

Raising of C-Section Births in the Context of ‘Public’ and ‘Private’ Health Care Dichotomy: The Concern of Reproductive Health Rights of Women in India

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Introduction

Over the past few decades, the caesarean delivery rate has increased dramatically around the world, particularly in developing and high-income countries. At the global level, the caesarean section (CS) birth rate was estimated at about 21.1% in 2015 (Boerma et al., 2018), which was only 12.1% in 2000. Despite the small amount of variations in the different estimations, ranged from 18.6% (Betrán et al., 2016) to 29.1% (Menacker et al., 2006), the trend of the rapid increase of CS rates appears to be a severe public health concern among health experts. Furthermore, knowledge about the consequences of surgical delivery on long-term reproductive, maternal, and child health is still inadequate. Although the cesarean delivery could prevent the risks of maternal and perinatal mortality and morbidity, the universal use of C -Section may lead to the rise of public health hazards and caesarean epidemic (Morris, 2014; Rejnö et al., 2014; Mamun et al., 2011). Several studies have shown the importance of surgical delivery as lifesaving intervention in the case of major complications during gestational period such as hypertension, symptoms of asthma, severe obesity, pregnant women with HIV etc. (Mamun et al., 2011; Nkoka et al., 2019; Turner et al., 2019; Adewuyi et al., 2019; Rejnö et al., 2014; Khan et al., 2019; Huberman Samuel et al., 2019). On the contrary, other research studies have revealed many adverse reproductive health and delivery consequences of c-section delivery in both short-term and long-term. Dekel et al. (2019), have shown that, in normal situation, the women who undergo unplanned cesarean operation are more likely to suffer with adverse mental health and psychiatric symptoms. Similarly, a recent study shows that the previous cesarean section could enhance the risk of immature birth in subsequent pregnancies (Zhang et al., 2019). Not only for mothers, the cesarean delivery has also shown a repugnant relationship with the neonatal and childhood health outcomes including low birth weight (Pires-Menard et al., 2019), obesity (Masukume et al., 2019). Therefore, the association between c-section delivery and maternal-child health outcomes remains unclear. Now the question arises, what could be the bearable rate for the cesarean delivery? However, after a prolonged debates and discussions WHO recommended a justified rate of cesarean delivery maximum to 15% at ‘population-level’ for a nation or country (Betran et al., 2016) as beyond of which, even in the increase in cesarean delivery are not associated with reductions in maternal and newborn mortality rates (Betran et al., 2015; Ye et al., 2016). Nevertheless, the global rates of cesarean delivery are rising emphatically not only in developed countries but in developing countries, including India. In this context, the present study is relevant to address a few critical questions like does the rising rate of CS delivery is a pro to women's reproductive health? Are all cesarean deliveries medically suggested? Is it a choice of women for herself or someone else?

Data and Methodology

Data and sample

The data used for this study were obtained from the fourth wave of the National Family Health Survey (NFHS-4; 2016-16), conducted by the International Institute for Population Sciences. The NFHS, globally known as Demographic and Health Survey (DHS). For the first time, among all the rounds of NFHS, the fourth round provides estimations not only for the nation and state but for the districts of India. The survey followed a two-stage sampling design for both rural and urban areas where the 2011 census served as the sampling frame. To be particular for this study, we have used birth history (BR file) file which contains the full birth history of all women interviewed for the children born in the last five years of the survey. Although the NFHS is a nationwide survey, the present study has analyzed a sub-sample of 5328 live births born within the last five years of the survey to the 4459 women in West Bengal.

Dependent and Independent Variables

The mode of delivery, categorized as normal and caesarean, was considered as the primary dependent variable for this study. A set of demographics, socio-economic, and household level variables have been considered as independent variables. The potential independent variables were chosen based on empirical evidence and literature review (Desai et al., 2017; Adewuyi, et al., 2019; Hoxha et al., 2019; Kim et al., 2019). The demographic variables included in this study are sex (*i.e.*, male and female), birth order (*i.e.*, 1st, 2nd, and 3+ order), and birth-weight (*i.e.*, obese, normal, thin) of the baby. The caste (*i.e.*, SC, ST, general, and others), religion (*i.e.*, Hindu and Non-Hindu), and residence (urban and rural) of the households, mother's education (*i.e.*, no education, primary, secondary and higher education) and BMI (*i.e.*, thin, normal obese) are included as socio-cultural and household level predictors. Household's economic status is measured by computing wealth index scores which are recommended proxy measure in the absence of real income data. In this method, households were given scores, derived using principal component analysis (PCA), based on their owned consumer goods and housing characteristics. Further, the households were ranked based on their scores and divided into five equal quintiles (*i.e.*, 1st, 2nd, 3rd, 4th, and 5th quintiles) representing higher the quintiles are the better economic status of the household.

