Findings Related to C-Section Rates: Using Cesarean Indication Classification System

Seema Tanvir¹, Manju Chhugani², Merlin Mary James³

¹M.Sc. Nursing (Obstetrics and Gynaecological Nursing) Student, ³Tutor, Rufaida College of Nursing, Jamia Hamdard, New Delhi.

²Dean, School of Nursing Sciences and Allied Health, Jamia Hamdard.

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Abstract

A retrospective study to assess the indications of cesarean section (C-section) using Modified Cesarean Indication Classification System (CICS) among health facilities in selected areas of New Delhi was conducted. C-section is one of the commonly performed surgical procedures in obstetric and is certainly one of the oldest operations in surgery. Recently, there has been a dramatic rise in the C-section rate (CSR) worldwide as primary cesarean deliveries contributed most to the overall CSR. The main aim of the study was to find out the number of C-sections and the indications based on absolute and non-absolute indications by using modified cesarean indication classification system. As the nursing perspective about the hospital birth, nurses are the major and central part for the management of labor and delivery units. Even nurses are the ones who are largely responsible for the mothers in their antenatal, intranatal and postnatal period. Nurses are the administrators and decision makers and can assess the outcome of second stage of labor, and they can assess for indications of C-section. A retrospective survey was done for collecting data. The data was collected from the medical records of mothers who had undergone C-section between January and September 2017 in four health facilities of New Delhi. The findings of the present study revealed that the average rate of C-section among four health facilities was 20.9%. Among the absolute indications, obstructed labor ranked first and maternal distress ranked the least, and among the non-absolute indications, fetal compromise ranked first and Rhesus incompatibility ranked the least. The most commonly recorded indications from across all the four health facilities were obstructed labor, severe preeclampsia/eclampsia, malpresentation, previous cesarean delivery, and fetal compromise. Regarding mortality after C-section, in health facility A, out of 1451 mothers who underwent C-section, 3.51% died after C-section; in health facility B₁, out of 1310 mothers, 3.37% died after C-section; in health facility B₂, out of 178 mothers who underwent C-section, the mortality was 3.37%; and in health facility C, out of 426 mothers, the mortality was 3.05. Regarding morbidity due to C-section, in health facility A, out of 1451 mothers who underwent C-section, 8 mothers developed morbidity due to C-section. Out of the 3365 C-sections assessed, 27 women had undergone C-section without taking consent. The study results suggested that increased standardization in indicator terminology is needed to enable meaningful monitoring and comparison of trends using an indication system. Nearly all files included in this review had a recorded indication; however, many indications were difficult to categorize because of the limited information included. Analysis of this data was also complex because of the varying terminologies across settings. Periodic reviews (quarterly/annually) of cesarean indications should be a core component of quality improvement efforts in safe motherhood. Strategies should be adopted in health facilities to charge the same amount for C-sections as natural deliveries.

Keywords: Cesarean section, Indications, Cesarean indication classification system, Absolute indication, Non-absolute indications

Corresponding Author: Ms. Seema Tanvir, Rufaida College of Nursing, Jamia Hamdard, New Delhi.

E-mail Id: seema.hamdarduni@gmail.com

Orcid Id: <https://orcid.org/0000-0002-8148-3045>

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Introduction

Being a mother is indeed an enthralling experience in every woman's life. Pregnancy and child birth sculpts a woman into a more responsible, caring and loving individual. Each pregnant woman anticipates for the outcome of pregnancy. Her outcome of pregnancy determines her extent of satisfaction of being a mother. There are two modes of childbirth – one can be vaginal and the other cesarean. The mode of delivery cannot be fixed for each woman. It may vary from one woman to another.

The availability of cesarean section (C-section) services is one of the signal functions of comprehensive emergency obstetrics and neonatal care. The surgery is needed in many cases of obstetrics and/or fetal complications in order to save the lives of the mother, the child or at times both members of the dyad. A reassessment of evidence in 2014 prompted the WHO to state in its 2015 statement on C-section rate (CSR) that “at a population level, C-section rates higher than 10% are not associated with reductions in maternal and newborn mortality rates; C-section should ideally only be undertaken when medically necessary.”¹

Among the countries for which data is available, Brazil is among the highest on this parameter with a C-section rate of 56%, as per data presented at the consultation. These escalating trends are being increasingly seen in some states of India as well. The latest NFHS-4 (2015-16) CSR data released for 17 states has rates several times higher than the population levels recommended by WHO. Out of the first 17 states, 11 have CSRs of over 20%, with Telangana having the highest total CSR at 58%.²

Data from survey sources like NFHS-4 revealed that overall, private sector conducted more C-sections as a proportion of total deliveries when compared to the public health sector, with private sector CSRs often being double or several times more than the value of public sector CSRs. The states with the highest private sector CSRs among the first 17 NFHS-4 states were West Bengal and Telangana, which have private sector CSRs of 71% and 75%, respectively, compared to their public sector CSRs of 19% and 41%; total CSRs for these states are 24% and 58%, respectively.²

In order to compare, monitor and analyze CSR within and between facilities and/or regions, it is also important to

classify cases based on obstetrics risk. WHO, after reviewing many such classification systems, proposes that countries use the Robson's criteria to classify all delivery and C-section cases into 10 mutually exclusive categories that signify variable risk of complications that may necessitate a C-section. Facilities should start using this classification as part of their case sheet records. Hence, the researcher felt the need to assess the indications of C-section among health facilities in selected areas of New Delhi by using another system for classification, which is being developed by FIGO, i.e., Cesarean Indications Classification System, which is being further modified by the researcher.

