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Framework Influencing Healthcare Services Utilization: Impact on Maternal Health-Seeking Behaviour and Key Factors

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ABSTRACT

Introduction: Maternal and neonatal mortality remain critical challenges in Sub-Saharan Africa, with Sierra Leone among the worst-affected countries. Barriers such as socio-cultural norms, financial constraints, and limited infrastructure hinder healthcare-seeking behaviors among pregnant women and mothers in rural areas. This study examines the influence of protective, alleviating, and aggravating factors on healthcare-seeking behavior among pregnant women and newborn mothers in Bo District, Sierra Leone.

Materials and Methods: A mixed-methods study was conducted among 500 participants, including 294 pregnant women and 206 newborn mothers, at Bo Government Hospital and Tikonko Village Health Center. Data were collected via structured questionnaires and analyzed using Chi-Square, logistic regression, and Structural Equation Modeling (SEM) to assess relationships among influencing factors.

Results: Protective factors, including health education and preventive care awareness, significantly influenced healthcare-seeking behavior, reported by 97.2% of participants. Alleviating factors such as access to healthcare (20.29%) and financial support (15.1%) promoted high antenatal care utilization (100%) and facility-based delivery (99.03%). Aggravating factors like cultural barriers and perceived risks negatively impacted care-seeking, with SEM showing a significant indirect effect ($\beta = -0.45$, $p < 0.001$).

Conclusion: Health education, accessibility, and financial support are critical for improving maternal and neonatal health outcomes. Addressing socio-cultural barriers and enhancing risk communication are essential for further progress. Policymakers should prioritize integrated strategies to reduce maternal and neonatal mortality in Sierra Leone.

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INTRODUCTION

Maternal and neonatal health outcomes in Sub-Saharan Africa continue to be a significant public health challenge, with the region accounting for the highest rates of maternal and neonatal mortality globally. Sierra Leone faces one of the highest maternal mortality ratios in the world, with 1,360 deaths per 100,000 live births [1-3]. Despite the efforts of international and national health interventions aimed at improving maternal healthcare, many women in Sierra Leone, especially those in rural areas, still face significant barriers to accessing healthcare services during pregnancy and after childbirth [4-6]. Healthcare-seeking Behaviours among pregnant women and newborn mothers are influenced by a complex interplay of factors, including protective, alleviating, and aggravating influences.

Protective factors such as health education, community support, and access to healthcare information play a crucial role in motivating women to seek care. On the other hand, alleviating factors, including access to healthcare facilities and financial support, help reduce some of the systemic barriers' women face. However, aggravating factors such as cultural practices, geographic isolation, and socio-economic constraints can significantly hinder the timely utilization of maternal health services [7-9].

This study focuses on Bo District in Sierra Leone, where traditional practices, combined with socio-economic and infrastructural challenges, present unique obstacles to healthcare access. By exploring the role of protective, alleviating, and aggravating factors in influencing healthcare-seeking Behaviour, this research provides insights into the determinants of maternal and neonatal healthcare utilization in the district. These insights are critical to informing policy interventions and strategies that could enhance maternal and neonatal health outcomes.

Study Objectives

The specific objectives of this research are:

1. To assess the influence of protective factors, such as health education, community support, and access to preventive healthcare services, on the healthcare-seeking Behaviour of pregnant women and newborn mothers.
2. To examine the role of alleviating factors, including improved access to healthcare facilities, financial support, and community health interventions, in promoting the utilization of healthcare services among pregnant women and newborn mothers.
3. To analyze the impact of aggravating factors, such as socio-cultural barriers, economic constraints, and perceived risks, on healthcare-seeking Behaviours during pregnancy and postnatal care.

METHODS

Study Design

This research applied a mixed-methods approach that integrated quantitative and qualitative data collection techniques and investigated the influence of protective, alleviating, and aggravating factors on healthcare-seeking Behaviours among pregnant women and newborn mothers.

