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Why have improvements in maternal health not translated in equitable outcomes in Madhesh Province, Nepal?

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Abstract

In Madhesh Province, Nepal, deep-rooted socio-economic, cultural, and systemic barriers are interwoven to persistently exclude women from safe and quality maternal care. Despite Madhesh's geographic accessibility, women continue to face barriers to maternal health service access exposing ingrained inequities that national progress has consistently failed to reach. These gaps are not dictated by geography, but by chronic underfunding, structural neglect, and intersecting linkage of poverty, caste, ethnicity, language, and limited autonomy. Addressing these challenges requires intersectional, equity-based strategies such as developing and scaling digital health interventions, strengthening and empowering community health cadres, engaging men/partner, and reforming resource allocation and financing. Only innovative shifts in policy, financing, and community engagement will uplift the most marginalized and drive real progress toward Universal Health Coverage and commitment to Sustainable Development Goals (SDG) 3 targets, in Nepal.

Keywords: Maternal Inequity, Madhesh Province, Maternal Outcomes, Intersectionality

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Introduction

Safe motherhood, a fundamental right in Nepal, remains unevenly realized. The decades-long efforts to reduce maternal mortality have saved many lives, yet the progress is stagnant.[1,2] For many women across Nepal, maternal health services remain inaccessible, determined by who they are, where they come from, and the resources they have. Nepal's current Maternal Mortality Ratio (MMR) stands at 151 deaths per 100, 000 live births, still far from national and global targets. Nepal committed to reduce its MMR from 281 in 2006 to 116 by 2022, 99 by 2025, and 70 by 2030, in line with the Sustainable Development Goals (SDGs).[2]

Despite national programs and policies intended to strengthen safe motherhood initiatives, and reduce financial barriers, inequities persist between provinces. Madhesh province continues to struggle with poor maternal health indicators.[3-6] Women in Madhesh Province are particularly disadvantaged, with only 68% attending four or more antenatal care visits, compared to the national average of 81%. Nearly one in three births (32%) in the province occur at home, and approximately 40% of mothers do not receive postnatal care. Iron supplementation uptake is also the lowest among provinces at 56%, increasing the risk of complications such as severe anemia, preterm birth, and perinatal mortality. In 2022, Madhesh Province had the lowest percentage of deliveries conducted by skilled birth attendants (60%) among all provinces.[1,6-8]

Nepal's commitment to Universal Health Coverage faces significant challenges due to by deep-seated provincial inequities in maternal health. Understanding these inequities and addressing disparities is crucial as it demonstrates the region's determination to reimagine health as a universal right, irrespective of geography, caste, or income. This viewpoint seeks to encourage critical reflection and prompt action on maternal health equity, highlighting the persistent and preventable disparities in Madhesh Province. It urges intersectional considerations that can ignite progress toward Nepal's 2030 maternal mortality goals and inspire change across South Asia.

Key drivers of maternal health inequity in Madhesh Province

Economic inequality and gaps in education significantly affect maternal health outcomes in Madhesh Province. Women from low-income households face obstacles to accessing facility-based care. These include high transportation costs, medical bills, and lost income during childbirth. Consequently, women in the wealthiest households are over eight times more likely to give birth in health facilities than those in the poorest households.[6,9] This disparity brings to light the serious financial inequities in maternal care.

Education shapes women's ability to seek and receive care.[9-11]. Women with higher level of education are more likely to recognize pregnancy complications and understand the benefits of skilled birth attendance and demonstrate confidence in navigating the health system.[11] Yet in Madhesh Province, nearly half of women (46%), have no formal education,[2] persistently contributing to low utilization of maternal health services, despite national efforts promoting institutional deliveries.

Maternal health decisions in Madhesh Province are strongly influenced by socio-cultural norms, family hierarchies, and women's limited autonomy**.** Traditional beliefs frame childbirth as a natural event that does not require medical help.[12] When combined with entrenched patriarchal structures, these attitudes restrict women's choices about where to give birth. Husbands or mothers-in-

