

Reprint

ISSN 1997-2571 (Web Version)

Journal of Innovation & Development Strategy (JIDS)

(*J. Innov. Dev. Strategy*)

Volume: 11

Issue: 3

December 2017

J. Innov. Dev. Strategy 11(3): 17-23 (December 2017)

SOCIO-DEMOGRAPHIC CHARACTERISTICS OF CAESAREAN SECTIONED WOMEN OF JESSORE DISTRICT OF BANGLADESH

F. ZOHRA, B. AIRIN, M.S. ISLAM, R.K. ROY AND S.M.A. HASAN



An International Scientific Research Publisher

Green Global Foundation[®]

Web address: <http://ggfjournals.com/e-journals archive>

E-mails: editor@ggfjournals.com and editor.int.correspondence@ggfjournals.com



SOCIO-DEMOGRAPHIC CHARACTERISTICS OF CAESAREAN SECTIONED WOMEN OF JESSORE DISTRICT OF BANGLADESH

F. ZOHRA*, B. AIRIN, M.S. ISLAM, R.K. ROY AND S.M.A. HASAN

Department of Nutrition and Food Technology, Jessore University of Science and Technology, Bangladesh.

*Corresponding author & address: Fatema-Tuj-Zohra, E-mail: shantafatema@yahoo.com

Accepted for publication on 5 December 2017

ABSTRACT

Zohra F, Airin B, Islam MS, Roy RK, Hasan SMA (2017) Socio-demographic characteristics of caesarean sectioned women of Jessore district of Bangladesh. *J. Innov. Dev. Strategy*. 11(3), 17-23.

The aim of this study was to describe the most frequent socio-demographic characteristics of women who had caesarean delivery in different hospitals in Jessore district of Bangladesh. Cross-sectional survey was carried out with 150 women who had their caesarean section in four hospitals from government, private and non-government organizations, in Jessore. Most of the women (About 70%) had caesarean delivery in the age range of 21-26 years. Alarmingly 18% of the women had caesarean delivery at their adolescent age. More rural women were found to have CS compared to urban women (53.3% vs. 46.7%). Women with higher socio-economic class had higher tendency to have CS. Women whose husbands had higher income level (from 20,000 to 40,000 BDT) had higher CS (40.7%) compared to the women whose husband income level was less than 20,000 BDT. The percentage of CS was less for the women who acted as an earning member of their family. Breathing problem (36.7%) and an abdominal problem (29.3%) were found as the most health-related problems of these caesarean women. Afraid of normal vaginal delivery (NVD) (48.0%), was one of the prominent causes for caesarean section followed by an amniotic fluid decrease (19.3%) and upward pressure of the uterus (10.7%) reported by the women of our study. Women with higher socio-economic class irrespective of rural or urban had higher tendency to have CS. Women who acted as an earning member of their family had a less caesarean section. Afraid of NVD, amniotic fluid decrease and upward pressure of the uterus were the primary causes of CS.

Key words: caesarean section, socio-demographic, socio-economic, jessore

INTRODUCTION

Once Caesarean Section (CS) was an uncommon procedure in Bangladesh, as less than one percent of the deliveries were by caesarean. During the period of 2003 to 2004, based on Bangladesh Demographic Health Survey (BDHS), the mean CS rate was only 2.5%. Population-based data indicate that the propensity of CS increased from 2.5% in 2003 to 35.5% in 2015 (NIPORT *et al.* 2012). For now, CS has become more common in Bangladesh like in most other comparable countries (Ravindran 2008; Martin *et al.* 2002; Menacker and Curtin, 2001). Save the children in a statistical report on CS in Bangladesh in 2016 released in August 2017 suggested that 70% of the CS in Bangladesh were unnecessary. CS rates above a certain limit have no additional benefit for the mother or the baby, and extensive use of caesarean surgery brings about negative consequences on mother and child health (Gibbons *et al.* 2010). Expanded fetal indications, law and rules concerning medical liability and development of new medical technology are examples of factors believed to be responsible for the rapid increase in CS in the late 1970s. Different factors in addition to the technological advancement are responsible for this high growth of CS in Bangladesh. A number of factors may influence this increasing rate of CS in Bangladesh, including a high rate of adolescent pregnancy (35%), increasing rate of late aged pregnancy (5%), improving educational and socio-economic status of mothers, and the ongoing dual nutritional burden (NIPORT 2016). Socio-economic factors probably may play an important role in this high growth of CS and have variation by the place of delivery (Mossialos *et al.* 2005; Acker *et al.* 1988). Other than the socio-economic factors, several studies in different countries found that the rate of caesarean delivery in private hospitals was higher than in public hospitals (Sufang *et al.* 2007; Khawaja *et al.* 2004; Leung *et al.* 2001). The increase in the rate of Caesarean section is a global phenomenon that has got the professionals, the public and those who care for women's health, worried because its rise has not contributed to an improved pregnancy outcome (Kaur *et al.* 2013).

