

## Effect of Online Education on Reducing Post Caesarian Section Pain and Anxiety among Pregnant Women

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### Abstract

**Background:** Cesarean section is accompanied by persistent postoperative pain and anxiety. **Aim:** To determine the effect of online education on reducing post-caesarian section 'pain and anxiety among pregnant women. **Design:** A quasi-experimental design was used to accomplish this study (pre/post-test). **Setting:** The study was conducted at the antenatal outpatient clinic in Mansoura University Hospital. **Subject:** A purposive sampling technique was used to select a sample of 100 pregnant women who were enrolled in the previously selected setting. **Tools:** *Three tools were used* (I) an Online-administered questionnaire, which covered two parts personal data and current obstetric history, (II) A numerical pain rating scale, and (III) a State-Trait Anxiety Inventory. **Results:** The current study found that pregnant women who received online education experienced lower mean pain scores post-online education than those pre-online education ( $P=0.05$ ). This difference was highly statistically significant. Additionally, the study found that anxiety levels among expectant women were significantly different post-online education compared to pre-online education ( $P=0.001$ ). Pre and post-education, there was a significant positive relationship between the pregnant women's state anxiety levels and pain intensity. **Conclusion:** Online education on has a positive effect on reducing post-caesarian section 'pain and anxiety among pregnant women. **Recommendations:** Providing online education for pregnant women is recommended to improve their knowledge and reported practices which are reflected in pain and anxiety levels reduction.

**Keywords:** Anxiety level, Online education, Pain, Pregnant women, Post cesarean.

### Introduction:

The World Health Organization (WHO) has released fresh information showing that the number of cesarean sections performed worldwide has increased and now accounts for more than one in five (21%) deliveries. According to the study, this number is expected to rise over the next ten years, with nearly a third (29%) of all newborns projected to be delivered via cesarean section by 2030. Even though a cesarean section can be a necessary and life-saving procedure, performing one when there is no medical necessity can put women and babies at unnecessary risk of both short- and long-term health issues (WHO 2021).

A surgical wound, flatulence, uterine contractions, or psychological stress and tension like fear, weariness, or grief can all cause pain. Physiological reactions to pain include those involving the respiratory, circulatory, gastrointestinal, urogenital, and

metabolic systems as well as the endocrine and mental systems. Anxiety following cesarean delivery might be brought on by fears of pain or worries about losing sexual function, and body image, returning to normal daily activities, or even losing a job (Kant & Akpinar, 2017).

Most women experience painful side effects throughout the recovery time from surgery. Pain is linked to significant handicaps due to decreased mobility, avoidance of exercise, falls, depression and anxiety, disturbed sleep, and exhaustion. Effective management of pain and fatigue can result in more comfort, better life quality, a quicker return to normal life, shorter hospital stays, and lower costs. Additionally, soreness and exhaustion may make it more difficult for a mother to provide for and optimally breastfeed her child during the postpartum time (Abdulla et al., 2013).

The majority of patients undergoing surgical procedures also reported varying

degrees of concern related to the type of anesthetic, trouble waking up after surgery, disability, post-operative discomfort, difficulty functioning at work, loss of body control, and worry about losing sexual function. It is well established that a patient's level of anxiety during the postoperative period affects how much pain they experience. Complementary and alternative therapy (CAT) techniques have acquired significance in the treatment of postoperative pain and anxiety due to the drawbacks of pharmaceutical approaches, such as respiratory depression, itching, nausea, vomiting, and decreased gastrointestinal motility (Tazuma et al., 2019).

Additionally, anxiety brought on by pain raises muscular tonus, which raises muscle oxygen demand and lactic acid production. Muscle cramping and soreness can be brought on by the buildup of lactic acid in the muscles. The recovery process is prolonged and the risk of problems rises when pain and anxiety are not properly managed in the immediate postoperative period (Youssef & Hassan, 2019).

Distance learning and online education were initially developed in developed nations (Cassum, et al., 2020). Post-cesarean women may benefit from online education to refine and polish their current abilities and knowledge, leading to higher-quality care. Additionally, they improved their knowledge and skills through continued study. Online educational models have developed as a new choice for post-cesarean women to pursue their education (Abd Elaziz, et al., 2021).

