

# IJMA



## INTERNATIONAL JOURNAL OF MEDICAL ARTS

Volume 7, Issue 3 (March 2025)



<http://ijma.journals.ekb.eg/>

P-ISSN: 2636-4174

E-ISSN: 2682-3780





Available online at Journal Website  
<https://ijma.journals.ekb.eg/>  
 Main Subject [Obstetrics and Gynecology]



## Original Article

# Impact of Application of Robson Classification On Rate of Cesarean Section in Al-Azhar University Hospital, Damietta.

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### ABSTRACT

#### Article information

Received: 19-12-2024

Accepted: 20-02-2025

DOI: [10.21608/ijma.2025.345775.2084](https://doi.org/10.21608/ijma.2025.345775.2084)

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**Citation:** Elnajar NA, Megahed AM, Thabet ME. Impact of Application of Robson Classification On Rate of Cesarean Section in Al-Azhar University Hospital, Damietta. IJMA 2025 Mar; 7 [3]: 5530-5536. DOI: 10.21608/ijma.2025.345775.2084.

**Background:** Caesarean section (CS) is a lifesaving operation that may reduce mother & infant morbidity and mortality.

**Aim of the work:** This research aimed to apply the Robson classification to determine trends in CS rates & the groups of women who were primarily responsible for the rising rates.

**Patients and methods:** This study was carried out at the Al-Azhar University Hospital (Damietta, Egypt). Information was gathered from the medical records of every woman who gave birth among February 2023 & February 2024. After calculating the overall rate of ACS, women were divided into 10 Robson groups. Calculations were made to determine each group's relative size, the contribution to the overall CS rate & CS rate within each group.

**Results:** The largest contributor to the overall CS rate was multiparous women with at least one previous CS, single cephalic pregnancy,  $\geq 37$  weeks' gestation, accounting for 43.6% of all deliveries and 56.7% of all CS. The relatively high CS rate in nulliparous women with single cephalic pregnancy,  $\geq 37$  weeks' gestation, spontaneous labor at 34.1% is also noteworthy. Group 2 showed a higher CS rate at 82.6%. Group 10 (all single cephalic,  $< 37$  weeks gestation, containing previous CS) was the second-largest contributor, representing 20.3% of all deliveries with a high CS rate of 88.2%. Group 3 (multiparous women without a previous CS, single cephalic pregnancy,  $\geq 37$  weeks gestation, spontaneous labor) showed the highest rate of NVD (96.5%). The 100.0% CS rate in Groups 7 (multiparous breech) & 9 (all abnormal lies) is not unexpected given the higher risks associated with these presentations.

**Conclusion:** This study highlights a high CS rate, with previous CS and pre-labor CS. Using the Robson classification, we identified previous CS and pre-term cephalic deliveries as major contributors to the CS rate, while multiparous women without previous CS had the highest rate of normal vaginal delivery.

**Keywords:** Robson Classification; Gravidity; Cesarean Section.



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## INTRODUCTION

The World Health Organization stated in 2015 that at the population level, cesarean section rates above ten percent are not linked to decreases in maternal & newborn mortality rates. This is in line with the international healthcare community's view since 1985 that the optimal rate for cesarean sections should be from ten to fifteen percent [1].

Over the past thirty years, the number of cesarean sections performed has climbed to a level above the WHO-recommended ideal proportion. Significant rises in non-medically indicated CS in several middle- & high-income nations have been the primary cause of this use growth. One of the obstacles to a deeper understanding of this trend is the lack of a globally recognized classification system for tracking & comparing CS rates. Robson's 10-group classification is a comprehensive perinatal classification that is based on basic obstetrical criteria & does not include the indication for CS because it applies to "all women" who are admitted for delivery, not just those who give birth via CS [2].

WHO recommended the use of Robson's (Ten Group) Classification by 2015 after conducting two systemic reviews back in 2011 that reviewed twenty-seven different systems to classify CS, and in 2014 about assessing the pros & cons of Robson's classification & recognizing impediments of its implementation [3]. In addition to this, the classification has been listed by WHO as one of the non-clinical interventions to decrease unnecessary CS.

