

**REFERRAL SYSTEM OF OBSTETRIC COMPLICATIONS: THE  
MISSING LINK IN DEVELOPING COUNTRIES**

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## **Abstract**

Maternal mortality and morbidity persist as critical challenges in developing countries despite global efforts. This paper investigates the role of referral systems in addressing obstetric complications in such contexts. Obstetric complications, ranging from hemorrhage to obstructed labor, remain significant contributors to maternal mortality. Referral systems, fundamental to primary healthcare, aim to transfer patients to higher-level facilities for advanced care. However, in many developing nations like Nigeria, these systems face numerous challenges, including inadequate communication, transportation, and funding, alongside staff attitudes and patient awareness. The missing links in referral systems encompass technological advancements, efficient coordination, and patient-centered communication. Efforts to enhance referral system efficiency must address these gaps while ensuring patient safety and satisfaction. While self-referral options exist, they come with drawbacks such as longer wait times and resource waste. Solutions lie in improving communication, transportation, and coordination between healthcare facilities, alongside strengthening healthcare infrastructure and ensuring adequate resources. Overall, an effective referral system holds the potential to significantly reduce maternal mortality by facilitating timely access to appropriate care for obstetric complications in developing countries.

**Keywords:** Referral System, Obstetric Complications, Developing Countries

## **1.0 Introduction**

The global rates of maternal mortality and morbidity remain quite high, notwithstanding some recent advancements.<sup>[1-6]</sup> In 2017, it is estimated that there were 295,000 maternal deaths globally, resulting in a maternal mortality ratio (MMR) of 211 deaths per 100,000 live births.<sup>[3,7,8]</sup> There are a total of 20 countries whose Maternal Mortality Ratio (MMR) exceeds 500 deaths per 100,000 live births. With the exception of Afghanistan, all of these countries are located in sub-Saharan Africa. Three nations, namely South Sudan, Chad, and Sierra Leone, have a Maternal Mortality Rate (MMR) over 1,000 fatalities per 100,000 live births.<sup>[5,8-11]</sup> A significantly higher number of women suffered from serious morbidity compared to the number of women who died. Multiple factors contributed to this fatality, including the provision of insufficient medical attention..<sup>[12]</sup>

Maternal mortality and morbidity in low- and middle-income countries (LMICs), including Nigeria, have not decreased despite the government and other stakeholders' implementation of various efforts. The current maternal mortality rate in Nigeria is 576 deaths per 100,000 live births<sup>[13,14]</sup> which is higher than the amount previously reported (545) and more than 50 times higher than the death rate under the best worldwide conditions. Despite a gradual drop, perinatal and neonatal mortality rates are still too high.<sup>[15]</sup> Between 2000 and 2017, Nigeria's lowest lifetime risk of maternal death was 4.86%.<sup>[16]</sup>

## **2.0 Referral System**

A referral is a process in which a healthcare provider at one level of the healthcare system requests assistance from a facility at the same or higher level that has superior or different resources to handle the client's case.<sup>[17]</sup> This is done due to the inadequacy of drugs, equipment, or abilities at the facility to effectively treat a clinical problem..<sup>[1,18,19]</sup> This approach facilitates the transfer of cases that require advanced technical competence from one infrastructure to a higher-level institution that possesses the requisite technical expertise and resources to provide the desired health services.<sup>[18]</sup>

One of the key components of primary healthcare is the referral system, which allows patients to receive care in health centers before moving on to higher levels of care like second and third-level

hospitals. <sup>[20]</sup> At a country's local, state, and federal levels, a functioning referral system is crucial to its healthcare infrastructure. <sup>[20-23]</sup>

