Maternal Mortality in Cameroon: A Critical Review of its Determinants

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Abstract

Background: Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. Cameroon is among the countries with the highest maternal mortality level at 782 maternal deaths per 100,000 live births in sub-Saharan Africa (SSA), representing an enormous burden for the country and its people. Furthermore, it has been reported that, each day in Cameroon, there are 12-13 cases of maternal mortality. The aim of this review was to assess the critical determinants of maternal mortality in Cameroon so as to facilitate informed decision making in regards to interventions on maternal health.

Methods: A search on PubMed, ScienceDirect, Cochrane Library, African Journals Online, MEDLINE, Scopus and Google Scholar with the following key words: “Determinants”, “Maternal mortality”, “factors”, “maternal health”, “Assessing” and combined with “Cameroon” was conducted with the use of a combination of Medical Subject Heading (MeSH) and free text terms searched through these databases. Studies to assess the determinants of maternal mortality in Cameroon as the primary outcome variable, were included. Our search was limited to, articles published from the year 2007 to 2019 (A 12 years review) in English and French. The search identified a total of 85 articles amongst which only 7 articles met the inclusion criteria.

Results: Maternal age, parity, post-partum haemorrhage, unsafe abortion, domestic violence, hypertensive disorders of pregnancy, severe malaria, HIV/AIDS, inadequate antenatal care, pre-existing co-morbidities, place of delivery, education level, healthcare provider qualification, delays in arrival at health facilities, ectopic pregnancy, placenta praevia, anemia, pneumonia, heart disease, number of prenatal visits <4, unemployment, socioeconomic status, no antenatal care, having been referred, past preterm deliveries, grand multiparity and distance to health facilities were identified as critical determinants of maternal mortality in Cameroon.

Conclusion: This critical review has established that, literature assessing determinants of maternal mortality in Cameroon is sparse. The rising level of maternal deaths points to a growing problem for maternal health in Cameroon. If this persists, Cameroon may miss its goal of reducing maternal mortality. Addressing inequalities in access to and quality of reproductive and maternal health care services; ensuring universal health coverage for comprehensive maternal health care will contribute in the global Strategy and goal of Ending Preventable Maternal Mortality.

Keywords: Maternal Health; Mortality; Determinants; Cameroon

Introduction

According to the World Health Organization (WHO), Maternal mortality referred to the death of a woman during
pregnancy, delivery, or within 42 days of childbirth, accounts for about 830 deaths everyday worldwide [1]. This clearly indicates that, maternal mortality is unacceptably high. Maternal mortality claims the lives of many women in Sub-Saharan Africa (SSA), often from factors that could have been prevented, in resource limited settings characterized by weak health systems. It is worthy of note that, in 2015, roughly 303 000 women died during and following pregnancy and childbirth. Almost all of these deaths occurred in low-resource settings, and most could have been prevented. It has been reported that, in sub-Saharan Africa, a number of countries halved their levels of maternal mortality since 1990. In other regions, including Asia and North Africa, even greater headway was made. Between 1990 and 2015, the global maternal mortality ratio (the number of maternal deaths per 100 000 live births) declined by only 2.3% per year. However, increased rates of accelerated decline in maternal mortality were observed from 2000 onwards [2].

In Cameroon, despite a global decline (by 44%) in maternal mortality rates reported, like many other sub-Saharan African countries, there is a high burden of maternal mortality. Cameroon has seen a rise in maternal mortality with 782 deaths /100,000 live births occurring in 2011 [3]. Furthermore, it has been reported that, each day in Cameroon, there are 12-13 cases of maternal mortality [4]. This shows that, Cameroon is among the countries with the highest maternal mortality level (3) in SSA, representing an enormous burden for the health system and the population. It should be noted that accurately quantifying maternal mortality is problematic in Cameroon due to underreporting or misclassifications of maternal deaths in vital registries in the country. Equally, maternal mortality is under-reported in Cameroon due to inadequate registry data limiting the country’s capacity to assess maternal mortality at the regional and national levels [5] Cameroon therefore relies on population-based data from surveys to measure maternal death. However, reducing maternal mortality is imperative for Cameroon even though there is a difficulty in identifying maternal death, arising from the need to ascertain a woman’s reproductive age, pregnancy status around death, and the cause of death [6] before a death can be classified in this manner.

