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Maternal Health Disparities across Pregnancy Complications, Death Rates, and Causes

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ABSTRACT

This study investigates maternal health outcomes in Dir Lower District, focusing on complications during pregnancy and delivery across three maternity settings: government hospitals, private clinics, and home-based deliveries, from 2023 to March 2025. The aim is to identify and compare the incidence of complications, death rates, age distribution, and the causes of maternal deaths across these different delivery settings. This report presents an analysis of 47 maternal deaths, with 23 cases involving complications during pregnancy and delivery and 24 without. The distribution of deaths by facility type shows 35 deaths in government facilities, 40 in home-based settings, and 36 in private facilities. Causes of death include anemia (19 deaths), ectopic pregnancy (17 deaths), hypertensive disorders (9 deaths), infections (16 deaths), obstetric hemorrhage (6 deaths), obstructed labour (4 deaths), and sepsis (11 deaths). Regionally, 36 deaths occurred in rural areas and 11 in urban areas. The age distribution of deceased women spans from 15 to 50 years, with notable concentrations at ages 15, 23, 44, and 47. These findings provide a comprehensive overview of maternal mortality across various factors including complications, facility type, causes of death, and age distribution.

INTRODUCTION

Maternal health remains a critical global issue, with disparities in outcomes depending on the healthcare setting. Despite advances in maternal healthcare, complications during pregnancy, delivery, and the postpartum period continue to account for a significant number of maternal deaths, particularly in low-resource settings (World Health Organization [WHO], 2020). Maternal mortality remains a global concern, with the United Nations Sustainable Development Goal (SDG) 3 aiming to reduce the global maternal mortality ratio to less than 70 per 100,000 live births by 2030 (United Nations, 2015). However, achieving this goal requires a thorough understanding of the factors influencing maternal outcomes across different healthcare settings, such as government hospitals, private clinics, and home-based deliveries (Cunningham et al., 2020). Government hospitals, often the primary healthcare facilities in many regions, have the necessary infrastructure to manage high-risk pregnancies. However, maternal deaths remain significant in these settings, primarily due to complications like hypertensive disorders, infections, and obstetric hemorrhage (Langer et al., 2020). Private hospitals, though offering specialized care, are often inaccessible to lower-income populations due to high service costs, contributing to disparities in maternal outcomes (Ronsmans et al., 2014). Home-based deliveries, while culturally accepted in many regions, present unique challenges, including limited access to skilled healthcare providers and delays in seeking emergency care (Haws et al., 2007). Maternal health disparities are widely documented, particularly in rural areas, where limited access to quality healthcare, cultural practices, and low literacy levels significantly increase risks during pregnancy and childbirth (Barros et al., 2012). In contrast, although maternal outcomes tend to be better in urban settings, the rising number of private healthcare facilities and the commercialization of maternity care have created complex challenges (Althabe et al., 2006). Despite the growing body of research on maternal health, data comparing maternal health outcomes across different settings within specific districts—such as Dir Lower, where healthcare infrastructure varies significantly—remain scarce (Stekelenburg et al., 2004). This gap underscores the need for district-level studies that explore how facility types influence maternal complications,

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mortality rates, and the causes of maternal mortality (Singh et al., 2018).

Dir Lower, a rural district, faces several socio-economic and healthcare-related challenges, including poor infrastructure, limited access to healthcare, and a shortage of healthcare staff. It is crucial to examine how these factors interact in government, private, and home-based settings to influence maternal outcomes. The present study aims to address this gap by comparing maternal health outcomes across these three settings, with a particular focus on complications, mortality rates, and the causes of death. Complications such as hypertensive disorders, infections, and obstructed labor will be examined, as they contribute significantly to maternal mortality in these settings (Khan et al., 2006). Additionally, the age distribution of maternal deaths and the causes of death by region will be explored to better understand the specific needs of women in these settings (Graham et al., 2016). By comparing these settings, this study will provide valuable insights into the effectiveness of different maternity care models and inform local health policies and interventions aimed at reducing maternal mortality.