There exist three levels of referral. Primary care is the fundamental and most widespread tier of the healthcare system. The next tier of the system is comprised of secondary hospital care. The third tier of the system, representing the utmost quality of care, provides dedicated facilities for the treatment of patients. The system is designed to facilitate the transfer of patients to different medical facilities through a referral letter, except in emergency cases where patients can seek immediate treatment at any facility. The transfer can occur between various levels of healthcare providers, ranging from village health workers to Basic Health Units, primary health care centres, comprehensive health centres, state general hospitals, and specialised or teaching hospitals. In order to enhance and elevate the reliability of the primary healthcare system, it is imperative that the higher tiers of infrastructure and secondary and tertiary institutions offer assistance at every level of the healthcare infrastructure. <sup>[24,25]</sup> The majority of referral systems consist of vertical and horizontal referral systems. Within a vertical healthcare system, patients are transferred from a lower-tier healthcare facility to a higher-tier facility. Depending on the nature and severity of the crisis, measures can be implemented in a hierarchical manner, bypassing one or two levels, to ensure timely provision of essential medical and nursing care in order to minimise both mortality and morbidity. In the horizontal system, patients are transferred from one specialty or department to another within the hospital in order to obtain comprehensive medical care. The referral categories encompass normal, emergency, opportunistic, elective, and split referrals.

Healthcare workers have the ability to provide care to patients within their skill level and are not hesitant to tackle challenging cases, as they may refer them to more advanced healthcare facilities. This benefits patients by ensuring they receive excellent care at the primary level, which is conveniently located near their homes. The management benefits from cost-effective and highly skilled healthcare professionals, such as doctors and nurses, who provide care to patients with serious and complex issues at specialised referral units. Meanwhile, patients with simple and minor problems receive care from other professionals at a lower cost.

### **3.0 Obstetric Complications**

Acute conditions that result from a direct cause of maternal death, such as antepartum or postpartum hemorrhage, obstructed labor, postpartum sepsis, post-abortal complications, preeclampsia or eclampsia, ectopic pregnancy, uterine rupture, [25-32] or from indirect causes, such as anemia, [33,34] are referred to as obstetric complications. [35-37] Indirect obstetric maternal deaths are those that originate from pre-existing conditions or those that arise during pregnancy and cannot be directly attributed to obstetric causes but are instead made worse by pregnancy's physiological consequences. It takes into account the impact of underlying conditions like diabetes, HIV infection, and mental illnesses. [38]

While pregnancy, labour, and delivery are natural physiological processes, many difficulties might arise. These complications can be characterised as high-risk but low-volume, indicating that they possess a significant potential for destruction or harm, however their occurrence is infrequent. Pregnancy complications can vary from mild inconveniences to potentially life-threatening illnesses. With the improvement of public health and increased awareness of personal health, there have been positive changes in social conditions and reduced inequality. As a result, life-threatening illnesses have become uncommon. [39] Pregnancy issues can range from small annoyances to potentially catastrophic disorders.

#### **4.0 Efficiency and Effectiveness of the Existing Referral Process**

An efficient referral system guarantees that there is close communication between all levels of healthcare and that patients get the finest care imaginable. It also aids in the efficient use of PHC and hospital services. [40] An effective and efficient referral system must consider various factors, such as the coordination between referral and referral centres, mechanisms, tools, and working methods; communication and feedback systems; transportation systems; executive protocols; trained staff; effective teamwork at all levels; integrated information recording systems; accountability; and performance improvement monitoring. [41,42] To improve and advance the credibility of the primary healthcare system, higher levels of infrastructure and secondary and tertiary institutions must provide support at each level of the healthcare infrastructure. [25]

The primary challenge in the care of obstetric problems in a developing nation such as Nigeria is the inefficient procedure of referring patients to appropriate medical facilities. This encompasses the lack of effective communication between the referral hospital and the referring hospital. The gaps that need to be addressed include lengthy intervals between referrals, delayed referrals, issues in issuing an accompanying referral letter, absence of an accompanying relative, and challenges in obtaining transportation.<sup>[43, 44]</sup> It is important to work as a team and understand the importance and nature of communication between the client and her healthcare provider, both within and between healthcare providers.<sup>[45]</sup>

