Knowledge and Beliefs of Pregnant Women Towards the effect of Cesarean Section Delivery on Women's Health

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Abstract

Background: Caesarean section (CS) is a major health phenomenon that has a short- and long-term effect on women's health. **Aim:** The current study aimed to assess knowledge and beliefs of pregnant women towards the effect of cesarean section delivery on women's health. **Design**: A descriptive research design was utilized for the current study. **Sample**: Purposive sample of 300 pregnant women were recruited in the current study. **Setting:** the study was carried out at obstetrics and gynecology outpatient clinics at Menoufia University Hospital. **Tools**: Three tools were utilized to collect the needed data: 1) Structured interviewing questionnaire; 2) Cesarean section knowledge questionnaire; and 3) Likert belief scale. **Results**: The mean age of the study sample was 29.86±5.73 years. About 84.30% of them had an unsatisfactory level of knowledge about the effect of CS delivery on women's health as compared to 15.7% of them having a satisfactory level of knowledge. While 77.70% of the study sample had positive beliefs toward the effect of CS on women's health as compared to 22.30% of them had negative beliefs. A statistically significant relation was found between belief categories and total knowledge scores among the study sample regarding the effect of CS on women's health (P < 0.05). **Conclusion**: The pregnant women had an unsatisfactory level of knowledge and positive beliefs regarding the effect of caesarean section delivery on women's health. **Recommendation**: Health education programs for pregnant women to increase their awareness of the effects of cesarean section on their health.

Keywords: Knowledge, Beliefs, Cesarean Section Delivery, Women's Health

Introduction

Cesarean (CS) section delivery is still generally regarded as safe in cases of fetal malpresentation, multiple pregnancies, chorioamnionitis, arrested labor, oligohydramnios, cord prolapse, cephalo-pelvic disorders, and medical conditions such as eclampsia and HELPP (hemolysis, elevated liver enzymes, and low platelets) syndrome. Furthermore, the most common reasons for C-sections performed on demand without a medical basis are fear of giving birth vaginally and avoidance of labor difficulties like pelvic organ prolapses and perineal damage **(Schantz et al., 2019).**

According to Anaman-Torgbor, et al., (2022), the most common causes for Caesarean sections performed on demand without a medical reason include fear of vaginal delivery, the desire to avoid complications during labor, such as perineal damage and pelvic organ prolapses, maternal employment, higher education, doctor's advice, and a family history of the procedure. In an Alkalash et al. (2020) study of 400 mothers, the researchers evaluated the mothers' attitudes toward the mode of delivery in the Banha districts and the rate of Caesarean section (CS). The study sample's 46.3% had a fair level of knowledge about the indications, benefits, and disadvantages of both modes of delivery, while 35.0% had a negative attitude toward CS.

Furthermore, CS may be associated with several risks and complications that could increase the risk of death and morbidity for the mother and her fetus when compared to vaginal birth **(Abbood & Khudhair, 2019).** Long-term or short-term complications are possible. Short-term complications are associated with surgery or anesthesia. Hypoxia, drug overdose, and apnea are a few of the negative effects of anesthesia.

Moreover, the most common surgical aftereffects include wounds, internal organ damage, thrombosis, bleeding, urinary tract, pelvic, and respiratory infections. While adhesions, ectopic pregnancies, infertility, and abnormal placental implantation, such as placenta previa, placenta accreta, placenta increta, and placenta percreta, are among the long-term issues **(Grabarz et al., 2020)**.

Al-Harthi et al. 2020 evaluated the knowledge and attitudes of Saudi Arabian women about the long- and short-term consequences of cesarean sections. They found that 68.8% of them preferred vaginal birth, 77.6% thought it was more harmful than vaginal delivery, and 39.8% thought it was safer for the mother and the child. Moreover, uterine adhesion was shown to be the most frequent problem of CS in the long-term squeal by 47.9% of the study population, while roughly 18% of participants indicated that ongoing pain was a prevalent side effect of CS.

Although vaginal birth is becoming more popular internationally as a way to lower CS-related maternal mortality and morbidity, its prevalence is limited in Egypt. This could be connected to pregnant women's misconceptions about the risks and advantages of a C- section as well as their lack of understanding of mothers. Additionally, less research has been done on the immediate and long-term effects of CS on women's health. Therefore, the aim of this study is to assess knowledge and beliefs of pregnant women regarding impact of caesarean section delivery on women's health.

