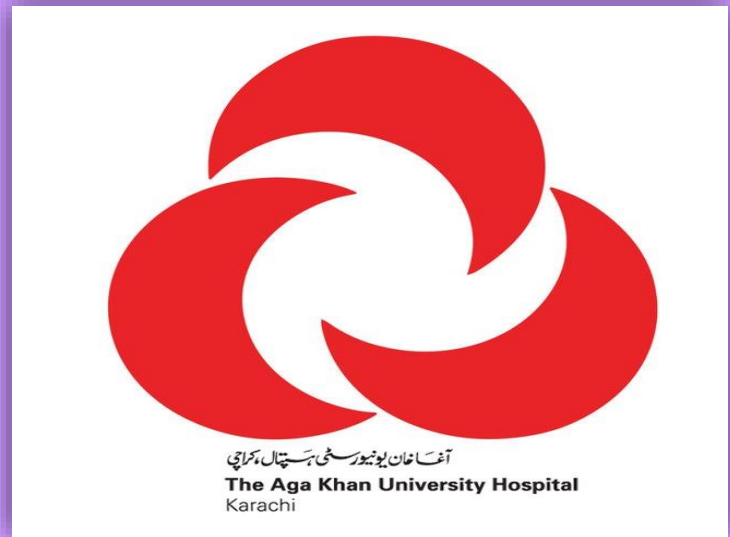




Delays in Emergency Cesarean Section and its Associated Feto-maternal Outcomes in Secondary Care Hospital.

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Introduction

Cesarean section is the most common surgical procedure done and can improve neonatal and maternal outcomes if done appropriately and on time. Royal College of Obstetrics and Gynecology (RCOG) classifies cesarean sections into four categories according to the need for the urgency of delivery of the fetus, i.e., category 1 (within 30 minutes) when there is an immediate threat to the life of the fetus or mother, category 2 (within 75 minutes) when there is no immediate threat and category 3 when the cesarean section was done for early delivery due to other reasons. Women with category 4 cesarean sections include elective cases. The decision to delivery Interval (DDI) is an important predictor for feto-maternal outcomes. Prolonged DDI may increase the risk of maternal and neonatal complications with devastating early and long-term effects (1). These delays could occur due to patient or theater preparation time, non-availability of an anesthetist or obstetrician on the floor, or due prolonged surgical time. The increased burden on healthcare facilities in developing countries with limited resources is a contributing factor to the increase in the DDI (2).

Objective

To find out major factors that result in DDI of emergency cesarean sections in a secondary care hospital and its effects on feto-maternal outcomes.

Methodology

Design: Cross-sectional observational study.

Population Setting: Aga Khan Hospital for Women-Karimabad (AKHW-K), Pakistan.

Duration: This study was conducted from June-December, 2022 over a period of six months.

Eligibility Criteria: All pregnant women with singleton pregnancies and decided for emergency cesarean sections were included in the study.

Sampling Technique: Nonprobability convenience sampling was used to recruit study participants. Women grouped in Category 1, Category 2, and Category 3 were included, but Category 4 cesarean sections were excluded from the study as it doesn't indicate DDI. Data was collected using a predesigned Performa which comprised four sub-groups that included patient factors, obstetrician factors, anesthesia factors, and lack of resources and staff. Maternal and fetal outcomes were also assessed.

