

## **Effect of Nursing Intervention Program for Women post-Caesarean Section regarding Self-Care on their Psychological status and Postoperative Pain**

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### **Abstract**

Cesarean section is accompanied by persistent post-operative pain. Inadequately managed postoperative pain is prevalent worldwide which adversely affects women's psychological status and outcomes that are associated with an increase of women's stress, anxiety and depression. **Aim:** To evaluate the effect of a nursing intervention program for women post-cesarean section regarding self-care theirs on psychological status (i.e., anxiety and/or depressive symptoms) and postoperative pain. **Subjects and Method: Design:** Quasi-experimental research design pre-post-test was used. **Settings:** The study was applied in the obstetrics and gynecology department in Beni-Suef University Hospital. **Sample:** A purposive sample was used to choose a sample of 100 post-cesarean women and recruited from the selected settings. **Tools:** (1) A structured interviewing questionnaire, (2) a Depression, Anxiety, and Stress Scale (DASS), and (3) Numerical Pain Rating Scale (NPRS). **Results:** knowledge level has been improved with statistical significance after nursing intervention program implementation as well as self-care practices after cesarean section post-intervention in comparison to pre-intervention program implementation. A statistically significant difference was detected in the pain level among women after nursing intervention program implementation. A statistically significant relationship was found between knowledge and self-care practices scores throughout the intervention phases. there were highly statistically significant improvements were observed in women's total scores of depression, anxiety, and stress scores regarding the caesarian section at ( $P < 0.001$ ). **Conclusion:** The nursing intervention program implemented for cesarean section women was effective in improving women's psychological status and reducing postoperative pain. **Recommendation:** A nursing intervention program should be integrated into the care among women submitted to cesarean section.

**Keywords:** *Self-care, Caesarean section, Psychological status & Postoperative pain.*

### **Introduction:**

According to new research from the WHO; cesarean section continues to rise globally, now accounting for more than 1 in 5 (21%) of all childbirths. This number is set to continue increasing over the coming decade, with nearly a third (29%) of all births likely to take place by cesarean section by 2030, the research finds. While a cesarean section can be an essential and life-saving surgery, it can put women and babies at unnecessary risk of short- and long-term health problems if performed when there is no medical need (WHO, 2021).

Postoperative pain frequently has nociceptive characteristics, that is, it derives from tissue or organ lesions, whose nociceptive stimuli are perceived as painful. In case of direct nerve lesion, or even strain or compression, neuropathic pain can also be present (Ward, 2018). Although postoperative pain is a physiological event, the improper relief of this experience may entail greater risks for people's health. The harmful effects include neuroendocrine

changes, involving responses of the hypophysis and adrenal glands, which can cause negative repercussions in different organ systems, such as the cardiovascular, respiratory and gastrointestinal, besides effects in the central nervous system (VanDenKerkhof et al., 2019). Highly intensive postoperative pain is also a predictor of chronic pain. In this scenario, very frequent surgeries like cesarean sections demand additional attention, considering that they rank among the most common surgeries among women of fertile age (Kant & Akpinar, 2017).

In addition, this procedure takes place at a time of considerable hormonal and emotional changes related to the pregnancy and arrival of the baby, which can negatively influence the postoperative pain, given the multidimensional nature of this experience. Additional losses for the post-cesarean section women include a commitment of the capacity to take care of their babies, breastfeed effectively and interact with their infant during the postpartum.

In addition, researchers appoint those cesarean sections represent the main cause of chronic pain among women (**International Association for the Study of Pain, 2016 & (Sousa et al., 2016)**).

The primary outcome of obstetric care is, of course, to ensure both mother and infant remain physically healthy however, psychological aspects and outcomes of maternity care and obstetrics are no less important. Psychological outcomes identified and examined in the literature as potentially related to CS include mental health problems such as postpartum depression, posttraumatic stress, and anxiety; decreased maternal satisfaction with childbirth; the mother-infant relationship; parents' sexual functioning; and health behaviors such as infant feeding. CS and the increased risk of psychological distress for women, it is imperative to gain insight into the diverse psychosocial outcomes for women experiencing this type of birth. Knowledge and awareness surrounding the impact of CS on women's psychosocial status are likely to enhance the overall quality of maternity care (**McCleane & Cooper, 2020**).

The majority of studies examining the psychological effects of CS on women have focused on sadness and hospitalization. However, there is a scarcity of studies on Post-Traumatic Stress (PTSD), an illness that develops after being exposed to a traumatic experience. An intrusive recollection of the traumatic experience, avoidance, unpleasant thoughts and feelings, and hyper-arousal are among the symptoms. Having a C-section, can cause lots of emotions that the mother may not feel prepared for. Many women feel tearful, anxious or sad for a few days after having a baby. This is commonly called '[baby blues](#)' (**McCleane & Cooper, 2020**).

Depression and anxiety are highly prevalent during the childbirth period. Most pregnant women experience a degree of anxiety before and after cesarean. before and after a cesarean. Anxiety can have unfavorable complications for the mother and the baby. Anxiety and stress are also considered psychological complications affecting mothers undergoing cesarean section. Anxiety is a very unpleasant sensation that results from stress and causes symptoms such as sweating, palpitations, nausea, diarrhea, dry mouth, decreased concentration and confusion. The prevalence of preoperative anxiety varies from 11% to 80% and may result in reduced wound healing, increased risk of infection, and changes in sleep patterns, which can prolong hospitalization, the patient's delayed discharge, and increased care costs. Depression is characterized by loss of interest or pleasure in activities and a sad mood during most of the day, as well as changes in sleep, appetite, concentration, and psychomotricity.

[Depression](#) is a complication that can happen after any type of surgery. It's a serious condition that needs attention so that you can find the treatments that can help you cope (**Hashemi, 2021, Khadigeh, 2021 & Coelho et al 2021** ).

Knowledge and attitudes of women submitted to the cesarean section should be directed towards improving knowledge and practices to reduce postoperative pain and improve their psychological status. Facts about women's perceptions and practices can be gained by assessing their knowledge about the cesarean section which helps to identify attributes that affect the women's adoption of healthy practices and responsive behaviors (**Aziato et al., 2015**).

