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# 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

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## Authors' contributions

This work was carried out in collaboration among all authors. Author EOO designed the study, defined the search items, reviewed search outcome, and assisted the data analysis process. Author MOY performed the search, wrote the chapters, and assisted the data analysis process. Author CIO and author AJ managed the appraisal process of selected papers and ensured rigor at every step of the review process. All authors read and approved the final manuscript.

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# 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 Methods:** 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, sociocultural 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.

## 1. INTRODUCTION

Maternal mortality entails any deaths from problems during pregnancy or childbirth or within 42 days of childbirth [1]. It has witnessed a 34% global reduction in maternal mortality ratios from 2000 to 2020, dropping from 342 to 223 deaths per 100,000 live births [2], with an average annual decrease of 2.1%. To attain the Sustainable Development Goal (SDG) of 70 maternal deaths per 100,000 live births by 2030 requires a substantial annual reduction of 6.4%, approximately one-third of the current rate [2]. Africa carries about 70% of the global burden of maternal mortality [3], revealing stark socioeconomic disparities in healthcare access. In 2020, high-income countries reported a maternal mortality rate of 12 per 100,000 live births, contrasting starkly with low-income countries' rate of 430 deaths per 100,000 live births [2].

[4] highlighted that obstetric haemorrhage, hypertensive disorders, and sepsis were prominent causes of maternal mortality in Sub-Saharan Africa, mirroring global trends [5]. The most critical period for maternal deaths includes the first trimester, delivery, immediately postpartum, or within a week after delivery [6]. Numerous challenges contribute to high maternal mortality in Africa, such as unskilled deliveries, ill-equipped facilities, lack of medical supplies, inadequate blood transfusion services, and transportation difficulties [4,7,8,9].

Non-obstetric causes of maternal mortality are [10] also significant. identified malaria, tuberculosis, and respiratory diseases as the primary non-obstetric causes of maternal mortality in Zambia, while [11 and 12] documented viral hepatitis, respiratory diseases, cancer, and HIV/AIDS in Nigeria. These largely preventable infectious diseases contribute substantially to maternal mortality.

[13] emphasized the importance of adequate antenatal care in identifying pregnant women at high risk of maternal mortality. Still, diagnostic errors by healthcare providers further contribute to the high burden of maternal mortality. [14] significant documented diagnostic errors committed by healthcare providers, revealing equipment diagnostic poor-quality and significant factors inadequate training as contributing to the problem.

Healthcare management systems play a critical role in mitigating maternal mortality by enhancing access to quality maternal health services. Initiatives in Nigeria, such as the National Health Insurance Scheme (NHIS) and the Midwives Service Scheme (MSS), aimed to boost access to reproductive healthcare [15]. However, these efforts face challenges like inadequate funding, infrastructure deficiencies, and a shortage of trained personnel. [16] identified poor tracking and data gathering as contributors to increasing maternal mortality in Africa.

Effective use of technology like the District Health Information System 2 (DHIS2) in Sierra Leone demonstrated its potential to improve maternal and infant health outcomes. Similarly, mHealth interventions were established in countries with high maternal mortality rates [17]. Despite its potential, their long-term effects on maternal and child health outcomes remain to be highlighted determined. [18] mHealth interventions as a potential avenue to improve maternal and child health in Sub-Saharan Africa and Southern Asia by enhancing healthcare access and improving care quality. However, barriers to achieving the Sustainable Development Goals (SDGs) concerning maternal mortality in Africa through HMS remain understudied.

This paper focuses on understanding the barriers and facilitators created by HMS to achieving 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 authors 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 accelerated progress toward achieving the SDG 3 by 2030.

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?

#### 2. METHODS

# 2.1 Search Strategy and Database Searches

In order to guarantee the reproducibility of results, which in turn ensures consistency, as

claimed by [19], a clearly articulated search strategy is essential. Nevertheless, as noted by [20 and 21], some systematic reviews published may not be reproducible by other researchers due to biases in the search technique. To avoid these prejudices, the authors set clear search items using the SPIDER framework as advised by [22] using the Boolean operators ("AND", "OR", "NOT") to narrow or expand searches. See appendix 1. A Critical Appraisal Skills Programme (CASP) [23] 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 [24], especially for those just starting out in research [25]. See appendix 2 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 [26]. Data saturation was achieved exhaustive after an search through the databases and a manual search through the reference list of identified studies. [27 and 28] 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.

