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Research Article

**A RETROSPECTIVE RESEARCH TO COMPARE PRIMARY  
EMERGENCY CAESAREAN SECTION (EM-CS) NEONATAL  
OUTCOMES & INDICATIONS OF (CAT – I & NON-CAT – I)**<sup>1</sup>Dr. Samreen Bugti, <sup>1</sup>Dr. Humaira Bugti, <sup>2</sup>Dr. Basil Siddique<sup>1</sup>Bolan Medical College, Quetta<sup>2</sup>Lahore Medical and Dental College**Abstract:**

**Objective:** We aimed to compare Category – I and Non-Category – I neonatal outcomes of primary Em-CS (Emergency Cesarean Section).

**Methods:** Our retrospective research was carried out at Mayo Hospital, Lahore (February 2016 to March 2017). A sample of 375 patients was enrolled through non-probability purposive method. sampling technique was used. We identified Em-CS by error margin of 5% and CS rate as 41.5%. Data was gathered from the neonatal ward, operation theatre and labour ward with the help of a structured questionnaire.

**Results:** In the total sample booked cases were in majority (89.3%). Primiparous cases were 282 women (75.2%). Term and preterm cases were respectively 230 cases (61.3%) and 145 cases (38.7%). Fetal distress was noticed as the main indication in Cat – I CS cases as (15.7%); whereas, leading cause of the abdominal delivery in Not-Cat – I cases was labour progress (45.1%). No variable was significant except APGAR at one minute ( $p = 0.048$ ) in the comparison of neonatal outcomes in both Cat – I and Non-Cat – I CS cases.

**Conclusion:** Major indications were non-progress of labour and fetal distress for Non-Cat – I and Cat – I CS cases. There was no significant relation between Em-CS indications and neonatal outcomes. Association can be established with more research work on the same topic.

**Keywords:** Category-I Caesarean Section (Cat – I CS), Primary Emergency Caesarean Section (Em-CS), Fetal Distress, Ante-Partum Hemorrhage, Non-Progress of Labor and Mal-presentation.

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**INTRODUCTION:**

Cesarean section (CS) is at an increase from last thirty years with associated variation at various regional and national level [1]. Developed and underdeveloped countries both face this healthcare issue. Quality obstetrics availability is a major indicator of CS proportion (WHO, 2009) with an optimum rate of 15% in 150 countries including African, Caribbean and American countries [2, 3]. Primigravid women are mostly reported for CS in Pakistan about 27.26% [4].

Clinical and non-clinical manifestations are also associated with the CS variations, as low parity, height under 150 cm, reproductive age, cardiotocography (CTG), obesity, fetal malpresentation and fetal low birthweight [6 – 8]. Status of the private health care, woman's choice, organizational factors and the obstetrician's features are among the non-clinical factors [9]. Em-CS is associated with the neonatal and maternal complications and it is against elective CS. Adverse neonatal disorders are associated with Cat – I Em-CS in comparison with the associated Non-Cat – I CS [10, 11]. We aimed to compare Cat – I and Non-Cat – I neonatal outcomes of primary Em-CS (Emergency Cesarean Section).

**METHODS:**

Our retrospective research was carried out at Mayo Hospital, Lahore (February 2016 to March 2017). A sample of 375 patients was enrolled through non-probability purposive method. sampling technique was used. We identified Em-CS by error margin of 5% and CS rate as 41.5% [12]. After ethical approval and informed consent of the participant's data was gathered from the neonatal ward, operation theatre and labour ward with the help of a structured questionnaire.

Our research variables were complications during pregnancy, maternal socio-demographic characteristics and CS indications. Neonatal outcomes, APGAR scores at 1 & 5 minutes, cord pH,

birth weight (kg), NICU admission and an early neonatal death. Cat – I and Non-Cat – I indications was progress failure in labour, pre-eclampsia, fetal distress, mal-presentation, antepartum haemorrhage (APH), twins with preterm labour and intrauterine growth restriction (IUGR).