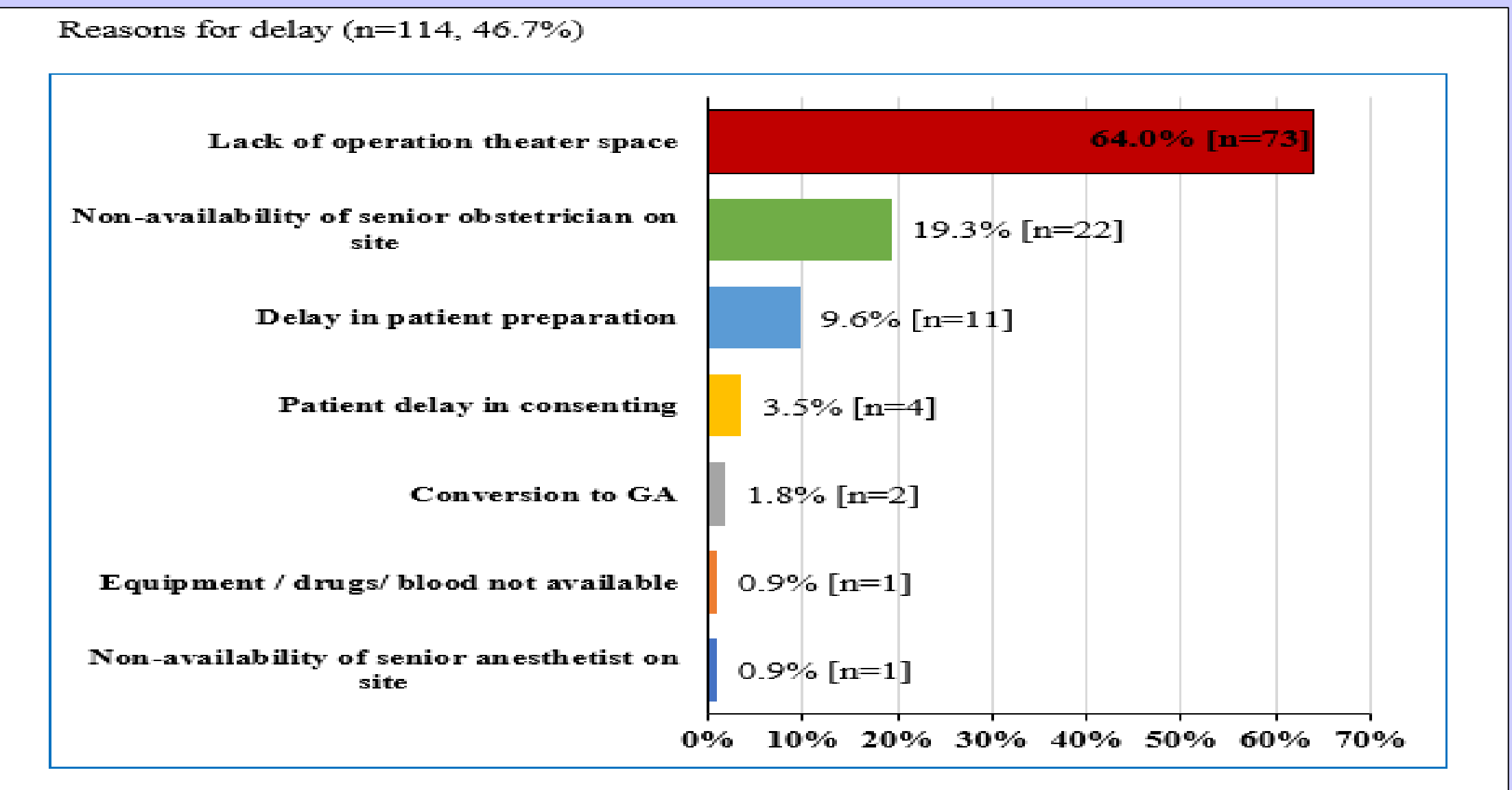
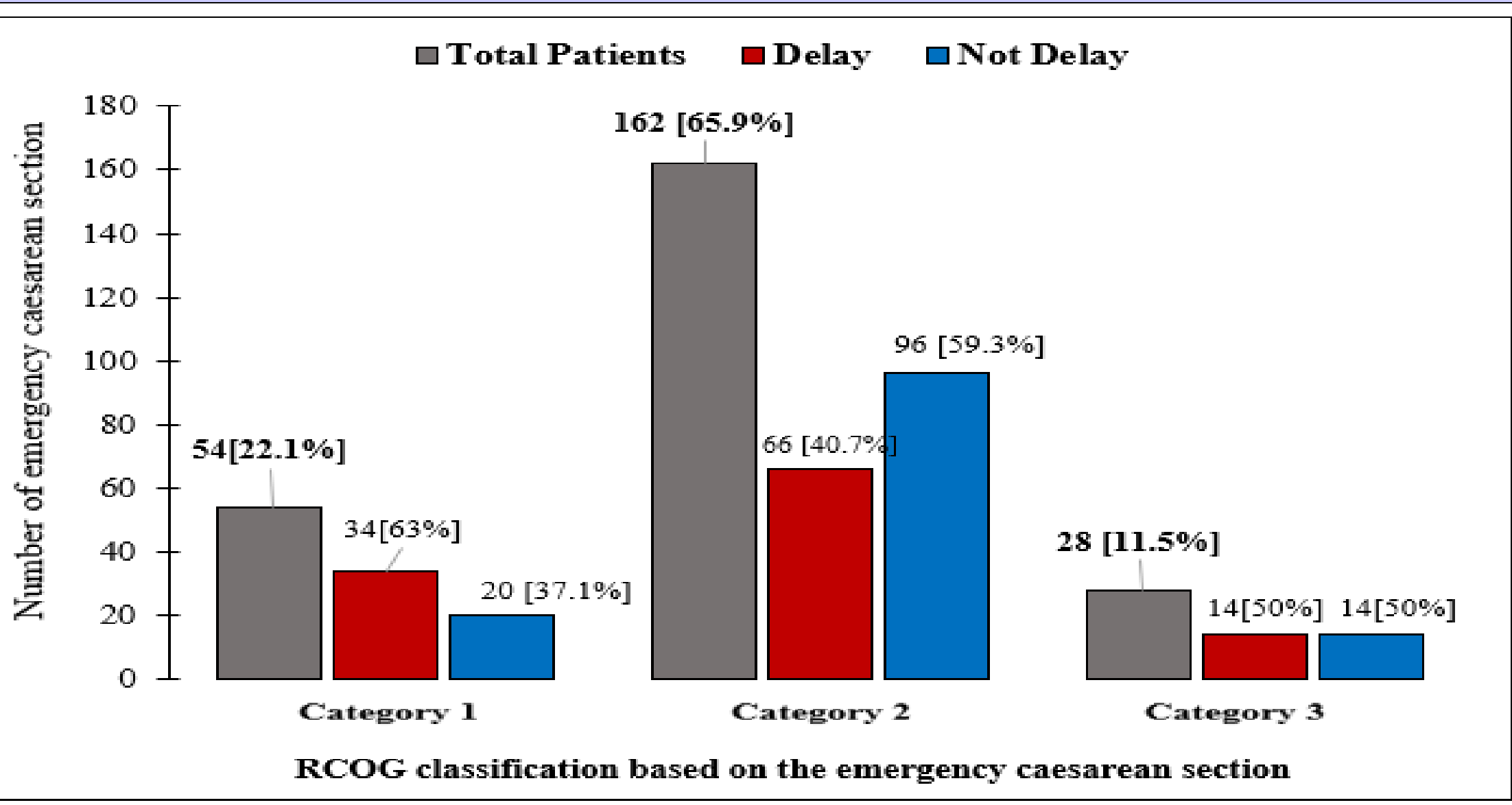
Statistical analysis: SPSS version 19.0 was used for the analysis of data.

