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The Relationship Between Perceived Fear and Post-Operative Pain Intensity Following Cesarean Section in Primigravida Mothers

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ABSTRACT

Background: Cesarean section elicits various physiological and psychological responses in patients. Anxiety arises from the fear of the unknown and uncertainty regarding the procedure's outcome. Objective: This study aimed to analyze the relationship between the perception of fear and postoperative pain intensity following a Cesarean section in primigravida mothers. **Methods:** A quantitative approach was employed using a one-group pretest-posttest research design. The population consisted of 249 pregnant primigravida women; purposive sampling was used to select a sample of 58 respondents. The variables studied were the independent variable (perception of fear) and the dependent variable (pain intensity). The study was conducted at Nahdlatul Ulama Hospital, Tuban, between March and May 2026. **Results:** The study found that 47 respondents (81.0%) perceived severe fear, while 31 respondents (53.4%) experienced severe postoperative pain. The Spearman correlation test yielded a p-value of 0.001 ($p < 0.05$). **Conclusion:** It is concluded that there is a relationship between the perception of fear and postoperative pain intensity following a Cesarean section in primigravida mothers; therefore, implementing comprehensive interventions addressing both psychological and physiological aspects can help manage postoperative pain intensity in this group.

Keywords: Perception of Fear; Pain Intensity; Post-Operative; Cesarean Section Mother; Primigravida

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INTRODUCTION

Cesarean section is a surgical procedure performed to deliver a fetus through an incision in the abdominal wall and uterus as an alternative to vaginal delivery. The performance of a Cesarean section inevitably elicits various bodily responses specifically, physiological and psychological reactions in the patient. From a psychological perspective, anxiety stemming from the fear of the unknown and uncertainty regarding the procedure's outcome can trigger various bodily reactions. (2)

According to Bellini et al. (2022), "Fear is a basic emotion characterized by different reactions, such as anxiety, apprehension, fright, panic, and terror." In their article titled "Understanding and Exploring the Concept of Fear," they explain that fear is a basic emotion involving various reactions, which are also linked to the perception of a threat within a specific context. Many psychological issues arising before or after a Cesarean section stem from apprehension and fear. Problems that may be encountered include preoperative anxiety, postpartum blues, postpartum depression, postpartum Post-Traumatic Stress Disorder (PTSD), reduced self-efficacy and bonding/attachment, and disturbances in adaptation and sleep; these issues also impact the duration of the mother's psychological and physiological recovery. According to Smeltzer and Bare (2017) in *Medical-Surgical Nursing*, anxiety and fear are among the psychological responses experienced by mothers following a Cesarean section. (1)

Research by Rizky Rahayu et al. (2023) highlights the risks of complications associated with pregnancies requiring delivery via

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Cesarean section; specifically, the study found that 8.6% (3) of primiparous mothers reported mild anxiety, 74.3% (26) reported moderate anxiety, and 17.1% (6) reported severe anxiety. Based on the data analysis from a study by Latifah Maulina (2023), it was found that following the informed consent intervention, the majority of preoperative patients experienced moderate anxiety (87.6%) because the brain perceived the situation as a threat to personal safety. Internationally, research by Federe et al. (2022) similarly demonstrated a 63% prevalence of preoperative anxiety in Ethiopia, driven by mothers' fears regarding childbirth complications and death. (3,4)

Fear is a natural emotional response arising from concerns regarding the surgical procedure, uncertain outcomes, or worries about the well-being of the fetus and oneself. According to Stuart and Sundeen (2016), the factors influencing the emergence of fear in individuals include biological, psychological, social, and environmental elements. Overall, efforts to address fear and associated psychological or physiological disturbances in mothers undergoing pre- and post-Cesarean section care must adopt a holistic approach that encompasses educational, psychological, social, and spiritual aspects, as well as pain management. Implementing such comprehensive interventions has been shown to enhance mental readiness, lower anxiety levels, alleviate pain, and accelerate the mother's overall recovery process.(5)

Based on the preceding discussion, the researcher is interested in conducting a study on the "Relationship Between Perceptions of Fear and Post-Operative Pain Intensity Following Cesarean Section in Primigravida Mothers."

