

A Study on the Causes and Consequences of High Caesarean Section (C-section) Incidence Rate in Public, Private and NGO Health Facilities in Bangladesh.

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Abstract: *The child births by caesarean deliveries across the whole world are increasing over the last decade. According to the World Health Organization (WHO) report 2010, the unnecessary caesarean deliveries in the world were 62 crore in 2008. During this period the caesarean incidence rates were fewer than 10 percent in 52 countries, (10-15) percent in 14 countries and above 15 percent in 69 countries of the world. The caesarean incidence rate was highest in Brazil (about 45.9 percent) and it was 8.5 percent and 7.3 percent in our neighboring countries like India and Pakistan respectively. In Bangladesh, the caesarean incidence rates were 2.6 percent in 2001, 7.5 percent in 2008 and 12.2 percent in 2010 (Bangladesh Maternal Mortality and Health Service Survey, 2010). So the incidence rate has increased 5 times during the last decade. The worldwide increase of the caesarean incidence in progressive rate including Bangladesh is a matter of anxiety for us. This study has been undertaken to justify the reasons behind this high current incidence rate of Caesarean section (C-section) in Bangladesh. We have observed that some socio-economic as well as demographic determinants are mostly responsible for choosing C-section deliveries. It has been possible to identify the number of unnecessary C-section deliveries of the caesarean performed mothers. It is clear to us that the unnecessary C-section deliveries are being happening due to the suppliers induced demand (SID) for the personal gains of the doctors and the hospital providers especially in private hospitals. It is very difficult to estimate the SID effect on caesarean incidence but the combined effect of socio-economic and demographic determinants on C-section delivery support the possible SID existence in caesarean delivery intervention in Bangladesh. Not surprisingly, mothers and babies health have been affected adversely due to the caesarean operations. It has been assessed both the normal and caesarean delivery performed mothers' health states by Euro QoL -5D (European Quality of Life - 5 Dimension) method*

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during the post delivery period and found that the caesarean performed mothers' health states have been deteriorated more than the normal delivery performed mothers' health states. Due to this high C-section incidence rate and it's negative health consequences on caesarean performed mothers and child births incur higher financial burden on their families. This is creating misallocation of scare resources in the poor economy like Bangladesh. So it is need to control such inappropriate practices by the health providers introducing litigation and special guidelines in the health policy.

1. Background

An upward trend in the incidence of C-section deliveries is a well documented stylized fact at the international level. Both developing and developed countries have witnessed a dramatic rise in the rate of caesarianbirths during the last three decades¹. In the United States, where C- section was rated as the most common hospital surgical procedure², it was estimated that half of the caesareans were medically unnecessary.³

In the United States, where C- section was rated as the most common hospital surgical procedure (Burns, Geller & Wholey, 1995, Rutkow, 1986), it was estimated that half of the caesareans were medically unnecessary (Burns et al., 1995).

Similarly in Latin America, it was estimated that over 8,50,000 C- sections were unnecessarily performed on an annual basis (Belizan, Althabe, Barros, and Alexander, 1999). Without doubt this exposes mothers and their infants to unnecessary health risks (Schuitemaker et al., 1997) with drastic implications for the health system and the economy.

Recently it is observed in the health sector that there has been a sudden surge of C-section deliveries in Bangladesh. A remarkable rising trend in the rate of C-sections has also been observed in Bangladesh, where this indicator has more than trebled from 1999 to 2010 (3% to 12.2%)⁴. Not surprisingly, the need to monitor its dynamics has drawn the attention of policymakers.

In fact, a growing body of research suggests that high C- section rates represent increased probability of negative health consequences for mother and child (Hemminki, 1991; Shearer, 1993) with probable adverse psychosocial impacts on the family (Mutryn, 1993). In addition to these negative health consequences, caesarean childbirths incur higher financial burden than vaginal deliveries (Shearer, 1993; Burns et al. 1995). This creates an economic burden not only on developed countries but more acutely on poor developing economies given their everlasting struggle with scarcity of resources

¹ cai et al., 1998 Leung, Lam, Thach, Wan & Ho, 2001; Martin, Hamilton, Ventura, Menacker; & Park, 2002.

