

## Epidemiology of Cesarean Section in a Single Center Study

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### Abstract

**Introduction:** Cesarean delivery is increasing in both developed and developing countries. Though it is considered as a lifesaving surgical procedure for the pregnant women and the neonate, it has various risk factors and complications.

**Objective:** The aim of this study was to assess the epidemiology and the results of the cesarean section in a single center of Bangladesh. **Study Design:** Retrospective observational study. **Place and Duration of the study:** The study was conducted in the department of Gynae & Obstetrics, Sher E Bangla Medical College Hospital, Barishal, Bangladesh, during the period from January 2019 to December 2019. **Methods:** This is a retrospective observational study. Among the total number of cesarean patients, we recruited 75 women who were age 25-35 years with gestational age 37-42 weeks of pregnancy. Those who were less than 37 weeks of gestational age, the patients with multiple pregnancy complications, and those who were referred were excluded from the study. Written consent was taken. Collected data were compiled and analyzed using computer-based software, statistical package for social science (SPSS). **Result:** In this study, a total of 75 women who had a cesarean delivery were included. The baseline characteristics of the study people were: maximum 45(60.0%) study people were from the age group of 25-35, multipara was 54 (72.0%), and primipara was 21 (28.0%), most of the study people 39(52%) had normal BMI 10(25.3%) had overweight, 9(12.00%) had obese, 8(10.7%) had underweight. The majority 22(29.3%) of the study people were secondary educated. Most of the study people 37(49.3%) had 37-42 gestational age. The indications of cesarean delivery, 31 (41.3%) had repeat cesarean delivery, 12 (16.0%) had failed to progress, 9 (12.0%) had fetal distress, 8 (10.7%) breech presentation, 7 (9.3%) had antepartum hemorrhage, 6 (8.0%) had hypertension and 2 (2.7%) had diabetes mellitus. SAB was used in 61 (81.33%), pfannenstiell incision was used in 70 (93.3%), and the average operating time was 51.2 minutes. Subcuticular was mostly used 42(56%) for skin stitch followed by vertical mattress in 33(44.0%). Intraoperative antibiotic was used in 11 (14.7%), postoperative antibiotic was used in 9 (12.0%), both of these mentioned antibiotics were used in 6 (8.0%), and no antibiotic was used for 49 (65.3%). **Conclusion:** Repeat cesarean deliveries were found in most of the study people of the cesarean section. Surgical site infection was the most common complication.

**Keywords:** Epidemiology, Caesarean Section and Single Center Study.

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## INTRODUCTION

Cesarean section is considered as a lifesaving operation for obstructed labor and other emergency obstetrical conditions. Cesarean section is usually performed when a vaginal delivery is a risk for mother and neonate, but sometimes it is also performed on request. Cesarean section is rapidly increasing nowadays and performed without any obstetric or medical indication[1-2]. Ensuring access to cesarean delivery is an essential strategy for meeting the Millennium Development Goals(MDGs) and the forthcoming Sustainable Development Goals (SDGs) for reducing child and maternal mortality [3-4]. In

recent years, the rate has risen to a record level of 46% in China and 25% or above in many Asian and European countries, Latin America, and the USA [5]. The cesarean delivery rate in Bangladesh is also increasing. Although the optimal population-level cesarean delivery rate is difficult to know, the World Health Organization (WHO) recommended that national rates not exceed 10 to 15 cesarean deliveries per 100 live births [6]. Despite this, cesarean delivery rates in many countries are substantially higher [7-8]. Risks of short-term and long-term maternal and infant morbidity associated with elective cesarean section are higher than those related to vaginal birth[9-11]. The

following were identified as risk factors for complications at cesarean section: excessive speed at operation, lack of experience, gestational age at 32 weeks, ruptured membranes, and low station of the presenting part [12]. Most evident is the short-term risk of postpartum infection, hemorrhage, and thromboembolic complications [13-17]. However, no differences in short-term medical outcomes were found between Swedish primiparous women undergoing elective cesarean section and those undergoing vaginal delivery[18]. The most common complication for the neonate is respiratory problems, which are estimated to increase by two to three times after elective section[19-21]. There are few studies about cesarean section in Bangladesh. So, this study aims to assess the epidemiology and the results of the cesarean section in a single center of Bangladesh.

## OBJECTIVES

To assess the epidemiology and the results of the cesarean section.