The management strategy uses a variety of methods, including action plans, problem-solving, self-monitoring, coping mechanisms, stress management, sharing of experiences, coaching, motivation and confidence building, positive feedback, and peer role models, to empower and support patients in enhancing their quality of life (Hassan et al., 2019). To help and urge post-cesarean women to self-medicate, nurses are crucial and play the most significant role in health education (Mohamed et al., 2017).

### Significance of the study:

Over 1 million women have a cesarean delivery each year, making it the most prevalent surgery performed in the country today. Cesarean birth rates increased from 5% in 1970 to 31.9% in 2016 (Robertson & White, 2021).

There was a higher risk of complications from cesarean deliveries because the nurse's lack of understanding about cesarean deliveries prevented her from giving the patients the proper treatment. The patients in this case were hurt and unable to receive therapy as intended. The use of medical and surgical techniques (as needed by pregnant women) is a major factor in the management of cesarean deliveries. Pregnant women would be able to cope with their discomfort and anxiety if they had the necessary information about cesarean sections.

Over the past ten years, there has been a sharp rise in the number of cesarean sections performed in Egypt, posing a risk to the health of both mothers and newborns. Additionally, there is a dearth of data regarding women's post-cesarean section knowledge and habits, which is a crucial component in creating and putting into practice a suitable intervention to address the issue of infections following a cesarean section. Unfortunately, there was little available data on post-cesarean section wound care knowledge, beliefs, and level of practice. Mother classes that are held during the antenatal time, after surgery, and before discharge help women prepare. Information should be tailored to the needs of the woman and include both routine and special care that may be needed in cases of deviation from the course of normal recovery. Therefore, it was important to determine the effect of online education on reducing post-caesarian section' pain and anxiety among pregnant women.

### Operational Definitions:

**Online education:** is a technique for learning that involves accessing the internet through electronic devices including computers, smartphones, and laptops.

### Aim of the study:

The study aimed to determine the effect of online education on reducing post-caesarian section pain and anxiety among pregnant women through:

- Assessing pregnant women's pain level post caesarian section pre and post-online education.
- Assessing pregnant women's anxiety level post caesarian section pre and post-online education.
- Designing and implementing online education based on pregnant women's needs.
- Evaluating the effect of online education on pain and anxiety among pregnant women post caesarian section.

### Research hypothesis:

Pregnant women's pain and anxiety are expected to reduce post-receiving online education caesarian section.

### Subjects and Method:

#### Research design:

A quasi-experimental design was used to accomplish this study (pre/post-test)

#### Setting:

The research was carried out in the antenatal outpatient clinic at Mansoura University Hospital, Egypt. This setting was selected because it serves the most populated region.

#### Subjects:

A purposive sampling technique was used to select a sample of 100 pregnant women who were enrolled in the previously selected setting. The subjects at first were determined through inclusion criteria in the previously mentioned setting and invited to participate in an online electronic questionnaire using a Google forms spreadsheet which was presented in Whats App groups. All the studied pregnant women meet the following inclusion criteria: educated or at least read and write, aged from 18 to 40 years old, between 30 and 36 weeks of gestation, will perform a cesarean section, accessible via phone call, already use WhatsApp groups, free from mental, chronic disease, and agree to participate in this study.

#### Sample size calculation:

The sample size was determined using the power analysis level of significance of  $0.95 (=1-0.05=0.95)$  at alpha. The significance was set at 0.05 (one-sided) with a big effect size (0.5), and the high significance was set at  $<0.001$ .

#### Data collection tools:

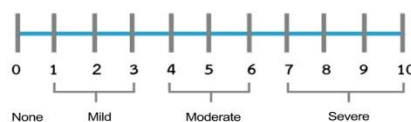
##### Three tools were used

**The online-administered questionnaire** was developed by the researchers after reviewing the related literature and research studies. This tool was an online Google form that was sent to the respondents' pregnant women via WhatsApp groups. It included two parts:

**Part (1):** to assess the personal data of the pregnant women; which included age, level of education, occupation, phone number, and residence.

**Part (2):** to assess the current obstetric history of the pregnant women; which included gestational age, antenatal care follow-up, and current pregnancy complications.

