

# ASSESSMENT OF MATERNAL AND NEW-BORN COMPLICATIONS FOLLOWING UNPLANNED CESAREAN SECTION

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**Aim:** assess maternal and newborn complications following an unplanned cesarean section

**Design:** Descriptive design was utilized to fulfill the aim of the study.

**Setting:** The study was carried out in Elgalaa educational hospital

**Sample:** A convenience sample of 72 unplanned S.C mothers

**Tool: first tool:** A structured interviewing questionnaire included Socio-Demographic characteristics, Obstetrical history, current pregnancy and causes cesarean section.

**Second tool:** Maternal and Newborn complications checklist

**Results:** This study revealed half of the cases had a moderate complication rate, mothers experienced increased pain and psychological stress, newborns experienced breastfeeding complication and jaundice

**Conclusion:** There was a highly significant relation between a history of having anemia and increased risk for complication following an unplanned cesarean, also having severe bleeding as a cause for unplanned cesarean section has a highly significant relation with increased risk of complication either to the mother or the newborn.

**Recommendations:** based on the study findings its recommended to design an antenatal health education program for high-risk mothers experiencing unplanned or emergency delivery.

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**Keywords:** unplanned cesarean, complication, cesarean section

## Introduction

Cesarean section is the most frequent form of delivery. The cesarean section's rate is increasing rapidly(1), which got significant consideration for mothers health. This increase is due to different factors as decreased normal vaginal delivery after previous cesarean section(2), increase incidence of breach presentation. Increased cesarean section on maternal request(3) An unplanned cesarean section is one form of the cesarean section decided by the physician before the due date for the delivery by week or day or even little hours. Unplanned cesarean differs from an emergency cesarean in the absence of emergency causes, but it's decided to avoid any potential emergencies. The mother's compliance following an unplanned cesarean section includes risk for developing thrombosis, infection complication, postpartum hemorrhage, increased pain rate, and breastfeeding difficulties(4). The new-born complication includes risk for getting a low APGAR score, breastfeeding complication, and developing jaundice in 1<sup>st</sup> 24 hours. Nurses must be prepared with knowledge and skills to assist mothers in experiences unplanned cesarean sections during and post the operation(5)

**Significance of the study:** The statistics of unplanned or emergency caesarean sections are increased because of many causes as there is sudden shifting from normal vaginal delivery as physician preference without a prior planning, or may be due to mother preference because fear of pain oriented to the predicted complication(6) Nursing role should be applied in the different health setting(7). As a maternal health nurse, every nurse should be oriented to the possible risks and complication following the caesarean section and especially the unplanned one, to be capable of designing a pre plan for managing the possible complication and draw a nursing protocol with evidence based practice aimed to improve maternal and new born health outcomes(8)

## Material And Methods

This descriptive design study was carried out on the inpatient's Department of Elgalaa Educational Hospital for obstetrics and gynecology from the beginning of July 2019 to the beginning of January 2020. A total of 72 mothers were included in this study.

**Study Design:** Descriptive study design.

**Study Location:** The study carried out at Elgalaa educational hospital for obstetrics and gynecology. It is a governmental hospital located in downtown Cairo

**Study Duration:** The beginning of July 2019 to the beginning of January 2020

**Sample size:** 72 mothers.

**Sample size calculation:** the sample was selected from the hospital registration book from the beginning of July 2019 to January 2020. The researcher attended to the postnatal unit every day of data collection from 9 am to 2 pm, entered the unit, and explained the study's aim to every selected mother after an agreement to participate in this study and fill the questionnaire.

**Subjects & selection method:** The researcher attended to the postnatal unit every day of data collection from 9 am to 2 pm, entered the unit, and explained the aim of the study to every selected mother after an agreement to participate in the study and fill the questionnaire

**Methods for data collection:** Data were collected to achieve the aim of the current study by using two main tools:

**I-Tool** includes a structured questionnaire developed by the researcher after reviewing the related literature that divided into two parts:

**Part 1:** Sociodemographic characteristics: this part will be concerned with the characteristics of the participants as age, marital status, educational level, occupation, address, height, and weight.