Community health nurse and maternity nurses play a key role in improving the health status of communities by serving as pregnant women's first health informants, offering up-to-date information and considered as the basis of maintaining their health promotion. Aim of nursing care is to increase control on their health and leads to positive results. Concerning primary level of prevention, nurse should emphasize on improving health promotion among pregnant women. It's important to increase awareness of pregnant women regarding impact of caesarean section delivery on women's health. Early detection and management is very important as early as possible through frequent health education sessions regarding effects of CS on women's health. Nurses should provide support to pregnant women in different community settings and family health centers. **(Stanhope & Lancaster, 2018)**.

Significance of the study:

One of the major surgical procedures that are carried out most commonly in the world is the Caesarean section (CS). The increasing rate of caesarean sections (CS) poses a risk to public health in developing countries such as Egypt **(Alaa-El-Din Wali, Taher, & Abd-El-Fatah, 2020)**. Concerns have been raised about the possibility of overuse or improper indications of the procedure due to the sharp rise in CS rates worldwide **(Abdel-Tawab, et al., 2018)**.

According to the World Health Organization (WHO, 2021), cesarean sections are a vital treatment in pregnancy. But when a C-section is performed improperly, the risks could exceed the advantages. Furthermore, national rates of cesarean sections higher than 10–15% are indicative of needless maternal danger. However, Egypt leads the world in C-section deliveries, accounting for 75–80% of all deliveries, compared to a global average of 25–30% (Ministry of Health and population, 2022). The risks, problems, and costs associated with an increase in C-sections for mothers and pregnancies have made them a significant public health concern **(Karim et al, 2020)**.

The most frequent complications that can happen to a mother during and after CS delivery include infections, blood loss, thrombus formation in the legs or lungs, nausea, vomiting, and a severe headache following the procedure; other complications include damage to another organ, such as the bladder. Additionally, complications can affect neonate during the delivery, such as breathing issues and immature lungs. The high expense of hospital stays and operations is another disadvantage. Additionally, the society may prefer CS due to a lack of general knowledge about the benefits of vaginal delivery, fear of pain, widespread misconceptions about the functions of the bladder and sex after vaginal delivery, and the false belief that a CS is safer

for the baby, childbearing women, their relatives **(Rabie, 2020).**

Thus, conducting this study may contribute to the existing body of knowledge regarding this problem. Additionally, the results of this study could be utilized to develop plans for educating pregnant women on the advantages, dangers, and complications of caesarean sections (CS) in order to enhance their knowledge and belief of this procedure and potentially lessen its negative effects on women's health and community. Furthermore, it influences educational policy in practice to concentrate on this issue and train nursing students and maternity nurses on how to instruct pregnant women on the advantages and disadvantages of CS and its consequences by conducting health education sessions in outpatient clinics. As well, the current study will contribute to the research field regarding the effect of CS on women's health, and the findings from this study will add to the existing literature. At the same time, it also serves as a source of information to support further studies. So the aim of the current study was to assess knowledge and beliefs of pregnant women towards the effect of cesarean section delivery on women's health.

Aim of the study

The current study aimed to assess assess knowledge and beliefs of pregnant women towards the effect of cesarean section delivery on women's health.

Research Questions:

To fulfil the aim of this study, the following research questions were formulated:

1- What is the knowledge of pregnant women toward the effect of caesarean section delivery on women's health?

2- What are the beliefs of pregnant women toward the effect of caesarean section delivery on women's health?

Subject and Methods

Research design

A descriptive research design was utilized for this study; this descriptive research design delineates or explains the variables being studied and provides flexibility in examining a problem from many different angles (Aggarwal & Ranganathan, 2019).

Setting

The current study was carried out in the obstetrics and gynecology outpatient clinics at Menoufia University Hospital. The outpatient clinics include antenatal follow up room, ultrasonography room, an infertility clinic, gynecological and family planning clinic. The total numbers of women who visit the clinic for antenatal follow up are 35000 women per year (statistical department, 2021), the clinic is run by obstetricians and diploma nurses. The researchers met the study participants at the waiting area of these clinics.

Sample

A purposive sample of 300 pregnant women according to the following inclusion criteria: primi or multigravida, aged between 20-45years, during any trimester of pregnancy. Women with contracted pelvis or high risk pregnancy were excluded from the study.

