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Factors Determining The Delay in Access to Appropriate Emergency Obstetric Care During The Lockdown Period of The COVID-19 Pandemic: An Observational Study at A Tertiary Referral Centre

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ABSTRACT

Background: The WHO declared the COVID-19 pandemic as a public health emergency of international concern following which many governments around the world adopted the most radical social distancing procedure, referred to as "lockdown", to prevent the spread of the virus. As a result, unsupervised pregnancies and the absence of routine antenatal visits lead to dreaded maternal and fetal complications. This study determines the barriers to accessing emergency care by pregnant women during the lockdown period.

Subjects and Method: This prospective study was conducted during the lockdown period in Delhi from 1 May 2021 to 31 May 2021. A total of 666 pregnant and postpartum patients admitted from casualty during this period were included. The variable of the study was various factors causing delays of more than 4 hours in accessing emergency care services by these patients after the onset of symptoms was assessed. This study used the conceptual model of Three Delays. The data was collected as per predesigned proforma. The demography, Obstetric profile, and various levels of delays were noted. The data was analyzed by frequencies and percentages using SPSS version 21.

Results: Among 666 enrolled participants, about 55.7% were multigravida and 48.04% belonged to the upper-lower class. Nearly 43% of patients were illiterate. Antenatal delay of > 4 hours was observed in 590 patients (88.6%). In Level 1 delay, the main reasons for the delay were unawareness of danger signs (45.8%) and lockdown (30.93%). The major reason for the Level 2 delay was care declined at the previous center (33.93%). Reasons for the Level 3 delay were due to either unavailability of beds or overcrowding after reaching the facility.

Conclusion: The unawareness of danger signs was the most common cause of delay. Hence, effective communication and counseling during the antenatal period have to be improved upon.

Keywords: Lockdown, SARS-COVID-19, maternal, fetal outcome, levels of delay, emergency services

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BACKGROUND

During the novel coronavirus SARS-CoV-2 pandemic, the world faced a serious and life-threatening infectious disease outbreak. The World Health Organization declared the public health emergency of International concern following which many governments around the world adopted the most radical social distancing procedure, referred to as "lockdown" to prevent the spread of the virus. These actions together with an increased influx of patients suffering from COVID-19 brought about major changes in the organization of health systems (Doncarli et al., 2021). The absence of routine antenatal care missed high-risk obstetric management, and inaccessibility of emergency obstetric care can lead to dreaded complications in both mother and newborn. As per the estimate of modeling studies, even the modest reduction of 10% coverage of pregnancy and newborn health care as an effect of pandemic-related lockdowns may result in a global additional increase of 28,000 maternal deaths and 1,68,000 neonatal deaths (Riley et al., 2020; Holland et al., 2020). The pregnant women were declared to be a high-risk group and guidelines were made for their care. However, the middle- and low-income sections of society had to face the maximum hardships during this time, especially with the restrictions on travel and limited healthcare facilities (Tadesse, 2020).

Equitable access to emergency obstetric care remains an ongoing challenge in most developing countries including India (Wichaidit et al., 2016). Reaching the right facility at the right time and timely interventions in obstetric emergencies can prevent maternal and neonatal complications. There is a need to prioritize reproductive health and overcome the barriers to make obstetric emergency care more accessible. This was certainly a huge challenge due to the pandemic.

This study utilized the conceptual model of "three delays" proposed by Thaddeus and Maine (1994). This model is widely used to evaluate the circumstances influencing the timely arrival of appropriate care in conditions of maternal near miss and mortality. We have used this model in the broader context of emergency obstetric admissions. This study has applied the three-delay framework in the broader context of all emergency obstetric admissions. This study determines the barriers to accessing emergency care by pregnant women during the lockdown period.

SUBJECTS AND METHOD

1. Study Design

The study was designed as a prospective and observational study over a period of one month. This study was conducted during the lockdown period in the Department of Obstetrics and Gynecology at LHMC and SSKH Hospital, New Delhi from 1 May 2021 to 31 May 2021.

2. Population and Sample

A total of 666 pregnant and postpartum women admitted from the Emergency Room of the Department of Obstetrics & Gynecology during the COVID-19 lockdown period from 1 May 2021 to 31 May 2021 were included. Patients admitted for non-obstetric causes and those called for planned admission were excluded. It was proposed to do the study over a fixed duration of time and all the women who got admitted from the casualty during the study period and consented to the study were included. Hence, sample size calculation was not applicable.

3. Study Variables

The variable of the study was various factors causing delays of more than 4 hours in accessing emergency care services by these

patients after the onset of symptoms was assessed. Women admitted due to non-obstetric conditions those having planned admissions or patients who did not give consent for the study were excluded. The level 3 delay was considered as a delay of more than one hour in procuring the admission after reaching our facility.

