

Preferences between Caesarean Section and Normal Vaginal Delivery among the reproductive women in Bangladesh

Md. Iftakhar Parvej^a, Mimma Tabassum^{b*}, Nelufa Aktar^c

^aDepartment of Statistics, Noakhali science and Technology University, Noakhali-3814, Bangladesh, iftakhar.nstu@gmail.com

^bDepartment of Statistics, Noakhali science and Technology University, Noakhali-3814, Bangladesh, tabassum021521@gmail.com

^cDepartment of Statistics, Noakhali science and Technology University, Noakhali-3814, Bangladesh, nilufanstu13@gmail.com

Abstract

Amount of death due to pregnancy are gradually decreasing worldwide, among all of these estimated deaths, one-fifth of the maternal death recorded in southern Asia. The increasing rate of caesarean section (CS) delivery and the improved safety of surgical skill are the big reason of reduced pregnancy related mortality rate. Bangladesh has the increasing CS rate on southern Asia. This study aimed to identify the different factors affecting the increasing rate of CS in Bangladesh. This cross-sectional survey was conducted between January 2020 - March 2020 among the married women at reproductive age (15-49 years age) having at least one under five years child of Dhaka and Noakhali district in Bangladesh. A questionnaire was designed to survey the preference of their delivery mode. Bivariate logistic regression analysis was performed to identify the factors. A total of 357 Bangladeshi women participated in the survey and 55.7% declared they would prefer normal vaginal delivery (NVD) and 37.3% had no clear preference. The actual scenario was the overall CS rate was 51.8% during 2015-2019. But it was very high (77.8%) for the 40 years and above women. The study revealed several important factors that significantly affect the increasing rate of CS for childbirth. Maternal age, religion, current place of residence, working status, monthly household income, birth order, marital age and year of childbirth were found to have significant effect on the high rate of CS. All those who have had face CS at least once in our study faced various problem, they reported. Most of them was feeling tired to do little work and suffered long term back pain. This study will help policy makers in formulating appropriate programs to cope with this challenge efficiently and effectively. Some Special programs should be taken to increase the social awareness and values to save both mother and child, which may lead to decrease the rate of CS in Bangladesh.

© 2021 Author(s).

Keywords: Caesarean section, Normal vaginal delivery, Women's preferences, Bangladesh.

1. Introduction

An approximately 810 women died worldwide every day due to pregnancy and child birth in 2017 [1], which was 981 in 2008 [2]. Of these estimated deaths, one-fifth of the maternal death accounted in southern Asia [3]. In Bangladesh recently the maternal mortality rate is 173 deaths for every 100,000 live births [4].

* Corresponding author.

Email address: tabassum021521@gmail.com (Mimma Tabassum)

In September 2015, UN member states set out a 15-year plan to achieve 17 goals (SDGs) [5]. Among 17 goals, goal 3 is to ensure healthy lives and promote well-being for the people of all ages. The goal proposed to reduce the global maternal mortality ratio to less than 70 for every 100,000 live births by 2030 [6]. We are so far in comparison with the desired goal. It is a big challenge for the government to achieve the goal.

One of the major causes to reduce maternal mortality rate is to improved safety of surgical and anesthetic skill which may be the prime reasons for increasing rates of caesarean section (CS) worldwide [7]. In recent years CS increased in all regions in the world. CS is a surgical procedure to deliver babies, usually preferred when normal vaginal delivery (NVD) would put the baby or mother at risk [8]. CS conducted without clinical need can have adverse consequences for mothers and children. So, CS have become a global epidemic [9]. A survey conducted by WHO in 2008 of 373 facilities across 24 countries found that unnecessary caesareans were highly associated with an increased risk of maternal mortality and serious outcomes for mothers and newborns, compared with NVD [10]. In comparison with 150 countries the overall CS rate was 18.6%, among them Latin America and Caribbean region reported highest [11]. Worldwide more than 45 countries have CS rates less than 7.5% and more than 50 countries have rates greater than 27% [12]. In the United Kingdom, the caesarean delivery rate was reported at 26.2% in 2015 [13]. In the United States, 31.9% of births were by caesarean in 2018 [14]. Similarly, in Australia 32% of babies were born by caesarean delivery in 2015 [15]. This increasing trend of CS rate are also recorded in several south Asian countries over the past 20 years. In Nepal, rates rose from 5% in 2011 [16] to 66.1% in 2018 [17]; In India, from 11% in 2006 [18] to 31.29 in 2014-2018 [19]; and in Pakistan, from 15.8% in 2012-2013 [20] to 46.7 in 2016-2017 [21].

