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Impact of telemedicine-enabled prenatal care on maternal and neonatal outcomes in Urban India

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Abstract

The integration of telemedicine into prenatal care has the potential to transform maternal and neonatal health outcomes, especially in urban settings where access to digital infrastructure is relatively higher. This study evaluates the effectiveness of telemedicine-enabled prenatal consultations on pregnancy-related outcomes in urban India. A comparative cross-sectional study was conducted with two cohorts: one receiving standard in-person prenatal care and the other receiving hybrid care that included teleconsultations. Results indicated significant improvements in appointment adherence, maternal knowledge about pregnancy, early detection of complications, and reduced instances of low birth weight in the telemedicine group. The study concludes that integrating telemedicine into prenatal care pathways can enhance maternal and neonatal outcomes while promoting healthcare accessibility and efficiency in urban Indian contexts.

Keywords: Telemedicine, Prenatal Care, Maternal Health, Neonatal Outcomes, Urban India, Digital Health

Introduction

Maternal and neonatal health continues to be a public health priority in India, with urban populations facing unique challenges such as overcrowded facilities, travel limitations, and uneven access to specialists. The COVID-19 pandemic highlighted the potential of telemedicine to bridge gaps in healthcare delivery. This study investigates whether telemedicine-enabled prenatal care can positively influence maternal and neonatal outcomes in urban India, where digital health solutions are increasingly viable.

Objectives

- To assess the impact of telemedicine consultations on maternal health indicators such as anemia, gestational diabetes, and hypertension.
- To evaluate neonatal outcomes such as birth weight, preterm delivery, and APGAR scores.
- To compare patient satisfaction and health-seeking

behavior between telemedicine users and traditional care recipients.

Materials and Methods

- Design: Comparative cross-sectional study.
- Setting: Tertiary hospitals and private clinics in Delhi and Mumbai.
- Participants: 400 pregnant women (200 in telemedicine group, 200 in traditional care group) between 12–36 weeks of gestation.
- Inclusion Criteria: Urban residents with access to smartphones and internet, low to moderate-risk pregnancies.
- Data Collection: Structured interviews, electronic health records, follow-up calls.
- Analysis: Descriptive statistics, chi-square test, logistic regression (SPSS v25).

Results

- Appointment Adherence: 92% in telemedicine group vs 76% in traditional care group.
- Complication Detection: Telemedicine enabled earlier diagnosis of gestational diabetes (mean gestational week 24.2 vs 26.5).
- Neonatal Outcomes: Low birth weight (<2.5 kg) in 9% of telemedicine cases vs 15% in control.
- Patient Satisfaction: 88% of telemedicine users found care convenient and responsive.

Discussion

The findings indicate that telemedicine can enhance prenatal care delivery, particularly in urban areas with digital access. Improved appointment adherence and earlier detection of pregnancy-related complications contribute to better maternal and neonatal outcomes. Challenges such as digital literacy and platform reliability remain, but overall, the model demonstrates feasibility and effectiveness.

Conclusion

Telemedicine-enabled prenatal care shows promise in improving maternal and neonatal health indicators in urban India. As digital infrastructure continues to grow, integrating such services into standard maternal healthcare can lead to more accessible, cost-effective, and patient-centered care.

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