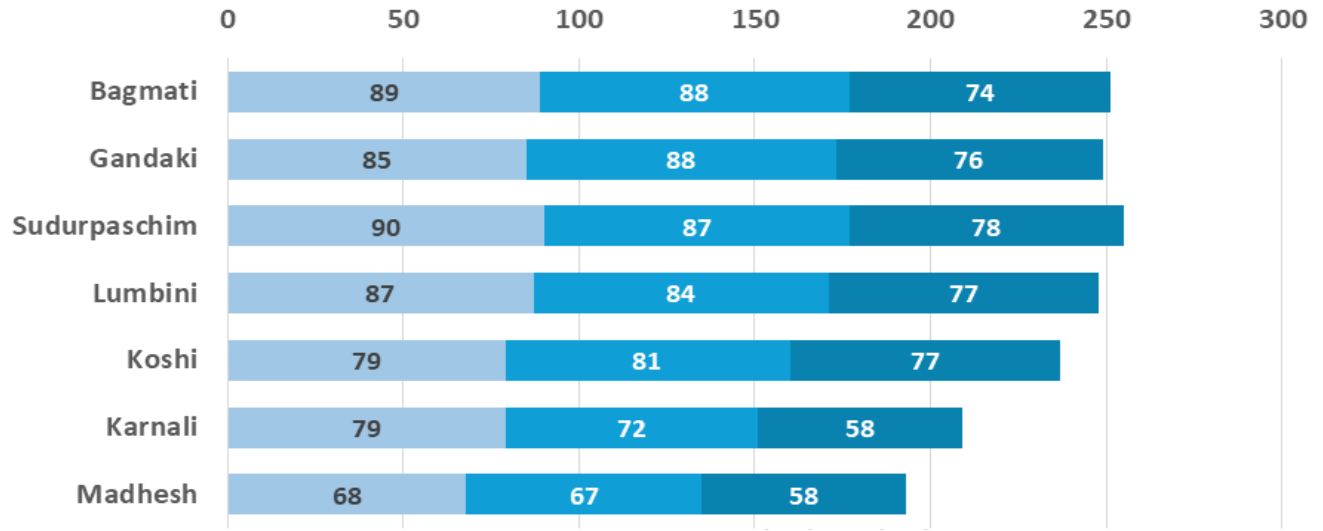

Figure 1. Maternal Health Service utilization across all 7 provinces based on NDHS 2022 data[6]

The figure compares coverage of antenatal care (ANC), institutional delivery (ID), and postnatal care (PNC within 2 days). Madhesh shows the lowest utilization nationally highlighting persistent inequalities in service utilization despite national maternal health initiatives.

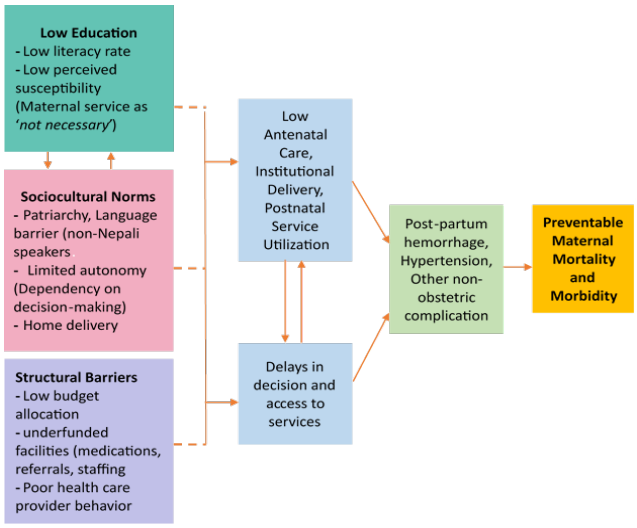

Figure 2. Drivers of disparity for maternal health service utilization in Madhesh Province

law frequently make these decisions, often favoring home births as a marker of social respectability[13]. Social expectations, prior experience of safe home deliveries, and mistrust of medical institutions further reinforce this preference for home births.

Gender inequality exacerbates these barriers, as women in Madhesh often facing experience restricted autonomy and mobility, which delay or prevents their access to skilled care.[13-15] The NDHS 2022 reports that Madhesi men are less likely than men from other ethnic groups[6] to accompany women to health facilities during delivery, which highlights how limited male involvement can directly contribute to delays and underutilization of essential maternal health services. When asked why women did not choose healthcare facilities for delivery, 80% of mothers in Madhesh Province indicated that facility-based delivery was unnecessary, while others reported that family members or husbands prohibited it.[6]

Limited health system capacity and structural hurdles further widen disparities in maternal health services across Madhesh Province. A shortage of skilled birth attendants, deteriorating infrastructure, disrespectful provider behavior, and lack of privacy[16] make safe delivery care elusive for women in remote areas. Madhesi women who deliver in health facilities report higher rates of verbal and physical abuse from providers compared to women from other groups[2], particularly female providers, further erodes trust and discourages women from seeking care.