Unnecessary CS is being happened due to the supplier's induced demand (SID) for the personal gains of the doctors and the hospital providers especially in private hospitals (Bogg *et al.* 2016). It is very difficult to estimate the SID effect on caesarean incidence but the combined effect of socio-economic and demographic determinants of CS could shape out the possible intervention to reduce unnecessary CS in Bangladesh. So far known, a few studies have been conducted on women's preference for delivery settings and factors associated with delivery through CS in Bangladesh. This study aims to explore the socio-demographic and socio-economic characteristics that were most prominent in the modes of delivery and the CS in women.

This study has been undertaken to justify the socio-demographic and socio-economic characteristics of women behind this high current incidence rate of CS in Bangladesh. We have observed that some socio-economic as well as demographic determinants are mostly responsible for choosing CS deliveries. Hence the objective of the study was to describe the most frequent socio-demographic and socio-economic characteristics of women who had caesarean delivery in different hospitals in Jessore district of Bangladesh.

METHODOLOGY

Study design: The study was cross-sectional in design which was conducted in four hospitals governed by Government (*Jessore Sadar Hospital*), Private (*Queen's Hospital* and *Ekota Hospital*) and Non-government (*Ad-din Hospital*) organizations in Jessore district of Bangladesh. Private hospitals are those which were owned by one or group of people for their business purpose whereas the non-government hospital is run by the *Ad-din* Foundation which has been supporting the underprivileged majority of Bangladesh since 1980. Hospitals from the different organization were selected as this selection process was aimed to include participants' from different socio-economic groups. This study was aimed to describe the prominent and mostly frequent socio-demographic and socio-economic characteristics of mother's who had their caesarean delivery. The descriptive and quantitative data were collected based on the aim of the study.

Sampling: The selected four hospitals of Jessore district were the major hospitals in *Jessore Sadar* where the pregnant women consult with the registered doctor and had caesarean section facility during the study period. This study was conducted for a period of 4 months starting from July to October 2017. We had purposely selected 150 women in Jessore district who had their caesarean delivery during the study period in the four selected hospitals.

Data collection procedure: The study was conducted using a standard questionnaire to collect the data from the respondent. The questionnaire included the information about selected women's living status, educational status, her profession, husband's profession and their income, work type during pregnancy, their health problem, and health facility during pregnancy, the reason for chosen CS and other related factors. A paper-based questionnaire was developed according to the purpose of the study. After constructing a sample questionnaire, it was pre-tested through a pilot survey to ensure its effectiveness as a tool to collect required data such as whether or not the words used are understandable by the respondents. After that, it was adjusted and finalized according to the findings from our pilot survey. Data were collected by face to face interview.

Data management and analysis: At the end of each of the day of data collection, an individual questionnaire was checked to identify whether any discrepancy or missing data for any variable exist or not. It was also checked to see whether it was filled completely and consistently. After that, the data were entered into SPSS program (16.0 versions) for analysis. Prior that an analysis plan was developed keeping in view with the objective of the study. Frequency distributions of all variables were checked for any missing value or wrong entry of the data. Descriptive statistics were reported for the background characteristics of the women.

Ethical clearance: Firm ethical guidelines were followed because this study involved human subjects. Written informed consent was obtained from each woman after explanation of the intentions of the research. Privacy and anonymity of the women were maintained throughout the study. The ethical clearance for this study was issued by the academic thesis committee of the Department of Nutrition and Food technology of Jessore University of Science and Technology.