Sample size calculation

Three hundred pregnant women were selected according to the following statistical formula: n=$\frac{z^2*p*(1-p)/e^2}{1+\frac{z^2*p*(1-p)}{e^2*N}}$, n=$\frac{1.96^2*0.5*(1-o.5)/.o5^2}{1+\frac{1.96^2*0.5*(1-o.5)}{.05^2*1400}}$

= 300, N = Population size, z = Critical value of the normal distribution at the required confidence level, z = 1.96, p = Sample proportion, p= 0.5 and e = Margin of error, e =.05. The actual sample size was 300 pregnant women, (Chaokromthong & Sintao, 2021).

Tools of data collection

Three tools were utilized to collect the needed data:

Tool (I): Structured Interviewing Questionnaire: This tool was developed by the researchers after an extensive literature review. It is composed of two parts:

The first part included four questions to assess women's demographic characteristics, such as age, educational level, occupation, and place of residence.

The second part included seven items to assess data related to obstetrical profile, such as the

number of gravida, parity, number of living children, number of abortions, gestational age, mode of previous delivery, and any problems during the previous pregnancy.

Tool (II): Cesarean Section Knowledge Questionnaire: This tool was developed by the researchers after an extensive literature review (Fleetwood, Cantello, & Comi, 2018). It consists of two parts: The first part included 8 questions to assess general information about cesarean section delivery such as reasons for doing CS, causes, advantage, problems of CS and affects a mother's health; the second part included 15 questions to assess data related to the effect of cesarean delivery on women's health as Short term effect of CS on women's health; occurrence of DVT, Urinary incontinence and bowel obstruction. Long term effect of CS on women's health: rupture of the uterus, chances of placenta abnormality and CS increase endometritis. The question's answer was yes or no; the yes response equaled one score, and the no response equaled zero score. The total knowledge scores were from 0 to 23, and they were classified into two levels: score 0-<14 (less than 60%) was considered an unsatisfactory level of knowledge, while score 14–23 (equal and more than 60%) was considered a satisfactory level of knowledge.

Tool (III): Likert Belief Scale:

It was adapted from Yaqoub et al., (2022) & Elom et al., (2023) by researchers after extensive literature review. This tool included 17 items related to the women belief about the effect of cesarean delivery on women's health, each item scored by 3 points likert scale, score 1 denote disagree, score 2 denote neutral, and score 3 denote agree. The total score was 51 which categorized into two levels score from 1-29 denote negative beliefs and score from 30-51 denote positive beliefs.

Tools validity and reliability

Tools were submitted to a panel of three experts in the fields of maternity and community health nursing, revision was performed to test the content validity, relevance, and clarity of the tools, and modifications were performed accordingly. The reliability of tools was tested using Cronbach's alpha test, and the result was

highly respectively reliable (0.78 & 0.77) for tools (2 & 3).

Ethical Considerations

An official approval was obtained from the Research Ethics Committee in the Faculty of Nursing at Menoufia University, Ethical approval No.994 was obtained to conduct the proposed study. Then official approval was obtained from the obstetrics and gynecology outpatient clinics administrator and a formal written consent was obtained from the pregnant women after informing them of the purpose and nature of the study. Participation in this study is entirely voluntary; each participant has the option to accept or refuse participation in the study. After carefully reading the informed consent form, the study participants signed it; the ethical considerations included explaining the goal and scope of the study; anonymity and confidentiality were ensured through data coding. Participants had the right to withdraw from the study at any time, and the information gathered was only used for this particular purpose.

Procedure

First, primary official permission was obtained from the research ethics committee of the Faculty of Nursing at Menoufia University to approve the tools and the study. Then, an official letter was sent to the administrative authorities of obstetrics and gynecology outpatient clinics at Menoufia University Hospital to grant approval for conducting the present study, and official permission was obtained from the administrative authority of the selected setting (outpatient manager). Data was collected three days per week; around five to seven women per day were recruited over a three months period, from August to October 2023. Data collection was carried out in two steps: Interviewing, recruitment, and assessment.

Interviewing and recruitment

During the interview, the aim of the study was explained to the selected women to gain their acceptance to participate in the study. Women who fitted the inclusion criteria and accepted to be included in this study were recruited and then data related to socio-demographic status and obstetric history was collected from each woman.

Assessment

Data was collected individually through face to face interview for each pregnant woman three days per week (total sample of 300 pregnant women). The researchers met the study sample, asked them questions in Arabic and record answers in the tools. Data related to general knowledge about cesarean section among pregnant women were collected using cesarean section knowledge questionnaire and data related to women's belief about cesarean section was collected using likert belief scale regarding the effect of cesarean delivery on women's health. The interview was carried out in the waiting room at outpatient clinic, and the time consumed to fulfill the questionnaire ranged from 20-30 minutes.