METHODS

This study employs a quantitative approach using a one-group pretest-posttest research design. The population consisted of 249 primigravid pregnant women; purposive sampling was applied to select a final sample of 58 respondents. The variables examined were the independent variable fear perception and the dependent variable pain intensity. The study utilized the Childbirth Fear Questionnaire (CFQ), an instrument developed by Courtney Stoll and colleagues (2016) to measure the level of maternal fear regarding the childbirth process. This instrument is designed to assess fear multidimensionally, covering physical and psychological aspects as well as potential medical interventions during labor. Additionally, the Numeric Rating Scale (NRS) was used to measure pain intensity; this tool employs a 0–10 numerical scale to assess the patient's subjective perception of pain levels. The NRS is among the most widely used instruments in clinical practice and research due to its simplicity, speed, and ease of understanding for patients.

RESULTS AND DISCUSSIONS

Based on data obtained by measuring and classifying the fear perceptions of mothers undergoing Cesarean sections using the Childbirth Fear Questionnaire (FCQ) and measuring postoperative pain intensity, the data were processed through editing selecting the collected information followed by coding and tabulation. The data were then analyzed using the Spearman Correlation Test at a significance level of $\alpha < 0.05$, utilizing the Statistical Package for the Social Sciences (SPSS) software, version 26.

Table 1. Table of respondent characteristics (Distribution of Respondents by Age at Nahdlatul Ulama Hospital Tuban in March 2026)

No	Age	Frequency (*f*)	Percentage (%)
1	< 20 Tahun	2	3,4
2	20 – 35 Tahun	56	96,6
	Amount (n)	58	100

Based on Table 1, the largest group of respondents falls within the 20–35 age range, totaling 56 respondents (96.6%).

Table 2. Table of respondent characteristics (Distribution of Respondents by Education Level at Nahdlatul Ulama Hospital Tuban in March 2026)

No	Education Level	Frequency (*f*)	Percentage (%)
1	Elementary School	1	1,7
2	High School / Vocational high school	45	77,6
3	College	12	20,7
	Amount (n)	58	100

Based on Table 2, a significant number of respondents 45 individuals, representing 77.6% of the total hold a high school or vocational high school (SMA/SMK) education level or equivalent.

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Table 3. Table of respondent characteristics (Distribution of Respondents by Occupation at Nahdlatul Ulama Hospital Tuban in March 2026)

No	Occupation	Frequency (*f*)	Percentage (%)
1	Housewife	42	72,4
2	Self-employed	9	15,5
3	Private Sector Employee	7	12,1
	Amount (n)	58	100

Based on Table 3, it is evident that the majority of respondents are housewives, totaling 42 respondents (72.4%).

Table 4. Table of respondent characteristics (Distribution of Respondents by Type of Anesthesia at Nahdlatul Ulama Hospital Tuban in March 2026)

No	Types of Anesthesia	Frequency (*f*)	Percentage (%)
1	Anestesi Regional Spinal	58	100
	Amount (n)	58	100

Based on Table 4, it is evident that all 58 respondents (100%) received spinal regional anesthesia.

Table 5. Table of respondent characteristics (Distribution of Respondents by Type of Incision at Nahdlatul Ulama Hospital Tuban, March 2026)

No	Type of Incision	Frequency (*f*)	Percentage (%)
1	Transverse Incision	58	100
	Amount (n)	58	100

Based on Table 5, it is evident that all 58 respondents (100%) have the Transversal type of insert.

Table 6. Table of specialized data (Distribution of Respondents Based on Fear Perception Classification Among Primigravida Women Giving Birth at Nahdlatul Ulama Hospital Tuban in 2026)

No	Perception of Fear	Frequency (*f*)	Persentase (%)
1	Moderate Fear	10	17,2
2	Terrified	47	81,0
3	Panic	1	1,7
	Amount (n)	58	100,0

Based on Table 6, a very large proportion of respondents perceived a sense of fear, with 47 respondents (81.0%) classified as experiencing severe fear. Based on the research findings presented in Table 6 regarding the distribution of respondents by fear perception classification, a small number of respondents (10 or 17.2%) perceived a moderate level of fear; a large majority (47 or 81.0%) perceived a severe level of fear; and a very small number (1 or 1.7%) perceived a level of fear classified as panic.