4. Operational Definition of Variables

This study utilized the conceptual model of "three delays" proposed by Thaddeus and Maine (1994):

Level 1 delay: is defined as a delay in DECIDING to seek care by the individual.

Level 2 delay: is delayed in REACHING an adequate health facility.

Level 3 delay: a delay in RECEIVING adequate obstetric care at the health facility.

5. Study Instruments

The study was conducted in the Department of Obstetrics and Gynecology at LHMC and SSKH Hospital, New Delhi. After obtaining consent, the reasons for the delay in seeking emergency care were recorded as per the predesigned proforma was used to record the reasons for the delay in seeking emergency care.

6. Data Analysis

Data was entered in an MS Excel sheet and analyzed by statistical package for the social sciences (SPSS) version 21. Descriptive statistics were elaborated in the form of means/standard deviations and medians for continuous variables. The frequencies and percentages were used for expressing categorical variables.

7. Research Ethics

The ethical committee approval was obtained from the Institutional Ethics Committee. Written informed consent was obtained from all the willing participants.

RESULTS

The total number of study participants was 666. The demographic profile of the patient cohort is shown in Table 1. In age distribution, the majority of patients about 42.0% (287) were in the young age group of 25 to 30 years. The majority of patients were multigravida (371, 55.7%). Amongst socio-economic class, the upper-lower class constituted the maximum being 320 patients (nearly 50%). Nearly 43% (287) of patients were illiterate.

Table 1. Demographic profile of the participants (n=666)

Characteristic	Category	Frequency (n)	Percentage (%)
Age Group	18-24	278	41.7
	25-30	280	42.04
	31-35	80	12.01
	36-40	28	04.20
Parity	Primigravida	267	40.10
	Multigravida	371	55.70
	Postpartum/Postabortal	28	4.20
Socio-economic status	Upper	7	01.05
	Upper middle	99	14.86
	Lower middle	186	27.92
	Upper lower	320	48.04
	Lower	54	08.13
Educational status	Illiterate	287	43.09
	Primary school	105	15.76
	High school	134	20.12
	Intermediate	94	14.11
	Graduate	46	06.90

The Obstetric profile of patients who presented in the casualty is shown in Table 2. A total of 440 patients (60%) were registered with our facility and the rest of the cases were referred from an outside hospital or clinic. Day admissions (8 am to 8 pm) constituted 377 patients (56.6%). The majority of patients 546 (81.98%) were in the high-risk category. Antenatal visits (>4 vs. <4) were equally distributed (51.06% vs 48.94% respectively). However Antenatal delay of > 4 hours was observed in 590 patients (88.6%).

Table 2. Obstetric profile of the participants (n=666)

Characteristic	Category	Frequency (n)	Percentage (%)
Registration Status	Registered	440	66.0
	Referred	226	33.9
Risk stratification	High risk	546	81.9
	Low risk	120	18.0
Time of admission	Day (8 am to 8 pm)	377	56.6
	Night (8 pm to 8 am)	289	43.4
Antenatal visits	Visits >4	340	51.0
	Visits <4	326	48.9
Delay > 4 hours	Observed	590	88.6
	Not observed	76	11.4

The various levels of delay are elaborated in Table 3. In level 1 delay (delay in deciding) the main reasons for delay were unawareness of danger signs (45.8%) and lockdown (30.93%). The major reason for level 2 delay (delay in reaching) was care declined at the previous center (33.9%). Reasons for level 3 delay (delay at the facility) were due to either unavailability of beds (6.9%) or due to overcrowding (4.6%). The maternal deaths observed during this period were 1.2%, the near miss was 0.75% and 3.45% had stillbirths as highlighted in Table 4.

Table 3. Three-level delays were observed among the participants (n=666)

Characteristic	Category	Frequency (n)	Percentage (%)
Level 1 Delay	1A (Unawareness of danger signs)	305	45.8
	1B (Fear of catching COVID infection)	116	17.4
	1C (No accompanying attendant)	48	7.2
	1D (Lockdown)	206	30.9
Level 2 Delay	2A (Delay in obtaining transport)	93	13.9
	2B (Financial Constraints)	88	13.2
	2C (Care declined at previous centre)	226	33.9
Level 3 Delay	3A (No beds)	46	6.9
	3B (overcrowding)	31	4.6

Table 4. Adverse Feto-maternal outcome among participants (n=666)

Category	Frequency (n)	Percentage (%)
Maternal Near Miss	5	0.75
Maternal Mortality	8	1.2
Still Birth	23	3.45

DISCUSSION

The Widespread disruption of the healthcare system, the stay-at-home policy, and reduced access to hospitals experienced during the COVID-19 pandemic affect the outcome of mother and baby. The pregnant population is more vulnerable to encountering greater stress and helplessness within the community due to strict lockdowns and restrictions. This can result in inaccessibility to appropriate healthcare facilities and delay emergency admission.