Statistical analysis:

Collected data were coded and tabulated using a personal computer. Statistical package for social science (SPSS) version 23 was used. The researchers checked all data to avoid any discrepancies. Data were examined for coding and entry errors. Percentage, mean, standard deviation and frequency were used for analyzing the data. These tests were used to identify the significant of the relations. Level of significance was considered at p-value <0.05.

Results

The findings of the current study are presented in five sections: 1) demographic characteristics of the study sample; 2) obstetrical profile of the study sample; 3) women's knowledge about CS, 4) women's beliefs about CS; and 5) the relations between total knowledge categories among selected women and their beliefs regarding CS.

Table 1 shows that 78.3% of the study sample aged from 20–35 years old, with a mean age 29.86 ± 5.73 years. More than two thirds of the study sample lived in rural areas, and 80.7% of them were housewives. Nearly one-third of the study sample (29.7%) had completed secondary school.

Table 2 shows that the gravidity of the study sample ranged from 1 to 7, with a mean of 3.66 ± 1.53. The range of parity was 0 to 6, with a mean of 2.261.38. About 58.7% reported that there was no history of abortion. Fifty percent of the study sample had one or two children, and the mean gestational age was 32.09 + 8.10.

Table 3 shows that 41.7 % of the study sample delivered normal vaginal as compared to 25% of them delivering CS. About 15% of the selected women had a history of previous problems during pregnancy.

Table 4 shows that about 28% of the study sample who had a previous CS stated that preeclampsia was the reason, while 20% of them had cephalopelvic disproportion. Also, 48% of the study sample knows that the reasons for doing CS are fear of pain, lack of knowledge, and dependence on a relative's opinion. About 73% of the study sample knows that CS saves the life of the mother, 49.7% know that it affects the mother's health, and 73.3% of them know that CS is accompanied by more bleeding.

Table 5 shows that 68.7% and 61.7% of the study sample reported that increased risk of wound infection and anesthesia problems are the common short-term effects of CS on women's health as compared to 42% of them who reported that CS increases the risk of postpartum bleeding and maternal mortality. Also, 53.7% and 43.3% of the study sample reported that bowel obstruction and urinary incontinence were short-term impacts of CS. Regarding the long-term effect of CS on women's health, the results shows that 39% and 37.7% of the study sample reported that CS increased the incidence of endometritis and the risk of premature delivery in the next pregnancy as compared to 17.3% of the study sample reported that CS increased the incidence of ectopic pregnancy.

Figure 1 shows that 84.3% of the study sample had an unsatisfactory level of knowledge regarding the impact of CS on women's health as compared to 15.70% of them having a satisfactory level of knowledge with a mean knowledge score of 6.28 ± 3.18.

Table 6 shows that the total mean belief score was 33.13 ± 5.99. About 72.7 % of the study sample agreed that CS delivery delayed bowel movements, 70% of the study sample agree that CS delay wound healing, and 52.3% of them agreed that increased the risk of maternal mortality. While 50.7% and 44.7% of the study sample disagreed that CS cause respiratory problems, and high incidence of miscarriage respectively.

Figure 2 shows that about 77.7% of the study sample had positive beliefs as compared to 22.3% of them had negative beliefs toward effect of CS on women's health.

Table 7 shows that there was a highly statistically significant relation between beliefs categories and total knowledge scores among the study sample.

Table (1): Percentage distribution of study sample regarding demographic characteristics (n=300).

Demographic characteristics	Freq.	%
Maternal Age (years)		
<20	9	3.0
20-35	235	78.3
>35	56	18.7
Mean age (mean ±SD) yrs.	29.86 ± 5.73	
Place of residence		
Rural	184	61.3
Urban	116	38.7
Level of education		
Can't read and write	77	25.7
Read and write	35	11.7
Primary school	7	2.3
Preparatory school	54	18.0
Secondary school	89	29.7
High education	38	12.7
Occupation		
Working	58	19.3
House wives	242	80.7

Table (2): Percentage distribution of the study sample toward obstetrical profile (n=300).