Study Setting

The study was conducted in Bo District, Sierra Leone, at two key healthcare facilities namely Bo Government Hospital (an urban setting), and Tikonko Village Health Center (a rural setting). Participants

Using Cochran's formula, the study initially calculated a sample size of 370 participants. To strengthen the study's rigor, this number was increased by 26%, adding 130 participants, resulting in a total sample size of 500. Among the participants, 294 were pregnant women, and 206 were mothers of newborns. This increase accounted for potential non-responses, enhanced population representativeness, and minimized sampling errors. The expanded sample ensured sufficient statistical power and captured a wider range of population variability, thereby improving the generalizability of the findings. This adjustment adhered to ethical research standards, particularly for sensitive groups like pregnant women and newborn mothers, ensuring actionable and meaningful outcomes. A simple random sampling method was applied to ensure that diverse socio-demographic characteristics such as age, education level, income, marital status, and religious affiliations were represented. Inclusion criteria required participants to be

either a pregnant woman or a mother of a newborn, reside in Bo District, and have accessed healthcare services at either Bo Government Hospital or Tikonko Village Health Center.

Data Collection

Data collection took place from March to May 2024 and involved the use of structured questionnaires administered via ONA, a mobile data collection application. ONA helped in getting real-time data and minimizing data collection errors. Ten trained data enumerators administered the questionnaires, ensuring consistency and reliability in data collection. Additionally, participants were provided informed consent before taking part in the study, ensuring ethical compliance. Ethical approval from obtained from the Njala University Institutional Review Board.

Data Analysis

Statistical analyses were carried out using SPSS and AMOS for descriptive and inferential statistics. The following analytical techniques were employed: Chi-Square Test of Independence, Logistic Regression, ANOVA, and Structural Equation Modeling (SEM).

Additionally, qualitative data from open-ended questions were analyzed using thematic analysis to provide deeper insights into the socio-cultural and contextual factors influencing healthcare utilization.

RESULTS

Participant Demographics

The study included 500 participants, with a majority (74.80%) attending Bo Government Hospital, an urban healthcare facility, while 25.20% attended Tikonko Maternity Home, located in a rural area.

The mean age of pregnant women was 25 years, slightly higher than that of newborn mothers at 24 years, reflecting a predominance of younger women. Most newborns (33.98%) were aged between 29 days and 2 months, followed by 28.64% aged 3 to 5 months.

The sex distribution of newborns was nearly equal, with 50.97% female and 49.03% male.

Participants predominantly had secondary education (53.60%), followed by primary education (28.40%). A smaller portion had tertiary education (8.00%), and 10.00% had no formal education.

Many participants were married (46.60%), with a significant number being single (31.60%).

The religious composition was nearly evenly split between Islam (52.40%) and Christianity (47.40%), reflecting the general religious demographics of the region.

A significant portion of participants were students (34.80%) or housewives (22.60%), with 30.80% engaged in business.

The Mende tribe constituted the majority (63.00%), followed by the Temne (18.00%). Most families were monogamous (86.8%), with only 13.2% being polygamous. The mean household size was 5.30, with a wide range from 2 to 52 individuals. The mean monthly income was 335.03 New Leone (NLE), with significant skewness (7.95), indicating that most households earn below this average, with a few high outliers.

The mean number of pregnancies was 2, with a skewness of 1.84, indicating that most women had experienced one or two pregnancies.

Health-Seeking Behaviour During Pregnancy and After Childbirth

All participants (100%) received ANC services during pregnancy, highlighting the success of maternal health outreach and awareness programs. Many participants (71%) received ANC services from public health facilities, followed by community health centers (24%), and a smaller percentage (4.6%) from private health facilities.

A significant proportion of participants attended 3-4 ANC visits (44.4%), while 41.2% attended 5 or more visits.

The vast majority (99.03%) of participants gave birth in a healthcare facility, with only 0.97% delivering at home.

Influence of Protective Factors

A significant proportion of respondents (97.20%) reported receiving information on preventive measures. This knowledge was found to be "moderately influential" (43.80%) or "very influential" (38.80%) in shaping maternal health-seeking Behaviour.

Influence of Alleviating Factors

The most influential alleviating factors identified were improved access to healthcare facilities (20.29%), increased awareness through education and community outreach programs (17.14%), and reduced financial barriers through affordable or free services (15.1%).