**Part 2:** Obstetrical History, Includes the number of pregnancies, number of abortions, number of labor, type of delivery, history of previous delivery problems, antenatal care.

**II-Tool** of maternal and newborn complications checklist includes maternal complications such as infection to the incision site, accidental surgical injury to an internal organ, major infection, emergency hysterectomy, and pulmonary embolism bladder or bowel injury, bleeding or increased blood loss, chronic pain, and exceeded hospital stay. And new-born complications such as premature birth, breathing, and respiratory problems, hypothermia, jaundice, low APGAR score, need for assistance with breathing and immediate care, fatal injury, difficult to latch on during breastfeeding

**Scoring system:** Each point was scored by 1 point and the total score of complication categorized as a followed low complication (1-3 ), average complication (4-6), high complication (more than 7 )

#### **Procedure methodology :**

The fieldwork was exhibited from the beginning of July to January, covering six months. The data was gathered by the researcher using the previous tools. This was done in the postnatal unit for two days per week from 9 am to 2 pm with a ratio of 2 to 3 mothers per week, and (2-3) sheet was filled every week until the predetermined number obtained regarding interviewing questionnaire sheet for mothers. The researcher filled this sheet through an interview ranged from 25 to 30 minutes with each mother in the postnatal unit, utilizing proper channels of communication and explaining the study's aim before beginning the questions in this sheet.

#### **Statistical analysis**

Data were organized and coded to be suitable for the computer entry process. Data were entered and analyzed using program SPSS ( Statistical Package for Social Science version 26). Graphics were done using Excel program. Quantitative data were presented by mean (X) and standard deviation (SD). It was analyzed using a student Chi-Square test. The qualitative data was illustrated in the form of frequency distribution tables, numbers, and percentages. It was analyzed by the chi-square ( $\chi^2$ ) test. Level of significance was set as P value <0.05 for all significant tests.

#### **Result**

Table 1 shows that the majority of the study mother aged between 21 and 25 years with 34.7% and mean age of 26.2 with standard deviation(SD) of 5.6 years, also marriage duration of 1 to 3 years was the major proportion with 54.1% and the duration of more than 10 years is the least with 2.7 % and mean marriage duration 3.8 and SD of 2.8 years, a mean score of height was 162.5 cm and SD 5.1 cm, regarding the weight mean score was 82.25 kg and SD of 9.1 kg, subsequently the mean body mass was 31.9 and SD was 5.8 this indicate that the study mothers suffers from obesity . As regarded to working condition results revealed that majority of the study mothers were (house wives) not working as 80.5% , while the work of working mothers was fairly difficult.

**Table 1: Distribution of the mothers according to their socio-demographic characteristics**

Socio-demographic characteristics		Number	Percent
Age groups	18->20	12	16.6%
	21->25	25	34.7%
	26->30	16	22.3%
	31->35	15	20.8%
	>36	4	5.6%
Mean $\pm$ SD		26.2 $\pm$ 5.6 years	
Marriage duration	1-3	39	54.2%
	4-6	18	25%
	7-10	13	18%
	>10	2	2.8%
Mean $\pm$ SD		3.8 $\pm$ 2.8 years	
Height	Mean $\pm$ SD	162.5 $\pm$ 5.1 cm	
Weight	Mean $\pm$ SD	82.25 $\pm$ 9.1kg	
Body mass	Mean $\pm$ SD	31.9 $\pm$ 5.8	
Work	Working	14	19.4%
	Not working	58	80.5%
Nature of the work	Comfortable	2	14.3%
	Fairly stressful	12	85.7%
	Very hard	0	0%

### The history of previous pregnancy and birth

Table 2 shows that 31.9% of the study mothers have 1 previous pregnancy and only 1.4% have 7 previous pregnancies, in regarding to number of previous miscarriage data shows 75% of the study mothers haven't any previous miscarriage. Regarding previous normal delivery data shows that 37.5% hadn't previous normal delivery. As regard to cesarean section all study recorded been undergoing cesarean section, also 1.4% of study mothers experienced having still preterm baby, but 5.6% of the study mothers experienced previous intrauterine fetal death, also 1.4% of cases experience previous ectopic pregnancy, in regarding to experiencing hemorrhage with the pregnancy data reveals that 8.3% of cases experience had hemorrhage with pregnancy, and 6.9% experienced postpartum hemorrhage, also 6.9% of study mothers experienced puerperal fever, with 26.3% of previous complication to the mothers but 8.3% experienced complication to the newborn.