Obstetrical profile	Freq.	%
Primigravida	9	2.0
Gravida two	116	38.7
More than 2	175	58.3
Primipara	100	33.3
More than 2	200	66.7
Mean ± SD	3.66 ± 1.53	
Number of abortion		
0	176	58.7
1-2	93	31.0
≥2	31	10.3
Number of children		
0	112	37.3
1-2	152	50.7
≥2	36	12.0
Mean ± SD	2.261.38	
Gestational age (Weeks)	32.09 ±8.01	

Table (3): Percentage distribution of the study sample towards history of previous pregnancy (n=300).

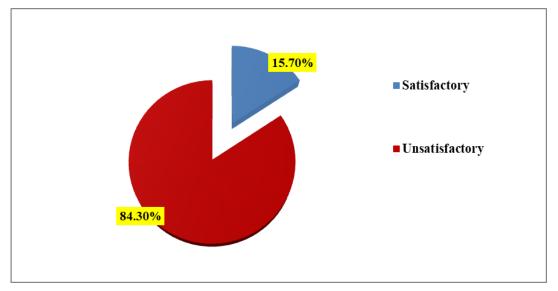| Variables	Freq.	%
Mode of previous delivery		
▪ No	100	33.3
▪ Normal delivery	125	41.7
▪ Cesarean section	75	25
Problems during previous pregnancy		
▪ Yes	45	15.0
▪ No	255	85.0
If yes, example of problems (n=45)		
▪ Premature uterine contractions	3	6.7
▪ Pre-eclampsia	21	46.7
▪ Intrauterine growth retardation	3	6.7
▪ sickle cell anemia	3	6.7
▪ Oligohydramnios	3	6.7
▪ Bleeding	3	6.7
▪ Ectopic pregnancy	3	6.7
▪ Gestational diabetes	6	13.3

Table (4): Percentage distribution of the study sample regarding general knowledge about cesarean section (n=300).

General knowledge about Cesarean sections	Yes		No	
	No.	%	No.	%
- **Having a previous cesarean section (CS)**	75	25.0	225	75.0
If yes, What are the reasons for having a previous CS? (n=75)				
▪ Delayed in labor progress.	16	21.3	0	0
▪ Macrosomic baby	3	4.0	0	0
▪ Convulsions due to high blood pressure	6	8.0	0	0
▪ Vaginal bleeding before childbirth	3	4.0	0	0
▪ Cephalopelvic disproportion	15	20.0	0	0
▪ Fetal complications	5	6.7	0	0
▪ Pre-eclampsia	21	28.0	0	0
▪ Uterine rupture.	3	4.0	0	0
▪ Ectopic pregnancy	3	4.0	0	0
- **Knowing the reasons for undergoing CS**	144	48.0	156	52.0
if yes, state the reasons for doing CS (n=144)				
▪ Fear of the pain of vaginal delivery	99	68.7	0	0
▪ Dependence on the opinion of relatives	30	20.8	0	0
▪ Women's lack of knowledge about the importance of vaginal delivery.	15	10.5	0	0
- **Knowing the causes of CS**	205	68.3	95	31.7
if yes, state the causes (n=205)				
▪ Medical reasons	33	16.1	0	0
▪ Fetal reasons	82	40	0	0
▪ Delayed labor progress	18	8.8	0	0
▪ Cephalopelvic disproportion	72	35.1	0	0
- **Knowing the advantage of CS**	99	33.0	201	67.0
If yes, mention the advantages (n=99)				
▪ Less pain	69	69.7	0	0
▪ Preserves the shape of the reproductive system.	24	24.3	0	0
▪ Low risk of child bones fracture.	6	6.0	0	0
- **Knowing the problems of the CS section**	161	53.7	139	46.3
If the answer is yes, list the problems (n=161)				
▪ An increase in the rate of infection.	105	65.2	0	0
▪ A lack of bonding between the mother and the fetus	18	11.2	0	0
▪ More expensive	38	23.6	0	0
- **Knowing that CS saves the life of the mother and the baby**	219	73.0	81	27.0
- **Knowing that CS affects a mother's health**	149	49.7	151	50.3
- **Know that CS delivery is accompanied by more bleeding**	210	73.3	80	26.7

Table (5): Percentage distribution of the study sample regarding knowledge about the short- and long-term effect of cesarean section on women health (n=300).

