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Choice of Place of Delivery during COVID-19 Pandemic: Observation from a Community-Based Survey in Rural India

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Abstract

For the past two decades, India has made considerable improvement in health indicators and the country was on the right track toward achieving sustainable development goal-3 by 2030. However, the COVID-19 pandemic has disrupted the health-care system including the essential health services for mother and child. This study was carried out to understand the barriers for utilization of institutional delivery and its prevalence during the pandemic in rural West Bengal. A total of 318 number of women from 18 sampled villages of Canning II block of South 24 Parganas district were interviewed face to face using a semi-structured interview schedule between October and November 2020. The data were analyzed using Stata and NVivo 12 Pro software. Findings show that more than one-fourth (27.3%) of the deliveries took place at home without any assistance of medical professionals. Fear and anxiety related to COVID-19, uncertain service availability, poor service quality during the pandemic, and lack of supporting hands at households compelled women to choose home delivery instead of institutional delivery. Those delivered at institutions, many of them were released on the day of delivery itself, which resulted poor perinatal care even in the cases of institutional delivery. The findings recommend that in addition to COVID-19 related health services, essential maternal and child health services should be continued with the quality to achieve Sustainable Development Goal 3.

Keywords: Child birth, COVID-19, Home delivery, Pregnancy, Rural health

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Introduction

The COVID-19 pandemic has put a huge challenge to our livelihood and on the health-care delivery system globally.[1,2] The WHO had declared it as global pandemic on March 11, 2020.[3] It had also suggested that the essential maternal and child health services should be continued during this pandemic.[4] Following this, the Government of India has also prioritized the essential maternal services for the pregnant women but the evidences show that there is a sharp decline in the utilization and accessibility of maternal and child health-care services in India during the pandemic.[5] Over the years, India has made significant progress on maternal and child health indicators by improving the preventable health service delivery system. Reduction of maternal mortality is one of the crucial indicators in the sustainable development goals (SDGs). A significant decline in maternal mortality ratio has been recorded in India from 212 in the year 2007 to 113 in 2016–2018.[6] The government has implemented the National Health Mission in both rural and urban areas, with priorities to specific issues in both areas in 2005 with a view to address the health system problems from a grassroot level approach. This health mission is known as National Rural Health Mission or NRHM in rural areas, it is characterized by a three-tier referral system of healthcare where ASHA workers act as primary contact persons between health care system and the community.[7] A decade after the implementation of NRHM, India has witnessed substantial progress in health indicators. Without COVID-19, this improvement in health statistics would have helped India achieve the target of 70 maternal death per 100,000 live births by the year 2030 as per the SDG target 3.1.[8] In West Bengal, we can see that the proportion of institutional delivery has increased from 75.2% in 2015 to 91.7% in the year 2019.[9] It is well established that timely use of maternal health services reduces the maternal mortality and morbidity.[10-13] Studies evident that institutional delivery conducted by skilled health professionals can reduce the maternal death by 16–33%.[14] However, this COVID-19 pandemic and the consequent nationwide lockdown had affected all arenas of health services.[7,15-17] Pregnant mothers avoided receiving maternal health services due to fear of infection by COVID-19.[18] However, there exists little evidence of transmission of virus from pregnant mother to the fetus in the womb.[19] Studies conducted on the impact of COVID-19 on the utilization of maternal health services in India have mostly collected data either from institutional setup or through telephonic survey.[7,20-23] However, there are dearth of surveys those have collected data from the community using face-to-face interview method. With this backdrop, the current research was undertaken to understand the impact of COVID-19 pandemic on the utilization of delivery (natal) care services among rural mothers of West Bengal.