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. For the purpose of weeding out duplicate results, all search results were transferred to EndNote version 20 [29]. To avoid double counting, counting bias, and additional screening work, this was essential [30]. 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 methodological were excluded due to 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 [31].

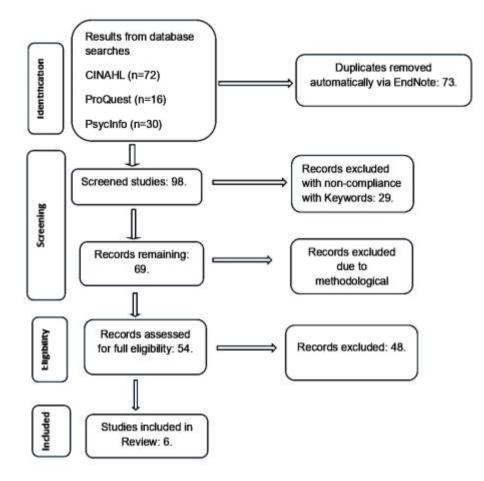


Fig. 1. PRISMA flowchart

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 [32], 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.

Quality and Risk of Bias Assessment: The CASP tool was used to evaluate critically the articles that database search techniques turned up. [33] claims that the use of the CASP instrument acts as validity check for the chosen

studies. To evaluate the 6 studies, the authors used a collection of 10 checklist questionnaires for qualitative studies [23], and for transparency's sake, the assessment method is laid out in Appendix 2. Even though researchers want a scoring system to determine the level of the Cochrane recommendation evaluation, recommends using quality assessments to divide research into three categories: low, medium, or Moreover. hiah [34]. the Cochrane recommendation is to have two assessors conduct the quality assessment to enhance accuracv [34]. The authors meticulously conducted and reviewed searches and outcomes both independently and collectively.

**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 3 for an overview of all included studies. 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 [35], 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" [35. 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 [36]. To further ensure trustworthiness, included studies with clearly stated reflexivity amongst other appraisal criteria were prioritized ahead of studies that did not state theirs.

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 Declaration of Helsinki [37]. Additionally, [38] 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 authors conducted 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 was preserved by proper referencing of the sources.

Trustworthiness: Although systematic reviews are frequently cited as providing the highest degree of evidence in research [39], the calibre of the evidence produced by a systematic review depends on the calibre of the studies included [40]. The authors used a transparent search quarantee transparency. strategy to reproducibility, reliability, and credibility as advised by [41]. Additionally, it is believed that recognising a study's reflexivity improves its reliability and validity [36]. As a result, the authors considered all reviews that included information about the reflexivity of their writers, as shown in appendix 3. This made it possible to weigh each study according to its level of reflexivity.

#### 3. FINDINGS

All the 6 studies included have a strong link with the research questions formulated for this review [42,43,44,45,46,47]. Two major themes and six domains originated from the data: barriers and facilitators. See Appendix 4 for a table illustrating the studies from which the themes originated.

**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, [47] found a number of obstacles in health system that Ethiopia's 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 [42] as significant health system barriers to the adoption of postpartum haemorrhage guidelines in Uganda. Similar to this, [43] 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. [45] 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, [46] 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, [44] 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 [44] 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 athome deliveries. [45] 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 [46], 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 [43], has hampered attempts to improve obstetric care in Senegal. According to [42], 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 [45] as policy-related obstacles to emergency obstetric treatment in a South African district. Finally, [46] 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.