Knowledge	Yes		No	
	No.	%	No.	%
Short term effect of CS on women's health				
▪ Anesthesia problems	185	61.7	115	38.3
▪ Occurrence of DVT	100	33.3	200	66.7
▪ Urinary incontinence	130	43.3	170	56.7
▪ Bowel obstruction	161	53.7	139	46.3
▪ Delays initiation of breastfeeding	99	35.0	201	67.0
▪ Infected wound	206	68.7	94	31.3
▪ Postpartum bleeding	126	42.0	174	58.0
▪ Risk of maternal mortality and morbidity	126	42.0	174	58.0
▪ High risk for hysterectomy	99	33.0	201	67.0
Long term effect of CS on Women's Heath				
▪ Rupture of the uterus	77	25.7	233	74.3
▪ Placenta abnormality	87	29.0	213	71.0
▪ Premature delivery in the next pregnancy	113	37.7	187	62.3
▪ High risk for endometritis	117	39.0	183	61.0
▪ High risk for ectopic pregnancy	52	17.3	248	82.7
▪ High risk for pelvic adhesions	91	30.3	209	69.7
Total mean knowledge score	6.20 ±3.14			
- **Minimum – Maximum**	0-15			

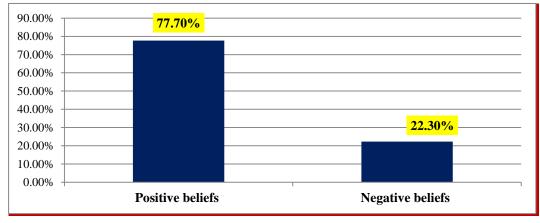*Responses are not mutually exclusive.

Figure (1): Total percentage distribution of the study sample according to their levels of knowledge regarding the impact of cesarean section on women's health (n=300).

Table (6): Percentage distribution of the study sample beliefs toward cesarean section (n=300).

Beliefs toward CS	Agree		Neutral		Disagree	
	No.	**%**	**No.**	**%**	**No.**	**%**
- High risk for hysterectomy	102	34.0	85	28.3	113	37.7
- High percentage of abnormal placenta (accreta)	82	27.3	114	38.0	104	34.7
- High risk for uterine rupture	84	28.0	88	29.3	128	42.7
- Delayed wound healing after the operation	210	70.0	51	17.0	39	13.0
- High risk for bleeding after CS delivery	128	42.7	63	21.0	109	36.3
- Increase the risk of bladder injury	107	35.7	96	32.0	97	32.3
- Liable to respiratory problems	73	24.3	75	25.0	152	50.7
- Bowel movement problems	218	72.7	33	11.0	49	16.3
- Lead to urethral injury	110	36.7	64	21.3	126	42.0
- Risk for blood thrombosis in lungs/feet	134	44.7	45	15.0	121	40.3
- Affect sexual health	103	34.3	75	25.0	122	40.7
- High risk for maternal mortality	157	52.3	39	13.0	104	34.7
- Less painful than vaginal delivery	122	40.7	87	29.0	91	30.3
- Lead to a hernia in the surgical site	195	65.0	33	11.0	72	24.0
- Protection from vaginal prolapsed	102	34.0	97	32.2	101	33.7
- Risk of ectopic pregnancy in the future	80	26.7	108	36.0	112	37.3
- High incidence of miscarriage	91	30.3	75	25.0	134	44.7
Total mean beliefs score. Minimum – maximum	33.13 ± 5.99 20 - 48					

Figure (2): Total percentage distribution of the study sample toward categories of beliefs (n=300).

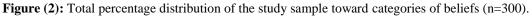**Table (7):** Relation between total knowledge scores and beliefs study sample regarding cesarean section (n=300).

Belief categories	Total knowledge scores				p-value
	Satisfactory		Unsatisfactory		
	No.	**%**	**No.**	**%**	
-Negative	0	0.0	67	26.5	χ^2=16.0
-Positive	47	100	186	73.5	P=0.001**

*Statistically significant at ≤0.05

**Highly significance at ≤0.01 levels

Discussion

Caesarean section is performed for medical necessity, CS can save both the mother's and the baby's lives. However, if it is carried out without a medical necessity, it may raise maternal death and morbidity rates. Underlying conditions associated with CS include an increased risk of uterine rupture, irregular placentation, ectopic pregnancy, hemorrhage, puerperal infection, stillbirth, thrombosis, and preterm birth Sandall et al (2018). The aim of the current study was to assess knowledge and beliefs of pregnant women towards the effect of cesarean section delivery on women's health. Therefore, this study helps to determine pregnant women's knowledge and beliefs about CS, which could be used in planning strategies for improving knowledge and beliefs about CS in the community in order to possibly reduce the adverse effects on women's health.