On 13th March 2016 Cameroon was shaken by the death of a pregnant woman with twins who died in front of the Laquintinie Hospital in Douala[7]. Several hundreds of people subsequently gathered to protest against the hospital's employees, who they accused of neglect. This is just one of a few stories that are told because of evidence among the many untold stories of maternal mortality in Cameroon. Maternal mortality has gained renewed focus with the Sustainable Development Goal (SDG) 3, which seeks to further reduce maternal deaths to less than 70 per 100,000 live births by 2030. Still, maternal mortality remains a major burden for developing countries, particularly in SSA and South Asia, where 99% of all maternal deaths occur [8]. To date, no known study has explored the review of critical determinants of maternal mortality within Cameroon to identify determining factors in the country. This study which is a review therefore aimed to assess the determining factors of maternal mortality in Cameroon. Findings from this study may provide new insights about maternal mortality in Cameroon, enhance informed decision making among women of reproductive age and guide interventions as well as prevention strategies with implications for national and sub-regional policies.

Methods

The research design that was applied to this study was a review of the available evidence on the determinants of maternal mortality in Cameroon. A review permitted us to conduct an exhaustive search for primary studies with our focus on the research question, selecting studies using clear and reproducible eligibility criteria, critically appraising study quality and completing a synthesis of our findings according to pre-determined methods.

Our expectation was to combine data of all studies on the determinants of maternal mortality in Cameroon.

We also anticipated that by studying similar outcomes across a wide variety of contexts and settings, we would be able to assess the rigor of available evidence on the determinants of maternal mortality in Cameroon, and the transferability of the results within and between SSA.

Additionally, considering that reviews are considered among the best source of evidence, our study is also intended to provide pooled estimates about the impact of maternal mortality in Cameroon, which maybe more reliable than evidence from single studies. This evidence will be critical to inform research, and guide policy makers as they constantly seek innovative solutions on how to significantly contribute in prevention and control of maternal mortality in the Cameroon.

Search Strategy

We initially conducted a scoping search done to identify existing reviews on determinants of maternal mortality in Cameroon, and this permitted us to further highlight relevant search terms and clarify inclusion and exclusion criteria
as well as avoid duplication in efforts. For this review, we searched several electronic databases for published and unpublished articles from 2007 to 2019.

The search identified a total of 85 articles amongst which only 7 research articles met the inclusion criteria. We decided to start our search in 2007 to exhaust a wide range of determinants over the years in Cameroon.

We used the Boolean strategy to search through the following databases;
PubMed, ScienceDirect, Cochrane Library, African Journals Online, MEDLINE, Scopus and Google Scholar. We used a combination of Medical Subject Heading (MeSH) and free text terms to search through these databases using the following key words:
“Determinants”, “Maternal mortality”, “factors”, “maternal health”, “Associative” and combined with “Cameroon”

In order to further extend our evidence base, and minimize publication bias due to selective availability of papers, we decided to search for grey literature (conference abstracts, research reports, book chapters and policy documents). Finally, we manually combed through bibliographies and performed hand searching of key journals on the topic. The most recent comprehensive search for each database was June 1st 2019, and all relevant studies were exported to Zotero bibliographic software.

**Eligibility Criteria**

According to our study design and the research topic, we established predefined criteria for study retention in the review as follows;

**Study Content:** All published research articles focusing on determinants of maternal mortality in Cameroon.

**Timeframe:** Papers are eligible if published in or after the year 2007 to present (2019).

**Context:** We sought studies carried out in any of the 10 regions of Cameroon which include; North, Far North, Adamawa, South, South West, North West, East, West, Centre and Littoral

**Study design:** Surveys, Prevalence and surveillance studies, Qualitative and cross-sectional studies that assessed the factors associated with maternal mortality.

**Population:** Women of reproductive age

**Setting:** Community and healthcare facilities

**Language:** English and French

**We excluded studies with the following characteristics**

Studies that addressed factors associated with maternal mortality, yet conducted outside Cameroon

**Data screening and extraction**

We first of all removed all duplicate articles that we found from the databases. We then performed an initial screening of the titles and abstracts on the basis of the eligibility criteria stated above in order to validate their selection as part of this review. Next, we performed full text screening of selected studies. All the articles that met our inclusion criteria were retained for data extraction. This was done using an electronic standardized data extraction template that was designed by the team in line with the study objectives, the inclusion criteria, and made up of relevant study components for data analysis. This data extraction template was first pilot tested on a representative sample of articles. The titles, abstract and full text screening as well as data extraction was done independently and in duplicate with disagreements resolved via consensus, or by a tie breaker.

