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**The Impact of Access and Quality of Antenatal Care on Maternal Mortality Rates among
Women in Pakistan**

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MPH 683: Integrated Learning Experience

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Abstract

This paper focuses on the factors contributing to high maternal mortality rates in Pakistan, emphasizing the crucial role of inadequate antenatal care (ANC) and limited access to quality health services. Prominent risk factors include poverty and financial constraints, healthcare workforce shortages, lack of women empowerment, and low socioeconomic conditions. The cultural and traditional context in Pakistan also plays an influential role in shaping these factors. For a substantial reduction in maternal mortality rates among Pakistani women and girls, a shift within the cultural perception of women's health, specifically regarding ANC, is crucial. To effectively reduce maternal mortality rates in the country, it proposes three strategic, multifaceted intervention approaches. The first approach calls for community-based interventions that offer incentives like voucher schemes to encourage mothers to attend ANC checkups, thereby enhancing the accessibility and affordability of vital healthcare services. The second approach advocates for a task-shifting process, where tasks usually conducted by highly trained health workers are redistributed to less-trained workers, amplifying the community's capacity to deliver ANC services. Lastly, the model suggests the adoption of Performance-Based Financing, where health facilities are incentivized based on performance metrics related to ANC, promoting a culture of quality care and positive health outcomes. Through this comprehensive strategy, the paper presents a pathway to revitalize Pakistan's healthcare workforce, expand the scope of maternal health services, increase ANC-seeking behaviors, and consequently decrease maternal mortality rates.

Introduction

Maternal mortality, or the rate that women die during complications in pregnancy or childbirth, is a grave public health issue impacting women across the globe. In 2020, the World Health Organization (WHO) reported approximately 223 maternal deaths per 100,000 live births globally due to pregnancy-related causes. Unfortunately, a high proportion of maternal deaths (95 percent) occur in low and middle-income countries, of which 86 percent is contributed by Sub-Saharan Africa and South Asia (WHO, 2023). Pakistan is facing the same daunting situation of high maternal mortality rates. According to the Sustainable Development Report (2023), Pakistan recorded a significant maternal mortality rate of 154.2 deaths per 100,000 live births in 2020 (SDG Index, 2023).

Recognizing the urgency of addressing this issue, the United Nations documented the Sustainable Development Goals (SDGs) in 2015. SDG 3.1 precisely intends to decrease the global maternal mortality rates, giving a target of attaining fewer than 70 deaths per 100,000 live births by 2030 (United Nations, 2016). This target underscores the importance of promoting safe births and enhancing maternal health and well-being. However, the achievement of SDG 3.1, faces challenges, particularly in low- and middle-income countries. South Asian countries like Afghanistan, Nepal, and Pakistan, face high maternal mortality rates, posing significant public health challenges as shown in the table1 below.

Countries	Maternal Mortality Rates
Afghanistan	638
Bangladesh	173
India	145

Pakistan	140
Sri Lanka	36

Table 1: Maternal Mortality Rates in South Asian Countries (World Health Organization, 2017)

According to a recent study, maternal mortality rates in Pakistan have shown a concerning upward trend, increasing by 10% since 2017. This escalation in figures suggests a current rate of 154 deaths per 100,000 live births, a significant rise from the previous rate of 140 deaths per 100,000 live births, as documented in 2017 (Shrestha et al., 2021). This alarming development underlines the urgent need for strengthened interventions in maternal healthcare in the country.

Antenatal care has a pivotal role in improving maternal health by providing early detection of risks and offering opportunities for education and support; hence it is widely recommended globally by organizations such as the World Health Organization (WHO, 2016), the American College of Obstetricians and Gynecologists (ACOG, 2017), and the International Confederation of Midwives (ICM, 2018). Early detection of risks during ANC visits allows healthcare providers to identify and monitor potential complications during pregnancy (Carroli et al., 2001). For example, it has been found that ANC helps detect and manage conditions such as preeclampsia, gestational diabetes, and sexually transmitted infections, reducing the rates of maternal mortality (WHO, 2016). ANC visits also provide opportunities for healthcare providers to educate and counsel expectant mothers on various aspects of pregnancy, childbirth, and postpartum care (McNellan et al., 2019). Moreover, education before childbirth can lessen the stress experienced by mothers, enhance their confidence, decrease the rate of cesarean deliveries, and cut down the usage of epidural anesthesia (Hong et al., 2021). Also, it is evident that persistent engagement in prenatal care, the presence of trained medical personnel during

childbirth, and follow-up care after birth are essential to enhance maternal health outcomes in low to middle-income countries (Kikuchi et al., 2015).

