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Assessing the Barriers and Services at Peripheral Health Facility Units to Improving Maternal Health Outcome in Pujehun District, Sierra Leone

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Abstract

Background: Maternal mortality remains a significant health problem in low-resource settings due to weak health systems and poor health service delivery. The World Health Organization (WHO) reported that 94% of global maternal deaths occur in low-income countries, with two-thirds in Sub-Saharan Africa, mainly due to inadequate healthcare access.

Aim: The study aims to access the barriers and services needed at the Peripheral Health Facility (FHF) level to improve maternal health outcomes in the Pujehun District.

Research Methodology: This study utilised a convergent parallel mixed-methodology research design to collect quantitative and qualitative data among healthcare workers, pregnant women and key stakeholders in Pujehun District. A multi-stage sampling technique and simple random sampling were employed to select participants. The combination of quantitative data was collected through Google Forms, and qualitative data was collected through focus group discussions and key informant interviews to understand maternal health services in Pujehun District comprehensively.

Results: The survey revealed inconsistent customer satisfaction with maternal health services, with half satisfied, 37.5% partially happy, and 12.5% unhappy. Geographical accessibility was a significant issue, with 30% of localities less than 5 km from medical facilities and 40% more than 10 km away. Basic amenities were lacking in 27.5% of facilities, despite 72.5% having accessible facilities. These findings highlight the need for better infrastructure and accessibility in maternal healthcare services.

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Conclusion: Participants emphasised the importance of timely responses to critical cases, strict attendance policies, feedback mechanisms, staff attitudes, punctuality, and responsiveness in maternal healthcare.

Keywords: Customer satisfaction, maternal health services, accessibility, basic amenities

Background

Maternal mortality remains a significant health problem in low-resource settings due to weak health systems and poor health service delivery (Haruna et al., 2019). World Health Organization (WHO) (2017) highlighted that 94% of 295,000 global maternal deaths occurred in low-income countries, and two-thirds of these deaths occurred in Sub-Saharan African countries. One of the major contributing factors to maternal deaths in these settings is the low access to healthcare services, especially in rural areas (Tsawe & Susuman, 2014). Maternal services, such as antenatal care (ANC), provide an opportunity for the prevention and early detection of maternal conditions such as anaemia, malaria, hypertension and other medical conditions affecting maternal Health, thereby improving pregnancy outcomes (Manyeh et al., 2020).

Delays and poor access to its services are associated with increased maternal, fetal and infant mortality and morbidity eminent in rural settings like Pujenu District in Sierra Leone. Access is an essential aspect of service delivery and has received increased attention due to its importance in health policy (Mental Health Policy and Strategic Plan [MOHS], 2017). The debate, however, is what constitutes “access” and how it can be operationalised. To make the concept of access operational, this study adopted the McIntyre Access Framework, which defines access as the “degree of fit” between clients and the healthcare system. The framework defines three distinct dimensions of access: availability, affordability and acceptability. The availability dimension examines whether appropriate services are provided in the right place and time to meet the population's needs.

Availability is further broken down into four elements: the location of services about the location of clients, the "ability and willingness" of providers to offer services desired by the people, the 'degree of fit' between the facility's operating hours and the time clients need services, and finally the relationship between the type of services offered and the health needs of the users. The affordability dimension is associated with the costs of healthcare services and the users' ability to pay these costs. On the other hand, the acceptability dimension is the fit between providers' and clients' expectations, characteristics, and practices towards each other. The acceptability dimension is closely linked to trust because once providers' expectations, characteristics, practices, and beliefs align with users' expectations, trust is enhanced, and access is promoted (Gilson et al., 2007).

Despite the improvement in access to maternal health services in other sun Saharan African countries over the years, it has remained relatively low in rural parts of Sierra Leone Compared to other countries in the region (WHO, 2019). The recent demographic and health survey in 2019 in Sierra Leone remained one of the worst in the bottom quartile of the least developed countries, with the highest maternal mortality rates at 717/100 000 (Sierra Leone Demographic and Health

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Survey [SLDHS], 2019). The health system had been marred by disasters and epidemics and had challenged its human, animal and environmental impacts. Many challenges, including a lack of trained human resources, financial resources to finance its health system, poor and fragile health infrastructures, and unaffordable healthcare care services, pose many challenges in improving maternal health outcomes.

Pregnant mothers attending ante-natal clinics are to access essential health services, including advice on the prevention and treatment of sexually transmitted infections (STI), such as HIV/AIDS, and prevention and treatment of malaria, anaemia, tetanus immunisation, family planning, and nutrition. Sierra Leone's Ministry of Health and Sanitation recommends a minimum of four ANC visits and a maximum of eight visits to an expanded program on immunisation (EPI). During these visits, possible pregnancy or delivery-related complications can be detected early, and appropriate measures are taken to prevent or minimise any adverse effects on the mother or child during delivery and the postpartum period. Pujehun district, spanning from 2018 to 2020, which this study period will cover, is described as one of the challenging districts observed with the lowest recorded rate of Antennal care visits, representing a 40% dropout rate, and one of the districts recording the highest maternal deaths in Sierra Leone (WHO, 2020).

This study, therefore, was designed to investigate further the limitations and barriers contributing to poor outcomes for the maternal population, especially in peripheral health units. It aimed to explore the availability, affordability, and acceptability of maternal services in Pujehun district in two rural and complex-to-reach chiefdoms: Sorogbeiman on the mainland and Mano Sakrim on the riverine. Understanding access barriers is an important step towards designing interventions to improve maternal Health, reduce maternal mortality, and improve outcomes and services.

Statement of the Problem

Multiple barriers prevent equitable access to healthcare services in low-middle-income countries (LMICs), leading to higher morbidity and mortality rates for maternal mothers for both acute and chronic health outcomes, especially in rural communities with low-resource settings (Ouma et al., 2015). Sierra Leone is one of the least developed countries worldwide, where access to healthcare is mainly constrained by geographical barriers, extremely high out-of-pocket expenditures, lack of skilled medical staff, poor service delivery, inadequate health financing and lots more (Mental Health Policy and Strategic Plan [MOHS], 2017).

This study aims to identify and analyse the barriers that prevent women from accessing maternal health services at the peripheral health facility level in the Pujehun District and determine the specific services needed to improve maternal health outcomes in the study area. Additionally, this study seeks to assess the affordability of maternal health services provided at the peripheral health facility level and to explore how clients find these services acceptable and relevant in improving maternal health outcomes.

Through its Ministry of Health, Sierra Leone has prioritised Maternal Health Services to address the high maternal mortality rates. Several initiatives have been introduced to improve service provision. One is the Free Health Care Initiative (FHCI), introduced in 2010. In addition to the

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FHCI, the Reproductive, Maternal, Adolescent, Infant and Child Health Directorate (RMNCAH), in collaboration with development partners had introduced the Maternal Deaths Surveillance Response (MDSR) system, where the initiative had a capacity and focal MDSR persons to report maternal deaths and its causes at community level promptly. To further improve maternal mortality statistics, the Government of Sierra Leone introduced the National Emergency Medical Services (NEMS) to respond to health emergencies, especially those affecting maternal Health. NEMs had preposition ambulances in all 149 chiefdoms nationwide to help address emergencies, including complicated delivery referrals, with support from its development partners. All these services are geared towards improving the quality and quantity of healthcare services provided to the populace, especially women and children.

Despite the efforts from the Ministry of Health, over the years, it is observed that Sierra Leone remained in the bottom quartile of the least developed countries, with one of the world's highest maternal mortality rates at 717/100, 000 infants and under five at 75/1000, and 122 per 1,000, and a low life expectancy at 47 years (SLDHS, 2019). These alarming figures in maternal mortality have placed Sierra Leone among the three worst countries in the world with maternal mortality and the worst country with under-five mortality (WHO, 2019). These statistics highlight the urgent need for effective interventions and improvements in maternal health services in Sierra Leone. The government and international organisations have initiated various programmes to address this issue, such as training skilled birth attendants, increasing access to quality healthcare facilities, and promoting reproductive health education. However, it is crucial to focus on providing these services and assess their effectiveness and acceptability among the clients. By understanding the perspectives and experiences of the clients, policymakers and healthcare providers can make informed decisions and tailor interventions to meet the population's specific needs, ultimately leading to improved maternal health outcomes.

Maternal deaths accounted for 23% of all deaths among women aged 15-49. Out of the total maternal deaths, 20% are adolescents. According to the 2019 Sierra Leone Demographic Health Survey, 83 per cent of women and girls aged between 15 and 49 years have undergone female genital mutilation (FGM), and a more significant number of these women and girls are at risk of obstetrical health complications. Therefore, it is crucial to consider the cultural and social factors that contribute to the high prevalence of FGM in Sierra Leone when designing interventions to improve maternal health outcomes. By involving community leaders, traditional birth attendants, and local healthcare providers in the decision-making process, a comprehensive approach can be developed that takes into account the unique challenges faced by women and girls affected by FGM. This collaborative effort will not only help to reduce maternal deaths but also address the underlying cultural beliefs and practices that perpetuate the harmful tradition of FGM.

Family planning practices because of health financing, social and family access, and cultural and religious beliefs have remained a significant barrier to improving women's Health in Sierra Leone. Efforts must be made to address these barriers and improve access to family planning services in Sierra Leone. By involving community leaders, religious leaders, and local healthcare providers in the decision-making process, a comprehensive approach can be developed that considers the cultural and spiritual beliefs surrounding family planning. This collaborative effort

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will improve women's Health and challenge and change the societal norms hindering progress in this area.

Trained human resources are scarce to service the health population of Sierra Leone. WHO has suggested that 23 doctors, nurses, and midwives per 10,000 population provide minimal basic skilled care for pregnant women and children in an ideal given population. However, Sierra Leone is still challenged in this area, causing challenges in its maternal health outcome. This shortage of trained healthcare professionals in Sierra Leone has significant implications for family planning services. Without an adequate number of doctors, nurses, and midwives, it becomes increasingly challenging to provide the necessary care and support for pregnant women and children. This scarcity of human resources puts women's Health at risk and hampers efforts to challenge and change the societal norms surrounding family planning.

The workforce consists mainly of auxiliary-level workers, such as community health workers. The global shortage of midwives poses a challenge to addressing maternal and infant mortality, and Sierra Leone is more challenging, with fewer than 500 midwives and over 40% working in an urban setting. Lack of adequate access to healthcare, weak health systems, poor quality of healthcare services, a weak Health Information Management System (HMIS), and poor motivation of health workers continue to weaken the health system in Sierra Leone. In addition, low healthcare-seeking behaviour, poor attitude of healthcare workers, poverty, frequent stockouts of essential medicines, healthcare-seeking behaviour, poor supervision, and high disease burden, among others, are significant gaps and weaknesses identified in the health system that are strengthening maternal and child Health.

Early marriages and pregnancies are prevalent in Sierra Leone rural areas like Pujehun in question for this study. In Pujehun, between 9 and 13% of women aged 20-24 were married before the age of 15, between 31% and 37% were pregnant before the age of 18, and between 6% and 10% before the age of 15 (Doctors With Africa, 2018).

Maternal and adolescent reproductive Health is also deteriorating due to conservative social norms and practices, such as female genital mutilation (FGMs) in the District, which is a widespread practice across 86% of the 15-49 women living in the District. Early pregnancies are one of the leading health problems favoured by various factors such as lack of education, economic vulnerability, and lack of sexual education, as well as cultural and social beliefs. These factors contribute to the high rates of child marriage and early pregnancies in rural Pujehun and Sierra Leone at large. The lack of education deprives young girls of knowledge and awareness about their reproductive Health, making them more susceptible to becoming pregnant at a young age. Economic vulnerability further exacerbates the issue, as girls may feel compelled to marry early in hopes of securing financial stability. Moreover, the deeply rooted cultural and social beliefs surrounding gender roles and sexuality perpetuate the cycle of early pregnancies and limited reproductive health options for young girls in the study area.

Adolescents face unique barriers to accessing and using high-quality care, like cost, opening hours, fear of being seen and judged, adverse treatment by service providers, limited, accurate information, and other restrictions on the services they can receive without parents or partners'

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consent. Generally, women experience gender inequality and power disparities within the health system that inhibit their ability to access health services and practice positive health behaviours. These barriers contribute to the perpetuation of the cycle of early pregnancies and limited reproductive health options for young girls in Sierra Leone. Furthermore, societal norms and cultural beliefs often stigmatise adolescent girls seeking reproductive health services, further exacerbating their challenges in accessing the care they need.

The results show a clear need to access the barriers and services needed to improve maternal health outcomes at the PHU level, a typical remote and deprived study area mentioned in the Pujehun district. The recommended result will help improve the intervention strategy at the peripheral level. It will help to improve the overall health intervention strategy that improves access to maternal health service delivery in the country and globally. The research will help to identify barriers and the role and responsibilities of health staff and health authorities in strengthening the health system and promoting interventions that would improve the maternal morbidity and mortality index in Sierra Leone. Addressing community support inequalities is recognised as the key driver of improved maternal and neonatal health outcomes (O'Rourke et al., 2018). This research aims to empower and educate the community on the importance of maternal health services by addressing community support inequalities. This will enable them to support pregnant women adequately and ensure their access to quality healthcare. Additionally, understanding the barriers faced by health staff and authorities will enable the development of targeted interventions to strengthen the health system and ultimately reduce maternal morbidity and mortality in Sierra Leone. Overall, this research has the potential to significantly improve maternal and neonatal health outcomes in Sierra Leone and globally**.**

Aim of the Study

The study aimed to access the barriers and services needed at the Peripheral Health Facility (PHF) level to improve maternal health outcomes in the Pujehun District.

Specific Objectives of the Study

1. To investigate the available maternal health services rendered at a peripheral level to support health outcomes of women of childbearing age.
2. This study aims to identify the barriers Peripheral health facilities face in improving maternal health outcomes in the study area.
3. To investigate solutions, remedies or relevance of the services rendered to clients to improving maternal health outcome

Research Questions

1. What are the available maternal health services rendered at the peripheral health facility level that support maternal health outcomes of women of childbearing age?
2. How affordable and accessible are the services rendered at the Peripheral health facility level to improve maternal health outcomes?
3. How relevant are the services rendered to clients to improve their maternal health outcomes?

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Significance of the Study

Pregnancy is a crucial period in the lives of mothers of childbearing, and the changes happening during pregnancy can impact maternal and newborn health immediately and later in life. High-quality care during pregnancy (antenatal care, ANC) is important for the mother's Health and the unborn baby's development. Inadequate care during this time breaks a critical link in the continuum of care and affects both women and babies. Lack of availability, affordability, and utilisation of ANC services is a complex, "wicked" problem highly dependent on contextual, sociocultural, socio-ecological, and intersectional aspects, with no straightforward definition or solution. This study will examine these problems and help provide recommendations for effective health delivery services at the peripheral level that would promote maternal health outcomes that remain challenging in strengthening Sierra Leone and Pujehun district health indicators.

The Sustainable Development Goal (SDG) is planned to reduce the global maternal mortality ratio (MMR) to less than 70 per 100,000 live births (SDG, 2015). It is estimated that the world will fall short of it by more than 1 million lives with the current pace of progress on maternal health care UN SDG. The high number of maternal deaths in some areas of the world reflects inequalities in access to quality health services. It highlights the gap between high-income countries and low-middle-income countries (LMICs), where the burden of MMR is the highest. To address these issues, research work on maternal, newborn and reproductive health rights and discussing solutions to improving quality, access and delivery in LMICs and generally in resource-constrained settings, like Pujehun - Sierra Leone will contribute to reducing maternal mortality and improve the health outcomes of the maternal mother which is the primary aim of SDG 3 set by world development partners.

