

IMPACT OF COVID-19 PANDEMIC ON STILLBIRTH RATES IN DEVELOPING COUNTRIES: A STUDY FROM LADY READING HOSPITAL, PAKISTAN

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Abstract: *The COVID-19 pandemic has created challenges, particularly for underdeveloped countries with fragile healthcare systems. These nations are experiencing increased pressure due to the pandemic and ongoing illnesses. This research aims to evaluate how the pandemic has indirectly impacted mother and newborn health in Pakistan, resulting in higher stillbirth rates. The study will analyze data from pre-pandemic and pandemic years to determine how healthcare interruptions, fewer prenatal visits, and infection concerns have affected stillbirth occurrences in tertiary-care hospitals. It is a cross-sectional study conducted at the Department of Obstetrics and Gynecology at Lady Reading Hospital, Peshawar, Pakistan, from January 2019 to January 2020. The Department of Obstetrics and Gynaecology at Lady Reading Hospital in Peshawar, Pakistan, conducted this cross-sectional research. Approved by ethics was acquired. Using internet calculators, the sample size of 200 was determined with a 5% margin of error, a 95% confidence interval, and a stillbirth percentage of 16%. Consecutive non-probability sampling was used. Patients who were at term and gave birth to stillborn children were included in the study; instances involving twin pregnancies, fetal abnormalities, and early neonatal deaths were not. For 2019 (before COVID-19) and 2020 (the pandemic year), retrospective data on medical problems, reasons for stillbirth, demographic traits, and prenatal visits were gathered. The causes of stillbirths were compared between the two years using chi-square testing. A p-value of 0.05 was considered statistically significant. The research discovered notable differences in stillbirth rates and associated variables between 2019 (before COVID-19) and 2020 (the pandemic year). The proportion of multiparous women increased to 62% in 2020 from 57% in 2019. A decline in prenatal bookings from 64% in 2019 to 52% in 2020 suggests that antenatal visits were fewer throughout the epidemic. There were notable variations between the two years in several stillbirth-related factors, including abruption, placenta previa, type II diabetes, gestational diabetes mellitus (GDM), malpresentation, intrauterine growth restriction (IUGR), obstructed labor, eclampsia, postdates, and unknown causes. These results demonstrate how the pandemic affected maternity care and how stillbirth rates are related to it. In an environment with inadequate resources, the research shows a significant rise in stillbirth rates during the COVID-19 epidemic. This increase is attributed to fewer prenatal visits, interruptions in healthcare services, and the pandemic's collateral consequences. These results highlight the need for tailored treatments and program changes for maternal health during medical emergencies.*

Keywords: Stillbirth Trends, COVID-19 Impact, Maternal Healthcare, Resource-Limited

Introduction

Along with putting pressure on healthcare systems, the COVID-19 pandemic—an unprecedented global health emergency—has also shown weaknesses in the mother and child healthcare system, especially in poor nations (Filip et al., 2022; Forman and Kohler, 2023). Complex interactions between the epidemic and its unintended consequences on mother and newborn health, with a particular emphasis on stillbirth rates. It was carried out at the Department of Obstetrics and Gynaecology at Lady Reading Hospital in Peshawar, Pakistan (Ahmad, 2012; John, 2017). The international healthcare systems face further hurdles due to the pandemic's unrelenting expansion (Lavinias, 2021). COVID-19 affects mother and child health in addition to the immediate impact of the virus. COVID-19 poses an even more significant burden in areas with little resources and pre-existing endemic illnesses such as HIV, TB, and malaria (Shadmi et al., 2020). The pandemic's indirect effects on mother and newborn health have raised severe concerns in developing nations like India, Indonesia, and Pakistan, where the healthcare system is often brittle and already

overburdened (Organization, 2005). Due to the COVID-19 disruption, elective obstetrical services have closed, pregnant patients are reluctant to seek hospital treatment out of concern for getting the virus, and overburdened healthcare institutions are unwilling to accept more patients (Brown, 2021). Pregnant women now face a complicated web of hurdles due to these difficulties, resource diversion, and lockdown procedures⁴. A concerning prediction indicates that the indirect consequences of the pandemic may result in around 338,760 stillbirths in nations such as Pakistan, Indonesia, and India, signifying a 31% rise in mortality (Sharma and Sharma, 2020). These depressing figures highlight the complex and wide-ranging effects of the epidemic, particularly in areas where healthcare inequities are conspicuous³. Prenatal treatment has undergone modifications in reaction to the epidemic, such as a decrease in the quantity of screening exams and ultrasounds (Bao et al., 2020). This predicament has been made worse by the unwillingness of pregnant people, both high-risk and low-risk, to access healthcare facilities during the pandemic (Akaba et al., 2022).