Influence of Protective Factors on Maternal Health Choices:

- **Accessible Healthcare Facilities:** Many respondents (35.60%) rated accessible healthcare facilities as "Very Influential" in their healthcare decisions, with 25.40% finding them "Extremely Influential."
- **Affordable Healthcare:** A significant portion of respondents (33.60%) found affordable healthcare to be "Very Influential," with 27.80% rating it as "Moderately Influential."
- **Health Education:** 32.80% of respondents considered health education "Very Influential," while 24.40% considered it "Moderately Influential."

Influence of Aggravating Factors

A high percentage (95.20%) of respondents were informed of risks or complications during pregnancy, with this knowledge being "very influential" (41.40%) or "moderately influential" (41.20%) in shaping healthcare-seeking Behaviour.

Healthcare-Seeking Behaviour for Newborns

Most respondents (96.12%) sought healthcare services for their newborns. The decision to seek healthcare services for newborns was primarily influenced by protective factors (81.31%), suggesting a strong commitment to preventive care.

Integrated Approaches and Suggestions

The following strategies were recommended for addressing Protective, Alleviating, and Aggravating factors:

- Community-Based Education (13.71%)
- Maternal and Child Health Clinics (10.14%)
- Early Antenatal Care (9.37%)

Antenatal Care (ANC) and Predisposing Level Factors

For the utilization of ANC or PNC Services, a high percentage (97.40%) of respondents received ANC or PNC services, with knowledge and awareness (82.96%) being the most influential predisposing factors.

Enabling Level Factors

The study revealed the presence of Enabling Factors. A significant portion of respondents (71.20%) reported enabling factors that facilitated access to healthcare, with financial stability (9.88%), health insurance coverage (9.7%), and transportation availability (8.62%) being the most cited enabling factors. These factors positively influenced healthcare-seeking Behaviour in 40.45% of respondents.

Illness Level Factors

Many respondents (68.20%) experienced health issues requiring care during or after pregnancy. These illness-level factors were "moderately influential" (45.16%) or "very influential" (30.21%) in the decision to seek healthcare, underscoring the impact of health complications on healthcare-seeking Behaviour.

Integrated Approaches for Predisposing, Enabling, and Illness Factors

Strategies for addressing Predisposing Factors were increasing access to prenatal education programs (25.91%), and community outreach to promote early antenatal are (24.12%).

The participants acknowledged the following strategies to address Enabling Factors:

- Enhancement of Transportation Options (24.6%)
- Expanding Access to Affordable Maternal Healthcare Services (24.21%)
- Establishing Community-Based Support for Pregnant Women and Newborn Mothers (22.76%).

The following strategies were reported by participants to address Illness Factors:

- Strengthening Maternal and Child Health Surveillance Systems (27.55%)
- Improving Access to Prenatal Screening and Diagnostic Services (23.08%)
- Increasing Availability of Skilled Birth Attendants and Emergency Obstetric Care Facilities (21.69%).

DISCUSSION

Participant Demographics

This study provides valuable insights into the characteristics of the study population and their influence on healthcare-seeking Behaviour. A significant portion of participants (74.80%) sought services from Bo Government Hospital, an urban facility, highlighting the preference for urban healthcare settings. This aligns with studies that indicate urban facilities are favored due to better accessibility, infrastructure, and resources [10,11,13]. The finding suggests that rural areas require infrastructural and quality improvements to balance healthcare access.

The mean age of pregnant women was 25 years (SD = 4.74), with newborn mothers slightly younger at 24 years (SD = 4.74). These ages reflect early childbearing trends prevalent in Sub-Saharan Africa [14]. The sex ratio of newborns, with 50.97% female and 49.03% male, mirrors the natural distribution and indicates a representative sample [10].

Education levels also play a crucial role, with 53.60% having secondary education, 28.40% primary, and 8.00% tertiary education. Education strongly correlates with health literacy and the likelihood of seeking healthcare services [15]. However, 10% had no formal education, highlighting disparities that may restrict healthcare access for this subset.

Marital status showed nearly half (46.60%) of participants were married, while 31.60% were single. Marriage often provides emotional and financial support, facilitating better healthcare

access [16]. Conversely, single women may face more significant barriers due to limited resources or support networks.