A study of this nature will help the government of Sierra Leone, its partners, and the Ministry of Health and Sanitation plan measures that will help improve the strategies that will be put in place as a result of recommendations made from the study under review. The study will be important on the following basis: The research team has been working on projects to address the research objectives of the International Non-Governmental Organization (INGO). F or over the years, further research of this nature in the study area in Pujehun, classed as one of the most vulnerable District in development and infant, maternal and newborn care issues in Sierra Leone, will be of immense help to his work and support to the Ministry of Health and its partners in the fight against maternal and newborn care issues. The research will serve as a platform for donors and organisations wanting to design projects to help improve infant, maternal, and newborn care issues in Sierra Leone, especially in the designed study area.

Lastly, the findings of this study will inform policy interventions aimed at improving maternal Health in Sierra Leone. By identifying the specific challenges faced by health staff and authorities, policymakers can develop targeted strategies to address these barriers and strengthen the overall health system. This may involve providing additional training and resources to healthcare workers, improving infrastructure and equipment in healthcare facilities, and implementing policies that promote equitable access to maternal healthcare services. Community organisations can play a crucial role in raising awareness and advocating for better healthcare

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services in hard-to-reach areas of study design. The findings from this study can contribute to developing evidence-based strategies that can be implemented in these chiefdoms and in similar contexts globally to enhance maternal healthcare.

Scope of the Study

This study will examine practices and interventions in maternal healthcare, specifically antenatal care, labour and delivery, and postpartum care. It will also analyse the gaps and challenges in these areas, including disparities in access to care and outcomes. The study will primarily rely on evidence-based research and data analysis to identify areas for improvement and develop targeted interventions. However, it is important to note that this study will not be able to address all aspects of maternal healthcare, such as specialised medical conditions or high-risk pregnancies.

The study will focus on assessing barriers and services at the peripheral health facility in the last three years (2020-2023), specifically in two hard-to-reach chiefdoms each: one mainland and riverine in Pujehun district: Soro Gbeima as main land Mano Sakrim as riverine. The research will concentrate on maternal health outcomes, considering service availability, affordability, and acceptability. Nonetheless, the findings from this study can still provide valuable insights and recommendations for policymakers, healthcare providers, and community organisations to enhance maternal healthcare in the chosen context.

In identifying the barriers and gaps in the existing healthcare system at peripheral health units, the required responses and review are necessary to source in-depth and unbiased information. In this regard, the research team used different research methods to target the required respondents. Policymakers at the community level, healthcare providers, pregnant mothers, community health workers and traditional birth attendants had been targeted through mixed methods study design using focus group discussions - FGD, key informant interviews - KII and community meetings, field observations and data obtained through desk review and administrative sources from various sectors.

Limitations of the Study

A study of this nature will not be done without challenges, constraints, and limitations. The study research team used mixed methods proposed in a single district out of 16 districts in Sierra Leon. The study, further reduced to two hard-to-reach chiefdoms of Pujehun district, was challenged, more so because limited studies and research of this kind have been rarely done in the past in the study area. This caused an indebted and rigid research procedure to gather the findings and outcomes of the study.

Another limitation experienced in this research is that to avoid bias in the findings, the research team decided to have the view of clients, mothers, and influencers, including peripheral health facility staff, CHWs, traditional birth attendants, and community stakeholders. This cohort of respondents allowed the research team to undertake qualitative and quantitative research methods to extrapolate different views and bring out barriers to research questions (accessibility,

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affordability and perception) on maternal health services received at the peripheral health facility level.

The scope of the study reviewed retrospective health facility data from 2020 to 2022. It was observed that most of the raw data to support the desk review were not found when the research team tried to confirm the support from the Ministry of Health, especially regarding essential drugs supplied to support the maternal health outcome at the PHU level. The DHMT Measurement and Evaluation (M&E) unit gathered little or no information. This makes the research minimal, with information in some regions of desk review. In this regard, the research team had no option but to visit health facilities to crosscheck some information needed for the research. For a study of this nature, which is not popularised, the time assigned to conduct the research was insufficient for the research team, especially since the research team had decided to investigate two hard-to-reach areas of Pujehun health facilities that are easily accessible by land or boat.

Literature Review

Maternal health challenge remains a serious global public health concern, especially in low-resource areas where access to quality healthcare services is limited. Sierra Leone, a country grappling with high maternal mortality rates, stands as a poignant example of the persistent struggles in providing adequate maternal health services. Sierra Leone, Pujehun district emerges as a focal point for examination due to its notable disparities in health indicators and the unique challenges its maternal population faces. The literature review seeks to explore and synthesise existing knowledge on maternal health outcomes, barriers, and services, thereby contributing to a nuanced understanding of the complexities inherent in addressing maternal Health in a low-resource context. To achieve this, the research team utilised a combination of electronic research engines, PubMed, Scopus, and Google Scholar, as well as relevant institutional websites and grey literature. The search strategy encompasses a specific timeframe (2010 to 2025) and inclusion criteria such as peer-reviewed articles, dissertations, and reports conducted in low-resource settings or focusing on healthcare challenges. Exclusion criteria helped maintain the precision of the search by eliminating studies unrelated to maternal health outcomes, those without full-text availability, and those conducted in high-resource settings.

Understanding about Maternal Health and its Services

Maternal Health comprises women's Health during pregnancy, childbirth, and postpartum. Health problems during pregnancy may have serious consequences, not only for the woman but also for her child, her family, and her community. Although motherhood is often a positive and fulfilling experience, for too many women, birth is associated with suffering, ill Health, and even death (WHO, 2011). Maternal Health and health care are important determinants of neonatal survival and child health outcomes. Therefore, maternal and child health improvements are important global public health goals. In the Sustainable Development Goals 3 (SDG 3), members of the United Nations are committed to further reducing the under-five mortality rate (U5MR) maternal mortality ratio (MMR) to its most excellent minimum (SDG, 2015).

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Access to appropriate maternal healthcare services is a fundamental right. Seventy-five per cent of maternal deaths occur during childbirth and the postpartum period, and the vast majority of these deaths are avoidable. Providing skilled care for all women before, during, and after childbirth is a key strategy for saving women's lives and ensuring the best chance of delivering a healthy infant (Save the Children, 2010). This study will look at ANC, delivery, and postpartum care to review barriers maternal mothers experience at the PHU level, considered essential components in any maternal healthcare program (Zanconato et al., 2010). Maternal and child mortality Global estimates of MMR decreased by 48% during 1990-2010, from 400 to 210 per 100,000 live births. The annual decline rate was 3.1%, just over half of what was needed to achieve the MDG 5 target (WHO, 2012). An estimated 287,000 women died worldwide in 2010 from causes related to pregnancy and childbirth. Large numbers of these deaths were preventable (WHO, 2012). Maternal and child mortality are recognised as having some of the most significant health disparities between regions and countries (Althabe et al., 2010). About 99% of maternal and child deaths occur in low and middle-income countries (LMICs), and Sub-Saharan Africa has the highest MMR (500/100,000 live births in 2010) and accounts for nearly 56% of maternal deaths worldwide (WHO, 2012). In some parts of the world, women have a one in six risk of maternal death. However, Southeast Asia has the third highest absolute number of maternal and child deaths, after sub-Saharan Africa and South Asia, mainly due to its large population and high birth rate (WHO, 2010).

This literature review contends that a critical examination of the various services available for maternal Health in peripheral health facilities is essential for understanding the gaps and opportunities for improvement. Antenatal care, delivery services, and postnatal care are integral components, and studies have highlighted disparities in their accessibility, quality, and comprehensiveness. It is crucial to analyse the factors influencing the utilisation of these services in peripheral areas.

Socioeconomic status, cultural beliefs, distance to healthcare facilities, and availability of skilled healthcare providers all play a significant role in determining whether women can access and receive adequate care throughout their pregnancy and postpartum (Mastylak et al., 2023). Understanding these factors can help identify strategies to improve the accessibility and quality of maternal health services in these underserved areas. By addressing the social, cultural, and economic barriers that often hinder access to care, healthcare systems can better support women during pregnancy and postpartum, improving maternal and infant health outcomes (Mastylak et al., 2023).

However, there is a lack of resources and support in low-income communities (Mumm & Scheffler, 2019). In these areas, healthcare facilities may be scarce, healthcare providers may be overworked and under-resourced, and there may be limited access to necessary medical interventions and education (Ramirez & Sadarangani, 2022). This can result in inadequate care for pregnant women and postpartum mothers, leading to higher maternal mortality rates and poorer health outcomes for both mothers and their babies (Barnes, 2017). In addition, the lack of resources and support in low-income communities can also contribute to higher rates of preterm births and low birth weights. Without access to proper prenatal care and education, women may not receive the necessary screenings and interventions to prevent complications during pregnancy

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(Johnston et al., 2021). Moreover, the absence of postpartum support can hinder women's recovery and ability to provide adequate care for their newborns, further exacerbating health disparities in these communities (Johnston et al., 2021).

Systemic factors, such as limited access to affordable healthcare and insurance coverage, further exacerbate these disparities (Buchmueller & Levy, 2020). Many low-income communities lack nearby healthcare facilities, forcing pregnant women to travel long distances to receive prenatal care (Buchmueller & Levy, 2020). This poses financial burdens and increases the likelihood of missed appointments and delayed care (Triemstra & Lowery, 2018). Additionally, the lack of insurance coverage often leaves these women without the means to afford necessary medications, tests, and treatments, further jeopardising their Health and the Health of their babies (Buchmueller & Levy, 2020). As a result, the cycle of poor health outcomes and limited resources continues to perpetuate in these marginalised communities. This perpetuates a vicious cycle of poverty and poor health outcomes that is difficult to break without targeted interventions and support (Pain, 2016).

Maternal and Child Health Situation in Sierra Leone

Sierra Leone remains one of the countries in the world with the highest Maternal, Newborn and Under-five mortality rates on the global stage. In previous years, significant improvement has been made in maternal health gains globally. Hence, the Ministry of Health and its development partners are prioritising support to improve the maternal health situation at the country level. In 2013, Sierra Leone was listed as one of the worst countries in the world, with high maternal death recorded at 1,165 per 100,000 live births, but had significantly reduced to 717 per 100,000 live births in 2019 (Sierra Leone Demographic and Health Survey [SLDHS], 2019).

In further analysis, since 2000, it is seen that the maternal death trajectory in Sierra Leone has transformed gravely from 1,682/100,000 live births to 443/100,000 live births in 2020, according to the latest UN Maternal Mortality estimates published in 2022. Sierra Leone has done very well in reducing maternal deaths since 2000. Despite the gains made in maternal health improvement, the country remained one of the countries with the highest maternal mortality rate in the world (World Health Organization [WHO], 2010)

In Sierra Leone, like many other developing countries in Sub-Saharan Africa, maternal deaths are due to preventable causes. Considering these worrying data, the leading direct causes of maternal deaths, as recorded from the country's annual data, are obstetric haemorrhage accounting for (46%), hypertension (22%), obstructed labour (21%) and sepsis (11). Data from national Maternal Death Surveillance and Response (MDSR) reports indicate that in 2020, health facilities accounted for 82.5% of all maternal deaths, representing a 1.1% increase from 2019. Maternal deaths at the community level and in transit to health facilities were reported among Adolescents; in 2020, 1.5% of the population aged 15-49 years were living with HIV - this percentage has been constant since 2000 (WHO, 2010).

Young women and teenage girls are particularly vulnerable, especially because of low contraceptive coverage - between 18% and 24% - and family planning does not offer all the services adapted to their specific needs. Early marriages and pregnancies are prevalent in Sierra

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Leone; between 9 and 13% of women aged 20-24 were married before the age of 15, between 31% and 37% were pregnant before the age of 18, and between 6% and 10% before the age of 15 (WHO, 2010).

Maternal and adolescent reproductive Health has also deteriorated due to conservative social norms and practices, such as female genital mutilation (FGM), which is a widespread practice across Sierra Leone. It is estimated that 86% of the 15-49 women in Sierra Leone have gone through female genital mutilation. Early pregnancies are one of the leading health problems favoured by various factors such as lack of education, economic vulnerability, lack of sexual education, as well as cultural and social beliefs.

The health facilities lack amenities that promote quality of care delivery. Teenage pregnancy rates are estimated at 21%, with 45% of 19-year-olds having started childbearing. Alarmingly, 20% of all deaths among girls and young women are pregnancy-related (SLDHS, 2019). Adolescents face unique barriers to accessing and using high-quality care, like cost, opening hours, fear of being seen and judged, adverse treatment by service providers, limited accurate information and other restrictions on the services they can receive without parents' or partners' consent. Generally, women experience gender inequality and power disparities within the health system that inhibit their ability to access health services and practice positive health behaviours.

The results show a clear need to access the barriers and services needed to improve maternal health outcomes at the PHU level, a typical remote and deprived study area of the Pujehun district. The recommended result will help to improve the intervention strategy at the peripheral level. It will help improve the overall health intervention strategy that improves access to maternal health service delivery in the country. The research will help to identify barriers and the role and responsibilities of health staff and health authorities in strengthening the health system and promoting interventions that would improve the maternal morbidity and mortality index in Sierra Leone.

Addressing Community support inequalities is recognised as the key driver of improved maternal and neonatal health outcomes in Sierra Leone, thus warranting this research (O'Rourke et al., 2018). Teenage pregnancy is an ongoing concern in the country. According to the report on the Assessment of Adolescent and Young People Friendly Health Services and the National Strategy for the Reduction of Adolescent Pregnancy and Child Marriage (2018-2022), the median age of first sexual intercourse for women is 16.4. The total fertility rate is 4.9 per 1,000, and the adolescent birth rate is high (125.1/1,000). There is an overall low contraceptive prevalence rate (CPR) of 16 per cent, and it is especially low among young people, estimated at 7.8 per cent among girls aged 15- 19 years and 14.2 per cent among females aged 20-24 years. Among 15-19-year-old girls, 46.8 per cent of deaths are maternal, and 25 per cent of maternal deaths are due to unsafe abortions among adolescents. Although the country generally has poor impact indicators across all districts, gender inequality is a major driver of poor pregnancy and maternal and child health outcomes. There are inequities in the coverage and quality of RMNCAH and Nutrition services based on age, gender, education, residence (urban versus rural), regions (across the four regions and districts), and wealth quintiles. Both neonatal and under-five mortality represent wide inequities based on where a child is born. A child born in the Pujehun district (48 per 1000

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live births) has a more than five times higher chance of dying during the first 28 days compared to a child born in the Bonthe district (9 per 1000 live births). Similarly, a child born in Port Loko has a 2.5 times chance of dying before their fifth birthday compared to the one from Bonthe district.