The CS rates are continuously increasing in Bangladesh like other countries in the world. Based on the report of Bangladesh Demographic and Health Survey (BDHS), rates of CS of all deliveries are rose from 8% in 2007 to 23% in 2014 and to 33% in 2017. The study also revealed that in private facilities almost 84% of the delivers were by CS [22]. There is no ideal rate of CS but a 1985 World Health Organization report suggest that, the CS rate should be kept between 10% and 15% of all deliveries [23]. For better outcomes some evidence showed that it may be 19% [12]. In order to achieve this rate, it is very important to determine the factors influencing the delivery mode.

The aim of this current study is to identify the different factors affecting the increasing rate of CS performed in the last five years preceding the survey in Bangladesh. Also want to find the preferred delivery mode and the opinion about current condition of CS, which may help the policy makers in formulating appropriate programs to cope with this challenge efficiently and effectively.

2. Methods

2.1 Study Design

The study is a cross-sectional survey conducted from January 2020 to March 2020 among the married women at reproductive age (15-49 years age) having at least one under five years child of Dhaka and Noakhali district in Bangladesh. A questionnaire was designed to survey the preference of their delivery mode (CS or NVD) and the socio-economic factors affecting them. The questionnaire contains two parts; one is the demographic characteristics and other in the questions asks about their reasons and feelings after CS. Participants were allowed to terminate the survey at any time they want. The survey did not require any personal information to be provided and the confidentiality of the information was confirmed.

2.2 Participants

Participants were randomly sampled in this study. The target sample size of participants was determined using the formula $N = Z_{\alpha}^2 P(1-P) / d^2$ in which $\alpha = 0.05$ and $Z_{\alpha} = 1.96$, and the estimated acceptable margin of error for proportion d was 0.05. The proportion of Bangladeshi women experienced CS was estimated at 33% in 2017, based on previous study [22], so at least 340 completed questionnaires from participants.

2.3 Outcomes and Covariates

Some demographic data were provided by the participants, including age (15-19, 20-39, 40-49 years), place of residence (urban or rural), religion (Muslim and others), educational status (illiterate, primary, secondary and higher), working status (working or not), monthly household income (below 15,000, 15,000-40,000, 40,001-1,00,000 and above 1,00,000).

We want to know pregnancy mode they preferred and the mode of their last pregnancy, where they regularly checking up during pregnancy and the birth order of their last pregnancy and marital age. If they face CS during their last pregnancy. Then they answered another five more questions.

2.4 Statistical Analysis

To determine potential variables having association with delivery mode, bivariate logistic regression analysis was performed presented as odds ratios (OR) and 95% confidence interval (CI). The analysis is conducted by IBM SPSS Statistics 25.0.

2.5 Ethics

The study was approved by the Ethics committee, before study was undertaken, from Noakhali Science and Technology University (reference no, 27/2020). In the study, a survey was conducted among the married women of reproductive age (15-49 years age) of Noakhali and Dhaka district in Bangladesh through face-to-face interview. verbal consents were applied in the survey. Prior to interviews, our interviewers briefly clarified the aims and objectives of this research to receive verbal consent. Privacy and confidentiality of each participants have maintained to encourage them for honesty and accurate data.