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Materials and Methods

Data presented in this paper were derived from an endline survey on perinatal health-care project implemented by the Human Development Centre, an NGO working for health, nutrition, sanitation, and livelihood-related issues in different villages in the South 24 Parganas, district of West Bengal, with funding support from the Terre des hommes Foundation (Tdh). In the endline, a total number of 318 married women were interviewed from 18 sampled villages of Canning II block in South 24 Parganas, district of West Bengal. Villages were selected using probability proportional to size sampling methods. In a selected village, 18 mothers who were currently pregnant or had delivered their children within the past 3 years preceding the survey were selected using systematic sampling technique. Out of these 318 interviewed women, 121 mothers had delivered their babies during the pandemic (March 25, 2020, to the date of survey). Therefore, the current analysis is based on 121 samples. Well-trained female enumerators had collected face-to-face data from the 4th week of October to the 3rd week of November 2020. Because of the pandemic, the enumerators followed all safety regulations suggested by the Department of Health and Family Welfare, Government of West Bengal. This proposal study was reviewed by the research review committee of Tdh. Women were explained in detail about the study objectives and verbal consent from them was taken. Semi-structured interview schedule was prepared to capture both quantitative and qualitative data. The questionnaire was translated into Bengali language and pre-tested before the original interviews. Respondents in the pilot test and main interview were mutually exclusive. Feedback from the pilot testing was incorporated in the final questionnaire. The questionnaire had three major sections. In the first section, the objective of the study was discussed, it was also included the informed consent form for the respondents for their voluntary involvement in the interview. The second part included the sociodemographic characteristics of the study population and their perception about COVID-19. The third section consisted their health-seeking behavior related to child birth and related issues. Data collection tool was digitized using ODK platform and data collected through android based tablets. For the qualitative part, we conducted in-depth interviews using "in-depth interview schedule." Quantitative data analysis was carried out using Stata version 16. Basic background characteristics of the study participants were described through frequency distribution. Bivariate cross-tabulations were prepared to show the association of dependent and independent variables. Inferential statistics (Chi-square test) applied to measure differences in utilization of health services by different categories of respondents. $P < 0.05$ was considered statistically significant. The qualitative data analyzed using NVivo 12 Pro. Theme-wise responses were coded in the software which helped to present a specific issue in a meaningful way. Qualitative findings were used to supplement quantitative findings from the survey.

Results

Sociodemographic Characteristics

Canning II block is one of the poorest blocks in West Bengal in terms of different sociodemographic characteristics as well as from basic infrastructure point of view.[24] Table 1 shows that majority of the respondents (43%) were in the age group 20–24 years, the mean age was 23.1 years, this indicates that most of them were young mothers. The educational status of the mothers shows a very sorrowful state, about 13% of mothers were illiterate. Majority of the respondents were from the scheduled caste community (33%), followed by other backward class (30.9%). Concerning the religion of respondents, it was almost balanced between Hindu (53.7%) and Muslim (46.3%). Furthermore, 58% of the respondents were married before their legal age of marriage (the mean age at marriage was 16.8 years). Although as per the prohibition of Child Marriage Act, 2006, it is a non-bailable offence, but still many girls in this study area are getting married before their legal age of marriage (for girls, i.e., 18 years). Practical barriers in accessing the legal system, poverty, and illiteracy are the major causes of child marriage in this area.

Table 1: Sociodemographic background of the surveyed women

Sociodemographic indicator	*n (121)*	*%*	*95%CI*	
Age (years)				
13–19	29	23.97	16.68	32.57
20–24	52	42.98	34.01	52.29
25–29	29	23.97	16.68	32.57
30 and above	11	9.09	4.63	15.68
Mean age (SD)	23.1 (4.9)		22.2	23.9
Education				
Illiterate	16	13.22	7.75	20.58
1–4 years	22	18.18	11.76	26.22
5–7 years	31	25.62	18.12	34.35
8–10 years	39	32.23	24.02	41.33
11 years or more	13	10.74	5.85	17.67
Caste				
General	27	22.31	15.25	30.78
Scheduled caste	40	33.06	24.78	42.19
Scheduled tribe	17	14.05	8.40	21.54
Other backward classes	37	30.58	22.53	39.61
Religion				
Hindu	65	53.72	44.43	62.83
Muslim	56	46.28	37.17	55.57
Age at marriage				
Less than 18 years	70	57.85	48.54	66.77
18 years and above	51	42.15	33.23	51.46
Mean age at marriage (SD)	16.8 (2.0)		16.5	17.2

Source: Primary Survey in November 2020

Knowledge and Risk Perception Toward COVID-19

In this study, an attempt was made to understand the knowledge and risk perception of mothers related to COVID-19. Table 2 shows that nearly 38% of the participants had knowledge about social distancing, 74% about use of face mask, and 68.6% about hand hygiene. About 36% of the respondents could answer all three protective measures against COVID-19. About 22% of mothers knew about the nearest COVID-19 testing center, 39% about the nearest COVID hospital, and one-third (33%) of the respondents reported knowing about the meaning of home isolation.

In addition to these knowledge-related questions, women were also asked about their perceptions regarding COVID-19. Two questions were asked related to this,

a. According to you, what is the chance that you will be infected with the COVID-19?
b. How do you feel about COVID-19?