### **5.0 Situation-Background-Assessment-Recommendation (SBAR)**

Effective health system communication depends on SBAR. It needs to be precise and succinct. Utilizing assessment techniques, this tool encourages workers to provide information with the appropriate amount of detail. The Situation-Background-Assessment-Recommendation (SBAR) Tool is employed while making referrals and providing patient updates.<sup>[46]</sup>

The SBAR tool offers a structure for discussing a patient's condition with other members of the medical staff. Situation (i.e., who are you, where are you?) What is the patient experiencing? B is the background (pertinent and brief information related to the situation). R stands for recommendations, while A is for assessment (analysis and study of possibilities—what you discovered or believed—what you have done, what you want me to do, and when and how the patient will get there). Women's rights, choices, and dignity must always be remembered and respected. Also, the care provided must not be a source of harm, and the health worker must take responsibility for her actions. Teamwork is important in delivering quality maternal care; everyone has a role in ensuring that good communication leads to good maternity health services. Effective leadership facilitates teamwork.<sup>[45]</sup>

### **6.0 Factors Affecting the Referral System**

Factors such as limited availability of affordable and appropriate transportation, lack of knowledge, long distances between primary and secondary healthcare facilities, insufficient funding, waiting times for care at clinics, unreliable communication methods, absence of a well-organized referral

system, attitudes of medical staff at referral facilities, and fear of surgery all contribute to the challenges faced by an effective referral system..<sup>[23,44,47]</sup>

The main obstacle to an effective system of referrals is the lack of transportation. The distances to a healthcare facility lengthen the time needed for patients to receive treatment and delay timely referrals due to poor resources in low-resource countries.<sup>[23]</sup>

At all levels of care, the presence of prompt vehicles can be instrumental in responding to emergency and referral cases. Studies have shown a lack of transportation contributes to the delay in seeking and receiving healthcare services and is one of the contributing factors to deaths among women with obstetric complications.<sup>[49]</sup> A study also showed that proximity to the referral hospital has an impact on access to healthcare services.<sup>[50-52]</sup>

According to a study by Kamau et al.,<sup>[22]</sup> 67.2 percent of the participants in Kenya's survey claimed that the majority of healthcare facilities do not provide transportation for patients who are referred to them. Distance and transportation issues were mentioned as barriers to accessing high-quality referral treatment by Eskandari et al.,<sup>[53]</sup> and Nartey.<sup>[54]</sup> According to a study by Nakahara et al.,<sup>[55]</sup> transportation is a problem in Cambodia, and people are required to pay for their fuel for ambulances or utilize taxis to transport patients, which is too expensive for the people seeking care.

Insufficient communication is an additional factor that impacts the quality of referral care. Prior to the transfer of a patient, establishing efficient communication between the referral centre and the referring centre is crucial in order to guarantee that the patient receives suitable treatment. This is achieved by allowing the receiving facility sufficient time to prepare. In undeveloped nations, such as Nigeria, the practice of providing references and feedback letters is not widespread. Feedback is crucial for referring facilities to assess the effectiveness of their management.<sup>[23,48,56]</sup>

Lack of funding of the primary healthcare facilities by the federal, state, and local government authorities will affect the referral system, as this will jeopardize all efforts to provide adequate healthcare delivery. An effective referral system influences the cost-effective use of hospital services and primary care.<sup>[23]</sup>

Lack of awareness or inadequate understanding of the referral system among staff members and clients is a significant problem that hinders the effectiveness of the referral system. The absence of a well-structured referral network will compromise the referral and patient follow-up processes, leading to inadequate communication among the many tiers of the referral system. Without follow-up, there will be a disruption in the ongoing care provided to clients. A major obstacle in the referral system that hampers the quality of healthcare in rural areas is the absence of feedback from higher levels of care to lower levels.<sup>[23,53]</sup>