To determine trends in the rates of cesarean sections at Al-Azhar University Hospital in Damietta, Egypt, and to pinpoint the demographics of women who are primarily responsible for the rising rates, this research used the Robson categorization system. Additionally, the Robson classification will be used to evaluate the markers for cesarean sections.

## PATIENT AND METHODS

**Study Design and Setting:** A cross-sectional study was conducted at Al-Azhar University Hospital in Damietta, Egypt. The study period spanned from February 2023 to February 2024, we included all women who gave birth at Al Azhar University Hospital of Damietta within this timeframe.

**Ethical Considerations:** Ethical approval was obtained in accordance on August 2023 with the recommendations of the Ethics Unit, Faculty of Medicine, Al-Azhar University, Damietta, prior to the commencement of the study.

**Inclusion Criteria:** Women between the ages of 16 and 46 who had a live delivery with a birth weight of at least 500 grams and/or a gestational age of at least 28weeks were included.

**Exclusion Criteria:** Women with pregnancies of less than 28weeks gestation had been excluded from the research.

**Data Collection:** Retrospective data collection had been done using the medical records of every woman who gave birth throughout the study period.

**Robson Classification:** The collected data was used to categorize each woman into 1 of the Ten Robson groups based on the six predefined obstetric characteristics: 1) Parity (multiparous & nulliparous women with & without prior surgery); 2) Cesarean section history; 3) The method of labor onset (pre-labor cesarean section, induced, or spontaneous); 4) The quantity of fetuses (one or many); 5) The term or preterm gestational age);

and 6) the fetal presentation & lay (transverse, breech, or cephalic).

### All target population had been subjected to:

General examination, abdominal examination, obstetric ultrasound, documenting labor events and any complications, and classifying women who give birth using the Ten Group Robson categorization are all included in the comprehensive history-gathering process. Contraceptive, menstrual, family, past, present, and obstetric history, including parity, prior CS, gestational age, labor onset, fetal presentation, and multiple fetuses) (Figure1).

Over the past ten years, the Robson classification system's effectiveness has been praised, & more hospitals & nations are using it to track & assess their CS rates. Without requiring the rationale for CS, all women had been concurrently classified using the 5 obstetric criteria outlined in the Robson Ten Group Classification System: the number of fetuses, parity, fetal presentation, the commencement of labor, & gestational age (Figure 2). Every category was mutually exclusive & completely inclusive.

To introduce the implementation manual to the personnel in charge of data collecting, a training session was held. 3 primary domain information quality, population type, & cesarean section rate—were used to interpret the data gathered in the Robson categorization reporting table.

**Statistical Analysis:** Version 22.0 of the Statistical Program for Social Science had been used to analyze the data. While frequency & percentage had been used to represent qualitative data, mean  $\pm$  standard deviation had been used to express quantitative data. The Chi-square (X<sup>2</sup>) test had been utilized to compare proportions among qualitative parameters, & an independent-samples t-test had been employed to compare means among 2 groups. P-values were classified as significant if they were less than 0.05, highly significant if they were less than 0.001, & insignificant if they were greater than 0.05.

## RESULTS

**Table (1)** presents Sociodemographic data for a sample of 502 participants, categorized into two groups: CS group (75.9%) and NVD group (24.1%). Most participants (75.1%) are under 30years old, with a significant difference in the distribution among groups: a higher proportion of NVD participants are over 30 (14% vs. 28.3% in CS group). The mean age was significantly lower in the NVD group (25 years) compared to the CS group (27.5 years). The mean gravidity was higher in the NVD group (3.2) compared to the CS group (2.3). This difference was statistically significant. A significant difference in parity was observed, with a higher proportion of nulliparous individuals in the NVD group (40% vs. 16% in CS). The results showed several statistically significant findings particularly in age, gravidity, and parity.

Table (2) presents the relative size of each Robson group & its contribution to the overall delivery rate, with a total of 502 deliveries. Cesarean Sections (CS) account for 75.9% of the total deliveries, while Normal Vaginal Deliveries (NVD) make up 24.1%. Group5 is the largest contributor, representing 43.6% of the total deliveries, & has a high CS rate of 98.6%, contributing 56.7% to the total CS rate. Group 10 represents 20.3% of the total deliveries; with 88.2% undergoing CS. Group 3 contributes 11.4% to the total and shows the highest NVD rate at 96.5%, but only 0.5% of CS. Group 1 represents 8.8% of the total, with 65.9% delivering vaginally. Groups 7 and 9 both show 100% CS rates. A statistically significant relationship among Robson groups & the mode of delivery was present.