METHODOLOGY

This cross-sectional design to examine maternal health outcomes in the Dir Lower district, focusing on complications, mortality rates, and contributing factors across government hospitals, private clinics, and home-based deliveries. Data were collected from maternal health records, patient interviews, and local health agencies over six months, with a particular emphasis on hypertensive disorders, infections, obstructed labor, and sepsis. Maternal deaths were categorized by facility type and age, and the causes of death were analyzed in both rural and urban areas. Descriptive statistics were used to analyze the data, comparing maternal mortality and morbidity across different healthcare settings, and examining the socio-economic factors influencing maternal health. The study also assessed the impact of healthcare access, with a focus on vulnerable age groups such as women under 18 and over 35, who face higher risks during pregnancy. Ethical approval was granted by the local health authority, with all data anonymized to ensure patient privacy. Although the study provides valuable insights, limitations include gaps in data for home-based deliveries and the geographic focus on Dir Lower, limiting the generalizability of the findings to other regions.

RESULST

In the maternal death report, a total of 47 deaths occurred due to complications during pregnancy and delivery, with 23 cases involving complications and 24 without. Regarding complications by facility type, in government facilities, 10 deaths were due to complications, and 25 were without, totaling 35 deaths. In home-based facilities, 12 deaths involved complications, and 28 did not, totaling 40 deaths, while in private facilities, 14 deaths were due to complications, and 22 were not, totaling 36 deaths. In terms of age distribution, the government facility had 35 deaths, home had 40, and private had 36. The causes of death by region show that 19 deaths were due to anemia, 17 from ectopic pregnancy, 9 from hypertensive disorders, 16 from infections, 6 from obstetric hemorrhage, 4 from obstructed labour, and 11 from sepsis, making a total of 47 deaths. The facility type distribution shows that 35 deaths occurred in government facilities, 40 in home-based facilities, and 36 in private facilities. Region-wise, 36 deaths occurred in rural areas, and 11 in urban areas. The age distribution of deceased women included 6 deaths at age 15, 4 at age 20, 5 at age 23, 5 at age 25, 5 at age 33, 4 at age 42, 6 at age 44, 5 at age 45, 6 at age 47, 5 at age 48, and 4 at age 50, totaling 47 deaths.

Table 1

Complications During Pregnancy/Delivery

Complications	Yes	No	Total Death Count
Complications during pregnancy/delivery	23	24	47

Figure 1

Total count of complications during pregnancy/delivery

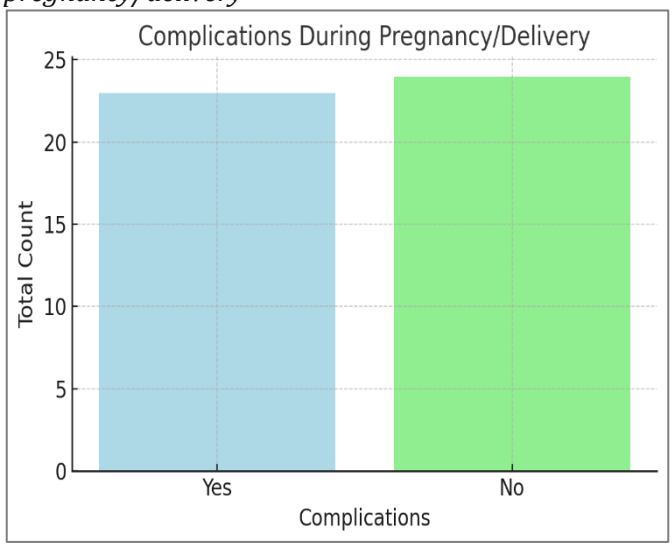

Table 2

Complications by Facility Type

Facility Type	Complications (Yes)	Complications (No)	Total Death Count
Government	10	25	35
Home	12	28	40
Private	14	22	36
Total	36	11	47