## METHODOLOGY & MATERIALS

This retrospective observational study was conducted in the department of Gynae & Obstetrics, Sher E Bangla Medical College Hospital, Barishal, Bangladesh, during the period from January 2019 to December 2019. The sample size was 75 women who had a cesarean section. The demographic and clinical data were collected with the consent of the guardian of the pregnant women. Data collected from each individual subject were recorded on a pre-designed data collection form. Collected data were compiled and analyzed using computer-based software, statistical package for social science (SPSS).

### Inclusion Criteria

It included data from patients who underwent a cesarean section.

### Exclusion Criteria

Referred to another hospital, the patients with multiple pregnancy complication.

## RESULT

In this study, a total of 75 women who had a cesarean delivery were included. Table 1 shows the baseline characteristics of the study people. Maximum 45(60.0%) study people were from the age group of 25-35, multipara was 54 (72.0%), and primipara was 21 (28.0%). Most of the study people (52%) had normal BMI 10(25.3%) had overweight, 9(12.00%) had obese and 8(10.7%) had underweight. The majority 22(29.3%) of the study people were secondary educated. Most of the study people 37(49.3%) had 37-42 gestational age. Table 2 shows the indications of cesarean delivery. In this study, 31 (41.3%) had repeat cesarean delivery, 12 (16.0%) had failure to progress, 9 (12.0%) had fetal distress, 8 (10.7%) breech presentation, 7 (9.3%) had antepartum hemorrhage, 6 (8.0%) had hypertension and 2 (2.7%) had diabetes mellitus. Table 3 shows information related to operation and post-operation. In this study, SAB was used in 61 (81.33%), pfannenstiell incision was used in 70 (93.3%), and the average operating time was 51.2 minutes. Subcuticular was mostly used 42(56%) for skin stitch followed by vertical mattress in 33(44.0%). Intraoperative antibiotic was used in 11 (14.7%), postoperative antibiotic was used in 9 (12.0%), both of these antibiotics were used in 6 (8.0%), and no antibiotic was used for 49 (65.3%). Table 4 shows the complications after the operation. Surgical site infection was in 56(74.7%), urinary tract infection was in 11 (14.7%) , puerperal sepsis was in 6 (8.0%), breast abscess was in 2 (2.7%) , fever was in 27 (36.0%), peritonitis 1 (1.3%) and bladder injury was in 1 (1.3%) .

**Table-1: The baseline characteristics of the study people. (n=75)**

| Characteristics            | n                          | %  |      |
|----------------------------|----------------------------|----|------|
| Age (in years)             | <25                        | 12 | 16   |
|                            | 25-35                      | 45 | 60   |
|                            | >35                        | 18 | 24   |
| Parity                     | Primiparas                 | 21 | 28   |
|                            | Multiparas                 | 54 | 72   |
| BMI                        | <18.5                      | 8  | 10.7 |
|                            | 18.5-24.9                  | 39 | 52   |
|                            | 25-29.9                    | 19 | 25.3 |
|                            | ≥30                        | 9  | 12   |
| Education                  | Uneducated                 | 14 | 18.7 |
|                            | Primary education          | 15 | 20   |
|                            | Secondary education        | 22 | 29.3 |
|                            | Higher secondary education | 18 | 24   |
|                            | Graduate                   | 4  | 5.3  |
| Gestational age (in weeks) | <37 (premature)            | 27 | 36   |
|                            | 37-42 (normal)             | 37 | 49.3 |
|                            | >42 (postmature)           | 11 | 14.7 |

**Table-2: Indications of Cesarean delivery. (n=75)**

| Parameters                   | n  | %    |
|------------------------------|----|------|
| Repeated cesarean deliveries | 31 | 41.3 |
| Failure to progress          | 12 | 16   |
| Fetal distress               | 9  | 12   |
| Breech Presentation          | 8  | 10.7 |
| Antepartum hemorrhage        | 7  | 9.3  |
| Hypertension                 | 6  | 8    |
| Diabetes mellitus            | 2  | 2.7  |

**Table-3: Information related to operation and post-operation. (n=75)**

| Parameter                    | n                 | %     |      |
|------------------------------|-------------------|-------|------|
| SAB                          | 61                | 81.33 |      |
| Pfannenstiel incision        | 70                | 93.33 |      |
| Average operating time (min) | 51.2              |       |      |
| Type of skin stitch          | Subcuticular      | 42    | 56   |
|                              | Vertical mattress | 33    | 44   |
| Antibiotics                  | Intraoperative    | 11    | 14.7 |
|                              | Postoperative     | 9     | 12   |
|                              | Both              | 6     | 8    |
|                              | None              | 49    | 65.3 |