3. Result

3.1 Socio-demographic Characteristics

A total of 357 questionnaires out of 400 were returned. We had the responding rate of 89%, which has been an acceptable rate. The demographic data of the participants are demonstrated in Table 1. Of the women, 7.3% were adolescents, 82.6% were aged between 20-39 years, and the rest were aged 40-49 years. Four of five women were Muslim. 33.6% women were rural residents. Only 2.8% had no formal education, 3.4% had primary education, 36.1% had secondary level of education, and 57.7% had higher education. Almost two-fifth were working women. Almost one-fifth (18.8%) of the respondent have spent more than 10 years of their married life. Over half of the births were of the first order, one-fourth were of the second order, and the rest were of third or higher order. Of the total births, 9.0% took place in 2015, 72.0% occurred during 2016- 2018, and 19.0% occurred in 2019. In terms of monthly household income, almost half (48.5%) having income between 15,000-40,000 taka. Majority (66.1%) of the women regularly consult with physicians in private clinic during pregnancy. More than half (55.7%) of the respondents preferred NVD for their child birth. But one-fifth of the women aged above 40 years preferred CS as delivery mode. There were 37.3% of women having no preference for child delivery.

Table 1. Socio-demographic Characteristics of Respondents in terms of delivery mode preference

Characteristics	Number (%)			
	Total	Delivery mode preference		
		CS	NVD	No preference
Age in years	357 (100)	26 (7.3)	199 (55.7)	132 (37.3)
15-19	26 (7.3)	1 (3.8)	14 (53.8)	11 (42.4)

Characteristics	Number (%)			
	Total	Delivery mode preference		
		CS	NVD	No preference
20-39	295 (82.6)	18 (6.1)	167 (56.6)	110 (37.3)
40-49	36 (10.1)	7 (19.4)	18 (50.0)	11 (30.6)
Religion				
Islam	291 (81.5)	22 (7.6)	165 (56.7)	104 (35.7)
Others	66 (18.5)	4 (6.1)	34 (51.5)	28 (42.2)
Current place of residence				
Urban	237 (66.4)	23 (9.7)	131 (55.3)	83 (35.0)
Rural	120 (33.6)	3 (2.5)	68 (56.7)	49 (40.8)
Educational status				
Illiterate	10 (2.8)	0 (0.0)	7 (70.0)	3 (30.0)
Primary	12 (3.4)	0 (0.0)	6 (50.0)	6 (50.0)
Secondary	129 (36.1)	3 (2.3)	76 (58.9)	50 (38.8)
Higher	206 (57.7)	23 (11.2)	110 (53.4)	73 (35.4)
Working status				
Not Working	220 (61.6)	9 (4.1)	128 (58.2)	83 (37.7)
Working	137 (38.4)	17 (12.4)	71 (51.8)	49 (35.8)
Monthly income in taka				
Below 15,000	44 (12.3)	2 (4.5)	25 (56.8)	17 (38.6)
15,000-40,000	173 (48.5)	13 (7.5)	96 (55.5)	64 (37.0)
40,001-1,00,000	126 (35.3)	9 (7.1)	71 (56.3)	46 (36.5)
Above 1,00,000	14 (3.9)	2 (14.3)	7 (50.0)	5 (35.7)
Marital age in years				
0-5	144 (40.3)	13 (9.0)	81 (56.3)	50 (34.7)
6-10	146 (40.9)	7 (4.8)	77 (53.5)	62 (43.1)
Above 10	67 (18.8)	6 (8.9)	41 (61.2)	20 (29.9)
Birth Order				
First	192 (53.8)	18 (9.4)	107 (55.7)	67 (34.9)
Second	103 (28.9)	5 (4.9)	59 (57.3)	39 (37.9)
Third	41 (11.5)	1 (2.4)	24 (58.5)	16 (39.0)
Forth and Above	21 (5.9)	2 (9.5)	9 (42.9)	10 (47.6)
Year of Birth				
2015	32 (9.0)	2 (6.3)	21 (65.6)	9 (28.1)
2016	57 (16.0)	3 (5.3)	34 (59.6)	20 (35.1)
2017	86 (24.1)	5 (5.8)	46 (53.5)	35 (40.7)
2018	114 (31.9)	12 (10.5)	68 (59.6)	34 (29.8)
2019	68 (19.0)	4 (5.9)	30 (44.1)	34 (50.0)
Regular checkup				
Community clinic	46 (12.9)	0 (0.0)	21 (45.7)	25 (54.3)
Non govt. organization	11 (3.1)	4 (36.4)	6 (54.5)	1 (9.1)
Government hospital	64 (17.9)	3 (4.7)	34 (53.1)	27 (42.2)
Private chamber	236 (66.1)	19 (8.1)	138 (58.5)	79 (33.5)