**Table (2) Distribution of the study mothers regarding the history of previous pregnancy and birth (N=72)**

Past history		Number	Percentage
<b>Number of previous pregnancies</b>	1	23	31.9%
	2	21	29.2%
	3	18	25.0%
	4	9	12.5%
	7	1	1.4%
<b>Number of previous miscarriages</b>	None	54	c
	One	11	15.3%
	Two	6	8.3%
	Three	1	1.4%
<b>Number of delivery</b>	Normal	0	27
		1	22
		2	19
		3	3
		6	1
	Cesarean	1	72
<b>Ectopic pregnancy</b>		1	1.4%
<b>Bleeding during pregnancy</b>		6	8.3%
<b>Intrauterine fetal death</b>		4	5.6%
<b>premature baby</b>		1	1.4%
<b>Postpartum hemorrhage</b>		5	6.9%
<b>Puerperal fever</b>		2	2.8%
<b>Mothers complication</b>		19	26.4%
<b>Newborn complication</b>		6	8.3%

Table (4) illustrate the causes of unplanned cesarean section , which include birth . maternal , fetal , and emergency causes.. As regard to birth causes the percentage of failed induction, no development of birth stages, sever bleeding, cord prolapse, and very week contraction are 4.2%,33.3%,15.3%,5.6%,and 4.3% in consequence. As regarded causes related to the mother the percentage of high blood pressure or pre-eclampsia, cervical weakness, malnutrition, permanent material problems, psychological stress, severe obesity are 11.1%, 0%,11.1%,5.6%, 23.6%,and 2.8% in consequence. As regard to causes of unplanned cesarean related to the fetus the percentage of fetal distress , fetal death, abnormal fetal presentation , low amniotic fluids , and warping of umbilical cord around fetus neck were 33.3%,4.2%,16.7%29.2%,and 9.6% in consequence .also emergency causes of unplanned cesarean was belly tummy as 1.4% and doing hard effort as 12.5%.

**Table (4) Distribution of the study mothers regarding causes of unplanned cesarean**

Causes of unplanned cesarean		Frequency	Percentage
<b>Birth causes</b>	Failed induction	3	4.2%
	No progress of birth stages	24	33.3%
	Severe bleeding	11	15.3%
	Cord prolapse	4	5.6%
	Very weak contraction	3	4.3%
<b>Maternal causes</b>	High blood pressure, pre-eclampsia	8	11.1%
	Cervical weakness	0	0%
	Malnutrition	8	11.1%
	Permanent marital problems	4	5.6%
	Psychological stress	17	23.6%
	Sever obesity , BMI >40	2	2.8%
<b>Fetal causes</b>	Fetal distress	24	33.3%
	Fetal death	3	4.2%
	Abnormal fetal presentation	12	16.7%
	Oligohydramnios	21	29.2%
	The umbilical cord is wrapped around the fetus neck	5	9.6%
<b>Emergency causes</b>	Belly tummy	1	1.4%
	Doing hard effort	9	12.5%

Table 5 shows the complication of the mothers after unplanned cesarean section, data reveals that the majority of complication is increased pain rate, inability to move after the operation , psychological on mother, anesthesia complication , and bleeding require blood transfusion represents 88.9%,80.6%,61.1%,27,8% and 23.6% in consequence and the minority of the complication unintentional injury to internal organs , infectious complication , admission to intensive care unite with percentage of 1.4%,2.8%, and 1.4% in consequence.

