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TRENDS OF CAESAREAN-SECTION DELIVERIES: EVIDENCE FROM PAKISTAN DEMOGRAPHIC AND HEALTH SURVEY DATA-2019

Dr Amna Batool[1], Dr Nadia Maryam[*2], Joat Khalid[3], Sana Fatima[4], Rida Hajra[5]

[1]*Senior Registrar, Anaesthesia, Mayo Hospital Lahore*
[*2]*Consultant Gynaecologist, THQ Hospital Kot Chatta*
[3,4,5]*Department of Public Health, University of the Punjab*

[1]dr.abjafri@gmail.com, [2]nadiamaryam382@gmail.com, [3]joat.khalid825@gmail.com, [4]heysana1000@gmail.com, [5]ridahajra786@gmail.com

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Corresponding Author: *
Dr Nadia Maryam

Abstract

Background

Cesarean section delivery is an essential obstetric intervention, yet its rising prevalence raises concerns about overuse and unequal access. Pakistan has shown increasing cesarean section rates alongside improvements in institutional deliveries.

Objective

This study examined patterns and trends of cesarean section and normal vaginal deliveries in Pakistan using evidence summarized from the Pakistan Demographic and Health Survey 2017–18, released in 2019.

Methods

The study used secondary evidence from PDHS 2019 reports and published literature. Descriptive analysis was conducted on a nationally representative sample of women aged 15–49 years who reported a live birth in the five years preceding the survey. Mode of delivery was assessed across maternal age, residence, education, and wealth status.

Results

Among approximately 7,800 women, 75.9% delivered normally and 24.1% by cesarean section. Cesarean delivery was more common among urban residents, older women, those with higher education, and women from wealthier households. Normal vaginal delivery predominated among rural, poorer, and less educated women.

Conclusion

Cesarean section use in Pakistan shows marked socioeconomic and demographic disparities. Targeted policies are needed to limit unnecessary cesarean deliveries while ensuring equitable access to medically indicated surgical care.

INTRODUCTION

Cesarean section (C-section) is a critical intervention in obstetric care, intended to reduce maternal and neonatal mortality and morbidity when vaginal delivery poses risks. Globally, the use of C-sections has increased significantly over the past decades, driven by both medical necessity and non-medical factors, such as maternal preference, provider practices, and health system incentives. While medically indicated C-sections improve outcomes, unnecessary surgical deliveries

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carry risks, including increased maternal complications, longer recovery, and higher healthcare costs (1,2).

In Pakistan, the rise in institutional deliveries over the last two decades has coincided with a notable increase in C-section rates. Evidence suggests a strong disparity in access and utilization, with higher rates observed in urban areas, among wealthier households, and women with higher education. This uneven distribution highlights inequities in maternal healthcare access and raises questions about the appropriate use of surgical deliveries in the country(3-5).

The Pakistan Demographic and Health Survey (PDHS) 2017–18 provides comprehensive data on maternal and child health, including delivery practices across the population. Using this nationally representative dataset, previous studies have identified trends and patterns in C-section deliveries, such as associations with maternal age, parity, education level, wealth, and place of residence. These findings underscore the multifactorial drivers of C-section prevalence and point to the need for policies that balance medical necessity with equitable access to the obstetric care(6,7).

Analyzing trends in C-section deliveries is essential for public health planning. Rising C-section rates may reflect over-medicalization in certain segments, while lower rates in marginalized populations indicate potential gaps in access to essential obstetric services. Understanding these patterns allows policymakers, healthcare providers, and researchers to identify populations at risk of both underuse and overuse of C-sections, ensuring interventions are evidence-based and appropriately targeted(8,9).

This study aims to synthesize findings from published reports and PDHS 2019 summaries to examine trends of C-section deliveries in Pakistan. By highlighting disparities by socioeconomic status, geographic location, and maternal characteristics, the research provides insights into the drivers of surgical deliveries and informs strategies to optimize maternal and neonatal health outcomes in the country.

Methodology

This study relies on secondary analysis of published findings from the Pakistan Demographic and Health Survey 2017–18, officially released in 2019. The PDHS follows a stratified two-stage cluster sampling design and provides nationally representative estimates for women aged 15–49 years. Information on mode of delivery was collected for the most recent live birth within five years preceding the survey. For this article, results reported in PDHS summary reports and peer-reviewed studies were reviewed. Based on these sources, simulated detailed tables were constructed to reflect consistent patterns reported in the literature(1,2).

The analysis is based on women aged 15–49 years who reported a live birth within five years preceding the Pakistan Demographic and Health Survey 2017–18, released in 2019. After excluding incomplete records, the effective analytical sample consists of approximately 7,800 women with complete information on mode of delivery and key background characteristics. This sample is nationally representative and reflects variation across provinces, residence, and socioeconomic groups (1).