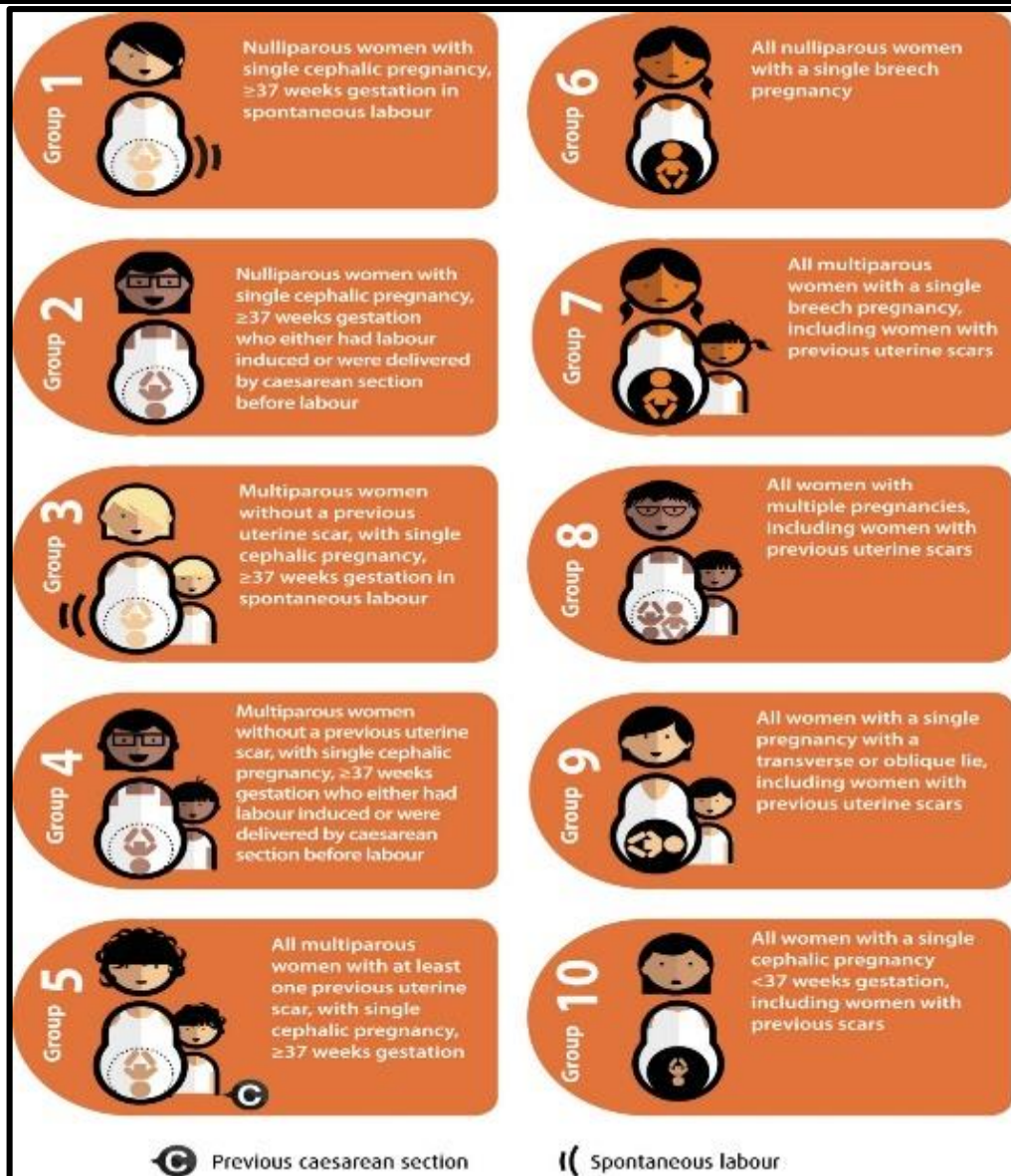


Figure (1): Group description of Robson's classification system

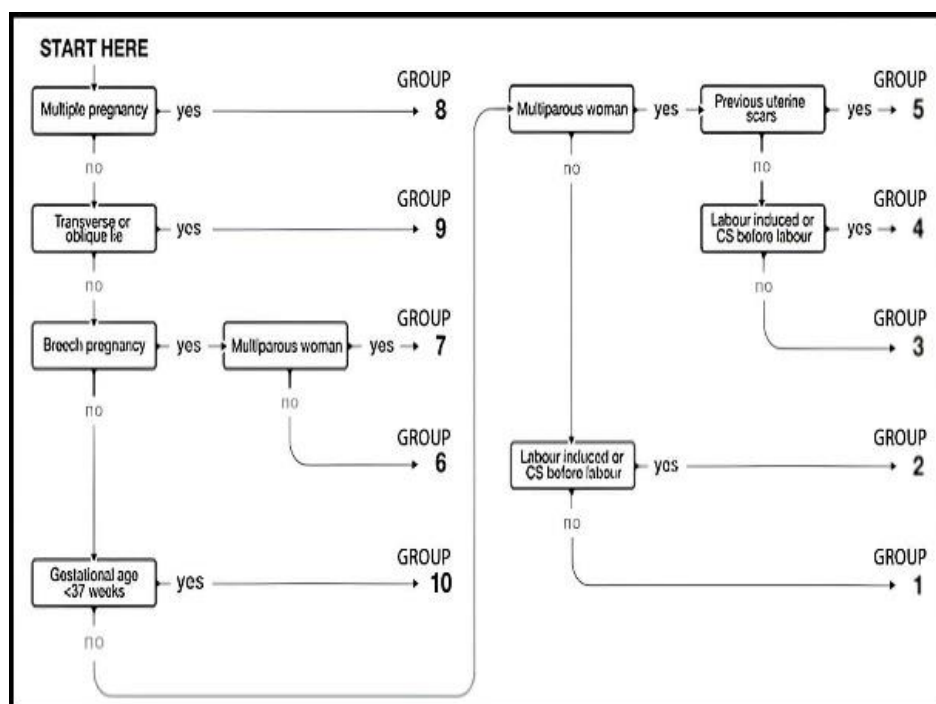


Figure (2): Flow chart for the Robson ten-group classification system Source (WHO, 2023).

The multiple regression analysis in (Table 4) illustrates various demographic and Robson classification parameters as potential predictors of Cesarean Section (CS) rates. Significant predictors include nulli-parity (Beta = -0.105, p = 0.009), multiparous full-term deliveries (Beta = 0.345, p < 0.001), previous Cesarean Section (Beta = 0.564, p < 0.001), pre-labor CS (Beta = 0.450, p < 0.001), full-term status (Beta = 0.067, p = 0.026), & fetal lie (Beta = -0.080, p = 0.008).

Nulliparous women are significantly less likely to undergo a CS, while women with previous full-term deliveries or a history of CS show a much higher likelihood of repeated Cesarean, with previous CS being the strongest predictor (Beta = 0.564). Additionally, pre-labor Cesarean significantly increases the likelihood of CS, as does full-term status, though to a lesser extent. Conversely, a cephalic fetal presentation decreases the likelihood of a CS. In contrast, factors such as age (Beta = -0.002, p = 0.969), gravidity (Beta = -0.013, p = 0.818), gestational age

(Beta = 0.004, p = 0.900), & the number of fetuses (Beta = 0.033, p = 0.299) did not significantly predict CS.

**Table (3)** illustrates the mode of delivery within each Robson classification group, excluding the total column. **Group 1** shows a higher rate of Normal Vaginal Deliveries (NVD) at 65.9%, while Cesarean Sections (CS) account for 34.1%. **Group 5** has the highest CS rate, with 98.6% undergoing Cesarean Section and only 1.4% having NVD. **Group 3** has a very low CS rate at 3.5%, with 96.5% delivering vaginally. **Group 7** and **Group 9** have 100% CS rates. **Group 2** shows a higher CS rate at 82.6%. **Group 10** also has a high CS rate (88.2%). A statistically significant correlation among Robson groups & the mode of delivery was present.