Cesarean section is accompanied by persistent post-operative pain. Inadequately managed postoperative pain is prevalent worldwide which adversely affects women's experience and outcomes that are associated with an increase of women's stress, anxiety and depression. Nursing intervention program improves women's self-care to promote their longer-term physiological and decrease postoperative pain. The nursing intervention program is a very important item for a woman during the postpartum period as it improves a woman's knowledge, practice, and self-care that avoid postpartum complications through nursing intervention programs about a woman's self-care. These nursing intervention programs empower women's knowledge and improve woman's practice for caring for a woman such as a wound care, exercise, and nutrition, relaxation, pray, meditation, doing exercise, taking one thing at a time, hobbies, healthy life style, hearing music, problem solving, pets, aromatherapy and social support (**Hashemi, 2021 & Avitha, 2014**).

### **Significance of the study:**

Estimates show immediate postoperative pain incidence rates after cesarean sections amounting to 77.4% and 100%, with the pain being of high intensity (**Nikolajsen et al., 2017**). Stress, anxiety and depression can have adverse effects on the mother and baby. 10-30% of hospitalized patients experience stress even without the need for surgery. The prevalence of preoperative anxiety varies from 11% to 80%. The prevalence of depression in women during pregnancy is 10-15% (**Khadigeh 2021**). It was found an increased risk of bipolar disorder in individuals born by cesarean section (**Coelho et al, 2021**).

Sufficient support and knowledge for women submitted to cesarean section may decrease their depression, anxiety, and stress levels and reduce postoperative pain. Therefore, implementing the nursing intervention program for post-cesarean

section women will help them acquire adequate knowledge and skills and may relieve their stressors. Cesarean delivery was linked to a higher risk of maternal death from anesthesia-related complications, puerperal infection, and venous thromboembolism. There was no significant difference in the risk of death from postpartum hemorrhage between vaginal and cesarean deliveries. Cesarean delivery is linked to a higher risk of maternal death after delivery. Knowledge of the causes of death linked to this increased risk informs current debates about cesarean delivery on-demand, as well as preventive strategies (Avitha, 2014).

#### **Aim of the study**

The study aimed to evaluate the effect of a nursing intervention program for women post-cesarean section regarding self-care on their psychological status and postoperative pain through:

- 1- Assessing women's knowledge and self-care practices post-cesarean section.
- 2- Assessing women's psychological status post-cesarean section.
- 3- Assessing postoperative pain level among cesarean section women
- 4- Determining the effect of a nursing intervention program on psychological status and postoperative pain among cesarean section women.

#### **Research Hypotheses:**

Hypothesis (1): There will be an improvement of women's knowledge and self-care practices post-cesarean section after nursing intervention program implementation than before.

Hypothesis (2): Women submitted to cesarean section will have improved psychological status as stress, anxiety, and depression and reduce postoperative pain after nursing intervention program implementation than before.

#### **Subjects and Methods:**

##### **Research design:**

A quasi-experimental research design pre-post-test was used. It is used for establishing the cause-and-effect relationship between an independent and dependent variable.

##### **Setting:**

The study was applied in the obstetrics and gynecology department in Beni-Suef University Hospital which is located on the second floor of the hospital. They consist of four rooms. This setting was selected due to the high prevalence of women in the selected setting, as well as the fact that it serves the most populous region of the country.

##### **Subjects:**

A purposive sample was used to choose a sample of 100 post-cesarean women and recruited from the selected settings. All the studied women were

conscious, oriented at the time of the data collection, in the third trimester of pregnancy, free from physical, mental, chronic disease, free from cognitive disease, no history of mental illness, and agree to participate in this study.

##### **Tools of data collection:**

Three tools were used to collect the data of the study as the following:

**The tool I: Structured interviewing questionnaire:** (pre-test tool): it was developed by researchers after reviewing related literature and consisted of four parts as follow:

**Part (1):** It includes demographic data which consisted of 4 items related to age, educational level, occupation, and residence.

**Part (2):** It includes the medical history of patients; it consisted of 4 items about parity, gestational week, previous cesarean history, and history of analgesic consumption.

**Part (3): Women's knowledge regarding caesarian section and knowledge about personal hygiene** (Salama and Aly, 2019 and Tamrakar & Nagaseshamma, 2015) (pre-post tool): it was developed by the researchers after an extensive review of the related literature to identify the level of women's knowledge regarding caesarian section and their source of information. It included (10) questions in the form of multiple-choice related to the meaning of the cesarean section, types of cesarean section, indications of cesarean section, complications of cesarean section, preparation for cesarean section, the direction of perineal care, timing of perineal care, wound care after CS, Knowledge about nutrition after CS, Importance of nutrition during puerperium after CS, Food types that receive during puerperium after CS, Importance of shower after delivery, and shower time after delivery.

##### **Scoring system:**

The women's knowledge was verified with a model key response after they completed the interviewing questions. Therefore, correct answers were scored one point, and incorrect or do not know answers were scored zero. The total score varied from 0 to 10 (there were ten questions). Women with a total knowledge score of 60 percent or more were regarded to have a satisfactory level of knowledge, while those with a score of less than 60 percent were judged to have an unsatisfactory level of knowledge.

**Part (4): Women's reported self-care practices regarding caesarian section tool** (WHO, 2021; Salama and Aly, 2019; Tamrakar & Nagaseshamma, 2015) (pre-post tool); it included items to assess the women's reported self-care practices as Rest after CS, exercise (walking, abdominal, pelvis, Breathing), personal Hygiene (General), perineal care, care for breast, and

breastfeeding, eating balanced nutrition after CS, avoid lifting heavy things or hard, work during puerperium period after CS, ways to overcome the feeling of pain, follow the taking of drugs (dose, route, and time---), and care of wound post caesarian section.

#### Scoring system for women's reported self-care practice:

The steps of the procedure of care of wound post caesarian section which done correctly were scored (1), and the items not done or incorrectly done were scored zero. For each area, the scores of the items were summed up, and the total was divided by the number of the items, giving the mean score for the part. These scores were converted to a percentage score. Women's reported practice was considered adequate if the percentage score was 60% or more and inadequate if it was less than 60%.

#### Tool II: Depression, Anxiety, and Stress Scale (DASS-21) (pre-post tool):

The researchers used the Depression, Anxiety, and Stress Scale which was adopted from **Lovibond & Lovibond (1995)**. The scale involved 21 items and consisted of a set of three self-report scales designed to measure the symptoms of the emotional state of depression, anxiety, and stress. Each of the three DASS-21 subscales contains seven items. The depression scale assesses hopelessness, dysphoria, devaluation of life, lack of interest/involvement, self-deprecation, anhedonia, and inertia. The anxiety scale measures autonomic arousal, skeletal muscle symptoms, subjective experience of anxious affect, and situational anxiety. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses nervous arousal, difficulty relaxing, and being easily upset/agitated, irritable/over-reactive, and impatient. The rating scale responses ranged from (3) applied to me very much or most of the time; (2) applied to me to a considerable degree or a good part of the time; (1) applied to me some of the time or to some degree; and (zero) did not apply to me at all.