In 2016, WHO updated its ANC model to better support maternal and child healthcare, moving away from the previous four-visit approach. (WHO, 2016). This revised model provides evidence-based recommendations for a more comprehensive and holistic approach to antenatal care. The updated guidelines emphasize the importance of a minimum of eight healthcare provider contacts during pregnancy, distributed strategically within specific timeframes. According to the WHO's recommendations, these healthcare provider contacts should occur at key gestational stages, including up to 12 weeks of gestation, at 20 and 26 weeks of gestation, and at 30, 34, 36, 38, and 40 weeks of gestation as shown in the table 2:

2016 World Health Organization ANC Model
<i>First Trimester</i>
Contact 1: up to 12 weeks
<i>Second Trimester</i>
Contact 2: 20 weeks
Contact 3: 26 weeks
<i>Third Trimester</i>
Contact 4: 30 weeks
Contact 5: 34 weeks
Contact 6: 36 weeks
Contact 7: 38 weeks
Contact 8: 40 weeks
Two tetanus toxoid injections during pregnancy
Iron and folic acid supplementation for a duration of 90 days

Table 2: World Health Organization ANC Model (2016)

This expanded schedule aims to ensure that pregnant women receive regular and timely care throughout their pregnancy, enabling the early detection and management of any potential complications or risks. Additionally, the guidelines highlight the importance of receiving a minimum of two tetanus toxoid injections during pregnancy. Furthermore, the updated ANC model emphasizes the provision of iron and folic acid supplementation for a duration of 90 days or longer. Iron and folic acid tablets are essential in preventing and treating anemia, a common condition during pregnancy that can have detrimental effects on both the mother and the developing fetus (Singh et al., 2012).

As the global significance of the updated ANC model is widely recognized, its adoption and implementation in Pakistan hold the potential to address the persistently high maternal mortality rates in the country. This paper aims to comprehensively assess the social, cultural, political, and structural factors that contribute to antenatal care-seeking behaviors and coverage in Pakistan. By gaining a deeper understanding of the barriers and challenges, effective strategies can be developed to improve ANC utilization and ultimately reduce maternal mortality rates. Additionally, the paper will explore the field of ANC and maternal health in Pakistan, providing suggestions for future opportunities.

Methods

This paper is a critical review that involved an extensive search on maternal mortality and antenatal care for women. This literature review was conducted using PubMed and Scopus through the University of San Francisco's online search engines as well as Google searches. The research question has been developed to focus on the impact of access to and quality of antenatal care on maternal mortality rates in women in Pakistan. The Mesh terms used were (("Asia, Southern"[Mesh]) AND "Prenatal Care"[Mesh]) AND "Maternal Mortality"[Mesh]. The search

was limited to the years 2005-2023 in an effort to keep the information as current as possible and only English-language publications were selected for review. In addition to focusing on Pakistan, the analysis has been expanded by including other neighboring countries such as Nepal, Bangladesh, and India. In total, there are forty-five primary sources included in the final version of this manuscript.

Keywords used: Maternal mortality, Perinatal mortality, Maternal health, Antenatal care, Pakistan, Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs), Safe Motherhood Initiative, (SMI), Quality of care, Healthcare system, Socioeconomic factors, Geographical barriers, Financial constraints, Lack of transportation, Availability of healthcare providers, Pakistan, South Asia, Nepal, Bangladesh, India.

Background/Literature Review

Epidemiological Trends

The relationship between ANC and maternal mortality is vital and deeply intertwined. It is evident that adherence to the recommended ANC guidelines plays a pivotal role in promoting institutional deliveries facilitated by skilled birth attendants, further enhancing maternal and child health outcomes (Pervin et al., 2012).

Research conducted in South Asian countries, including Pakistan, has presented that only 30% of women meet the recommended standards for ANC, highlighting the low percentage of women receiving sufficient care (Anik et al., 2021). Moreover, women residing in rural areas, those from low-income families, and those with low empowerment status face even greater challenges in accessing and utilizing ANC services (Anik et al., 2021). In Pakistan, the situation remains concerning, as according to the Pakistan Maternal Nutrition Strategy, 2022-27, the

proportion of women who attended any antenatal care visit with a skilled health provider is reported to be 64.5% (UNICEF & Government of Pakistan, 2022). The strategy further indicates that the attendance rate for antenatal care visits of more than four visits is 31.7%, and for more than eight visits, it stands at 10.7% (UNICEF & Government of Pakistan, 2022).

Past Interventions

In response to the MDGs and now the SDGs, various interventions have been implemented in different countries in South Asia. For example, India introduced the "Janani Suraksha Yojana (JSY)" project, which aimed to increase the usage of ANC services and promote births at healthcare facilities by providing cash incentives to pregnant women. This initiative also focused on strengthening health infrastructure and raising awareness about maternal health (Gupta et al., 2012).