**Table (1):** Sociodemographic of CS group and NVD group

Variable	Total	CS	NVD	Test
	502 (100%)	381 (75.9%)	121(24.1%)	sig
Age	< 30 years	377(75.1)	273 (71.7)	$\chi^2= 10.03$ 0.022*
	> 30 years	125 (24.9)	108 (28.3)	
	Age (mean $\pm$ SD)	26.9 $\pm$ 5.95	27.5 $\pm$ 6.0	25.0 $\pm$ 5.10
Gravidity Number	26.9 $\pm$ 6	3.2 $\pm$ 1.6	2.3 $\pm$ 1.6	t= 5.08 <0.001
Parity	Nulliparous	109 (21.7)	61(16)	$\chi^2= 30.2$ <0.001*
	Multipara	393 (78.3)	320 (84)	
Multi parity	Full term	1 (0-6)	2(0-6)	Z= -5.181 <0.001*
	Preterm	0 (0-2)	0(0-2)	Z= -0.774; 0.439
	Abortion	0(0-9)	0(0-9)	Z= -2.462; 0.014
	Living	1 (0-7)	2(0-7)	Z= -5.113; <0.001*

t= independent samples t-test,  $\chi^2$ = Chi-square test, \*: statistically significant (p  $\leq$  0.05), Z= Mann Whitney test.

**Table (2):** Relative size of each Robson group & Contribution of each Robson group in the delivery rate

Robson group	Total	CS	NVD	TEST
	502 (100%)	381 (75.9%)	121(24.1%)	Sig
<b>G1</b>	44(8.8%)	15(3.9)	29(24.0)	$\chi^2= 306.5$ <0.001*
<b>G2</b>	23(4.6%)	19(5.0)	4(3.3)	
<b>G3</b>	57(11.4%)	2(0.5)	55(45.5)	
<b>G4</b>	12(2.4%)	2(0.5)	10(8.3)	
<b>G5</b>	219(43.6%)	216(56.7)	3(2.5)	
<b>G6</b>	9(1.8%)	7(1.8)	2(1.7)	
<b>G7</b>	15(3.0%)	15(3.9)	0(0.0)	
<b>G8</b>	17(3.4%)	11(2.9)	6(5.0)	
<b>G9</b>	4(0.8%)	4(1.0)	0(0.0)	
<b>G10</b>	102(20.3%)	90(23.6)	12(9.9)	

$\chi^2$ = Chi-square test, \*: statistically significant (p  $\leq$  0.05)

**Table (3):** Mode of delivery within each Robson classified group

Robson group	Total	CS	NVD	TEST
<b>Total N (%)</b>	502 (100%)	381(75.9%)	121(24.1%)	Sig
<b>G1</b>	44(100%)	15 (34.1)	29(65.9)	$\chi^2=306.5$ (<0.001)*
<b>G2</b>	23(100%)	19(82.6)	4(17.4)	
<b>G3</b>	57(100%)	2(3.5)	55(96.5)	
<b>G4</b>	12(100%)	2(16.7)	10(83.3)	
<b>G5</b>	219(100%)	216(98.6)	3(1.4)	
<b>G6</b>	9(100%)	7(77.8)	2(22.2)	
<b>G7</b>	15(100%)	15(100)	0(0)	
<b>G8</b>	17(100%)	11(64.7)	6(35.3)	
<b>G9</b>	4(100%)	4(100)	0(0)	
<b>G10</b>	102(100%)	90(88.2)	12(11.8)	

$\chi^2$ = Chi-square test \*: statistically significant (p  $\leq$  0.05)

**Table (4):** Multiple Regression analysis for the possible Indicators of cesarean sections based on demographic and Robson classification parameters

Model	Standardized Coefficients		t	Sig.	95% C. I	
	Beta				Lower Bound	Upper Bound
(Constant)			3.943	0.000	0.488	1.456
Age	-0.002		-0.039	0.969	-0.006	0.005
Gravidity	-0.013		-0.230	0.818	-0.031	0.025
Nulli Parity (Yes)	-0.105		-2.612	<b>0.009*</b>	-0.191	-0.027
Multi Full-term	0.345		5.021	<b>0.000*</b>	0.074	0.168
Previous CS	0.564		11.388	<b>0.000*</b>	0.242	0.171
Gestational age	0.004		0.126	0.900	-0.009	0.010
Full term (Yes)	0.067		2.226	<b>0.026*</b>	0.008	0.125
Onset labor (pre labor CS)	0.450		13.463	<b>0.000*</b>	0.297	0.399
No of fetus (Single)	0.033		1.039	0.299	-0.067	0.219
Fetal lie (Cephalic)	-0.080		-2.646	<b>0.008*</b>	-0.226	-0.033