SPSS was used for data analysis. Chi-Square test was used for univariate analysis for categorical variables; whereas, continuous variables were assessed by Student T-test ( $p < 0.05$ ).

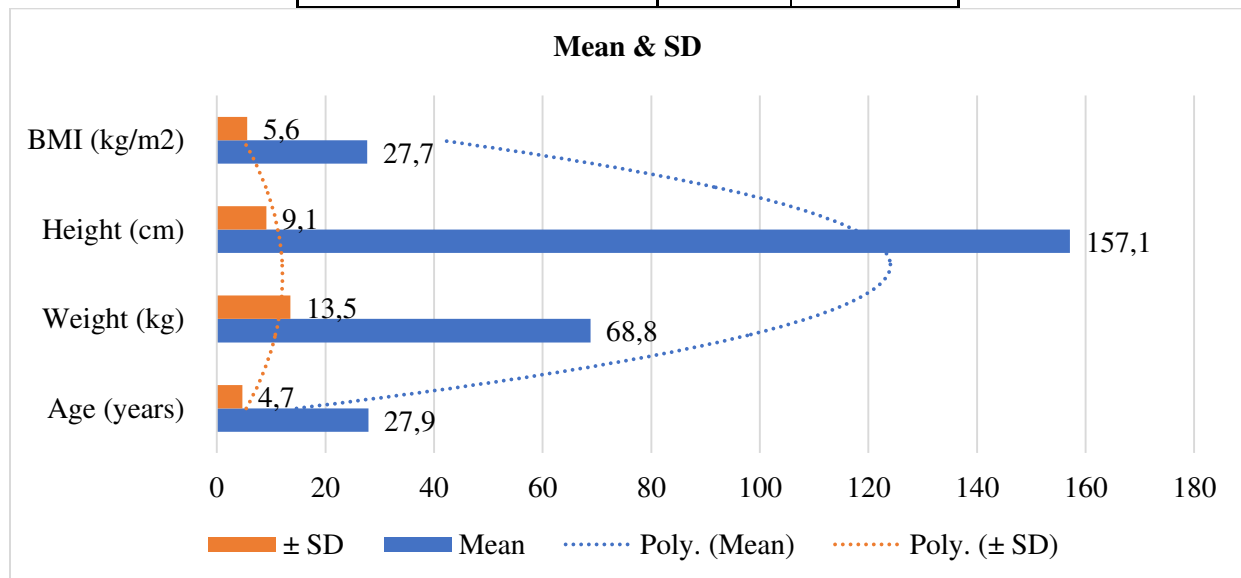
CS indications were classified into four categories on the basis of CS urgency in consideration with immediate risks to fetus or mother [13]. Two broader categories were made for CS as Cat – I and Non-Cat – I. All immediate risk conditions were considered in Cat – I which included a risk to fetus and mother which required a delivery decision within thirty minutes. In the case of an early delivery Non-Cat – I (Cat II & III) CS was performed. Cat – IV was not included, which is carried out when it suits to maternity services and mothers as an Elective CS in case of not a fetus or maternal risk. Fetal distress was found in all cases of preeclampsia, placental abruption, placenta previa or preterm labour [14]. Early neonatal deaths were reported in the first seven days. Primary CS is taken as the first case of delivery even if vaginal births have taken place.