Analytical approaches

The prevalence of caesarean delivery was calculated as the ratio of numbers of caesarean delivery to total livebirth born in the last five years of the survey, expressed in percentage. To understand the differential prevalence of caesarean delivery by type of hospitals, the caesarean rates were calculated for both private and public hospitals separately *i.e.*, caesarean rate for private/public hospital = (caesarean deliveries in public or private hospital / total live birth born in public or private hospital, respectively) *100. Bi-variate and univariate analyses were performed, and Chi-square test (X^2) was applied to find the differentials of caesarean delivery by various socio-demographic characteristics. In addition, multivariate binary logistic regression models were used to understand the significant predictors of caesarean delivery in whole as well as for private and public hospitals. Given the outcome variable as dichotomous, the binary logistic regression model was appropriate to choose. The results of the logistic regression model have presented in the form

of odds ratio (OR) along with its 95% confidence interval (CI). Further to understand the association between post-delivery child-health outcomes and mode of delivery the k-density curves were used for plotting z-score distributions of three selected anthropometric indices of child malnutrition (i.e., stunting, wasting, and underweight) by their mode of delivery.

Preliminary analysis

Of total numbers of births (N=5328) in the last five years of the survey (fig 1), 75% of births (N=4001) were institutional, where 58% delivered in the public hospitals and 17% delivered in private hospitals, and 25% (N= 1327) were born at home. In the study sample more than half of the total births analyzed were male child (51%), belonged to scheduled caste (SC; 51%), Hindu religion (65%), and resided in the rural counterpart (77%). Regarding the mother's education status, more than half (53%) have been passed secondary (53%) education and average years of schooling were found 6.3 years among them. One-third (24%) of the delivered babies were obese, and one-third (26%) of mothers showed their BMI lesser than normal.

Fig 2 shows an extensive regional variation in the prevalence of caesarean births in West Bengal. Out of nineteen districts in West Bengal, nine districts in southern part and one district in northern part of the state— namely, Hugli (40%), N-24 Parganas (39%), Haora (39%), Kolkata (35%), Nadia (34%), Barddhaman (29%), East Medinipur (29%), Darjeeling (27%), West Medinipur (21%) showed higher prevalence in CS

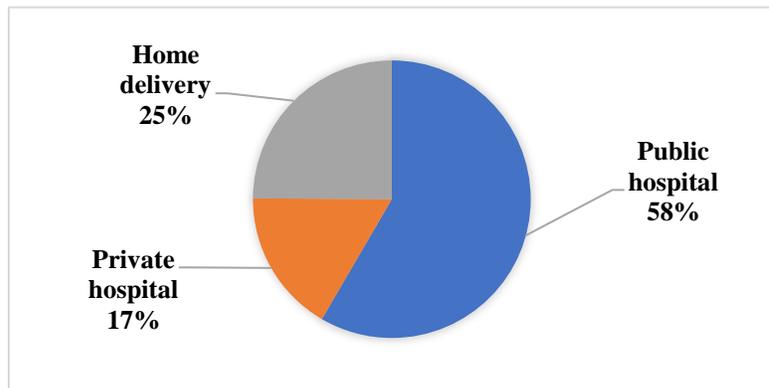


Fig 1: Distribution of baby delivered in last five years of survey by their place of delivery (N=5328)

birth rates. Besides, there was a significant regional variation of caesarean birth rates in public and private hospitals. The caesarean rate in public hospitals ranged from six percent in Puruliya to thirty percent in North 24 Parganas whereas it ranged, in private hospitals, from 45% in South 24 Parganas to 98% in Murshidabad. For the most part, the performance of caesarean delivery in public hospitals was below the expected ranges (less than 20%) except few southern districts where caesarean delivery rates were reported ranging from >21 to 40%. In contrast, the caesarean delivery performed by the private hospitals was unexpectedly high in all the districts. There are some districts-namely N 24 parganas, Nadia, Murshidabad, Birbhum, and South Dinajpur- where more than 80 live births per 100 were delivered as caesarean birth in the private hospitals. Although few districts such as Purulia, Bankura, East Medinapore, South 24 parganas, Darjeeling and Jalpaiguri have reported comparatively lower level of prevalence in the private hospitals, indeed the figures were as high as 44 to 62 percent.