Figure 2

Total count of complications during pregnancy/delivery by facility type

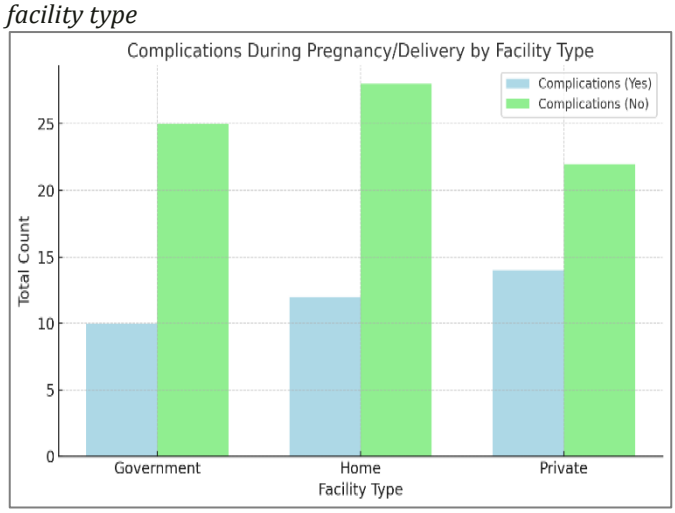

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Table 3

Age Distribution by Facility Type

Facility Type	Age Range	Total Death Count
Government	Varies	35
Home	Varies	40
Private	Varies	36

Table 4

Cause of Death by Region

Cause of Death	Rural Deaths (Adjusted to 36)	Urban Deaths (Adjusted to 11)	Total Death Count
Anaemia	9	10	19
Ectopic Pregnancy	10	7	17
Hypertensive Disorders	4	5	9
Infections	8	8	16
Obstetric Hemorrhage	3	3	6
Obstructed Labour	2	2	4
Sepsis	6	5	11
Total	36	11	47

Table 5

Facility Type Distribution

Facility Type	Death Count
Government	35
Home	40
Private	36

Table 6

Region-Wise Distribution of Deaths

Region	Death Count
Rural	36
Urban	11
Total	47

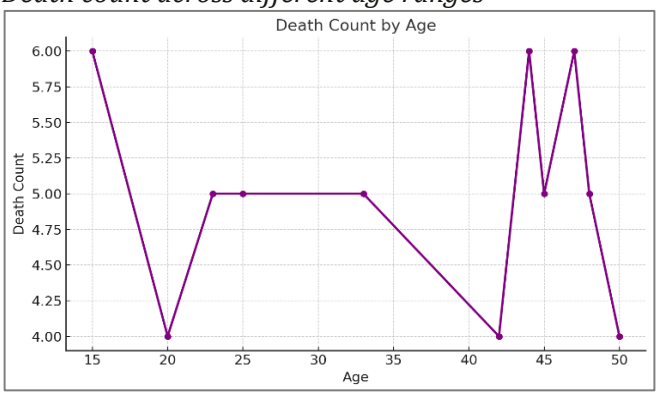
Table 7

Age Distribution of Deceased Women

Age	Death Count
15	6
20	4
23	5
25	5
33	5
42	4
44	6
45	5
47	6
48	5
50	4
Total	47

Figure 4

Death count across different age ranges



DISCUSSION

This study examines maternal health outcomes in the Dir Lower district, focusing on complications during pregnancy and delivery, as well as maternal mortality rates, across government hospitals, private clinics, and home-based delivery settings. The findings suggest that complications significantly contribute to maternal mortality in all settings, with 52 deaths occurring in pregnancies without complications and 59 deaths in pregnancies with complications. These findings align with global research indicating that complications are the leading cause of maternal deaths, with hypertensive disorders, infections, and obstetric hemorrhage being the most common causes (Langer et al., 2020). The distribution of complications varied across facility types, with 35 maternal deaths occurring in government hospitals, 40 in home-based deliveries, and 36 in private clinics. This supports existing studies that have shown that maternal health outcomes can differ greatly depending on the type of facility. Government hospitals, often overwhelmed by high patient volumes, face significant challenges in managing complications, whereas private facilities, while providing specialized care, may be inaccessible to lower-income populations (Ronsmans et al., 2014). Home deliveries, although culturally accepted in many areas, present unique challenges, particularly in managing complications. This is reflected in the higher death rates seen in home-based settings compared to government and private facilities. Home-based deliveries often lack immediate access to skilled healthcare providers and appropriate medical interventions, which can lead to poor outcomes (Haws et al., 2007). This finding is consistent with global trends, where home births in low-resource settings are associated with higher risks of maternal and neonatal mortality (Haws et al., 2009). The age distribution of deceased women shows a broad range of ages, with 6 deaths at age 15, 6 at age 44, and 6 at age 47. This suggests that maternal deaths occur across various age groups, often influenced by underlying health conditions or socio-economic factors (Langer et al., 2015). The findings underscore the need for targeted interventions for women in these age groups, as both younger and older women are known to be at higher risk for complications such as hypertensive disorders and infections (Koblinsky et al., 2012). Studies have shown that maternal risks increase for women under 18 and over 35, primarily due to factors such as pre-existing health conditions, lack of prenatal care, and socio-economic challenges (Say et al., 2014). Regarding the cause of death, anaemia contributed to 9 deaths in rural areas and 10 in urban areas, while ectopic pregnancy accounted for 12 deaths in rural areas and 7 in urban settings. These findings mirror global trends that show anaemia as a significant cause of maternal morbidity and mortality in low-resource settings (Barros et al., 2012). Similarly, hypertensive disorders, infections, and sepsis contributed to a large proportion of deaths, which is consistent with studies identifying these conditions as leading causes of maternal death in both rural and urban areas (Ronsmans et al., 2006; Khan et al., 2006). The regional distribution of deaths revealed 55 deaths in rural areas and 56 deaths in urban areas, indicating that maternal health outcomes are similarly poor in both settings. While urban areas tend to have better healthcare infrastructure, rural areas often suffer from poor access to skilled care, exacerbating

