Research Wing
PPHI SINDH

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A REPORT ON CESAREAN SECTION AUDIT

Kausar hospital, Khairpur

October 2019

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Abbreviations

APH	Antepartum hemorrhage
CS	Cesarean section
DHS	Demographic and Health Survey
KPK	Khyber Pakhtunkhwa
LMP	Last menstrual period
LUMHS	Liaquat University of Medical and Health Sciences
NVD	Normal Vaginal Delivery
RCOG	Royal College of Obstetricians and Gynecologists
US	Ultrasound
VBAC	Vaginal Birth After Cesarean section
WHO	World Health Organization

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Foreword

Rising cesarean rate in rural area of Sindh has become a concern among public health expert in Pakistan. PPHI Sindh commissioned the Cesarean Section Audit to accurately determine the current cesarean section rate and variation of cesarean section indications. The audit also enabled us to identify the gaps in documentation of patients' clinical information within the medical record.

The project has been an important initiative successfully conducted by the Research Wing, PPHI Sindh in collaboration with medical experts from Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro.

This audit highlight upon some important issues that would enable us in developing future guidelines on cesarean section practice and proper documentation of patients' medical record. It is also anticipated that the audit will be re-conducted in order to see an improvement over the time after implementation of these guidelines. These findings have been presented to the executive management and a member from Board of Directors of PPHI Sindh. They showed their positive interest in conducting in-depth analysis of the data in order to improve cesarean section practices.

Dr. Zamir Hussain Suhag   7th October 2019
Director
Research Wing
PPHI Sindh

Introduction

Background:

Cesarean section (CS) is a surgical intervention to conduct a delivery where spontaneous or assisted vaginal delivery is not recommended. A CS is performed for maternal indications, fetal indications, or both. Major indications for cesarean delivery are previous cesarean section, fetal distress, breech presentation, and dystocia.[1] In many instances, CS are also performed based on maternal preference.[2] This is a lifesaving procedure both for mothers and her fetus, however higher rates of CS are not associated with any additional reduction in maternal or perinatal mortality and can lead to short to long term complications[3], such as; infection, thromboembolism, hemorrhage, incidental surgical injuries, adhesion formation and infertility. Despite there is a common agreement that CS should be advised only for maternal or fetal indicated reasons, global CS rates at the population level are rising[4 &5]. Contributing factors leading to low threshold in opting for CS are commonly related to the resources available at healthcare facilities, availability of specialists, physician's convenience, patient overload, and population characteristics.

Based on recent publications[4-6], data shows that 106 (out of 169) countries have CS rates above 10% to 15% of births, that is ought to be most appropriate by WHO[7]. Within these countries, CS rates vary widely as high as 58.1% in Dominican Republic, followed by Brazil and Egypt (55.5%), and Turkey (53%) to as low as 0.6% in South Sudan, including other developing countries. In developing countries, or low- and middle-income countries, CS rates are comparatively lower than the rates in developed countries.[4] This is presumably due to the low levels of access to CS and extremely poor access to general surgical care.[8] In the United States of America, CS rate hiked from 26% to 36.5% between 2003 and 2009; 50.0% of this increase was attributed to the higher rate of primary caesarean delivery[9].

In Pakistan, the proportion of births delivered by CS has been rising steadily during the past three decades (figure 1). Despite the high prevalence, large urban – rural disparity persists in all regions of Pakistan (figure 2). Notably, Sindh province showed striking inequality between urban and rural areas (34.1% vs. 13.9%), possibly due to the skewed distribution of secondary and tertiary care hospitals, heavy patient load, accessibility of healthcare services and availability of specialists.