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Methodology

The Department of Obstetrics and Gynaecology at Lady Reading Hospital in Peshawar, Pakistan, performed this cross-sectional research with ethical permission. The purpose of the study was to look at how the COVID-19 epidemic affected the number of stillbirths. Using an internet calculator, the sample size of 200 was calculated with a 5% margin of error, a 95% confidence interval, and a 16% stillbirth percentage in mind. To choose the patients, non-probability sequential sampling was used. The inclusion criteria included instances of twin pregnancies, fetal abnormalities, and early neonatal mortality; the exclusion criteria included pregnant women at full gestation who delivered stillborn babies. Every patient who was enrolled gave their informed permission. Data were gathered retroactively by examining patient records from the pre-pandemic year of 2019 and the pandemic year 2020. Numerous factors were noted, such as reasons for stillbirth, medical issues, prenatal visits, and demographic traits. The causes of stillbirths were compared between the two years using chi-square tests, with a p-value of 0.05 designated as the statistical significance threshold. This approach allowed for a comprehensive analysis of how the pandemic impacted stillbirth rates and contributing factors in the hospital setting.

Regardless of the technique, this study included patients who were full-term pregnant and gave birth to stillborn children. These criteria aimed to focus on stillbirth cases while excluding twin pregnancies, fetal anomalies, and early neonatal death to provide a homogenous study population.

Twin pregnancies, fetal abnormalities, and early neonatal mortality were all included in this study. These criteria served to lessen the likelihood of confounding factors like multiple pregnancies or congenital disabilities by restricting the emphasis on stillbirth cases and maintaining the homogeneity of the study group.

One step in the data collection procedure was looking back at patient records. Information on pregnant women who gave birth to stillborn infants in the pre-pandemic year of 2019 and the pandemic year of 2020 was gathered by searching hospital records. Several characteristics, such as demographic information, prenatal visit history, medical issues, and reasons for stillbirth, were methodically collected using a pre-made data-collecting form.

The Chi-square test (SPSS 28.0) was used for statistical analysis to compare the causes of stillbirths in 2019 and 2020. To ascertain the statistical significance of the observed differences, a significance threshold of $p < 0.05$ was used. Significant differences in the causes of stillbirths between the pre-pandemic and pandemic years were found according to this investigation.

Results

The research at Lady Reading Hospital in Peshawar, Pakistan, between 2019 (pre-pandemic) and 2020 (pandemic year) showed significant variations in stillbirth rates and contributing variables. Compared to 2019 (57%),

a more significant proportion of multiparous mothers (62%) had stillbirths in 2020. The percentage of booked prenatal appointments fell sharply from 64% in 2019 to 52% in 2020, suggesting fewer prenatal visits were made during the COVID-19 epidemic. There were noticeable changes in several stillbirth-related indicators between the two years. These included the following: malpresentation (12% in 2020 vs. 12% in 2019), intrauterine growth restriction (IUGR) (9% in 2020 vs. 6% in 2019), obstructed labor (10% in 2020 vs. 12% in 2019), eclampsia (7% in 2020 vs. 15% in 2019), placenta previa (11% in 2020 vs. 17% in 2019), gestational diabetes mellitus (GDM) (17% in 2020 vs. 21% in 2019), type II diabetes (14% in 2020 vs. 9% in 2019), abruption (85% in 2020 vs. 90% in 2019), eclampsia (7% in 2020 vs. 15% in 2019), and unknown causes (7% in 2020 vs. 6% in 2019). The results above underscore the noteworthy influence of the COVID-19 pandemic on maternal care and its correlation with modifications in stillbirth incidents. This highlights the criticality of tackling these obstacles in resource-constrained environments during health emergencies.

Table 1: Demographic Characteristics and Causes of Stillbirths: A Comparison between Pre-pandemic (2019) and Pandemic (2020) COVID-19 Years"

Features	2019 (N=70)	2020 (N=130)
Multiparity		
- No	30 (43%)	50 (38%)
- Yes	40 (57%)	80 (62%)
Booking status		
- No	25 (36%)	62 (48%)
- Yes	45 (64%)	68 (52%)
Causes of Stillbirth		
- Abruption	63 (90%)	110 (85%)
- Placenta previa	58 (83%)	116 (89%)
- Gestational Diabetes	55 (79%)	108 (83%)
- Type II Diabetes	64 (91%)	112 (86%)
- Malpresentation	62 (88%)	115 (88%)
- IUGR	66 (94%)	119 (91%)
- Obstructed labor	62 (88%)	118 (90%)
- Eclampsia	60 (85%)	121 (93%)
- Unknown	66 (94%)	121 (93%)
- Postdates	63 (90%)	114 (88%)

Table 2: Comparison of Stillbirths between Pre-pandemic (2019) and Pandemic (2020) COVID-19 Years"

Features	2019 (N=70)	2020 (N=130)
Total Stillbirths	70	130
Percentage Increase	-	85.71%
Antenatal Booking Reduction	-	12%

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Table 3: Summary of Stillbirths and Associated Factors in Pre-pandemic (2019) and Pandemic (2020) Years.