**Tool (II):-** Numeric Pain Rating Scale (NRS) adopted from **John et al, (2008)**, used for assessment of the pain intensity, the pregnant woman is asked to indicate the numeric value on the segmented scale that best describes their pain intensity, consists of (11 points) numeric rating scale, with 0 representing "no pain" and 10 "unbearable pain". It was used twice in an individual interview with researchers pre and post-manipulation.



#### Tool (III): State-Trait Anxiety Inventory

The State-Trait Anxiety Inventory developed by **Spielberger (1972)** to detect the State-Trait Anxiety level, it is a self-assessment questionnaire consisting of short statements. 20 items asked participants to describe how they felt about themselves in a specific context and under certain circumstances, taking into account how they felt about the situation in which they were present.

Expressions in this section are divided into direct and reverse expressions. In a computer environment, the scoring was carried out using the SPSS application. For both the direct and inverted expressions, two different scales were initially created. After being positive for direct expressions and negative for negative questions, the total weighted score for negative expressions is deducted from the total weighted score for direct expressions.

#### **Scoring system:**

The scale items measure the level of State-Trait Anxiety and are scored as follows: “none” (1), “some” (2), “many” (3), and “entirely” (4). The highest score obtained is 80 and the lowest score is 20.

#### **Validity of the tools:**

The content validity of the tools, their clarity, comprehensiveness, appropriateness, and relevance was reviewed by five experts; two professors in the obstetric nursing field, two professors of the Obstetrics and Gynecological Department, and one professor in the Psychiatric nursing field. Modifications were made according to the panel judgment to ensure sentence clarity and content appropriateness.

#### **Reliability of the tools:**

State-Trait Anxiety Inventory reliability is considered good with Cronbach's alpha of 0.87 for the total score. The Numeric Pain Rating Scale reliability was ( $r = 0.94$ ).

#### **The procedure of data collection:**

#### **Ethical considerations and Administrative design:**

The Mansoura University Faculty of Nursing's Ethical Review Committee states that all ethical issues linked to conducting research were taken into consideration during conducting of this study. On page 1 of the online survey, there was a space for an informed consent form. The cover page of the questionnaire included the rapid response (QR) code, a link to the online survey, a succinct summary of the study's objectives, and a QR code. Following reading the consent form, pregnant women filled out the questionnaire. They were told that their decision to take part

in the study was completely up to them and that they might withdraw at any moment, for any reason. The use of the participants' information was disclosed to them as being restricted to research purposes.

#### **Pilot Study:**

A pilot study was carried out on 10% of the pregnant women (10 pregnant women) to test the clarity and testing of feasibility, simplicity, and applicability of the research process as well as to determine the time allowed to fulfill the developed tool. Those pregnant women who were involved in the pilot study were included in the study.

#### **Fieldwork:**

The study was carried out from the first of March 2021 to the end of August 2021.

The current study was carried out in three phases; preparatory, implementation, and evaluation phases.

#### **The collection of data was done through three phases:**

- **I-Preparatory phase:** To create the instruments for data collecting, the researchers analyzed the recent and older literature that was available, including books, journals, magazines, and internet searches. On the first page of the online survey, women who were expecting were provided information about the study's goals and expected results, the tools' features, and how to reply. To ensure that materials could be accessed by pregnant women, participants were asked to fill out and submit an online Google Form after making sure that internet access was available. The Google form link was sent to pregnant women via WhatsApp apps. The content of the educational booklet was prepared in Arabic.

#### **II- Implementation phase:**

- To communicate with pregnant women through online education and share information about the educational content, the researchers from the team of nursing staff and obstetrics and gynecology staff established a WhatsApp group. The participants were divided into ten

subgroups, and once or twice a week, the researchers conducted Zoom meetings with the pregnant women they were studying. Women who were expecting were also advised to arrive early for the Zoom meeting so that everyone could speak freely. Pregnant women attended three of the sessions. Each session lasted for roughly an hour.

- Those who participated in the pre-test using the Google Form received a soft copy of the booklet through their WhatsApp groups. The researchers published pertinent PowerPoint slides, videos, and posters to make it more understandable for pregnant women regarding cesarean section.