The study identified that the attitudes of health personnel at the referral centres and the fear of surgery are among the factors that impact the effectiveness of the referral system. Certain healthcare practitioners exhibit unfriendliness and a lack of regard towards maternity care. Providing consumers with a hostile attitude will discourage her from returning to the facility for healthcare services. Respecting customers' values, culture, religion, and beliefs is crucial for ensuring the best possible outcome of health care services. Several clients have the belief that when they are referred to a higher-level facility for ongoing care, such as surgery or another advanced service that is beyond the capabilities of the main health care centre, it signifies a grim prognosis. This has emerged as a significant issue contributing to an inadequate referral system in Nigeria, resulting in maternal and foetal mortality.<sup>[45,57]</sup>

## **7.0 The Missing Links in the Referral System in Developing Countries**

The performance of referral systems is impacted by a variety of factors. A variety of elements, such as coordination between the referrer and referral centers, working procedures, communication and feedback systems, transportation systems, executive protocols, trained personnel, effective teamwork among all levels, integrated information recording systems, accountability, and monitoring performance improvement, are needed for an efficient referral system. Below is a short description of each of them, along with the sub-themes.

### **7.1 Technology**

Electronic referral: An electronic referral system reduces the amount of follow-up that patients need to receive, improves the quality of care, decreases waiting times, increases access,



productivity, referrals, and patient privacy, strengthens the connection between primary and specialized care, raises patient safety, and ultimately improves efficiency. <sup>[18,23]</sup> This is one of the missing links in countries like Nigeria. Lower facilities do not have contact telephone numbers for the referral hospital or who to contact. Often, it's just the name of the hospital that is written in the referral note, and most patients may have to follow long protocols before being attended to because of a lack of direct contact with appropriate healthcare providers.

**Coordination:** Coordination between levels of health services in the referral system improves the efficiency of primary care, strengthens the first level of services' capacity building, raises the quality of documents, abides by the referral hierarchy, enhances continuity of patient care, enhances the quality of healthcare, and lowers the number of patients referred to hospital clinics.

**Response:** The referral system shortens waiting times for medical attention and enables tracking of patients' access to care. Customer satisfaction considerably rises when online queries from patients are responded to quickly. Thus, a crucial step in streamlining intensive care pathways and delivering top-notch treatment is the widespread use of e-referrals. **Feedback:** Positive feedback reduces medical costs and raises the standard of letters of reference. Feedback may also influence the kind of patients that doctors refer. <sup>[18,23]</sup>

**Processes' Efficacy:** Supporting referral system changes, putting referral policies into place, developing standardized guidelines and structure forms, and continuing general practitioners' education are only a few of the variables influencing the referral system's effectiveness.

**Efficiency:** The availability of doctors and midwives, the training of family physicians, changes to the electronic health registration system, improvements to management skills, actions taken to attract specialists and improve their maintenance, and management of the referral system's gatekeepers are all factors that can affect the referral system's efficiency.

**Organizational management, policy-making, and planning:** Government efforts and investments, improved referral conditions (improving access through transportation and communication systems), readiness, infrastructure improvement, the implementation of a standard referral system monitoring toolkit, a curriculum to instruct health workers about referral policies and guidelines,

and adequate funding for monitoring and evaluation are all part of the referral system's policymaking and planning. Rules and regulations for the referral system should include notification of referral guidelines, a reduction in clinic diversity, notification of operational rules, a suitable monitoring system, and criteria-based auditing.

Patient-centered communication: By lowering the need for diagnostic tests and referrals, patient-centered communication enhances community health and boosts the efficacy of care.

### **7.2 Individual element**

Transportation, social capital, awareness, attitude, satisfaction, and social influence are some of the individual aspects that each have an impact on the referral system.<sup>[18]</sup>

### **7.3 Benefits OF the Referral System**

Different features of the referral system's benefits have been recognized. Health professionals benefit. They can treat patients who fall within their scope of practice and are not afraid to handle challenging cases because they can refer them to higher-level centers and referral units. Management benefits because it is cost-effective since highly qualified and skilled staff can provide effective care at the primary level that is close to their home and at a low cost.