**Table no 5:** Distribution of the study complication following unplanned cesarean section

Complication following unplanned cesarean section		Frequency	Percentage
Complication related to the mother	Changes in vital signs	17	23.6%
	Bleeding requires blood transfusion	17	23.6%
	Unintentional cut to internal organs	1	1.4%
	Infectious complication	2	2.8%
	Admission to the intensive care unit	1	1.4%
	Inability to move after operation	58	80.6%
	Anesthesia complication	20	27.8%
	Type		
	General	6	8.3%
	Spinal	66	91.7%
	Increased pain rate	64	88.9%
	Absence of breast milk	21	29.2%
	Intestinal obstruction	2	2.8%
	Psychological effect on mother	44	61.1%
Financial problems	3	4.2%	
Social problems	3	4.2%	
Complication related to new-born	Low APGAR score	24	33.3%
	Premature new-born	4	5.6%
	Breastfeeding complication	33	45.8%
	Jaundice in 1st 24 hours	26	36.1%
	Cardiac resuscitation	7	9.7%
	The unintentional wound to the new-born	3	4.2%
	Shortness of breath	8	11.1%
	Low blood glucose	3	4.2%
	Admission to NICU	16	22.2%

Figure 3 shows the types of anesthesia received during cesarean section operation , results shows 91.7% of the mothers received spinal anesthesia during cesarean operation while 8.3% received total anesthesia during cesarean operation