3.2 Determinants of Caesarean Section (CS)

Table 2, show that the characteristics of women, the number and percentage of births by NVD and CS in each category and bivariate logistic regression analysis. The overall CS rate was 51.8%. The rate increased from 26.9% among adolescent to 77.8% among women 40-49 years old (OR, 11.34; 95% CI, 1.79 -71.97; $P = .010$). Muslim women had lower CS rate (47.8%) than the women of other religions (69.7%, OR, 0.40; 95% CI, 0.20-0.83; $P = .013$). The urban women (64.1%, OR, 2.00; 95% CI, 1.01-3.96; $P = .047$), compared to their rurales (27.5%), were more likely to deliver through CS. Working women had higher CS rate (75.2%, OR, 2.85; 95% CI, 1.50-5.42; $P =$

.001) than the non-working women (37.3%). The CS rate increased from 20.5% among poor women to 73.8% among women had monthly income 40,000-1,00,000 taka (OR, 5.12; 95% CI, 1.82 -14.43; $P = 0.002$). Women had married life 6 and more years had higher CS rate (53.4%%, OR, 2.39; 95% CI, 1.20-4.75; $P = 0.013$) than among women had married life 5 or less (48.6%).

Table 2. Logistic regression result of CS

Characteristics	Normal vaginal delivery	Caesarean section delivery	Odds ratio (95% CI)	P value
	n (%)	n (%)		
	172 (48.2)	185 (51.8)		
Age in years				
15-19	19 (73.1)	7 (26.9)	Reference	
20-39	145 (49.2)	150 (50.8)	2.07 (0.63-6.77)	0.228
40-49	8 (22.2)	28 (77.8)	11.34 (1.79-71.97)	0.010
Religion				
Others	20 (30.3)	46 (69.7)	Reference	
Islam	152 (52.2)	139 (47.8)	.40 (0.20-0.83)	0.013
Current place of residence				
Rural	87 (72.5)	33 (27.5)	Reference	
Urban	85 (35.9)	152 (64.1)	2.00 (1.01-3.96)	0.047
Educational status				
Illiterate	7 (70.0)	3 (30.0)	Reference	
Primary	7 (58.3)	5 (41.7)	1.51 (0.19-12.32)	0.701
Secondary	86 (66.7)	43 (33.3)	0.75 (0.15-3.84)	0.730
Higher	72 (35.0)	134 (65.0)	0.66 (0.12-3.56)	0.629
Working status				
Not Working	138 (62.7)	82 (37.3)	Reference	
Working	34 (24.8)	103 (75.2)	2.85 (1.50-5.42)	0.001
Monthly income in taka				
Below 15,000	35 (79.5)	9 (20.5)	Reference	
15,000-40,000	99 (57.2)	74 (42.8)	1.87 (0.72-4.90)	0.201
40,001-1,00,000	33 (26.2)	93 (73.8)	5.12 (1.82-14.43)	0.002
Above 1,00,000	5 (35.7)	9 (64.3)	1.80 (0.36-9.03)	0.478
Marital age in years				
0-5	74 (51.4)	70 (48.6)	Reference	
6-10	68 (46.6)	78 (53.4)	2.39 (1.20-4.75)	0.013
Above 10	30 (44.8)	37 (55.2)	2.57 (0.94-7.02)	0.065
Birth Order				
First	71 (37.0)	121 (63.0)	Reference	
Second	57 (55.3)	46 (44.7)	0.60 (0.30-1.19)	0.145
Third	30 (73.2)	11 (26.8)	0.26 (0.10-0.70)	0.007
Forth and Above	14 (66.7)	7 (33.3)	0.10 (0.02-0.52)	0.006
Year of Birth				
2015	22 (68.8)	10 (31.2)	Reference	
2016	33 (57.9)	24 (42.1)	0.98 (0.29-3.26)	0.973
2017	44 (51.2)	42 (48.8)	1.73 (0.54-5.61)	0.359
2018	46 (40.4)	68 (59.6)	2.89 (0.89-9.34)	0.077
2019	27 (39.7)	41 (60.3)	2.50 (0.70-8.92)	0.157
Regular checkup				
Community clinic	33 (72.0)	13 (28.0)	Reference	
Non govt. organization	3 (27.3)	8 (72.7)	1.91 (0.30-12.04)	0.492
Government hospital	50 (78.1)	14 (27.9)	0.42 (0.14-1.24)	0.116
Private chamber	86 (36.4)	150(63.6)	0.88 (0.34-2.40)	0.806