In relation to the demographic characteristics of the selected pregnant women, the findings indicated that more than three-quarters of them aged between 20 and 35 years old, with a mean age of 29.86± 5.73 years, and about one-third of them had secondary education. And more than half of them lived in rural areas. Also, the majority of the study sample was a housewife. This might be as a result of the fact that marriage rates are higher in rural areas than in urban areas in Egypt, and a woman's fertility is generally of good quality from the late teens to the early thirties. This finding was consistent with Al-Rifai et al., (2020), who conducted a study about knowledge and preference towards mode of delivery among pregnant women in the United Arab Emirates and found that the mean age of the pregnant women was 30.6 ± 5.8 years. Furthermore, these results agree with the findings of Maitanmi et al. (2023), who evaluated pregnant women's knowledge, attitudes, and perceptions regarding cesarean sections. They also reported that half of the respondents were in the 25–35 age range. From the researchers point of view this congruency in sample age may be related to the mean age of marriage in Arabic countries and Arabic culture prefers the marriage in the early age of child bearing period.

These results, however, disagree with those of Yaqoub et al. (2022), who evaluated women in Jeddah, Saudi Arabia, regarding their awareness and knowledge of complications following cesarean sections. They stated that the age range of the study sample was 21–74 years old, with a mean age of 37.42 ± 9.7. Most of the women had graduated from university, with the remainder having completed at least primary school. The majority of women were housewives. From the researchers opinion, the contradicting may be related to the Arabic countries had a great value of having children even in case of old age women. They considered the women as productive person for children.

The present study indicated that one quarter of the studied sample underwent CS delivery in the previous pregnancy due to preeclampsia, cephalopelvic disproportion, delayed labor progress, and complications that occurred during pregnancy, such as macrocosmic babies, convulsions due to high blood pressure, vaginal bleeding before childbirth, fetal complications, uterine rupture, and ectopic pregnancy. This result was in line with a study by Karim et al. (2020), who found that one of the main risk factors for cesarean sections was the existence of prenatal problems. These results also support the findings of Alaa-El-Din, Taher, and Abd-El-Fatah (2020), who evaluated the awareness, knowledge, and attitude of Egyptian women toward cesarean delivery. They found that over half of the participants had at least one CS in their lifetime, with maternal requests and expected CPD before labor pains being indicators of CS. From the researchers' point of view, this agreement was a normal congruent as a result of complication of CS among women at any community.

According to the study's findings, selected pregnant women's reasons for undergoing caesarean sections were mostly fear of the pain during vaginal delivery, reliance on family opinions, and ignorance of the significance of vaginal delivery. This result was in line with that of Gamal, Khalifa, Ghazawy, and Hassan (2019), who investigated the factors that led to cesarean section deliveries in the Minia Governorate and discovered that fear of labor pain, was one of the non-medical causes of CS. This congruency may be due to the nature of Egyptian women tolerance to pain and fear of pain may be lead her to do major operation as CS. Also, the other main causes of CS may be due to avoid any deformity in vaginal as a result of vaginal delivery. Solanke (2018), on the other hand, found that the factors

linked to cesarean delivery were maternal age, parity, education, and household income.

Furthermore, the results of this study showed that over 50% of pregnant women were aware of the causes of cesarean section (CS); fetal factors, cephalopelvic disproportion, medical factors, and delayed labor progress. The results matched the research conducted by Gamal, Khalifa, Ghazawy, and Hassan (2019), who found that the most common medical reasons for cesarean section (CS) were malpresentation, cephalopelvic disproportion, failure of labor progress, and fetal distress. This matching was compatible with main indicators of CS recently in Egypt Ministry of health mentioned.

Additionally, the results of the current study showed that one-third of the sample stated that CS had advantages such as reducing pain, maintaining the structure of the reproductive system after childbirth, and making it more difficult for the child to suffer a bone fracture. This result was consistent with that of Al-Rifai 2020, who reported in his research that over 75% of the participants believed caesarean delivery (CS) would be less painful than vaginal delivery. Additionally, a significant proportion of the sample anticipated that respiratory disorders and bone fractures would be less common following CS delivery. Furthermore, this result aligned with the findings of Suwanrath et al. (2021), who mentioned six categories as main causes of pregnant women selection for CS such as: favourable attitudes toward the procedure, labor anxiety, and unpleasant past experiences. This consistency proved that all pregnant women had a same fear from vaginal delivery and the preferred CS for this cause.