Barrier or Obstacles Limiting Maternal Health Outcomes

Sierra Leone's challenge in improving maternal Health has been characterised by barriers including but not limited to:

1. Demand side barriers to access of high impact interventions
2. Human Resources for Health (HRH) challenges
3. Unstable commodities and supplies
4. Weak referral systems
5. Sub-optimal quality of care in the delivery of RMNCAH and nutrition interventions
6. Weak Health Information Systems and
7. Financing for RMNCAH and nutrition program

Considering these unique barriers to Sierra Leone improving maternal health outcomes, other multiple studies have consistently identified a range of obstacles encountered by women when trying to receive maternity health services in remote places (Benzie et al., 2023; Hurley, 2011; Johnson et al., 2016; Kimberly et al., 2018). The combination of geographical isolation and insufficient transportation infrastructure poses a significant issue (Durango-Cohen & Madanat, 2015). This problem leads to delays in seeking and obtaining essential maternal care, which directly affects the health outcomes of both mothers and newborns ("Coalition for Quality Maternal Care: Advocating for Mothers and Newborns," 2011). Aside from geographical isolation, limited financial resources have also been recognised as a significant obstacle to maternity healthcare in peripheral health facilities (Tanou & Kamiya, 2019).

Research has indicated that women from economically disadvantaged homes frequently encounter difficulties meeting the financial demands of transportation, medical expenses, and essential medicines (Sun & Ertz, 2021). Moreover, cultural and societal norms exert a substantial influence in constraining women's ability to access maternal health services since conventional beliefs and practices may inhibit the use of medical treatment during pregnancy and delivery (Ntozi & Katusiime-Kabazeyo, 2016).

As an illustration, in remote regions of underdeveloped nations, women may be required to undertake extensive journeys to access the closest healthcare establishment (Mahase, 2019), a circumstance that might pose significant difficulties for expectant mothers. This can lead to delayed or inadequate prenatal care, resulting in increased risks for problems during childbirth (Osawa & Kodama, 2021). Furthermore, several cultures adhere to the practice of women delivering babies at home under the guidance of traditional birth attendants rather than seeking professional medical aid (Pfeiffer & Mwaipopo, 2013). This can significantly elevate the risks of maternal and newborn death (Kirkwood & Bahl, 2013).

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An effective approach to overcoming these obstacles is establishing community-based programmes that strive to enhance the availability of maternal health care (Kanmiki et al., 2023). Possible solutions may involve offering needy women monetary aid or transit vouchers (Hurley, 2011) while implementing awareness campaigns to educate communities about the need to access medical services throughout pregnancy and delivery (Khan, 2022). Furthermore, it is crucial to actively include local authorities and traditional birth attendants to facilitate the transformation of cultural and societal norms about maternal Health. For this reason, Khan (2022) explored "*The Use of Traditional Birth Attendants and Faith-Based Birth Attendants in Cross River State and the Impact on the Global Maternal Mortality Rate," 2017"* to highlight traditional birth. Through cooperative engagement with these relevant parties, it is feasible to establish a nurturing atmosphere that fosters women's inclination to pursue necessary healthcare (Sachie, 2022). In the end, these endeavours can contribute to improved maternal health outcomes.

The recurring problem is the quality of care provided in outlying health facility units (Untimanon et al., 2022). The effectiveness of maternal health services is compromised due to limited resources, understaffing, and poor training of healthcare workers (Kurzawa et al., 2020). This analysis contends that it is crucial to tackle these systemic challenges to enhance the quality of care delivered and, as a result, enhance maternal and neonatal outcomes. To significantly enhance the quality of maternity care, it is imperative to provide additional resources, including equipment and supplies, and augment the number of healthcare personnel in peripheral health institutions (Serneels & Lievens, 2018). In addition, offering extensive training courses for healthcare personnel may effectively rectify any deficiencies in their knowledge and guarantee that they possess the requisite abilities to deliver exceptional treatment (Lv et al., 2022). By tackling these underlying problems, those involved may strive to attain superior results for mothers and newborns, enhancing the overall standard of care in peripheral health facility units (Shrestha et al., 2020).

Sociocultural variables influence how women in remote locations seek maternity healthcare (Belford, 2019). Cultural values, social norms, and gender roles all impact decisions regarding prenatal care, birth, and postnatal care (BrintzenhofeSzoc & Gilbert, 2017). To create effective treatments for peripheral health facilities, it is essential to acknowledge and tackle these sociocultural variables that impact their populations ("We Must Tackle Inequalities," 2017). Healthcare providers can customise their services to cater to the distinct requirements and inclinations of the community by comprehending and valuing the cultural environment (van Hardeveld et al., 2018). This may entail integrating customary traditions or rituals into maternal healthcare initiatives and including community leaders and influencers to encourage favourable health-seeking conduct (Zainuddin, 2023). Moreover, tackling gender disparities and enabling women to make well-informed choices about their reproductive Health might enhance maternal and newborn outcomes in remote regions.

Regarding further referral at the secondary or tertiary hospital level, the lack of transportation and limited access to healthcare facilities are major barriers to establishing effective referral systems for obstetric emergencies (Nsemo et al., 2022). In many rural areas, women may travel long distances to reach a higher-level healthcare facility, resulting in delays in receiving timely

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and appropriate care. Furthermore, the lack of trained healthcare providers and the limited availability of medical equipment and supplies in these facilities can hinder the provision of specialised care for complicated obstetric cases (Noordmanet al., 2019).

These challenges highlight the need for robust referral systems that can efficiently transfer pregnant women experiencing emergencies to appropriate healthcare facilities ("Barriers and Challenges in Mental Healthcare Utilization Among Pregnant Women in Rural India -A Narrative Review," 2023). One potential solution is telemedicine and teleconsultation services, which can help bridge the gap between remote areas and specialised healthcare providers (Bridge, 2019). Healthcare professionals can remotely assess and guide obstetric emergencies by leveraging technology, allowing for prompt decision-making and appropriate interventions (Bratt & Kalmendal, 2023).

However, there is a lack of reliable internet connectivity and electricity in many remote areas. Without consistent access to these resources, telemedicine services would be unreliable and potentially ineffective (Pappas, 2010). Additionally, even if teleconsultation services were available, they may not fully address the need for hands-on medical care and immediate intervention often required in obstetric emergencies (Maarop & Win, 2011). In such cases, the lack of transportation options remains a significant obstacle in rural areas (Lambu, 2016). Emergencies like obstetric emergencies require prompt action, which cannot be adequately provided through teleconsultation alone ("Obstetric Emergencies: Re-thinking EMS in Rural Africa," 2012). Furthermore, the rugged terrain and limited infrastructure of remote areas may hinder the timely arrival of ambulances or air evacuation services, making it difficult to ensure timely medical intervention (Torshizian & Maralani, 2023). Therefore, while telemedicine can partially mitigate the transportation issue, it is crucial to develop comprehensive healthcare systems that incorporate both technology and physical accessibility to address rural areas' unique challenges (Hatem et al., 2023).

While telemedicine can provide some assistance in addressing healthcare challenges in remote areas, it cannot fully substitute for the need for physical accessibility and prompt medical intervention in obstetric emergencies (Tzanou, 2020). In situations where complications arise during childbirth, such as postpartum haemorrhage or fetal distress, immediate access to skilled healthcare professionals and well-equipped facilities is essential (Tessema et al., 2018). Telemedicine can provide guidance and support to healthcare workers in rural areas, but it cannot replace the need for a physical presence in urgent cases. Without timely medical intervention, the lives of both the mother and the baby may be at risk. Therefore, it is crucial to prioritise the development of comprehensive healthcare systems that ensure physical accessibility and prompt medical attention in obstetric emergencies in rural areas (Potokina, 2023).

Strategies to Improve Maternal Health Care at Community and Peripheral Level

The barriers identified in the literature, combined with the analysis of maternal health services, directly contribute to maternal and child mortality rates in peripheral health facility units. A growing body of evidence establishes a causal connection between delayed access to care

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support, quality service delivery, and unfavourable health outcomes. Addressing these challenges is paramount to achieving sustainable maternal and child health improvements at the peripheral and community levels. Several strategies have been proposed to address the barriers and improve maternal and child health outcomes in peripheral health facility units. One approach is strengthening the healthcare system by increasing the availability and accessibility of essential maternal and child health services (Krishna Banik, 2015). This can be achieved through the establishment of well-equipped and staffed health facilities in rural and remote areas, as well as the deployment of skilled healthcare providers (Kumar, 2021). Additionally, efforts should be made to improve the quality of care provided in these facilities through regular training and supervision of healthcare workers (Kadoya, 2012). Another important strategy is to focus on community engagement and empowerment, involving community members in decision-making processes (Mthembu & Chimbari, 2023).

By involving community members in decision-making processes, there is a greater likelihood of addressing the specific needs and preferences of the population (Read et al., 2023). This can be done through community health committees or similar mechanisms, where community members have a voice in planning and implementing health interventions (Barbir, 2011). Furthermore, it is crucial to prioritise health education and awareness campaigns, ensuring that communities are equipped with the knowledge and skills necessary to make informed decisions about their Health (Miller et al., 2023). These campaigns can cover various topics, including family planning, nutrition, hygiene, and disease prevention. Ultimately, a comprehensive approach that combines increased access to healthcare services, improved quality of care, and active community participation can lead to better health outcomes for all (Karliner, 2020).

However, this approach can be seen in communities with limited resources and infrastructure. In such cases, even if community members have a voice in planning and implementing health interventions, they may lack the necessary resources and support to effectively address their health needs (Renaud et al., 2023). For example, if a community lacks access to clean water or proper sanitation facilities, implementing hygiene campaigns alone may not be sufficient to prevent the spread of diseases (Tumwebaze & Lüthi, 2013). Therefore, a comprehensive approach that addresses the root causes of health disparities is necessary to ensure the success of health interventions (Tipirneni, 2021).

This comprehensive approach should include health education, awareness campaigns, and improving access to clean water, sanitation facilities, and healthcare services (Kuehn, 2021). Additionally, it is important to consider the social determinants of Health, such as poverty and inequality, that can contribute to disparities in health outcomes (Worku & Woldesenbet, 2016). By addressing these underlying factors, communities can create a foundation for sustainable and long-term improvements in Health (Varnadore, 2018). Collaboration between community members, healthcare professionals, and policymakers is essential to develop and implement effective interventions that address each community's specific needs and challenges (Crittenden et al., 2021). Together, these stakeholders can improve access to healthcare and promote preventive measures, such as vaccinations and regular screenings (Villacorta & Sood, 2015). Education and awareness campaigns can also be crucial in empowering individuals to make informed decisions about their Health (Chalela et al., 2015). By fostering a sense of community

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ownership and engagement, sustainable improvements in Health can be achieved, leading to a healthier and more equitable society for all. This can lead to a more sustainable and resilient healthcare system (White, 2019).

Furthermore, evidence-based interventions are imperative for effecting meaningful change. Community-based interventions involving local healthcare workers, traditional birth attendants, and community leaders present a promising avenue (Bankole et al., 2012). Moreover, leveraging technological innovations such as telemedicine can overcome geographical barriers and enhance communication between healthcare providers and pregnant women (D'Arrigo, 2017).

These evidence-based solutions can potentially address pregnant women's barriers to accessing quality healthcare (Williams et al., 2022). Community-based interventions can help bridge the gap between healthcare providers and pregnant women by bringing healthcare services closer to their homes (Bridge, 2019). Local healthcare workers and traditional birth attendants can be crucial in providing antenatal care, educating women about safe childbirth practices, and ensuring timely referrals when necessary (Chukwuma et al., 2019). Additionally, involving community leaders can help raise awareness about the importance of maternal healthcare and encourage community members to support pregnant women in seeking appropriate care (Mundargi & Hiregoudar, 2021).

Despite the potential benefits of community-based interventions, a remote rural community with limited access to healthcare facilities (Boyle & Geary, 2023). In such a community, the presence of local healthcare workers and traditional birth attendants may be insufficient to provide comprehensive antenatal care or handle complications during childbirth (Aziato & Omenyo, 2018). Additionally, if there is a lack of resources and infrastructure, timely referrals and necessary medical interventions may not be possible, putting the Health of pregnant women at risk ("Hospitalisation of Pregnant Women Raises Risk of Blood Clots," 2013). While community-based interventions can be beneficial, it is important to consider that in remote rural communities with limited access to healthcare facilities, the presence of local healthcare workers and traditional birth attendants may not be enough to provide comprehensive care or handle complications during childbirth due to a lack of resources and infrastructure (Kassie et al., 2022). This can lead to a higher risk of maternal and infant mortality. Community-based interventions can still provide valuable support and care to pregnant women, even in remote rural communities, as local healthcare workers and traditional birth attendants can offer basic healthcare services and support during childbirth (Haruna et al., 2019). However, it is important to acknowledge that these interventions may not be sufficient to handle complex medical complications or emergencies. In such cases, it is crucial to establish effective referral systems that can quickly transfer women needing specialised care to higher-level healthcare facilities.

Implementing a robust transportation system could be a potential solution to overcoming the referral pathway. Many remote areas lack reliable transportation options, making it difficult for patients to reach higher-level healthcare facilities in a timely manner (Oskarbski & Kaszubowski, 2016). By investing in infrastructure and establishing transportation networks specifically designed for medical emergencies, healthcare workers can ensure that patients receive the necessary care when time is of the essence (Agorinya et al., 2023).

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In addition to primary care services, mobile health clinics often offer specialised services tailored to the community's specific needs. For instance, in areas with high rates of chronic diseases such as diabetes or hypertension, these clinics may provide regular checkups, medication management, and lifestyle counselling to help patients manage their conditions effectively (Fontil et al., 2016). Moreover, mobile health clinics also play a crucial role in preventive care by conducting health education sessions and promoting awareness about various health issues, such as the importance of vaccinations, hygiene practices, and early detection of diseases.

However, mobile health clinics' effectiveness can be seen when these clinics struggle to reach remote or isolated areas due to logistical challenges (Tamata & Mohammadnezhad, 2022). In situations where the terrain is rugged, or infrastructure is lacking, mobile health clinics may face difficulties in providing regular checkups and medication management, thus limiting their impact on managing patients' conditions effectively (Rath & Deb, 2017). Additionally, cultural barriers and mistrust towards healthcare providers may hinder the success of health education sessions conducted by mobile clinics, reducing their ability to promote awareness

Recommended Essential Services Provided at Peripheral Health Facility to Improve Maternal Health Outcomes

Comprehensive Antenatal Care

Services provided at peripheral health facility units include comprehensive antenatal care. This includes regular checkups, prenatal screenings, and monitoring of the Health of the mother and the developing baby (Sokunbi, 2015). These services play a vital role in promoting maternal and child Health in communities, especially in areas where access to specialised healthcare facilities may be limited.

Furthermore, antenatal care also includes education and counselling on nutrition, exercise, and the importance of prenatal vitamins. These sessions help expectant mothers make informed decisions about their Health and the well-being of their babies (Oxman, 2013). Addressing any concerns or questions, healthcare providers can ensure that women feel supported and empowered throughout their pregnancy. Additionally, antenatal care offers an opportunity to identify and address potential risk factors or complications that may arise during pregnancy, such as gestational diabetes or high blood pressure (Tort & Parry-Smith, 2023). Early detection and intervention can greatly improve outcomes for both the mother and the baby. For example, during an antenatal care session, a healthcare provider may discuss the importance of prenatal vitamins to support the baby's healthy development (Baby et al., 2013). By educating expectant mothers about the benefits of prenatal vitamins, healthcare providers can help ensure that they are taking the necessary steps to optimise their Health and that of their baby (Santin, 2012).