Similarly, the MaMoni Health Systems Strengthening Project in Bangladesh implemented a community-based intervention to improve access to quality ANC services. This intervention involved training community health workers, establishing community support groups, and ensuring the availability of essential supplies (Haider et al., 2017). The intervention resulted in increased antenatal care attendance.

In Pakistan, the Safe Motherhood Initiative (SMI) was introduced in 1987 as a collaborative effort by the WHO, the United Nations Population Fund (UNFPA), and the World Bank to enhance maternal health globally. The SMI focuses on delivering evidence-based comprehensive care to women throughout their perinatal journey, emphasizing principles such as family planning and antenatal care (Ali et al., 2023). However, the implementation of the SMI in Pakistan has faced challenges due to the country's weak health system mainly comprised of a lack of sufficient health workforce, inadequate health service delivery, poor health information

systems, lack of access to essential medicines, ineffective health financing, and/or lack of good leadership and governance.

In addition to that, the Pakistani government has initiated diverse strategies to tackle maternal health, such as offering free maternal and child health services at public health facilities and establishing programs with lady health workers. The LHW program, operating under the Ministry of National Health Services, Regulation, and Coordination (MoNHSR&C), was another effort, aimed to improve maternal and child health outcomes by extending healthcare access to underserved communities. Lady Health Workers are community-based healthcare providers who are selected from the local communities they serve. They undergo specialized training to provide basic health education and counseling on various aspects of antenatal care. Their role includes educating pregnant women on the importance of regular antenatal check-ups, proper nutrition, and healthy lifestyle practices during pregnancy (Khowaja et al., 2018). However, despite these initiatives, the reduction in maternal mortality rates (MMR) has largely plateaued in Pakistan.

Furthermore, identifying the necessity to enhance the quality of care given to mothers, the WHO, in partnership with UNICEF and Pakistan's Ministry of National Health Services, Regulation, and Coordination, is working to create a Strategic Framework for Quality of Care. The goal of this framework is to improve healthcare providers' skills via training programs and capacity-building initiatives, thereby boosting the healthcare services accessible to mothers (WHO, 2023). Despite all the efforts, Pakistan is not showing any improvement in addressing this critical public health issue. This stagnation emphasizes adopting more robust actions to address high rates of maternal deaths.

Socioeconomic Challenges in Accessing Quality Antenatal Care

The utilization of ANC services can be influenced by a range of socioeconomic factors. Economic disparities, education levels, cultural beliefs, and social norms all shape women's decisions and ability to seek ANC. The affordability of ANC services, transportation costs, and time constraints are further considerations that can affect ANC utilization rates.

Poverty and limited financial resources are the main reasons why women from low-income backgrounds face difficulties in accessing and affording antenatal care services. Pakistan's healthcare system heavily relies on direct out-of-pocket (OOP) payments by individuals seeking care, which disproportionately burdens the poor (Khowaja et al., 2018). It is estimated that more than 80% of healthcare expenses are borne out-of-pocket (OOP), with the private sector being the primary source of funding (Khowaja et al., 2018). The latest data by World Bank on health expenditures in Pakistan reveals that the current allocation of gross domestic product (GDP) towards healthcare stands at 2.95% in 2020. (World Bank, 2020). The WHO recommends that countries allocate a minimum of 5% of their GDP to healthcare to meet the basic health needs of the population (World Health Organization, 2010). In comparison, the allocated percentage in Pakistan falls below this recommended threshold, indicating that the healthcare sector may face financial constraints in providing comprehensive and equitable healthcare services. It is evident that insufficient allocation of GDP directly impacts ANC services as shown in the figure below:

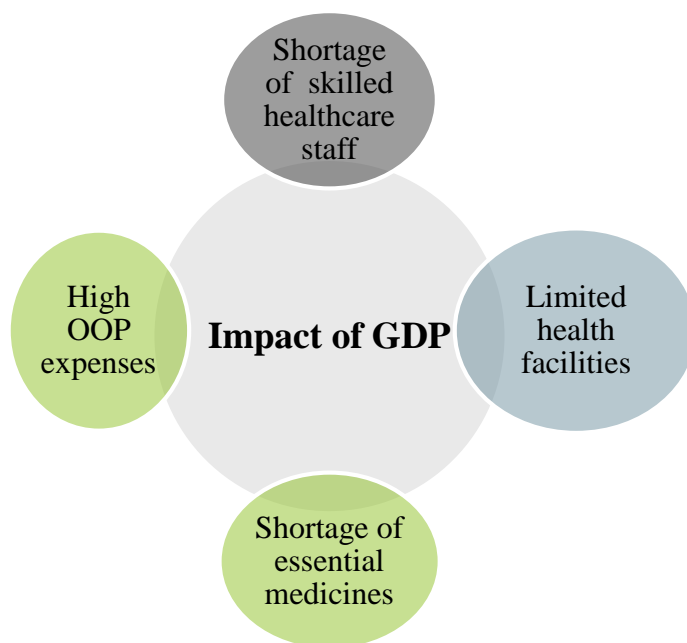


Figure1: Impact of GDP on Maternal Healthcare

Health budget constraints result in a shortage of healthcare facilities, inadequate staffing, and limited resources, all of which hinder the provision of comprehensive ANC (Kruk et al., 2018). Furthermore, inadequate funding leads to decreased access to ANC clinics, longer waiting times, and reduced availability of skilled healthcare providers. These factors limit women's practices to receive timely and quality ANC (Kruk et al., 2018).