Cesarean section is a surgical procedure performed to deliver a fetus through an incision in the abdominal wall and uterus as an alternative to vaginal delivery. This procedure is one of the most frequently performed obstetric interventions in hospitals, driven by either medical or non-medical indications. Undergoing a Cesarean section inevitably elicits various bodily responses specifically, physiological and psychological reactions in the patient. From a psychological perspective, anxiety stemming from the fear of the unknown and uncertainty regarding the procedure's outcome can trigger various physical reactions.

Fear is a natural emotional response arising from concerns about the surgical procedure, uncertain outcomes, or worries regarding the condition of the fetus and oneself. According to Stuart and Sundeen (2016), the factors influencing the emergence of fear in individuals include biological, psychological, social, and environmental factors. Biological factors encompass physiological conditions and hormonal changes that can heighten sensitivity to stress. Psychological factors relate to past experiences, anxiety levels, and an individual's self-control capabilities. Meanwhile, social and environmental factors include family support, culture, and the experiences of those around the individual.

Excessive fear can lead to pre-operative anxiety, postpartum blues, postpartum depression, postpartum post-traumatic stress disorder (PTSD), reduced self-efficacy and impaired bonding/attachment, adjustment disorders, sleep disturbances, and prolonged recovery times (4).

During the study, researchers observed that several respondents frequently expressed fears regarding both their own condition and that of their babies. These fears stemmed from concerns about potential complications, procedure failure, or the death of the mother or infant. Such conditions indicate that primigravida mothers scheduled for a Cesarean section are in the early stages of psychological adaptation, making them more susceptible to anxiety that manifests as excessive fear.

Results from the study conducted at Nahdlatul Ulama Hospital, Tuban, revealed that

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a significant number of respondents perceived high levels of fear; specifically, 47 respondents (81.0%) were classified as experiencing severe fear. This finding aligns with research by Rizky Rahayu et al. (2023) and is attributed to the risks of complications associated with pregnancies requiring delivery via Cesarean section.

Throughout the study, respondents with no prior experience caring for an infant or undergoing surgical procedures tended to exhibit signs of fear. This is consistent with findings by Fallon et al. (2016), which state that primigravida mothers experience higher levels of anxiety than multigravida mothers due to differences in experience and psychological readiness.

Tabel 7. Table of specialized data (Distribution of Respondents Based on Post-Cesarean Section Pain Intensity Classification Among Primigravida Mothers at Nahdlatul Ulama Hospital, Tuban, in 2026)

No	Pain Intensity	Frequency (f)	Persentase (%)
1	Moderate pain	27	46,6
2	Severe Pain	31	53,4
	Amount (n)	58	100,0

Based on Table 7, the majority of respondents experienced postoperative pain classified as severe, comprising 31 respondents (53.4%). Based on the research findings presented in Table 7 regarding the distribution of primigravid respondents at Nahdlatul Ulama Tuban Hospital classified by postoperative pain intensity following a Caesarean section the majority of respondents (31 or 53.4%) experienced severe postoperative pain, while a smaller group (27 or 46.6%) experienced moderate postoperative pain. According to the International Association for the Study of Pain (2020), pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage. Smeltzer and Bare (2019) describe pain as a complex, highly individual sensation and a response to stimuli that cause or have the potential to cause tissue damage.(14)

Factors contributing to post-Caesarean section pain identified in authoritative midwifery and obstetric literature such as that from the World Health Organization (WHO) and the American College of Obstetricians and Gynecologists (ACOG), as well as references like *Williams Obstetrics* and Sarwono Prawirohardjo's *Buku Ajar Ilmu Kebidanan* (Textbook of Midwifery) include tissue damage from the surgical incision, the waning effects of anesthesia, uterine contractions during involution, inflammatory responses and nerve sensitization, psychological factors (anxiety and fear), individual factors and pain thresholds, and surgical wound complications (15,16))

Consistent with the study's findings, these factors appear to influence the emergence of fear and anxiety among the respondents. This is a complex phenomenon that cannot be understood merely as an isolated, singular reaction. A comprehensive analysis of empirical field data reveals mutually reinforcing interrelationships between physiological conditions, cognitive interpretation processes, emotional history, and the dynamics of interaction with the external environment.