For both the above stated questions, respondents were assessed on a scale 1–3. For the first question, the responses were "high," "moderate," and "low" whereas for the second question, the responses were "very fearful," "fearful but optimistic," and "optimistic." It is seen that 44.6% of the respondents perceived

Table 2: Knowledge and risk perception of women of COVID-19

Particulars	*n (121)*	*%*	*95% CI*	
Knowledge of personal protection measures for COVID-19				
Social distancing (avoiding personal contact and maintaining distance of 6 feet)	46	38.02	29.35	47.29
Use of face mask (covering nose)	90	74.38	65.65	81.88
Hand hygiene (washing hand with soap or application of sanitizer)	83	68.6	59.53	76.73
Who have spontaneously said all the three	44	36.36	27.81	45.6
Knowledge of testing and treatment of COVID-19				
Know nearest COVID-19 testing center	27	22.31	15.25	30.78
Know nearest COVID hospital	47	38.84	30.12	48.13
Know the meaning of home isolation	40	33.06	24.78	42.19
According to you, what is the chance that you will get infected with the COVID-19?				
High	34	28.10	20.31	36.99
Moderate	33	27.27	19.57	36.12
Low	54	44.63	35.59	53.94
How do you feel about COVID-19				
Very fearful	41	33.88	25.53	43.05
Fearful but optimistic	46	38.02	29.35	47.29
Optimistic	34	28.10	20.31	36.99

Source: Primary Survey in November 2020

themselves as "low chance" of being infected with coronavirus. Most of the mothers wrongly perceived that proper using of a face mask alone can protect them from the virus. As stated by one woman,

"Whenever I go outside for any work, I wear the face mask properly. Wearing a mask is sufficient to protect oneself from the disease."

When women were asked how do they feel about COVID-19, nearly one-third (34%) of them expressed that they were very fearful, 38% said fearful but optimistic, and rests 28% said that they were optimistic about COVID-19. It was also observed from the qualitative interviews that during the initial days of lockdown, respondents were highly worried about COVID-19 outbreak but over the time, their fear decreased as they had seen that most of the COVID-19-infected persons recovered by taking doctors' prescribed medicines at home. According to a mother,

People were terrified at first since the number of instances was steadily increasing and death rate was also high. Nowadays, many people are probably being infected with COVID-19, they are having all symptoms of infections but very less number of them are going for testing. People's fear has currently decreased because the low case fatality rate and easy cure by taking medicines at home. However, this does not mean that we will be safe as we were before the COVID-19 outbreak.

Place of Delivery during the Pandemic

Women who delivered their babies during the pandemic were asked about the place of delivery. Figure 1 shows that nearly 73% of the deliveries took place in health institutions and rests 27% at home. Women who delivered their babies at home were further asked the reason behind that. It was seen that fear of COVID-19 transmission at health institution was the most reported reasons (87.9%) for not opting health institution for delivery followed by uncertain service availability (66.7%) and poor service quality (57.6%) at health institution during the pandemic. Uncertain service availability and poor service quality were related to their past experience of availing ANC services during the pandemic or they might have heard from other women who had experienced such issues while delivering their babies in health institution. Other reasons were fear of COVID-19 transmission to the babies (48.5%) at health institutions, household members did not allow the mother to deliver at the health institution (51.5%), and transport related issues (48.5%).

It was found from the qualitative interviews that not only the mothers but also the health services providers had fear of transmission of COVID-19 while receiving or rendering health services. Such fear might have led of poor health service quality during the pandemic. As stated by one mother,

"During my ANC visit at the Health Sub-Centre, ANMs did not touch us and they used to provide tablets from a distance. Therefore, I doubt during my delivery at hospital if such untouchability exists among the health service providers then who will conduct my delivery there? Therefore, I and my family members have decided to deliver my baby at my home, because the presence of local Dai (Traditional Birth Attendant, TBA) and family members are assured at home."

Another mother who had delivered her child at home said,

"Nowadays going to hospital means inviting coronavirus to our home. If I would deliver my baby at hospital, then I would have infected first, then my baby and all other household members. Newborns have less immunity, so they will not survive if they are infected with the virus."

Family responsibilities of women such as cooking food, taking care of children and elderly had also compelled them to deliver at home. This was also added with less support from close relatives during this pandemic. As stated,

"I had thought to deliver my baby at hospital. My mother told me that she will come to my home and take care of all of my household chores during that time. But due to lockdown she could not be able to come to my place. My husband was also stuck in Bangalore due to lockdown and with no caretaker at home I had to deliver my baby at home with the support of our local Dai. I am very much thankful to our Dai who not only assisted my delivery but also took care all of my household chores for 3 days after my delivery."

