the facilitators and barriers of obstetric referral in selected public health facilities of Addis Ababa city administration, Ethiopia	Ethiopia	Qualitative (descriptive)	Not stated	12 healthcare workers and three recently referred mothers.	Random and Purposive	Thematic analysis
2	Hill et al., 2020	To identify facilitators and barriers to facility delivery in Gombe State in North East Nigeria with a focus on women who have had a facility delivery.	Nigeria	Qualitative (descriptive)	Not stated	24 narrative and in-depth interviews with mothers, and 16 FGD with mothers, fathers, grandmothers, and community health	Purposive	Thematic analysis

						workers.		
3	Dumont et al., 2009	To explore and describe health workers' perceptions of facility-based maternal death reviews and to identify barriers to and facilitators of the implementation of this approach in pilot health facilities of Senega.	Senegal	Mixed study	Not stated	3 FGD, 8 observation	Purposive	Thematic analysis
4	Braddick et al., 2015	To determine the level of adherence to postpartum haemorrhage clinical guideline recommendations and to explore context-specific barriers and facilitators to evidence-	Uganda	Mixed study	Not stated	18 interviews	Purposive	Thematic analysis

		based obstetric care						
5	Thwala et al., 2019	To identify health system enablers and barriers to the delivery EmOC from the perspective of district managers	South Africa	Qualitative	Not stated	19 interviews	Purposive	Thematic analysis
6	Udenigwe et al., 2021.	To explore the perspectives of policymakers and health workers, two major stakeholders in the health system, on facilitators and barriers to women's use of skilled pregnancy care in rural Edo State, Nigeria	Nigeria	Qualitative	Not stated	13 interviews	Purposive	Thematic analysis

Appendix 7: Themes derived from Studies.

Barriers	**Facilitators**
Health system barriers (Braddick et al., 2015; Dumont et al., 2009; Hill et al., 2020; Thwala et al., 2019; Udenigwe et al., 2021; Yasin et al., 2019).	Health system facilitators (Dumont et al., 2009; Thwala et al., 2019; Udenigwe et al., 2021; Yasin et al., 2019).
Sociocultural barriers (Hill et al., 2020; Thwala et al., 2019; Udenigwe et al., 2021).	Sociocultural facilitators (Dumont et al., 2009; Hill et al., 2020; Thwala et al., 2019; Udenigwe et al., 2021; Yasin et al., 2019).
Policy-related barriers (Braddick et al., 2015; Dumont et al., 2009; Thwala et al., 2019; Udenigwe et al., 2021).	Policy-related facilitators (Dumont et al., 2009; Thwala et al., 2019; Udenigwe et al., 2021).

Appendix 8: Participants responses obtained from Studies.

Themes	Domains	Responses
Barriers	Health system barriers	"… in obstetric emergency, a minute has great value. In my opinion, there should be a stand by ambulance in the health centre to facilitate immediate referral of the women to an appropriate facility" (Yasin et al., 2019). "Now that we are approaching rainy season, … … access road is a serious problem because all the routes are bad" (Hill et al., 2020). "It's a big problem because we are understaffed and there are so many patients delivering at the same time. So, we hardly spend much time with

		the patients for observation" (Dumont et al., 2009) However, many of them still think that for this pregnancy, I will go to the TBAs because that is the person I know. For many reasons, especially when the health centre or facility is far, they look at the cost, they look at their time then they look at the familiarity with the environment. If the facility if far, they will rather go to the TBA" (Udenigwe et al., 2021).
	Sociocultural barriers	"Some don't want to go because their tradition is to deliver at home … they are following the traditions of their parents" (Hill et al., 2020). "There are some that are defiant, I won't go for antenatal, I don't believe in it. They go to prayer houses, they go to TBA. You know, it is closer, cheaper. A few percentages don't believe in it in the first place" (Udenigwe et al., 2021).
	Policy-related barriers	"We are told [what to do] from school, we don't have the guidelines here around" (Dumont et al., 2009). The national health insurance scheme has not really embraced the lower or poorer population or rural dwellers. I think it is just for some career staffs of the federal and state governments, so these are just very minute population of Nigeria and so the huge rural population, the huge number of women are not covered by the national health insurance scheme" (Udenigwe et al., 2021). "… Now it goes back to what the question, what is our responsibility? … And so, we [province] ended up developing a lot of protocols for them [health facilities], which was not necessary. Because

		protocols were already there [from national government], documents were already there, you know … That's why the system is confusing in this country" (Thwala et al., 2019). "The use of oxytocin, I even don't know where it came from, but everybody does it" (Dumont et al., 2009).
Facilitators	Health system facilitators	"…standard operating procedure was provided for all health facilities and trainings on how to implement the standard operating procedure were given for all staff working at the hospital" (Yasin et a., 2019). "The government is trying so hard to prioritize maternal health. So, I can't say there is usually no Pitocin [oxytocin]. Pitocin is always there" (Dumont et al., 2009). "For that, the relationship is very good because if we are in the community and we are not able to relate well, nobody will patronize that health center, so the relationship is very good, the community accept us, we accept them, at least we work hand in hand. We are not working in isolation" (Udenigwe et al., 2021).
	Sociocultural facilitators	"We (community health workers) are like security. When the community women want to go to the hospital, they are afraid, but if they will go with them, they have a cover and bad treatment will not be aimed at them …. the hospital staff shout at them but if we accompany them then they find some ease" (Hill et al., 2020).
	Policy-related facilitators	"By domesticating the policy of primary health care under one roof, we can make our PHCs run

		effectively. You will be able to improve on your health indices, like the one you are looking at, if you want your PHCs to run effectively, the women will not prefer to go to TBAs they will come to your health facilities and because we have deliveries by skilled attendants, you will also reduce the maternal mortality and the perinatal mortality and the morbidity, that's the focus of the government and we are working on getting that seriously working, that is if our PHCs are working effectively" (Udenigwe et al., 2021).