#### Scoring system for Depression, Anxiety, and Stress Scale (DASS):

The responses were categorized with the cutoff point adopted by **Antony et al. (1998)** to categorize stress, anxiety, and depression. Thus, the level of symptoms (extremely severe, severe, moderate, mild, and no symptoms) was as follows:

| Levels of DASS symptoms | Depression | Anxiety | Stress |
|-------------------------|------------|---------|--------|
| Normal (no symptoms)    | 0-9        | 0-7     | 0-14   |
| Mild                    | 10-13      | 8-9     | 15-18  |
| Moderate                | 14-20      | 10-14   | 19-25  |
| Severe                  | 21-27      | 15-19   | 26-33  |
| Extremely Severe        | 28+        | 20+     | 34+    |

#### Tool III: Numerical Pain Rating Scale (NPRS) (post tool):

The pain intensity was measured with the help of an 11-point Numerical Pain Rating Scale (NPRS), a one-dimensional, ordinal tool that permits measuring the pain intensity through scores representing the amount of pain felt (0 (zero) = no pain; 1, 2, 3 and 4 = mild pain; 5 and 6 = moderate pain; 7, 8 and 9 = severe pain and 10 (ten) = worst possible pain). As people use figures since childhood, the advantage of the NPRS is that the participants are familiar with it. This scale has been widely used in hospitals and/or clinics for rapid, non-invasive, and valid information about acute or chronic pain (**Melzack, 1987 & Ferraz et al., (1990)**).

#### Validity of the tools:

The content validity was tested for clarity, comprehensiveness, appropriateness, and reviewed by five professors' experts in the obstetrics and gynecology nursing field. No modifications were done.

#### Reliability of the tools:

The reliability of the tools was assessed through Cronbach's alpha test was  $\alpha = 0.891$  for the first tool,  $\alpha = 0.823$  for the second tool, and  $\alpha = 0.759$  for the third tool.

#### Pilot study

A pilot study was carried out on 10% of the sample (10 women) to observe the clarity and testing of the feasibility of the research process. No modifications were done. Women involved in the pilot study were excluded from the study.

#### Ethical considerations:

Before starting the research, the researchers met both medical and nursing directors of the selected settings to clarify the purpose of the study and obtained their approval. Oral informed consent was obtained from the women to participate in the study after the objective of the study was explained to them. The researchers informed the women that, the study was voluntary, they were allowed to not participate and they had the right to withdraw from the study at any time, without giving any reason. Moreover, they were assured that their information would be confidential.

#### Methods of data collection:

##### Field Work:

The study was carried out in the period from August to December 2021. This work was conducted through four phases (preparatory, assessment, implementation, and evaluation phases). The researchers attended the previously mentioned setting two days per week, (Saturday and Monday); from 9 a.m. to 1 p.m. until the researchers completed the sample size of women.



**Preparatory phase:**

Contents of the educational sessions about the caesarian section were designed. Several methods of teaching were used (videos, attractive pictures, and booklet) were prepared. Booklet was written in Arabic language, covered all contents of the sessions, printed out regarding the sample size, and given after nursing intervention program implementation.

**Assessment phase:**

Data was collected by all the researchers and they introduced themselves to the women. Clear and simple explanations about the aim and nature of the study were discussed by the researchers with women. The structured interviewing questionnaire was used to collect women's characteristics.

Before the 1st session, women's knowledge and self-care practices regarding the caesarian section were assessed by using a knowledge questionnaire and self-care practices questionnaire respectively as a pretest (parts 3 and 4 in tool 1). The questionnaires were distributed to women and collected after filling.

The questionnaire and the DASS were used twice. For the first time, these were used as a pretest for the assessment of women's knowledge about the caesarian section and their reported self-care practices and their level of depression, anxiety, and stress

Then, the knowledge questionnaire and self-care practices questionnaire respectively as a pretest (part 3 and 4 in tool 1), DASS, the postoperative pain level was used another time after the caesarian section to evaluate the effect of a nursing intervention program on psychological status and postoperative pain among cesarean section women.

**Implementation phase:****Psychological intervention program:**

It was designed by the researcher focused on the following sessions:

Session1: Introduction about the aim of psychological intervention.

Session 2: Give knowledge about CS and self-care.

Session (3): Women's self-care practices about the caesarian section

Session 4: Effect of CS on psychological status.

Session 5: Practice relaxation training as a deep breathing exercise.

Session 6: Practice relaxation training as progressive muscle relaxation technique Session 7: Practice relaxation training as meditation.

Session 8: Evaluation of the psychological intervention by using pre-assessment tools.

The sessions for the psychological intervention program were:

Session 1: Orientation and introduction

1. To relieve fear, tension, and improve motivation to participate in the program, the researcher

creates a warm and secure environment for the patients

2. The researcher greets the patients, introduces herself, and describes the study's origin and goal, as well as the prospect of persuading the patients that the program is critical.

3. Providing patients with information about the program (8 sessions, one session every week, for 60-90 minutes). Patients must agree to the following session rules: confirming the privacy and confidentiality of research information, committing to session dates and times, avoiding interruptions while others speak, avoiding sarcasm about other people's opinions, and performing essential activities during each session.

4. The pretest DASS Scale was given to them (pre-intervention assessment).

Session 2: Overview on CS - At the beginning of the session, the researcher welcomes all patients and thanks them for their renewed attendance.

From the starting, the women were aware of the nursing intervention sub-sessions contents. Six sub-sessions (four theoretical sessions about caesarian section were provided to them in nine groups of 11–12 women, one session every two weeks for four weeks in the form of lectures and group discussion with a duration of 45 - 60 minutes for each session. In the 1st session, the definition of cesarean section, types of cesarean section, indications of cesarean section, complications of cesarean section, in the 2<sup>nd</sup> session preparation for cesarean section were discussed. In the 3<sup>rd</sup> session direction of perineal care, the timing of perineal care, wound care after CS, Knowledge about nutrition after CS, Importance of nutrition during puerperium after CS, Food types that receive during puerperium after CS were discussed. In the 4<sup>th</sup> session Importance of a shower after delivery, and shower time after delivery were discussed.