According to the World Health Organization (WHO), CS rate for a given population should not be more than 15%[7 & 10]. Not too long ago, WHO adapted and recommended using Robson Classification system as a tool to assess, monitor and compare CS rates within healthcare facilities over time, and between facilities[11]. This CS rate within each stratum can be analyzed through an in-depth audit to produce the measures to minimize CS rate.
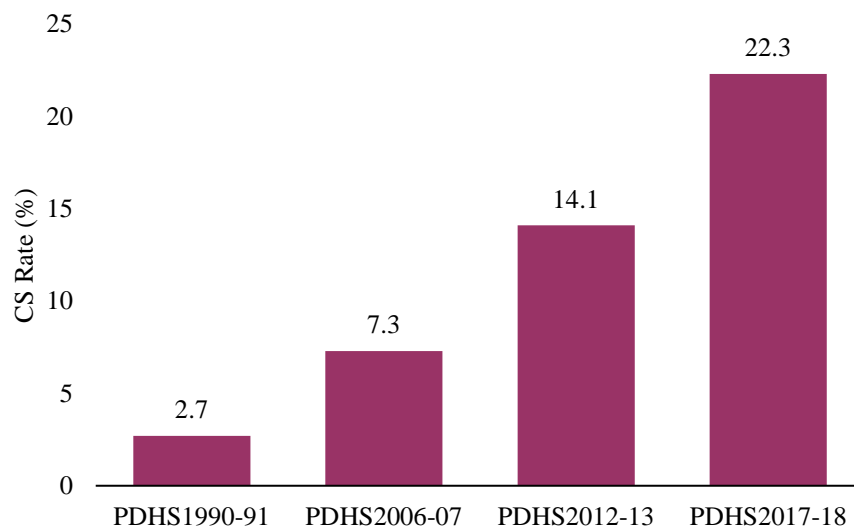
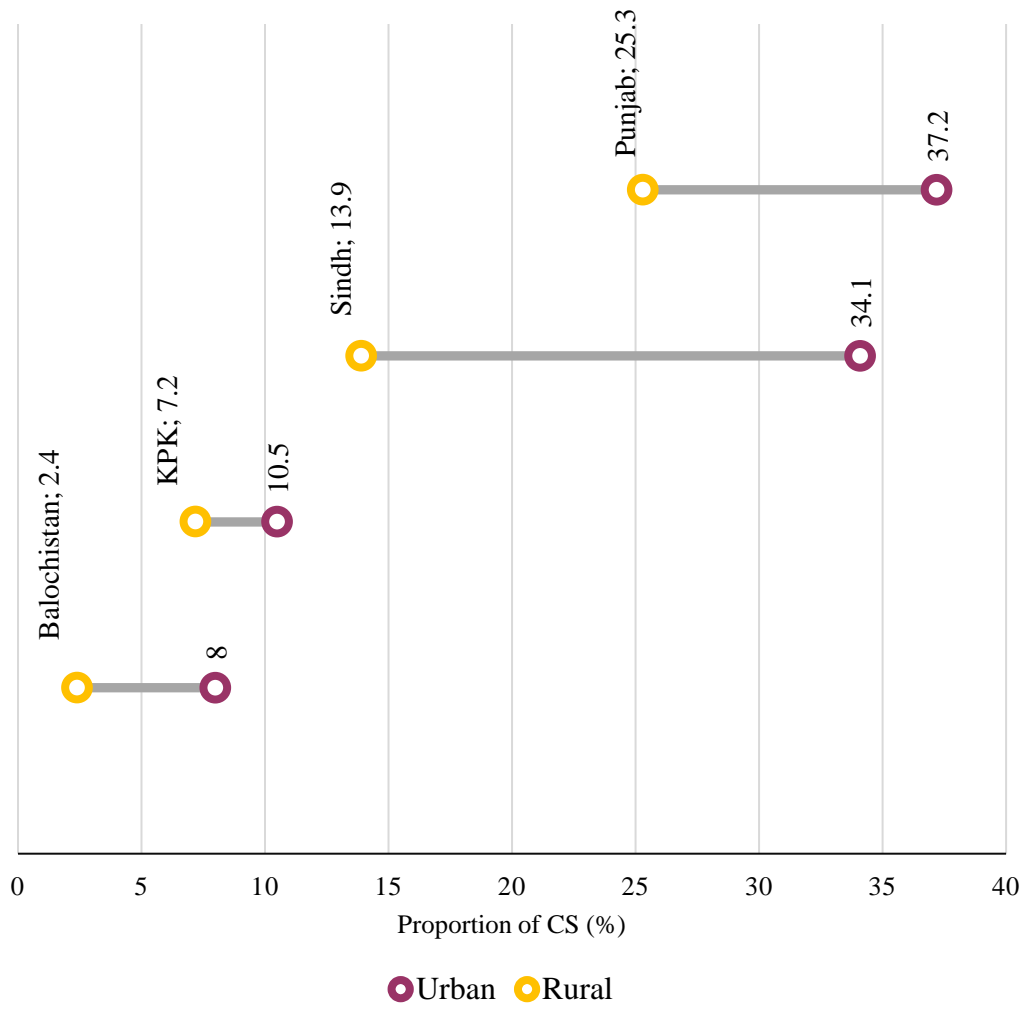Figure 1: CS Rate in Pakistan from 1991 - 2018

Figure 2: Urban/Rural disparity in proportions of CS across four provinces in Pakistan
Data: Pakistan DHS 2017-18

The Caesarean Section Audit

PPHI Sindh commissioned the CS audit at Kausar Hospital, Khairpur district as one of the pilot CS audits. Kausar Hospital is a comprehensive maternal, neonatal and child healthcare Center which is providing all components of secondary care health facility. This 40-bed hospital has benefited the community by providing free of cost access to quality health services. Total number of deliveries conducted in year 2017 is nearly 4,000, out of which one half were delivered via CS. The average number of CS conducted at Kausar Hospital is nearly 10 per day, which is alarmingly high.

Aim & Objectives:

The overarching aim of this audit was to produce high-quality evidence on the labor management practices and documentation practices. Based on this, objectives of the audit are:

- To identify indications (absolute and relative) and frequency of caesarean sections conducted in Kausar Hospital Khairpur

- To identify gaps in healthcare service provision

The expected outcome outlined in designing of the audit was to develop strategies for improvement in the care of pregnant women and newborns. We hope that a wider set of measures will allow maternity services to compare their antenatal, intrapartum and postnatal care patterns, and prompt services to reflect on variation, acting if appropriate, even in the absence of national standards. This may contribute to the future development of appropriate standards and 'acceptable ranges'.

Methodology:

The analysis in this report is based on the retrospective analysis of the data from CS conducted at Kausar Hospital, Khairpur between September to November, 2018. Data on caesarean section conducted during the study period were extracted by a senior gynecologist from Liaquat university of Medical and Health Sciences (LUMHS). The extracted data was recorded on a standard questionnaire adapted from Royal College of Obstetricians and Gynaecologist (RCOG)[12]. Some of the variables included in the proforma were demographic characteristics of patients, indication for CS, whether the CS was an emergency or elective, obstetric, delivery and labor history, newborn birth weight, sex, assessment of APGAR score, and maternal routine investigations (see appendix A).

A total of 551 CS records were extracted and reviewed critically by the auditor who later categorized the urgency of CS, whether the CS was indicated based on the information available in the medical record and whether auditor agreed with the decision of CS. In case of disagreement, auditor was asked to write her remarks for disagreement, which were later reviewed by principal investigator of the CS audit.

Before starting the analysis, the information in the data was cleaned. Specifically, the open-ended text within the 'others' categories. In order to analyze the data, CS rate was calculated by dividing all CS conducted by the total number of deliveries conducted in the hospital. All CS cases were then classified whether the decision of CS was based on absolute or relative indication of CS. For other categorical variables, frequency (in terms of percentages) were calculated and presented in tabular and graphical format.