These three primary dimensions biological, psychological, and socio-environmental operate simultaneously and interactively to accelerate the escalation of anxiety levels experienced by the subject. Regarding the biological aspect, physiological conditions and hormonal changes play a significant role in establishing a physical foundation that heightens the body's sensitivity to stress. However, researchers emphasize that these biological conditions essentially represent only a potential. The primary trigger that activates the fear response is how the individual's cognitive system appraises the situation at hand. Researchers observed that the subject's fear stemmed largely from a lack of knowledge; when information regarding the upcoming medical procedure was minimal, the subject's brain naturally filled the void of uncertainty with negative imaginings. (12,13)

The study results reveal that the high proportion of respondents experiencing severe pain (53.4%) is closely linked to the fact that all participants were primigravida mothers. A primigravida is a woman experiencing her first pregnancy and childbirth; consequently, she lacks prior experience with surgical pain or the labor process. According to pain management theory, past experience plays a crucial role in shaping an individual's coping mechanisms. Primigravida mothers, lacking a frame of reference for postoperative physical sensations, tend to perceive pain more intensely than multigravida mothers, who have previously undergone surgery or childbirth and possess more mature psychological adaptation. (17-20)

Beyond the factor of experience, primigravida status is significantly associated with anxiety levels. A first delivery involving surgery gives rise to dual anxieties for the mother: concern regarding her physical integrity (fear of surgical wound damage or movement) and anxiety about her new role as a mother (maternal role adaptation). (21) Neurobiologically, anxiety stimulates the sympathetic nervous system to activate the

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Hypothalamic-Pituitary-Adrenal (HPA) axis, resulting in increased secretion of stress hormones such as cortisol, adrenaline, and noradrenaline. This surge in stress hormones is known to lower the pain threshold, causing the perceived pain to feel far more severe and agonizing for the patient. (20,22)

From the researcher's perspective, the finding that more than half of the respondents (53.4%) at Nahdlatul Ulama Tuban Hospital experienced severe pain indicates that postoperative pain management for C-section deliveries in primigravida mothers requires more optimal and comprehensive attention. The consequences of poorly managed severe pain are far-reaching; such pain can hinder early ambulation, thereby increasing the risk of postoperative complications ranging from uterine atony and intestinal adhesions to thromboembolism. Intense pain also interferes with early breastfeeding initiation and exclusive breastfeeding, as mothers struggle to position themselves comfortably for nursing. Furthermore, extreme pain suppresses the production of oxytocin a hormone crucial for successful breastfeeding and uterine involution and elevates the risk of postpartum psychological issues, such as the "baby blues" or postpartum depression.

Therefore, the management of post-Cesarean section pain in hospitals should not rely solely on pharmacological approaches (analgesic administration) but must be integratively combined with non-pharmacological management. Nurses and midwives are expected to provide pre-operative education regarding the sensations to be expected after surgery in order to reduce anxiety, as well as to implement self-managed pain relief techniques such as deep breathing exercises, warm or cold compresses, music therapy, and guided imagery.

Analysis of the Relationship Between Perceived Fear and Post-Cesarean Section Pain Intensity Among Primigravida Mothers at Nahdlatul Ulama Hospital, Tuban, in 2026

Table 8. Table of specialized data (Crosstabulation of the Relationship Between Perceived Fear and Post-Cesarean Section Pain Intensity Among Primigravida Mothers at Nahdlatul Ulama Hospital, Tuban, in 2026)

Perception of Fear	**Pain Intensity**			**Amount**
	Mild pain	Moderate pain	Severe Pain	
Moderate Fear	0 (0,0%)	9 (15,5%)	1 (1,7%)	10 (17,2%)
Terrified	0 (0,0%)	18 (31,0%)	29 (50,0%)	47 (81,0%)
Panic	0 (0,0%)	0 (0,0%)	1 (1,7%)	1 (1,7%)
Amount	0 (0,0%)	27 (46,6%)	31 (53,4%)	58 (100,0%)
	***p* = 0,001**			***α* = 0,05**

Based on Table 8, the majority of respondents fell into the "severe fear" category, comprising 47 respondents (81.0%). Within this group, most experienced severe post-operative pain intensity, specifically 29 respondents (50.0%). Meanwhile, respondents in the "moderate fear" category tended to experience moderate pain, accounting for 9 respondents (15.5%).

