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Cesarean delivery rate in Bangladeshi hospitals offering emergency obstetric care

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Abstract
Background: *Caesarean section is a life-saving medical operation for women and their newborns, but it is overused, which is a public health concern. It is critical to study the prevalence and indications of cesarean deliveries at Bangladesh's public emergency obstetric care (EmOC) hospitals.*
Aim of the study: *The study aims to evaluate the prevalence of cesarean deliveries and their indications at a public emergency obstetric care (EmOC) hospital in Bangladesh.*
Methods: *This retrospective, cross-sectional study was conducted from January to December 2024 in the Department of Obstetrics and Gynaecology at Shaheed Ziaur Rahman Medical College Hospital in Bogura, Bangladesh. A total of 130 participants participated in the trial. Statistical analysis of the study was done by computer software device as the Statistical Package for Social Science (SPSS) version 17.0.*
Results: *A total of 71 (54.62%) cesarean deliveries were performed due to a previous cesarean, fetal distress, or prolonged/obstructed labor. The majority of cesarean delivery (67, or 51. 54%) were between the ages of 20 and 29. The ratio of male to female infants was 1.2. Only two (1.54%) cesarean deliveries ended in stillbirth. Obstetric problems linked to stillbirth included fetal distress (n = 1) and obstructed labor (n = 1). Only 10 (7.79%) of the 130 neonates with documented birth weights weighed less than 2.5 kg.*
Conclusion: *EmOC Hospital has a high overall rate of cesarean delivery. Interventions to improve decision-making and reduce the number of needless cesarean sections are required.*
Keywords: *Caesarean, delivery, obstetric.*

I. INTRODUCTION

Bangladesh has made significant improvements in mother and child health over the last few decades [1, 2]. However, maternal mortality remains unacceptably high at 194 deaths per 100,000 live births [2]. Increasing access to emergency obstetric care (EmOC) during pregnancy and for birthing problems is a recognized strategy to reduce maternal mortality [3]. Since the 1990s, Bangladesh has implemented safe motherhood programs to minimize maternal and newborn mortality [4]. EmOC services have been more accessible, leading to a significant increase in cesarean deliveries [5, 6]. Cesarean deliveries have grown from 2.7% in 2001 to 12.2% in 2010, according to population-based data [1, 2]. Cesarean deliveries may increase due to improved access to health services, delays in seeking obstetric issues, increasing demand by women, financial incentives, and poor provider decision-making [7]. EmOC services include cesarean birth, which can save both the mother and the newborn's lives [8]. High cesarean delivery rates raise public health concerns. While cesarean deliveries can save lives, needless procedures waste resources and increase the risk of complications for pregnant women and newborns [9-11]. In low-resource nations, maternal death rates following cesarean section are six times greater than in high-resource countries [10]. Maternal morbidities are reported following 9.0%-20.0% of cesarean deliveries in low-resource countries [9-10]. The procedure can result in immediate complications such as endometritis, wound infection, wound dehiscence, and hemorrhage [9], as well as long-term consequences such as increased risk of spontaneous abortion, preterm labor, retained placenta, postpartum hemorrhage, and reduced fertility [10, 12]. Subsequent pregnancies increase the chance of scar rupture, with rates ranging from 0.2% to 1.5% for lower segment scars and 4.0% to 9.0% for classic scars [12]. A recent study in Pakistan [11] found an increased risk of

infant death following cesarean births. The current study sought to examine the incidence of cesarean birth and its indications at EmOC Hospital in Bangladesh.

II. METHODOLOGY

This retrospective, cross-sectional study was conducted from January to December 2024 in the Department of Obstetrics and Gynaecology at Shaheed Ziaur Rahman Medical College Hospital in Bogura, Bangladesh. The study included a total of 130 patients. In 2024, hospitals' operating theater registers contained full information on all cesarean births conducted. The registers kept track of age, gravidity, parity, anesthesia type, physician-documented indications for cesarean delivery, maternal and neonatal outcomes, and birth weight. The data was cleaned for errors, coded, entered into a spreadsheet, and descriptively analyzed using SPSS version 17 (SPSS Inc, Chicago, IL, USA). The data is presented as simple statistics like numbers and percentages.

III. RESULT

Table-1 highlights the characteristics of women who had a cesarean delivery. The majority (67, or 51. 54%) were between the ages of 20 and 29. Approximately half of the deliveries were for a first pregnancy, and one-third for a second pregnancy. Table-2 shows a total of 71 (54.62%) cesarean deliveries were performed due to a previous cesarean, fetal distress, or prolonged/obstructed labor. All cesarean surgeries were performed under spinal anesthesia. Only one patient required a blood transfusion during the procedure at the district hospital, and no maternal deaths were reported during the subsequent hospital stay. Table-3 shows highlights neonatal outcomes. The ratio of male to female infants was 1.2. Only two (1.54%) cesarean deliveries ended in stillbirth. Obstetric problems linked to stillbirth included fetal distress (n = 1) and obstructed labor (n = 1). Only 10 (7.79%) of the 130 neonates for whom birth weight was known weighed less than 2.5 kg.