Socio-economic factors were evident, with a mean household size of 5.30 and a mean monthly income of 335.03 NLE, indicating financial constraints. The skewed income distribution suggests that poverty is a barrier to healthcare, especially for frequent antenatal visits or facility-based deliveries [11]. On average, women had 2 pregnancies, and multiparous women were more familiar with the healthcare system, increasing their likelihood of seeking care [17].

Health-Seeking Behaviour During Pregnancy and After Childbirth

The findings reveal a 100% antenatal care (ANC) utilization rate, demonstrating the effectiveness of maternal health outreach programs in Bo District. Public healthcare facilities were the most utilized (71%), followed by community health centers (24%) and private facilities (4.6%). The preference for public facilities reflects their affordability, though the low use of private facilities suggests cost is a limiting factor [18].

Most participants (44.4%) attended 3–4 ANC visits, while 41.2% attended five or more, meeting the World Health Organization (WHO) recommendations of at least four visits [12]. This high adherence underscores the success of health education campaigns in raising awareness about the importance of regular ANC visits.

Facility-based deliveries were reported at 99.03%, a positive outcome linked to policies promoting skilled birth attendance and emergency obstetric care. However, the 0.97% who delivered at home highlight persistent barriers in remote or rural areas where healthcare access is limited [19].

Influence of Protective, Alleviating, and Aggravating Factors

Protective factors, such as health education, significantly influenced healthcare-seeking Behaviour, with 97.20% of participants reporting awareness of preventive measures. Educational interventions emerged as key motivators, with 43.80% finding this information "moderately influential" and 38.80% finding it "very influential." These findings align with global evidence that health education enhances maternal healthcare utilization [20,21].

Alleviating factors, including improved healthcare access (20.29%), education (17.14%), and reduced financial barriers (15.1%), were pivotal in promoting healthcare-seeking. Accessibility to healthcare facilities was rated "very influential" by 35.60% of respondents, with affordability cited as a key enabler [22]. The findings underscore the importance of reducing logistical and financial constraints to improve utilization, particularly in rural areas.

Aggravating factors, such as awareness of risks and complications, were reported by 95.20% of participants, with 41.40% finding this information "very influential." Risk awareness motivates early and frequent care-seeking, particularly in emergencies [23,24]. However, financial and logistical barriers may prevent women from acting on this knowledge, necessitating integrated approaches that combine risk communication with accessible and affordable services.

Comparison with Existing Literature

These findings are consistent with research from Sub-Saharan Africa, which identifies education, access, and affordability as key determinants of maternal healthcare utilization [11,25]. Educational

campaigns in low-income settings have significantly improved ANC attendance and facility-based deliveries [23,26]. The high facility-based delivery rate observed in this study aligns with other countries in the region that have implemented successful maternal health outreach programs [26].

However, this study adds nuance by highlighting the role of aggravating factors, particularly risk awareness. While previous studies emphasize the importance of risk communication, this research shows that awareness alone cannot overcome financial and logistical barriers [28,29].

CONCLUSION

This study demonstrates the significant influence of **protective, alleviating, and aggravating factors** on healthcare-seeking Behaviours among pregnant women and newborn mothers in Bo District, Sierra Leone. **Protective factors** like awareness of preventive measures (97.2%) strongly contributed to positive healthcare-seeking, as evidenced by high antenatal care (ANC) utilization (100%) and facility-based delivery rates (99.03%). **Alleviating factors**, such as improved access to healthcare facilities (20.29%) and financial support (15.1%), played critical roles in facilitating healthcare access. On the other hand, **aggravating factors**, particularly risk awareness, negatively affected care-seeking, suggesting that fear of complications and other barriers hinder timely healthcare utilization. These findings highlight the need for **multi-stakeholder interventions** to address protective and aggravating factors to improve maternal and newborn health outcomes.