Results:

Main outcome of the CS Audit:

Over the 3-months study period (i.e. September – November, 2018), there were 1,084 deliveries conducted out of which 697 were caesarean section (CS rate: 64.3%) and 387 mothers had vaginal deliveries (35.7%). During this course, CS rate slightly increased from nearly 62% to 66% between September and October, thereafter reducing to 65.5% in the month of November. A longer period of study would be required to infer meaningful trend (figure 3).
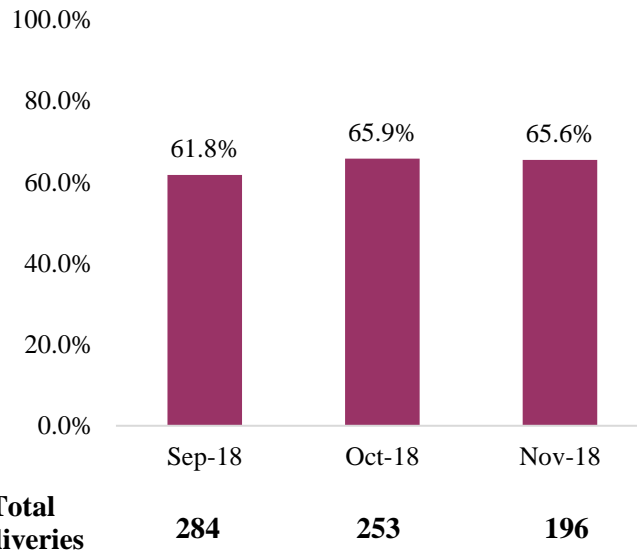
Figure 3: Month-wise CS Rate

Total Deliveries	Sep-18	Oct-18	Nov-18
	284	253	196

Of 551 CS records, 413 (74.9%) were emergency CS, 93 (16.9%) CS were elective and for 45 (8.2%) CS medical record did not document whether the case was conducted as an emergency or elective procedure. Based on the data presented within CS records, only 337 (61.2%) of all CS were clinically indicated (figure 4). Among those CS which were performed based on a clinical indication, 205 (60.8%) were shown absolute indications while 132 (39.2%) of CS had relative indications (figure 5). As shown in the table 1, majority of CS were performed on mothers who previously had two or more than two CS, followed by fetal compromised and breech presentation.

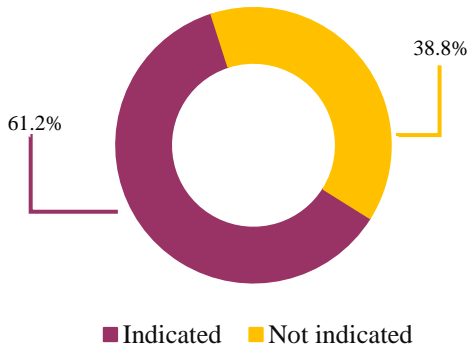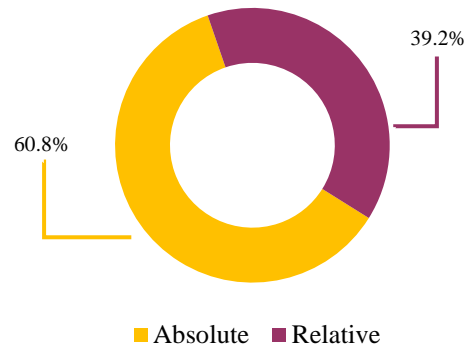Figure 4: Proportion of indicated & non-indicated CS

61.2% Indicated 38.8% Not indicated

Figure 5: Proportion of absolute and relative indication of CS

60.8% Absolute 39.2% Relative

Table 1: Absolute and Relative Indications of CS

Absolute Indication	n (%)	Relative Indication	n (%)
Cord prolapse	1 (0.5)	Placental abruption	1 (0.8)
Maternal disease	3 (1.5)	Maternal request	6 (4.5)
APH	2 (0.9)	Failure to progress	17 (12.9)
Chorioamnionitis	3 (1.5)	Breech presentation	31 (23.5)
Uterine rupture	3 (1.5)	Presumed fetal compromise	77 (58.3)
Placenta previa	4 (1.9)		
Pre-eclampsia/ eclampsia	7 (3.4)		
Malpresentation	15 (7.3)		
Previous 2 or more than 2 CS	167 (81.5)		