Objectives of the Study

- To find out the number of C-sections in the selected hospitals
- To assess the indications of C-section using Modified Cesarean Indication Classification System (CICS) in the selected hospitals of New Delhi
- To find out whether the consent was taken for C-section from the client

Materials and Methods

For the present study, the quantitative research approach was considered to be most appropriate to accomplish the objectives. Since the present study was aimed to find out the rate of C-section and indications of C-section in selected health facilities, the research design selected was retrospective research design. The population included mothers who had undergone C-Section. The sample for the present study included mothers who underwent C-section in the selected health facility of New Delhi from January to September 2017. Sampling technique used was total enumerative sampling technique. Reliability of the tool-structured observation checklist was checked by inter-rater reliability. The inter-rater reliability was checked and was observed by two observers. The value was computed and the reliability score was found to be $r=0.84$ which is highly reliable.

Results

The total number of deliveries was assessed in the four health facilities between January and September 2017, out of which the frequency and percentage distribution of vaginal delivery and C-sections were computed in Table 1.

Table 1. Frequency and Percentage Distribution of Vaginal Deliveries and C-Sections in Four Health Facilities between January and September 2017

Health Facility	Vaginal Delivery		C-Section		Total
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency
A*	5913	80.3	1451	19.7	7364
B ₁ **	4698	78.2	1310	21.8	6008
B ₂ **	1424	88.9	178	11.1	1604
C***	948	69.0	426	31.0	1374
Total	12,983	79.85	3365	20.9	16,350

*A – MCD hospital, **B₁ – Government hospital, **B₂ – Government hospital, ***C – Private hospital

The CSRs at these four health facilities were recorded. All facilities used paper-based record-keeping systems, with multiple registers for recording service statistics. C-section indications were recorded in operating theater registers and patient records. Nearly 3365 C-section records were reviewed; nearly all (99%) included at least one indication. Most key informants, i.e., physicians reported of being aware of various C-section indication classification systems, but no site had a formally documented system in place. While most key informants said monthly HMIS reports were submitted on the number and type of deliveries, no site had undertaken any formal review of cesarean indications prior to this study.

Findings from Patient Record File

We found a wide range of terminology for C-section indications in the patient records. In addition to the indications listed on the data collection tool, other indications were also recorded, some of which ended

up being recorded as “other, not enough information.” Providers used diverse terminology for common indications.

On the Basis of Indications

In health facility A, out of 1451 C-sections, 241 women had absolute indications with a mean of 40.16 and 1210, had non-absolute indications with a mean of 86.5. In health facility B₁, out of 1310 C-sections, 314 women had absolute indications with a mean of 52.33 and 996 had non-absolute indications with a mean of 71.14. While in health facility B₂, out of 178 C-sections, 31 women had absolute indications with a mean of 5.17 and 147 had non-absolute indications with a mean of 10.5. And in health facility C, out of 426 C-sections, 105 women had absolute indications with a mean of 17.5, and 321 had non-absolute indications with a mean of 22.93.

Overall, out of 3365 C-sections, 691 (20.53%) mothers had absolute indications and 2674 (79.47%) mothers had non-absolute indications.

Table 2. Frequency, Percentage Distribution and Rank Order of Absolute Indications of C-Section in Four Health Facilities

S. No.	Indications	Health Facility A	Health Facility B ₁	Health Facility B ₂	Health Facility C	Total	Rank Order
		Frequency	Frequency	Frequency	Frequency	Frequency	
5a	Absolute Indications						
5a.1	Obstructed labor (CPD and failed trial of labor)	120	113	14	29	276	I
5a.2	Uterine rupture	4	26	0	12	42	V
5a.3	Malpresentation (including transverse, oblique and brow)	65	117	10	47	239	II
5a.4	Major antepartum hemorrhage and grade 3 or 4 placenta previa	13	14	2	7	36	IV
5a.5	Unfavorable cervix	26	17	3	5	51	III
5a.6	Maternal distress	13	27	2	5	47	VI

$N(n_1+n_2+n_3+n_4)=3365$

Table 3. Frequency, Percentage Distribution and Rank Order of Non-Absolute Indications of C-Section in Four health facilitiesN(n₁+n₂+n₃+n₄)=3365

