CARL PUBLIC HEALTH

Reducing Maternal Death Among Women through First Delay Maternal Education in Koinadugu District of Serra Leone

Abstract

Maternal mortality (MM) is a significant public health issue, particularly in regions with limited resources and underdeveloped healthcare systems such as many districts in Sierra Leon. With specific focus on Koinadugu district, the review examined the public health intervention of reducing MM among women of childbearing population (18-49years) through first delay maternal education (FDME). Report have indicated inadequate understanding of "danger signal" as a factor for delay I; therefore, the review considered various procedure to enhanced knowledge and practices of overcoming delay I based on FDME. The review provided an overview of the background and rationale for the public health issue of interest while demonstrating various approaches to the intervention including the leadership role.
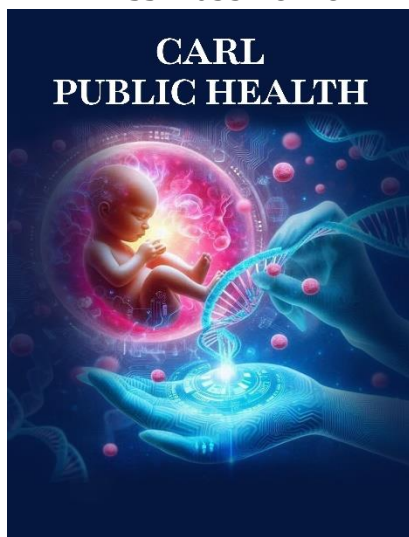
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Introduction

Maternal Mortality (MM) is a critical public health issue, especially among the world's Low-Medium Income Countries (LMICs) (Okonji et al., 2023). Due to this concern, the third Sustainable Development Goal (SDG 3.1) is targeted at reducing MM and MM-ratio (MMR) to 70 deaths in every 100,000 live births by 2030 (United Nations [UN], 2015). Considering LMICs such as Sierra Leone (SL), which is still fazed by the burden of MM even though an incredible job has been done over the years to reduce the MMR of the country by fifty percent from 2000 to 2017 and another fifty percent from 2017 to 2020 (Sonnie et al., 2023); however, the country and many of its district including Koinadugu remains among the top three MMR globally (Carshon-Marsh et al., 2022; Sonnie et al., 2023). The review proposes a public health change event towards reducing MM among women of the childbearing population (18-49 years) in Koinadugu district of SL through improved maternal health education for the targeted population and midwifery. According to Maternal Death Surveillance and Response (MDSR, 2016) and Elton et al. (2016), the high MM in the country is due to delays which have been tagged based on the "Three Delay Model", which are delays in decision-making to seek healthcare, delaying in reaching healthcare facility and delay in receiving adequate healthcare. The MDSR (2016) report attributed inadequate understanding of "danger signal" as a factor for delay I while challenges associated with reaching health facilities (such as poor

road network) and unskilled birth attendants as the factors for delay II and III, respectively. Elton et al. (2016) pointed out that waiting for severe symptoms, collective decision-making and delayed referrals by healthcare workers are the barriers associated with delay I.

Considering the need towards the reduction of MD in the district and the country at large, a series of policies and interventions focused on enhancing maternal and child health services (MCHS), such as the 2010 Free Healthcare Initiative (FHCI) and RMNCAH Strategy (2017-2020) (Elston et al., 2016; Sserwanja et al., 2022). However, the outcome has not been entirely successful, considering the country still has the third worst MMR globally (UNFPA, 2013; SLMHS, 2017), and it has been attributed to delays based on the "Three Delay Model" (Elston et al., 2016; Sserwanja et al., 2022). The review assesses the evidence-based towards reducing maternal mortality through enhanced knowledge and practices of overcoming delay-I based on *First Delay Maternal Education (FDME)* among women of childbearing population (18-49 years) in Koinadugu District of Serra Leone.

Maternal Death Challenges in Serra Leone

Maternal mortality is a significant public health issue, particularly in regions with limited resources and underdeveloped healthcare systems (Kamara et al., 2023). According to available data, it was reported in 2017 that about 810 women lost their lives due to preventable factors related to pregnancy and childbirth (Kamara et al., 2023). Notably, most maternal mortality, namely 94%, transpired in settings characterised by limited access to resources (Okonji et al., 2023). The term "maternal death" refers to the demise of a woman during pregnancy or within 42 days after the termination of pregnancy, regardless of the duration and location of the pregnancy (Kamara et al., 2023). This unfortunate event is attributed to causes directly linked to or exacerbated by the pregnancy or its medical care, excluding accidental or incidental factors (Elmusharaf et al., 2015). Maternal mortality is a reliable metric for assessing the extent to which health services are utilised. It highlights the limited scope of our understanding of the extent of pregnancy-related disorders, near-miss incidents, and other potentially severe effects that may arise postpartum. Additionally, it emphasises the long-term psychological, social, and economic implications associated with these circumstances (Elmusharaf et al., 2015).

With a projected population of 8,100,318 as of 2020 and twenty-two percent of the population being women of childbearing age (Kamara et al., 2023), SL still fazed with an extremely high MMR at 510 death per 100,000 livebirths and remains third highest globally (Sonnie et al., 2023). The country has five administrative regions with 16 districts; the health infrastructure is categorised into tertiary healthcare facilities, secondary (at the district level) facilities and peripheral health units (at the community level). SL has recorded encouraging progress in reducing MM, with the MMR dropping from 2480 maternal deaths (MD) per 100,000 live births in 2000 to 1,120 per 100,000 live births in 2017, representing a 55% reduction between 2000 to 2017 (World Health Organization [WHO], 2019; Kamara et al., 2023) and another fifty percent reduction between 2017 and 2020 (Sonnie et al., 2023). Sadly, MDs account for thirty-six percent of all deaths of women aged 15-49 years in SL (SL Demographic and Health Survey, 2020; Kamara et al., 2023).