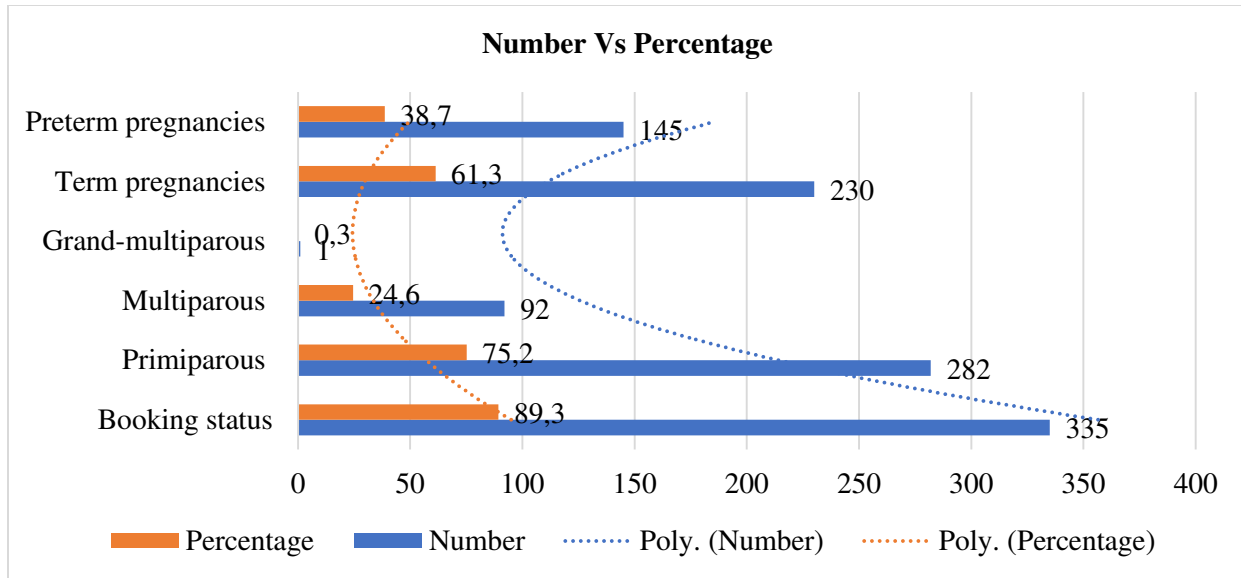
**RESULTS:**

Detailed outcomes analysis in the form of mean, SD, number and percentage have been carried out in the given tabular and graphical data. In the total sample, booked cases were in majority (89.3%). Primiparous cases were 282 women (75.2%). Term and preterm cases were respectively 230 cases (61.3%) and 145 cases (38.7%). Fetal distress was noticed as the main indication in Cat – I CS cases as (15.7%); whereas, leading cause of the abdominal delivery in Not-Cat – I cases was labour progress (45.1%). No variable was significant except APGAR at one minute ( $p = 0.048$ ) in the comparison of neonatal outcomes in both Cat – I and Non-Cat – I CS cases.

**Table – I:** Maternal demographics of all participants (375 participants who underwent primary emergency cesarean section)

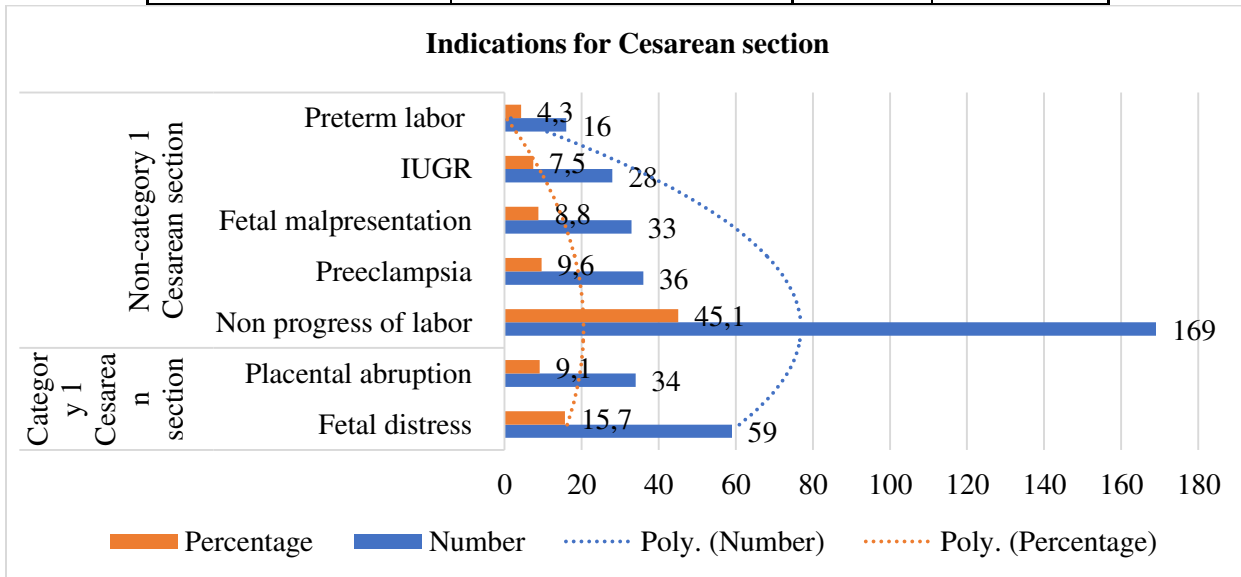
Variables	Mean	± SD
Age (years)	27.9	4.7
Weight (kg)	68.8	13.5
Height (cm)	157.1	9.1
BMI (kg/m <sup>2</sup> )	27.7	5.6
Variables	Number	Percentage
Booking status	335	89.3
Primiparous	282	75.2
Multiparous	92	24.6
Grand-multiparous	1	0.3
Term pregnancies	230	61.3
Preterm pregnancies	145	38.7





