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Improving Maternal and Neonatal Health Outcomes through Evidence-Based Interventions in Pakistan

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Abstract. *Maternal and neonatal health remains a pressing public health concern in Pakistan, with maternal mortality ratio (MMR) at 186 per 100,000 live births and neonatal mortality rate (NMR) at 41 per 1,000 live births. Despite progress in healthcare infrastructure, disparities in access to quality maternal and neonatal care persist, particularly in rural and underserved areas. Evidence-based interventions, including skilled birth attendance, emergency obstetric care, improved antenatal and postnatal services, nutritional supplementation, and immunization programs, have demonstrated significant potential to reduce maternal and neonatal morbidity and mortality. This paper examines the current status of maternal and neonatal health in Pakistan and highlights evidence-based strategies for improvement, emphasizing the role of community health workers, capacity building, and health system strengthening. The study concludes that implementing these interventions through integrated policies and public–private partnerships is critical for achieving Sustainable Development Goal (SDG) 3.1 and 3.2 in Pakistan.*

1. INTRODUCTION

Maternal and neonatal mortality remains a significant challenge for Pakistan's healthcare system, with preventable deaths continuing to occur due to inadequate access to essential maternal and child health services. According to the Pakistan Demographic and Health Survey (PDHS 2017–18), only 69% of women received at least four antenatal care visits, while more than 40% of deliveries are conducted without skilled birth attendants. Malnutrition, limited access to emergency obstetric care, socio-economic inequalities, and cultural barriers further exacerbate poor maternal and neonatal outcomes.

Globally, evidence-based interventions such as maternal nutritional supplementation, tetanus immunization, clean delivery practices, kangaroo mother care, neonatal resuscitation, and strengthening referral systems have proven effective in reducing mortality rates. However, implementation gaps, weak health infrastructure, and inadequate human resources limit the effectiveness of these interventions in Pakistan. Strengthening health systems through evidence-based approaches can significantly reduce maternal and neonatal mortality and contribute to the achievement of the Sustainable Development Goals.

Current Status of Maternal and Neonatal Health in Pakistan

Pakistan continues to face significant challenges in improving maternal and neonatal health outcomes. The maternal mortality ratio (MMR) currently stands at 186 per 100,000 live births, while the neonatal mortality rate (NMR) is 41 per 1,000 live births, one of the highest in South Asia. Although there has been gradual progress over the past two decades, the pace of decline remains slower than required to meet Sustainable Development Goals. Marked disparities exist between rural and urban populations, with rural women being less likely to access antenatal care, skilled birth attendance, and emergency obstetric services compared to their urban counterparts. Socioeconomic inequalities, limited healthcare infrastructure in remote areas, and cultural barriers further exacerbate these gaps. Barriers to accessing maternal and neonatal healthcare include insufficient health facilities, lack of trained healthcare providers, financial constraints, poor transportation, and gender norms restricting women's autonomy in seeking care. Consequently, preventable deaths continue to occur, underscoring the urgent need for scaling up evidence-based interventions and addressing systemic inequities in Pakistan's maternal and neonatal health system.

Evidence-Based Interventions for Maternal Health

Improving maternal health outcomes in Pakistan requires the consistent application of evidence-based interventions throughout the continuum of care. Antenatal care (ANC) visits are critical for early detection of complications, provision of essential supplements such as iron, folic acid, and calcium, and counseling on birth preparedness. Studies indicate that women receiving at least four ANC visits are more likely to have safe deliveries and healthier newborns. Nutritional supplementation during pregnancy further reduces risks of anemia, low birth weight, and preterm births. Equally important is the role of skilled birth attendants who can ensure safe delivery practices, recognize complications, and perform timely referrals. Clean delivery practices, including sterilized instruments and

hygienic environments, significantly lower the incidence of maternal infections and neonatal sepsis. Emergency obstetric care remains essential for addressing life-threatening conditions such as postpartum hemorrhage, eclampsia, and obstructed labor, which contribute heavily to maternal mortality in Pakistan. Postpartum care, including monitoring for complications, counseling on breastfeeding, and family planning services, plays a vital role in safeguarding maternal health beyond delivery. Strengthening these interventions through training, resource allocation, and community outreach is crucial for reducing maternal mortality and achieving sustainable improvements in women's health.

Evidence-Based Interventions for Neonatal Health

Neonatal survival in Pakistan can be significantly improved through the implementation of proven, evidence-based interventions. Neonatal resuscitation is one of the most effective measures to reduce deaths caused by birth asphyxia, a leading contributor to neonatal mortality. Training healthcare providers, particularly midwives and community health workers, in essential newborn care (ENC) — including immediate drying, thermal protection, cord care, and early initiation of breastfeeding — is vital to reducing risks during the critical first 28 days of life. Kangaroo mother care (KMC), which involves prolonged skin-to-skin contact, has shown remarkable benefits in stabilizing preterm and low-birth-weight infants by maintaining body temperature, improving breastfeeding rates, and strengthening maternal-infant bonding. Breastfeeding promotion, particularly exclusive breastfeeding for the first six months, is essential for reducing neonatal infections, malnutrition, and mortality. Immunization programs, including the administration of vaccines such as BCG, polio, and pentavalent vaccines, play a central role in preventing life-threatening infections in newborns. Furthermore, infection prevention through hygienic delivery practices, clean cord care, and timely antibiotic use for neonatal sepsis remains critical in resource-limited settings. Expanding access to these interventions, alongside strengthening referral systems and community awareness, can substantially lower neonatal mortality rates in Pakistan and align progress with global child survival targets.