Essential Delivery Services

Another important intervention healthcare providers can offer during pregnancy is access to essential delivery services. This includes ensuring expectant mothers have access to skilled healthcare professionals, such as obstetricians and midwives, who can provide appropriate

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prenatal care and attend to the delivery (Pendharkar et al., 2016). Access to these services is crucial for the safe and successful delivery of the baby, as skilled healthcare professionals can monitor the progress of the pregnancy, identify any potential complications, and provide necessary medical interventions when needed (Khatiwada et al., 2020).

Moreover, having access to essential delivery services also ensures that expectant mothers receive the support and guidance they need during labour and delivery, which can help reduce anxiety and increase the chances of a positive birth experience (Levett et al., 2015). Additionally, skilled healthcare professionals can provide postnatal care to both the mother and baby, ensuring that they receive proper medical attention and guidance in the early days of parenthood. This comprehensive care can improve overall health outcomes for both the mother and baby in the long term (Ådén, 2014). For example, in rural areas where access to healthcare facilities may be limited, the implementation of mobile clinics can provide essential prenatal care to expectant mothers. These clinics can travel to remote villages, offering prenatal checkups, ultrasounds, and vaccinations (Dudko et al., 2017). This intervention ensures that pregnant women receive necessary medical attention and allows healthcare professionals to identify potential complications early on and provide appropriate treatment.

Another example is the use of telemedicine in underserved communities. Patients can remotely consult with healthcare providers through telemedicine platforms, reducing the need for physical visits and increasing access to medical advice (Guthrie & Snyder, 2023). This technology allows individuals in remote areas to receive timely diagnosis and treatment recommendations without travelling long distances (Banawan et al., 2023). Additionally, telemedicine can facilitate collaboration between healthcare professionals, enabling them to share expertise and knowledge to provide comprehensive care for patients in underserved communities (GorFinkel & Lexchin, 2019).

However, the lack of dependable internet connectivity in these areas hinders the use of telemedicine in underserved communities (Uscher-Pines et al., 2017). Many remote regions do not have access to stable and high-speed internet, making it impossible for patients to engage in telemedicine consultations (Buvik et al., 2019).

Postnatal Care and Follow-Up

Postnatal care and follow-up are crucial components of maternal and infant healthcare, but they are often lacking in underserved communities (Symon & Dobb, 2011). Limited access to healthcare facilities and transportation challenges can make it difficult for new mothers to attend postnatal appointments. This can result in missed opportunities for important checkups, vaccinations, and screenings essential for the well-being of both mother and baby (Qin & Xie, 2023). Additionally, the lack of available healthcare providers in these areas can lead to long wait times and delays in receiving necessary postnatal care, further exacerbating the health disparities faced by underserved communities (Sharma et al., 2020).

For example, new mothers in rural communities without nearby healthcare facilities may have to travel long distances to attend postnatal appointments (Orser & Wilson, 2023). This can be particularly challenging for those without reliable transportation or who cannot afford the costs

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associated with travelling. As a result, these mothers may face difficulties accessing necessary healthcare services and may not receive timely postnatal care (Benzie et al., 2023).

Furthermore, the shortage of healthcare providers in underserved areas can lead to overcrowded clinics and long wait times for postnatal care. This can result in delays in receiving essential medical attention, potentially leading to complications or the worsening of postnatal conditions (Spero & Fraher, 2014). Additionally, the lack of accessible healthcare services in rural communities may also contribute to a lack of education and support for new mothers, as they may not have access to resources such as breastfeeding assistance or guidance on newborn care. These challenges can further hinder the well-being and recovery of new mothers in underserved areas (Kandiah et al., 2011).

A scenario where an underserved area has a well-functioning healthcare system that effectively manages postnatal care. Despite being underserved, the clinics are efficiently organised, and wait times are minimised through proper appointment scheduling and resource allocation (Liu et al., 2017). Additionally, community health workers and outreach programmes actively provide education and support to new mothers, ensuring they can access the necessary resources and guidance. As a result, the well-being and recovery of new mothers in this underserved area are not compromised, and they receive the same level of care and support as those in well-served areas (Liu et al., 2017). The success of this healthcare system demonstrates that being underserved does not necessarily equate to inadequate postnatal care, as effective management and community engagement can overcome resource limitations.

Immunisation and Maternal Health Services

Immunisation and child health services play a crucial role in preventing the spread of infectious diseases and ensuring the well-being of pregnant women and children (Rana et al., 2021). However, in underserved areas, these services are often lacking or inaccessible, leaving children vulnerable to preventable illnesses. This further widens the gap in healthcare disparities, as children in underserved areas are at a higher risk of developing serious health complications (Zickafoose & Davis, 2013). Efforts should be made to improve access to immunisation and child health services in these areas through mobile clinics or community outreach programmes. By prioritising the Health of children in underserved areas, healthcare workers can help reduce the burden of infectious diseases and improve overall community health (Nxumalo et al., 2013). Additionally, investing in education and awareness campaigns can empower parents and careers with knowledge about the importance of immunisations and regular health checkups for their children. By addressing these healthcare disparities, we can work towards a future where all children have equal opportunities for a healthy life (Karabulut & Akbaş, 2023).

For example, a mobile clinic could be set up in a rural village with limited access to healthcare facilities. The clinic would provide vaccinations, regular checkups, and basic medical treatments to children in the community (Khan, 2021). Through community outreach programmes, healthcare professionals could also educate parents about the benefits of immunisations and the importance of preventive care for their children's Health. This comprehensive approach would

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improve the immediate health outcomes for these children and contribute to long-term community well-being (Razai et al., 2023).

However, despite access to healthcare facilities and regular checkups, children in the community may still suffer from chronic illnesses due to underlying environmental factors such as pollution or inadequate nutrition (Hanaoka, 2023). Additionally, the lack of trained healthcare professionals or limited resources in the mobile clinic could result in subpar medical treatments, leading to ineffective or even harmful care for pregnant women (Phiri, 2021).

Despite the potential advantages of healthcare facilities and routine checkups, environmental factors and inadequate nutrition may still hurt mothers' Health in the community. The mobile clinic's limited resources and lack of trained professionals may lead to subpar or harmful medical treatments (Getahun et al., 2023). These challenges highlight the importance of addressing the community's root causes of poor child health. Efforts should be made to improve the overall environmental conditions and provide children access to nutritious food (Drangert, 2023). Moreover, investing in training and recruiting more healthcare professionals is crucial to ensure quality care in the mobile clinic. Only by addressing these issues can we truly positively impact the Health and well-being of children in the community. Therefore, it is essential to prioritise these factors in order to achieve our goal of providing quality healthcare to children (Razai et al., 2023).

Family Planning and Reproductive Health Services

Another important aspect of improving maternal Health in the community is the provision of comprehensive family planning and reproductive health services. By ensuring access to contraception and reproductive healthcare, healthcare providers can empower individuals and families to make informed decisions about their reproductive Health (Pettersson & Baroudi, 2024). This includes providing education on family planning methods, offering counselling services, and making contraception readily available. Additionally, it is important to address issues such as teenage pregnancy and sexually transmitted infections through targeted interventions and education programmes (Marguerite & Amour, 2011). By prioritising family planning and reproductive health services, we can help prevent unintended pregnancies, reduce the risk of maternal and infant mortality, and promote healthier outcomes for both mothers and infants (Hoggart & Phillips, 2011).

Furthermore, access to comprehensive reproductive health services can empower individuals to take control of their bodies and make choices that align with their personal goals and aspirations (Oraby, 2015). By providing education on family planning methods, individuals can better understand their options and make informed decisions about when and if they want to start a family. Counselling services can also play a crucial role in supporting individuals as they navigate the complexities of reproductive Health, addressing any concerns or anxieties they may have (Aziz et al., 2017). Moreover, ensuring that contraception is readily available and affordable can help reduce barriers to accessing reproductive health care and prevent unintended pregnancies (Robson et al., 2015).

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For example, a young couple who wants to focus on their careers and travel before starting a family can benefit from education on family planning methods. By understanding their options, such as birth control pills or long-acting reversible contraceptives, they can make informed decisions that align with their personal goals and aspirations (Kraetschmer, 2018). Additionally, counselling services can provide guidance and support to address any concerns or anxieties they may have about their reproductive Health, ensuring they feel confident in their choices (Delemere & Maguire, 2022). Making contraception readily available and affordable further reduces barriers for young couples, allowing them to access and use the contraceptive methods of their choice effortlessly. This accessibility promotes responsible family planning and empowers them to take control of their reproductive Health. Moreover, by utilising contraception effectively, they can confidently pursue their career and travel goals without the worry of an unplanned pregnancy, ultimately enhancing their overall well-being and life satisfaction (Lee & Rathi, 2018).

However, in the case of a young couple who have access to affordable contraception but still face barriers in their family planning due to cultural or religious beliefs, despite the availability and affordability of contraception, they may choose not to use it due to personal or societal reasons (Begun, 2015). This can lead to unintended pregnancies and potential negative impacts on their physical and emotional well-being, as well as limitations on their career and travel goals (Neupert & Can, 2022).

While access to affordable contraception can enhance overall well-being and life satisfaction, cultural or religious beliefs may still prevent some individuals from using it, potentially leading to unintended pregnancies and limiting their career and travel goals (Speed & Lamont, 2021). These individuals may face challenges in accessing comprehensive reproductive healthcare services, including safe and legal abortion. The lack of access to these services can result in increased health risks and hinder their ability to make informed choices about their reproductive Health. Therefore, promoting education and awareness about contraception and reproductive rights is crucial, ensuring that individuals have the information and support to make the best decisions for themselves and their futures (Berro Pizzarossa, 2018).

Research Methodology

Research Designs

A convergent parallel design was conducted to address the study objectives. Quantitative and qualitative data were collected simultaneously, and the results were interpreted together (Demir & Pismek, 2018). This mixed method helped provide a comprehensive understanding of the maternal health landscape at peripheral health facilities in the Pujehun District. This design allowed the integration of qualitative and quantitative data to explore barriers, assess services, and gain useful insights into interiors faced by internal Health in the dry area. Integrating these two data types provided a richer and more nuanced understanding of the challenges and opportunities faced by maternal health services at the Peripheral Health Facility (PHF) level in Pujehun District.

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The quantitative component of the study involved the systematic collection and analysis of numerical data, utilising statistical tools and methodologies. This approach facilitated the quantification of key indicators related to the barriers, availability, affordability, and acceptability of maternal health services.

The qualitative component employed in-depth research methods such as Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs). These qualitative approaches allowed the research team to understand better the contextual factors influencing maternal health services. Themes and patterns emerging from the qualitative data complemented and enriched the quantitative findings, offering a more holistic perspective on the challenges and facilitators of maternal Health in the study area.

Description of Study Area

The study was conducted in two rural hard-to-reach chiefdoms with worst-performing data on maternal indicators in Sierra Leone (Mano Sakrim and Soro Gbeima Chiefdom) in Pujehun district SLDHS 2019. Pujehun district is described as one of the Main challenging districts in Sierra Leone regarding the maternal morbidity and mortality index. The health demographic indicators of the District are not as conducive as other rural District and urban settings in Sierra Leone, thus making a relevant study of this nature. As for the country, so is the District and the referent chiefdom of study. Maternal and child morbidity and mortality remained at the pinnacle of health challenges faced by inhabitants of the two chiefdoms, especially Mano Sakrim, which had very difficult access challenges due to its topography, which essentially had to do with the riverine. In this Chiefdom, out of six (6) health facilities (Mano Gbogeima CHC, Mende MCHP, Gombu MCHP, Kassay MCHP, Nyandehun MCHP, Sebengu MCHP and Bengani MCHP), five are accessed by boat where only one is accessed by land. Transportation boat movement to these health facilities is only possible 2 days a week (Tuesdays and Wednesdays), considered market days in the Chiefdom in Gbondapi**.** Obstetrics and medical referral referrals and the movement of inhabitants in this Chiefdom had remained a significant challenge over this period. They marked the Chiefdom as one of the hardest-to-reach Chiefdoms with poor maternal health indicators in the district district.

On the other hand, Soro Gbeima Chiefdom, as a referent chiefdom of study, is one of the biggest Chiefdoms in the Pujehun district, located in the far South of the District and shares a border with Liberia. Out of the 11 chiefdoms in Pujehun, this Chiefdom had the longest distance of communities and health facilities to access the Pujehun government hospital and the central District (Pujehun town) that holds all the social, economic and political amenities and institutions. Access to Pujehun from this part of the District remained a significant challenge to the inhabitants of the District in terms of distance, similar to Mano Sakrim.

Maternal and child morbidities and mortalities, as previously studied over the years, are more prevalent and higher in these two chiefdoms in Pujehun than in any other in the District. These peculiar challenges are a few of the informed decisions that warranted research of this nature. In the annexe of this study, a map of the study area is displayed for reference.

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Population of Study

The study population will include women of reproductive age, healthcare providers, Community Health Workers, Traditional Birth attendants, Facility management Committees and stakeholders involved in maternal health services at the peripheral health facility and community level in Pujehun District. The study aims to understand their perspectives and experiences to inform the development of interventions for effective and sustainable improvements in maternal health outcomes. By including women of reproductive age, healthcare providers, and stakeholders in the health sector mentioned in the study, a comprehensive understanding of the issues surrounding maternal health services in the Pujehun District could be obtained. This will allow interventions to be specifically tailored to address the unique needs and circumstances of the local population. By incorporating the perspectives and experiences of these individuals, the interventions developed will be more effective and sustainable, ultimately leading to improved maternal health outcomes in the District.

Sample and Sampling Procedure

A multi-stage technique was employed for the quantitative study. First, purposive sampling was used to select one of the worst-performing Districts in maternal health indicators in Sierra Leone, based on the 2019 Sierra Leone Demographic Health Survey (SLDHS 2019), followed by selecting the worst-performing Chiefdom in the selected District. Cluster sampling was then employed to select four peripheral health workers per chiefdom, after which health care workers on payroll supporting maternal health at the PHU level, including community health officers, nurses, midwives, and other health workers, were identified from a listing exercise. A random sample of 126 healthcare workers was done, and 40 were identified to administer questionnaires in the two chiefdoms. Randomisation addressed sample selection bias (Kahan et al., 2015). The prevalence formula determined the sample size (Pourhoseingholi et al., 2013). Quantitative data was collected using a pretested structured questionnaire, and information collected included participants' demographic information and questions measuring research questions regarding barriers to maternal health outcomes on availability, affordability and acceptability of maternal health services. Precisely, availability was measured by services, availability of health care workers, availability of essential drugs, WASH services, time spent by clients, travel time, mode of transport used to get to a health facility, and the convenience of facility opening and closing times. Affordability was measured by the expenditure on maternal services, medication, transport, accommodation, food, communication and paying someone to care for the children at home. Acceptability was measured by how respondents felt about the length of queues, health workers' attitudes and respect, and the cleanliness of facilities.

A purposive sampling technique was used as directed by the SLDHS 2019 survey and review of the PHU population for pregnant and lactating mothers. The qualitative data was collected through four (4) Focus Group Discussions (FGDs), each per Chiefdom with 10 pregnant and lactating women with kids less than 2 years old each per FDG, utilising maternal health services in the four PHU and four FDG done with five TBAs each per group. In addition, eight (8) Key Informant Interviews (KIIs) with community-level stakeholders, including Chiefs, Mammy queens, CHWs, and Facility management committee members at the chiefdom level were

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conducted. Lactating and pregnant women participating in the FDG were identified from the PHU attendance register utilising services for the past 6 months. TBAs and community stakeholders were identified with the help of facility-in-charges. The triangulation methods were used to enhance the validity of the findings.