**The first session** covered a knowledge content overview regarding cesarean section incision care including the following

- Shower as needed. Pat incision dry.
- Watch the incision for signs of infection, such as more redness or drainage.
- Hold a pillow against the incision when you laugh or cough and when you get up from a lying or sitting position.
- Remember, it can take as long as 6 weeks for the incision to heal.

**The second session** concentrated on the activity, here are some suggestions:

- Don't try to take care of anyone other than the baby and yourself.
- Remember, the more active you are, the more likely you are to have an increase in your bleeding.
- Get lots of rest. Take naps in the afternoon.
- Increase activities bit by bit.
- Plan activities so that you don't have to go up or down stairs more than needed.
- Do postsurgical deep breathing and coughing exercises. Ask the healthcare provider for instructions.

- Don't lift anything heavier than the baby until the healthcare provider tells you it's OK.
- Don't drive until the healthcare provider says it's OK.
- Don't have sex until after had a checkup with a healthcare provider and have decided on a birth control method.
- Let others do things for you. Don't hesitate to ask for help.

**The third session** covered knowledge content about Follow-up as Making a follow-up appointment as directed by our staff and when to call your healthcare provider

- Fever of 100.4° F ( 38°C) or higher
- Redness, pain, or drainage at the incision site
- Bleeding requires a new sanitary pad every hour. Heavy vaginal bleeding may be a sign of postpartum hemorrhage. It needs medical care right away.
- Severe belly pain
- Pain or urgency with urination
- Foul odor from vaginal discharge
- Trouble urinating or emptying the bladder
- No bowel movement within 1 week after the birth of the baby
- Early amputation to prevent deep veins thrombosis
- Swollen, red, painful area in the leg
- The appearance of rash or hives
- The sore, red, painful area on the breasts that may come with flu-like symptoms
- Method of transportation if any complications happen
- Feelings of anxiety, panic, or depression

### III - (Evaluation phase):

After the implementation of online education, the assessment was carried out using the same methods; the post-test was given by

re-posting the questionnaire to the participants on Google Forms.

### Statistical design:

Using SPSS V.20, the data were tabulated and examined. Before further statistical analysis, the data were checked using the Anderson-Darling test for normality and homogeneity variances. Quantitative descriptive data analysis employed mean value and SD calculations, whereas qualitative descriptive data analysis used frequency and percentage calculations and the Chi-square test to compare qualitative variables. The T-test was used to compare two pairs within a group. Significance  $p < 0.05$  was considered statistically significant. Highly Significance:  $p < 0.001$

### Results

**Table (1):** reveals that 60% of the pregnant women who participated were between the ages of 18 and 25 with a mean age of  $29.32 \pm 4.33$  and 40% were literate. Additionally, it was noted that 61% of them were from rural areas and that 90% of them were unemployed.

**Table (2):** demonstrates that more than the average gestational age ( $33.1 \pm 0.4$ ) of the pregnant women tested, the majority (79%) got regular prenatal care, and 16% developed gestational diabetes.

**Table (3):** demonstrates that there was a very statistically significant difference and reduction seen between the mean pain score for pregnant women before and after receiving online education at ( $P < 0.001$ ).

**From figure 1,** pregnant women were found to have lower pain levels post completing their online education, with 24% of them reporting severe pain and a decrease to 8% post-online education.

**Table (4):** Shows that the mean anxiety score for pregnant women before and after online education was significantly different and decreased at ( $P < 0.001$ ).

**Table (5):** Shows that after receiving online instruction, pregnant women were shown to have a statistically significant positive association between their levels of pain and anxiety ( $p < 0.000$ ).

**Table (1):** Frequency and percentage distribution of studied pregnant women according to their data (n=100)

Personal data	No. (100)	%
<b>Age/years:</b>		
• 18<25	60	60.0
• 25<30	19	19.0
• 30<35	13	13.0
• 35≥ 40	8	8.0
Mean age $29.32 \pm 4.33$		
<b>Educational level:</b>		
• Read and write	40	40.0
• Basic education	22	22.0
• Secondary education	31	31.0
• University education	7	7.0
<b>Occupation</b>		
• Working	10	10.0
• Not-working	90	90.0
<b>Residence:</b>		
• Urban	39	39.0
• Rural	61	61.0

**Table (2):** Frequency and percentage distribution of studied pregnant women according to their current obstetrical history: (n=100).