Session (3): Women's self-care practices about the cesarean section: This session concerned with the discussion of women's self-care practices about the caesarian section such as assessing the women's reported self-care practices as rest after CS, exercise (walking, abdominal, pelvis, breathing), personal hygiene (General), perineal care, care for breast, and breastfeeding, eating balanced nutrition after CS was taught. In this session avoid lifting heavy things or hard, work during the puerperium period after CS, ways to overcome the feeling of pain, follow the taking of drugs ( dose, route, and time--), and care of wound post caesarian section were discussed such as:

- Washing hand before & after any procedure
- Prevent water from reaching operation site until suture removal
- Don't put ointment or cream on the wound

- Don't raise the dressing to see operation immediately unless done by medical staff
- Support the operation during coughing, sneezing, laughing
- Care of perineal care post caesarian section was discussed such as:
  - Washing hand before using the bathroom
  - Wash hands after using the bathroom (toilet)
  - Wash perineum area with warm water contains antiseptics from front of the pubic bone to the anus
  - Place sanitary pads from front to back to protect the inner surface from contamination
  - Do not hold on to the urine when feeling the desire to urinate
  - Change sanitary pads with each urination and defecation
  - Practice Kegel exercises 2-3 times per day
  - Do not have sexual intercourse during the first 6 weeks
  - Preferred to use the western bathroom

Prepared videos and attractive pictures were presented. At the end of each session, the important points were reviewed. The sessions were repeated to each group of women. Each woman was provided with the educational booklet at the end of the 1st session as a guide.

Session (4): Overview of the effect of CS on psychological status as stress, anxiety and depression -The researcher greets all patients at the start of the meeting. Patients are asked to respond to the following question by the researcher: What influence does CS have on psychological well-being? After listening to their responses, the researcher gives a full explanation of how CS affects psychological well-being.

Session (5): Relaxation training - The researcher greets all patients at the start of the meeting. In front of the patients, the researcher does a deep breathing exercise. The researcher displays photographs demonstrating how to perform deep breathing exercises. The researcher then serves as a model for patients, demonstrating the phases of deep breathing exercises. Patients are asked to practice deep breathing exercises at home by the researcher.

Relaxation training (Session 6) - The researcher greets all patients at the start of the meeting. At the start of the session, the researcher asks patients to demonstrate the steps of the deep breathing exercise again. In front of the patients, the researcher displays progressive muscular relaxation. The researcher demonstrates how to practice progressive muscle relaxation with photographs. The researcher then serves as a model for patients, demonstrating the phases of gradual muscle relaxation. Work at home: Patients are instructed to use progressive muscular relaxation by the researcher.

Session (7): Relaxation training - The researcher greets all patients at the start of the meeting. The researcher goes through homework with patients and asks them to show progressive muscle relaxation stages again. The researcher demonstrates meditation in front of the patients at the start of the session. The researcher displays photographs that demonstrate how to meditate. The researcher then serves as a model for the patients, demonstrating the steps of meditation. Patients are asked to practice meditation at home by the researcher.

#### **Tips on managing stress, anxiety and depression**

- Getting regular daily exercise
- Finding relaxing hobbies, such as hearing music
- Maintain a positive affirmation and attitudes. Make an effort to replace negative thoughts with positive ones.
- Not taking on as many responsibilities at home
- Sharing responsibilities or delegating tasks to others around you
- Surrounding yourself with supportive and positive friends and family members
- Removing yourself from stressful environments or situations
- Taking regular breaks from responsibilities
- Welcome humor. A good laugh goes a long way.
- Talk to someone. Tell family and friends you're feeling overwhelmed.
- Getting enough sleep
- Consuming less caffeine or alcohol
- Pray ( if can)

Session 8: Evaluation of the psychological intervention by using pre-assessment tools.

The women were followed on the first day after three hours of the cesarean section to evaluate the physiological status and postoperative pain levels among cesarean section women pre-program intervention.

#### **The Evaluation phase:**

The effect of the nursing intervention program for women post-cesarean section regarding self-care they're on psychological status and postoperative pain was evaluated after the implementation phase using the same preintervention tools as knowledge and practices questionnaire as a pretest (part 3 and 4 in tool 1), DASS, postoperative pain level after three hours of the caesarian section and through telephone call post two weeks and after two months.

#### **Administrative design:**

An Approval was obtained from the deans of the faculty of nursing and the directors of the obstetrics and gynecology department at Beni-Suef University Hospitals to carry out this study.

#### **Statistical Analysis:**

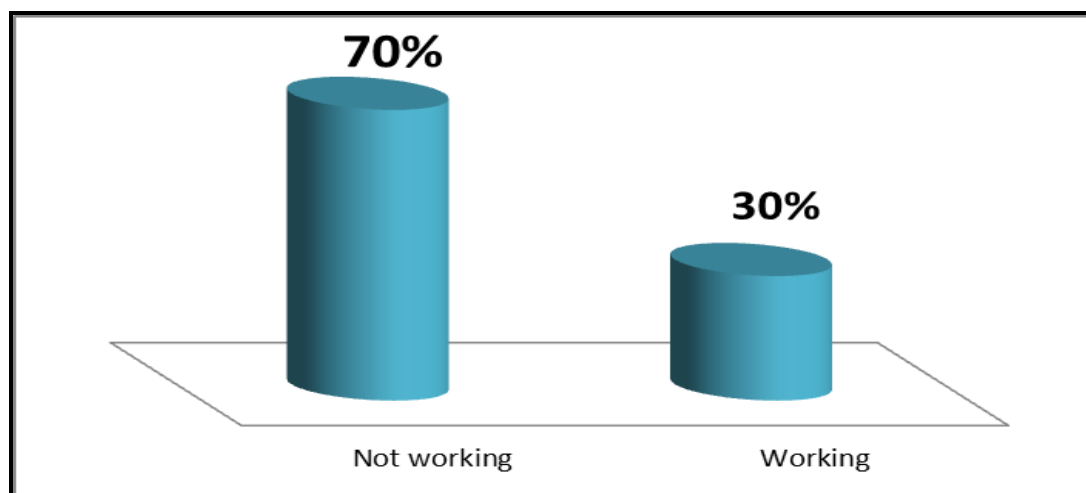
Statistical Package for Social Sciences (SPSS) version 21 was used for statistical analysis of the obtained data. Data were presented using descriptive

measures in the form of a number, percentage, mean and standard deviation. A Chi-square test was used for the differences between variables pre and post-intervention. Pearson correlation test was used to the association between variables. The Cronbach's alpha was used to assess the reliability of the second and third tools.