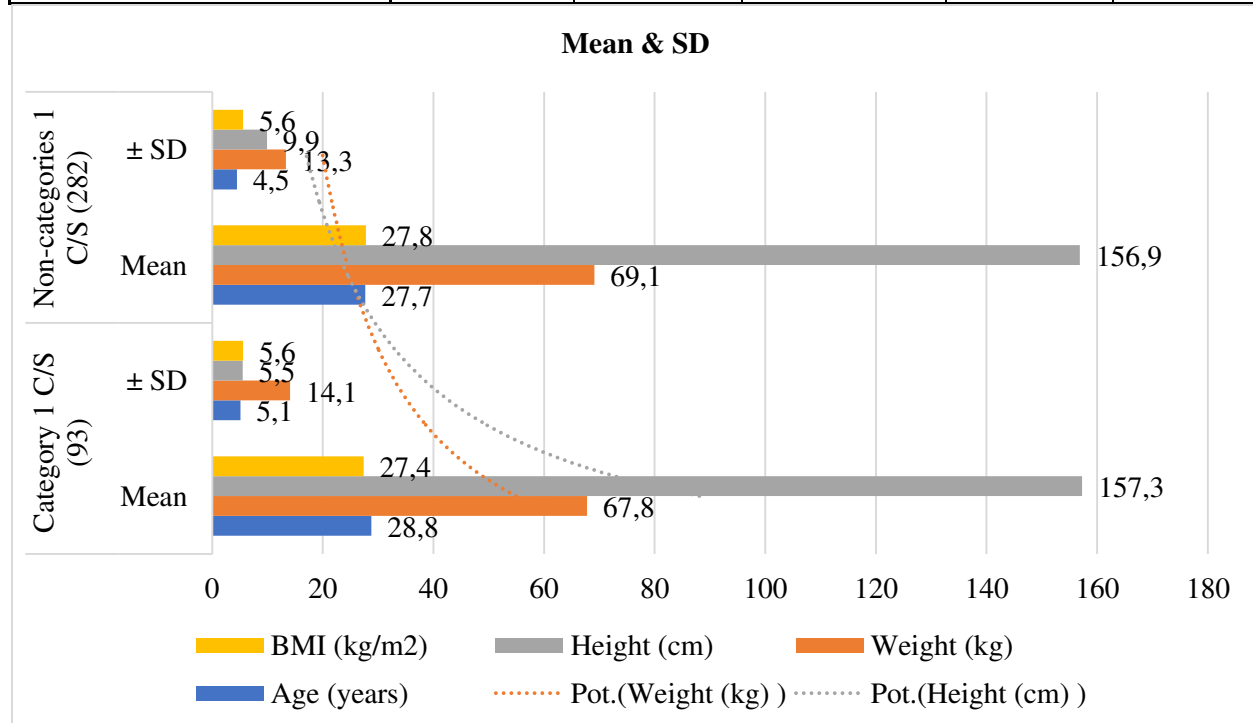
**Table – II:** Indications for Cesarean section (Participants who underwent primary emergency cesarean)