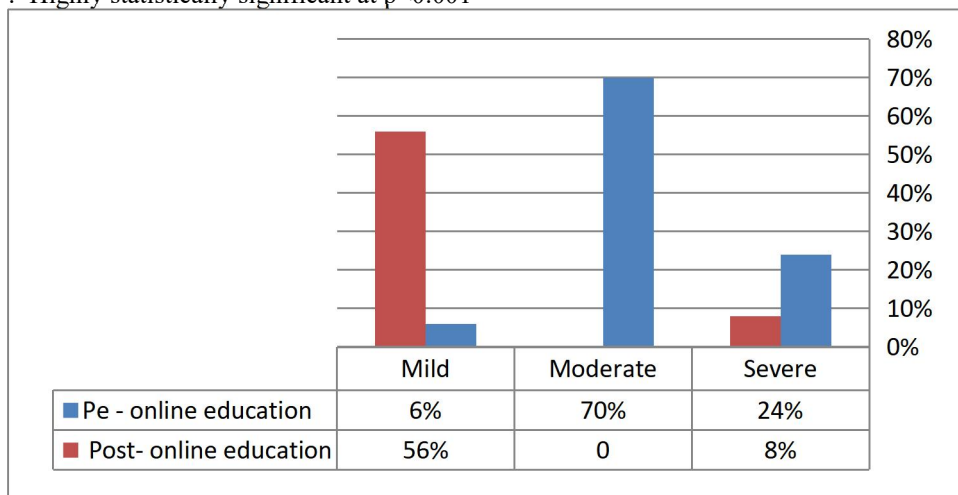
Item	no. (100)	%
<b>Gestational week</b> • Mean $\pm$ Stander deviation	33.1 $\pm$ 0.4	
<b>Antenatal care follow up</b> • Regular • Irregular	79 21	79.0 21.0
<b>Current pregnancy complications</b> • None • Preeclampsia • Gestational diabetes • Genital infection • Anemia	60 4 16 5 15	60.0 4.0 16.0 5.0 15.0

**Table (3):** Differences in the studied pregnant women's pain mean scores pre/post-online education

Item	Pre-online education	Post-online education	t-test	p-value
<b>Pain intensity</b>	7.54 $\pm$ 1.44	3.22 $\pm$ 2.13	17.74	<0.001**

t: paired sample t-test

P: \*\*: Highly statistically significant at p&lt;0.001

**Figure 1:** Percentage distribution of the studied pregnant women regarding pain levels pre and post-online education (n=100)**Table (4):** Differences in the studied pregnant women's anxiety mean scores pre/post-online education

Item	Pre-online education	Post-online education	t-test	p-value
<b>Anxiety level</b>	41.52 $\pm$ 8.67	25.33 $\pm$ 2.42	14.89	<0.001**

t: paired sample t-test

P: \*\*: Highly statistically significant at p&lt;0.001

**Table (5):** Correlation between pain and anxiety levels among the studied pregnant women pre and post-online education

Pain intensity	Anxiety levels	
Pre-online education	r	0.120
	p	.124
Post-online education	r	0.579
	p	.000

\*= significant at  $p < 0.05$  level

### Discussion:

After a cesarean section, postoperative pain from the procedure is still fairly common. Additionally, a minority mentioned mild pain, which is clinically inappropriate but provided new information on the painful experience and its treatment (Karlstrom et al., 2017). In addition to fluctuating, maternal anxiety after cesarean section may also be impacted by psychosocial factors, such as the birth partner. Additionally, significant determinants of postoperative experiences were psychosocial variables. During cesarean delivery, interventions that effectively control psychological and social aspects may help women have a more satisfying experience (Edmund, 2016).

The current study's findings showed that three-fifths of the pregnant women analyzed were between the ages of 18 and 25 with a mean age of 29.32 and 4.33. The bulk of the samples' ages was between 21 and 25 years old, according to Snehallen et al., (2021), "The Impact of a Structured Teaching Program on Knowledge of Pre-Procedure Anxiety Levels in Women Having Caesarean Sections at Selected Hospitals in Rajkot, Gujarat." According to the study's findings, two-fifths of the pregnant women who were evaluated could read and write. Nekoe (2019), who did a study named "assessment of anxiety status of pregnant women" and reported the same findings, lends weight to these findings.