**Data analysis**

The extracted data was uploaded into Excel for analysis. We assessed the papers based on a judgment of their validity and reliability as well as overall relevance to our topic. We collated, summarized and categorized the extracted data in order to perform appropriate analyses.

**Results and Discussion**

After a careful examination, taking into consideration the inclusion and exclusion criteria, only 7 studies were found
eligible for review. The adapted PRISMA flow diagram as shown in Figure 1 presents the inclusion and exclusion process. The full text of the 7 studies included for review were retrieved, and information regarding study design, and critical determinants of maternal mortality were extracted (See Table 1).

![PRISMA flow diagram](image)

**Figure 1:** Adapted PRISMA flow diagram of the included studies on the review of critical determinants of maternal mortality in Cameroon (2007-2019)

<table>
<thead>
<tr>
<th>SN</th>
<th>Title</th>
<th>Year</th>
<th>Study type</th>
<th>Established determinants of maternal mortality in Cameroon</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Determinants of Maternal Mortality in Mezam Division in the North West Region of Cameroon: A Community-based Case Control Study</td>
<td>2016</td>
<td>Retrospective, community-based case-control study</td>
<td>Post-partum haemorrhage, unsafe abortion, and hypertensive disorders of pregnancy, severe malaria, HIV/AIDS, inadequate antenatal care, pre-existing co-morbidities, place of delivery, healthcare provider qualification, and delays in arrival at health facilities</td>
</tr>
<tr>
<td>2</td>
<td>Determinants of Maternal Mortality: A Comparison of Geographic Differences in the Northern and Southern Regions of Cameroon</td>
<td>2017</td>
<td>Cameroon Demographic and Health Surveys</td>
<td>Age, parity, education level, Distance to facility, domestic violence and ethnicity</td>
</tr>
<tr>
<td>3</td>
<td>Adverse Perinatal Outcomes of Adolescent Pregnancies in Cameroon</td>
<td>2007</td>
<td>Cross-sectional study</td>
<td>Maternal age, number of prenatal visits &lt;4, and the state of being unemployed</td>
</tr>
<tr>
<td>4</td>
<td>Use of routinely collected data to assess maternal mortality in seven tertiary maternity centers in Cameroon</td>
<td>2011</td>
<td>Descriptive retrospective study</td>
<td>Age, parity, and socioeconomic status</td>
</tr>
<tr>
<td>5</td>
<td>Attainment of the Fifth Millennium Development Goal: Utopia or Reality Based on Trends in Maternal Mortality in 12 Years in Two Regional Hospitals in Fako Division, Cameroon? A Retrospective Study</td>
<td>2014</td>
<td>Retrospective, analytical cross-sectional study</td>
<td>No antenatal care, age less than 35 years, and unemployment</td>
</tr>
<tr>
<td>6</td>
<td>Outcome of deliveries among adolescent girls at the Yaoundé central hospital</td>
<td>2014</td>
<td>Cross-sectional analysis, Reviewed records of deliveries</td>
<td>Having been referred, past preterm deliveries and grand multiparity</td>
</tr>
<tr>
<td>7</td>
<td>Maternal mortality in Cameroon: a university teaching hospital report</td>
<td>2015</td>
<td>case-control study</td>
<td>Postpartum hemorrhage, unsafe abortion, ectopic pregnancy, hypertension in pregnancy, malaria, anemia, heart disease, and pneumonia and placenta praevia</td>
</tr>
</tbody>
</table>

**Table 1:** Key Determinants of maternal mortality in Cameroon (2007-2019)
In this review, we grouped the determinants into 6 main themes namely: i. women’s characteristics, ii. Reproductive status, iii. Access to health services, iv. Health seeking behaviors, v. health, socio-economic and cultural status, vi. Water, sanitation and hygiene (WASH); see figure 2 that’s shows a framework for the determinants of Maternal mortality in Cameroon. Maternal mortality and morbidity reflect the status of population health and quality of life across nations. Poor understanding of the interplay of many antecedent factors, including sociocultural, economic and logistic factors, combined with an overwhelming poor health services delivery, is a basic challenge in several countries, particularly in rural settings where functional health care services are relatively scarce [9,10]

![Figure 2: A framework for the critical determinants of maternal mortality in Cameroon](image)