### **8.0 Difficulties of Self-Referral and Direct Access to Hospital Care**

All patients should use primary healthcare centers to obtain hospital care unless they are in an emergency and can go immediately to the hospital through the emergency department. This is known as self-referral. By doing this, systemic inefficiencies are prevented. Caregivers report high levels of satisfaction and an effective outcome when patients and their families actively participate in the referral process.<sup>[58-62]</sup>

The use of self-referral or direct access to hospital treatment has been linked to some drawbacks, including inadequate care, longer wait times, a lack of continuity and follow-up, a loss of coordination between hospital departments, and resource waste at all levels of care.<sup>[58-62]</sup>

### **8.0 Conclusion**

National facility-level data that outline intra-facility emergency referral trends for significant obstetric problems can be useful for low-resource nations with high maternal and infant mortality. It is easier for policymakers to make judgments about the best ways to administer maternity services when they are aware of how deliveries and obstetric problems are spread throughout the health system. Enhancing the conditions for referral (by expanding access to communication and transportation networks) and managing obstetric problems (by raising readiness) will improve the standard of care and increase the effectiveness and efficiency of referrals.<sup>[63]</sup>

The safety of patients during transfer depends on efforts to upgrade the transportation system for the referral of obstetric complications. There should be better communication between referring and receiving facilities. To promote effective referral practices and healthcare delivery, tertiary hospitals and other stakeholders in the referral chain must work closely together. At the same time, it's important to focus on providing side barriers at recommended facilities by making sure there are enough beds, blood, medications, and staff readily available. An effective referral system will improve by providing dedicated transportation and communication infrastructure. Supporting supervision to enhance the efficient use of current infrastructure and human resources. Eventually, this will lead to quicker access to high-quality emergency obstetric care.

## **9.0 References**

1. Jolivet RR, Moran AC, O'Connor M. Ending preventable maternal mortality: phase II of a multi-step process to develop a monitoring framework, 2016–2030. *BMC Pregnancy Childbirth*. 2018; 18: 258.
2. Andra HJ, Jerome JF, Homa KA. Disparities in obstetric hemorrhage outcomes. *Research and Practice in Thrombosis and Haemostasis*. 2022; 6(1): e12656.
3. Sitaula S, Basnet T, Agrawal A, et al. Prevalence and risk factors for maternal mortality at a tertiary care centre in Eastern Nepal- retrospective cross sectional study. *BMC Pregnancy Childbirth*. 2021; 21: 471.
4. Ameh CA, van den Broek N. Making It Happen: Training health-care providers in emergency obstetric and newborn care. *Best Pract Res Clin Obstet Gynaecol*. 2015; 29(8):1077-91.
5. Executive summary. Trends in Maternal Mortality 2000 to 2017. 2019. Estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population [Division](#). [WHO/RHR/19.23@World](#) Health Organization 2019.