**Figure 3: Distribution of the study mothers according to type of anesthesia during cesarean section (N=72)**

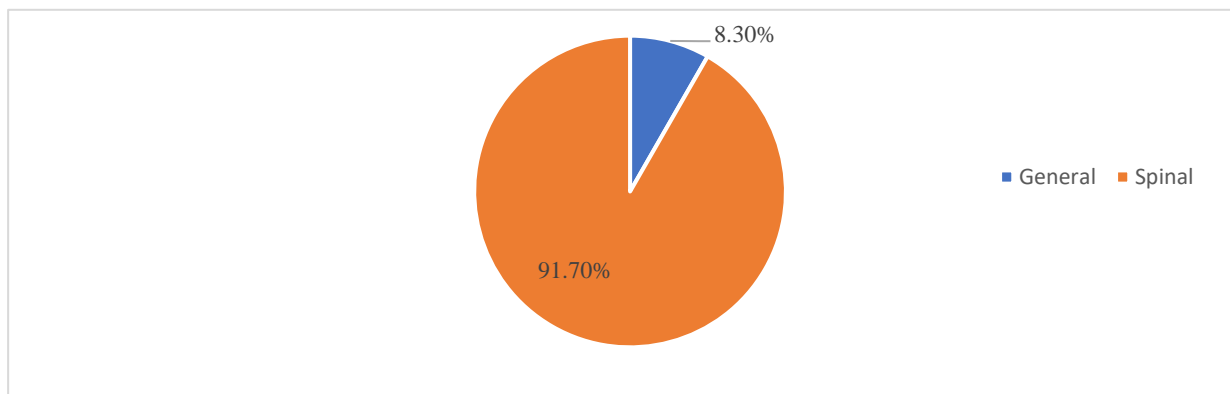


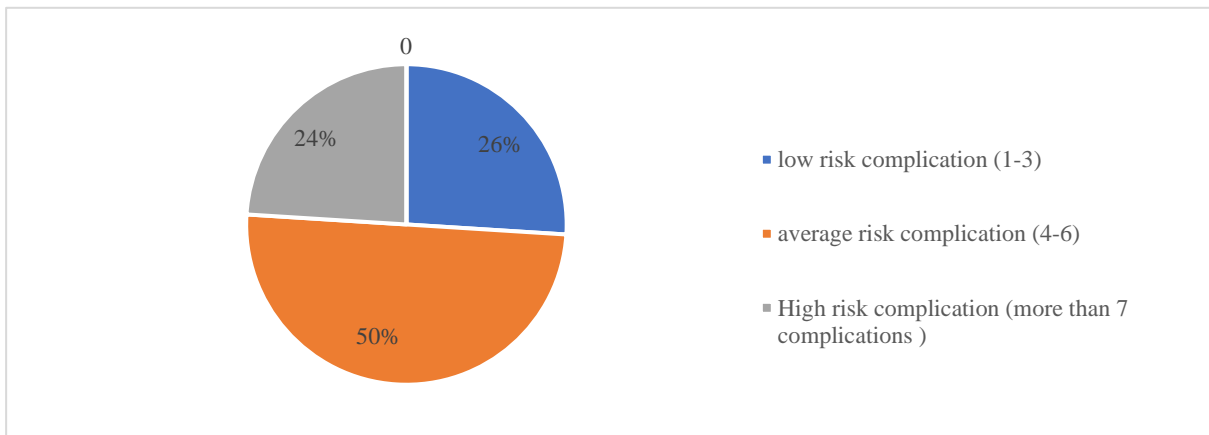
Table 6 shows the distribution of newborn complication following the unplanned cesarean section, data reveals that breastfeeding complication was 45.8%, jaundice in first 24 hours was 36.1% , and low APGAR score was 33.3 , also complication of cardiac resuscitation ,preterm newborn, unintentional injury to the newborn , and low blood glucose level as 9.7%, 5.6%, 4.2%, and 4.2 % in consequence.

**Table (6): Distribution of the study mothers complication related to newborn following unplanned cesarean section (N=72)**

Complication related to newborn		Frequency	Percentage
<b>Complication</b>	Low APGAR score	24	33.3%
	Premature newborn	4	5.6%
	Breastfeeding complication	33	45.8%
	Jaundice in 1 <sup>st</sup> 24 hours	26	36.1%
	Cardiac resuscitation	7	9.7%
	The unintentional injury to the newborn	3	4.2%
	Shortness of breath	8	11.1%
	Low blood glucose	3	4.2%
	Admission to NICU	16	22.2%

Figure 4 illustrates complication risk among mothers with unplanned cesarean section; data shows that 50 % of the study have an average complication, 26.4 % have a low complication, and 23.6% have a high complication rate.

**Figure 4:** Distribution of complication risk among mothers with unplanned cesarean section



**Discussion**

the CS rates have risen above what is assumed to be optimal concerning the well-being of the woman and the newborn, so studying the sequences and complications of unplanned cesarean section is an avital aspect of caring for mother and infant(9). The finding in this study showed thatthemajority of the studied mothers were aged 21-25 years the mean age of 26.2±5.6 years, more than half of the mothers were married for 1-3 years, these results are due to the low age of marriage among Egyptian mothers, and the increasing number of the Egyptian population in that age group as a result from last official population census reported by Central Agency for Public Mobilization and Statistics of Egypt, as a total number of female aged 20-25 are 3,995,929 of the total population(10)

Regarded height, weight, and body mass were 162.5±5.1cm, 82.25±9.1kg, 31.9± 5.8. This may be unhealthy nutritional habits among all Egyptian populations and reluctant on fast food while being on the educational process and eating outside homes.

The current study shows that the number of non-working mothers is four times the number of working as a percentage of 80%; also nature of work have a highly significant correlation with the complication of unplanned cesarean section as it increases in more stressful work nature, mothers tend to be non-working during pregnancy, and the outcome of a working mother is more adverse of non-working mother by increased risk of preterm labor or having a more postpartum complication, from the researcher point of view the increased number of non-working mothers is related to low educational level, and in low socioeconomic status, mothers tend to be more likely to be a housewife.