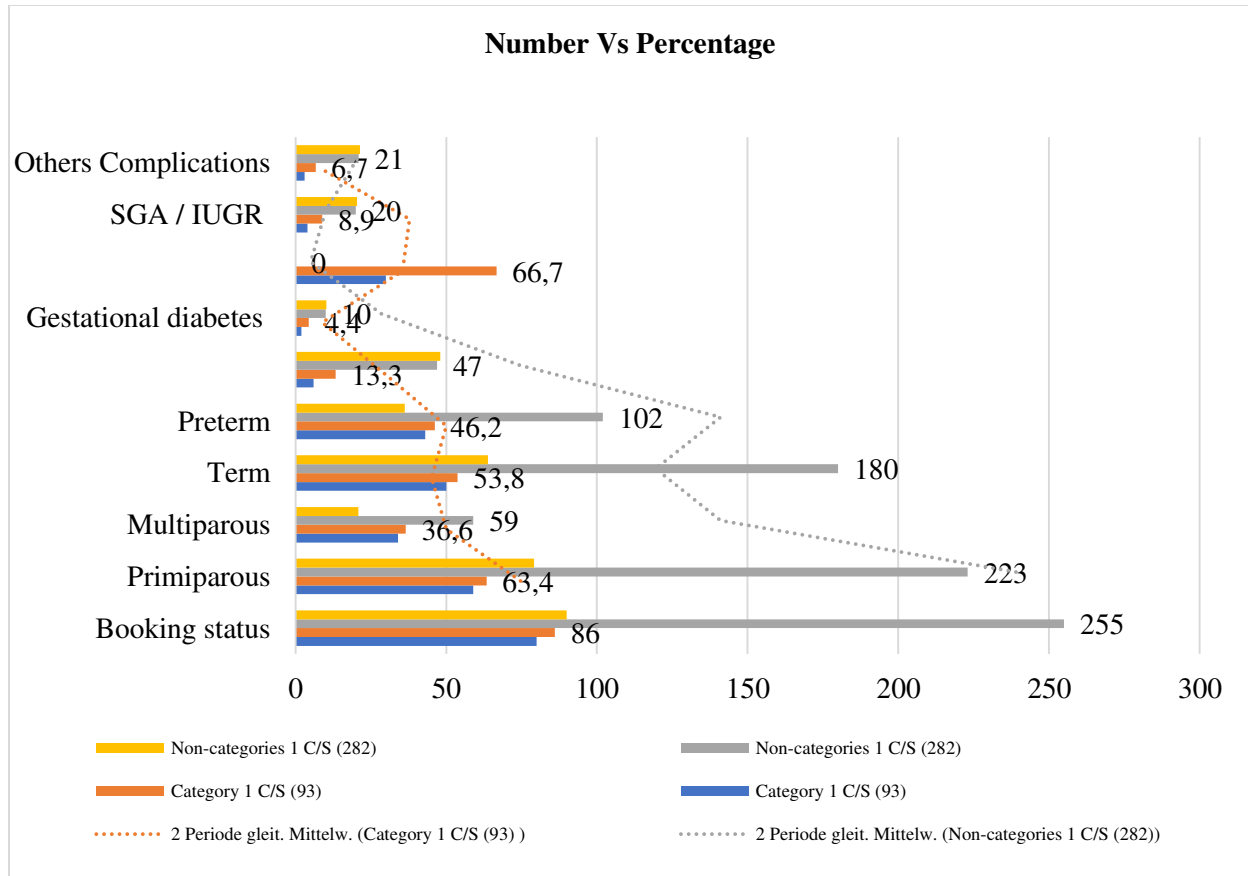
Cesarean section indications		Number	Percentage
<b>Category 1 Cesarean section</b>	<b>Fetal distress</b>	59	15.7
	<b>Placental abruption</b>	34	9.1
<b>Non-category 1 Cesarean section</b>	<b>Non-progress of labor</b>	169	45.1
	<b>Preeclampsia</b>	36	9.6
	<b>Fetal malpresentation</b>	33	8.8
	<b>IUGR</b>	28	7.5
	<b>Preterm labor</b>	16	4.3