The majority of the study participants (51.0%) had more than four antenatal visits even with an ongoing pandemic. A Major proportion of pregnant women were high risk (81.98%), as our center is a tertiary referral facility catering to all sorts of high-risk obstetrical conditions. About 88.6 % of our women had a delay of more than four hours in reaching our facility after the onset of symptoms. This was much higher compared to studies done in the pre-COVID time. In the study by Tiruneh et al. (2020), the proportion of delay in deciding to seek emergency obstetric care was 36.3%.

In this study, the major cause of delay was found to be Level 1. The main reason for the level 1 delay was a lack of awareness of danger signs which correlated with the fact that the majority of our patient population was illiterates. The other main reasons for level 1 delay were due to lockdown (30.93%) and fear of catching covid infection (17.40%). In a similar study done by Goyal et al. (2021) in North India, about 50.9% of women had delays due to strict lockdown and lack of transportation and 33.4% avoided hospital visits due to fear of catching COVID infection. About 44.7% had one or more complications aggravated by delay in seeking health care.

A major study was done by Sinha et al. (2020) in New Delhi. Nearly 200 eligible mothers were interviewed. About 84% women who delivered after lockdown had more than 4 antenatal visits compared to 97% among those who delivered before lockdown. Fear of contracting COVID-19, poor quality of care, lack of transportation, social stigma associated with covid 19, and financial constraints were key issues faced by mothers in accessing health care. A study by Singh et al. (2021) in Uttar Pradesh, India has also shown a significant decrease in utilization of antenatal services with a reduction in institutional deliveries during the pandemic thus negatively affecting the provisions as well as utilization of maternal and child health services.

Among Level 2 delays, care declined at the previous center constituted the major cause (33.9%). The delay in obtaining transportation was seen in 13.96% of our study participants. This major chunk of the decline in giving emergency care in previous centers can be explained by the fact that most of the healthcare facilities in our city were turned into dedicated COVID-19 care centers during the lockdown period due to the massive rise in COVID-19 cases.

Level 3 delay, that is delay of more than one hour in obtaining admission after reaching our facility was observed in our study, due to overcrowding in the emergency admission room (4.6%) and non-availability of beds (6.9%). Our center continued its dedicated service for both covid as well and non-COVID pregnant patients during the pandemic due to which there was overcrowding and a bed crunch.

Among the women who had delays in reaching the appropriate facility, the maternal deaths observed was 1.2%, maternal near miss was 0.75% and 3.45% had a stillbirth. In a study in Uganda, during the 3-month lockdown, adverse pregnancy outcomes like stillbirth were higher as compared to pre-covid data. Maternal

mortality however remained stable (Burt et al., 2021). A retrospective cohort study in France, published in 2022 by Quibel et al. (2022), suggested that maternal and perinatal outcomes were unaffected by the Covid lockdown period. Chmielewska et al. (2021) did a systematic review and meta-analysis of studies on the effects of the pandemic on maternal, fetal, and neonatal outcomes. The search identified 3592 citations, of which 40 studies were included. There were significant increases in stillbirth and maternal death in both low-income and middle-income countries.

This study's findings herein suggest that unawareness of dangerous signs of pregnancy is the most common cause of delay in seeking emergency obstetric services. There is an urgent need to improve the counseling and effective communication of antenatal women and their families to improve the decision-making capacity to seek immediate care. The unpredictable nature of childbirth and related complications have disastrous consequences for both patients and healthcare professionals. There is an urgent requirement for the improvement of strategies and accessibility to emergency health services by policymakers and stakeholders to handle future health crises. The barriers and delays experienced by our obstetric population cannot be generalized as it is done during the lockdown period. Such studies are recommended with large sample sizes and at the multicentric level. However, our study observations provide us an insight into various factors determining the access to appropriate health facility care during lockdown and hence prepare us to effectively handle such similar crises time in the future.

AUTHOR CONTRIBUTION

Triveni GS and Manjupuri are the main researchers who chose the topic, conducted a search for data collection. Noopur Chawla and Aishwarya Kapur contributed to the manuscript writing. Prateeksha BS and Kavita Badal contributed to data collection and analysis

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CONFLICT OF INTEREST

Nill.

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