Women who had delivered their babies at health institution during the pandemic were also asked what insisted them to choose for institutional delivery. In all cases, these women told the research team that ASHA and ANM insisted them for institutional delivery otherwise mothers will not get financial benefits for their motherhood, and at later stage, it will be difficult for their babies to get birth certificate or immunization. With these fear, many mothers who did not want to deliver their babies at hospital had gone for institutional delivery during the pandemic. This finding proves the effort of ground level health workers for ensuring institutional delivery. During the qualitative interviews, many such mothers also reported that they were discharged from the health institutions on the day of delivery itself.

"I had told our ASHA that I don't want to stay at hospital after my delivery, the longer I will stay there the higher will be chances of corona infection. ASHA Didi (sister) kept my word, I could manage to return home after 5 hours of my delivery." (a 20-year-old mother)

This story clearly speaks about the lack of perinatal health-care service even in institutional delivery.

Findings from the Bivariate Analysis

Table 3 shows the results from bivariate analysis of women who had gone for institutional delivery by their different background characteristics. It was seen that higher proportion of women (82.8%) in the age group of 13–19 years had gone for institutional delivery compared to other age groups, however, this difference was not statistically significant. Among the illiterate women, the incidents of institutional delivery were lower than educated women. Higher proportion of Hindu women (81.5%) had gone for institutional delivery compared to Muslim women (62.5%), this difference was statistically significant ($\chi^2 = 0.019$). Women married before the legal age of marriage (i.e. 18 years), lower proportion of them (68.6%) had gone for institutional delivery compared to those who had got married after attending the legal age of marriage (78.4%), but the difference was statistically insignificant. The psychological factors such as the "risk perception of women of being infected with COVID-19" and "fearfulness about COVID-19" were significantly associated with the institutional delivery. As seen from the table below, women had "high"-risk perception of being infected with COVID-19, lower proportion of them (58.8%) had gone for institutional delivery compared to those who had moderate- (81.8%) or low-risk perception (75.9%), the differences was also statistically significant ($\chi^2 = 0.053$). Similarly, women who were "very fearful" about COVID-19 only 56% of them had gone for institutional delivery whereas, this proportion is higher among women who were "fearful but optimistic" (76.1%) and "optimistic" (88.2%) and the differences was also statistically significant ($\chi^2 = 0.006$).

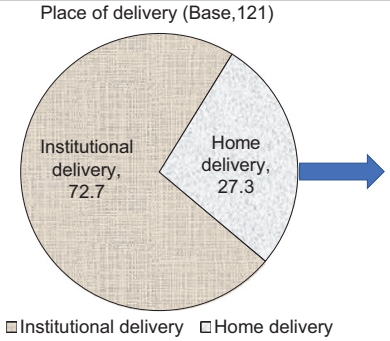
Table 3: Mothers who had gone for institutional delivery by sociodemographic characteristics

	Eligible for delivery during pandemic	*% institutional delivery*	*P-value (χ^2)*
Age			
13–19	29	82.8	0.441
20–24	52	73.1	
25–29	29	65.5	
30 and above	11	63.6	
Education			
Illiterate	16	50.0	0.235
1–4 years	22	81.8	
5–7 years	31	77.4	
8–10 years	39	71.8	
11 years or more	13	76.9	
Caste			
General	27	74.1	0.160
Schedule caste	40	80.0	
Schedule tribe	17	82.4	
Other backward classes	37	59.5	
Religion			
Hindu	65	81.5	0.019
Muslim	56	62.5	
Age at marriage			
Less than 18	70	68.6	0.229
18 and above	51	78.4	
Risk perception toward being infected with COVID-19			
High	34	58.8	0.053
Moderate	33	81.8	
Low	54	75.9	
Fearfulness about COVID-19			
Very fearful	41	56.1	0.006
Fearful but optimistic	46	76.1	
Optimistic	34	88.2	