RESULTS

Socio-demographic characteristics of the women having caesarean delivery are described in Table 1. Most of the women (About 70%) who had caesarean delivery were within the age ranged from 21 to 26 years. About 18% of the women who had caesarean delivery were within the adolescent age range. More rural women were found to have a caesarean delivery compared to urban women though the difference was not very large (53.3% vs. 46.7%).

Table 1. Socio-demographic characteristics of the women having caesarean delivery (n=150)

Characteristics	Frequency (n)	Percentage (%)
Age categories (y)		
18-20	27	18.0
21-23	54	36.0
24-26	51	34.0
27-30	16	10.7
>30	2	1.3
Area (living)		
Urban	70	46.7
Rural	80	53.3
Housing status		
Owner	119	79.3
Rental	31	20.7
House type		
Building	64	42.7
Semi building	56	37.3
Tin shaded	29	19.3
Wooden/soil	1	0.7

Cont'd		
Education type		
General	136	90.7
<i>Madrasha</i> ¹	14	9.3
Education		
Primary	33	22.7
SSC ²	38	25.0
HSC ³	56	37.0
Graduation	23	15.3
Family members		
3-5 members	110	73.3
6-10 members	40	26.7

¹*Madrasha* is an Arabic word which mainly represents any type of educational institute where emphasize is given on religious education in conjunction with secular system; ²SSC= Secondary School Certificate; ³HSC= Higher Secondary School Certificate

Women with higher socio-economic class had higher tendency to have caesarean delivery. Owner of a house and who lived in building assumed as a higher income group and these groups had a higher percentage of women with caesarean delivery. Women who had the general education and studied more than the higher secondary level had higher caesarian delivery compared to *Madrasha* (90.7% vs. 9.3%) and primary education level (52.3% vs. 22.7%) studied women. Women who were from the households which had less family member (3-5 members) were found to had more CS compared to women from households with 6 or more family members.

Socio-economic characteristics of the women having caesarean delivery are presented in Table 2. Most of the caesarean deliveries were reported for housewives (91.3%). Women whose husbands had higher income level (from 20,000 to 40,000 BDT) had a higher caesarean section (40.7%) compared to the women whose husband income level was less than 20, 000 BDT.

Table 2. Socio-economic characteristics of the women having caesarean delivery (n=150)

Characteristics	Frequency (n)	Percentage (%)
Respondent's profession		
Service holder	13	8.7
Housewife	137	91.3
Husband's profession		
Service holder	53	35.3
Business	46	30.7
Farmer	19	12.7
Driver	7	4.7
Others	25	16.7
Family income in BDT¹		
5000-10000	25	16.7
10001-20000	51	34.0
20001-40000	61	40.7
>40000	13	8.7
Act as an earning member		
Yes	50	33.3
No	100	66.7
Savings		
Yes	112	74.7
No	38	25.3
Having agricultural land		
Yes	60	40.0
No	90	60.0
Subsistence production		
Yes	62	41.3
No	88	58.7

¹BDT= Bangladeshi Taka

Caesarean deliveries were prominent for those women whose husbands were service holder and businessmen compared to the women whose husbands were farmer or day labor (66.0% vs. 17.4%). The percentage of caesarean section was less for the women who acted as an earning member of their family compared to those who were not the earning member (67.0% vs. 33.0%). About 75.0% of the caesarean women had savings.

Household which had only subsistence level of agriculture production had less cesarean women compared to agriculturally solvent households (58.7% vs. 41.3%). About 60.0% of the women were from the household which had no agricultural land.

Table 3 describes the pregnancy-related variables of the women having a caesarean delivery. Cooking was found as the most prominent work of the caesarean women at the time of their pregnancy. Most of the caesarean women (about 95.0%) did not work in the land at the time of their pregnancy.