6. Belizán JM, Gibbons L, Cormick G. Maternal mortality reduction: a need to focus actions on the prevention of hypertensive disorders of pregnancy. *Int J Equity Health*. 2021; 20: 194. <https://doi.org/10.1186/s12939-021-01535-x>
7. Mangiaterra V, Bucagu M, Sabbatucci F. Maternal Health. In: Raviglione, M.C.B., Tediosi, F., Villa, S., Casamitjana, N., Plasència, A. (eds) *Global Health Essentials. Sustainable Development Goals Series*. Springer, Cham 2023 [https://doi.org/10.1007/978-3-031-33851-9\\_9](https://doi.org/10.1007/978-3-031-33851-9_9)
8. Kurjak A, Stanojević M, Dudenhausen J. "Why maternal mortality in the world remains tragedy in low-income countries and shame for high-income ones: will sustainable development goals (SDG) help?" *Journal of Perinatal Medicine* 2023; 51 (2):170-81.
9. Owusu PA, Sarkodie SA, Pedersen PA. Relationship between mortality and health care expenditure: Sustainable assessment of health care system. *PLoS ONE* 2021; 16(2): e0247413.
10. Ameh C, Allot H, Nabwera H, et al. Welcome to the emergency obstetrics and Neonatal live-skill saving skill course. In: Ameh C, Allot H, Mohammad H, editors. *Emergency Obstetric Care and Newborn Care training for skilled healthcare personnel*. 2020. Liverpool, LSTM. Pembroke place. United Kingdom. pp 5.
11. Bailey PE, Andualem W, Brun M, et al. Institutional maternal and perinatal deaths: a review of 40 low and middle income countries. *BMC Pregnancy Childbirth* 2017; 17: 295.
12. Geller SE, Koch AR, Garland CE, et al. A global view of severe maternal morbidity: moving beyond maternal mortality. *Reprod Health*. 2018; 15 (1):98. <https://doi.org/10.1186/s12978-018-0527-2>.
13. Arisukwu O, Akinfenwa S, Igbolekwu C. Primary healthcare services and maternal mortality in Ugep. *Annals of Medicine & Surgery*. 2021; 68.
14. National Population Commission (NPC) [Nigeria] and ICF International. *Nigeria Demographic and Health Survey 2013*. Abuja and Rockville: NPC and ICF International; 2014.
15. Akaba GO, Ekele BA. Maternal and fetal outcomes of emergency obstetric referrals to a Nigerian teaching hospital. *Trop Doc*. 2018; 48(2):132-35.
16. WHO, UNICEF, UNFPA, World Bank Group & United Nations Population Division *Trends in Maternal Mortality: 2000 - 2017*. 2019. Geneva.
17. WHO. *Management of health facilities: Referral systems*. World Health Organization. 2014.
18. Seyed-Nezhad M, Ahmadi B, Akbari-Sari A. Factors affecting the successful implementation of the referral system: A scoping review. *J Family Med Prim Care*. 2021; 10(12):4364-75.
19. Legodi TL, Wolvaardt JE. A blank page: Feedback from first referral hospitals to primary health care clinics. *South African Family Practice*. 2015; 57:282–5.
20. Abraham O, Linnander E, Mohammed H, et al. A patient-centered understanding of the referral system in Ethiopian primary health care units. *PLoS One*. 2015; 10:e0139024.