**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 [43,45,47]. 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 [43,45,46,47]. Establishing emergency obstetric care procedures in hospitals with limited resources is crucial for ensuring consistent, highquality care, according to [43]. Similar to this, [45] emphasised the necessity of health system strengthening initiatives to enhance healthcare workers' ability to provide emergency obstetric care. Additionally, [47] 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, [44] discovered that locals were aware of the advantages of facilitybased delivery and eager to help expectant women get access to treatment. The importance community participation in emergency of obstetric care in South Africa was also mentioned by [45]. Additionally, [46] discovered that participation of traditional birth attendants community-based and 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 members in maternal community death reviews in Senegal, according to [43], helped to find and address cultural practises that impeded access to maternal health care. Similar to this, [47] pointed out that Ethiopian pregnant women and health care professionals need to communicate in ways that are attentive to backgrounds. their cultural 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 Africa. According mortality in to [46]. policymakers in Nigeria saw government backing and the implementation of policies as crucial facilitators of skilled prenatal care. Similar to this, [43] reported that supportive policies and the participation of national and local health authorities helped Senegal implement facilitybased maternal death reviews. According to [45], 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 5.

## 4. 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 [48,49,50,51,52,53]. [53] 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 those identified by [54] in their systematic review using a high-income country. [54] 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 [55]. 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 [56,57]. In many African countries, concerns about sociocultural beliefs and practises having an impact on maternal freedom are frequently noted [58,59]. 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, aettina assistance when needed was challenging.

model. The social ecological 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 [60,61]. 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 athome deliveries with traditional birth attendants in Gombe State, Nigeria, reflects both unique beliefs and habits as well as more general cultural norms [44]. Similar to this, societal norms and interpersonal ties play a role in South Africa's reluctance to seek treatment from male health providers [45]. 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 [43], while in rural Nigeria, traditional birth attendants take part in community-based health education projects [46]. These examples highlight the significance of community engagement in enhancing maternal health outcomes.

Policy-related barriers and facilitators: additional Numerous studies have also highlighted policy-related obstacles to maternal health care, such as insufficient funding and ineffective policy implementation [51]. On the other hand, several other facilitators bordering around the HMS policy were documented in other studies such as the importance of community health workers, mobile health technologies, or health insurance programs [62,63]. For example, a study carried out in Ghana discovered that using a maternal health mobile application enhanced antenatal care attendance and decreased maternal death [64].

This study has been able to contribute to existing knowledge by collating evidence that policyrelated 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.

Limitations and Strength: Several strategies were employed by the authors 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 was 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. 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 Additionally policymakers. 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 lowresource 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 collaboration with local stakeholders. in 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.

#### 6. 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.

#### CONSENT AND ETHICAL APPROVAL

It is not applicable.

#### **COMPETING INTERESTS**

Authors have declared that no competing interests exist.

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# APPENDIXES

#### Appendix 1. SPIDER framework

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

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 workers.	Purposive	Thematic analysis
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	Uganda	Mixed study	Not stated	18 interviews	Purposive	Thematic analysis

# Appendix 3. Overview of studies included

S/N	Author/date	Aim	Location	Study Design	Author's Reflexivity	Participants/ Sample Size	Sampling	Data analysis
		to explore context- specific barriers and facilitators to evidence- 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 4. Themes derived from studies

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

Appendix 5. Participants responses obtained from Studies	Appendix 5.	Participants	responses	obtained	from Studies
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Themes	Domains	Responses
Barriers	Health system	" in obstetric emergency, a minute has great value. In my opinion, there should be a stand by ambulance in the
	barriers	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	"Some don't want to go because their tradition is to deliver at home they are following the traditions of their
	barriers	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	"We are told [what to do] from school, we don't have the guidelines here around" (Dumont et al., 2009).
	barriers	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 evideoin Levien den't know where it come from but even hedy does it" (Dyment et al., 2000)
Facilitators	Health avetam	"The use of oxytocin, I even don't know where it came from, but everybody does it" (Dumont et al., 2009).
Facilitators	Health system	"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).
	facilitators	"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	"We (community health workers) are like security. When the community women want to go to the hospital, they are
	200.00010101	

Themes	Domains	Responses
	facilitators	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	"By domesticating the policy of primary health care under one roof, we can make our PHCs run effectively. You will
	facilitators	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).

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