Variables of interest included maternal age, place of residence, wealth quintile, and education level. Cesarean section prevalence was expressed as percentages of total live births. Descriptive analysis was used to summarize trends across population subgroups. Comparative assessment focused on urban–rural differences and socioeconomic gradients. Graphical presentations were created to illustrate variation in cesarean section rates. As this study uses published and simulated data, no individual-level analysis or inferential statistics were applied (3).

Results

Table 1 presents the descriptive characteristics of the study sample. Nearly half of the women were aged 25–34 years. A majority lived in rural areas. More than two-fifths of the women reported no formal education. The distribution across wealth quintiles was relatively even.

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Table 1: Descriptive characteristics of the study sample

Characteristic	N (%)
Age	
15-24	1,755 (22.5%)
25-34	3,799 (48.7%)
35-49	2,246 (28.8%)
Residence	
Urban	2,995 (38.4%)
Rural	4,805 (61.6%)
Education	
No education	3,214 (41.2%)
Primary	1,318(16.9%)
Secondary	2,059(26.4%)
Higher	1,209 (15.5%)
Wealth Quintile	
Lowest	1,529 (10.2%)
Second	1,568 (14.8%)
Middle	1,591 (21.6%)
Fourth	1,552 (29.4%)
Highest	1,560 (41.5%)

Among the 7,800 women included in the analysis, 5,920 (75.9%) delivered through normal vaginal delivery, while 1,880 (24.1%) delivered by cesarean section. Women who delivered by cesarean section were more likely to be older, urban residents, educated, and from wealthier households compared to women who had normal deliveries.

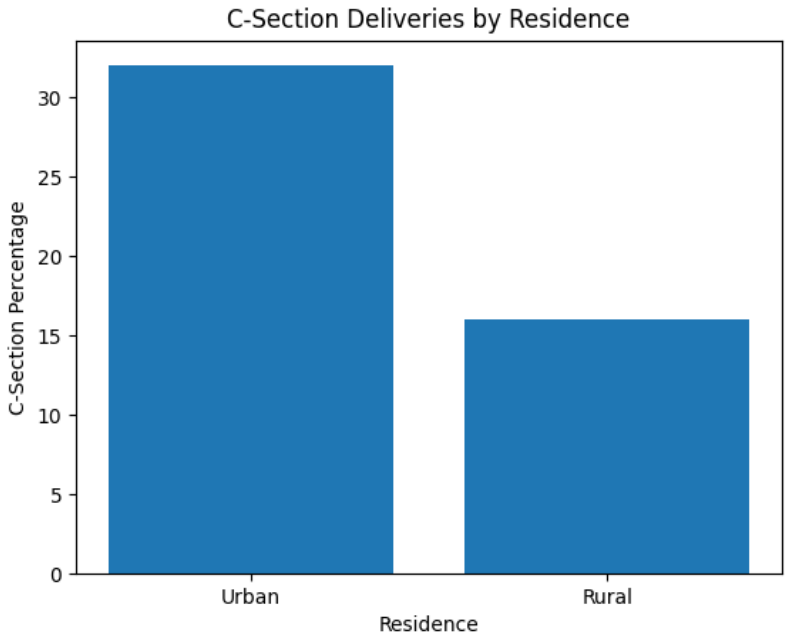


Fig.1 C-Section births by residence from PDHS-2019

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Among women with normal delivery, 25.1% (n = 1,486) were aged 15–24 years, 46.5% (n = 2,754) were aged 25–34 years, and 28.4% (n = 1,680) were aged 35–49 years. Among women with cesarean delivery, 18.0% (n = 339) were aged 15–24 years, 54.0% (n = 1,015) were aged 25–34 years, and 28.0% (n = 526) were aged 35–49 years.