Table 3. Pregnancy related variables of the women having caesarean delivery (n=150)

Characteristics	Frequency (n)	Percentage (%)
Work during pregnancy		
Cooking	114	76.0
Teaching	8	5.3
Rest	26	17.3
Others	2	1.3
Work in land		
Yes	8	5.3
No	142	94.7
Health related problems		
Breathing problem	55	36.7
Abdominal pain	44	29.3
Itching	4	2.7
No problem	31	20.7
Others	16	10.7
Health facility		
Went to doctor	117	78.0
Went to hospital	20	13.3
Went to CC ¹	13	8.7
Doctor suggestion²		
NVD ³	120	80.0
CS ⁴	30	20.0
Reason for CS²		
Afraid in NVD	72	48.0
Upward pressure of uterus	16	10.7
No pain	10	6.7
Transverse position	10	6.7
Amniotic fluid decrease	29	19.3
Pre delivery in CS	10	6.7
Too Large Baby	3	2.0

¹CC= Community clinics. ²This suggestion is the proposition of the doctor about the expected better delivery type after 7.5 months of the gestational period. ³NVD= Normal vaginal delivery. ⁴CS= Caesarean section

Breathing problem (36.7%) and the abdominal problem (29.3%) was found as the most prevalent health-related problems of these caesarean women. Caesarean section was found higher for the women who went to doctor for their consultation at the time of pregnancy. But most of the doctor suggest for normal vaginal delivery (about 80%). Afraid of normal vaginal delivery (48.0%) was the most prominent cause for caesarean section followed by an amniotic fluid decrease (19.3%) and upward pressure of the uterus (10.7%) affirmed by these women. Duration of labor pain, baby delivery week, idea about different types of delivery procedure, and reason for caesarean delivery of the respondents is shown in Fig. 1. Other than the prescribed suggestion for caesarean delivery, this was found highest for the women who had delivery within 36-38 weeks of gestational age.