**Women’s Characteristics**

**Intimate partner violence (IPV)**

It has been reported that, preventing and reducing violence against women and maternal mortality are sustainable development goals (SDGs). Violence against women is a global public health problem and many women of reproductive age including adolescent girls endure violence usually exerted by their intimate partners [11]. Some studies have reported HIV infection and induced abortions are health outcomes linked with intimate partner violence [12]. During pregnancy, these adverse health outcomes affect the mother–baby dyad and can be augmented by consequent risky health behaviours such as substance abuse, lack of seeking healthcare, smoking, alcohol consumption, poor nutrition, among others[11]. In Cameroon, it has been reported by Alio et al that women who had experienced intimate partner violence were at an increased risk for induced abortion [13]. Intimate partner violence (IPV) remains a global health problem of epidemic proportions, affecting a third of women across the globe and as many as 60% in heavily affected regions of Africa and related with negative health consequences including maternal mortality[14]. Still, limited data on the specific measure of exposure to violence in population studies, challenge the international community’s effort to guide policy development and monitor progress on domestic violence prevention which can influence maternal mortality. Such information will enable the recommendation of effective policies and culturally appropriate strategies to curb intimate partner violence including domestic violence and consequently reduce resulting maternal mortality incidence. Physical and emotional violence often work in tandem causing poor mental and physical health outcomes [15]. Understanding risk factors for violence within the peer or family context is essential for improved violence prevention.
Education

It has been reported that, lower levels of maternal education are associated with higher maternal mortality even amongst women able to access facilities providing intrapartum care [16]. This trend is evident in both developed and developing countries [17], most especially in Africa where female children are removed from school in favor of early marriages [18]. An important consequence of low education is that fewer women are able to identify warning signs that may present during pregnancy [19]. Pre-Eclampsia has taken many lives due to lack of education on warning signs and prevention. Emergency c-sections have equally been delayed due to lack of education on making these informed decisions. It is important to note that, education empowers women with the ability to contribute in matters of their fertility, family planning and marital life [20]

Social autonomy

Autonomy is considered essential for decision-making in a range of health care situations, from health care seeking and utilization to choosing among treatment options. Evidence suggests that women in developing or low-income countries often have limited autonomy and control over their health decisions [21]. Lack of autonomy/decision making among women is strongly correlated with pregnancy outcomes and maternal survival [22]. This is clearly seen in women’s lack of control on their reproductive health, domestic confinements and inequalities in decision making as well as no participation in their health care, in cases where partners and husbands unilaterally make decisions [23]. It has been established that, lack of autonomy plays a pertinent role in maternal health outcomes, predisposing women to frequent births when male children are preferred over female, and at risk of complications due to frequent and poorly spaced pregnancies [24]. This leads to maternal mortality if not prevented

Reproductive Status

Age

Age has been shown to be a strong factor in the death or survival of a pregnant woman [9]. In developing countries like Cameroon, women start childbearing at an earlier age [25] compared to those of the developed world. This is fostered by the legal recognition of marriage involving a girl as young as 15 years of age which encourages the start of childbearing at an early age. The fact that, adolescent pregnancies are prevalent in Cameroon has been established. A study carried out in Kumbo, showed an adolescent pregnancy prevalence of 26% [26]. Also, about 12% of all deliveries in Yaounde, Cameroon were teenage deliveries of girls 16 years and younger [27]. A study by Egbe et al. reported adolescent pregnancies are more likely to lead to adverse fetal and maternal outcomes than adult pregnancies [28]. Also, complications from pregnancies in tertiary level facilities in Cameroon occur mostly among patients younger than 20 years and older than 31 years of age [29].

Parity

It has been shown that, the total number of pregnancies is correlated with maternal death [30].

The influence of parity on maternal mortality is a concern for women in Africa (Cameroon inclusive) where the fertility level is high [31]. High parity, specifically in Cameroon, remains a major public health issue; however, limited studies exist on how parity in Cameroon relates to maternal mortality. Limited reach of family planning especially for rural women, the fear of childlessness, the pressure for large families, and the fear of husbands taking on new wives serve to promote this issue [32]. This makes women bear many children often with poor spacing pre-disposing them to pregnancy related complications, which can cause maternal mortality. Like age, parity affects the outcome of a pregnancy and together, age and parity are the most important risk factors of maternal death [33].

Access to Health Services

Distance to facilities

WHO has reported that, the risk of maternal mortality rises with increasing distance to health facility (1). Physical distance to health facilities can impact maternal health since this serves as a barrier to accessing health care for women and for mothers in particular [34]. This forces women to walk and choose facilities based on proximity, leading to delays in seeking help or preventing women from seeking help at all. Maternal mortality was associated with time (greater than one hour) to get to health facility in Mezam division of the North-West region of Cameroon [35].