Furthermore, this result was consistent with an additional study that showed a lower incidence of pelvic organ prolapse and urine incontinence is linked to cesarean birth (Keag, Norman, & Stock, 2018). Furthermore, Alaa-El-Din, Taher, and Abd-El-Fatah (2020) found that nearly two-thirds of the women surveyed believed that a cesarean delivery was safer for the infant and safer for the mother and about two-thirds noted that CS was linked to less bleeding and pain than vaginal birth.

The current study found that over half of the study sample were aware of the negative consequences of CS, including higher infection rates, a lack of mother-fetal connection, and higher costs. This result was consistent with the findings of Al-Rifai et al., (2020) and Alaa-El-Din (2020), who found that pregnant women knew that caesarean sections (CS) are associated with greater maternal problems than vaginal birth and can impact mothers' ability to form an emotional attachment with their children. According to the current study's findings, around 75% of participants are aware that more bleeding occurs after CS delivery. Al-Rifai et al., (2020) reported that 83.9% of respondents believed that maternal bleeding was less likely to occur during caesarean section (CS) compared to vaginal delivery, which contradicted the previous finding.

The present study revealed that more than three-quarters of the study sample had an unsatisfactory level of knowledge about the impact of CS on women's health. This may be due to the fact that they thought only about CS advantages, as CS saves the lives of the mother and the baby and is less painful than vaginal birth. Also, this unsatisfactory level of knowledge may be related to the fact that the majority of the study sample had only secondary education and lived in rural areas where there was less health awareness and no educational programs to raise women's awareness about the advantages and disadvantages of modes of delivery. This finding was consistent with the findings of Al-Rifai et al., (2020), who found that pregnant women did not fully understand the health risks connected to various delivery modalities and did not have sufficient knowledge about the mode of delivery. The result also agrees with Yaqoub's et al (2022) findings, which indicated that the majority of participants had low knowledge scores on complications related to cesarean sections.

These findings contradict with Al Sulamy, Yousuf, and Thabet (2019), who found that pregnant women generally had an acceptable level of knowledge of elective CS, with a few exceptions (such as the negative effects of CS). Furthermore, Maitanmi et al. (2023) and Panti et al. (2018), who stated that most study participants had positive opinions about computer science, do not support these findings. The contradiction may be due to the level of knowledge about CS may be related to the difference in educational level, as the majority of women in those other studies were highly educated and could access the internet and other media to acquire the needed information.

The current study revealed that more than three-quarters of the study sample had positive beliefs toward the effect of CS on women's health. This might be due to the ignorance of pregnant women about the effects of CS on their health. This finding is consistent with the findings of Naa Gandau et al. (2019), who found that most of the study's participants had a positive attitude toward using CS if necessary. These findings, however, are inconsistent with Yaqoub's et al (2022) clarification that the majority of participants preferred vaginal delivery and had negative attitudes toward cesarean deliveries. Furthermore, these findings contradict those of Al Sulamy et al., (2019) and Le (2016) in Vietnam, who found that only 25% of pregnant women in their research had a positive attitude toward CS and that over half of them had a negative view. Moreover, these results contradict those of Ghotbi et al. (2014), who found that the majority of pregnant women had a negative attitude toward CS. One possible explanation for the discrepancy between the findings of the present study and the previous study's results is the nature, traits, and cultural background of the study participants. Beliefs generally reflect an individual's culture, and the beliefs of pregnant women toward caesarean sections may be influenced by their ideas, feelings, and dread. Positive beliefs may be from the previous CS in their families or neighbours.

Conclusion

Based on the findings of the current study, the majority of pregnant women had an unsatisfactory level of knowledge, and more than three quarters of the study sample had positive beliefs regarding the effect of caesarean section delivery on women's health.

Recommendations

Based on the study findings, the researchers recommended the following:

▪ Health education programs for pregnant women to increase their awareness regarding the effects of CS on their health.

▪ Nurses should provide the necessary knowledge about C-section complications to pregnant women who attending antenatal clinics through mother class.

▪ Future researches should include:
1- Replicating this research with larger sample sizes in a variety of at different health care settings.
2- Conduct further live-experience research to explore women's perceptions related to the long-term effects of CS on their health.
3- Evaluating the impact of health education program on pregnant women awareness of the effects of CS on their health.

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