Sample Size of the Study

The research team embarked on the mixed method of study. In identifying the quantitative respondent, with the view to capture evidence-based data, which will ascertain the barriers maternal mothers face in craving their health needs at the PHU level, the target audience used by the research team was healthcare workers providing services at the PHU level. Based on pre-existing information gathered in the study area, a maximum of 11 and a minimum of seven health facilities are identified in the two chiefdoms of the study. Out of this total, four facilities were randomly selected to ascertain respondents. In the eight health facilities identified in the two chiefdoms, 126 healthcare workers reported on the payroll were identified as working in the eight PHUs identified. Out of this total, 40 health workers were randomly selected as the sample size for the quantitative respondents targeting health workers.

At the PHU level, a review of the pregnant and lactating mother's attendance registers and the support of the health facility in charge helped to determine the sample size for the qualitative design. The purposeful techniques used here helped the research team to identify four (4) Focus Group Discussions (FGDs) each per Chiefdom with 10 pregnant and lactating women with kids less than 2 years old each per FDG, utilising maternal health services in the four PHU and 4 FDG was done with 5 TBAs each per group. In addition, eight (8) Key Informant Interviews (KIIs) with community-level stakeholders, including Chiefs, Mammy queens, CHWs, and Facility management committee members at the chiefdom level were conducted. Lactating and pregnant women participating in the FDG were identified from the PHU attendance register utilising services for the past 6 months. TBAs and community stakeholders were identified with the help of facility-in-charges. The triangulation methods were used to enhance the validity of the findings.

Data Collection

The questionnaire was given to the respondents after they were assured that the information would be kept confidential and used only for academic and research purposes.

The research team ensured the voluntary participation of respondents to be informed about the study's objective and benefits, the confidentiality of records was protected, and no names of respondents were asked during the data collection.

Instrument for Data Collection

This mixed-method study used Google Forms as a data collection platform for the quantitative component, capturing quantitative information about maternal health services in rural Pujehun. The questionnaire addressed key indicators like availability, affordability, and acceptability of maternal health services. Google Forms provided accessibility, ease of data entry, and real-time

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data capture, allowing participants to respond conveniently. The platform also facilitated automated data collection and organisation for analysis. Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) were used for the qualitative component to gather in-depth information about contextual factors influencing maternal health services. A semi-structured interview guide was developed to ensure consistency and coverage of key themes. The combination of quantitative data collected through Google Forms and qualitative insights from FGDs and KIIs allowed for a comprehensive exploration of maternal health services in rural Pujehun, enhancing the study's robustness and providing a more nuanced understanding of the research objectives.

Validity of Instrument

The quantitative data collection instrument will undergo rigorous validation to ensure reliability and suitability for the study's specific setting. The process includes expert evaluation, pilot testing, content validity, and construct validity. Experts will examine the preliminary version of the questionnaire to enhance its clarity, relevance, and connection with the study's aims. Pilot testing will involve a small group of participants from a similar location to the research region, gathering feedback to evaluate the comprehensibility of the questions and detect uncertainties. Content validity will be assessed by ensuring each item effectively encompasses the specific components of maternal health care described in the study goals. Construct validity will be assessed by ensuring the questions align with existing notions about maternal health services, affordability, and acceptability. The qualitative data collection instrument, consisting of semi-structured interviews and focus group discussion guides, will undergo validation to ensure its effectiveness in capturing participants' experiences and perspectives. The process includes expert evaluation, pilot testing, and feedback integration. Experts will review the preliminary version of the interview and focus group guides, enhancing the questions and aligning them with the study's objectives. Pilot testing will be conducted with participants who reflect the intended participant groups, evaluating the comprehensibility of questions, language use, and the instrument's ability to elicit detailed responses. Feedback integration will improve clarity, pertinence, and cultural appropriateness. The study aims to improve the accuracy, reliability, and relevance of the data collected by thoroughly validating both quantitative and qualitative instruments, ensuring the data effectively addresses research objectives and provides valuable insights into maternal health services in the Pujehun District.

Reliability of Instruments

The validation and reliability of the data collection instruments were established through a pilot testing phase conducted before the actual FGDs. The interview guide and visual aid were refined based on feedback from a small sample of healthcare workers who shared similarities with the target participants. Adjustments were made to improve clarity, relevance, and cultural sensitivity. The final instruments were deemed valid and reliable for capturing the nuanced perspectives of healthcare workers on maternal health outcomes in Barrie Chiefdom.

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Source of Data

Two data sources, Primary and secondary sources, were used during the research. The primary data was collected using statistical tools such as questionnaires, informal interviews, focus group discussions, and participant interviews. The research team used secondary data as well. Familiar sources of secondary data for social science include information collected from the District health management team platform, Health facility records, organisational records, and data initially collected for other research purposes. All these two sources were used during this research.

Data Collection Procedure

The study will use standardised questionnaires to gather quantitative data on obstacles, services, and affordability of maternal health services. A team of enumerators will undergo comprehensive training on research objectives, ethical issues, and questionnaire delivery. A pilot test will be conducted to address clarity and language issues. Participants will be selected based on a specific sampling technique, focusing on women of reproductive age, healthcare practitioners, and other stakeholders in maternal health services. Informed consent will be obtained from each participant. Enumerators will administer the questionnaires, guiding factors such as obstacles, perceived accessibility, and demographic information. Supervisors will conduct regular checks to ensure the data is high quality. Participants will be asked to provide further information or clarification if their responses are incomplete or confusing. The quantitative data will be entered into a statistical software package for analysis, with a meticulous data cleansing procedure to detect and correct inaccuracies or discrepancies.

The study will use a qualitative data collection strategy, including semi-structured interviews and focus group discussions, to understand the acceptability and relevance of maternal health care. Participants will be carefully selected based on demographic diversity, experiences with maternal health care, and cultural representation. Informed consent will be obtained from participants before they participate in the data collection procedures. Key informants like healthcare professionals, community health workers, and traditional birth attendants will be the subjects of semi-structured interviews by trained interviewers. Focus group discussions will be conducted with participants from diverse backgrounds to examine everyday experiences and perspectives. Audio recordings and notes will be made with participants' explicit permission, while transcription will ensure the full depth of participants' answers is maintained. The qualitative data analysis will identify and interpret recurring patterns and themes from the interviews and discussions. A qualitative analysis programme will be employed to facilitate this process. Triangulation will combine the qualitative data with the quantitative results to comprehensively understand maternal health care in the Pujehun District. This approach aims to fulfil research objectives and provide valuable insights for future interventions.

Method of Data Analysis

This mixed-method study systematically analysed quantitative and qualitative data to evaluate the barriers to improving maternal health services in rural Pujehun. Data was collected through

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Google Forms and analysed using STATA version 11 for Windows. Key indicators like barriers to availability, affordability, and acceptability were quantified to discern patterns and trends. Statistical tests were used to explore associations and significant differences among variables. Qualitative data was derived from Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) and analysed using thematic content analysis. Coding was used to identify and categorise key concepts and patterns within the qualitative data, allowing for a nuanced exploration of contextual factors influencing maternal health services. Qualitative data analysis was conducted using qualitative data analysis software to enhance rigour and traceability. The convergent parallel design of the study facilitated the integration of quantitative and qualitative findings, providing a comprehensive understanding of maternal health services in rural Pujehun.

Triangulation was employed to enhance the validity and reliability of the overall study findings. A robust data management system was implemented to ensure the security and confidentiality of participant information. Quantitative data was securely stored and backed up, while qualitative data was anonymised and stored in password-protected electronic databases. Proper documentation of data coding procedures and analytical decisions was maintained for transparency and reproducibility.

Ethical Consideration

This study aims to uphold ethical standards throughout the research procedure, ensuring participants' rights, welfare, and confidentiality. It will provide explicit consent, guarantee voluntary participation, protect participant identities through pseudonyms, and prioritise beneficence. Participants will learn about the potential benefits of the study, including enhanced maternal health care. Harm mitigation measures will be implemented to reduce discomfort during data collection. Inclusive sampling will ensure diverse perspectives, including demographic, cultural, and socioeconomic characteristics. All participants will receive equitable treatment regardless of their origin or qualities. Confidentiality will be maintained through confidential settings for interviews and focus group discussions. Ethical committee approval will be obtained before data collection, ensuring compliance with national and international research ethics standards. Transparent communication will be provided to participants, and feedback mechanisms will be provided upon expressing interest. The study will emphasise community involvement, which means informing and educating local communities and leaders. Data collectors who adhere to regional cultural norms will demonstrate cultural sensitivity. By upholding these ethical principles, the study seeks to provide thoughtful, conscientious, and answerable research to the participants and communities involved. The ultimate goal is to provide ethically sound insights into maternal Health in the Pujehun District.

Finding and Interpretation of Data

Demographic Characteristics of Respondents-Quantitative Data

Table 1 below summarises the demographic makeup of healthcare workers targeted in the quantitative design. Analysis of this section shows that Female healthcare workers accounted for 60.5% of the sample, while male healthcare workers accounted for 32.6%. The age distribution

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of healthcare workers was relatively balanced across the different age groups. The largest age group was between 26-35 years, representing 32.6% of the sample. Similarly, the 20-25 and 36-45 age groups comprised 27.9% and 32.6% of the respondents, respectively. Most healthcare workers had attained a university education, with 67.4% of the sample doing so. On the other hand, 25.6% of the respondents reported having completed education up to the secondary school level.

Among healthcare workers, 69.8% were pinned coded (payroll staff), while 23.3% were non-pinned. The SECHN (State Enrolled Community Health Nurse) is the most prominent cadre, accounting for 25.6% of the respondents. State registered Nurse SRN and midwives were also significant cadres, representing 20.9% and 16.3% of the sample. The data indicate that the distribution of healthcare workers is primarily concentrated in two chiefdoms, Soro-Gbeima and Mano-Sakrim, with each hosting an equal proportion of workers, accounting for 46.5% of the total. Employment across various facilities is also observed. BEmONC (Basic Emergency Obstetric and Newborn Care) facilities employ the most significant proportion of workers, comprising 44.2% of the sample. Other types of facilities include CHC (community health centres (CHCs), CHP (community health Posts), and MCHPs (maternal and child health posts. The distribution of healthcare workers across health facilities seemed balanced, with each facility having an equal share of workers, totalling five respondents and comprising 11.6% of the sample.

Table 1: Demographic Characteristics' Of Healthcare Workers

Variable(s)	**Category**	**Frequency**	**Percentage**
Gender	Male	14	32.5%
	Female	26	67.5%
	Total	40	100.0%
Age	20 to 25	12	30.0%
	26-35	14	35.0%
	36-45	14	35.0%
	Total	40	100.0%
Education Level	High School Level	11	27.5%
	University Level	29	72.5%
	Total	40	100.0%
Employment Status	Pinned-Coded	30	75.0%
	Non-Pinned Coded	10	25.0%
	Total	40	100.0%
Staff Cadre	CHO	6	15.0%
	Mid-wife	7	17.5%
	SRN	9	22.5%
	SECHN	11	27.5%
	MCHA	4	10.0%
	TBAs	3	7.5%
	Total	40	100.0%
Chiefdom where you work	Soro -Gbeima	20	50.0%
	Mano-Sakrim	20	50.0%

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	Total	40	100.0%
Facility type	BEmONC	19	47.5%
	CHC	8	20.0%
	CHP	7	17.5%
	MCHP	6	15.0%
	Total	40	100.0%
Name ofHealth Facility	Sulima HF	5	12.5%
	Jendema HF	5	12.5%
	Fairo HF	5	12.5%
	Malema HF-1	5	12.5%
	Mano HF	5	12.5%
	Sebengu HF	5	12.5%
	Bengani HF	5	12.5%
	Kassay HF	5	12.5%
	Total	40	100.0%

Objective 1:

Descriptive Report on Maternal Health Services and Facility Resources

Objective one (1) assessed the availability of essential maternal health services and crucial resources in primary healthcare units (PHUs). Figure 1 revealed that a variety of maternal health services are available to promote positive maternal health outcomes in Pujehun District, including family planning (32.6%), nutrition education (20.9%), antenatal care (23.3%), postnatal care (11.6%), and immunisation services (4.7%). Although delivery services are also available, they are rarely mentioned. The healthcare workers evaluated the availability of drugs and medical supplies at their facilities; 48.8% rated it as very good, 30.2% rated it as good, and 14.0% rated it as fair [Figure 2].

Furthermore, most healthcare workers positively perceived the availability of medical equipment at their facilities, with 48.8% rating it as very good and 30.2% rating it as good. The available data showed that the following distribution emerged concerning the frequency of facility closures: 34.9% of the facilities were closed a month ago, 20.9% were closed 2-4 months ago, 14.0% were closed more than four months ago, and 23.3% had never closed. Additionally, the inventory levels of key drugs, including antimalarial, oxytocin, Paracetamol, and amoxicillin with folic acid, were as follows: 39.5% of antimalarials and 39.5% of oxytocin had less than two weeks' worth of stock; 27.9% of Paracetamol had less than two weeks' worth of stock; and 32.6% of amoxicillin with folic acid had between one and two weeks' worth of stock.

Healthcare workers were queried regarding the existence of pharmacies in their respective residential areas. The data revealed positive (39.5 %) and negative responses (53.5 %). The overwhelming majority of respondents indicated that expectant and nursing mothers pay for healthcare services in their health facilities, with 79.1% reporting this. For those who pay for these services, the costs vary as follows: 14.0% pay less than 50 new Leones, 14.0% fall within the range of 60-100 new Leones, 16.3% pay-101-200 new ones, 30.2% pay-201-400 new

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Leones, and 18.6% pay more than 500 new Leones. The services for which payments are made include laboratory tests, purchase of medicines that are not available, and registration booking for ANC.

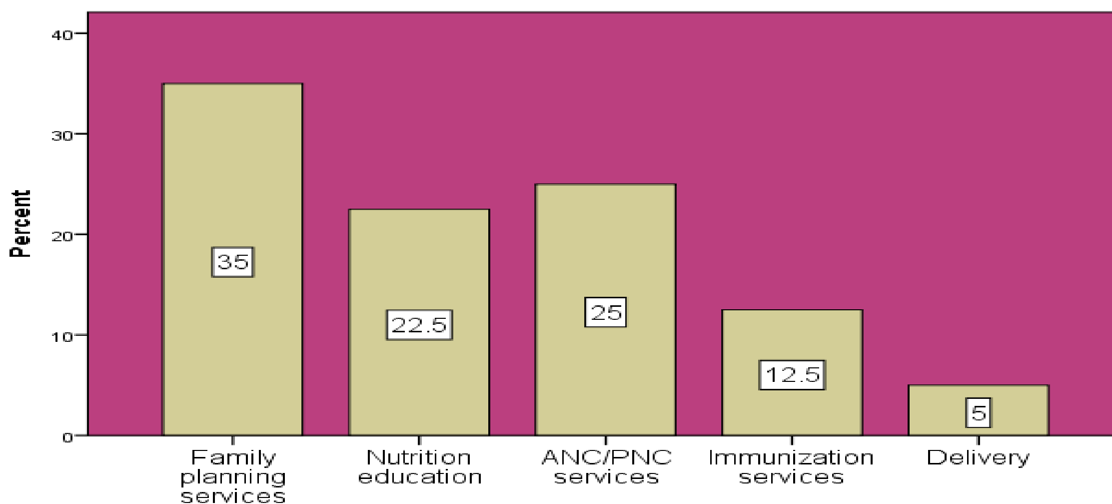

Figure 1: What are the available maternal health services rendered at your Health Facility?