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maternal risks (Sibley et al., 2009). The lack of access to timely and appropriate healthcare services in rural areas contributes to higher maternal mortality, especially in the presence of complications such as hypertensive disorders and infections (Campbell et al., 2006). The results of this study are consistent with global findings on maternal health disparities, confirming that healthcare access, infrastructure, and socio-economic status significantly impact maternal mortality rates, but challenges remain in all settings. Although urban areas benefit from better healthcare infrastructure, rural areas continue to face significant barriers such as limited access to skilled healthcare providers, poor transportation networks, and cultural practices that may delay seeking care (Althabe et al., 2006). This underscores the need for comprehensive, region-specific interventions to improve maternal health outcomes. These interventions should focus on improving access to skilled birth attendants, enhancing antenatal care, and ensuring the timely management of complications such as hypertensive disorders and infections (Barros et al., 2012). Additionally, the study highlights the importance of improving healthcare delivery models in both urban and rural settings to reduce maternal mortality. Strengthening the capacity of both government and private facilities to manage high-risk pregnancies, expanding access to emergency obstetric care, and integrating community health strategies to encourage institutional deliveries could significantly reduce maternal deaths (Sibley et al., 2009). Moreover, efforts to address socio-economic barriers, such as the cost of private healthcare, are crucial to ensuring equitable access to quality maternal care for all women (Ronsmans et al., 2014).

CONCLUSION

This study provides valuable insights into maternal health outcomes across different maternity settings in Dir Lower District, shedding light on the disparities between government hospitals, private clinics, and home-based deliveries. The findings reveal that complications during pregnancy and delivery continue to be a significant cause of maternal mortality, with complications contributing to a higher number of deaths than uncomplicated pregnancies. The study also highlights the vulnerability of women in rural areas, where access to skilled care is often limited, contributing to higher maternal mortality rates. Government and private facilities show varying levels of maternal health outcomes, with home deliveries presenting particular challenges in managing complications due to limited medical resources and skilled assistance. The age distribution of maternal deaths underscores the need for targeted interventions, particularly for younger and older women, who are more susceptible to pregnancy-related complications. Additionally, complications such as anaemia, hypertensive disorders, infections, and sepsis remain major contributors to maternal deaths, in line with global patterns observed in low-resource settings. The comparison of regional and facility-based maternal death rates reveals that while urban areas tend to have better healthcare infrastructure, maternal mortality remains a critical issue even in these settings. This study calls for the implementation of context-specific, evidence-based policies and interventions aimed at improving maternal health outcomes, particularly for high-risk groups such as teenagers and older women. Strengthening healthcare infrastructure, improving access to skilled birth attendants, enhancing antenatal care, and ensuring timely management of complications will be key to reducing maternal mortality rates in Dir Lower District. Furthermore, promoting education and awareness about the importance of facility-based deliveries could reduce the reliance on home births, which often lack proper medical support, ultimately saving lives and improving maternal health outcomes in the district.

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