Quality care in antenatal services is impacted by various factors, including the shortage of adequately trained healthcare staff, poor referral systems, and lack of well-equipped maternity units or delivery rooms. A cross-sectional quantitative descriptive study was conducted at a secondary care hospital in Pakistan to explore pregnant women's perceptions of the quality of public health hospital prenatal care (Tasneem, 2023). The study stated that a total of 200 pregnant women were enrolled in the study using simple random sampling. The findings revealed that 52% of the participants considered the services to be of poor quality.

The shortage of adequately trained healthcare staff, including skilled midwives and obstetricians, poses a significant challenge to the provision of quality ANC services. Insufficient staff leads to overcrowding, longer waiting times, and a compromised ability to provide comprehensive ANC care (Abdus-Salam et al., 2021). The WHO has defined a threshold level of health workforce required to deliver essential health interventions to achieve the MDGs by 2015, and Pakistan was one of the 57 countries found to be below that threshold level (WHO 2011).

Furthermore, the absence of robust referral services and effective communication channels between primary healthcare centers and higher-level facilities restricts women's access to specialized care and emergency obstetric services. This lack of timely referrals and inadequate emergency obstetric care contribute to maternal and neonatal mortality rates (Asim et al., 2021).

Inadequate physical infrastructure, or limited geographical access to healthcare facilities, particularly in rural and remote areas, hampers women's ability to receive regular ANC check-ups (Aziz Ali et al., 2020). The case-control study in a rural area of Pakistan, categorized women who did not utilize ANC services during their last pregnancy as cases, while those who did utilize ANC services were considered controls. The analysis revealed that the distance between women's homes and the healthcare facility providing ANC services played a significant role. Women living within a shorter distance of less than 5 km were found to be 1.21 times more likely to utilize ANC services (Aziz Ali et al., 2020).

Low literacy rates and inadequate awareness among women have been identified as other significant hindering factors in achieving health target goals, particularly in the context of ANC seeking behaviors. The World Health Organization highlights the impact of low literacy rates and inadequate awareness among women as hindering factors in achieving health target goals, including ANC-seeking behaviors (World Health Organization, 2016). The document "Strategies

toward ending preventable maternal mortality “by WHO states that illiterate or poorly educated women may not fully understand the benefits of ANC, the appropriate timing of visits, or the importance of receiving necessary healthcare interventions during pregnancy. These factors ultimately result in suboptimal ANC utilization rates and hinder efforts to improve maternal and child health outcomes. The 2017-18 Bangladesh Demographic and Health Survey emphasized the significance of education, confirming that women with at least a secondary education were more likely to receive ANC from skilled providers compared to uneducated women (National Institute of Population Research and Training, 2020).

Women empowerment is an important indicator of maternal health care services utilization. Recent evidence suggests a positive association between women's empowerment and the utilization of contraception as well as access to and utilization of antenatal care (Asim et al., 2022). The study, grounded on data from the 2017-18 Pakistan Demographic and Health Survey, concentrated on 6,602 married women aged between 15 and 49 years, all of whom had given birth in the preceding five years. The investigation assessed women's empowerment through three key dimensions: social independence, decision-making ability, and attitudes toward domestic violence. The study examined the quality of ANC coverage and consultations as outcome variables. The findings revealed that 41.4% of the women received ANC coverage, while 30.6% received ANC consultations during their pregnancies. Controlling for socioeconomic and demographic factors, the study found that higher levels of women's empowerment were positively associated with both outcomes. Women with greater autonomy in their attitude towards violence were 1.66 times more likely to receive ANC coverage and 1.45 times more likely to receive quality ANC consultations. Those with higher social independence had 1.87 times higher odds of quality ANC coverage and 2.78 times higher odds of quality ANC

consultations. Similarly, women with increased autonomy in household decision-making had 1.98 times higher odds of quality ANC coverage and 1.56 times higher odds of quality ANC consultations (Asim et al., 2022). Furthermore, the limited autonomy of women in healthcare decision-making has been identified as another significant barrier. Women often need to seek permission from their male partners or female family elders. Even in cases of emergency, women are dependent on their family elders or husbands and are unable to access health facilities alone (Sahito & Fatmi, 2018).