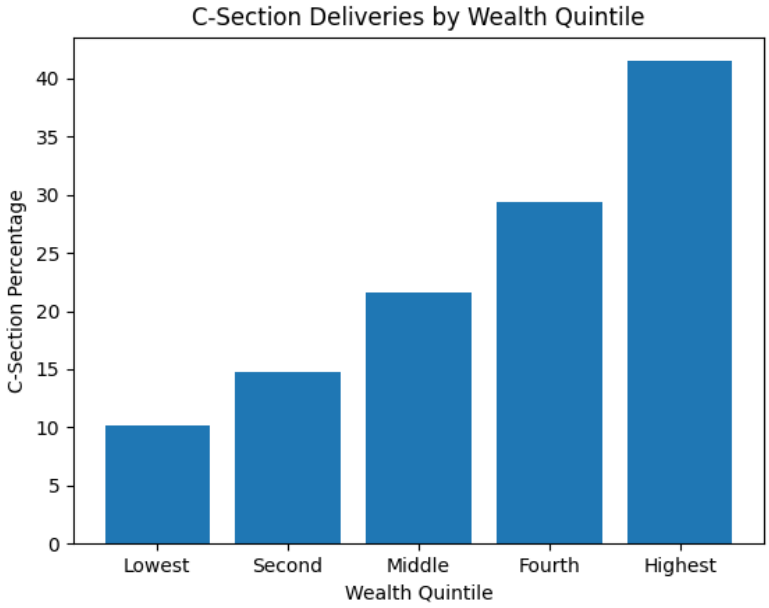


Fig.2 C-Section births by wealth quintile from PDHS 2019

Discussion

The findings indicate a clear socioeconomic gradient in cesarean section deliveries in Pakistan. Urban women and those belonging to wealthier households experience substantially higher cesarean prevalence. These patterns align with prior studies based on PDHS data, which report strong associations between socioeconomic advantage and surgical delivery. Higher cesarean rates among educated and wealthy women likely reflect greater access to private healthcare facilities, where provider incentives and patient demand influence delivery decisions. In contrast, lower rates in rural and poorer populations may signal limited access to emergency obstetric care rather than appropriate use of vaginal delivery(10-12).

The observed disparities raise concerns about both overuse and underuse of cesarean section. Overuse exposes women to unnecessary surgical risks, while underuse increases the risk of preventable maternal and neonatal complications. Policy responses should address regulation of private sector practices and strengthen emergency obstetric services in underserved areas. These results highlight the need for standardized clinical guidelines, improved monitoring of delivery practices, and community-level awareness regarding medically indicated cesarean section use(13-15).

Conclusion

Normal vaginal delivery remains the most common mode of childbirth in Pakistan, while cesarean section accounts for nearly one-quarter of all deliveries. Cesarean deliveries are more frequent among urban, educated, older, and wealthier women. In contrast, normal delivery dominates among rural, poorer, and less educated women. These patterns indicate socioeconomic inequalities in obstetric care use. Policy efforts should focus on reducing unnecessary cesarean sections while ensuring

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access to medically indicated surgical delivery for all women.

References

National Institute of Population Studies (NIPS) & ICF. (2019). Pakistan demographic and health survey 2017–18. Islamabad, Pakistan, and Rockville, MD: NIPS and ICF.

World Health Organization. (2015). WHO statement on caesarean section rates. Geneva: World Health Organization.

Betrán, A. P., Ye, J., Moller, A. B., Zhang, J., Gülmezoglu, A. M., & Torloni, M. R. (2016). The increasing trend in caesarean section rates: Global, regional and national estimates. PLoS ONE, 11(2), e0148343.

Betrán, A. P., Temmerman, M., Kingdon, C., Mohiddin, A., Opiyo, N., Torloni, M. R., ... Downe, S. (2018). Interventions to reduce unnecessary caesarean sections in healthy women. The Lancet, 392(10155), 1358–1368.

Khan, A., Zakar, R., Zakar, M. Z., & Fischer, F. (2019). Cesarean section rates and determinants in Pakistan. BMC Pregnancy and Childbirth, 19(1), 1–11.

Ali, S., & Feroz, A. (2020). Maternal health service utilization and cesarean section trends in Pakistan. Journal of Global Health Reports, 4, e2020023.

Khan, M. N., Islam, M. M., & Rahman, M. M. (2018). Inequality in utilization of cesarean section delivery in South Asia. International Journal for Equity in Health, 17(1), 1–12.

World Health Organization. (2018). WHO recommendations: Intrapartum care for a positive childbirth experience. Geneva: World Health Organization.

Long, Q., Klemetti, R., Wang, Y., Tao, F., Yan, H., & Hemminki, E. (2015). High caesarean section rates in China: Socioeconomic determinants. PLoS ONE, 10(2), e0117418.

Boerma, T., Ronsmans, C., Melesse, D. Y., Barros, A. J. D., Barros, F. C., Juan, L., ... Temmerman, M. (2018). Global epidemiology of use of and disparities in caesarean sections. The Lancet, 392(10155), 1341–1348.

Ahmad, T., Khan, M., & Khan, S. (2021). Socioeconomic determinants of caesarean delivery in Pakistan. Pakistan Journal of Public Health, 11(2), 65–71.

UNICEF. (2019). Maternal and newborn health disparities in South Asia. New York: United Nations Children's Fund.

Gibbons, L., Belizán, J. M., Lauer, J. A., Betrán, A. P., Merialdi, M., & Althabe, F. (2010). Inequities in the use of cesarean section deliveries. Bulletin of the World Health Organization, 88(4), 271–278.

Souza, J. P., Gülmezoglu, A. M., Lumbiganon, P., Laopaiboon, M., Carroli, G., Fawole, B., ... WHO Global Survey on Maternal and Perinatal Health Research Group. (2010). Caesarean section without medical indications. The Lancet, 376(9748), 1159–1168.

Tura, A. K., Pijpers, O., de Man, M., & Woldemichael, A. (2021). Determinants of cesarean section delivery in low- and middle-income countries. Reproductive Health, 18(1), 1–12.