According to the study's findings, 60% of the pregnant women examined had gestational diabetes in their place of residence. This may be the reason and a warning sign for cesarean procedures, according to the experts. The mean pain score of pregnant women decreased significantly before and after receiving online instruction, according to the current study's findings. This, in the opinion of the researchers,

showed the benefits of using online education to address the genuine requirements of the women who were the subject of the study.

According to the findings of the current study, pain levels among the studied pregnant women post-online education have reduced post-online education with a statistically significant difference. From the researchers' point of view, it reflected the noticeable good impact of online education in improving and reducing pain. These confirmed the significant modifications in the studied pregnant women's pain level that reflected the main goals of the online education intervention.

The majority of postoperative patients reported a severe level of pain, according to Lorentzen et al., (2018) on pain experience and pain management in surgical patients, which found a similar outcome. Jayanthi et al., (2019) who observe that a significant difference in pain levels between pre-and post-test was seen in both experimental and control groups supports this finding.

The findings of this study showed that the majority of pregnant women experienced minor pain after receiving online education. This outcome, in the opinion of the researchers, illustrates the positive impact of online education applications, which meet the demands of pregnant women and help to lessen and enhance their suffering.

According to the study's findings, there was a substantial difference and decrease in the mean anxiety score of pregnant women before and after receiving online education. From the researchers' point of view, this indicates how successful online education was. This demonstrated the critical requirement to comprehend online education's goal of lowering anxiety levels regarding cesarean sections. This demonstrated the effectiveness and good impact of online education as well.



These findings are consistent with **Snehalben et al., (2021)** from Rajkot, Gujarat, entitled "The Impact of Structured Teaching Program on Knowledge of Pre-Procedure Anxiety Levels in Primigravida Mothers Having Caesarean Sections at Selected Hospitals," which found that the structured teaching program's obtained value indicated a significant improvement in pre-procedure anxiety levels.

Additionally, a qualitative study on "The link between the model of delivery and postpartum depression" conducted in Sweden by **Sarah et al., (2017)** found that CS deliveries were stressful enough to meet the stressor criteria for PTSD. A very sizable study on "Mode of delivery and postpartum emotional distress" by **Adams et al. (2018)** discovered that women's emotions of discomfort were caused by their fear of a CS. This may be due to a lack of support during labor, lack of information, fear of fetal harm or death, and knowledge gaps.

These findings are also consistent with the **Wiklund et al., (2017)** study, "Cesarean section on maternal request: reasons for the request, self-estimated health, expectations, experience of birth, and signs of depression among first-time mothers," which found that women who were having CS frequently reported anxiety. **Fuglenes et al., (2018)** research "Why do some expecting mothers prefer a cesarean section? The effects of fear, delivery experiences, and parity" also said that women with CS frequently experienced significant levels of labor anxiety during their pregnancies.

The current study's findings showed that among the pregnant women who were evaluated, there was a statistically significant positive association between their levels of pain and anxiety following online education. According to the researchers, the relationship between the two can be explained by the fact that psychological status is affected by pain levels and increases anxiety.

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### Conclusion:

Based on the results and hypotheses of the present study, the study findings concluded that online education had statistically significant positive effects on decreased pain and anxiety means scores of the studied women. The study revealed that there was a difference between in mean scores pre and post- online education regarding pain and anxiety levels.

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### Recommendations:

The following suggestions are made based on the current study's findings:

- Providing online education for pregnant women is recommended to improve their knowledge and reported practices which are reflected in pain and anxiety levels reduction.
- For those women, obstetricians and nurses can make it a regular part of their practice to do a systematic pain assessment.
- A straightforward and practical approach to lessen mental anguish and manage postoperative pain should be made available to pregnant women during the prenatal period.
- Pregnant women should receive psychological assistance as part of routine care to help them grow more accustomed to and enhance their psychological status toward the caesarian section. - Informational pamphlets and brochures on caesarian sections should be created, preserved at antenatal clinics, and distributed to all pregnant women.
- To ensure generalizability, the current work should be replicated using a bigger probability sample.

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