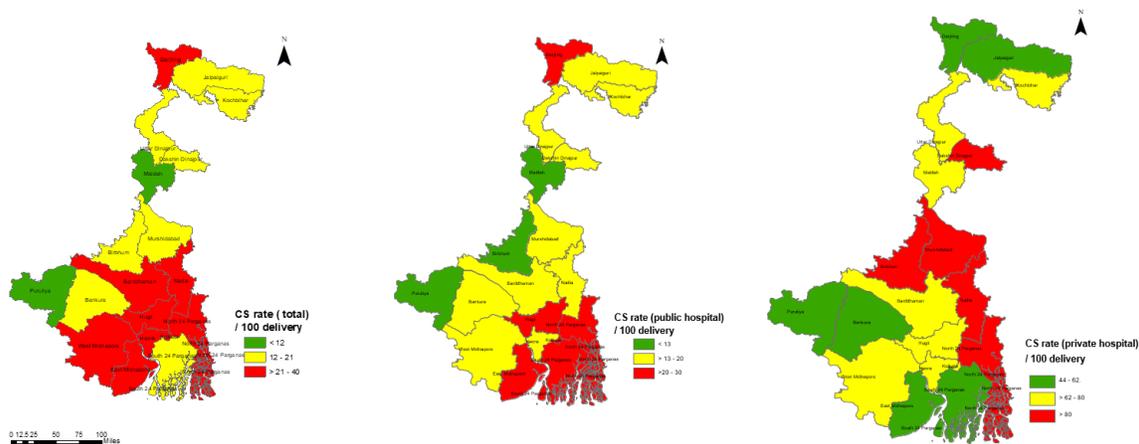
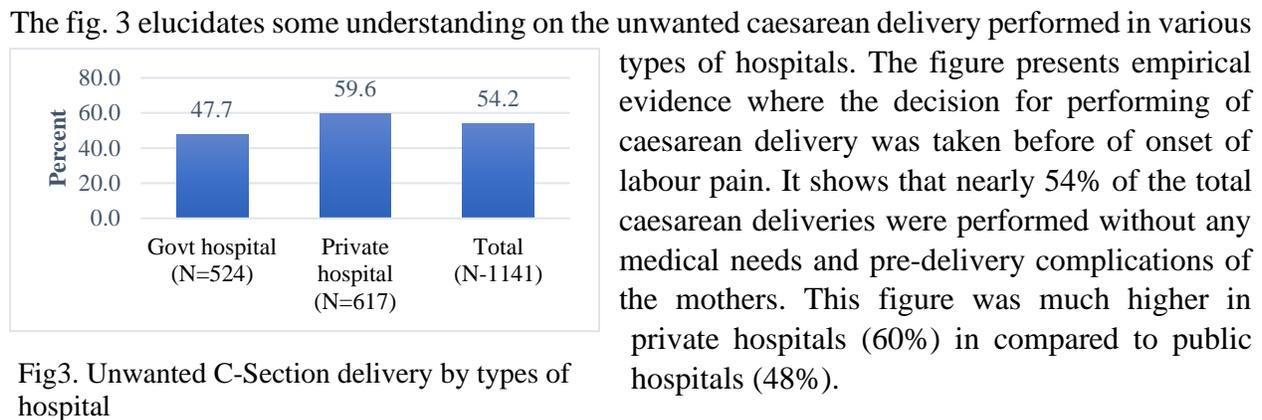


Fig 2: Regional variation in the prevalence of caesarean births in West Bengal



In general, the average caesarean delivery cost was almost double than non-caesarean delivery. Moreover, the median delivery cost in private hospital was more than three times higher than the public hospitals for both caesarean (INR 5000 for public hospitals; INR 16600 for private hospitals) and non-caesarean delivery (INR 2100 for public hospitals; INR 8600 for private hospitals). Additionally, while showing the relationship between mode of delivery and children's health outcomes in the form of stunting, underweight, and wasting, the study shows that mean z-score concentrations pertaining to all the three anthropometric indicators were closed to normal for the non-caesarean children than those of caesarean children.

Conclusions:

The present study highlights the prevalence of CS delivery by types of the hospital (i.e., public and private), and by regions. In aggregate level, the caesarean section birth rate in West Bengal has increased sharply from 2.5% in 1991-92 to 24% in 2015-16 (NFHS 1991-92; 2015-16). Referring

to the WHO recommendation (WHO, 1985) on the ideal rate for ‘population-based’ CS delivery of any region to be between 10 - 15%, the current prevalence of 24% seems to be excessively high. The upward deviation of caesarean rate than the normal range has several public health implications that need to be addressed by government interventions.

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