RECOMMENDATIONS WITH STAKEHOLDER RESPONSIBILITIES

1. **Enhance Health Education Campaigns:**
   - **Local Community and Local Leaders:** Organize community gatherings and initiatives to raise awareness about the importance of antenatal care (ANC) and facility-based deliveries.
   - **Healthcare Providers and Health Facilities:** Deliver consistent health education during ANC visits, focusing on preventive measures and available services.
   - **District Health Authority:** Implement community outreach programs targeting remote and underserved areas to improve maternal health education.
   - **Ministry of Health & National Government:** Launch nationwide media campaigns and public health messaging to promote healthcare-seeking Behaviours.
2. **Improve Healthcare Accessibility:**
   - **Local Community and Local Leaders:** Advocate for improved road infrastructure and transport services to connect remote areas to health facilities.
   - **District Health Authority:** Establish additional health posts and mobile health services in underserved areas.
   - **Ministry of Health and National Government:** Invest in rural healthcare infrastructure development to reduce geographic disparities in service delivery.
3. **Alleviate Financial Barriers:**
   - **Local Leaders:** Facilitate the formation of community savings groups or microfinance initiatives to support women in accessing maternal healthcare.
   - **District Health Authority:** Collaborate with local stakeholders to develop community-based health insurance schemes and financial support mechanisms.
   - **Ministry of Health:** Introduce or expand subsidies and voucher programs

for maternal health services to reduce out-of-pocket expenses for low-income households.

- **National Government:** Support comprehensive national health insurance programs and allocate sufficient budgetary resources to make maternal healthcare affordable.

4. **Strengthen Risk Communication:**
   - **Healthcare Providers:** Train providers to communicate clearly and empathetically about pregnancy risks and complications to empower women.
   - **Training Institutions:** Incorporate effective risk communication into healthcare training curricula to equip future providers with these skills.
   - **District Health Authority:** Design district-level strategies and outreach programs to address fears related to pregnancy complications and promote healthcare options.
   - **Ministry of Health:** Establish national guidelines and ensure providers are trained in effective risk communication techniques.
5. **Address Cultural Barriers:**
   - **Local Leaders:** Work with traditional leaders and cultural influencers to address harmful beliefs and practices while respecting cultural norms.
   - **Healthcare Providers:** Collaborate with traditional birth attendants (TBAs) and community health workers to integrate traditional practices with modern maternal healthcare.
   - **District Health Authority:** Develop culturally sensitive maternal health programs that involve traditional healers and community leaders.
   - **Ministry of Health:** Create a national framework to integrate traditional practices with modern healthcare, ensuring that cultural beliefs are respected while prioritizing maternal health outcomes.

REFERENCES

1. UNICEF. Maternal, Neonatal, Child and Adolescent Health. UNICEF Sierra Leone. Available from: https://www.unicef.org/sierraleone/maternal-neonatal-child-and-adolescent-health
2. World Health Organization. Sierra Leone's determination to stem maternal and child mortality. WHO Regional Office for Africa. 2023 Sep 5 [cited 2024 Nov 2]. Available from: https://www.afro.who.int/countries/ sierra-leone/news/sierra-leones-determination-stem-maternal-and-child-mortality
3. Shafiq Y, Caviglia M, Juheh Bah Z, Tognon F, Orsi M, K Kamara A, *et al.* Causes of maternal deaths in Sierra Leone from 2016 to 2019: analysis of districts' maternal death surveillance and response data. BMJ Open. 2024 Jan 12;14(1):e076256. doi: 10.1136/bmjopen-2023-076256. PMID: 38216175; PMCID: PMC10806740.
4. Tsawe M, Susuman AS. Inequalities in maternal healthcare use in Sierra Leone: Evidence from the 2008-2019 Demographic and Health Surveys. PLoS One. 2022 Oct 13;17(10):e0276102. doi: 10.1371/journal.pone.0276102. PMID: 36228021; PMCID: PMC9560049.Xx
5. Treacy L, Bolkan HA, Sagbakken M. Distance, accessibility and costs. Decision-making during childbirth in rural Sierra Leone: A qualitative study. PLoS One. 2018 Feb 20;13(2):e0188280. doi: 10.1371/journal.pone.0188280. Erratum in: PLoS One. 2018 Apr 23;13(4):e0196523. doi: 10.1371/journal.pone.0196523. PMID: 29462152; PMCID: PMC5819763.
6. Lokuge K, Caleo G, Greig J, Duncombe J,

McWilliam N, Squire J, et al. Maternal health after Ebola: unmet needs and barriers to healthcare in rural Sierra Leone. Bull World Health Organ. 2016;94(12):870-874.