Variables	Pre-pandemic (2019)	Pandemic (2020)	Percentage Change
Total Stillbirths	70	130	85.71%
Antenatal Booking Reduction	-	12%	-
Specific Causes of Stillbirth			
- Abruption	63 (90%)	110 (85%)	-
- Gestational Diabetes	55 (79%)	108 (83%)	-

Discussion

The research goal at Pakistan's Lady Reading Hospital in Peshawar was to find out how the COVID-19 epidemic affected stillbirths (Kassa et al., 2022). The results show notable changes in the incidence of stillbirths and related variables between the pre-pandemic year of 2019 and the pandemic year of 2020. These findings provide insight into the intricate interactions that exist between a global health emergency and the health of mothers and children in environments with inadequate resources (Duan and Zhu, 2020). First and foremost, the research found a significant surge in stillbirths during the pandemic year, with an 85.71% increase over the pre-pandemic year. This concerning increase in stillbirths highlights the considerable delays to the delivery of maternal healthcare brought about by the COVID-19 epidemic (Xiong et al., 2020). It is consistent with worries throughout the world that the epidemic may have unintentionally caused poor maternal and fetal outcomes, especially in low- and middle-income nations (Nelson, 2020). This research's noteworthy discovery is the decline in prenatal appointments throughout the epidemic. Prenatal care is essential for keeping an eye on the health of the mother and the fetus, and fewer appointments indicate a significant drop in routine maintenance. Many pandemic-related variables, such as lockdowns, mobility restrictions, and the worry of catching the virus in hospital settings, might be blamed for this decline in prenatal visits. The higher stillbirth rate is evidence that these delays in healthcare availability directly impact pregnancy outcomes (Hao et al., 2020). Examining specific stillbirth reasons sheds further information on the pandemic's complex effects. Maternal hyperglycemia, abruption, placenta previa, and malpresentation were among the variables that showed notable variations over the two years. These variations may be related to the healthcare systems' difficulties during the epidemic, such as restricted access to regular treatments and decreased prenatal care (Berthelot et al., 2020). Uncontrolled gestational diabetes brought on by a lack of access to healthcare facilities may have had a role in diabetic individuals' stillbirths. It is important to note that while the research found these notable changes in stillbirth rates and causes, it did not take COVID-19 infection-related stillbirths into consideration (Lebel et al., 2021). It concentrated on the pandemic's overall effects and related disruptions. This emphasizes the need to provide maternal healthcare in crises with a comprehensive strategy that addresses both direct and indirect consequences (Flor et al., 2022). This work offers critical new insights into the COVID-19 pandemic's unintended consequences for mother and child health, especially in places with low resources (Akseer et al., 2020). Maternal healthcare services

available in times of emergency and draw attention to the necessity of focused efforts to lessen the adverse effects of the epidemic (Singh et al., 2020). Future studies in this field must examine possible causes and risk factors and the direct effect of COVID-19 infections on stillbirth rates. Studies should also evaluate the long-term effects of pandemic-related disruptions on mother and child health to guide targeted treatments and plans for the resilience of the healthcare system.

Conclusion

The research shows the effects of the COVID-19 pandemic on stillbirth rates and maternal healthcare carried out at Lady Reading Hospital. The pandemic has resulted in a notable rise in stillbirths despite a decrease in prenatal appointments. This underscores the interruption of crucial mother care. Different stillbirth reasons also showed diversity, highlighting the pandemic's complex consequences. The results underscore the pressing need to maintain uniform maternity healthcare amid health emergencies and execute focused actions to alleviate unfavorable consequences. This research adds to the increasing data showing the pandemic's indirect effects on mother and child health, especially in areas with minimal resources.

Declarations

Data Availability statement

All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate

Approved by the department Concerned.

Consent for publication

Approved

Funding

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Conflict of interest

The authors declared absence of conflict of interest.

Author Contribution

Sumaira Yasmin

Concept & Design of Study

Final Approval of version

Wajeaha Syed

Drafting

Final Approval of version

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Data Analysis

Wajiha Farid

Revisiting Critically

Saira Naseem

Revisiting Critically

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