Follow up visits during pregnancy as five times or more represents more than half of the study sample; this was agreed with results found by Ae-Ngibise in Ghana as found that 50 % of the study sample have more than five visits during the antenatal period (11)but on the other hand a study in Egypt conducted by Hussein et al., found that less than third of their study sample have five antenatal clinic visit (12), from the researcher point of view increase awareness of the mother about the importance of antenatal visit related to education to the mother in their first visit and the spread of primary care setting across the country

Anemia comes first of the most common diseases that happen during pregnancy, as more than 60% of the study sample suffer from anemia, followed by high blood pressure, which represents a near quarter of mothers. Lin disagree with these results as stated that anemia among pregnant mothers represent 25% in China (13); on the hand, Behrens agree that hypertension among pregnant mothers near 25% of pregnant mothers (14)

As regarded causes of unplanned cesarean section, causes related to birth, the researcher found that no development of the birth process represents the most frequent causes that lead to unplanned cesarean, as it presents more than a third of the cases experienced it at any stage of labor, Sever bleeding come as a second cause that leads to unplanned cesarean and has a highly significant correlation with a complication related to unplanned cesarean section sever bleeding prevent progression of normal vaginal delivery and force physician from shifting from normal or planned cesarean to an unplanned cesarean(15).

The second category is causes related to the mother; a near quarter of the cases suffered from psychological stress, along the same lines Takács who stated that 17% of mothers experienced unplanned or cesarean section had psychological predictors such as fear of childbirth, and low self-esteem(16), Causes related to the fetus, comes as the third category of the causes of unplanned cesarean section, fetal distress occupying the most frequent cause of unplanned cesarean by the percentage of 33%, also Karlström, agree with this results, as he concludes that fetal distress is the main cause of unplanned cesarean also(17)

The last category comes emergency causes as the leading factor of unplanned cesarean section, making hard effort evolve as a principle emergency cause of unplanned cesarean, it represented 12% of cases experience hard effort as one cause of developing unplanned cesarean, performing hard effort especially in the third trimester can lead to pregnancy loss. Similarly, observations have been reported in the USA(18)(19)(20)

The researcher found that increased pain is the first common form of complication that occurs after cesarean section, either planned or unplanned; different studies found the same results in Iran, Taiwan, and Japan(11)(21)(22), pain is related to incision and movement and fear of open wound and bleeding, psychological stress may tend to increase pain score(23). Regarding complication related to the new-born, about half of the new-born were experienced breastfeeding complication; this is common problems due to either the cesarean section operation or lack of knowledge regarded breastfeeding (24), more than a third of the new-born experienced jaundice in the first 24 hours, Finn reported in their study in Ireland that jaundice in new-born through emergency cesarean is two time higher than newborn through NVD(25)

Overall, this research has found that half of the study sample were experiencing average complication (4-6 complication). On the same line, Kwon et al., 2016 found the same results that mothers and newborn experienced average complication after an emergency or unplanned cesarean(26)

## Conclusion

**The present study concluded that** after implementation of assessment of the causes and complications followed unplanned cesarean section, all mothers experienced at least one previous cesarean section, this can be identified with increased mean of BMI of the mothers that contribute for developing cesarean section. Although of frequent antenatal follow up visits mothers experienced complications followed the unplanned cesarean section, due to



different causes related to birth causes as non-progress of birth stages, or maternal causes such as psychological stress, or fetal causes such as oligohydramnios , or emergency causes such as doing hard effort. Regarded the complication followed unplanned cesarean the most frequent complication was increased pain score for the mother and breast feeding complication or jaundice in 1<sup>st</sup> 2h hours in newborn. There was a highly significant correlation between history of having anemia and increased risk for complication following unplanned cesarean  $P=0.001$  , also having sever bleeding as a cause for unplanned cesarean section has a highly significant correlation with increased risk of complication either to the mother or the new born  $P=0.001$ .

## **Recommendation**

- 1)The study has shown that mothers experienced unplanned cesarean face the greatest risk post-partum complication. To prevent complication , it is therefore recommended that design antenatal program for high risk mothers for experiencing unplanned or emergency delivery
- 2)The research revealed that educating pregnant women about the risks and causes of unplanned cesarean during antenatal period , tend to decrease the complication during postpartum period
- 3)Disseminate the results among nurses in primary health care facilities and obstetric health settings and hospitals
- 4)Future studies: conducting the study on a large number of women in other obstetrics hospitals .

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