S. No.	Indications	Health Facility A	Health Facility B ₁	Health Facility B ₂	Health Facility C	Total	Rank Order
		Frequency	Frequency	Frequency	Frequency	Frequency	
5b	Non-absolute indications						
5b.1	Fetal compromise (including fetal distress, cord prolapsed, severe intrauterine growth retardation)	407	382	49	119	957	I
5b.2	Failure to progress in labor (prolonged labor)	130	57	15	9	211	IV
5b.3	Previous cesarean	311	382	43	115	851	II
5b.4	Severe pre-eclampsia or eclampsia	103	30	12	17	162	V
5b.5	Antepartum hemorrhage, excluding absolute indications, including abruption placentae	27	4	3	5	39	VII
5b.6	Breech presentation	144	60	17	20	241	III
5b.7	Oligohydramnios	14	4	1	7	26	X
5b.8	Psychosocial, including maternal request and precious pregnancy	14	26	3	9	52	VI
5b.9	Genitor urinary fistula or third-degree tear repair	0	0	0	0	0	XIII
5b.10	Maternal medical disease	14	9	1	1	25	XI
5b.11	Multiple Gestation	6	17	0	5	28	IX
5b.12	Rhesus incompatibility	13	4	1	3	21	XII
5b.13	Anemia	14	4	1	7	26	X
5b.14	Failed induction	13	17	1	4	35	VIII

The data presented in Tables 2 and 3 shows that among absolute indications, obstructed labor ranked one and maternal distress ranked the least, and among non-absolute indications, fetal compromise ranked number one and Rhesus incompatibility ranked the least.

Consent

In all four health facilities, out of 3365 C-sections, consents were not taken from 27 mothers.

Discussion

The 2008 CSRs at these facilities ranged from 7% (at Niger C) to 53% (in Bangladesh). For comparison, estimated national cesarean rates for similar time periods were 2% or less in Guinea, Mali, and Niger; 5% in Uganda; and 17% in Bangladesh. C-section indications were recorded in operating theater registers and patient records. A total of 2941 C-section records were reviewed; nearly all (99%)

included at least one indication. The findings are supported by the present study in which the rates of C-section at health facilities were 20.53% and each C-section case was categorized into absolute (20.53%) and non-absolute (79.47%).⁴

In the present study, the findings showed that the commonest absolute indication was obstructed labor (39.94%), in non-absolute indications fetal compromise ranked first (35.77%) and previous CS ranked II (31.81%). These findings are similar to the study done by Singh and Gupta, in which the commonest recorded indications for CS were: previous CS (29.4%), fetal distress (15.7%), cephalopelvic disproportion (10.2%), prolonged obstructed labor (8.3%) and post-term dates (7.0%).

According to NFHS-4, Telangana state has the dubious distinction of having the highest CSR in the country. Close to 58% of pregnant women undergo C-section in Telangana followed by Andhra Pradesh, which is at 40%. According to

NFHS survey in northern states such as Haryana, Madhya Pradesh, Uttarakhand and Bihar, the CSR has hovered anywhere from 21% to as low as 13%. This is not just an Indian trend, even worldwide, C-section is becoming a major public health concern due to potential risks to mothers, infants and costs. Overall, when compared to other countries India has an average CSR of 20 while Brazil has the highest at 55.6. The divide between private and public health institutions too is quite visible. In Telangana, CSR in private hospitals is 75 for 100 live births while in public health institutions it is 40.6.³ The study findings are similar to the present study findings in which CSR in four health facilities was 20.9%.

Conclusion

The total number of deliveries in all the four health facilities was 16,350 between January and September 2017, out of which 79.85% were vaginal deliveries and 20.9% C-sections. In absolute indications, obstructed labor ranked number one and maternal distress ranked the least and in non-absolute indications, fetal compromise ranked number one and Rhesus incompatibility ranked the least. Out of 3365 C-sections, consent was not taken from 27 mothers, in health facilities. The findings of the study have implications for nursing practice, nursing education, nursing administration and nursing research. The CSR is alarmingly increasing in India; the number has doubled in the past decade. At the institution level, low CSRs are often the best indicator of quality. Hence, nurses should be educated about identifying the absolute and non-absolute indications of C-section. Nurses should educate women about benefits of natural deliveries. For education in nursing, student nurses may be provided with learning experiences related to identification of indications for C-section and further educate them about documentation of the findings using an observation checklist to assess the indications. The findings of the study have implications for administration for continuing/in-service education programs for the nurses: short-term courses can be organized to update them with knowledge

on identification of indications for C-section and keep them abreast with the knowledge on newer classification system for C-section. Further studies can be done at many health facilities to generalize the findings and to find the best practices. Patient record keeping should be strengthened as it is an important component of processes for quality improvement and HMIS strengthening in settings. Periodic reviews (quarterly/annually) of cesarean indications should be a core component of quality improvement efforts in safe motherhood. Strategies should be adopted in health facilities to charge the same amount for C-sections and natural deliveries. Further, retrospective studies can be done to compare the CSRs in private and public health facilities. Research studies can be done to assess the opinion of women who have undergone C-section in terms of preference, complications, and maternal-infant bonding. Prospective studies can be done to assess the long-term complications of C-sections.

Conflict of Interest: None

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