## DISCUSSION

In the current work, 75.9 percent was the overall CS rate, which is significantly higher than the ten to fifteen percent WHO-recommended rate [4]. This high rate aligns with the trend observed in Egypt, where CS rates are increasing rapidly over the past decades [2]. *Gaber et al.* [4] aimed to calculate the C-section rate and analyze it using the Robson grading scale. They reported that 3,860 women gave children at the institution, with 2,171 of those births using CS (56.2%). *Abdelkareem et al.* [5] aimed to assess the clinical significance of the Ten Group Robson classification system in Al-Azhar Assiut University Hospital. They reported that 1200 women were included, 69.4% gave birth by Cesarean section while 30.6% by normal vaginal delivery which adheres to the current national rate of 72% according to the results of the Egyptian Family Health Survey of 2021 [6]. *Giayi et al.* [7] represented birth data from Greece using the Robson classification. Their overall CS rate (CSR) of 60.90%

When comparing the CSR to the Assiut research [8], which looked at an annualized rate of 15,000 deliveries, the authors looked at only two months' worth of data, between December 2008 and 2011. In comparison to the CSRs, 32.6% in 2008 and 38.5% in 2011. Research conducted by *Jadoon et al.* [9] at Benha University Hospital, revealed a CSR of 55% overall.

Our study found significant differences in sociodemographic characteristics between the CS and normal vaginal delivery (NVD) groups. Women who underwent CS were generally older (mean age 27.5 years) compared to those who had NVD (mean age 25.0 years). This result is in line with past research that found a link between an elevated risk of CS and an older mother [10]. Numerous earlier research shows a significant correlation between a higher risk of CS birth and an older mother (> 35 years) [11, 12].

Although a shifting social environment could be the cause of this connection, pre-pregnancy morbidities are frequently cited as an explanation [13]. *Vila-Candel et al.* [14] demonstrated that only a small percentage of the women in their study had comorbidity, and none of them disclosed their age, which was not necessary for the Robson Ten Group Classification System. They would be unable to offer a hypothesis on the relationship between the risk of a CS birth & the mother's age.

In our study, the higher gravidity and parity among the CS group also align with previous research suggesting that women with higher parity are more likely to undergo CS, possibly because of increased obstetric complications or previous CS [15].

In our research, the largest contributor to the overall CS rate was Robson Group5 (multiparous women with at least one previous CS, single cephalic pregnancy,  $\geq 37$ weeks gestation), accounting for 43.6% of all deliveries and 56.7% of all CS. The relatively high CS rate in Group1 (nulliparous women with single cephalic pregnancy,  $\geq 37$ weeks gestation, spontaneous labor) at 34.1% is also noteworthy. This rate is higher than what is typically seen in low-risk nulliparous women and may indicate a need for a review of labor management practices in this group. Group 2 shows a higher CS rate at 82.6%.

This result is consistent with studies from other middle-income countries. For instance, a study in Brazil found Group 5 to be the largest contributor to their CS rate [16]. The high contribution of this group highlights the effect of previous CS on subsequent deliveries and underscores the importance of strategies to decrease primary CS rates.

*Gaber et al.* [4] reported that Group 3 (all primigravida women with at last once CS or a single cephalic birth, 37weeks gestation) accounted for the largest share of the total CS rate (37.4% Absolute contribution). In group 5, the most common reason for alarm was a history of two or more previous cesarean sections. 8.3% of the total CS rate came from women in Session 1 (All women with subsequent births involving women with prior CS).

*Abdelkareem et al.* [5] reported that the top contributors to the CS rate were group 5 with a relative contribution of 62.2%, followed by group2 (2a) with a relative contribution of 14.3% then group 4 (4a) with a relative contribution of 10.4% and the rest of the groups' relative contribution ranged from 0 to 2.6%.