Results

Comparison of reasons for delay among Emergency Caesarean Sections (according to RCOG classification) (n=114)				
Variables	Category 1 n=34	Category 2 n=66	Category 3 n=14	P-Value
Patient Factors				
Patient delay in consenting	0	3(4.5%)	1(7.1%)	0.369
Obstetrician Factors				
Non-availability of senior obstetrician on site	13(38.2%)	8(12.1%)	1(7.1%)	0.003
Anesthesia factors				
Non-availability of senior anesthetist on site	0	1(1.5%)	0	0.639
Conversion to GA	0	2(3%)	0	0.477
Lack Of Resources / Staff				
Lack of operation theater space	16(47.1%)	48(72.7%)	9(64.3%)	0.040
Equipment / drugs/ blood not available	1(2.9%)	0	0	0.305
Delay in patient preparation	4(11.8%)	4(6.1%)	3(21.4%)	0.185

Indication of CS (n=244)			
Indication for CS	Without delay n=130	With delay n=114	P-Value
Category 1 CS			
Antepartum hemorrhage	3(15%)	3(8.8%)	0.659
Suspected/actual uterine rupture	2(10%)	17(50%)	0.003
Failure of operative vaginal delivery	0	1(2.5%)	0.999
Acute fetal bradycardia without recovery.	14(70%)	12(35.3%)	0.014
Maternal vitals unstable	0	1(2.9%)	0.999
LSCS for 2nd twin	1(5%)	0	0.370
Category 2 CS			
Cases of abnormal fetal heart rhythm which revert to normal once oxytocin is stopped.	21(21.9%)	13(19.7%)	0.845
Non-progress of labor (according to partogram) after oxytocin is started.	69(71.9%)	45(68.2%)	0.613
Maternal refusal to take trial for VBAC (vaginal birth after C-section) without any fetal compromise	2(2.1%)	6(9.1%)	0.043
Abnormal presentations in labor.	4(4.2%)	2(3%)	0.707
Category 3 CS			
The patient was induced with prostin only, but the decision changed for Lower Segment Cesarean Section)	12(85.7%)	13(92.9%)	0.999
Abnormal presentations are not in labor.	2(14.3%)	1(7.1%)	0.541