The CS rate (65%) is almost double for highly educated (honors and above) women comparing to others (secondary, primary and illiterate). Birth order increase a consistent decrease in the likelihood of CS comparing to NVD. From 2015-2019 CS rate increasing every year in Bangladesh. The rate was almost double (31.2% in 2015 and 60.3% in 2019) during these five years. Private and non-governmental organizations patients had a higher CS rate (66.3% and 72.7%) than public and community clinic patients (27.9%, and 28.0%).

4. Discussion

In this study majority of the women in Bangladesh preferred NVD and whereas only one in every fourteen women preferred CS, we also found the similar result in the other studies [7]; [24]; [25]. Almost four out of ten participants had no clear preference which is large comparing to the study conducted in China [26].

The result of logistic regression showed that mother's age has a significant effect on CS, however, a hospital-based study from china also showed higher CS rate for 40 years above old women [26]. Also, a population-based study from Taiwan reported that older than 34 years women were preferred CS for their child birth [27]. Religion and current place of residence also appeared to be an additional independent factor that was strongly associated with increasing rate of CS. Our study showed that Muslim women had less CS rate comparing to other religions. Similar result also found in Thailand [28]. Our findings showed that rural women had less CS rate than Urban women. Previous study also reported the same result [29]; [30].

Mother's level of education did not remain significant as an effective factor in our study, but results showed that the women in higher educational level had high CS rate. But from the previous study of Iran reported that women education plays an important role for high CS rate[31]. Women employment and household monthly income were found as a significant factor for high CS rate. The CS rate of employed women were almost doubled comparing to the CS rate of housewives. Employed and high-income level may lead to high socio-economic status. In Brazil, women from high socio economic status had significantly high CS rate [32].

Our study also revealed that marital age and birth order of women significantly associated with the increasing rate of CS. Women with first-order pregnancy have high CS rate comparing to second or higher order delivery, which is very much similar to previous findings in China [33]. In Bangladesh NVD is decreasing day by day from 2015-2019. The rate was almost half during these five years, that is CS rate was doubled at these time period. Private and non-governmental organizations patients had a higher CS rate than public and community clinic patients. In private eighty-four percent of the deliveries by CS in Bangladesh reports by BDHS 2017-2018 [22]. Our study reported relatively lower CS rate in private facilities comparing to BDHS.

All those who have had face CS at least once in our study faced various problem, they reported. Most of them was feeling tired to do little work and suffered long term back pain. Every three of four women in our study think that, some unscrupulous practitioners doing CS as a profitable business and which is the prime reason for increasing CS rate in Bangladesh.

5. Conclusion

The rates CS are high in Bangladesh which may reduce the maternal and child mortality rate but it has a long-term bad impact on their health. There is a lot of debate about the ideal rate of CS for a country. The appropriate range for the caesarean section rate in a country remains a matter of debate. WHO suggestion is to kept between 10% to 15%. Bangladesh are very much far from the recommended level. The study points out several important factors that significantly affect the increasing rate of CS for childbirth. Maternal age, religion, current place of residence, working status, monthly household income, birth order, marital age and year of childbirth were found to have significant effect on the high rate of CS. It's very scary that the rate is very high in private comparing to the overall rate. Some immoral practitioners are responsible for this high rate in private hospitals and non-governmental organizations. Some Special programs should be taken to increase the social awareness and values to save both mother and child, which may lead to decrease the rate of CS in Bangladesh.

Acknowledgments

Authors are grateful to the Noakhali Science and Technology University Research cell for providing the financial support in order to conduct this research. We are very much grateful to all the participants for their contribution to this study. We also grateful to all interviewers for their contribution in data collection.