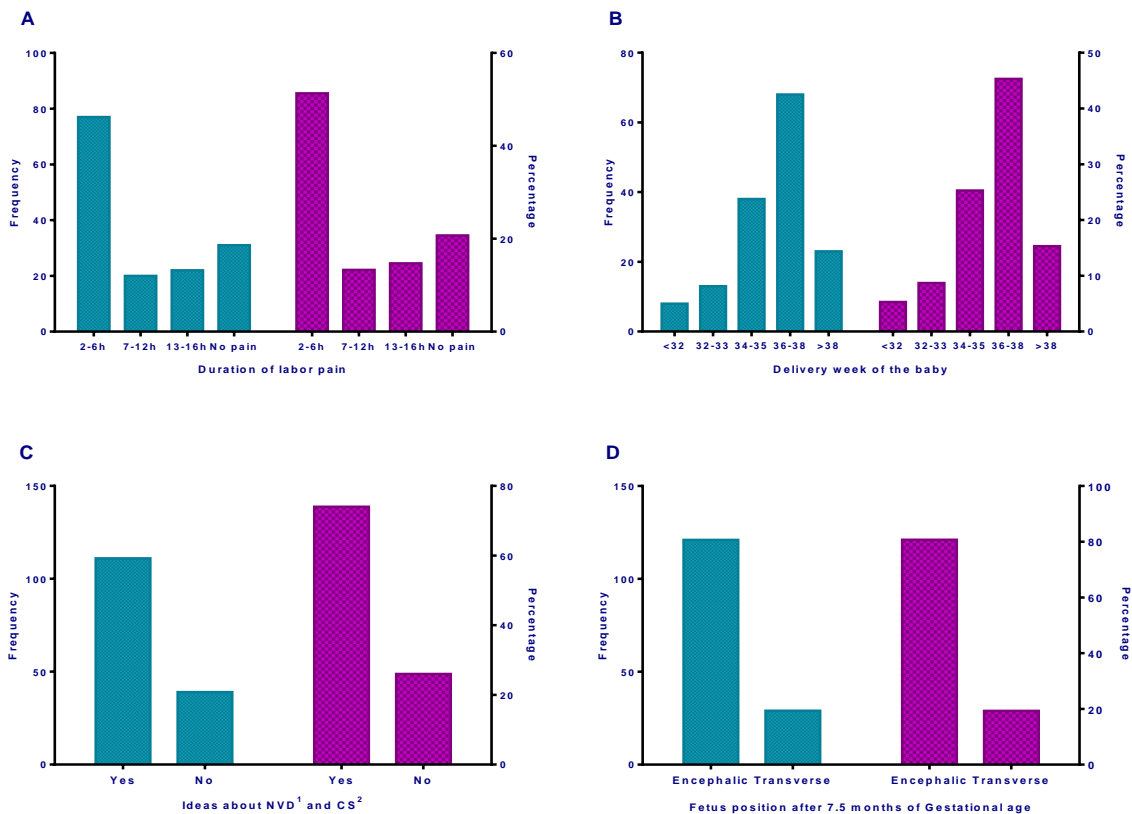


Fig. 1. Duration of labor pain (A), delivery week of the baby (B), idea about different types of delivery procedure (C), and fetus position after 7.5 months of gestational age (D) of the women (n=150); ¹NVD= Normal vaginal delivery. ²CS= Caesarean section

Around 45.3% caesarean women were delivered in 36th to 38th weeks and 25.3% women were delivered in 34th to 35th weeks. About 15.3% women delivered in more than 38th week. On the other hand, 8.7% and 5.3% were delivered in 32nd to 38th week and less than 32nd weeks, respectively. Women with caesarean delivery had ideas about normal and caesarean delivery (74.0% vs. 26.0%). Most of the caesarean women had labor pain for 2 to 6 hours. It is found here that 51.3% caesarean women suffered labor pain for 2-6 hours, 13.3% women suffered for 7-12 hours, 14.7% suffered for 13-16 hours.

DISCUSSION

Nowadays there is a huge increase in CS delivery mode in Bangladesh. The rate of CS has increased by around 19% between 2004 and 2014 (Khan *et al.* 2017). Being a low-income country; this figure is alarming for Bangladesh. Moreover, Bangladesh has relatively low percentage of regency that is covered by skilled birth attendance. So this recent huge increment in caesarean delivery could be a probable threat to the maternal and perinatal health. It could increase the risk of maternal and perinatal morbidity and mortality. It is necessary to find out the possible determinants of unnecessary caesarean delivery. In this study, we reported the most prominent socio-demographic and socio-economic factors that were frequent among the caesarean women in Jessore district of Bangladesh.

In our study, we found that 82% of the respondent's age was more than 21 years and 70% of them were within the 21 to 26 years age range. Hasan *et al.* (2015) had also found an almost similar scenario (67.53% of CS mothers were in the age range of 20 to 25 years or more) in a study conducted at hospitals in Rajshahi city in Bangladesh. In our study, more rural women were found to have caesarean delivery compared to urban women though the difference was not very large (53.3% vs. 46.7%). The urban and rural differences in CS delivery could be comprehensive and complex. Socio-economic differences among rural and urban people due to developmental gradient could be a reason for this difference. In the recent, BDSH data (NIPORT 2016) reported about 38 percent in urban areas and 18 percent in rural areas, women had caesarean section. But in our study, we did not find this much difference in CS delivery between rural and urban women. Moreover, according to BDHS report (NIPORT 2016), Khulna division ranked highest one in case of CS delivery rate with a value of 34.12% whereas national CS rate was 23%. As Jessore is one of the most prominent districts in Khulna division, CS rate is high in both its urban and rural areas. Previous studies in Bangladesh and other countries in South Asia regional also showed socio-economic variations in CS delivery (Khan *et al.* 2017; Khawaja *et al.* 2004; Leung *et*

al. 2001). In addition economic situation, infrastructure and communication facilities have improved a lot; so rural people have now getting more access to the urban health care facilities. This may be a possible reason for this higher CS rate in rural mothers of our study. Moreover, relatively high number of functional emergency obstetric care facilities in the public sector in Khulna region may also contribute to this situation (Anwar *et al.* 2009). Women who had a general level of education and studied more than the higher secondary level had higher caesarian delivery compared to *Madrasha* level education system (90.7% vs. 9.3%) and primary education level (52.3% vs. 22.7%) studied women. A similar fact was also observed in BDHS report (NIPORT 2016). According to BDHS report, about 56% of CS mothers had studied at the higher secondary level or more (NIPORT 2016). So there is a probable link that a higher level of education plays an important role in delivery mode especially on CS delivery. Pamadas *et al.* (2000) also reported a similar finding on maternal education level and increased the likelihood of caesarian delivery among women of south India. Educated women may prefer CS because they believe it to be safer and interferes less with the work load and leisure time (Anwar *et al.* 2015).