Media exposure

In many African countries, with Cameroon inclusive, the media are heavily controlled by the government [36]
which levies heavy sanctions against media corporations and citizens for sharing information deemed controversial or portraying an unflattering image of the government. This situation has directly and indirectly lessened media credibility, particularly state-run media in the country, and hence raises the question of the impact media exposure may have on maternal mortality in Cameroon. Radio and television, however, remain vital for reaching the masses as typical health campaigns have used these options to influence large numbers of people through repeated, low cost drives. Mobile technologies application in health care, also known as mHealth, represent a feasible approach in helping alleviate some of Cameroon’s disease burden and generate improvements in women’s health care outcomes. However, despite the opportunity presented by rapidly expanding mobile technologies in Cameroon, evidence of their impact in improving women’s health outcomes and revolutionizing healthcare solutions is limited. Thus, there is a need for more intervention studies to ascertain the effect of mHealth interventions on health outcomes and health care delivery processes in Cameroon and the Central African region at large [37]. Moreover, it has been established that; exposure to mass media provides increased knowledge, as well as changes in behaviors, awareness, social norms and attitudes that may lead to positive maternal health outcomes. Furthermore, preparations for childbirth made by pregnant women, their families, and communities increases the use of skilled birth attendants and hence reduces maternal morbidity and mortality in sub-saharan Africa and Cameroon at large.

**Healthcare Seeking Behavior**

**Contraception Uptake (family planning)**

It has been established that, an increase in contraceptive prevalence is also associated with reduction in maternal mortality [38,39] In Cameroon, the prevalence of modern contraception has remained under 20%[40] Also, a Contraceptive uptake of 10.7 % among adolescent girls has been reported in Kumbo West Health District of Cameroon [41]. This shows that, the contraceptive uptake is relatively low among the adolescent girls and there is a need to improve access, availability and delivery of family planning services in Cameroon. A study in the Santa Health District of Cameroon, revealed side effects of contraception and husband’s disapproval, to be some of the major deterrents to their use [42]. This results in the pervasive use of illicit abortion services in Cameroon where abortion is illegal, thus risk of woman dying. Thus, low use of contraceptives may be related to maternal mortality in Cameroon.

**Health and family Status**

**Nutrition**

Malnutrition is a major cause of iron deficiency anemia, which increases the risk of maternal mortality. This is because anemic women have less tolerance of blood loss and so have a higher risk of death in the event of hemorrhage at delivery [43]. Anemia is a global public health problem affecting both the developed and developing countries. About 1.62 billion people are affected worldwide, currently pregnant women are the most vulnerable population corresponding to 24.8% [43]. In Cameroon, malnutrition persists in regions like the North in part because of cultural practices that influence diet [44].

**Religion**

Religious beliefs affect women’s health behaviour and choices that influence their maternal health outcomes [36]. Specifically, in Nigeria with many religious bodies, religion influences women’s choice of health provider and type of delivery [45]. Some of the women have reportedly refused necessary caesarian sections because their religious leaders advised against them [46]. Similarly, even though few studies have reported how religion affects the health attitudes of women in Cameroon, it does. The concept of religious fanaticism is fast a becoming a public health issues as it influences decisions that affect the health of women.

There are some religious groups promoting marriage as the only acceptable condition for procreation [46]. In Cameroon, religious reasons were found to prevent the use of family planning by women in the Santa health district, although, the religious leaders were cited as the influential figures who disapproved of the use of contraceptives. Furthermore, in Cameroon, some Catholic health facilities, counsellors offered counselling about all methods of contraception but refrained from offering any modern method, referring clients, who preferred to use contraceptives, to other facilities that may have attended to their needs [42]

**Ethnicity**

It has been reported that, ethnicity influences maternal mortality. Maternal deaths have also been found to be significantly higher in minority ethnic groups [47]. Cameroon’s ethnic diversity provides a rich cultural environment with strong
attachments to norms, traditional beliefs and practices that can influence maternal health outcomes. Cultural practices that can affect maternal health outcomes include but not limited to postpartum abstinence period taboos, and seclusion of unmarried females from unrelated males thereby preventing unwanted pregnancies. Also, the pride from having large families and having male children in Cameroon foster practices such as arranged marriages and early marriages to ensure a young girl can procreate [36].