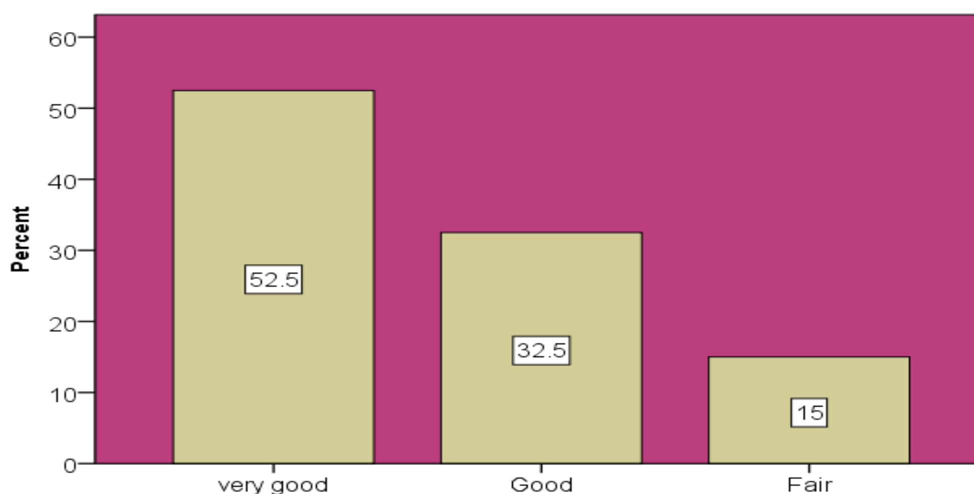

Figure 2: Availability of Medical Equipment at your Health Facility

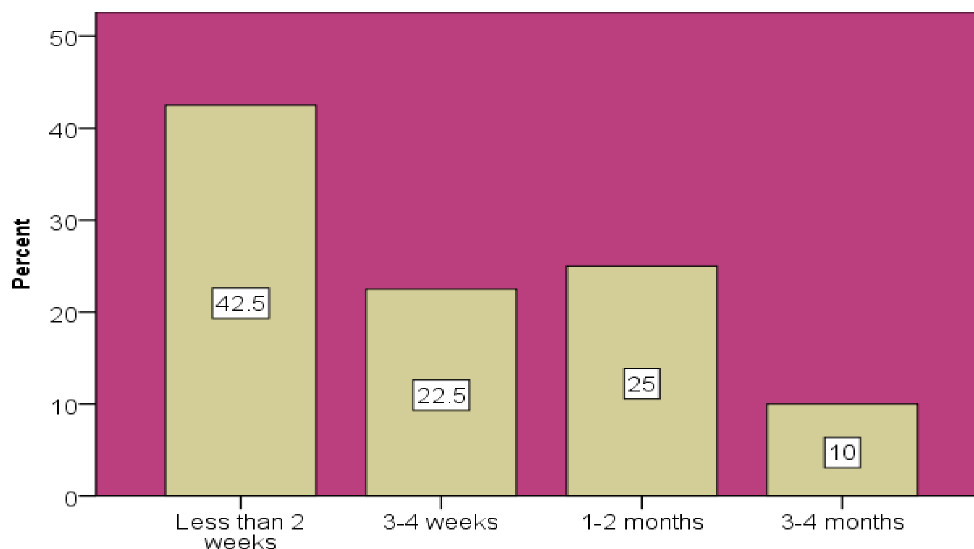

Figure 3: When Last Was Your Clinic Closed?

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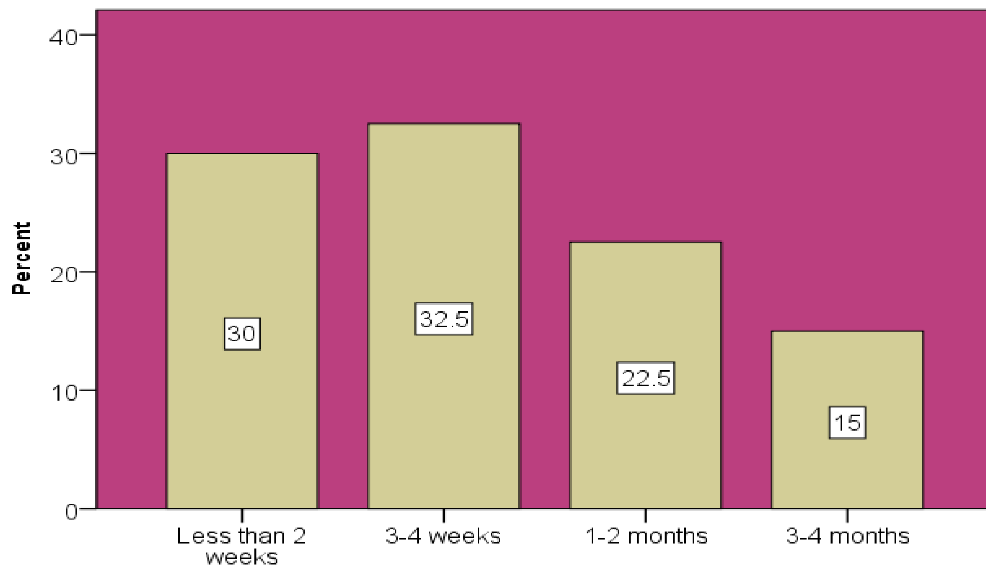

Figure 4: When Last was your Facility stocked out with Anti Malaria Drugs

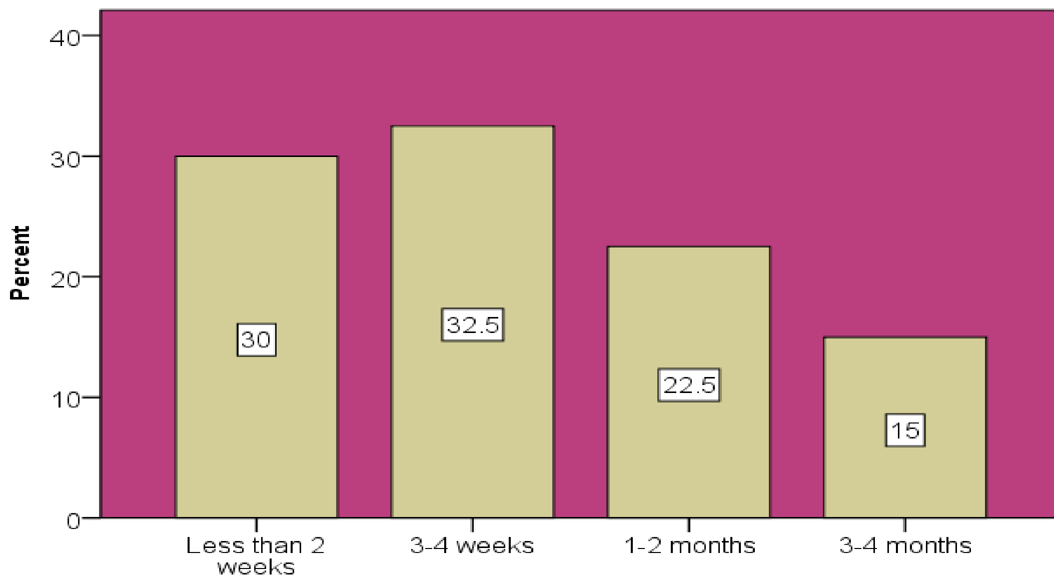

Figure 5: When was your facility stocked out with Oxytocin?

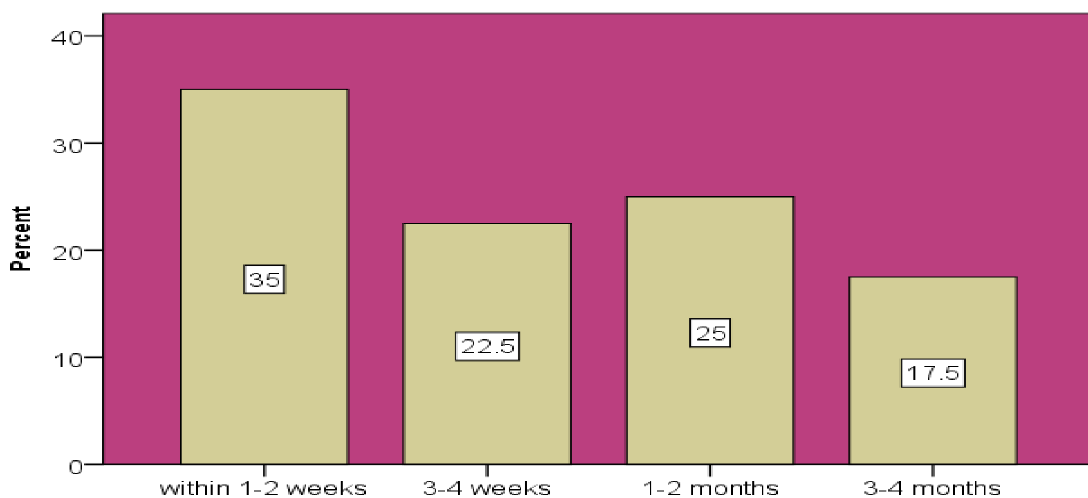

Figure 6: When Last was your Facility stocked out with Paracetamol

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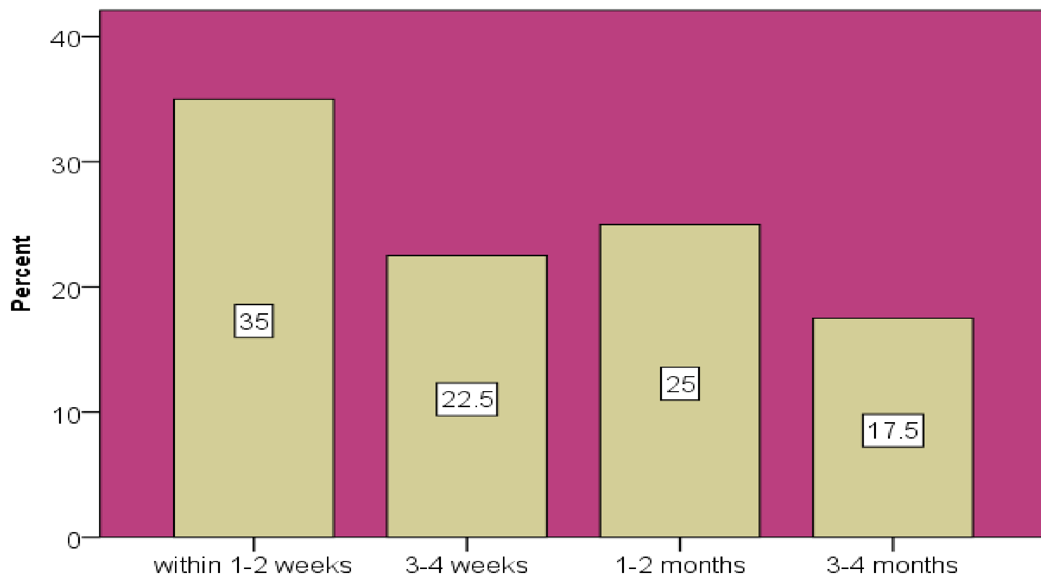

Figure 7: When was your facility last stocked with amoxicillin?

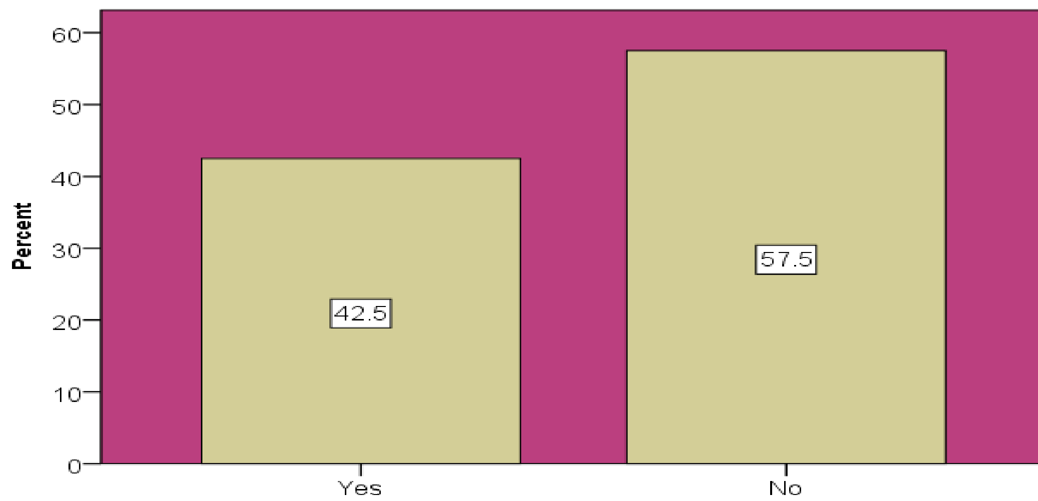

Figure 8: Is there a pharmacy within your community where clients can get Medicine?

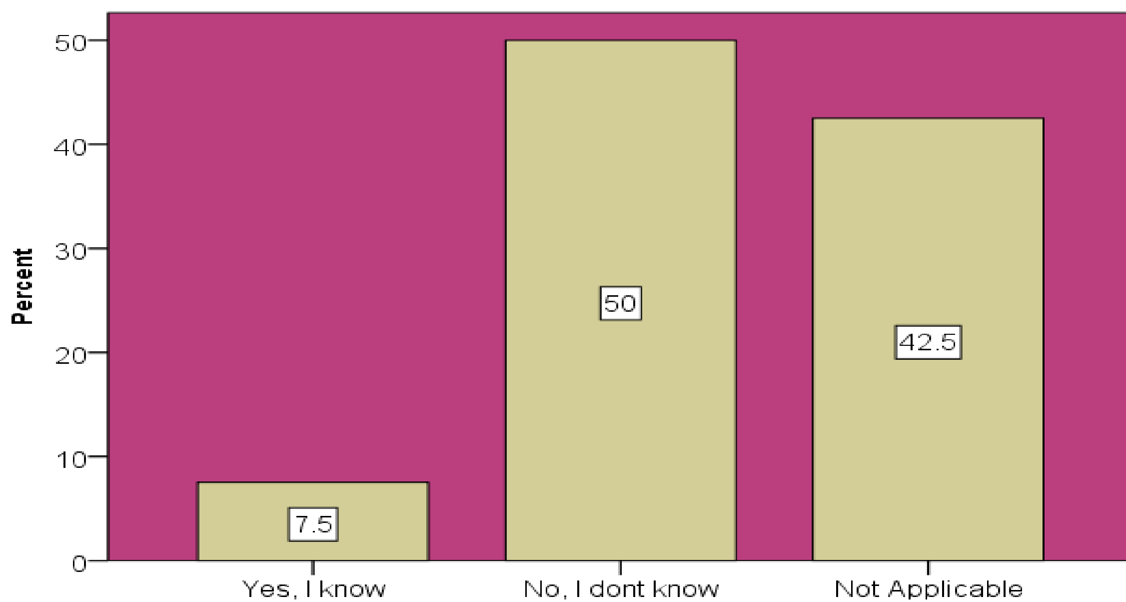

Figure 9: If not, do you know where they get Medicine Prescribed at the Health Facility?