Figure 6 shows that most of the CS performed were of emergency type. It is worth observing that CS with absolute indications were conducted as emergency CS, pointing out to the possibility of high referral rate *(not shown in the data)*.
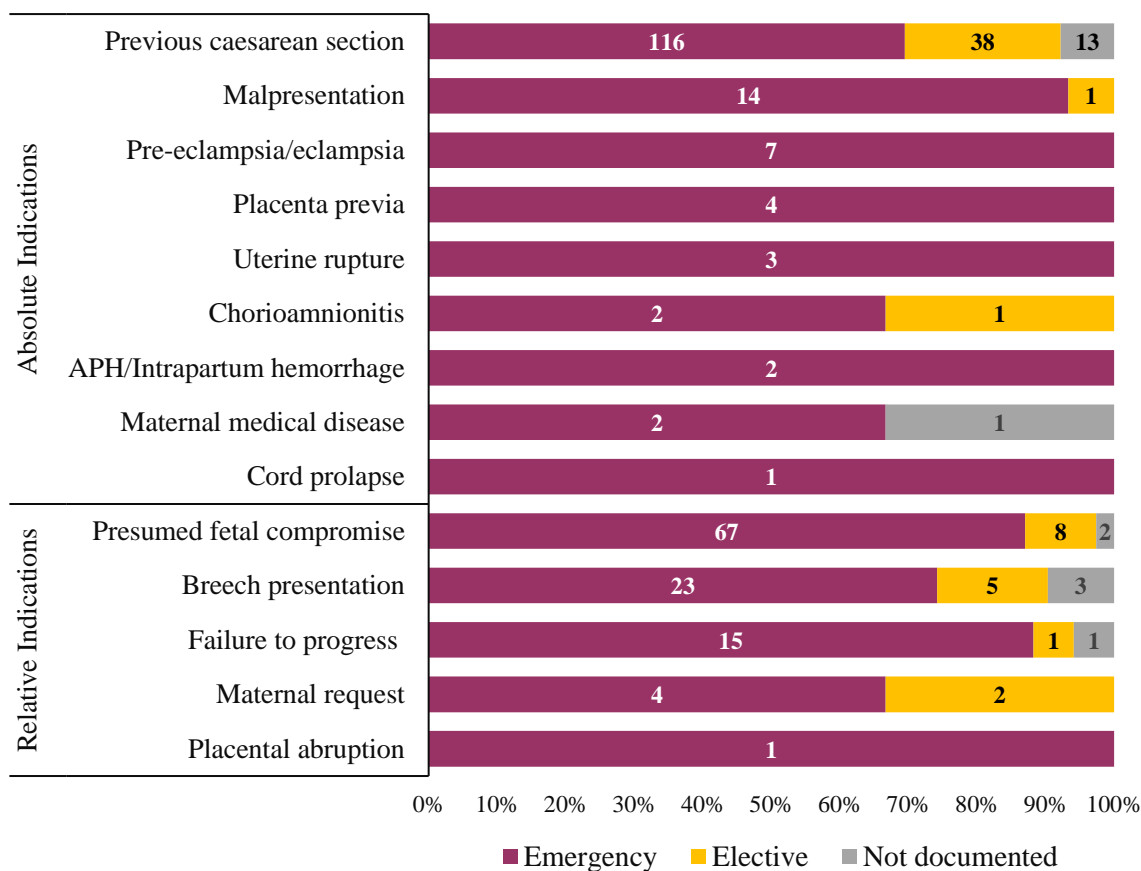
Figure 6: Type of CS according to the absolute and relative indications

Auditor's agreement:

We asked the auditor to record her remarks on the decision of CS conducted based on the available data in patient's medical record. Auditor agreed in 82% of CS conducted under the absolute and relative indications. Most of the disagreement came under the indications of *'previous CS'*, *'presumed fetal compromise'*, and *'failure to progress'* (figure 7). The auditor reported followings were the key reasons for disagreement:

- Patient should have been given trial of vaginal delivery
- No indication of CS (only based on previous one CS)
- Insufficient information available in medical record to justify indication
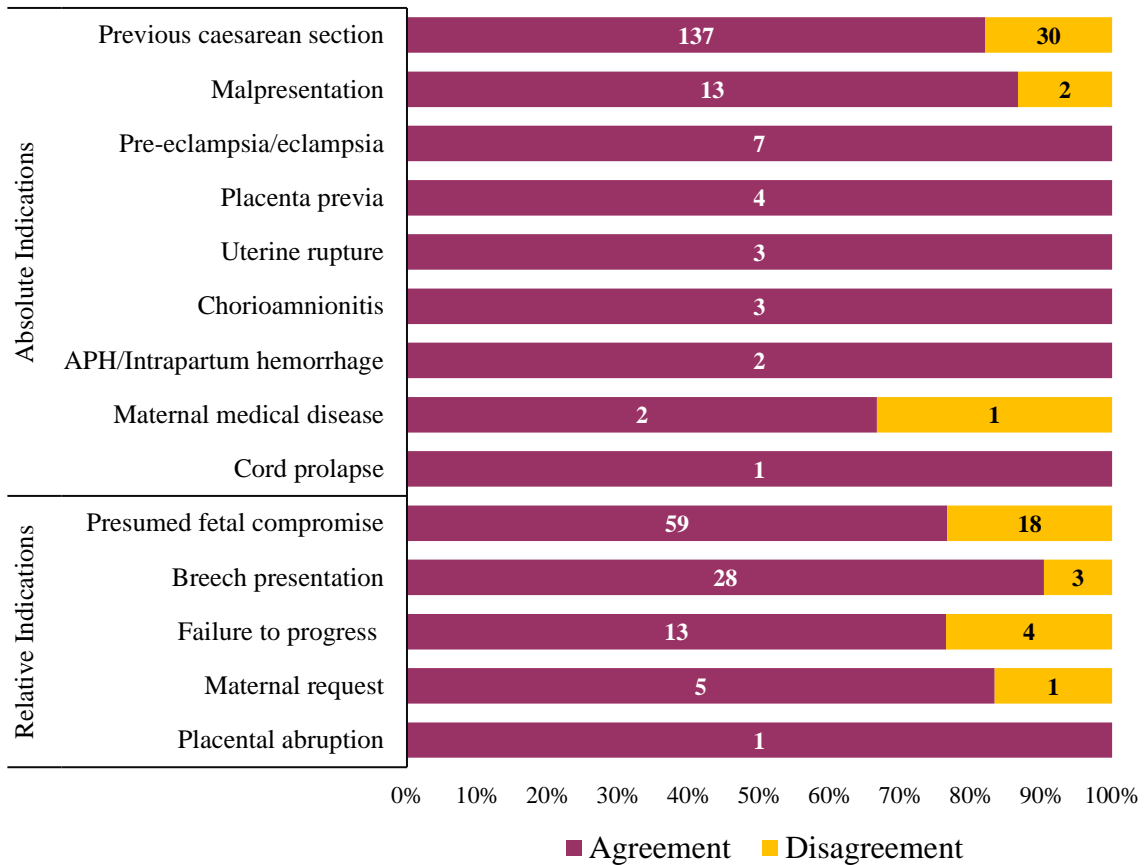
Figure 7: Auditor's agreement according to the absolute and relative indications