References

- [1] W. H. Organization, "Trends in maternal mortality 2000 to 2017: estimates by WHO, UNICEF, UNFPA, World Bank Group and the United Nations Population Division," 2019.
- [2] U. WHO, "UNFPA, The World Bank. Trends in maternal mortality: 1990 to 2008 Estimates developed by WHO, UNICEF," ed: UNFPA and The World Bank. Geneva: World Health Organization, 2010.
- [3] WHO. "Maternal mortality." <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality> (accessed).
- [4] I. Mundi. "Bangladesh Demographics Profile 2019." https://www.indexmundi.com/bangladesh/demographics_profile.html (accessed).
- [5] U. N. Association. "The Sustainable Development Goals 2015 – 2030." <https://una-gp.org/the-sustainable-development-goals-2015-2030/> (accessed).
- [6] U. N. Association. "ENSURE HEALTHY LIVES AND PROMOTE WELL BEING FOR ALL AT ALL AGES (GOAL 3) " <https://una-gp.org/clancyt/files/goals/goal3.pdf> (accessed).
- [7] A. R. Najmeh Maharlouei, Elham Hesami, Fariba Moradi, Ezat Mazloomi, Hassan Joulaei, and a. K. B. L. Mohammad Khodayari, "The preference of Iranian women to have normal vaginal or cesarean deliveries," *Journal of Research in Medical Sciences*, vol. 18, no. 11, pp. 943-950, 2013.
- [8] Statistia. "Cesarean sections - Statistics & Facts." <https://www.statista.com/topics/5217/cesarean-sections/> (accessed).
- [9] W. Savage, "The caesarean section epidemic," *Journal of Obstetrics and Gynaecology*, vol. 20, no. 3, pp. 223-225, 2000.
- [10] J. P. Souza *et al.*, "Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004-2008 WHO Global Survey on Maternal and Perinatal Health," *BMC medicine*, vol. 8, no. 1, p. 71, 2010.
- [11] A. P. Betrán, J. Ye, A.-B. Moller, J. Zhang, A. M. Gülmezoglu, and M. R. Torloni, "The increasing trend in caesarean section rates: global, regional and national estimates: 1990-2014," *PloS one*, vol. 11, no. 2, p. e0148343, 2016.
- [12] M. George Molina, MPH; Thomas G. Weiser, MD, MPH; Stuart R. Lipsitz, ScD; Micaela M. Esquivel, MD; M. Tarsicio Uribe-Leitz, MPH; Tej Azad, BA; Neel Shah, MD, MPP; Katherine Semrau, PhD, MPH; and M. William R. Berry, MPA, MPH; Atul A. Gawande, MD, MPH; Alex B. Haynes, MD, MPH, "Relationship Between Cesarean Delivery Rate and Maternal and Neonatal Mortality," *JAMA*, vol. 314, no. 21, pp. 2263-70, 2015, doi: 10.1001/jama.2015.15553.
- [13] T. Telegraph. "Caesareans now used in one in four UK births, major new report reveals." <https://www.telegraph.co.uk/news/2018/10/11/caesareans-now-used-one-four-uk-births-major-new-report-reveals/> (accessed July 31, 2020).
- [14] M. P. H. Joyce A. Martin, Brady E. Hamilton, Ph.D., Michelle J.K. Osterman, M.H.S., and Anne K. Driscoll, "Births: Final Data for 2018," National Vital Statistics Reports, 2019, vol. 68. [Online]. Available: https://www.cdc.gov/nchs/data/nvsr/nvsr68/nvsr68_13-508.pdf
- [15] L. T. T. Trinh, H. Assareh, H. Achat, S. Chua, and V. Guevarra, "Caesarean section by country of birth in New South Wales, Australia," *Women and Birth*, vol. 33, no. 1, pp. e72-e78, 2020.
- [16] M. Nepal, "New ERA, ICF International," *Nepal demographic and health survey*, 2011.
- [17] R. Poudel *et al.*, "Assessment of Cesarean Section Rates at Kathmandu Model Hospital Using the Robson's Ten Group Classification System," *Journal of Nepal Health Research Council*, vol. 17, no. 4, pp. 491-494, 2019.
- [18] I. I. f. P. Sciences, *National Family Health Survey (NFHS-3), 2005-06: India*. International Institute for Population Sciences, 2007.
- [19] A. De, R. Tripathi, and N. Gupta, "Analysis of cesarean sections using Robsons classification system in a tertiary hospital in New Delhi," *Indian Journal of Obstetrics and Gynecology Research*, vol. 7, no. 1, 2020.