According to available data through MDSR and National Disease Surveillance Program (NDSP), as reported by Kamara et al. (2023), Koinadugu district had the highest MMR in 2020 at 350 per 100,000 live births and one of the highest among the districts; hence, the basis for the district selection for the change event. Considering where most deaths occurred, the report of MDSR indicated that most MM occurred at a healthcare facility (81.8%), while 14.1% and 4.2% of the MM occurred at the community level and transit, respectively (SL Ministry of Health and Sanitation, 2021). Furthermore, the report noted that the MM at the healthcare facility level is contributed by delay I, that is, delays in referrals from lower-level healthcare facilities, among other factors. Similarly, the report of Kamara et al. (2023) based on MDSR and NDSP data indicated that for MD that was recorded along with their contributing factors (1053, 47% of the total MD), 33% (346 out of 1053) was due to delay in referral by health facility while 16% (172 out of 1053) was due to delay in seeking healthcare by the patient. According to Elmusharaf et al. (2015), inadequate understanding of the significance of seeking healthcare during labour is commonly noticed to negatively influence health behaviour and decision-making processes, while the decision to seek healthcare is founded and interconnected with social and economic attributes, particularly for rural areas childbearing women (Yar'zever, 2013). Reducing the MD/MM remains a global concern, as indicated by SDG 3, and such is critical for SL and its districts, including Koinadugu, considering their high MMR. The high MMR still raise doubt about the country meeting SDG 3 and such doubt is connected to the quality of the overall maternal

healthcare system and its associated factors, particularly towards reducing MMR.

Intervention: Maternal Readiness and Complication Alertness

Several interventions have been implemented to reduce MD/MM based on different focuses, actions and actors; however, irrespective of the kind of the change events, according to Forero et al. (2016), change events could be community-based, structural-change based, medical fee and pharmacologic intervention. Regarding the present change event for Koinadugu district, a community-based change event has been adopted by providing *FDME* (Serbanescu et al., 2019) for women of childbearing population (18-49 years) and midwifery within the district's rural setting. According to Orjingare and Morgan (2020), a community-based intervention is a deliberate action to promote changes that can be expressed differently based on the community's demands. The country still has the third worst MMR globally (UNFPA, 2013; SLMHS, 2017), and it has been attributed to delays based on the "Three Delay Model" (Elston et al., 2016; Sserwanja et al., 2022); therefore, the focus of the intervention is to provide understanding regarding maternal readiness and complication alertness. The selected intervention is evidence-based and has been adopted in a similar community setting and recommended by WHO for MH promotion (WHO, 2015; Serbanescu et al., 2017; Serbanescu et al., 2019; Lee et al., 2019; Ngoma-Hazemba et al., 2019).

The intervention is considered appropriate for reducing MD in the district because it provides the basis for overcoming other delays (II and III), considering that the government of SL, through various supporting organisation, are making provision for structural-based intervention that will ensure the provision of adequate MCHS; hence, community-based change event towards reducing the delay of not seeking (or early referral) MCHS early enough is appropriate.

Literature suggests that good leadership and its positive impact on the target population play a crucial role in the success of interventions related to MCHS (Murphy et al., 2022; Labrague, 2023). In a community setting, the primary determinant of initial delay is the impact of social and cultural influences (Serbanecu et al., 2019; Ngoma-Hazemba et al., 2019). A significant obstacle that may impede the progress of change events is the need to address the influence exerted by traditional or spiritual healers, which hinders timely healthcare-seeking behaviour and utilisation of healthcare facilities. Several studies (Ariyo et al., 2017; Marabele et al., 2020; Omer et

al., 2021) have identified a cultural inclination in LMICs that discourages the utilisation of healthcare facilities and leads to delays in obtaining maternal care. Emily et al. (2013) posited that culture increases the probability of MM through directly dangerous behaviour, lack of action, engaged kind of care and social status. The FDME intervention according to WHO (2015), is designed to ensure cultural factors are addressed, and leadership role is enhanced to ensure that every community member is adequately carried along. The success of the intervention can be evaluated based on the increase in women's confidence and trust in healthcare providers, as well as their perception of the quality of health services. This can be demonstrated by their willingness to revisit healthcare facilities with their children for general maternal and child health services and future births.

Serbanecu et al. (2019) reported a significant increase in the rate of institutional deliveries from 45.5% in 2012 to 66.8% in 2016. This improvement was attributed to the implementation of community-led communication and education strategies to enhance maternal safety and raise awareness about the availability of enhanced delivery services in healthcare facilities. Lee et al. (2019) reported a significant rise of 2.280 times in the utilisation of 4+ antenatal care (ANC) following the implementation of community-based maternal and child health (MCH) interventions. A majority of the participants in the intervention group received four or more ANC visits, and previous research has demonstrated the efficacy of ANC in reducing MMR (Lee et al., 2019).

Conclusion

Several evidence-based strategies have successfully addressed the second and third delay, contingent upon the effectiveness of the first delay intervention. Implementing such intervention is founded upon efficient and community-oriented FDME, further bolstered by socio-cultural empowerment. The strategies employed to tackle the initial delay were based on the premise that community involvement and empowerment are essential for achieving higher utilisation of maternal and new born healthcare and improved health outcomes. The effort placed significant emphasis on allocating resources to facilitate community engagement, enhance birth preparedness, educate communities regarding the advantages of facility delivery, augment the availability and demand for recently expanded facility resources, and mitigate obstacles to obtaining healthcare services.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Credit Authorship Contribution Statement

All authors contributed equally.

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