### Results:

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

| Items                          | No.          | %  |
|--------------------------------|--------------|----|
| <b>Age in years</b>            |              |    |
| - 18 < 30                      | 82           | 82 |
| - 30 < 40                      | 18           | 18 |
| <b>Mean ±Stander deviation</b> | 23.12 ± 3.54 |    |
| <b>Educational level</b>       |              |    |
| - Illiterate                   | 13           | 13 |
| - Read and write education     | 36           | 36 |
| - Secondary education          | 24           | 24 |
| - University education         | 27           | 27 |
| <b>Residence</b>               |              |    |
| - Urban                        | 28           | 28 |
| - Rural                        | 72           | 72 |



**Figure (1): Distribution of studied pregnant women according to their occupation (n=100)**

**Table (2): Distribution of pregnant women according to their obstetric history (n=100)**

| Obstetric history                       | No.      | %    |
|---|----------|------|
| <b>Parity</b>                           |          |      |
| - 1 < 3                                 | 78       | 78.0 |
| - > 3                                   | 22       | 22.0 |
| <b>Gestational week</b>                 | 38.1±0.5 |      |
| <b>Previous cesarean history</b>        |          |      |
| - Yes                                   | 29       | 29.0 |
| - No                                    | 71       | 71.0 |
| <b>History of analgesic consumption</b> |          |      |
| - Yes                                   | 39       | 39.0 |
| - No                                    | 61       | 61.0 |

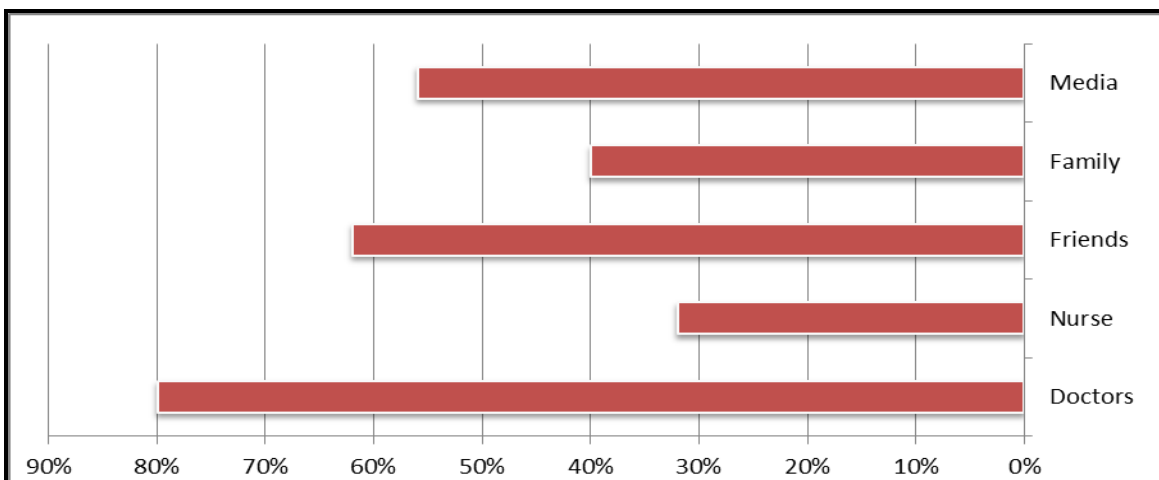


Figure (2): Distribution of the studied women according to their source of knowledge regarding caesarian section (n=100)

Table (3): Percentage distribution of women's knowledge about caesarian section and personal hygiene before and after the nursing intervention program implementation

| Women's knowledge about caesarian section and personal hygiene | No =(100) |      |      |      | P-value |
|--|-----------|------|------|------|---------|
|  | Pre       |      | Post |      |         |
|  | No        | %    | No   | %    |         |
| Definition of cesarean section                                 | 26        | 26.0 | 90   | 90.0 | <0.001* |
| Types of cesarean section                                      | 34        | 34.0 | 79   | 79.0 | <0.001* |
| Indications of cesarean section                                | 37        | 37.0 | 86   | 86.0 | <0.001* |
| Complications of cesarean section                              | 24        | 24.0 | 86   | 86.0 | <0.001* |
| Preparation for cesarean section                               | 17        | 17.0 | 93   | 93.0 | <0.001* |
| The direction of perineal care                                 | 26        | 26.0 | 90   | 90.0 | <0.001* |
| Timing of perineal care  | 34        | 34.0 | 79   | 79.0 | <0.001* |
| Wound care after CS  | 37        | 37.0 | 86   | 86.0 | <0.001* |
| Knowledge about nutrition after CS                             | 24        | 24.0 | 86   | 86.0 | <0.001* |
| Importance of nutrition during puerperium after CS             | 17        | 17.0 | 93   | 93.0 | <0.001* |
| Food types that receive during puerperium after CS             | 26        | 26.0 | 90   | 90.0 | <0.001* |
| Importance of shower after delivery                            | 34        | 34.0 | 79   | 79.0 | <0.001* |
| Shower time after delivery                                     | 37        | 37.0 | 86   | 86.0 | <0.001* |

\*Significance at 0.001 levels

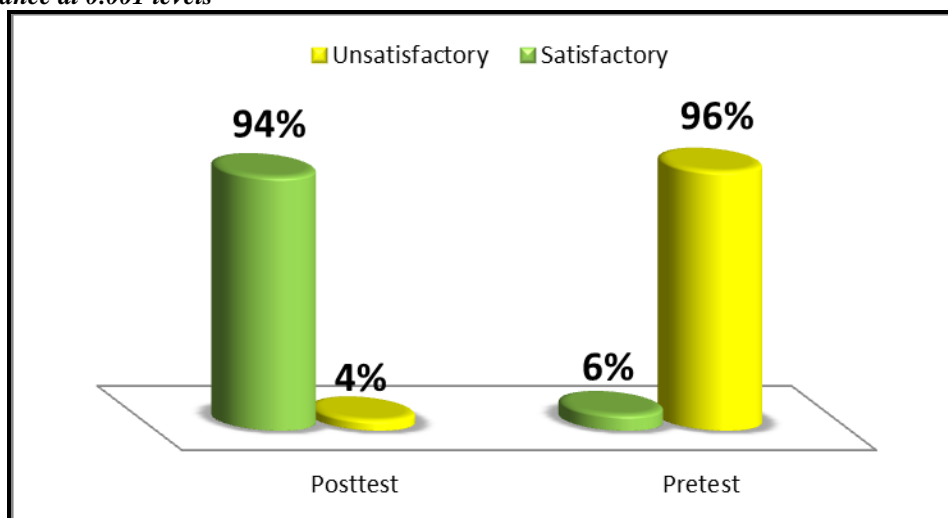


Figure (3): Percentage distribution of the total women's knowledge level about caesarian section and personal hygiene pre and post-nursing intervention program implementation (n=100).