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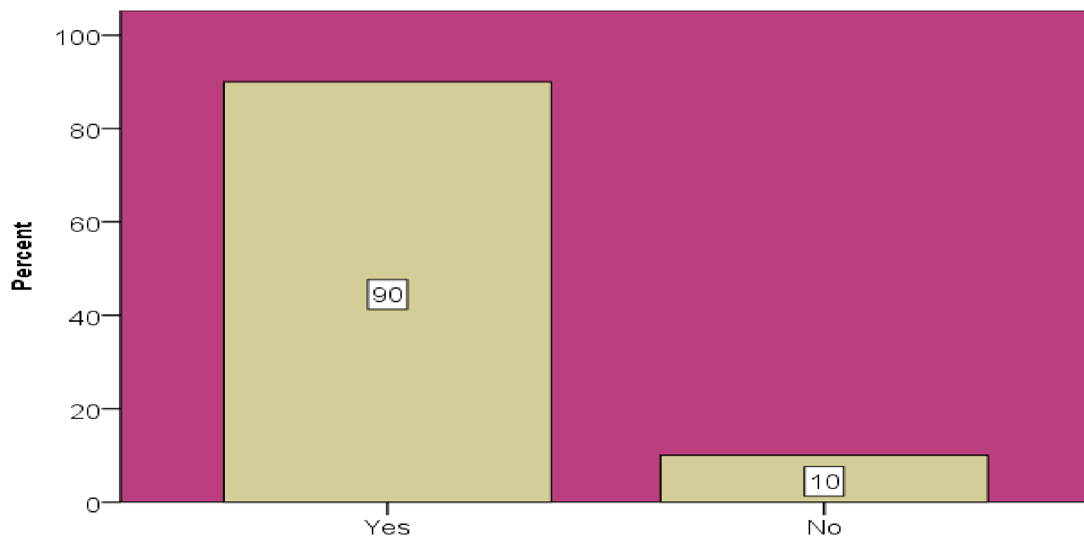

Figure 10: Does your Health Facility have a cost Recovery Drugs Facility?

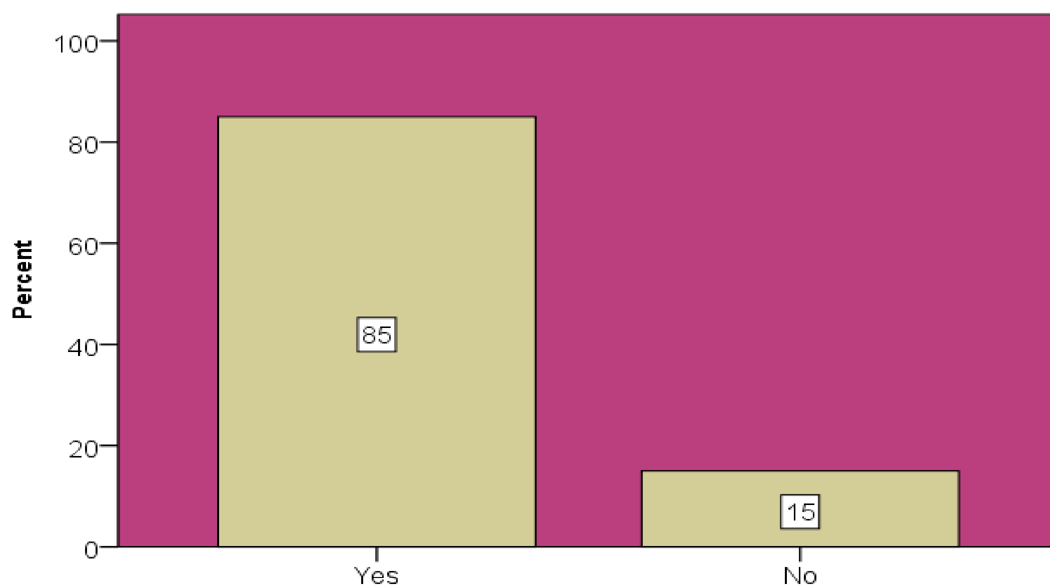

Figure 11: Are there times when Pregnant And Puerperium Mothers Paid for Services In Your Facility?

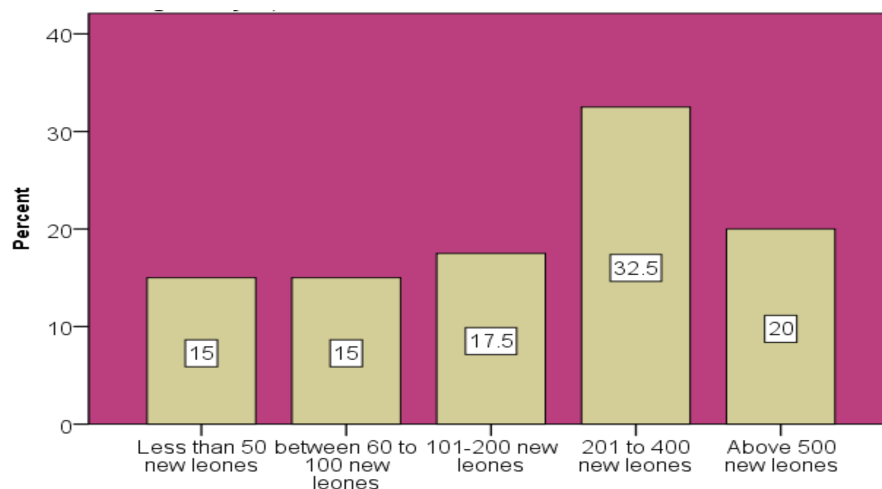

Figure 12: If yes, can you Rate the Cost Paid for The Services Rendered?

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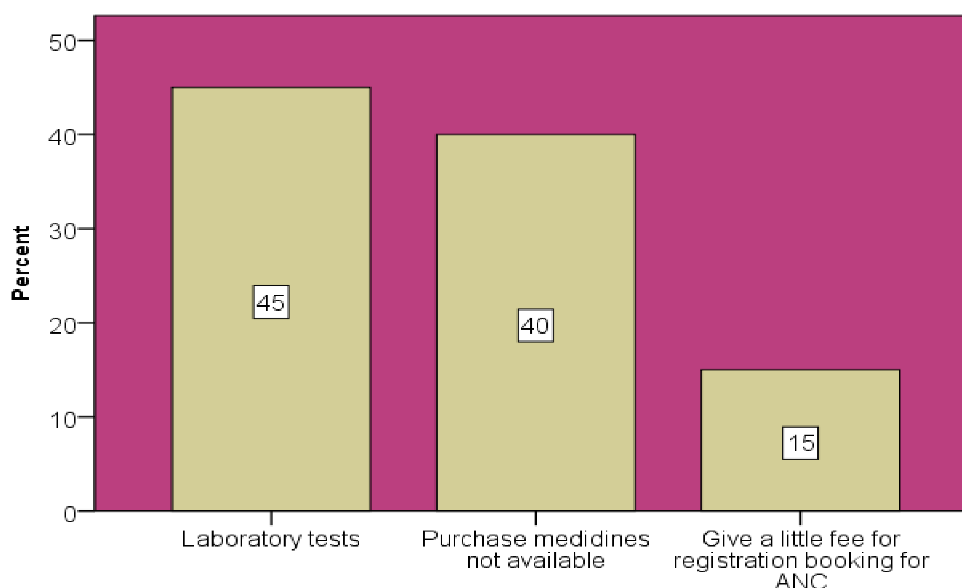

Figure 13: If yes, what are the key services paid for?

Objective 2:

Maternal Healthcare Services and Accessibility at Peripheral Health Units

Objective two (2) aimed to provide a comprehensive overview of the accessibility and infrastructure of Peripheral Health Units (PHUs) about maternal health outcomes. Most respondents (46.5%) indicated that PHUs offer completely accessible maternal health services, reflecting a positive perception of service availability. However, 34.9% of the respondents reported partial accessibility, and 11.6% indicated that services were inaccessible. The data also provided insights into the infrastructure available at PHUs to support maternal healthcare. While most respondents reported the availability of drinking water (67.4%) and toilet facilities (83.7%), a notable proportion indicated a lack of these amenities. Various alternatives have been reported for those without toilet facilities, including using community facilities or seeking assistance from neighbours.

Regarding the availability of electricity for delivery services at night, the responses were divided equally, with 46.5% indicating the presence of electricity. Among those who used electricity, solar grids (25.6%) and generators (16.3%) were the primary sources. Most PHUs reported having space to retain pregnant women during labour (79.1%), with retention periods ranging from 1-3 days to 6-10 days. To facilitate referrals, respondents used various modes of transportation, including motorbikes (48.8%), ambulances (37.2%), and hammocks (4.7%). All PHUs had mobile network coverage for communication purposes, with Orange, Africell, and Qcell as the most accessible networks, enabling communication for healthcare delivery and coordination.

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Table 2: How Affordable and Accessible Are the Services Rendered at Your Health Facility Level

Category	Frequency	Per cent
Yes, Completely	20	50.0%
Yes, Partially	15	37.5%
Not at all	5	12.5%
Total	**40**	**100%**

Table 3: What is the Population Accessing the Health Facility?

Category	Frequency	Per cent
<100 population	17	42.5%
Between 101 and 299, the population	11	27.5%
Between 300 and 499 population	9	22.5%
>500 populations	3	7.5%
Total	**40**	**100.0%**

Table 4: What is the Shortest Distance for Communities to Your Health Facility?

Category	Frequency	Per cent
<5km	12	30.0%
Between 6-10 km	12	30.0%
>10 km	16	40.0%
Total	**40**	**100.0%**

Table 5: Are There Drinking Water Facility Available and Accessible Within the Health Facility?

Category	Frequency	Per cent
Yes	29	72.5%
No	11	27.5%
Total	**40**	**100.0%**

Table 6: If 'NO', How do They Get Water For Drinking?

Category	Frequency	Per cent
Drink purchase water	5	12.5%
Drink water from a community tap	4	10.5%
Fetch and drink water from the streams/ river	2	6.5%
Not Applicable	28	70.0%
Total	**40**	**100.0%**

Table 7: Are There Toilet Facilities Available for Client Usage Within the Health Facility?

Category	Frequency	Per cent
Yes	36	90.0%
No	4	10.0%
Total	**40**	**100.0%**

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Table 8: If 'NO,' what do they do when the need arises?

Category	Frequency	Per cent
Use community toilet	2	5.0%
Go to their homes	1	2.5%
Use neighbourhood toilet	1	2.5%
Not applicable	36	90.0
Total	**40**	**100.0%**

Table 9: Is There Electricity At Night To Conduct Delivery At Your Health Facility?

Category	Frequency	Per cent
Yes	20	50.0%
No	20	50.0%
Total	**40**	**100.0%**

Table 10: If YES, what is the source of electricity?

Category	Frequency	Per cent
Solar grid	11	27.5%
Generator	7	17.5%
We Care Solar	3	7.5%
Not Applicable	19	47.5%
Total	**40**	**100.0%**

Table 11: Is there a Space Within the Health Facility To Retain Pregnant Women During Complicated Labor

Category	Frequency	Per cent
Yes	34	85.0%
No	6	15.0%
Total	**40**	**100.0%**

Table 12: If YES, How Long Are These Pregnant Women Retained?

Category	Frequency	Per cent
Between 1 to 3 days	22	55.0%
Between 4 to 5 days	10	25.0%
Between 6 to 10 days	8	20.0%
Total	**40**	**100.0%**

Table 13: How Does Your Facility Facilitate Referral Needs from the Community Level?

Category	Frequency	Per cent
Motorbike	21	52.5%
Hammock	2	5.0%
Ambulance	16	40.0%
Public and private transport	1	2.5%
Total	**40**	**100.0%**

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Table 14: How Long Is The Distance From the Referral Facility To the Hospital?

Category	Frequency	Per cent
< 10 km	20	50.0%
11 to 20 km	11	27.5%
21 to 30 km	7	17.5%
31km and above	2	5.0%
Total	**40**	**100.0%**

Table 15: Does your HF have any mobile networks that help facilitate referral systems?

Category	Frequency	Per cent
Yes	40	100.0%
No	0	0.00%
Total	**40**	**100.0%**

Table 16: Which Network is Most Accessible?

Category	Frequency	Per cent
Orange	14	35.0%
Africell	12	30.0%
Qcell	14	35.0%
Total	**40**	**100.0%**

Objective 3:

Accessing the Relevance of Services Rendered to Clients to Improve Maternal Health Outcomes

In this section, key informant interviews were conducted with healthcare providers, including community health workers (CHWs) and traditional birth attendants (TBAs), and a focus group discussion was conducted involving pregnant women and lactating mothers. These activities aimed to provide the research team with a thorough awareness of the obstacles and elements that contribute to enhancing maternal health outcomes.

Focus Group Discussion Responses on Access and Availability of Maternal Health Services

The focus group discussions provided valuable insights from pregnant and lactating mothers regarding the maternal health services they received from the health facilities in Pujehun District. The participants acknowledged the comprehensive nature of these services, highlighting essential components, such as health talks, antenatal care, hygiene discussions, and personal exercises. They unanimously recognised the significance of these services, emphasising that they are essential for women and children. This shared perspective underscores the necessity of a comprehensive approach to maternal healthcare, in which numerous interventions work synergistically to improve outcomes. The recognition of the value of these healthcare services reflects their favourable view as invaluable resources in tackling maternal health challenges.

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The responses gathered from participants have important implications for maternal healthcare practices and community engagement. By recognising the relevance of services, healthcare providers can stress the significance of offering comprehensive maternal healthcare. This ensured that pregnant women and nursing mothers received thorough care throughout their journey. Moreover, the collective acknowledgement of the importance of services signifies community empowerment and engagement. This presents potential opportunities for community participation in healthcare decision-making and advocacy initiatives, fostering a supportive environment for maternal healthcare provision.

FGD Responses on Satisfaction with Healthcare Services

During the focus group discussions, participants provided insights into their level of satisfaction with the healthcare services offered at their health facilities. One participant expressed satisfaction with sufficient medication and treatments during antenatal care visits. Two lactating mothers shared their dissatisfaction with the healthcare system, citing instances of delayed or inadequate attention from healthcare workers coupled with perceived disrespectful behaviour. A pregnant woman also highlighted concerns regarding the financial aspects of accessing care, such as being asked to pay registration fees before receiving treatment or medication during ANC visits. These findings underscore the importance of adopting a patient-centred approach in healthcare delivery, where the experiences and voices of patients are prioritised to enhance the quality and effectiveness of healthcare services.

Focus Group Discussion Responses on Solutions to Healthcare Challenges

Participant 1: *"The Sierra Leone government and the Ministry of Health and Sanitation ought to guarantee that all free healthcare initiatives are available to all pregnant and breastfeeding mothers. They must supervise the process to guarantee that these healthcare professionals do not request payments for services that are supposed to be free within these medical facilities."*

Participant 2: *"Essential maternal drugs should be available on time for pregnant women. This will help reduce the number of complicated maternal cases. Therefore, healthcare workers must ensure that they provide timely care. Delaying in giving care will lead to poor maternal outcomes, which is not good for the baby and the mother."*

Participants 3, 4, 5, and 6: *"Healthcare workers need to change their negative attitude towards pregnant women, especially when visiting the ANC. Shouting at them is not good; they should be encouraged."*

Pregnant and lactating mothers emphasised the need for government oversight to ensure free healthcare initiatives and the timely availability of essential maternal drugs. They also stressed the importance of healthcare workers adopting supportive and respectful approaches during antenatal care visits.