Demographic profile:

Table 2 shows the demographic information of the study population. Mean age of mother who went under CS was 29.4 ± 10.4 years. Majority of the women in the study population were married but nearly for 15% of the data their marital status was not mentioned in their medical record. Participants' gestational age ranged from 24 to 41 weeks with the mean of 37.6 and standard deviation of 1.62 weeks. Nearly 22% of the medical record did not revealed mothers' gestational age. The trend of poor documentation is evident from the fact that only for less than 15% of patient have been reported to document the gestational age (i.e. LMP and US), rest of the 85% of medical record have not documented the method of estimating gestational age.

Table 2: Demographic profile of mothers who underwent CS between September –
November, 2018

Demographic profile	Mean ± SD
Mother's age (years)	29.4 ± 10.4
Gestational age (weeks)	37.6 ± 1.62
	n (%)
Marital status	
Married	471 (85.5)
Widowed	1 (0.2)
Not documented	79 (14.3)
Educational status	
Uneducated	453 (82.2)
Primary	9 (1.6)
Secondary	7 (1.3)
Tertiary	32 (6.0)
Not documented	50 (9.0)
Occupational status	
Housewife	505 (91.7)
Not documented	46 (8.3)

Obstetric and Labor details:

More than one half (54.4%) of the mother who underwent CS during the three-month period
had previous CS. Among them, 48.0% had two or more than two previous CS, resulting it as
the most common indication for CS. Trial of vaginal birth after caesarean section (VBAC)
is one way to reduce the CS rate. For the remaining 46.0% of mothers who have had one
previous CS, only one woman was given trial of vaginal delivery. Out of 17 cases of failure
to progress, only one mother received pre-labor oxytocin and five mothers were given
prostaglandin, but for majority of cases their medical record failed to document the complete
information (88.2% and 70.6%, respectively). The most common type of anesthesia was
spinal anesthesia given in 516 mothers (93.6%) followed by general anesthesia given in only
4 cases (0.7%). We found that the data compiled in the medical record is grossly incomplete.
For example, data was not recorded for obstetric and labor details such as whether mother

was booked (78.2%), whether mother was referred from other facility (69.2%), onset of labor (76%), and status of ruptured membrane prior caesarean section (74.6%) (table 3).

Table 3: Obstetric and labor details of mothers who underwent CS between September – November, 2018

Obstetric and Labor details	n (%)
Booking status of mother	
Booked	38 (6.9)
Un-booked	82 (14.9)
Not documented	431 (78.2)
Mother was referred	
Yes	101 (18.3)
No	69 (12.5)
Not documented	381 (69.2)
Spontaneous onset of labor	
Yes	25 (4.5)
No	107 (19.4)
Not documented	419 (76.0)
Rupture of membrane (ROM) prior to CS	
Yes	17 (3.1)
No	123 (22.3)
Not documented	411 (74.6)
Previous CS	
Yes	300 (54.4)
No	107 (19.4)
Not documented	144 (26.1)

Obstetric and Labor details *(cont.)*	n (%)
Number of previous CS *(n = 300)*	
One	138 (46.0)
Two	100 (33.3)
Three	43 (14.3)
Four	1 (0.3)
Not documented	18 (6.0)
Trial of vaginal delivery *(n = 138)*	
Offered	1 (0.7)
Not offered	41 (29.7)
Not documented	96 (69.6)
Oxytocin administered *(n = 17)*	
Yes	1 (5.9)
No	1 (5.9)
Not documented	15 (88.2)
Prostaglandin administered *(n = 17)*	
Yes	5 (29.4)
No	0 (0.0)
Not documented	12 (70.6)
Type of anesthesia administered	
Spinal	516 (93.6)
General anesthesia	4 (0.7)
Epidural	1 (0.2)
Not documented	30 (5.5)

Delivery details:

Table 4 shows the details of delivery status. Only 5 mothers had twin pregnancies (0.9%) whereas 493 (89.5%) mothers had singleton deliveries. For remaining 9.6%, medical record did not have complete information whether mother delivered singleton or multiple. Four (0.7%) still births were recorded during the study period, whereas for 18.9% of CS status of live birth was not mention. The mean birth weight of newborn was recorded to be 2.87 ±

2.23 kgs. For 30% of patient's medical record did not mention the birth weight and likewise nearly 94% did not mention the record of APGAR score.

Table 4: Delivery details of mothers who underwent CS between September – November, 2018

Delivery details	Mean ± SD
Mean birth weight	2.87 ± 2.23
	n (%)
Birth weight not document	166 (30.1)
Delivery outcome	
Live birth	443 (80.4)
Still birth	4 (0.7)
Not documented	104 (18.9)
Newborn's gender	
Male	257 (46.6)
Female	251 (45.6)
Not documented	43 (7.8)
Number of babies born in this pregnancy	
Singleton	25 (4.5)
Multiple	107 (19.4)
Not documented	419 (76.0)
Prophylactic antibiotics administered	
Yes	286 (51.9)
No	81 (14.7)
Not documented	184 (33.4)
APGAR score recorded	
At 1st minute	24 (4.3)
At 5th minute	10 (1.8)
Not documented	517 (93.8)

Maternal investigation:

Figure 8 (a, b, c, & d) shows the maternal investigations done. It is evident that medical record keeping is highly unacceptable, causing any meaningful data analysis. This incompleteness of patients' record could hamper decision-making process by consulting surgeon and anesthesiologist in order to conduct CS procedure.
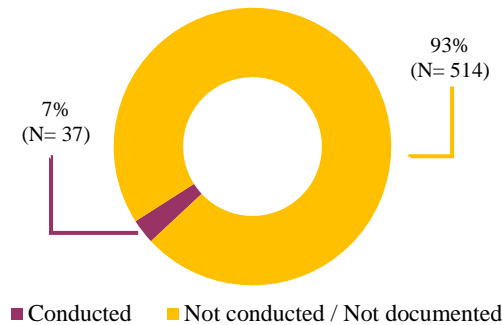

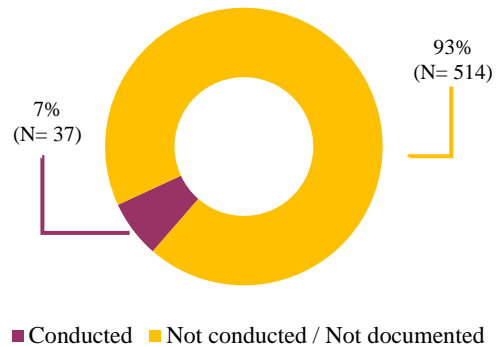Figure 9a: Proportion of medical record of ultrasound

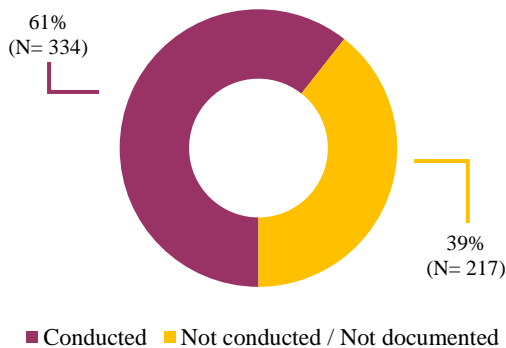Figure 9b: Proportion of medical record of Urine DR

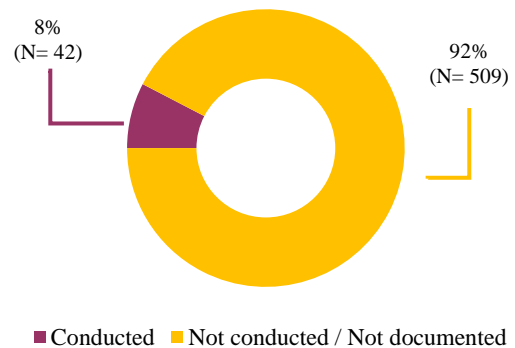Figure 9c: Proportion of medical record of Hb test

Figure 9d: Proportion of medical record of Random blood glucose

Recommendations:

It is worth to note that the audit was performed not to judge individual clinical practices but to gather essential data to produce an evidence-based action plan. Even though this was a pilot audit, findings show that unjustified CS exist at alarming rates and majority can be averted by rigorous training of healthcare providers to authenticate the need of CS, and emphasizing normal vaginal deliveries (NVDs) and the use of assisted deliveries. Finally, results from this audit can be used to design interventions for healthcare workers to improve their clinical practice by following strategies:

- Implementing CS guidelines and protocols

- Strengthening ANC that would provide better management of high-risk pregnancy and reduce emergency CS.

- Better maternal and fetal monitoring by rigorous training for partograph.

- For secondary and tertiary level HFs where trained medical staff (i.e. gynecologist, anesthesiologist, medical doctors and pediatricians) are available, such as Kausar Hospital (Khairpur), it is recommended to monitor fetal wellbeing after delivery by performing and recording APGAR score.

- Implementing standard proforma to improve reporting/documentation mechanism.

- Attending gynecologist & obstetrician should conduct effective counselling to the pregnant women and family about the benefit of NVD over cesarean section and to avoid related immediate and long-term complications of CS, due to maternal request especially in booked patients and women who visited in emergency or referred but have no immediate threat to mother and the fetus.

- Introducing efforts in reducing primary CS that would be more effective to halt growing CS rate.

- Another strategy to circumvent the high rate is to set local threshold for acceptable CS rate.

- Hospital management should establish strong system to ensure completeness of the medical record.

- CS audit commission should re-audit the CS in this healthcare facility as well as other facilities where CS are performed.

- To monitor CS according to the WHO recommendation, future CS audits should implement Robson Classification.

- The primary objective of re-audit should be to utilize audit data in more constructive, participatory and resulting in concrete action plan.

- Effective and regular (i.e. quarterly) audits of labor management can reduce unnecessary CS.

- A sub-sample of cases shall be selected for qualitative study of both client and healthcare provider to explore veracity of CS against their medical records.

Conclusion:

Overall, this audit provides a useful tool and if implemented as a routine audit system, it can improve decision-making process. This audit shows a substantial number of CS that are being conducted without clinical justification. Majority of CS that were conducted at Kausar Hospital were of emergency CS which further needs to be scrutinize to validate the need of surgical and medical urgency of CS. The three most common indications for CS in this audit were having two or more than two previous CS, fetal compromise and breech presentation. Improving quality of care during ANC can reduce these complications which in turn can reduce the necessity of CS. It is believed that a well-informed mother would be keen to undergo VBAC compared to elective CS if she was provided with an effective counselling towards the benefits of NVD. Furthermore, the audit found large amount of gap in proper documentation of medical record which needs immediate action plan.