**Table – III:** Comparison for complications during pregnancy and indications of C/S in all pregnancies

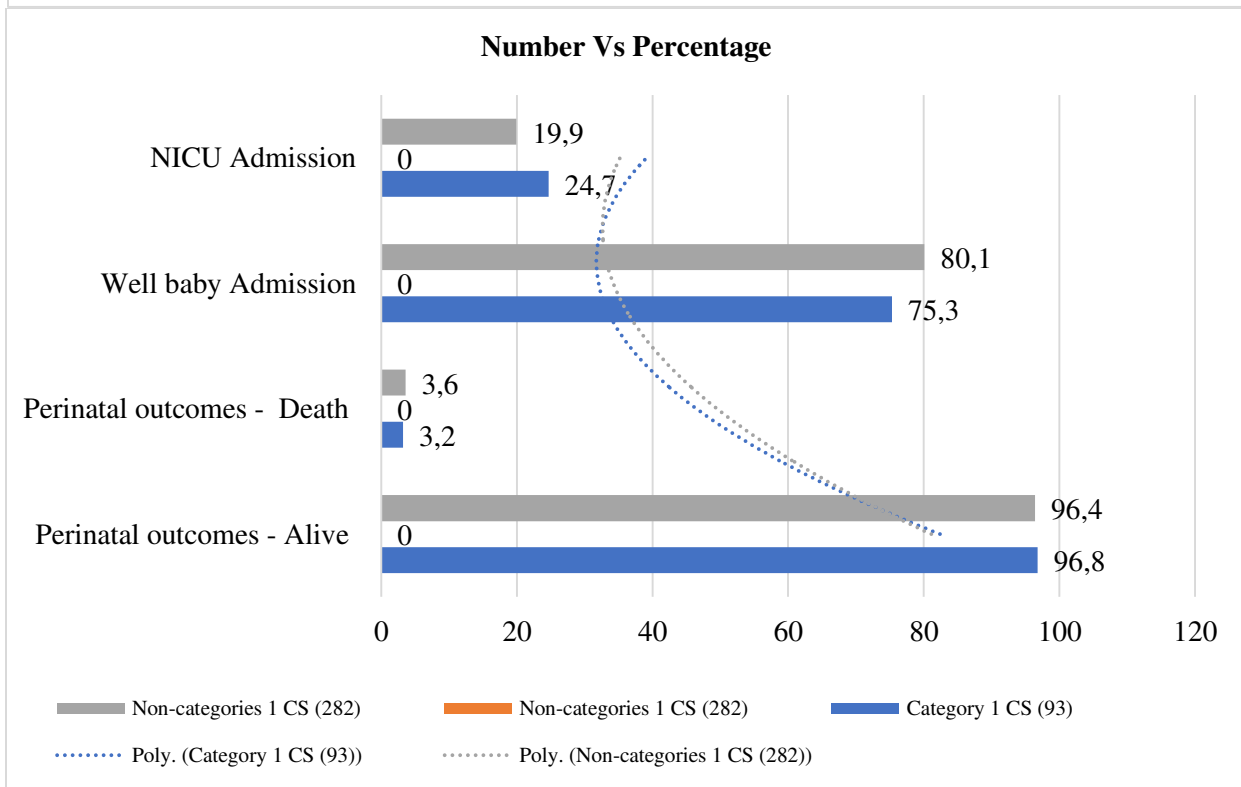
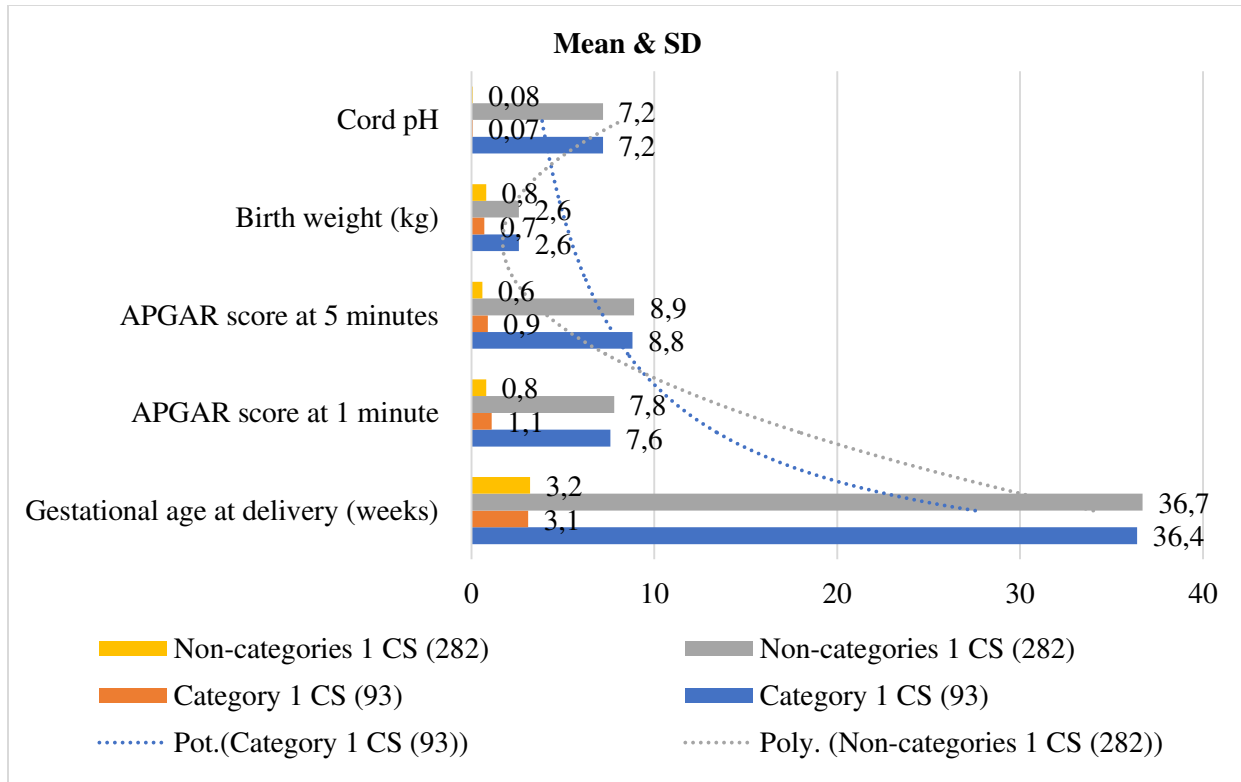
Variables	Category 1 C/S (93)		Non-categories 1 C/S (282)		p-value
	Mean	± SD	Mean	± SD	
Age (years)	28.8	5.1	27.7	4.5	0.05
Weight (kg)	67.8	14.1	69.1	13.3	0.42
Height (cm)	157.3	5.5	156.9	9.9	0.71
BMI (kg/m <sup>2</sup> )	27.4	5.6	27.8	5.6	0.57
Variables	Category 1 C/S (93)		Non-categories 1 C/S (282)		p-value
	Number	Percentage	Number	Percentage	
Booking status	80	86	255	90	0.23
Primiparous	59	63.4	223	79.1	0.06
Multiparous	34	36.6	59	20.9	
Term	50	53.8	180	63.8	0.06
Preterm	43	46.2	102	36.2	
Hypertension in pregnancy	6	13.3	47	48	0.06
Gestational diabetes	2	4.4	10	10.2	
Placenta previa/abruption	30	66.7	0	0	<0.001
SGA / IUGR	4	8.9	20	20.4	
Others Complications	3	6.7	21	21.4	