Persistent deficiencies in service quality and chronic shortages of essential supplies undermine public confidence in the health system. Many local facilities lack emergency obstetric care and do not provide round-the-clock services. As a result, families frequently resort to home deliveries with no choice left. Madhesh Province, home to roughly 21% of Nepal's people, remains one of the nation's most under-resourced regions. In contrast to mountainous provinces, where rugged terrain poses significant barriers, Madhesh's flat landscape should, facilitate easier access to healthcare services.[17,18]

However, the reality paints a very different story. The persistent gaps in healthcare access in Madhesh are not attributable to geography. Instead, these disparities are byproduct of disproportionate resource allocation and systemic neglect. For years, Madhesh has received the lowest per-capita health budgets of any province, resulting in inadequate infrastructure, staffing, medicines, and staff.[1] The consequences of this chronic underinvestment are evident in maternal health outcomes.

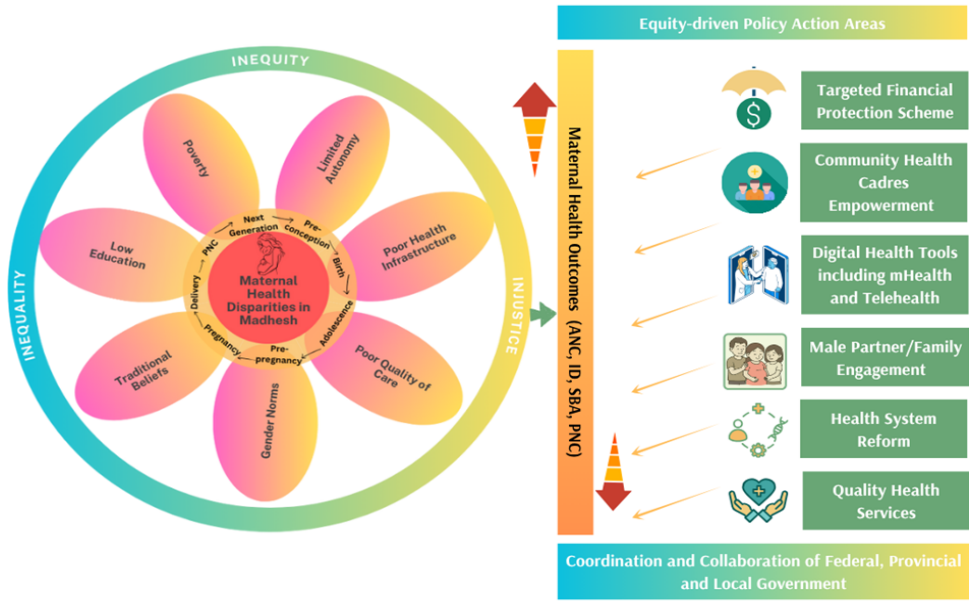

Figure 3. Intersectional Life Course Framework for Maternal Health Equity in Madhesh Province

The figure outlines the different levels, individual, interpersonal, community, institutional, and structural, that influence maternal health disparities over the period life course. The model places women's reproductive experiences within the intersecting structures of caste, class, gender norms, and access to resources, illustrating how inequities build up throughout life and impact maternal health outcomes in long run.

Strategies for addressing maternal health disparities in Madhesh Province

Digital innovations such as telemedicine and mobile health (mHealth) are expanding opportunities for maternal and perinatal care in underserved regions of Nepal. By connecting pregnant women with

healthcare professionals remotely, these tools help overcome barriers related to distance, cost, and workforce shortages.[19] Success stories from India and Bangladesh shows that telemedicine can reduce maternal mortality and increase antenatal visits.[21] Video and phone consultations provide immediate medical advice, referrals, and follow-up, reducing the need for families to travel long distances at significant cost. Meanwhile, mHealth apps and SMS reminders enable women to monitor their health, access essential information, and keep up with appointments.[19,20] In Nigeria, a simple SMS program dramatically increased postnatal clinic attendance[21], demonstrating that even basic mobile solutions can be effective in low-resource settings.[22]

Madhesh Province is well-positioned to benefit from these innovations. Nearly 95% of households have a mobile phone, and 65% of women have used the internet in the past year.[2]

This digital readiness supports the implementation of innovative health solutions. By weaving telemedicine and mHealth platforms into existing maternal health programs, Madhesh can address access gaps, increase service use, and take a major step toward equitable care for all.[23]