² Burns, Geller & Wholey, 1995, Rutkow, 1986, ³Burns et al., 1995, ⁴Bangladesh Health and Demographic Survey 2004, 2007

In light of these consequences, it would seem that the global trend toward more caesarean births is in need of thorough scrutiny. In that respect, decision makers have to focus on a wide

array of factors responsible for the increase in caesarean rates. The main explanations proposed by the literature focus on the role of many different factors: from technological changes (affecting for instance the treatment of pain in delivery), to changes in patients' preferences and the physicians/providers behaviors (the latter being also influenced by the remuneration system).

For the lack of information and regulations to the appropriateness of C-section deliveries in Bangladesh, the incidence rate appears to be on the rise. The physicians are often responsible for inducing inappropriate demand for C-section deliveries mainly to maximize the provider's income. On the other hand the patient is faced with high economic costs, including payments to obtain drugs, to improve access and services offered for transport and to cater for care giver's services. So it is now need to take appropriate regulatory measures by the policy makers to control both inappropriate and unnecessary caesarean deliveries in Bangladesh.

2. The Objectives of the Study

The main objective of the study is to determine the causes and consequences of high C-section deliveries in Bangladesh. The specific objectives of the study are as follows:

- ❑ Finding the outcomes in terms of health status of C-section for the patient cohorts (Euro QoL 5D- a generic measure of health status of an individual at a point in time) and assessing the indicators quality of life.
- ❑ Policy implications (suggesting specific guidelines in Health Policy to make C-sections more restrictive and case specific).

3. Methodology of the Study

In the present study the purposive sampling technique has been followed to collect the data for cross-sectional analysis by direct interviews. The study sample comprise 401 randomly selected women from 1,86,79,435 child bearing women who have been undergone C-section and normal deliveries at public, private and NGO health facilities in Bangladesh. The study cohorts are defined as those who have undergone for delivery at the major tertiary care public hospitals, leading private hospitals and NGO hospitals during the period from January 2010 to June 2011. The number of cases among public, private and NGO level hospital facilities are distributed on the basis of the load of getting services from the hospitals. The delivery cohort sizes at the public, private and NGO hospital facility are 120,260 and 21 which are 30 percent, 65 percent and 5 percent of the total collected data respectively. The data are selected randomly by direct interviews using the close-ended questionnaires from the women who have given births under the mentioned

category of hospitals

A comprehensive set of questionnaire is designed to determine socio-economic and reproductive background of the expectant mothers and also mothers and babies health outcomes. The current health state of the woman after delivery is measured by the Euro-QoL- 5D (European Quality of Life- 5 Dimension) indicators also included in the questionnaire. In order to capture the information of the illness of the mother and the baby during the post operative period, a follow up household interview is also conducted. Using the data from primary source, a special database is compiled containing the following information on all 401 mothers and their newborns in Bangladesh. The database is compiled containing the following information.

To explain / examine the determinants of C-section econometric analysis have been made. The Logit Model has been used to evaluate the independent effect of each factor on the mode of delivery. The resulting contribution of each factor on the likelihood of caesarean delivery is expressed in terms of odds ratio (OR). The following model is used for the determinants of C-section delivery.

$$Y = \beta_0 + \beta_1 \text{ Household income (HHY)} + \beta_2 \text{ Mother's education (MED)} \\ + \beta_3 \text{ Husband's education (HED)} + \beta_4 \text{ Desire for C-section delivery} \\ \text{(Dsr)} + \beta_5 \text{ Mother's age (MAG)} + \beta_6 \text{ Birth order (BOR)} + \beta_7 \text{ Previous} \\ \text{mode of delivery (Pmod)}.$$

The above econometric model has been used to analyze relationship between a dependent variable (C-section delivery), Y and independent variables which are closely associated to influence and determine the variable Y (C-section delivery). If the parameters are significant then we can say that how the probability of C-section delivery are affected due to a particular factor.