21. Omole VN, Mora AT, Yunusa IU, et al. Knowledge, attitude, and perception of the referral system among tertiary health-care workers in Kaduna metropolis, Nigeria. *Int J Med Sci Public Health*. 2017; 6:1481–9.
22. Kamau KJ, Osuga BO, Njuguna S. Challenges facing implementation of referral system for quality health care services in Kiambu county, Kenya. *Health Syst Policy Res*. 2017; 4:1–8.
23. Azamar-Alonso A, Costa AP, Huebner LA, et al. Electronic referral systems in health care: A scoping review. *Clinicoecon Outcomes Res*. 2019;11: 325–33.
24. Operational framework for primary health care: transforming vision into action. Geneva: World Health Organization and the United Nations Children’s Fund (UNICEF), 2020. Licence: CC BY-NC-SA 3.0 IGO.
25. Prathiba PI, Niranjjan R, Maurya DK et al. Referral chain of patients with obstetric emergency from primary care to tertiary care: A gap analysis. 2020; 28: 347–53.
26. Ben-Ayoun D, Walfisch A, Wainstock T, et al. Trend and risk Factors for Severe Peripartum Maternal morbidity - a population-based Cohort Study. *Matern Child Health J*. 2023; 27: 719–27.
27. Shah K, Katke RD, Radiowala SY. Postpartum Hemorrhage. In: Garg, R. (eds) *Labour and Delivery*. Springer, Singapore. [https://doi.org/10.1007/978-981-19-6145-8\\_17](https://doi.org/10.1007/978-981-19-6145-8_17)
28. Anikwe CC, Ikeoha CC, Ogah CO, et al. A five-year retrospective review of the maternal and foetal outcome of obstructed labour and its determinants in a tertiary hospital in Nigeria. *Afri Health Sci*. 2022; 22(2): 500-10.
29. Ngonzi J, Tornes YF, Mukasa PK, et al. Puerperal sepsis, the leading cause of maternal deaths at a Tertiary University Teaching Hospital in Uganda. *BMC Pregnancy Childbirth*. 2016; 16: 207.
30. Ngwenya S. Factors associated with maternal mortality from sepsis in a low-resource setting: a five-year review at Mpilo Central Hospital, Bulawayo, Zimbabwe. *Tropical Doctor*. 2020; 50(1):12-5.
31. Nair M, Kurinczuk JJ, Brocklehurst P, et al. Factors associated with maternal death from direct pregnancy complications: a UK national case–control study. *BJOG*. 2015; 122: 653–62.
32. Nair M, Nelson-Piercy C, Knight M. Indirect maternal deaths: UK and global perspectives. *Obstet Med*. 2017; 10: 10–5.
33. Young MF. Maternal anaemia and risk of mortality: a call for action. *The Lancet*. 2018; 6:e479.
34. Singal N1, Setia G2, Taneja BK3, et al. Maternal outcome in pregnant women with anaemia. *Bangladesh Journal of Medical Science*. 2018; (17):03. 446-54.
35. Sikder SS, Labrique AB, Christian P. Availability of emergency obstetric care (EmOC) among public and private health facilities in rural northwest Bangladesh. *BMC Public Health*. 2015; 15(36). <https://doi.org/10.1186/s12889-015-1405-2>.
36. WHO. Postpartum haemorrhage (PPH) summit 2022. [https://www.who.int/publications/m/items/who-post-partum-haemorrhage-pph-\(summit\)](https://www.who.int/publications/m/items/who-post-partum-haemorrhage-pph-(summit)).
37. Nair M, Knight M, Kurinczuk JJ. Risk factors and newborn outcomes associated with maternal deaths in the UK from 2009 to 2013: a national case–control study. *BJOG*. 2016; 123: 1654–62.

38. Jones G, Mitchell, CA, Hirst J, et al. Understanding the relationship between social determinants of health and maternal mortality. *BJOG: An international journal of obstetrics and gynaecology*. 2022; <https://doi.org/10.1111/1471-0528.17044>.
39. Crafter H, Brewster J. Common problems associated with early and advanced pregnancy. In: Marshall JE, Raynor MD, editors. *Myles Text Book for Midwives*. 16th ed. London: Churchill Livingstone Elsevier publisher. 2014. pp 221-42.
40. Ofosu B, Ofori D, Ntumu M, et al. Assessing the functionality of an emergency obstetric referral system and continuum of care among public healthcare facilities in a developing setting: an application of process mapping approach. *BMC Health Services Research*. 2021; 21(1):1-14.
41. World Health Organisation. Referralnotes. Referral Systems - a summary of key processes to guide health services managers. 2019.
42. Amoah PA, Phillips DR. Strengthening the referral system through social capital: a qualitative inquiry in Ghana. [Healthcare](#)
43. Yasin C, Geleto A, Berhane Y. Referral linkage among public health facilities in Ethiopia: a qualitative explanatory study of facilitators and barriers for emergency obstetric referral in Addis Ababa city administration. *Midwifery*. 2019; 79:102528.
44. Geleto A, Chojenta C, Musa A, et al. Barriers to access and utilization of emergency obstetric care at health facilities in sub-Saharan Africa: a systematic review of literature; 2018; 1–14.
45. Ameh C, Allot H, Nabwera H, et al. Communication, Triage and Referral. In: Ameh C, Allot H, Mohammad H, editors. *Emergency Obstetric Care and Newborn Care training for skilled healthcare personnel*. 2020. Liverpool: LSTM. Pembroke place. United Kingdom. pp 19-28.
46. Gonzales MS. SBAR Tool: Patient Assessment and Nurse-Physician encounters. 2018. <https://rnspeak.com/Sbar-tool/>
47. Daniels AA, Abuosi A. Improving emergency obstetric referral systems in low and middle-income countries: a qualitative study in a tertiary health facility in Ghana. *BMC Health Serv Res* 2020; 10: 20(1):32.
48. Give C, Ndima S, Steege R, et al. Strengthening referral systems in community health programs: a qualitative study in two districts of Maputo Province, Mozambique *Health Serv Res*. 2019; 19:263.
49. Varela C, Young S, Mkandawire N, et al. Transportation barriers to access health care for surgical conditions in Malawi a cross sectional nationwide household survey. *BMC Public Health*. 2019; 19: 264.
50. Eide AH, Mannan H, Khogali M, et al. Perceived Barriers for Accessing Health Services among Individuals with Disability in Four African Countries. *PLoS One*. 2015; 10(5): e0125915.