Recommendations and Implications

The Impact and Effectiveness of Voucher Schemes in Enhancing ANC Accessibility

As affordability stands as the primary obstacle preventing many individuals from accessing ANC, community-centered interventions like voucher schemes are highly commended. These voucher schemes aim to address various aspects of healthcare, including ANC checkups, laboratory tests, medications, and facility-based deliveries. These vouchers will be distributed through different channels, including health centers, community outreach programs, and collaborations with local NGOs that are actively involved in maternal health support. The vouchers will be targeted toward pregnant women living below the poverty line of less than \$2 per day. The success of such schemes relies on the collaboration of multiple organizations, often forming a consortium that includes government agencies, non-profit organizations, and donor agencies. Through this collective effort, resources are pooled, allowing for a broader reach and more comprehensive coverage of maternal healthcare services. This financial support ensures that pregnant women in dire economic circumstances do not have to bear the cost burden of essential healthcare services, enabling them to access quality care without hesitation or delay. A study conducted in Cambodia found that the implementation of voucher schemes led to an

overall increase in public healthcare facility deliveries by 10.1%. This increase was even more notable among women from the poorest 40% of households, with a rise of 15.6%. About one-fifth of the total increase in institutional deliveries in districts with such schemes could be attributed to these vouchers (Van de Poel et al., 2014). Another study in Kenya stated that voucher schemes resulted in a 5.7% increase in the recommended package of maternal health services among pregnant women, as well as an increase in skilled attendance at birth (Dennis et al., 2018). Findings from Cambodia and Kenya highlight the success of voucher schemes in improving maternal health, suggesting they could be a viable strategy for similar challenges elsewhere.

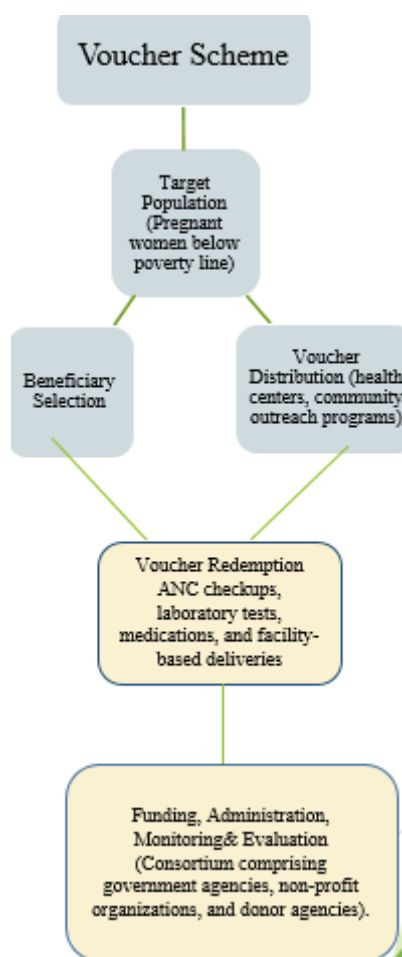


Figure2: Model of Voucher Scheme

The Potential of Task Shifting in Antenatal Care

Task shifting is a process where certain tasks, typically conducted by highly trained health workers, are shifted to health workers with less training (WHO, 2008). Effective task shifting requires careful consideration of the roles to be shifted, ensuring the right support and training for these new roles, and implementing appropriate regulatory frameworks to maintain the quality of care (WHO, 2008). In South Africa, the non-governmental organization Philani Maternal, Child Health, and Nutrition has developed a Mentor Mother Program that embodies the concept of task-shifting. This program recruits and trains local mothers to act as community health promoters (Wynn et al., 2017). These Mentor Mothers are tasked with visiting homes to identify pregnant women and infants who are not receiving appropriate care. They provide health education, promote and assist with health service uptake, including antenatal care, and provide peer support. The Mentor Mothers serve as a bridge between the healthcare system and the community, expanding the reach of health services to those who may not have ready access.

This approach can be particularly effective in a country like Pakistan, which suffers from a shortage of skilled health professionals, and where there is an established community health worker program, such as the Lady Health Workers (LHW) initiative. Empowering a wider range of healthcare providers, including Lady Health Workers(LHWs), with additional training can significantly increase the capacity to reach more pregnant women and reduce the burden on skilled professionals. LHWs, being members of the communities they serve, are well-positioned to provide ANC services at the community level, raising awareness about the importance of regular check-ups, distributing necessary supplies, and providing basic health education.