7. Toe SY, Higuchi M, Htay SS, Hamajima N. Health care seeking behaviors regarding maternal care and the associated factors among married women in Naung Cho Township, Myanmar. Nagoya J Med Sci. 2021 Nov;83(4):727-740. doi: 10.18999/ nagjms.83.4.727. PMID: 34916717; PMCID: PMC8648524.
8. Liu, G., Xue, Y., Qian, Z. *et al.* Healthcare-seeking behavior among pregnant women in the Chinese hierarchical medical system: a cross-sectional study. *Int J Equity Health* 18, 129 (2019). https://doi.org/10.1186/ s12939 -019-1037-8
9. Kifle, D., Azale, T., Gelaw, Y.A. *et al.* Maternal health care service seeking behaviors and associated factors among women in rural Haramaya District, Eastern Ethiopia: a triangulated community-based cross-sectional study. *Reprod Health* 14, 6 (2017). https://doi.org/10.1186/s12978-016-0270-5
10. Long Y, Chen Q, Larsson H, Rzhetsky A. Observable variations in human sex ratio at birth. PLoS Comput Biol. 2021 Dec 2;17(12):e1009586. doi: 10.1371/ journal. pcbi.1009586. PMID: 34855745; PMCID: PMC8638995.
11. Kruk ME, Gage AD, Arsenault C, Jordan K, Leslie HH, Roder-DeWan S, et al. High-quality health systems in the Sustainable Development Goals era: Time for a revolution. Lancet Glob Health. 2018;6(11) –1252. https://doi.org/10.1016/S2214-109X(18)30313-1
12. World Health Organization. Accelerate progress towards reducing maternal, newborn and child mortality in order to achieve Sustainable Development Goal targets 3.1 and 3.2. Geneva: World Health Organization; 2024. Report No.: EB154/CONF./4. Available from: https:// apps.who.int/gb/ebwha/pdf_files/EB154/ B154_CONF4-en.pdf
13. Clarke-Deelder E, Afriyie DO, Nseluke M, Masiye F, Fink G. Health care seeking in modern urban LMIC settings: evidence from Lusaka, Zambia. BMC Public Health. 2022 Jun 16;22(1):1205. doi: 10.1186/s12889-022-13549-3. PMID: 35710372; PMCID: PMC9202228.
14. Fall CH, Sachdev HS, Osmond C, Restrepo-Mendez MC, Victora C, Martorell R, *et al.* COHORTS investigators. Association between maternal age at childbirth and child and adult outcomes in the offspring: a prospective study in five low-income and middle-income countries (COHORTS collaboration). Lancet Glob Health. 2015 Jul;3(7):e366-77. doi: 10.1016/S2214-109X(15)00038-8. Epub 2015 May 18. PMID: 25999096; PMCID: PMC4547329.
15. Raru TB, Ayana GM, Zakaria HF, Merga BT. Association of Higher Educational Attainment on Antenatal Care Utilization Among Pregnant Women in East Africa Using Demographic and Health Surveys (DHS) from 2010 to 2018: A Multilevel Analysis. Int J Womens Health. 2022 Feb 1;14:67-77. doi: 10.2147/IJWH.S350510. PMID: 35140524; PMCID: PMC8819274.
16. Pandey KR, Yang F, Cagney KA, Smieliauskas F, Meltzer DO, Ruhnke GW. The impact of marital status on health care utilization among Medicare beneficiaries. Medicine (Baltimore). 2019 Mar;98 (12):e14871. doi: 10.1097/MD. 000000000 0014871. PMID: 30896632; PMCID: PMC6709281.
17. McPherson RA, Khadka N, Moore JM, et al. Quality of care in maternal and newborn health: A strategy for identifying "routine

care signal functions" for monitoring the success of health system strengthening interventions in low-income settings. BMC Pregnancy Childbirth. 2019;19(1):18. https://doi.org/10.1186/s12884-019-2196-3