**Table – IV:** Comparison of Perinatal outcomes in women with category 1 CS (fetal distress and placental abruption) compared to other causes for CS (Non-Category-1 CS)

Variables	Category 1 CS (93)		Non-categories 1 CS (282)		P-Value
	Mean	± SD	Mean	± SD	
Gestational age at delivery (weeks)	36.4	3.1	36.7	3.2	0.39
APGAR score at 1 minute	7.6	1.1	7.8	0.8	0.048
APGAR score at 5 minutes	8.8	0.9	8.9	0.6	0.25
Birth weight (kg)	2.6	0.7	2.6	0.8	0.51
Cord pH	7.2	0.07	7.2	0.08	0.49
Variables	Category 1 CS (93)		Non-categories 1 CS (282)		P-Value
	Number	Percentage	Number	Percentage	
Perinatal outcomes - Alive	90 (96.8)	96.8	272 (96.4)	96.4	0.88
Perinatal outcomes - Death	3 (3.2)	3.2	10 (3.6)	3.6	
Well baby Admission	70 (75.3)	75.3	226 (80.1)	80.1	0.32
NICU Admission	23 (24.7)	24.7	56 (19.9)	19.9	



**DISCUSSION:**

Perinatal outcomes of our research were not significant in the patients who underwent Cat – I

primary Em-CS than Non-Cat – I CS cases with an exception of APGAR score taken at one minute. Placental abruption and fetal distress were Cat – I

indications; whereas, preeclampsia and non-progress of labour were major Non-Cat – I CS indications. Demographics of our research can be compared for both categories as given in Table – I. Outcomes given in Table – I suggest about the primary Em-CS is very much common in primiparous than multiparous which may be associated with the smooth and fast labour. These outcomes are comparable with the outcomes of Jain M *et al.* [15].

In the antenatal complications comparison of both categories, significant variation was noticed. Cat – I CS faced normally placental abruption and placenta previa as repeated complications; whereas, Non-Cat – I CS experienced IUGR and hypertensive disorders with respective proportions of 20.4% and 48% [15]. Cat – I CS experienced placental abruption 9.1% and fetal distress 15.7% as repeated indications; whereas, in Non-Cat – I CS labour non-progress 45.1% was a most common indication which has been observed by Singh and Chu, almost same [16, 17]. Subjectivity about the CTG interpretation cannot be overruled as it depends on the obstetric experience and practice. Regular fetal heart's electronic monitoring does not improve perinatal results, on the other hand, it increases the instrumental delivery and CS cases [18]. The total delivery operative rate can be reduced through continuous CTG monitoring as reported by in a meta-analysis (0.93; 0.88 – 0.99) [19].

Preeclampsia affects pregnancy after a gestation of twenty weeks, it may also make complications in pregnancy with placental insufficiency or placental abruption that may induce IUGR, it also deteriorates fetal and maternal state. The disease can be better be arrested through better disease treatment [20]. Deliveries termination was observed because of Em-CS indications such as 36 severe preeclampsia cases (9.6%), 34 placental abruption (9.1%) and 28 IUGR cases (7.5%) [21, 22]. We also observed numerous CS due to 32 fetal mal-presentation (8.5%) cases. Higher CS rates can be controlled through ECV (External Cephalic Version) at thirty-six gestation weeks which needs a skilled management of ECV [23].

Majority of preterm labour hospitalized cases were twins (12 / 16). No data was available about remaining CS cases in the hospital record as they were hospitalized against pre-term labour. Non-statistically significant variation was seen about perinatal outcomes in both the categories except the score of APGAR which was noted at one minute as shown in Table – II ( $p = 0.048$ ). Grace L reported poor perinatal results in Cat – I CS than Non-Cat – I

CS, his research duration span over seven years and his research sample was also large [23]. Prematurity was the major cause of hospitalization among 75% of the patients. There is no direct association with Em-CS indications, but it can be taken as gestation's confounding effect. Thirteen cases were reported with neonatal mortality (3.5%). Extreme prematurity was the major reason behind poor perinatal results.

#### CONCLUSION:

Placental abruption and fetal distress were reported in Cat – I CS patients; whereas, Non-Cat – I CS cases were reported preeclampsia and nonprogress of labour as major indications. There was no significant relation between Em-CS indications and neonatal outcomes. Association can be established with more research work on the same topic.

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