A recent study analyzed the contribution of different groups to the overall cesarean section (CS) rate, with a focus on nulliparous women. It was discovered that the nulliparous population—which is comprised of Robson groups 1 & 2 (nulliparous, singleton cephalic, term)—contributed most significantly to the total CS rate. Group 1's (spontaneous labor) relative contribution to the overall CS rate declined dramatically during the research. On the other hand, group2 (induced labor) contributed the most in absolute terms to the total CS rate over the research period, making up 4.7 percent. Group 2's CS rate rose dramatically from 23.2 percent in 2010 to 34.9 percent in 2018. The ratio of spontaneous to induced labor in nulliparous women changed from 2.7:1 in 2010 to 1.7:1 in 2018, indicating an increase in labor inductions. Overall, at 20.4 percent, group1 (nulliparous, singleton cephalic, term, spontaneous labor), group2 (nulliparous, singleton cephalic, term, induced labor or cesarean before labor), & group 4 (multiparous, singleton cephalic, term, induced or cesarean delivery before labor) contributed the most to the overall rate of CS. Group 2's rise in the CS rate was a major factor in the overall increase

in the CS rate over the period under analysis [14].

According to earlier findings, a ratio of less than 2:1 between groups 1 & 2's sizes could indicate a high prevalence of CS & induction before labor [17]. **Giaksi et al.** [17] reported that the main contributions to the overall CS rate are often Robson Groups 1, 2, & 5. Group 1 had a CS rate of 38.7 percent. Groups 3 & 4 had a total relative group contribution of 1.2 percent for spontaneous labor, induced labor, or CS before labor, multiparous women (not including those who had previously had a CS), single cephalic, &  $\geq 37$  weeks. Groups 3 & 4 had respective CS rates of 3.2 percent & 4.7 percent.

The CS rates by the Robson group range significantly from the global standard for CS rates from the WHO MSC in Maternal & Newborn Health, which comprises 42,637 women from twenty-two different countries. All Robson categories had greater rates of cesarean sections than the WHO MSC reference population, which likely reflects Greece's tendency to conduct unneeded CSs, particularly in categories 1, 2, 3, 4, & 10 [15]. Other University Hospitals across Egypt have the same finding of group 5 being the top contributor to the CS rates, as in Zagazig University Hospital in which the relative contribution of group 5 was 53%. Relative contributions of groups 2 & 4 were 9% and 8.5% and the subgroups represented the following percentages: 2a (41.6%), 2b (85.4%), 4a (50.7%), and 4b (49.3%) [18].

**Abdel-Aleem et al.** [18] reported that group 5 with repeat CS was the most prevalent indication in both time periods. Group 1 (full-term nulliparas who gave birth naturally) and Group 4 (low-risk pregnancies) tied for second place (term multipara with previous series induced or prelabor CS). Groups 10 and 8 followed Group 5 in the real world. **Jadoon et al.** [19] revealed a CSR of 55% overall, with the contributions to that figure coming mostly from groups 5, 6, & 10. The largest contribution to the overall CS rate (thirty-six percent) came from Robson Group 5 (multiparous, term, cephalic presentation, & prior cesarean section). With 4.6 percent & 2.8 percent of the total CS rate, respectively, Group 6 (all nulliparous women with a single breech pregnancy) & Group 10 (cephalic preterm pregnancies) were the 2nd & 3rd largest contributors.

In our study, Group 10 (all single cephalic,  $< 37$  weeks gestation, containing previous CS) was the second-largest contributor, representing 20.3% of all deliveries with a high CS rate of 88.2%. This high number of pre-term deliveries is concerning and warrants further investigation into the indications for CS in this group. **Gaber et al.** [4] reported that the second most frequent contributor to the relative CS rate was Group 10 (Those women with a singular cephalic pregnancy 37 weeks gestation, inclusive of women with prior CSs), which accounted for 28.2% of the total CS rate.

According to Robson and others, groups 8 (multiple pregnancies) & 10 (premature deliveries) are predicted to contribute to the overall cesarean section (CS) rate [17, 19]. **Giaksi et al.** [17] reported that the primary cause of the overall cesarean birth rate is Robson Group 10.