Since 1988, the Female Community Health Volunteer (FCHV) Program has been a cornerstone to Nepal's grassroots maternal and child health efforts. FCHVs, often with limited formal education, are trusted community neighbors who distribute supplements, screen for risks, and promote health campaigns. Their strong community ties and local knowledge are vital for reaching women in remote, marginalized, nooks and corners.[24] In Madhesh, where home births remain common, equipping FCHVs and traditional birth attendants with practical, on-site training, supportive supervision, and fair incentives can enhance maternal health outreach without overburdening them. Delivering health education in local languages builds trust and understanding among women who face language and cultural barriers. Even global evidence is compelling: in Uganda, Women Development Leaders teaching in local languages led to a increase in maternal health service use by addressing issues of awareness, access, and social norms.[25] In Kenya, transforming Traditional Birth Attendants and FCHVs into referral agents through community engagement and training drove skilled birth attendance from 3.6% to 27.6%.[26] This approach turns trusted local figures into effective advocates for equitable maternal health service delivery.

Male partners are powerful agents of change in maternal and newborn health (MNH) as decision-makers, caregivers, and influencers of family health behaviors. Since the mid-1990s, research has shown that when men step up and engage in MNH programs, outcomes for mothers and babies improve dramatically. Their involvement brings practical, financial, and emotional support, encourages timely care-seeking, and fosters safer practices at home. It also opens up communication between couples, empowering them to make health decisions together, critical for better service access, use, and maternal well-being.[27]

Couple-focused education and counseling programs have sparked better maternal health outcomes worldwide. In India, such interventions increased the use of maternal health services.[28] Uganda's behavior-driven initiatives blending education, persuasion, role modeling, and environmental changes led to more women accessing antenatal, skilled birth, and postnatal care.[27] In southwestern Kenya, home-based counseling by trained male-female teams not only increased male involvement but also encouraged fairer household decision-making and greater use of maternal health services.[29]

Addressing financial barriers and introducing local maternal health financing mechanism, such as comprehensive insurance and robust incentive programs are crucial for increasing facility-based deliveries and improving maternal health outcomes in Madhesh Province. Global evidence supports similar approach. For instance, in Burkina Faso, eliminating maternal delivery fees through local government funding led to a sustained increase in facility births.[30] Similarly, Ghana's provision of free delivery services and maternal health insurance increased institutional deliveries and reduced disparities between resourced and limited-resourced women.[31]

In Madhesh, high out-of-pocket expenses continue to discourage families from seeking facility-based deliveries. Introducing a maternal health insurance package covering antenatal visits, delivery (including complications), transportation, and postnatal care could address these barriers. Effective cooperation and collaboration between local governments and the Provincial Health Directorate is necessary to bring this vision to life.

While antenatal care use is high and quality services exist in health facilities, women in Madhesh frequently receive quality-compromised care. Tailoring province-specific interventions that provide on-site coaching to health staff fluent in local language is crucial for improving care standard.[32] Nepal's federal structure, established in 2015, enables provinces to design and implement health system reforms tailored to local needs. This decentralized approach facilitates decision-making aligned with local health needs, and a

reduces regional disparities.[33] Nepal's *Aama Surakshya Programme* offers incentives for safe deliveries[34], but its reach and recognition remain limited in Madhesh. Strengthening the program through simpler cash transfers, effective communication in local languages, and transparent monitoring can foster trust, increase participation, and promote equitable access to maternal health services.

Conclusion

Evidence reinforces that gender norms, education gaps, and unequal family power dynamics accumulate over time, resulting in layers of vulnerabilities affecting maternal health in Madhesh Province. Targeted, equity-driven actions are needed. Poverty and limited education should not dictate women's access to maternal health services. Provincial and federal governments, development partners, academia, and civil society posses a window of opportunity to make a meaningful difference. Through investment in culturally responsive services, empowerment of FCHVs and frontline workers, implementation of financial protection, and amplification of voices of marginalized women in local planning processes, Nepal can fulfill its commitment of leaving no one behind.

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Conflict of Interest

None

AI Declaration

During the finalization of this work, authors used Grammarly to improve readability and correct grammar. Authors, reviewed and edited the content and take full responsibility for the publication.

Author Contribution

Concept, design, planning: AM; ; Literature review: AM, TRT; Data collection: AM, TRT; Data analysis: AM Draft manuscript: AM; Revision of draft: AM, TRT, LB Final manuscript: AM, TRT, LB; Accountability of the work: AM, TRT, LB; Guarantor: AM, TRT, LB.

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