The study results reveal that a significant number of respondents—47 (81.0%)—experienced fear classified as "severe." Within this group, half (29 respondents, or 50.0%) experienced severe pain intensity following surgery. Meanwhile, respondents in the "moderate fear" category tended to experience moderate pain (9 respondents, or 15.5%). This indicates a trend: the higher the pre-operative fear perceived by the respondent, the higher the pain intensity experienced during the post-operative period. Furthermore, data regarding the classification of post-operative pain intensity among primigravida mothers undergoing Cesarean sections at Nahdlatul Ulama Hospital, Tuban (Table 2), show that the majority of respondents (31, or 53.4%) experienced severe post-operative pain, while a smaller proportion (27, or 46.6%) experienced moderate post-operative pain.

Fear perception is a psychological factor that plays a crucial role in influencing the pain intensity experienced by mothers after a Cesarean section. Post-operative pain is influenced not only by physiological factors—such as tissue damage resulting from the surgical procedure—but also significantly by individual psychological factors, including fear and anxiety. (24) The fear perceived by mothers following a Cesarean section can trigger a stress response that directly impacts the perception of pain. Physiologically, fear activates the sympathetic nervous system, a component of the body's stress response. This activation leads to an increased release of stress hormones, such as adrenaline and cortisol, contributing to heightened muscle tension, elevated heart rate, and increased nervous system sensitivity to pain stimuli. (25) These conditions can amplify the transmission of pain impulses to the central

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nervous system, resulting in the perception of more intense pain. This aligns with the theory of psychoneuroimmunology, which states that the mind (psycho), the nervous system (neuro), and the immune system (immunology) cannot be separated but are instead interdependent.

The analysis in this study employed the Spearman Rank test with a significance level of $\alpha < 0.05$, using Statistical Package for the Social Sciences (SPSS) software version 26. The results yielded a p-value of 0.001 ($p < 0.05$). Consequently, H1 was accepted, indicating a relationship between the perception of fear and the intensity of postoperative pain following a Caesarean section among primigravida mothers at Nahdlatul Ulama Hospital, Tuban.

CONCLUSIONS

Based on the research findings, the following conclusions are drawn:

1. The majority of primigravida mothers undergoing cesarean section at Nahdlatul Ulama Tuban Hospital perceive their fear as falling into the "severe fear" category.
2. The majority of primigravida mothers at Nahdlatul Ulama Tuban Hospital experience postoperative pain intensity following cesarean section that falls into the "severe pain" category.
3. There is a relationship between the perception of fear and the intensity of postoperative pain following cesarean section among primigravida mothers (at Nahdlatul Ulama Tuban Hospital).

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CONFLICT OF INTEREST AND FUNDING DISCLOSURE

The authors declare no conflicts of interest regarding this article. This research was funded personally by the researchers.

RESEARCH AND PUBLICATION ETHICS

The authors state that the study received ethical approval from the Research Ethics Committee of the Nahdlatul Ulama Institute of Health Sciences Tuban (Reference No. 364/0084223523/LEPK.IIKNU/V/2026). All respondents were provided with an explanation in accordance with research ethics procedures prior to data collection.

AUTHOR CONTRIBUTIONS

ED: Conceptualization, data curation, formal analysis, funding acquisition, visualization, writing (original draft), writing (review & editing). MM: Investigation and supervision.

DECLARATION ON THE USE OF ARTIFICIAL INTELLIGENCE (AI)

The authors state that Artificial Intelligence technology (OpenAI's ChatGPT) was used to a limited extent as a supporting tool for organizing initial ideas and editing grammar. The entire substance of the manuscript including the dataset, analysis process, interpretation of results, references, and the formulation of conclusions has been thoroughly reviewed and verified by the authors. The authors bear full responsibility for the accuracy, integrity, and originality of the manuscript's entire content.

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