Performance-Based Financing (PBF): A Strategic Approach to Improve Antenatal Care Quality and Outcomes

In order to improve quality care, the adoption of PBF models, equipped with defined indicators can significantly influence the enhancement of care standards. This model creates a direct link between financial incentives and the delivery of high-quality ANC services, encouraging healthcare providers to stick to prescribed guidelines and offer comprehensive, evidence-based care. Such an approach can elevate the effectiveness and efficiency of ANC services, assuring that pregnant women undergo necessary screenings and interventions and receive ample support throughout their pregnancy. By regularly evaluating the quality of ANC services, it is possible to identify areas of improvement, introduce necessary corrections, and thereby significantly enhance maternal health outcomes. The application of PBF has been continually explored worldwide, with several recent studies indicating the potential for improved health outcomes. An example of Malawi, where a PBF initiative was introduced in 2015, improved indicators for ANC were measured. This program rewarded health facilities based on performance indicators related to maternal and child health. It significantly increased facility-based deliveries, four or more ANC visits, and up-to-date immunizations among children (Brenner et al., 2020).

Though the model has many benefits, it can also put pressure on providers due to the increased emphasis on meeting set indicators and may require substantial initial investments for facility upgrades, equipment procurement, or additional staff recruitment. There's also a risk of providers "gaming" the system by focusing solely on easy-to-achieve indicators or neglecting other aspects of care not tied to incentives. To mitigate these concerns and ensure the successful implementation of PBF in a country like Pakistan, it is crucial to establish a transparent and fair

model with comprehensive training, initial investment in health facility infrastructure and personnel, and regular monitoring and evaluation to drive continuous improvements in ANC services.

Collectively, the voucher schemes, task-shifting, and PBF can significantly shape the landscape of ANC in Pakistan and potentially reduce maternal mortality rates. When integrated, these strategies present a comprehensive approach that addresses financial barriers, workforce shortages, and quality of care. By making care more affordable, accessible, and high-quality, we can anticipate a higher uptake of ANC services, which directly correlates with reduced complications during childbirth and postpartum. Globally, as evidenced in countries like Cambodia, Kenya, and Malawi, these strategies have shown positive outcomes, indicating that their application in Pakistan could lead to substantial reductions in maternal mortality rates.

However, several limitations could hinder the full realization of these recommendations. Firstly, there's the potential resistance to change in traditional healthcare setups, especially when introducing task shifting or PBF models. Secondly, the implementation of voucher schemes requires meticulous planning and collaboration among various stakeholders, which can be challenging to achieve. The risk of healthcare facilities focusing solely on easily achievable PBF indicators, rather than a holistic care approach, is also a significant concern.

For these recommendations to truly make a difference, the next steps should involve comprehensive pilot programs to test the feasibility and impact of these strategies in select regions of Pakistan. Following the assessment of these pilots, adjustments can be made before a national rollout. Continuous monitoring, evaluation, and stakeholder feedback should also be integral components of this implementation phase to ensure that these strategies effectively address the root causes of high maternal mortality rates in Pakistan.

Conclusion

Antenatal care services play a crucial role in enhancing maternal health and reducing maternal mortality rates, a vital concern in many low- and middle-income countries like Pakistan. Despite some progress, the country still grapples with high maternal mortality rates. The utilization of ANC services is influenced by various socioeconomic, cultural, and structural factors. To effectively address this issue, it is imperative to understand these factors and devise strategies to enhance the accessibility and utilization of ANC services.

Potential interventions that have shown promise in improving ANC utilization include voucher schemes, task-shifting processes, and Performance-Based Financing models. These approaches have demonstrated success in increasing the uptake of ANC services and improving maternal health outcomes in other contexts. Implementing similar strategies in Pakistan could prove beneficial in encouraging pregnant women to seek timely and comprehensive ANC support.

By addressing the challenges and leveraging the opportunities identified through careful research and analysis, there is considerable potential to significantly improve maternal health outcomes and reduce maternal mortality rates in Pakistan. By focusing on enhancing the accessibility and utilization of ANC services through evidence-based interventions, the country can make significant strides toward safeguarding the well-being of pregnant women and ensuring safer and healthier pregnancies. This comprehensive approach may also contribute to strengthening the overall healthcare system and fostering a culture of proactive maternal care, ultimately creating a positive impact on maternal and child health in the nation.