In this study, we found that most of the caesarean deliveries were reported for housewives (91.3%). Women whose husbands had higher income level (from 20,000 to 40,000 BDT) had a higher caesarean section (40.7%) compared to the women whose husband income level was less than 20,000 BDT. Caesarean deliveries were prominent for those women whose husbands were service holder and businessmen compared to the women whose husbands were farmer or day labor (66.0% vs. 17.4%). About 74% of the respondents have also reported that they were able to maintain savings over their monthly expenditure. All of these together indicate that most of the CS mothers were from the higher socioeconomic group. So, higher socioeconomic status might increase the likelihood of caesarian delivery. Our finding was in line with the results of earlier studies conducted in Asia and Africa (Cavallaro *et al.* 2013). As the higher socioeconomic group has the ability to meet the additional medical cost resulting from caesarean section and they are likely to be more aware of their illnesses, so both of these prompt them and the doctors to decide on CS. Not only that a profit motive of health care providers and/or owners of private facilities could be an important factor (Khan *et al.* 2017).

Sedentary activity, such as cooking was found as the most prominent work of the caesarean women at the time of their pregnancy. Most of the caesarean women (about 95.0%) did not work in the field, a vigorous work, at the time of their pregnancy. Breathing problem (36.7%) and an abdominal pain (29.3%) was found as the most prevalent health-related problems of these caesarean women. Caesarean section was found higher for the women who went to doctor for their consultation at the time of pregnancy. But most of the doctor suggest for normal vaginal delivery (about 80%). Afraid of normal vaginal delivery (48.0%) was the most prominent cause for caesarean section followed by an amniotic fluid decrease (19.3%) and upward pressure of the uterus (10.7%) affirmed by these women. In a hospital-based study, Khan *et al.* (2017) found a positive association between the use of antenatal care and delivery in CS. It is not unlikely that the doctors motivated women to undergo CS by using these antenatal visits. Indeed, some health care providers influence on maternal fear of pain to promote CS (Hasib 2015). Where the health care providers should make the mothers aware of the consequences of CS and NVD on mother and baby's health, some of them guide the mothers in a wrong way, which makes the mother and family members further frightened on NVD. Financial gain and/or excessive pressure of private employers are some likely reasons behind this malpractice (Khan *et al.* 2017).

Most of the caesarean women had labor pain for 2 to 6 hours (51.3%) and around 45.3% caesarean women were delivered in 36th to 38th weeks and 25.3% women were delivered in 34th to 35th weeks of gestation. Interestingly most of the mother claimed that they had the knowledge about delivery mode but they were not well aware of the short and long-term consequences of different types of delivery.

Our study has several limitations. Through a cross-sectional study design, it is not possible to ascertain a cause-effect relationship between socio-demographic characteristics and the incidence of the unnecessary caesarean section. We had focused on the most prominent socio-demographic as well as socioeconomic characteristics of the caesarean women. But these selective factors that we included in our study were not only the prominent factors in the decision of having an unnecessary caesarean delivery. Besides this health, gynecological factors and others possible socio-economic and socio-demographic factors that predict a women delivery mode. We have not considered or reported these things in our study. Moreover, we had considered hospitals that are situated in Jessore city only but we are aware that a good number of CS are being performed at less urban settings private clinics though there is limited data on this. Factors influencing the decision making for the delivery mode of the pregnant women also depend on the decision of the family members of the pregnant women; we had not considered the influence of this decision making in our study.

CONCLUSION

Our study reveals some important scenario on CS delivery mode. Right now CS is not only restricted in urban people but also rapidly spreading among the rural people. Maternal education level, father's income, father's occupation have profound influence on delivery type rather than the health complications. Fear of pain in NVD plays a vital role in making decision for CS delivery. Prior the Caesarean Section (CS), awareness on

consequences of CS delivery on mother and baby should make. Here healthcare providers may play the key role but also Government and non-government organizations can come forward to create this awareness not only of mothers as well as of other family members through different media.