In our study, Group 3 (single-cephalic, multiparous,  $\geq 37$ -week gestation, spontaneous labor, and no prior CS) showed the highest rate of NVD (96.5%). This is encouraging and suggests that multiparous women without previous CS have a good chance of achieving vaginal delivery when labor starts spontaneously. According to previous studies, groups 3 & 4 (multiparous, singleton cephalic, & term) have decreased their respective contributions to the overall CS rate over time [20].

In our research, the one hundred percent CS rate in Groups 7 (multiparous breech) & 9 (all abnormal lies) is not unexpected given the higher risks associated with these presentations. However, the high CS rates in Groups 5 (98.6%) & 10 (88.2%) are concerning. For Group 5, this

high rate suggests that vaginal birth after cesarean is rarely attempted or successful in our setting. This contrasts with recommendations from organizations like the American College of Obstetricians & Gynecologists, which suggests that many women with one previous CS are candidates for trial of labor after cesarean [21]. **Giaksi et al.** [17] reported that the CS rates for Groups 6 & 7 were 99.3 percent & 96.2 percent, respectively.

In our study, the multiple regression analysis revealed several significant indicators for CS. Previous CS: This was the strongest predictor ( $\beta = 0.564$ ,  $p < 0.001$ ), which aligns with the high CS rate in Group 5. Pre-labor CS: The high coefficient ( $\beta = 0.450$ ,  $p < 0.001$ ) for this variable suggests a significant proportion of planned CS, which may indicate a need for more stringent criteria for scheduling elective CS. Multiparity with full-term pregnancies: The positive association ( $\beta = 0.345$ ,  $p < 0.001$ ) is somewhat surprising and contradicts the typically lower CS rates seen in multiparous women. This finding warrants further investigation into the specific indications for CS in this group. Nulliparity: Interestingly, nulliparity showed a negative association with CS ( $\beta = -0.105$ ,  $p = 0.009$ ). This unexpected finding may be related to the very high overall CS rate in our study population. Cephalic presentation: The negative association ( $\beta = -0.080$ ,  $p = 0.008$ ) is expected, as non-cephalic presentations are often delivered by CS. This finding is consistent with global trends and highlights the cascading effect of primary CS on subsequent pregnancies [15]. **Gaber et al.** [4] reported that, the substantial contribution of women with previous CS to the overall CS rate.

**Abdelkareem et al.** [15] reported that, the top indications for CS in our department were previous CS with 54%, pathological cardiotocography (CTG) (12%) and oligohydramnios (8%). The top indications for the nulliparous women in groups 1 and 2 were cephalopelvic disproportion (CPD) (33%), pathological CTG (21%), and failure of progress (8.5%) while the top indications for the multiparous women in groups 3 and 4 were pathological CTG (43%), Oligohydramnios (27%) and severe preeclampsia (10.3%). **Giaksi et al.** [17] reported that cephalopelvic disproportion & a prior cesarean section were the primary indicators for CSs. Although the rates of overweight babies were only approximately three percent, the primary indicators for Groups 1, 2a, 2b, 3, 4a, & 4b were elevated rates of cephalopelvic disproportion, which accounted for the percentages above fifty percent of CSs.

This contrasts with many studies that find nulliparity to be a risk factor for CS [22].

**Conclusion:** Our study highlights a high cesarean section (CS) rate, with previous CS and pre-labor CS as significant contributors. Using the Robson classification, we identified Group 5 (previous CS) and Group 10 (pre-term cephalic deliveries) as major contributors to the CS rate, while Group 3 (multiparous women without previous CS) had the highest rate of normal vaginal delivery (NVD). Sociodemographic factors such as older age, higher gravidity, and parity were associated with CS. Regression analysis confirmed previous CS as the strongest predictor, alongside pre-labor CS and multiparity, while nulliparity and cephalic presentation reduced CS likelihood. These results underscore the necessity for targeted interventions to manage CS rates effectively.

**Financial and non-financial activities and relationships of interest:** None.



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## INTERNATIONAL JOURNAL OF MEDICAL ARTS

Volume 7, Issue 3 (March 2025)



<http://ijma.journals.ekb.eg/>

P-ISSN: 2636-4174

E-ISSN: 2682-3780