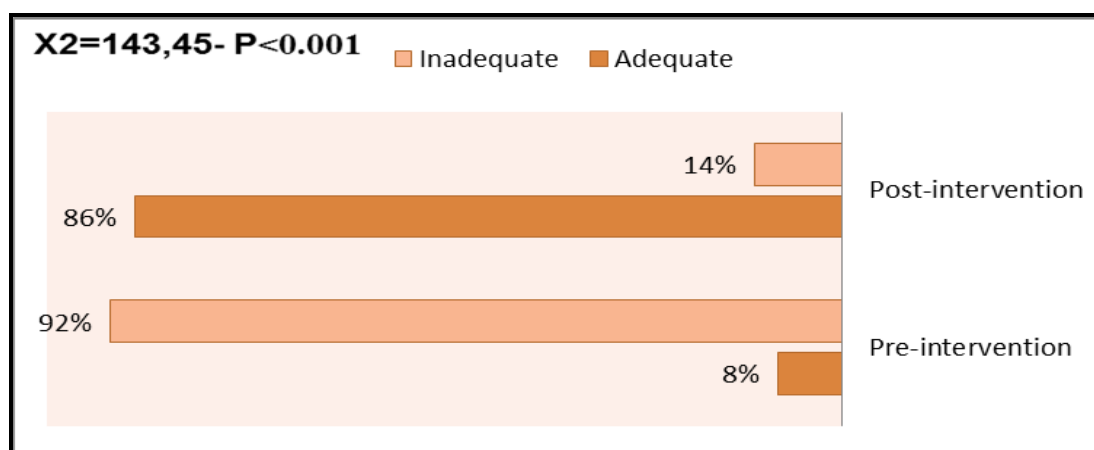


Figure (4): Percentage distribution of the total women's self-care practices level about caesarian section pre and post-nursing intervention program implementation (n=100).

Table (5): Total mean scores of women's psychological status (depression, anxiety, and stress) regarding caesarian section pre and post nursing intervention program implementation

| DASS       | No =(100)    |              | P-value |
|------------|--------------|--------------|---------|
|            | Pre          | Post         |         |
| Depression | 25.67 ± 2.57 | 13.40 ± 1.34 | <0.001* |
| Anxiety    | 18.30 ± 1.22 | 12.47 ± 1.23 | <0.001* |
| Stress     | 33.69 ± 3.45 | 22.38 ± 2.65 | <0.001* |

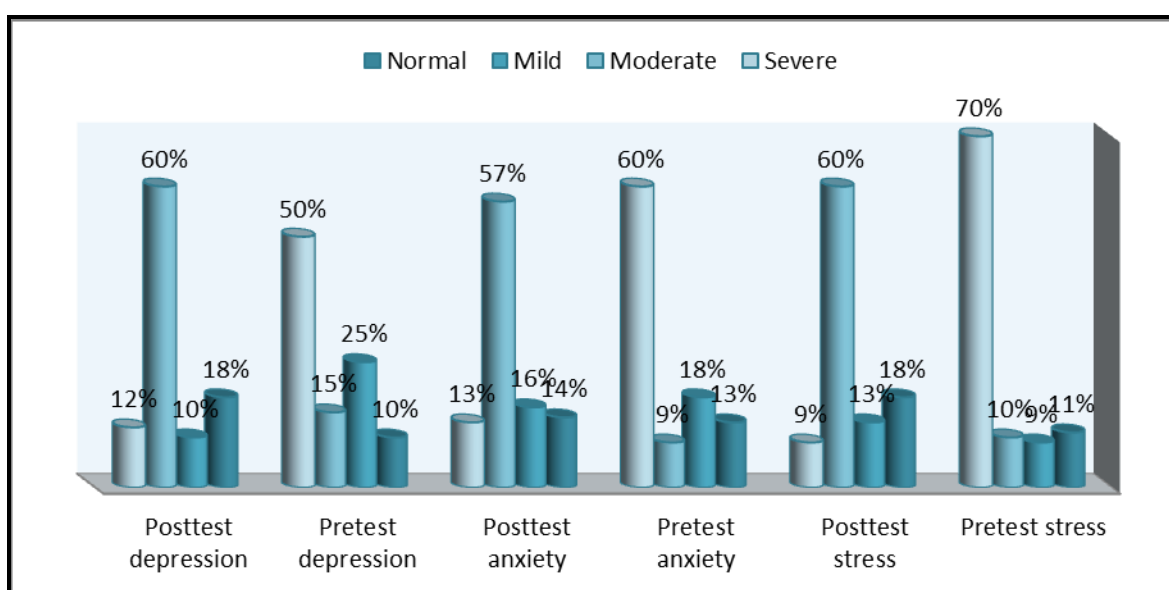


Figure (5): Percentage distribution of the studied women's psychological status (depression, anxiety, and stress level) regarding caesarian section pre and post-nursing intervention program implementation

Table (6): Percentage distribution of the studied women's pain level regarding caesarian section pre and post nursing intervention program implementation

| Pain level | Pre |      | Post |      | X <sup>2</sup> | P-value |
|------------|-----|------|------|------|----------------|---------|
|            | No  | %    | No   | %    |                |         |
| No pain    | 0   | 0.0  | 5    | 5.0  | 12.4           | <0.001* |
| Mild       | 9   | 9.0  | 57   | 57.0 | 10.3           |         |
| Moderate   | 66  | 66.0 | 35   | 35.0 | 14.8           |         |
| Severe     | 25  | 25.0 | 3    | 3.0  | 16.2           |         |

**Table (7): Association between women's level of depression, anxiety, and stress and their total level of knowledge about caesarian section pre and post nursing intervention program implementation**

| DASS       | Pre          |      |                |      | Post         |      |                |      | X2   | p-value  |
|------------|--------------|------|----------------|------|--------------|------|----------------|------|------|----------|
|            | Satisfactory |      | Unsatisfactory |      | Satisfactory |      | Unsatisfactory |      |      |          |
|            | No=4         | %    | No=96          | %    | No=94        | %    | No=6           | %    |      |          |
| Depression | 0            | 0    | 39             | 40.0 | 23           | 24.0 | 1              | 20.0 | 34.8 | <0.0001* |
| Anxiety    | 2            | 50.0 | 40             | 42.0 | 42           | 45.0 | 3              | 42.0 |      |          |
| Stress     | 2            | 50.0 | 17             | 18.0 | 29           | 31.0 | 2              | 36.0 |      |          |

**Table (8): Correlation between total knowledge and self-care practices scores of the studied women regarding caesarian section pre and after nursing intervention program implementation (n=100).**

| Knowledge | Practice |       |      |        |
|-----------|----------|-------|------|--------|
|           | Pre      |       | Post |        |
|           | r        | P     | R    | P      |
| Pre       | 0.43     | 0.48* |      |        |
| Post      |          |       | 0.88 | 0.001* |

Statistically significant at  $p < 0.01$

**Table (1):** Represented that 82% of the studied women their age ranged between  $18 < 30$  years with mean  $\pm$  SD  $23.12 \pm 3.54$ , (36%) of them had basic education, meanwhile, and the same table demonstrated that (72%) of the studied women lived in rural areas and 28% of them were from urban areas.