REFERENCES

- Acker DB, Haas S, O'Brien E, Donahue CL, Porell MM, Sachs BP (1988) Caesarean birth rate: small-geographic-area analysis. *American Journal of Obstetrics and Gynecology*, 159(2), 386-388.
- Anwar I, Kalim N, Koblinsky M (2009) Quality of obstetric care in public-sector facilities and constraints to implementing emergency obstetric care services: evidence from high-and low-performing districts of Bangladesh. *Journal of health, population, and nutrition*, 27(2), 139.
- Anwar I, Nababan HY, Mostari S, Rahman A, Khan JA (2015) Trends and inequities in use of maternal health care services in Bangladesh, 1991-2011. *PloS one*, 10(3), e0120309.
- Bogg L, Diwan V, Vora KS, DeCosta A (2016) Impact of alternative maternal demand-side financial support programs in India on the caesarean section rates: indications of supplier-induced demand. *Maternal and child health journal*, 20(1), 11-15.
- Cavallaro FL, Cresswell JA, França GV, Victora CG, Barros AJ, Ronsmans C (2013) Trends in caesarean delivery by country and wealth quintile: cross-sectional surveys in southern Asia and sub-Saharan Africa. *Bulletin of the World Health Organization*, 91(12), 914-922D.
- Gibbons L, Belizán JM, Lauer JA, Betrán AP, Merialdi M, Althabe F (2010) The global numbers and costs of additionally needed and unnecessary caesarean sections performed per year: overuse as a barrier to universal coverage. *World health report*, 30, 1-31.
- Hasan FS, Joardar CK, Hossain MG (2015) Maternal socio-demographic factors and nutritional status as predictors of Caesarean delivery at hospital in Rajshahi city, Bangladesh. *Mal J Nutr*, 21(3), 345-353.
- Hasib NI (2015) *DHS points to abnormal rise of C-section in Bangladesh*. Retrieved from bdnews24.com: <https://bdnews24.com/health/2015/04/26/dhs-points-to-abnormal-rise-of-c-section-in-bangladesh>.
- Kaur J, Singh S, Kaur K (2013) Current trend of caesarean sections and vaginal births. *Advances in Applied Science Research*, 4(4), 196-202.
- Khan MN, Islam MM, Shariff AA, Alam MM, Rahman MM (2017) Socio-demographic predictors and average annual rates of caesarean section in Bangladesh between 2004 and 2014. *PloS one*, 12(5), e0177579.
- Khawaja M, Jurdi R, Kabakian-Khasholian T (2004) Rising trends in caesarean section rates in Egypt. *Birth*, 31(1), 12-16.
- Leung GM, Lam TH, Thach TQ, Wan S, Ho LM (2001) Rates of caesarean births in Hong Kong: 1987-1999. *Birth*, 28(3), 166-172.
- Martin J, Park M, Sutton P (2002) *Births: Preliminary Data for 2001 National Vital Statistics Report, Vol. 50, No. 10*. Hyattsville (MD): National Center for Health Statistics.
- Menacker F, Curtin S (2001) Trends in caesarean birth and vaginal birth after previous caesarean, 1991-99. *National vital statistics reports*, 49(13), 1940-1955.
- Mossialos E, Allin S, Karras K, Davaki K (2005) An investigation of Caesarean sections in three Greek hospitals: the impact of financial incentives and convenience. *The European Journal of Public Health*, 15(3), 288-295.
- NIPORT (2016) *Bangladesh Demographic and Health Survey 2014*. Dhaka, Bangladesh, and Rockville, Maryland, USA: Mitra and Associates, and ICF International.
- NIPORT, MEASURE Evaluation, icddr,b (2012) *Bangladesh Maternal Mortality and Health Care Survey 2010*. Dhaka, Bangladesh: NIPORT, MEASURE Evaluation, and icddr,b.
- Padmadas SS, Kumar S, Nair SB, KR AK (2000) Caesarean section delivery in Kerala, India: evidence from a national family health survey. *Social Science & Medicine*, 51(4), 511-521.
- Ravindran J (2008) Rising caesarean section rate in public hospitals in Malaysia 2006. *Med J Malaysia*, 63(5), 434-435.
- Sufang G, Padmadas SS, Fengmin Z, Brown JJ, Stones RW (2007) Delivery settings and caesarean section rates in China. *Bulletin of the World Health Organization*, 85(10), 755-762.