**Wealth index**

Inequalities in health outcomes based on wealth index, living standards or on social hierarchy (as observed through various measures of socio-economic position) have been identified [48].

Wealth determines economic status and influences outcomes of maternal health and as such, economic status, often assessed through individual assets in developing countries, is closely tied to a woman’s birth outcomes, with poorer and marginalized women having a higher risk of death. This risk is great for Africa with Cameroon inclusive where poverty is pervasive and women tend to be poorer than men [49]. Women in Cameroon indicated that lack of money prevents them from maintaining good health which may adversely affect maternal health outcomes [36].

**Water, sanitation and hygiene (WASH)**

Infections during pregnancy (e.g. hepatitis E) can be waterborne and are associated with a high risk of death. Poor sanitation can lead to hookworm infestation that causes anaemia and may thus increase the risk of maternal death [50]. Water storage may encourage mosquitoes carrying malaria and dengue to breed; both diseases pose high risks to pregnant women.

It is in this light that, poor water quality, poor sanitation and hygiene are risk factors for maternal mortality. Ordinarily, water should pose no risk of harm to any individual but good quality water, a basic human right, is not available to all especially in low and middle income countries. Poor water quality is rampant in many developing countries with poorly maintained sanitation facilities as such, a country like Cameroon, which is enriched with abundant freshwater resources lacks adequate supply of quality water that is severely incapacitated by chronic mismanagement. With a growing Cameroonian population, many communities are underserved because the national water management has not been able to increase the network of improved water. The accelerated population growth in urban centers like Douala, partly due to the internally displaced phenomena because of the Anglophone crisis has led to an increase in contaminated water by waste from poorly built homes as well as overcrowding. This increases the occurrence of infectious diseases [36].

**Discussion**

This critical review has established that, literature assessing determinants of maternal mortality in Cameroon is sparse. Though the determinants of maternal mortality have been established on the global scale, the significant determinants specific for Cameroon have not been extensively researched and documented. In Cameroon, the few studies that exist on assessing determinants of maternal mortality are health facility-based [27,28,51-54] and community-based [35,36]. These facility-based studies highlighted causes (direct and indirect) of maternal death that are consistent with those established for Sub-Saharan Africa (9). The study by Mbassi et al. assessed obstetric complications in seven health centers in the South of Cameroon and found associations between age, parity, and socioeconomic status, and maternal mortality. Age was also significant in a health facility studies in the North [53,54]. Also, the study by Pierre-Marie et al. reported that maternal mortality was significantly associated with no attendance for antenatal care [53]. In the same light, Ekane et al. [51] found associations between maternal mortality and having no antenatal care, age less than 35 years, and unemployment. Fouelifack et al. [52] found that having been referred, past preterm deliveries and grand multiparity increased the odds of maternal mortality in a health facility in Yaoundé. A community based study in Mezam, found no association between maternal mortality and age and parity. Instead, a high prevalence of unsafe abortions, an increased likelihood of home delivery, the use of traditional birth attendants, and taking over one hour to get to a health facility or hospital were found to be significant risk factors for maternal death [35]. Education as well as effective and efficient health system, especially during pregnancy and delivery, are strongly related to maternal death.

**Conclusion**

The rising level of maternal deaths points to a growing problem for maternal health in Cameroon. If this persists, Cameroon may miss its goal of reducing maternal mortality. The questions remains: Why do women die as a result of complications during and following pregnancy and childbirth? Most of the complications develop during pregnancy
and most are preventable or treatable. Other complications may exist before pregnancy but are worsened during pregnancy, especially if not managed as part of the woman’s care. As part of the Global Strategy and goal of Ending Preventable Maternal Mortality, WHO is working with partners towards: addressing inequalities in access to and quality of reproductive, maternal, and newborn health care services; ensuring universal health coverage for comprehensive reproductive, maternal, and newborn health care. Addressing all causes of maternal mortality, reproductive and maternal morbidities, related disabilities; strengthening health systems to collect high quality data in order to respond to the needs and priorities of women and girls; as well as ensuring accountability in order to improve quality of care and equity are eminent in reducing maternal mortality.

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Consent for publication: Not applicable.

Availability of data and material: Not applicable.

Competing interests: The authors declare that they have no competing interests.

Author Contributions: FSW conceived and designed the study. FSW, DEAA, PAN, NT, FLT, LKL, MYL, RBG, FSW, DEAA and EVY contributed in the analysis and interpretation of the data and in writing the original manuscript.

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