Source: Primary Survey in November 2020

Discussion

In this study, we tried to investigate the underlying factors for making choice of place of delivery during the pandemic. Findings show that 27.3% of mothers had delivered their babies at home during the pandemic. This study revealed how health-seeking behavior of the mothers was changed and what types of barriers they had to face to utilize health institutions for delivery care in rural West Bengal during the COVID-19 pandemic. Utilization of health facilities for delivery care during this pandemic was found to be associated with sociocultural characteristics of mothers (literacy and religion), supply side factors (transportation facilities/cost and quality of care at health facilities), psychological factors (fear of being infected of themselves and their babies with COVID-19, their feelings about COVID-19, and perception of poor service quality at health institutions), concerns of children and elderly at home, and availability of alternative providers (TBAs). Higher proportion of educated mothers reported delivering their babies at health facilities compared to the illiterate mothers. It might be the case that the educated mothers could understand the benefits of institutional delivery over the perceived risk of COVID-19 infection at health institutions. Significantly higher proportion of Hindu women gone for institutional delivery compared to Muslim women. The difference was due to traditional views and religious beliefs of Muslim households in the study area. Restriction on



Reasons for home delivery (Base, 33)
(Multiple responses, total % may be greater than 100)

Reasons	*n*	*%*
Fear of own transmission from the health center	29	87.9
Fear of transmission of my baby	16	48.5
Lack of transportation/high transportation cost	16	48.5
Service provider was not providing quality service as before	19	57.6
Uncertain service availability at health center	22	66.7
Household members did not allow me to go there	17	51.5
Other	11	33.3

Figure 1: Place of delivery during COVID-19 pandemic
Source: Primary Survey in November 2020

public transportation during the lockdown period and increased cost of transportation during lockdown and post-lockdown period were found some of the supply side challenges to avail health facilities for delivery care. Some women experienced poor quality of care at health facilities during their ANC visit and some others had heard from other women regarding poor quality of delivery services at health facilities during the pandemic, this had also reduced the prevalence of institutional delivery in the study area during the pandemic. Maternal health services were severely disrupted due to reallocation of human resources to contain the pandemic. Such issues led to poor quality of care for institutional delivery services at public health facilities. Despite the commitment of uninterrupted essential health-care services, there were supply side gap. However, this study found that the ground root level health workers played a key role in providing health services at the grassroot level. The anxiety and fears of mothers about COVID-19 were due to their doubts and confusions about the risk of being infected with COVID-19 if they visit health facilities. The reasons for choosing TBAs over institutional delivery were their easy accessibility and caring nature even after delivery. Sometimes, these TBAs supported mothers by looking after other children at home and by performing their household chores for the first few days after the delivery. Therefore, we can see that both the supply and demand side factors were responsible for the reduction in the cases of institutional delivery during this pandemic. Other studies conducted in India also reported the reduction of institutional birth during this pandemic.[25,26] An analysis of HMIS data of Bihar shows that there were 19% reduction in institutional delivery in April–June 2020, compared to the previous year's data for the same period,[27] similar analysis from HMIS data was carried out at the country level and it was found that there was 28% decline in the institutional deliveries during the period April–June 2020, compared to the same period in the year 2019.[28] Such decline in institutional delivery services may pose challenges to achieve health targets for the SDGs. The pandemic has reduced the income opportunities of households in various ways. Such changes in economic status may lead to widen the existing socioeconomic inequalities that will have further negative effects on health-care utilization and thereby to achieve the SDGs.[22]

Strengths and Limitations

It is important to mention that the sampling of the study was done to understand the status of perinatal health in the study area. The subsample of mothers who had delivered their babies during the pandemic period was extracted for this current analysis. Moreover, the study locations were purposively chosen for the intervention needs, thus the findings of this study may not be echoed with other parts of India or West Bengal. Despite these limitations, we think that findings of this study could portray the underlying factors behind mothers' choice of place of delivery during the pandemic.

Summary and Conclusion

This study tried to assess the scenario of institutional delivery during the COVID-19 pandemic. The result of the study shows that due to this, pandemic incidents of institutional delivery were decreasing and cases of home delivery started increasing. As per the NFHS-5 fact sheet, the proportion of institutional delivery in this district was 91.0%,[9] but in our study, we have found that only 72.7% of women had gone for institutional delivery during the pandemic. This study concludes that fear and anxiety related to COVID-19, perception of uncertainty of health services, and poor quality of service at health institution were the major barriers in accessing institutional services for delivery. Non-availability of supporting hands at the household also found to be an important factor for home delivery. It is important to mention that the ground root level health workers had tried their level best to ensure institutional delivery during the pandemic. Therefore, it is suggested that the government should play an important role in improving the quality of health services for mothers at health institutions and through IEC activities and it should reduce the fear of mothers for visiting health institutions during this pandemic. This should be done with priority, else the maternal health statistics will be continued to be deteriorating as long as the pandemic exists and if this situation continues, India will be unable to meet the target of health indicators of SDG by 2030.

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Conflicts of interest

The authors declare that they have no competing interest.

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