4. Result analysis

The estimation results of the Logit Model for the full sample of 401 respondents attending private, public and NGO hospital facilities for deliveries.

Table -1: The estimated results of the Logit Regression Model at all facilities.

Number of obs. =		401					
		LR chi ² (7) =		57.94			
		Prob> chi ² =		0.0000			
Log likelihood =		-196.25032		Pseudo R ² =		0.1286	

MOD	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]		
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HHY	.0001005	.0000211	4.76	0.000*	.0000591	.0001419	
MED	.3953764	.2799871	1.41	0.158***		-1.533882	.944141
HED	-.7311294	.31418	-2.33	0.020**		-1.346911	-.1153479
Dsr	.6383282	.2981105	2.14	0.032**		.0540423	1.222614
Mag	-.0789446	.0355872	-2.22	0.027**		-.1486943	-.009195
BOR	-.1697954	.2471703	-0.69	0.492		-.6542403	.3146496
Pmod	-.7000361	.2706657	-2.59	0.010*		-1.230531	-.1695411
_cons		3.258131	1.496745	2.18	0.029**	.3245638	6.191698

*Significant at 1%, **Significant at 5%, *** Significant at 20%

The estimation of the Logit Regression Model (n=401) indicate that there exists significant causal relationship between the probability of happening C-section delivery and the independent variables such as household income (HHY), desire for the mode of delivery(Dsr). The regression coefficients appear to be positive and significant. But the negative coefficients of mother’s age and previous mode of delivery and husband education level suggest that lower aged mothers and no experience of previous delivery, lower level of education influence inversely the probability of the mode of delivery (C-section delivery) significantly.

The survey results support that the C-section is more frequent for the mothers who have minor or no indication, higher education, 1st birth order, lower aged , live in urbane area, high household income, desire for the mode of delivery, lower gestational age, no previous experience of delivery, lack of knowledge about pregnancy related problem. The C-section deliveries have been undergone more where there is no valid reason in favor of this particular mode of delivery. Furthermore the sample data tells us that 20 percent of the babies born by the C-section delivery with the weight less than 2.5 Kg. Babies born under 2.5 Kg (5.5 Pounds) are

considered as low birth weight or underweight. Underweight babies are more susceptible to have health problem, slower development, delayed milestones and low immunity. It has been observed that about 14 percent mothers have been suffering from any or any more complications during the post caesarean delivery period. The health status of the caesarean performed mother is much worse than the health status of the normal delivery performed mother.

5. Concluding Remarks

In this study it has been demonstrated the most crucial socio-economic attributes of the respondents mostly responsible for choosing C-section deliveries. Most of the C-section deliveries have been performed without any valid demographic or medical reason. We have observed from our academic research that there have been some adverse effects on mothers and babies due to caesarean deliveries. About 14 percent of caesarean performed mothers have been suffering from various physiological and also psychological complications the post caesarean period. The health status of mothers during the post caesarean period is much worse than the health status of mother during the post normal delivery period. In our study it has been observed that about 20 percent babies born by caesarean deliveries are underweight who have been suffering from various diseases.

It is clear from the estimated results of the partial correlation and the Logit Model that the contributions of the socio- economic and demographic variables do influence the prevailing high C-section delivery incidence in Bangladesh. So most of the caesareans deliveries have been undergone at private health facilities are inappropriate which can also be treated as unnecessary. The supplier's inducement may be one of the main reasons behind the unnecessary C-section deliveries. The C-section deliveries have been induced probably by the providers for their own financial gains. The doctor's malpractice for C-section delivery is occurring frequently across the whole country for the lack of proper regulation in the health policy.