**Table-4: Complications after operation. (n=75)**

| Infectious morbidities  | n  | %    |
|-------------------------|----|------|
| Surgical site infection | 56 | 74.7 |
| Urinary tract infection | 11 | 14.7 |
| Puerperal sepsis        | 6  | 8.0  |
| Breast abscess          | 2  | 2.7  |
| Fever                   | 27 | 36.0 |
| Peritonitis             | 1  | 1.3  |
| Bladder injury          | 1  | 1.3  |

## DISCUSSION

In this study, among 75 women who had a cesarean delivery, maximum 45(60.0%) were from the age group of 25-35. In another study of Karlström A et al.[22], similar results were found where among 5877 study people having cesarian delivery, majority (61.2%) were from the age group of 25-35. In this study, multipara was 54 (72.0%) study people, and most of the study people (52%) had normal BMI. In another study of Karlström A et al.[22], similar results were found where among 5877 study people having cesarean delivery, most of the study people (52.9%) had normal BMI.

The study found that the majority (29.3%) of the study people were secondary educated. Most of the study people 31(49.3%) had 37-42 gestational age. In this study, 31 (41.3%) had repeated cesarean delivery, 12 (16.0%) had failure to progress, 9 (12.0%) had fetal distress, 8 (10.7%) had breech, 7 (9.3%) had antepartum hemorrhage, 6 (8.0%) had hypertension and 2 (2.7%) had diabetes mellitus. In another study of Al Sheeha MA et al.[23], similar results were found where among 936 study people, repeated cesarean deliveries (201, 21.5%), failure to progress (87, 9.3%), fetal

distress (72, 7.7%); breach (60, 6.4%), antepartum hemorrhage (54, 5.8%), hypertension (36, 3.8%) and diabetes mellitus (9, 1.0%) and more than one indication (6; 0.6%). In this study, SAB was used in 61 (81.33%), pfannenstiel incision was used in 70 (93.3%), and the average operating time was 51.2 minutes. Subcuticular was mostly used 42(56%) for skin stitch followed by vertical mattress in 33(44.0%). Intraoperative antibiotic was used in 11 (14.7%), postoperative antibiotic was used in 9 (12.0%), both of these antibiotics were used in 6 (8.0%), and no antibiotic was used for 49 (65.3%). From another study of Deutchman M et al. [24], similar results were found where among 562 performed with cesarean section, general anesthesia was used in 97 (17.3) , pfannenstiel incision was used in 469 (83.8), average operating time was 63.2 minutes, subcuticular was mostly used (58%) for skin stitch followed by vertical mattress in 42% , intraoperative antibiotic was used in 65 (11.5%), postoperative antibiotics was used in 107 (19.0%), both of these antibiotics were used in 196 (34.8%), and no antibiotic was used for 195 (34.6%) .In this study, surgical site infection was in 56 (74.7%) study people, urinary tract infection was in 11 (14.7%) study people, puerperal sepsis was in 6 (8.0%) study people, breast abscess was in 2 (2.7%), fever was in 27 (36.0%), peritonitis 1 (1.3%) study people and bladder injury was in 1 (1.3%) study people. In another study of Rina V Patel et al.[25], similar results were found. They found that among 50, surgical site infection was in 38 (76%), urinary tract infection was in 7 (14%), puerperal sepsis was in 4 (8%), breast abscess was in 1 (2%). According to another study of Deutchman M et al. [24], similar results were found where among 562, fever was in 171 (30.0 %), peritonitis 0.2%, and bladder injury was in 0.3%.

## LIMITATIONS OF THE STUDY

In our study, there was a small sample size and absence of control for comparison. The study population was selected from one center in Barishal city, so it may not represent a wider population. The study was conducted within a short period of time. The sampling was retrospective, and there was no random allocation, so there remains a risk of selection bias.

## CONCLUSION AND RECOMMENDATIONS

In this study, repeated cesarean deliveries were found in most of the study people of the cesarean section. Surgical site infection was found in most of the study people. Proper skin preparation done before surgery reduces the chances of Surgical Site Infection (SSI). Cesarean sections should be performed electively whenever possible to reduce infectious morbidities. High-risk patients should be given higher-order antibiotics preoperatively. There should be judicious use of antibiotics in the postoperative period.

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**Conflict of interest:** None declared.

**Ethical approval:** The Institutional Ethics Committee approved the study.

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