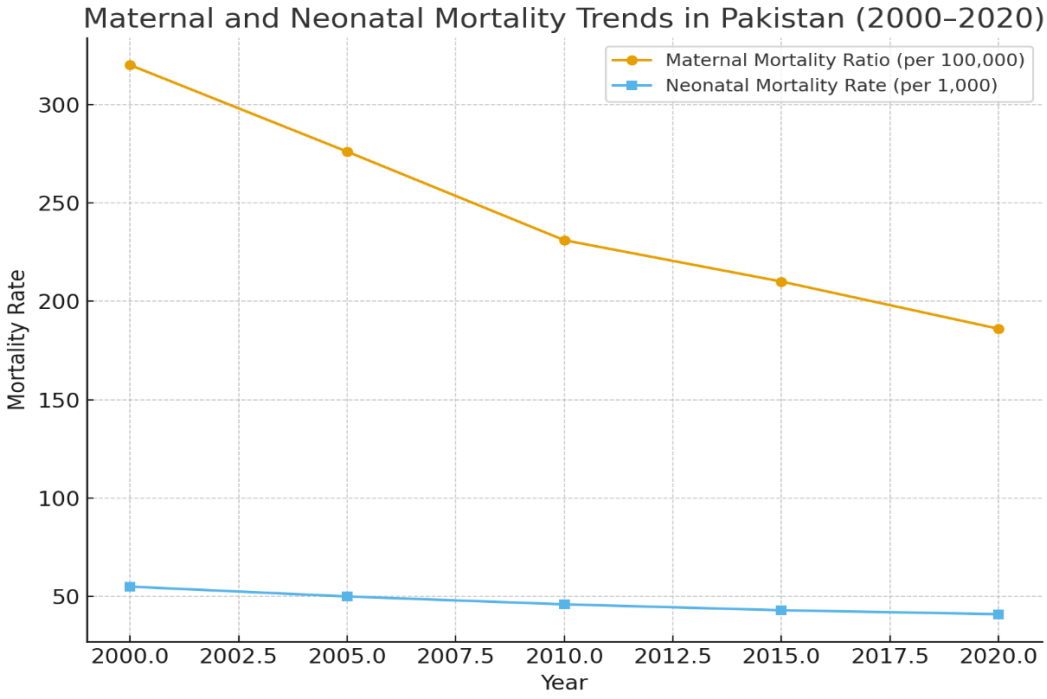
Health System Strengthening and Community-Based Approaches

Strengthening Pakistan's health system and adopting community-based strategies are critical to improving maternal and neonatal health outcomes. The Lady Health Worker (LHW) program has been a cornerstone of community outreach, bridging gaps in access by providing door-to-door maternal and child health services, including antenatal checkups, counseling on safe deliveries, and referral support. Their role in mobilizing communities, promoting immunization, and encouraging institutional deliveries has been instrumental, especially in underserved rural areas. However, to maximize their impact, sustained investment in training and incentives for LHWs is essential. Training and capacity building of healthcare providers at all levels — from community midwives to tertiary-level specialists — ensures better quality of care, timely detection of complications, and effective management of emergencies. Regular refresher courses, standardized protocols, and supportive supervision further enhance service delivery. In addition, public–private partnerships (PPPs) offer opportunities to expand healthcare coverage, improve infrastructure, and ensure sustainable financing for maternal and neonatal programs.

Successful PPP models in Pakistan have demonstrated improvements in service delivery by leveraging private sector efficiency alongside government oversight. By integrating these approaches into national strategies, Pakistan can build a resilient health system capable of delivering equitable, high-quality maternal and neonatal healthcare across diverse populations.

Policy Implications and Future Directions

For Pakistan to make meaningful progress in reducing maternal and neonatal mortality, strong policy frameworks must prioritize the integration of evidence-based interventions into national health strategies. Ensuring universal access to antenatal care, skilled birth attendance, essential newborn care, and emergency obstetric services should form the foundation of maternal and child health policies. These interventions must be embedded within Pakistan's health sector plans, with special attention to addressing inequities in rural and marginalized populations. Robust monitoring and evaluation frameworks are equally critical to measure progress, identify implementation gaps, and ensure accountability. Data-driven decision-making, facilitated by improved health information systems, can guide policymakers in refining strategies and allocating resources effectively. Furthermore, Pakistan's commitment to achieving the Sustainable Development Goals (SDG 3.1 and 3.2) requires accelerated action to reduce maternal mortality to less than 70 per 100,000 live births and neonatal mortality to at least 12 per 1,000 live births by 2030. Aligning maternal and neonatal health programs with SDG targets, while fostering cross-sectoral collaboration, will not only save lives but also contribute to broader goals of gender equity, poverty reduction, and sustainable development. A forward-looking policy approach, supported by strong political will and public–private partnerships, is essential to ensure lasting improvements in maternal and neonatal health outcomes in Pakistan.



Summary

Maternal and neonatal health outcomes in Pakistan remain below global standards, with preventable deaths continuing to occur due to limited access to quality healthcare. Evidence-based interventions, such as antenatal care, skilled birth attendance, neonatal resuscitation, breastfeeding promotion, and kangaroo mother care, have shown effectiveness in reducing mortality rates. Community-based approaches, particularly through Lady Health Workers, along with stronger health system support and public–private partnerships, are essential to bridge healthcare gaps. Policymakers must integrate these interventions into national strategies, supported by monitoring and evaluation frameworks, to achieve Sustainable Development Goals. Strengthening maternal and neonatal health services will not only save lives but also improve overall population health and development outcomes in Pakistan.

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