6. Implications for Policy Purposes

Some suggestive measures may help to reduce the prevailing high C-section incidence rate and costs of this mode of delivery which could substantially reduce the social burden of delivering babies in Bangladesh:

- i) Special guidelines should be implicated in the relevant health policy to make C-sections more restrictive and case specific so that it would be possible to control the unnecessary and inappropriate C-section.
- ii) The information gap between the C-section performed mothers and the doctors about the pregnancy problems must be removed so that the doctors could not influence the patients to stimulate the demand for C-section to increase their level of income by taking the advantages of

the information gap.

- iii) The private practices of the government doctors should be stopped by introducing the regulations in the relevant health policy by which it would be possible to reduce the C-section deliveries substantially at the private hospitals.
- iv) Awareness should be built among general population about the different side-effects of the C-section upon mothers and new born babies.
- v) Introduce litigation and implement it properly in all levels of health facilities to stop the doctor's malpractices for the C-section deliveries.
- vi) Government should initiate the motivation program for the mothers for their anxiety on the fear of labor pain during the delivery period and the mothers of wrong perception about losing their physio-functional capabilities while giving both to babies through normal procedures.
- vii) Like many developed countries (such as UK, Canada, Australia, Germany, Italy, Sweden), Health Ministry could form a panel of qualified specialized doctors to verify the circumstance under which a particular C-section procedure has been performed.

Bibliography

1. HEU, MOHFW, Govt. of Bangladesh (March, 1998): Costs and outcomes of caesarean section procedures in public, private and NGO health care facilities in Bangladesh.
2. Todaro, M.P., S.C. Smith (2010): Economic Development, Tenth Edition, England, Pearson Education Limited, Chapter 2.
3. Khan, M.R. (ed.) (1997): Bangladesh health finance and expenditure pattern, Research Monograph # 14, The Institute of Development Studies, Dhaka.
4. Chudhury, R.H. and Z. Chudhury (2008): Achieving the Millennium Development Goal on maternal mortality: Gonoshasthaya Kendra's experience in rural Bangladesh, 2nd edition, January 2008.

5. Khan, M.N.U., Z. Quayyum, H.-E.-Nasreen, T. Ensor and S. Salauddin (2009) : Household costs of obtaining maternal and newborn care in rural Bangladesh: baseline survey, Research Monograph series # 43.
6. Say, L., R.C. Pattinson, and A.M. Gulmezuglu (2004): WHO systematic review Of maternal morbidity (near miss).
7. Rosefield, A., Min C.J. Freedom LP(2007): Making motherhood safe in developing countries , The New England Journal of medicine; 356(14).
8. Ministry of Health and Family Welfare (1992): Status report on Bangladesh third and fourth population and health project for World Bank Review, Dhaka.
9. Pany, S. MW, Leung D.TN, Lai CY, Lau TK, Chung T. KH (2007): Determinants of preference for elective caesarean section in Hong Kong Chinese pregnant women, Hong Kong Med J Vol. 13. No. 2:100-5.
10. Khawaja, M. and M. Al-Nsour (2007): Trends in the prevalence and determinants of caesarean section delivery in Jordan: Evidence from three demographic and health surveillance : 1990-2002, Vol. 9 No.4
11. Mishra, US, and M. Ramanathan (2002): Delivery related complications and determinants of caesarean section rates in India, Health policy and planning, 17(1):90-98.
12. ICDDR, B publication (SR 106, 2009): Health and demographic surveillance system-Matlab: Volume forty one registration of health and demographic events 2007.
13. Sattar, M.A., R.H. Bhuiyan, M.A. Alam and V.K. Majumder (2008): Maternal child and reproduction health services in Bangladesh, South Asian Journal of population and health 1(1), 63-80.
14. GOB (2009, 2010, 2011): Bangladesh Economic Review, Ministry of Finance.