**Figure (1):** Pointed out that 70 % of the studied women were not working and 30% of them are working.

**Table (2):** Portrayed that 78% of the studied women their parity was  $1 < 3$ . Regarding their gestational weeks, it was observed mean weeks were  $38.1 \pm 0.5$ . Also, (71%) of them (71%) do not have previous cesarean history and 61% do not have a history of analgesic consumption.

**Figure (2):** Illustrated that 80% of the studied women reported that their main source of information regarding the caesarian section was a doctor.

**Table (3):** Represented the effect of nursing intervention program implementation on women's knowledge about the cesarean section and personal hygiene. It was noticed that the majority of women's knowledge has been improved about the caesarian section in all items after nursing intervention program implementation than before and there was a highly statistically significant difference between women's knowledge about caesarian section before and after implementation of the program ( $P < 0.001$ ).

**Figure (3):** Showed that most of the studied women (96%) had an unsatisfactory level of knowledge about the cesarean section and personal hygiene in the pretest but after nursing intervention program implementation, (94%) of them had a satisfactory level of knowledge.

**Figure (4):** Showed the women's total self-care practices scores before and after receiving the nursing intervention program. It was discovered that most of women investigated (92%) had inadequate self-care practices before the nursing intervention program, which fell to 14 % post-program. On the other hand, just 8% of the women in the study had adequate self-care practices before the nursing intervention program, but 86 % of them reported self-care practices to score improved after the program, with a statistically significant difference.

**Table (5):** About women's total scores of depression, anxiety, and stress regarding caesarian section pre and post nursing intervention program implementation. It was observed from that, the total women's depression, anxiety, and stress scores were severe before the nursing intervention program implementation and there was highly statistically significant improvements were observed in women's total scores of depression, anxiety, and stress scores regarding caesarian section at ( $P < 0.001$ ).

**Figure (5):** Presented that, less than three quarter (70%) of the studied women before the nursing intervention program implementation had a severe level of stress, more than half (60 %) of mothers had severe anxiety and half of them (50%) had severe depression while these percentages decreased to be moderate in more than half of the nursing intervention program implementation.

**Table (6):** Highlighted that there was an improvement and decrease in pain level among women, (25%) of the studied women before the nursing intervention program implementation had a severe level of pain which decreased to be 3% after nursing intervention program implementation. A statistically significant difference was detected in the

pain level among women after nursing intervention program implementation.

**table (7):** It was clear from the that, there was a significant relationship between the studied women's psychological status (depression, anxiety, and stress levels) and their total level of knowledge pre and post-nursing intervention program implementation ( $P < 0.05$ ). Nearly half of them who had an unsatisfactory level of knowledge had a psychological disturbance in the form of depression and anxiety before the implementation of the guideline.

**Table (8):** Showed that there was a significant positive correlation ( $P=0.001$ ) between women's knowledge scores and their self-care practice scores post-program implementation.

### Discussion:

It was evidenced that postoperative pain remains very frequent after cesarean section. In addition, a minority referred to mild pain, a clinically unacceptable fact that gave the knowledge advances on the painful experience and its relief. Similarly, in other surgical scenarios, estimates appointed postoperative incidence rates of 100% in this population (**Karlstrom et al., 2017**).

Maternal fear, anxiety, and stress during cesarean section not only fluctuates but may be influenced by psychosocial factors, including their birth partner. Psychosocial factors were also important predictors of postoperative experiences. Interventions that appropriately manage psychological and social factors during cesarean delivery may facilitate a more positive experience for women (**Edmund, 2016**).

Results of the present study indicated that the majority of the studied women their ages ranged between  $18 < 30$  years with a mean  $\pm$  SD of  $23.12 \pm 3.54$ . This finding is matched with **Snehalben et al., (2021)** who conducted a study to evaluate "The Impact of a Structured Teaching Program on Knowledge of Pre-Procedure Anxiety Levels in Women Having Cesarean Sections at Selected Hospitals in Rajkot, Gujarat" and found that majority of the sample's age was between 21-25 years.

Concerning education, the findings of the present study revealed that more than one-third of the studied women had basic education. These results are supported by **Nekoe, (2019)** who conducted a study entitled "evaluation of anxiety status of pregnant women" and reported the same results.

Concerning residence, the study results showed that the majority of the studied women lived in rural areas. From the researchers' point of view, this may be the cause of knowledge deficit due to the deficiency of services that help in improving information in rural areas.

Results of the present study revealed that the main source of information regarding the caesarian section among the majority of the studied women was a doctor. From the researchers' point of view, this reflected that health personnel play a major role, as well as the places of health services. On the other hand, the results are similar to **Snehalben et al., (2021)** who found that the majority of samples are having books as a source of information.

As regards the effect of nursing intervention program implementation on women's knowledge about the cesarean section and personal hygiene, the results revealed that the majority of women's knowledge has been improved about the caesarian section after nursing intervention program implementation. From the researchers' point of view, this reflected the positive effects of nursing intervention program implementation.

The results of the current study revealed that after nursing intervention program implementation regarding cesarean section, most of the studied women had a satisfactory level of knowledge. From the researchers' point of view, this demonstrates how well the nursing intervention program was very effective. This reflected the imperative need to understand the purpose of the nursing intervention program regarding improving the knowledge regarding cesarean section and it will improve the psychological status and reduce pain.

These results are in the same line with **Snehalben et al., (2021)** who studied in Rajkot, Gujarat "The Impact of Structured Teaching Program on Knowledge of Pre-Procedure Anxiety Levels in Primigravida Mothers Having Cesarean Sections at Selected Hospitals " and reported that the obtained' value for the level of knowledge was 6.71 which mean highly improvement after teaching program in knowledge with significant at  $p < 0.05$  level.