Key Informant Interview Responses

Key informant interviews were conducted with healthcare workers, including community health workers (CHWs) and traditional birth attendants (TBAs), who have extensive knowledge and

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experience in maternal and child health. These interviews provided valuable insights into and perspectives on the research findings. Key informants shared their expertise, offering unique viewpoints that enriched the research process. Their input helped validate and contextualise the data collected through other methods, contributing to a more comprehensive understanding of the subject matter.

Key Informant Interview Responses Regarding the Relevance Of Health Facility Services For Maternal Health Improvement

Key Information 1 (Manor Health Facility): "All services are provided for pregnant women in this health facility."

Key Informant 2 (Malema 1): "The services we provide as a health facility are very relevant considering the distance from our facility to Pujehun town where the hospital is. So, I must say that we are very proud to provide these services promptly."

Key Informant 3: "Ever since this facility began, we have provided quality health services to all pregnant and lactating mothers. Thus, we are satisfied with its services."

The responses from key informants highlight the perceived relevance and importance of the services provided by their respective health facilities in improving maternal health outcomes. The key informants expressed confidence in the quality and accessibility of the healthcare services, emphasising their commitment to serving pregnant and lactating mothers in their communities. Such perspectives shed light on the dedication of healthcare providers and the significance of local health facilities in addressing maternal health needs.

Key Informant Feedback On Satisfaction With Health Facility Services

According to a key informant at the Jendema Health Facility, satisfaction with the services provided by the health facility was mixed. While they experienced satisfaction at times, dissatisfaction due to the negative attitudes of the healthcare staff was also mentioned. The informant highlighted that staff members' negative demeanours could hinder the delivery of quality care, citing instances where staff lacked proper communication skills and provided inadequate responses to client inquiries about fees.

Another key informant raised concerns regarding issues related to staff punctuality and discipline. They noted instances where healthcare workers arrived late to work despite the disciplinary measures being in place. This lack of punctuality could have severe consequences, potentially leading to adverse client outcomes and even a loss of life. The informants stressed the importance of adhering to professional standards to fulfil the primary goal of saving lives.

In addition, timely responses to critical cases have emerged as a significant concern. The key informant observed instances where healthcare staff failed to respond promptly to critical maternal conditions, possibly for various reasons. This response delay could exacerbate maternal health complications and compromise patient outcomes. The informant emphasised the need for improved responsiveness from healthcare providers to ensure timely interventions and prevent adverse maternal health outcomes.

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Overall, feedback from key informants underscores the importance of addressing issues related to staff attitudes, punctuality, and responsiveness to ensure the delivery of quality healthcare services. By addressing these concerns, health facilities can enhance client satisfaction and improve maternal health outcomes within the community.

Key Informant Responses to Improve Identified Issues

Addressing Negative Attitudes and Improving Communication

Training programs emphasising interpersonal communication and professionalism are essential to address healthcare staff's negative attitudes. Healthcare staff can better comprehend and address their clients' needs by offering workshops on effective communication techniques and empathy. Furthermore, setting up anonymous feedback mechanisms for clients to express their concerns would enable healthcare providers to identify areas for improvement and proactively address negative attitudes.

Enhancing Staff Punctuality and Discipline

A comprehensive approach is necessary to enhance staff punctuality and discipline. Stricter enforcement of attendance policies and disciplinary measures is fundamental. Frequent observation of staff attendance and performance can reveal patterns of tardiness and be proactively remedied. Additionally, by conducting team meetings and performance evaluations that promote a sense of accountability and responsibility, staff can be inspired to maintain professional standards and prioritise punctuality.

Ensuring a Timely Response to Critical Cases

Redefining the communication channels and devising unambiguous protocols for emergency scenarios is essential to expediting the response time for critical situations. Regular drills and simulations can aid staff in becoming acquainted with emergency procedures, enhancing their response time. Furthermore, it is crucial to maintain sufficient staffing levels during peak hours and to implement a triage system to prioritise critical cases, thereby optimising resource allocation and minimising delays in providing care.

Discussion

Extensive maternal healthcare services, including family planning, prenatal and postnatal care, and nutrition education, are crucial for ensuring comprehensive care for expectant and nursing mothers. This approach aligns with the World Health Organization’s (WHO) integrated maternal and child healthcare services recommendations. However, the limited mention of delivery services suggests a potential gap in service provision, consistent with other studies conducted in low-resource settings (Kruk et al., 2015).

Differing opinions regarding the availability of drugs, medical supplies, and equipment and the recurring closures of facilities highlight infrastructure and resource accessibility challenges. Comparable research has identified the unavailability of essential medications and insufficient

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facility infrastructure, revealing the shared challenges experienced by healthcare systems in low-resource settings (Sridhar et al., 2017).

The impact of socioeconomic factors on healthcare access is highlighted by the reliance on out-of-pocket payments and disparities in pharmacy availability, which contribute to broader socioeconomic inequalities affecting maternal health services. Research has consistently shown that financial barriers and disparities in healthcare facilities contribute to maternal health inequities, particularly among marginalised populations (Gabrysch & Campbell, 2009).

This study's second objective unveiled the strengths and weaknesses of Peripheral Health Units (PHUs) in delivering maternal healthcare services. These findings are consistent with previous studies' findings, providing valuable information for enhancing maternal health outcomes. Although most respondents believed PHUs offered accessible maternal healthcare, a considerable portion reported limited accessibility. This suggests disparities in geographical reach and obstacles to its utilisation. Earlier studies have emphasised the difficulties in accessing maternal healthcare, especially in remote or underserved areas, necessitating targeted interventions to improve access. Although most PHUs had basic amenities such as drinking water and toilets, a substantial number indicated a deficiency in these resources.

Inadequate infrastructure poses considerable challenges in delivering quality maternal healthcare services and maintaining hygiene standards, vital for preventing infections and complications during childbirth (WHO, 2015). Access to electricity for delivery services, especially at night, is critical for ensuring safe delivery and emergency obstetric care. The use of alternative sources, such as solar grids and generators, reflects creative approaches to overcoming infrastructure difficulties, although access disparities persist. Studies have emphasised the importance of a dependable electricity supply to reduce maternal mortality rates and improve maternal health outcomes (WHO, 2016).

Providing retention facilities and efficient referral mechanisms is essential to ensure timely access to skilled birth attendance and emergency obstetric care. Although the majority of PHUs have space to accommodate pregnant women during labour, the variability in retention periods underscores the need for standardised protocols to guarantee optimal maternal and neonatal care. Motorcycles and ambulances are crucial in facilitating timely access to higher-level healthcare facilities in the case of complications. Mobile network coverage in all PHUs enables healthcare delivery and coordination communication, facilitating timely referrals and emergency response. However, disparities in network accessibility can impede effective communications, particularly in remote areas. Research has emphasised the significance of mobile health technologies in improving maternal health outcomes, highlighting the need for equitable access to communication infrastructure.

The focus group discussions and key informant interviews revealed insights into pregnant and lactating mothers and healthcare providers' perceptions of maternal healthcare in the Pujehun District. These insights highlight aspects of maternal health services such as access, satisfaction, and challenges. Pregnant and lactating mothers positively perceived the comprehensive nature of the district's maternal health services, including health talks, antenatal care, hygiene discussions,

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and personal exercise. This positive perception highlights the need to provide a comprehensive package of maternal health care services to meet the diverse needs of women during pregnancy and childbirth. Key informants also expressed confidence in the relevance and importance of the services provided by their respective health facilities, demonstrating their commitment to serving pregnant and lactating mothers in their community.

Participants in the FGDs expressed varying levels of satisfaction with the healthcare services. While some were satisfied with the provision of medication and treatments during antenatal care visits, others were dissatisfied with the delayed or inadequate attention from healthcare workers and perceived disrespectful behaviour. Key informants also mentioned mixed satisfaction levels, highlighting positive experiences and concerns about staff attitudes, punctuality, and responsiveness to critical situations. These findings emphasise adopting a patient-centred approach to address patients' needs and preferences.

Challenges Identified

Participants in FGDs and key informants identified various challenges service users and providers face. These challenges include issues related to access, disrespectful behaviour from healthcare workers, financial barriers, staff attitudes, punctuality, and responsiveness to critical cases. While pregnant and lactating mothers emphasised the importance of government oversight to ensure free healthcare initiatives and timely availability of essential maternal drugs, key informants highlighted the need for continuous training programs to improve staff attitudes and communication skills and stricter enforcement of attendance policies to enhance staff punctuality and discipline.

Recommendations

For implementing Interventions

Based on the study's findings, the following recommendations on implementing interventions are proposed to address the identified challenges and improve maternal healthcare services in Pujehun District. To improve maternal healthcare delivery services, it is crucial to invest in training programs for healthcare providers, ensure the availability of essential equipment and supplies, and improve the infrastructure to support childbirth. Additionally, efforts should be made to minimise facility closures and optimise resource management to enhance the accessibility and reliability of maternal health care services.

To address socioeconomic barriers to maternal healthcare access, efforts should be made to eliminate out-of-pocket payments and ensure the timely availability of essential maternal drugs through government oversight. Additionally, it is crucial to promote equitable access to healthcare services for all individuals regardless of socioeconomic status.

To provide optimal care, it is crucial to prioritise patient-centred approaches by enhancing staff attitudes, communication skills, and responsiveness to patient needs. Continuous training programs should emphasise empathy, professionalism, and respectful communication among health care providers to increase patient satisfaction and improve the quality of maternal health

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care services. Additionally, infrastructure development, such as essential amenities, including drinking water, sanitation facilities, and reliable electricity supply, can help overcome infrastructure challenges and ensure access to essential services during childbirth and emergencies.

Standardise protocols and establish efficient referral mechanisms between primary healthcare units and higher-level facilities to ensure timely access to skilled birth attendance and emergency obstetric care, thereby reducing maternal morbidity and mortality rates. Invest in mobile health technologies to address disparities in communication infrastructure, particularly in remote areas, and improve access to maternal healthcare information and services for marginalised populations.

For Future Studies

Based on the study's findings, several areas emerge as potential avenues for future research to further enhance understanding and improve maternal healthcare services in Pujehun District.

To investigate the effect of enhancing delivery services at maternal healthcare facilities on maternal health outcomes, including maternal mortality rates, birth complications, and neonatal health. Conduct longitudinal studies to assess the impact of interventions to strengthen delivery services on health indicators.

To evaluate the impact of infrastructure development projects, such as providing essential amenities and reliable electricity supply, on maternal health service delivery and health outcomes. Conduct quantitative assessments of facility performance before and after infrastructure improvements.

To explore the socioeconomic factors that impact access to maternal healthcare services, including out-of-pocket payments, pharmacy availability disparities, and financial barriers faced by pregnant and lactating women. Qualitative studies can shed light on the lived experiences of women and their families about access to healthcare. Additionally, we investigated effective community engagement strategies to promote community participation in decision-making processes, advocacy initiatives, and resource mobilisation efforts. Comparative studies can assess the impact of various community engagement models on healthcare service utilisation and health outcomes.

Evaluating patient-centred care interventions in maternal healthcare facilities involves assessing the impact of training programs for healthcare providers and communication improvements on patient satisfaction and healthcare outcomes. Mixed-method studies can provide insights into the effectiveness of these interventions.

Additionally, exploring innovative solutions to address infrastructure challenges in maternal healthcare delivery, such as renewable energy sources, telemedicine technologies, and mobile health applications, can improve access to maternal healthcare services. Pilot studies can be used to assess the feasibility and effectiveness of these solutions. Investigating the functionality and effectiveness of referral systems for maternal health emergencies, including transportation modes

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and communication networks, can help to identify bottlenecks in the referral process and evaluate interventions to improve timely access to emergency obstetric care. Operational research has provided valuable insights.

Assessing healthcare access and utilisation disparities among different population groups, including rural-urban disparities, socioeconomic inequalities, and barriers marginalised populations face, can inform targeted interventions to address inequities and promote universal access to maternal healthcare services. Health equity studies can help to achieve this goal.

Social Impacts and Policies Formulations

Based on the study's findings, the following recommendations for social change and policy formulations are proposed to address the identified challenges and improve maternal healthcare services in Pujehun District.

Social Change Initiatives

Implementing community awareness programs that emphasise the importance of maternal healthcare services, including antenatal care, skilled birth attendance, postnatal care, and the benefits of early and regular access to healthcare services for maternal and child health outcomes. Additionally, promoting women's empowerment initiatives that enhance their decision-making power regarding their healthcare, including reproductive choices, seeking healthcare services, and financial autonomy, as empowering women to make informed decisions about their health can contribute to improved maternal healthcare utilisation and outcomes.

Policy Formulations

Develop and implement policies that eliminate out-of-pocket expenses for essential maternal healthcare services. This can be achieved by expanding existing free healthcare initiatives to cover all maternal health services and ensuring adequate funding allocation for their implementation. Additionally, it prioritises infrastructure investment policies that improve the accessibility and quality of maternal healthcare facilities, addressing disparities in infrastructure availability between urban and rural areas and underserved communities. The maternal healthcare workforce should be strengthened through training programs, recruitment and retention strategies, and incentives for healthcare professionals specialising in maternal healthcare services. Incorporating community engagement strategies into healthcare policy frameworks ensures community participation in decision-making processes, resource mobilisation efforts, and advocacy initiatives related to maternal healthcare.

Cross-Sectoral Collaboration

Foster collaboration between the health sector and other relevant sectors, such as education, agriculture, and women's empowerment, addresses the social determinants of maternal health and promotes holistic approaches to maternal healthcare. Multisectoral partnerships can leverage resources, expertise, and networks to implement comprehensive interventions that address the underlying drivers of maternal mortality and morbidity.

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Monitoring and Evaluation Mechanisms

Establish effective local, regional, and national data monitoring systems to improve monitoring and evaluation processes and track the progress of maternal health goals. Collect, analyse, and disseminate maternal health indicators regularly to inform evidence-based decisions and ensure accountability for maternal healthcare services.

Conclusion

This study provides an overview of maternal healthcare services in Pujehun District, highlighting the strengths and areas for improvement. The study revealed that the district offers essential maternal health services, including family planning, antenatal and postnatal care, and nutrition education. However, challenges still need to be addressed, such as limited access to delivery services, insufficient infrastructure, socioeconomic barriers, and disparities in healthcare access. Recurring facility closures and insufficient stock of essential drugs and supplies exacerbate these challenges. Despite these challenges, there are opportunities for social change and policy formulation to enhance maternal healthcare services in the district. To achieve this, recommendations include strengthening delivery services, improving infrastructure and resource accessibility, mitigating socioeconomic barriers, fostering community engagement, and implementing patient-centred care approaches. These recommendations emphasise the importance of multisectoral collaboration, policy coherence, and robust monitoring and evaluation mechanisms to address the underlying determinants of maternal health and promote equitable access to quality healthcare services. By implementing these recommendations, stakeholders can improve maternal health outcomes, reduce maternal mortality and morbidity rates, and advance towards achieving universal health coverage—sustainable Development Goal targets related to maternal and child health in Pujehun District and similar settings.

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