51. Lungu K, Kamfosa V, Hussein J, et al. Are bicycle ambulances and community transport plans effective in strengthening obstetric referral systems in southern Malawi. *Malawi Med J*. 2001. 16-8
52. Munthali AC, Mannan H, MacLachlan M, et al. Non-use of formal health Services in Malawi: perceptions from non-users. *Malawi Med J*. 2014; 26(4):126–32.
53. Eskandari M, Abbaszadeh A, Borhani F. Barriers of referral system to health care provision in rural societies in Iran. *J Caring Sci*. 2019; 28: 2(3): 229-36.
54. Nartey AK. Transportation: Barrier to maternal and child healthcare services in rural sub-Saharan Africa. *African journal of current medical research*. 2018; 2(2). DOI: 10.31191/afrijcmr.v2i.30.
55. Nakahara S, Saint S, Sann S, et al. Exploring referral systems for injured patients in low-income countries: a case study from Cambodia. *Health policy and Planning*. 2010; 25(4) :319 - 27
56. Abutiheen KAA. Clients' satisfaction with referral system in Karbala: *American Journal of Applied Sciences*. 2014; 11(2):216-22.
57. Austin A, Gulemaz H, Belizan M, et al. Barriers to providing quality emergency obstetric care in Addis Ababa, Ethiopia: Healthcare providers' perspectives on training, referrals and supervision, a mixed methods study .*BMC Pregnancy and Childbirth*. 2015; 15:74.
58. Rasoulynejad SA. Patient views for self-referral to specialists. *Iranian Journal of Public Health*. 2007; 36 (1):62-7.
59. Kraaijvanger N, van Leeuwen, H, Rijpsma, D, et al. Motives for self-referral to the emergency department: a systematic review of the literature. *BMC Health Serv Res*. 2016; 16.
60. Kraaijvanger N, Rijpsma D, van Leeuwen H, et al. Self-referrals in the emergency department: reasons why patients attend the emergency department without consulting a general practitioner first—a questionnaire study. *Int J Emerg Med*. 2015; 8: 46.
61. Abere TM, Atnafu DD, Mulu Y. Self-referral and associated factors among patients attending adult outpatient departments in Debre tabor general hospital, North West Ethiopia. *BMC Health Serv Res*. 2021; 21: 607.
62. Andrews H, Kass L. Non-urgent use of emergency departments: populations most likely to overestimate illness severity. *Intern Emerg Med*. 2018; 13: 893–900.
63. Bailey PE, Awoonor-Williams JK, Lebrun V, et al. Referral patterns through the lens of health facility readiness to manage obstetric complication: national facility - based results from Ghana. 2019. 16(19). <https://doi.org/10.1186/s12978-019-0684-y>