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Appendix A: Data Collection Tool

Form Number: -------------

Caesarean Section Audit for Kausar Hospital Khairpur

Data Collection Tool B: For all caesarean sections conducted

Data will be extracted from the patient's file

Question/ Filter		Skipping Pattern
1. Form filled in by: (*Name*)	2. Date form filled in: _____ DD/MM/YYYY	
A. MOTHER'S DETAIL		
3. File/ patient ID number:		
4. Patient's name:	5. Husband/ father's name:	
6. Patient's home address:		
7. Phone number (landline):	8. Phone number (mobile):	
9. Mother's Date of birth: _____ DD/MM/YYYY 9a. If date is not known, write down mother's age in years: _____	10. Date of delivery: _____ DD/MM/YYYY	
11. Education:	12. Occupation:	
1. None ☐	1. None/ unemployed ☐	
2. Pre-Primary ☐	2. Unskilled ☐	
3. Primary ☐	3. Skilled ☐	
4. Middle ☐	4. Agriculture ☐	
5. Secondary ☐	5. Professional ☐	
6. Intermediate ☐	6. Student ☐	
7. Graduation ☐	7. Housewife ☐	
8. Others: _____	8. Others: _____	

13. Marital status:
    1.   Married   ☐
	14. Height (last recorded): ….. cms
	    ☐ Not known (999)	

2. Separated ☐ 3. Widowed ☐ 4. Not known ☐	15. Weight (last recorded): ..... kgs ☐ Not known (999)	
B. OBSTETRIC DETAILS		
16. Estimated gestation: [weeks - days] Week ------------	17. Based on: 1. LMP ☐ 2. USS ☐ 3. Not Mentioned ☐ Others: _____	
18. Number of pregnancies, prior to this pregnancy, of ≥ 24 weeks ------------ If none, please write 0 99. Not Known ☐		
19. Number of pregnancies, prior to this pregnancy, of < 24 weeks ------------ If none, please write 0 99 Not Known ☐		
20. Number of previous stillbirths ≥ 24 weeks Not known: ------------ If none, please write 0 99. Not Known ☐		
21. Was the mother booked to have her baby in this hospital?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	
22. Was the mother transferred to this hospital with baby in utero?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	
C. DECISION MAKING		
23. Which of the following statements most accurately describes the 'urgency' of this caesarean section?		
1. Immediate threat to the life of the woman or fetus ☐	2. Maternal or fetal compromise which was not immediately life-threatening ☐	
3. No maternal or fetal compromise but needs early delivery ☐	4. Delivery timed to suit the woman and staff ☐	
Others (**Note : Please write clearly in capital letters in Bullets form**) • • • •		
24. Who was the most senior obstetrician involved in the decision to perform the caesarean section?		
1. Consultant ☐	2. FMO (Training completed) ☐	

Others (**Note : Please write clearly in capital letters in Bullets form**) • • • • •		
25. Was the caesarean section performed for a singleton breech?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	If 'No' or 'Unknown' ➔29
26. Was External cephalic version (ECV) offered during this pregnancy?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	
27. Was ECV attempted during this pregnancy?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	
28. Was the mother offered a trial of vaginal breech delivery?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	
29. Has the mother had a previous caesarean section?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	If 'No' or 'Unknown' ➔31
30. If yes, how many caesarean sections?	_____ (numbers)	
31. Who was the most senior obstetrician/gynecologist present at the delivery (in theatre)?		
1. Consultant ☐	2. FMO (Training completed) ☐	
Others: (**Note : Please write clearly in capital letters in Bullets form**) • • • • •		
32. Who was the most senior anesthetist present at the caesarean section?		
Consultant Full Time Anesthetist ☐	Part Time Anesthetist ☐	
Others: (**Note : Please write clearly in capital letters in Bullets form**) • • • •		
33. Did any of the following influence the decision to perform a caesarean section?		
Fetal reasons		
1. Breech presentation	1. Yes ☐ 2.No ☐	
2. Malpresentation/Unstable lie	1. Yes ☐ 2.No ☐	
3. Multiple pregnancy	1. Yes ☐ 2.No ☐	

4. Presumed fetal compromise/IUGR/Abnormal CTG	1. Yes ☐ 2.No ☐	
5. Cord prolapse	1. Yes ☐ 2.No ☐	
6. Chorioamnionitis	1. Yes ☐ 2.No ☐	
7. Others: (**Note : Please write clearly in capital letters in Bullets form**) • • • • •		
Maternal reasons		
1. Placenta previa, actively bleeding	1. Yes ☐ 2.No ☐	
2. Placenta previa, not actively bleeding	1. Yes ☐ 2.No ☐	
3. APH/Intrapartum hemorrhage	1. Yes ☐ 2.No ☐	
4. Placental abruption	1. Yes ☐ 2.No ☐	
5. Pre-eclampsia/eclampsia/HELLP	1. Yes ☐ 2.No ☐	
6. Maternal medical disease	1. Yes ☐ 2.No ☐	
7. Failure to progress (induction/in labor)	1. Yes ☐ 2.No ☐	
8. Previous caesarean section	1. Yes ☐ 2.No ☐	
9. Uterine rupture	1. Yes ☐ 2.No ☐	
10. Maternal request	1. Yes ☐ 2.No ☐	
11. Previous poor obstetric outcome	1. Yes ☐ 2.No ☐	
12. Previous physically or emotionally traumatic vaginal delivery	1. Yes ☐ 2.No ☐	
13. Previous infertility	1. Yes ☐ 2.No ☐	
14. Other: (**Note : Please write clearly in capital letters in Bullets form**) • • •		
34. In the question # 33, which *single* factor was the most influential? (**Note : Please write clearly in capital letters in Bullets form**) • • •		
35. If there were *no* maternal medical, obstetric or fetal complications, was the only reason to perform a caesarean section an unprompted maternal request	1. Yes ☐ 2. No ☐ 3. Unknown ☐ 4. N/A☐	