Table-1: Maternal characteristics (N=130)

Characteristics	Total (N=130)	
	No.	%
Age (years)		
≤20	20	15.38
20–29	67	51. 54
≥30	43	33.08
Pregnancy		
First	52	40.00
Second	48	36.92
Third	22	16.92
Fourth	5	3.85
Fifth or higher	3	2.31

Table -2: Indications for cesarean delivery (N=130)

Indication	Total (N=130)	
	No.	%
Previous cesarean delivery	27	20.77
Fetal distress	24	18.46
Obstructed/prolonged labor	20	15. 38
Postmaturity	14	10.77
Oligohydramnios	11	8.46
Breech presentation	8	6.15
Pre-eclampsia and eclampsia	7	5.38
Leaking/early rupture of membrane	5	3.85
Prepartum hemorrhage or placenta previa	3	2.32
Others	9	6.92
No indication recorded	2	1.54

Table-3: Neonatal characteristics (N=130)

Characteristics	Total (N=130)	
	No.	%
Sex		
Male	71	54.62
Female	59	45.38
Twin deliveries	2	1.54
Birth status		
Stillbirth	2	1.54
Live birth	128	98.46
Birth weight		
<1.5 kg	1	0.77
1.5 to <2.5 kg	10	7.69
≥2.5 kg	119	91.54

IV. DISCUSSION

In 2024, public EmOC hospitals in a district in Bangladesh had a relatively high (32.3%) cesarean delivery rate. Data from national surveys and health management information systems show a rapid increase in cesarean delivery rates in Bangladesh over the last decade [1, 2, 6]. Cesarean delivery rates vary substantially across hospitals worldwide. Studies in African nations show hospital-based cesarean rates ranging from 8.0% to 12.0% [9, 13, 14]. A research at a hospital in Calcutta, India, found a 17.5% frequency [15]. In Southeast Asian, Latin American, and Arab nations, hospital-based cesarean rates range from 12.3% to 38.0%, 15.8% to 40.0%, and 6.4% to 20.4%, respectively [16]. However, these investigations used data from tertiary-level hospitals. The UN recommends keeping the overall cesarean rate between 5.0% and 15.0% [17]. The recommended number of cesarean deliveries in EmOC facilities is unclear. A incidence of more than 20.0% in a hospital may imply needless procedures, prompting clinical audits to improve standards [17, 18]. Cesarean delivery rates at EmOC hospitals are difficult to interpret due to factors such as the proportion of deliveries in the area, complications treated, availability of services throughout the week, and providers' attitudes, skills, and experience [8]. A partograph, a useful tool for deciding on surgical interventions during obstetric difficulties, was not commonly employed in the research hospitals. To prevent overmedication during birth, hospitals should encourage and oversee the use of partographs. The high proportion of cesarean deliveries at EmOC facilities highlights the need for evidence-based standards to guide decision-making. Obstetricians can advocate for the use of partographs and evidence-based practices among service providers. Cesarean delivery is appropriate for both maternal and fetal reasons. The study found that previous cesarean birth, fetal distress, and protracted or obstructed labor were the most common indications. In a Nigerian study [13], the primary criteria were cephalopelvic disproportion (39.8%), previous cesarean with an obstetric anomaly (18.1%), and prolonged or obstructed labor (10.2%). A study in Ethiopia [9] identified cephalopelvic disproportion (44.0%), malpresentations and malpositions (21.0%), previous cesarean (16.0%), and fetal distress (6.0%) as the most common indications. Almost half of all cesarean deliveries were due to previous cesarean or fetal distress, according to the report. While trial of labor has hazards, it may be appropriate for some patients who have had a previous cesarean section [18]. A trial of labor is possible provided the facility has trained staff, fetal monitoring, and plans for fast cesarean delivery [18]. Fetal discomfort might be challenging to diagnose without additional information. An electronic monitoring system. While cesarean birth might save lives, it can also lead to difficulties for both the mother and the baby [9-11]. The study found no maternal deaths following cesarean birth, but no information was available on later morbidities. A Nigerian teaching hospital reported a maternal death rate of 0.6% following cesarean delivery [19]. Consider the clinical circumstances and potential outcomes before performing a cesarean section. Before deciding on a cesarean section, consider other treatments such as version and extraction, aided vaginal delivery, and symphysiotomy to minimize problems. Despite the fact that several women underwent cesarean section for obstructed labor, prepartum hemorrhage, or placenta previa, just one patient received a blood transfusion. Some women may have gotten a blood transfusion prior to or after surgery, but this information was not recorded in the operating theater register. There was no facility-based protocol for limiting blood transfusions during cesarean delivery.

Limitation of the study:

The current study has a few major limitations. Due to limited information in operation theater registers, important factors such as gestational age, maternal weight gain, hemoglobin level, height and weight, indications for previous cesarean, subsequent morbidity, active management for dystocia, early neonatal outcomes, and blood transfusion before or after cesarean could not be analyzed in relation to cesarean delivery and fetal outcome. The study examined physician-recorded cesarean indications. The study investigated physician-recorded indications for cesarean birth. Providers may record justifications for cesarean deliveries, making it difficult to verify their accuracy. The study may be influenced by information bias (justification bias) about indications for cesarean

section. The study's observed low birth weight rate may not be representative of all EmOC hospital deliveries or the community at large. The cesarean delivery rate may not be consistent between EmOC facilities in Bangladesh.

V. CONCLUSION & RECOMMENDATION

Finally, EmOC Hospital has a high rate of cesarean deliveries. The most common reasons for cesarean delivery were previous cesarean, fetal distress, and protracted or obstructed labor. More research is needed to identify interventions that avoid overmedication and improve rational decision-making among clinicians.

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