18. Stellenberg EL. Accessibility, affordability and use of health services in an urban area in South Africa. Curationis. 2015 Mar 10;38(1):102. doi: 10.4102/ curationis.v38i1.102. PMID: 26016516; PMCID: PMC6091258.
19. Dhakal P MS, Shrestha M MS, Baral D MS, Pathak S MD. Factors Affecting the Place of Delivery among Mothers Residing in Jhorahat VDC, Morang, Nepal. Int J Community Based Nurs Midwifery. 2018 Jan;6(1):2-11. PMID: 29344531; PMCID: PMC5747568.
20. Weitzman A. The effects of women's education on maternal health: Evidence from Peru. Soc Sci Med. 2017 May;180:1-9. doi: 10.1016/j.socscimed.2017.03.004. Epub 2017 Mar 6. PMID: 28301806; PMCID: PMC5423409.
21. Wang H, Frasco E, Takesue R, Tang K. Maternal education level and maternal healthcare utilization in the Democratic Republic of the Congo: an analysis of the multiple indicator cluster survey 2017/18. BMC Health Serv Res. 2021 Aug 21;21(1):850. doi: 10.1186/s12913-021-06854-x. PMID: 34419033; PMCID: PMC8380349.
22. Nurani H, Akbar IZ, Shadiqi MA. Influencing healthcare utilization: exploring the interplay of education, attitudes, and distance in access to health services. River Studies. 2023;1(2):82-92. doi:10.61848/rst.v1i2.7.
23. Crofts JF, Ellis D, Draycott TJ, Winter C, Hunt LP, Akande VA. Change in knowledge of midwives and obstetricians following obstetric emergency training: a randomised controlled trial of local hospital, simulation centre and teamwork training. BJOG. 2007 Dec;114(12):1534-41. doi: 10.1111/j.1471-0528.2007.01493.x.
24. Institute of Medicine (US) Committee on Improving Birth Outcomes; Bale JR, Stoll BJ, Lucas AO, editors. Improving Birth Outcomes: Meeting the Challenge in the Developing World. Washington (DC): National Academies Press (US); 2003. 2, Reducing Maternal Mortality and Morbidity. Available from: https://www.ncbi.nlm.nih.gov/books/NBK222105/
25. Bain, L.E., Aboagye, R.G., Dowou, R.K. *et al.* Prevalence and determinants of maternal healthcare utilisation among young women in sub-Saharan Africa: cross-sectional analyses of demographic and health survey data. *BMC Public Health* 22, 647 (2022). https://doi.org/10.1186/s12889-022-13037-8
26. Lateef MA, Kuupiel D, Mchunu GG, Pillay JD. Utilization of Antenatal Care and Skilled Birth Delivery Services in Sub-Saharan Africa: A Systematic Scoping Review. Int J Environ Res Public Health. 2024 Apr 3;21(4):440. doi: 10.3390/ijerph21040440. PMID: 38673351; PMCID: PMC11050659.
27. Fong RM, Kaiser JL, Ngoma T, Vian T, Bwalya M, Sakanga VR, *et al.* Barriers and facilitators to facility-based delivery in rural Zambia: a qualitative study of women's perceptions after implementation of an improved maternity waiting homes intervention. BMJ Open. 2022 Jul 25;12(7):e058512. doi: 10.1136/bmjopen-2021-058512. PMID: 35879007; PMCID: PMC9328096.
28. Communicating risk in public health emergencies: A WHO guideline for emergency risk communication (ERC) policy and practice [Internet]. Geneva: World Health Organization; 2017. 7, Recommendations. Available from: https://www.ncbi.n

lm.nih.gov/books/NBK540733/
29. Heydari ST, Zarei L, Sadati AK, Moradi N, Akbari M, Mehralian G, Lankarani KB. The effect of risk communication on preventive and protective Behaviours during the COVID-19 outbreak: mediating role of risk perception. BMC Public Health. 2021 Jan 6;21(1):54. doi: 10.1186/s12889-020-10125-5. PMID: 33407302; PMCID: PMC7787415.

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