Results of the present study revealed that the majority of the studied women reported self-care practices to score improved after the program, with a statistically significant difference.

The present study findings are supported by **Afnan et al., (2014)** who study the beliefs, effects, and practices that permeate women's self-care during puerperium. This study shows the importance of professionals and being aware of this period with common knowledge about the topic.

Moreover, the current study finding supported by **Karlstrom, (2016)**, who study home visits were made on the 2nd, 15th, and 42nd postpartum days after discharge of the CS women in the intervention group. Care and training were given to the women during these visits. The research indicated that nurses' planned home visits to women discharged early from

hospital following birth by cesarean delivery affected the mother's health positively.

The present study findings are supported by **John, (2014)**, who randomized a controlled study to evaluate the effectiveness of self-instructional module on knowledge of post-operative self-care among cesarean' mothers. This revealed that there was a significant difference found between the mean pre-test knowledge score and mean post-test knowledge score.

As regards women's total scores of depression, anxiety, and stress regarding the caesarian section, the results of the current study revealed that there were highly statistically significant improvements were observed in women's total scores of depression, anxiety, and stress scores regarding caesarian section post-implementation. From the researchers' point of view, this reflected the important role of the nursing intervention program in improving the psychological status and reducing depression, anxiety, and stress levels regarding the caesarian section. This result is similar to a study conducted by **Furuta et al., (2016)** entitled "Predictors of birth-related posttraumatic stress symptoms" and found that CS was a contributing factor for post-traumatic stress symptoms and Post-Traumatic Stress Disorder (PTSD) after childbirth.

Further, a qualitative research study conducted in Sweden by **Sarah et al., (2017)** about "The relationship between model of delivery and postpartum depression" concluded that experiences of women who delivered via CS were traumatic enough to fulfill the stressor criterion of PTSD. This study stated that more than half of women interviewed a few days after a CS reported feelings of intense fear of death or injury to themselves or their baby during the delivery process.

Three studies in Norway, Scotland, and England examined distress concerning CS. A very large study conducted by **Adams et al., (2018)** about "Mode of delivery and postpartum emotional distress" found that the fact that a CS was frightened women, resulting in feelings of distress.

Results of the current study highlighted that three-fifth of women had severe anxiety and half of them had severe depression and these percentages decreased to be moderate in more than half of them after nursing intervention program implementation. This may be related to fear of fetal injury/death, knowledge deficit, loss of control, and lack of support during childbirth. Which, improved after the nursing intervention program implementation and from the researchers' point of view, this reflected the positive effect of using the programs in improving psychological status among the studied women.

These results are consistent with those reported by **Ahluwalia & Morrow, (2017)** who noted that women with CS often experience severe stress. Similarly, these results are parallel with the study published by **Wiklund et al., (2017)** about " Cesarean section on maternal request: reasons for the request, self-estimated health, expectations, experience of birth and signs of depression among first-time mothers" and reported that women who were having CS often reported anxiety.

Also, **Lobel, et al., (2017)** conducted a study titled" Psychosocial sequelae of cesarean delivery: Review and analysis of their causes and implications" and observed that women may have experienced heightened anxiety as a result of anticipating that surgery would be performed shortly after birth and being concerned about the surgery method, such as anesthesia, the risk of being cut, and the operating room's physical atmosphere.

**Fuglenes et al., (2018)** studied "Why do some pregnant women prefer cesarean? The influence of parity, delivery experiences, and fear" also, reported that the high anxiety of childbirth during pregnancy was common in women with CS.

According to the findings of the current study, during the pretest, the majority of post-cesarean women had a severe level of pain but, after nursing intervention program implementation, there was a statistically significant difference, an improvement and decrease were detected in the pain level among women after nursing intervention program implementation. This result is similar to the study of **Lorentzen et al., (2012)** demonstrated in their study on pain experience and pain management in surgical patients that the majority of postoperative patients reported a severe level of pain.

Results of the current study highlighted that there was a significant relationship between the studied women's psychological status (depression, anxiety, and stress levels) and their total level of knowledge pre and post-nursing intervention program implementation. From the researchers' point of view, this reflected the positive effect of using nursing intervention program in improving knowledge among the studied women led to minimizing depression, anxiety, and stress levels.

The current study results are supported by the study done by **Hassan, (2018)** who studied" effectiveness of a structured teaching program on anxiety among seropositive pregnant women" and showed that there was a significant association between the effectiveness of the teaching program and knowledge and anxiety level among women undergoing c-section

This indicates that as knowledge improved, depression, anxiety, and stress decreased, and as

knowledge decreased depression, anxiety, and stress increased. From the researchers' point of view, this association is explained by that improvement in knowledge is reflected in the improvement in psychological status. Also, mean when the studied women had sufficient knowledge they can practice well. Also, this reflected the success of the nursing intervention program and its positive effect.

The current study results showed that there was a significant positive correlation between women's knowledge scores and their self-care practice scores post-program implementation. This result is matched with **Mohamed et al., (2019)** who studied "Effect of Self-Care Guideline versus Counseling on Post Cesarean Section Women Practices" and found that there was a highly statistically significant difference between women regarding their self-care practices after CS post-intervention. Also, concluded that self-care guideline has a positive effect to enhance self-care knowledge & practices among post-caesarean section woman than counseling.

### Conclusion:

Based on the current study findings and hypotheses, it was concluded that there was a significant improvement in knowledge and self-care among women regarding the caesarian section and a significant decrease in depression, anxiety, and stress level among women regarding the caesarian section. The nursing intervention program implemented for cesarean section women was effective in improving women's psychological status and reducing postoperative pain among women undergoing caesarian section.

### Recommendations:

**Considering the current study results, the following recommendations are proposed:**

- Encouraging the research on the long-term effects of C-section birth type on the offspring's mental health
- The nursing intervention program should be integrated into the care among women submitted to cesarean section.
- Replication of the current study on a larger probability sample is recommended to achieve generalizability. Post cesarean women should be provided with a simple and applicable program to reduce emotional distress and control postoperative pain.
- Conduction of awareness secessions for pregnant women during antenatal period regarding self-care guideline to enhance self-care knowledge & practices among pregnant woman and should be conducted, discussed, integrated into antenatal care

to improve their knowledge and decrease their anxiety and stress level.

- Psychological support should be carried out through routine care to help pregnant women become more adapted and improve their psychological status regarding the caesarian section.
- Booklets and brochures containing sufficient knowledge about the caesarian section should be printed and kept in antenatal clinics and given to all pregnant women.

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