- [20] S. Mumtaz, J. Bahk, and Y.-H. Khang, "Rising trends and inequalities in cesarean section rates in Pakistan: Evidence from Pakistan Demographic and Health Surveys, 1990-2013," *PloS one*, vol. 12, no. 10, p. e0186563, 2017.
- [21] N. Tahir, M. Adil, S. Fatima, and S. Khan, "CAESARIAN SECTIONS: FREQUENCY AND INDICATIONS AT PERIPHERAL TERTIARY CARE HOSPITAL," *Pakistan Armed Forces Medical Journal*, vol. 68, no. 2, pp. 273-79, 2018.
- [22] a. I. National Institute of Population Research and Training (NIPORT), "Bangladesh Demographic and Health Survey 2017-18: Key Indicators.," Dhaka, Bangladesh, and Rockville, Maryland, USA: NIPORT, and ICF., 2019. [Online]. Available: <https://www.researchgate.net/publication/337680718>
- [23] WHO, "WHO Statement on Caesarean Section Rates," 2015.
- [24] K. E. Kasai, R. M. Nomura, G. R. Benute, M. C. de Lucia, and M. Zugaib, "Women's opinions about mode of birth in Brazil: a qualitative study in a public teaching hospital," *Midwifery*, vol. 26, no. 3, pp. 319-326, 2010.
- [25] M. R. Torloni *et al.*, "Do Italian women prefer cesarean section? Results from a survey on mode of delivery preferences," *BMC pregnancy and childbirth*, vol. 13, no. 1, p. 78, 2013.
- [26] H. Liang *et al.*, "Women's cesarean section preferences and influencing factors in relation to China's two-child policy: a cross-sectional study," *Patient preference and adherence*, vol. 12, p. 2093, 2018.
- [27] H.-C. Lin and S. Xirasagar, "Maternal age and the likelihood of a maternal request for cesarean delivery: a 5-year population-based study," *American Journal of Obstetrics and Gynecology*, vol. 192, no. 3, pp. 848-855, 2005.
- [28] O. Rachatapantanakorn and P. Tongkumchum, "Demographic determinants for cesarean delivery in Pattani Hospital," *Southeast Asian journal of tropical medicine and public health*, vol. 40, no. 3, p. 602, 2009.
- [29] S. M. Kamal, "Preference for institutional delivery and caesarean sections in Bangladesh," *Journal of health, population, and nutrition*, vol. 31, no. 1, p. 96, 2013.
- [30] M. Neuman *et al.*, "Prevalence and determinants of caesarean section in private and public health facilities in underserved South Asian communities: cross-sectional analysis of data from Bangladesh, India and Nepal," *BMJ open*, vol. 4, no. 12, p. e005982, 2014.
- [31] S. Ahmad Nia, B. Delavar, H. Eini Zinab, S. Kazemipour, A. Mehryar, and M. Naghavi, "Caesarean section in the Islamic Republic of Iran: prevalence and some sociodemographic correlates," *EMHJ-Eastern Mediterranean Health Journal*, 15 (6), 1389-1398, 2009, 2009.
- [32] F. Rebelo, C. M. M. Da Rocha, T. R. Cortes, C. L. Dutra, and G. Kac, "High cesarean prevalence in a national population-based study in Brazil: the role of private practice," *Acta obstetrica et gynecologica Scandinavica*, vol. 89, no. 7, pp. 903-908, 2010.
- [33] H. Lei, S. W. Wen, and M. Walker, "Determinants of caesarean delivery among women hospitalized for childbirth in a remote population in China," *Journal of Obstetrics and Gynaecology Canada*, vol. 25, no. 11, pp. 937-943, 2003.