References

- Abdus-Salam, R. A., Adeniyi, A. A., & Bello, F. A. (2021). Antenatal clinic waiting time, patient satisfaction, and preference for staggered appointment-a cross-sectional study. *Journal of Patient Experience*, 8, Article e23743735211060802. <https://doi.org/10.1177/23743735211060802>
- Ali, S. S., Ali, T. S., Adnan, F., Asif, N., Memon, Z., Barkat, S., Soofi, S., Hussaini, A. S., & Karmaliani, R. (2023). Safe motherhood: A hidden reality in Pakistan. *Midwifery*, 119, Article 103624. <https://doi.org/10.1016/j.midw.2023.103624>
- American College of Obstetricians and Gynecologists. (2017). Guidelines for perinatal care. <https://www.acog.org/clinical-information/physician-faqs/-/media/3a22e153b67446a6b31fb051e469187c.ashx>
- Anik, A. I., Islam, M. R., & Rahman, M. S. (2021). Do women's empowerment and socioeconomic status predict the adequacy of antenatal care? A cross-sectional study in five South Asian countries. *BMJ Open*, 11(6), Article e043940. <https://doi.org/10.1136/bmjopen-2020-043940>
- Asim, M., Hameed, W., & Saleem, S. (2022). Do empowered women receive better quality antenatal care in Pakistan? An analysis of demographic and health survey data. *PloS One*, 17(1), Article e0262323. <https://doi.org/10.1371/journal.pone.0262323>
- Asim, M., Saleem, S., Ahmed, Z. H., Naeem, I., Abrejo, F., Fatmi, Z., & Siddiqi, S. (2021). We

- won't go there: Barriers to accessing maternal and newborn care in District Thatta, Pakistan. *Healthcare*, 9(10), Article 1314. <https://doi.org/10.3390/healthcare9101314>
- Aziz Ali, S., Aziz Ali, S., Feroz, A., Saleem, S., Fatmai, Z., & Kadir, M. M. (2020). Factors affecting the utilization of antenatal care among married women of reproductive age in the rural Thatta, Pakistan: Findings from a community-based case-control study. *BMC Pregnancy and Childbirth*, 20(1), Article 355. <https://doi.org/10.1186/s12884-020-03009-4>
- Brenner, S., Muula, A. S., Robyn, P. J., Bärnighausen, T., Sarker, M., Mathanga, D. P., Bossert, T., & De Allegri, M. (2014). Design of an impact evaluation using a mixed methods model--an explanatory assessment of the effects of results-based financing mechanisms on maternal healthcare services in Malawi. *BMC Health Services Research*, 14, Article 180. <https://doi.org/10.1186/1472-6963-14-180>
- Carroli, G., & Villar, J. (2001). Piaggio G, et al. WHO systematic review of randomised controlled trials of routine antenatal care. *The Lancet*, 357(9268), 1565-1570. [https://doi.org/10.1016/S0140-6736\(00\)04723-1](https://doi.org/10.1016/S0140-6736(00)04723-1)
- Dennis, M. L., Abuya, T., Campbell, O. M. R., Benova, L., Baschieri, A., Quartagno, M., & Bellows, B. (2018). Evaluating the impact of a maternal health voucher programme on service use before and after the introduction of free maternity services in Kenya: A quasi-experimental study. *BMJ Global Health*, 3(2), Article e000726. <https://doi.org/10.1136/bmjgh-2018-000726>
- Gupta, SK., Pal, DK., Tiwari, R., Garg, R., Shrivastava, AK., Sarawagi, R., Patil, R., Agarwal,

L., Gupta, P., & Lahariya, C. (2012). Impact of Janani Suraksha Yojana on institutional delivery rate and maternal morbidity and mortality: An observational study in India.

Journal of Health Population and Nutrition, 30(4), 464-471.

[https://doi: 10.3329/jhpn.v30i4.13416](https://doi.org/10.3329/jhpn.v30i4.13416)

Haider, M. R., Rahman, M. M., Moinuddin, M., Rahman, A. E., Ahmed, S., & Khan, M. M.

(2017). Impact of maternal and neonatal health initiatives on inequity in maternal health care utilization in Bangladesh. *PloS One*, 12(7), Article e0181408.

<https://doi.org/10.1371/journal.pone.0181408>

Hong, K., Hwang, H., Han, H., Chae, J., Choi, J., Jeong, Y., Lee, J., & Lee, K. J. (2021).

Perspectives on antenatal education associated with pregnancy outcomes: Systematic review and meta-analysis. *Women and Birth: Journal of the Australian College of Midwives*, 34(3),

219–230. <https://doi.org/10.1016/j.wombi.2020.04.002>

International Confederation of Midwives. (2018). Essential competencies for midwifery practice.

https://www.internationalmidwives.org/assets/files/general-files/2018/10/icm-competencies---english-document_final_oct-2018.pdf

Khowaja, A. R., Mitton, C., Qureshi, R., Bryan, S., Magee, L. A., von Dadelszen, P., &

Bhutta, Z. A. (2018). A comparison of maternal and newborn health services costs in Sindh Pakistan. *PLoS One*, *13*(12), Article e0208299.

<https://doi.org/10.1371/journal.pone.020829>

Kikuchi, K., Ansah, E. K., Okawa, S., Enuameh, Y., Yasuoka, J., Nanishi, K., Shibamura, A., Gyapong, M., Owusu-Agyei, S., Oduro, A. R., Asare, G. Q., Hodgson, A., Jimba, M., & Ghana EMBRACE Implementation Research Project Team. (2015). Effective linkages of continuum of care for improving neonatal, perinatal, and maternal mortality: A systematic review and meta-analysis. *PLoS One*, *10*(9), Article e0139288.