D. LABOR		
36. Was the labor onset spontaneous?	1. Yes ☐ 2. No ☐ 3. Unknown ☐ 4. N/A☐	
37. Was pre-labor prostaglandin used?	1. Yes ☐ 2. No ☐ 3. Unknown ☐ 4. N/A☐	If 'No', 'Unknown' or 'N/A' ➔39
38. If yes, what was the date and time of the first dose?	Date: _____ DD/MM/YYYY Time: _____ (HH:MM)	
39. Were there ruptured membranes (ROM) prior to the caesarean section?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	If 'No', 'Unknown' or 'N/A' ➔42
40. If yes, was ROM	1. Spontaneous ☐ 2. Artificial ☐ 3. Unknown ☐	
41. Date and time of rupture of membranes	Date: _____ DD/MM/YYYY Time: _____ (HH:MM)	
42. Was oxytocin used before delivery?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	If 'No', 'Unknown' or 'N/A' ➔44
43. If yes, when was the oxytocin given?	Date: _____ DD/MM/YYYY Time: _____ (HH:MM)	
NOTE: If the woman was *never* in the labor, please go to next section (i.e. DELIVERY, question # 48)		
44. Date and time of onset of first stage of labor	Date: _____ DD/MM/YYYY Time: _____ (HH:MM)	
45. Date and time of onset of second stage of labor	Date: _____ DD/MM/YYYY Time: _____ (HH:MM)	
46. Was any analgesia used in labor?	1. Yes ☐ 2. No ☐ 3. Unknown ☐	If 'No', 'Unknown' or 'N/A' ➔48
47. If yes, what methods were used?		
1. Epidural	1. Yes ☐ 2. No ☐ 3. Unknown ☐	
2. Combined spinal-epidural	1. Yes ☐ 2. No ☐ 3. Unknown ☐	

Others: **(Note : Please write clearly in capital letters in Bullets form)**
    ●
    ●
    ●		

E. DELIVERY			
48. Was the caesarian section an:	1. Emergency ☐ 2. Elective ☐		If 'elective', ➜50
49. If it was an emergency, what was the date and time of the decision to carry out the caesarean section?	Date: _____ DD/MM/YYYY Time: _____ (HH:MM)		
50. What cervical dilatation was reached prior to the caesarean section?	. . . . .☐cms	99. Not assessed ☐	
51. What type of anesthesia was used for the caesarean section?	1. General Anesthetic ☐ 2. Epidural ☐ 3. Spinal ☐ 4. Combined spinal-epidural ☐		
52. Was acid prophylaxis used for the caesarean section?	1. Yes ☐ 2. No ☐ 3. Unknown ☐		
53. Number of babies born in this pregnancy?	1. Singleton ☐ 2. Twins ☐ 3. Triplets ☐ 4. Quadruplets + ☐		
54. If multiple, was the 1st baby delivered vaginally?	1. Yes ☐ 2. No ☐ 3. Unknown ☐		
55. If multiple, was the 2nd baby delivered by caesarean section?	1. Yes ☐ 2. No ☐ 3. Unknown ☐		
56. Were prophylactic antibiotics given?	1. Yes ☐ 2. No ☐		
57. What was the estimated blood loss?	1. ≤ 500 ml ☐ 2. 500 – 1000 ml ☐ 3. > 1000 ml ☐ 9. Not Estimated ☐		
58. Does this mother require 'special' care post-caesarean section which is additional to routine post-op care?	1. Yes ☐ 2. No ☐ 3. N/A ☐		If 'No' or 'N/A' ➜60
59. If yes, where will this mother go to receive the additional post-op care?	1. Special ward ☐ 2. Referred ☐ 3. Don't know ☐		
	Baby 1	**Baby 2**	
60. Date and time of delivery *(If more than 2 babies delivered, use extra sheet to complete this section)*	Date: _____ DD/MM/YYYY	Date: _____ DD/MM/YYYY Time: _____ (HH:MM)	

		Time: _____ (HH:MM)		
61. Meconium stained liquor present		1. Yes ☐ 2. No ☐ 3. Unknown ☐		
62. Presentation just prior to delivery		1. Cephalic☐ 2. Breech ☐ 3. Transverse/Oblique☐		
63. Other methods of delivery attempted		1. None ☐ 2. Breech ☐ 3. Forceps ☐		
64. Delivery outcome		1. Livebirth ☐ 2. Stillbirth ☐		
65. Sex		1. Male ☐ 2. Female ☐ 3. Unknown ☐		
66. Birth weight		….. kg	….. kg	
67. APGAR score		1. 1 minute ☐ 2. 5 minutes ☐ 3. Not done ☐		
68. Transfer to nursery		1. Yes 2. No		
F. MATERNAL INVESTIGATIONS *Note: Record any Investigation done during pregnancy or during current admission*				
69. Ultrasound:	1. Done ☐ 2. Not done ☐	If done, record summary findings: **(Note : Please write clearly in capital letters in Bullets form)** • • • •		
70. Urine DR:	1. Done☐ 2.Not done☐	If done, report was: 1. Normal ☐ 2. Abnormal ☐		
71. Hb level:	1. Done☐ 2.Not done☐	Result: ………..mg/dl		
72. Fasting Blood Sugar or GTT:	1. Done☐ 2.Not done☐	Result: ……….mg/dl		
Any other investigation: please write it down recommendations (**Note : Please write clearly in capital letters in Bullets form)** • • • • • • •				

73. Indication made at the time of caesarian section:	**(Note: Please write clearly in capital letters in Bullets form)** • • • •	

G. Auditor's Remarks

74. Based on this audit, do you agree with the decision of caesarian section?	1. Yes ☐ 2. No ☐

If no, please provide details and recommendations **(Note: Please write clearly in capital letters in Bullets form)**

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