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Comparison of maternal and fetal outcome among categories of CS for delay cases (114)					
Variables	Overall n=114	Category 1 n=34	Category 2 n=66	Category 3 n=14	P-Value
Maternal					
Stable	112(98.2%)	34(100%)	64(97%)	14(100%)	0.477
Referred to tertiary Care	5(4.4%)	2(5.9%)	3(4.5%)	0	0.661
Blood Transfusion	5(4.5%)	2(6.3%)	3(4.5%)	0	0.639
Fetal					
APGAR at 5min (normal)	111(97.4%)	33(97.1%)	64(97%)	14(100%)	0.806
Need for resuscitation	1(0.9%)	0	1(1.5%)	0	0.693
Referred	5(4.4%)	2(5.9%)	3(4.5%)	0	0.661
Still Birth	0	0	0	0	-

Discussion

Our study showed that 37% of Category 1, 60% of Category 2, and 50% of Category 3 cesarean sections were done within the specified time period. In literature, the cesarean section done within a specified time period varies from 0-55% (3). A study done in Tanzania and Ethiopia showed that only 12% and 19.6% of category 1 cesarean sections were done within 30 minutes respectively (4,5).

The most common indication in category 1 cesarean was suspected uterine rupture followed by acute fetal bradycardia without recovery and antepartum hemorrhage. In our study, the most common indication for category 2 was nonprogress of labor.

Our study showed that the major factor that resulted in DDI was the lack of operation theatre space in 64% of cases. Healthcare facilities in developing countries with limited resources and overburdened hospitals are a major factor that is responsible for the occupancy of theatres with a large number of patients waiting for elective procedures. As a routine, an emergency case is always dealt with on a priority basis therefore, the elective list is stopped until no emergency case. But DDI in emergency cases increases when an elective case is already being operated in the theatre, and the emergency case could not be taken before the elective case ends and the operation theatre is cleaned.

Non-availability of obstetricians on the floor during emergency cases caused DDI in 19.3% of cases. Non-availability of a senior obstetrician resulted in DDI as many cases in category 1 cesarean section were declared at night when only a junior obstetrician was available on the floor. In these cases, the emergency cesarean section could not start until a senior obstetrician reached the hospital.

Delays in patient preparation resulted in prolong DDI in 10% of cases. Delays in patient preparation caused delays in emergency cesarean sections as staff was dealing with multiple patients at the same time.

Conclusion

DDI of emergency cesarean sections especially due to the non-availability of operation theatres led to compromised health conditions in neonates. In low-resource health settings, optimum utilization of theatre along with training of junior obstetricians should be done to improve maternal and neonatal outcomes.

References

- Decision to incision interval for emergency cesarean section and postoperative outcomes in a resource limited rural Kenyan public hospital. Int J Reprod Contraception Obstetrics Gynecology. 2018;7(7):2573.
- Maternal and perinatal mortality and complications associated with caesarean section in low-income and middle-income countries: a systematic review and meta-analysis. The Lancet. 2019 May 11;393(10184):1973-82.
- Determinants of the decision to incision interval in case of emergency caesarean section in Yaoundé'hospitals. African Health Sciences. 2022 Aug 1;22(2):511-7.
- The decision delivery interval in emergency caesarean section and its associated maternal and fetal outcomes at a referral hospital in northern Tanzania: a cross-sectional study. BMC Pregnancy Childbirth. 2017;17(1):411. <https://doi.org/10.1186/s12884-017-1608-x>.
- Evaluation of decision to delivery time interval and its effect on feto-maternal outcomes and associated factors in category-1 emergency caesarean section deliveries: prospective cohort study. BMC Pregnancy and Childbirth. 2020 Dec;20(1):1-1.