<https://doi.org/10.1371/journal.pone.0139288>

Kruk, M. E., Gage, A. D., Arsenault, C., Jordan, K., Leslie, H. H., Roder-DeWan, S., & Adeyi, O. (2018). High-quality health systems in the sustainable development goals era: Time for a revolution. *The Lancet Global Health*, *6*(11), Article e1196-e1252.

[https://doi.org/10.1016/S2214-109X\(18\)30386-3](https://doi.org/10.1016/S2214-109X(18)30386-3)

Kuhnt, J., & Vollmer, S. (2017). Antenatal care services and its implications for vital and health outcomes of children: Evidence from 193 surveys in 69 low-income and middle-income countries. *BMJ Open*, *7*(11), Article e017122. <https://doi.org/10.1136/bmjopen-2017-017122>

McNellan, C. R., Dansereau, E., Wallace, M. C. G., Colombara, D. V., Palmisano, E. B., Johanns, C. K., Schaefer, A., Ríos-Zertuche, D., Zúñiga-Brenes, P., Hernandez, B., Iriarte, E., & Mokdad, A. H. (2019). Antenatal care as a means to increase participation in the continuum of maternal and child healthcare: an analysis of the poorest regions of

four Mesoamerican countries. *BMC Pregnancy and Childbirth*, 19(1), Article 66.

<https://doi.org/10.1186/s12884-019-2207-9>

National Institute of Population Studies. (2018). Pakistan demographic and health survey.

<https://dhsprogram.com/pubs/pdf/FR354/FR354.pdf>

National Institute of Population Research and Training. (2018). Bangladesh demographic and

health survey 2017–18. <https://dhsprogram.com/pubs/pdf/PR104/PR104.pdf>

Pervin, J., Moran, A., Rahman, M., Razzaque, A., Sibley, L., Streatfield, P. K., Reichenbach,

L. J., Koblinsky, M., Hruschka, D., & Rahman, A. (2012). Association of antenatal care with facility delivery and perinatal survival - a population-based study in Bangladesh.

BMC Pregnancy and Childbirth, 12, Article 111. <https://doi.org/10.1186/1471-2393-12-111>

Sahito, A., & Fatmi, Z. (2018). Inequities in antenatal care, and individual and environmental

determinants of utilization at national and sub-national level in Pakistan: A multilevel analysis. *International Journal of Health Policy and Management*, 7(8), 699–710.

<https://doi.org/10.15171/ijhpm.2017.148>

Singh, P. K., Rai, R. K., Alagarajan, M., & Singh, L. (2012). Determinants of maternity care

services utilization among married adolescents in rural India. *PLoS ONE*, 7(2), Article

e31666. <https://doi.org/10.1371/journal.pone.0031666>

SDG Index. (2023). Sustainable development report 2023. <https://www.sdgindex.org>

Tasneem, S. (2023). Pregnant Women's Perceptions of the Quality of Antenatal Care in a

- Public Hospital in Punjab, Pakistan during COVID-19: A Cross-Sectional Study. *Healthcare (Basel)*, 11(7), Article 996. <https://doi.org/10.3390/healthcare11070996>
- United Nations. (2015). Goal 3: Ensure healthy lives and promote well-being for all at all ages. <https://www.un.org/sustainabledevelopment/health>
- Van de Poel, E., Flores, G., Ir, P., O'Donnell, O., & Van Doorslaer, E. (2014). Can vouchers deliver? An evaluation of subsidies for maternal health care in Cambodia. *Bulletin of the World Health Organization*, 92(5), 331–339. <https://doi.org/10.2471/BLT.13.129122>
- World Bank. (2020). World development indicators 2020. <https://databank.worldbank.org/source/world-development-indicators>
- World Health Organization. (2008). Task shifting global recommendations and guidelines. <https://apps.who.int/iris/bitstream/handle/10665/43821/9789?sequence=1>
- World Health Organization. (2010). World health report 2010: Health systems financing: The path to universal coverage. <https://www.who.int/publications/i/item/9789241564021>
- World Health Organization. (2023). Maternal mortality. <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>
- World Health Organization. (2016). WHO recommendations on antenatal care for a positive pregnancy experience. <https://www.who.int/publications/i/item/9789241549912>
- Wynn, A., Rotheram-Borus, M. J., Leibowitz, A. A., Weichle, T., Roux, I. L., & Tomlinson,

M. (2017). Mentor mothers program improved child health outcomes at a relatively low cost in South Africa. *Health Affairs (Project Hope)*, 36(11), 1947–1955.

<https://doi.org/10.1377/hlthaff.2017.0553>