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Patient Anxiety and Early Mobilization After Emergency Cesarean Section

A Correlational Study Among Primiparous Mothers in the Postpartum Inpatient Ward

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Abstract

Emergency Cesarean Section (C-section) can cause severe anxiety in primiparous postpartum mothers, potentially inhibiting early mobilization and delaying physical recovery. This study aimed to analyze the correlation between patient anxiety level and the implementation of early mobilization in primiparous post-emergency C-section mothers in the postpartum inpatient room. A quantitative study with a cross-sectional correlational design was conducted involving 112 primiparous post-emergency C-section mothers across three referral hospitals in Jombang Regency (RSUD Jombang, RS Muslimat, and RS Pelengkap) selected via consecutive sampling. Data were collected using the State-Trait Anxiety Inventory (STAI) State Anxiety version (Cronbach's α=0.884), a psychosocial support questionnaire, and an observation sheet for Day 1 post-C-section early mobilization SOPs. Data were analyzed using Pearson Chi-Square and Monte Carlo exact statistical tests. This study found most respondents experienced severe anxiety (53.6%) and the implementation of early mobilization was predominantly in the poor category (42.9%). The Chi-Square test revealed a statistically significant correlation between anxiety level and early mobilization execution (χ^2=47.32, df=4, p<0.001, Cramér's V =0.46). A significant inverse association exists between anxiety level and early mobilization execution in primiparous post-emergency C-section mothers, indicating that higher anxiety is associated with lower physical mobilization compliance during initial postoperative recovery.

Keywords: *Anxiety Level, Early Mobilization, Emergency Cesarean Section, Primipara, Postpartum Mothers*

Introduction

Childbirth through emergency Cesarean Section (C-section) is an unplanned surgical procedure performed to address maternal or fetal distress. Unlike elective surgeries, emergency C-sections leave patients with minimal time for psychological and physical preparation, frequently inducing acute anxiety. In primiparous mothers with no prior surgical experience, high anxiety can lower pain tolerance thresholds and impair willingness to engage in postoperative physical activities [1], [2].

Globally, C-section rates have risen to 21%, exceeding the recommended range of 10%–15%. In Indonesia, C-section births account for 17.6% of total deliveries, with emergency procedures comprising a significant proportion in regional referral centers [3], [4]. In Jombang Regency, emergency C-sections represent a substantial volume of admissions across primary referral facilities, including RSUD Jombang, RS Muslimat, and RS Pelengkap.

Early mobilization within the first 24 hours post-surgery is essential to restore gastrointestinal function, improve circulation, and reduce the risk of postoperative complications such as deep vein thrombosis or paralytic ileus [5]. Although early mobilization protocols are standard nursing practice in postpartum wards, compliance remains suboptimal, particularly among primiparous mothers facing acute perioperative stress. Fear of pain and concerns regarding surgical wound disruption frequently deter patients from early movement [6], [7].

While existing literature highlights the importance of early mobilization, empirical evidence examining its specific association with anxiety among primiparous emergency C-section patients in hospital settings remains limited [8]. Therefore, this study aimed to investigate the relationship between anxiety levels and early mobilization compliance on Day 1 post-surgery among primiparous mothers across three hospitals in Jombang Regency.

Material and Methods

A. Research Design

This study utilized a quantitative cross-sectional correlational design to evaluate the association between patient anxiety levels and early mobilization execution in primiparous post-emergency C-section mothers in postpartum inpatient wards without providing direct clinical interventions.

B. Research Location and Time

The study was conducted from May to July 2026 across postpartum inpatient wards of three referral hospitals in Jombang Regency, East Java, Indonesia: RSUD Jombang, RS Muslimat Jombang, and RS Pelengkap Jombang. All three hospitals implement standardized post-C-section nursing care protocols and post-surgical analgesia protocols.

C. Research Subjects

A total of 135 post-emergency C-section mothers were initially screened using a consecutive sampling technique during the study period. Of these, 15 patients were excluded based on exclusion criteria: 5 had a pre-existing history of anxiety disorders, 4 had co-existing severe systemic conditions, and 6 experienced severe neonatal critical outcomes or loss. Additionally, 8 eligible patients declined to participate. The final analytical sample comprised 112 primiparous mothers distributed across RSUD Jombang (n=48), RS Muslimat (n=36), and RS Pelengkap (n=28).

Inclusion criteria for this study included:

1. Primiparous post-emergency C-section mothers on Day 1 (24 hours post-procedure);
2. Fully conscious (compos mentis) with stable vital signs and no severe delivery complications (e.g., eclampsia, massive hemorrhage);
3. Capable of communication and willing to provide written Informed Consent.

Exclusion criteria included:

1. History of mental disorders or diagnosed anxiety disorders prior to pregnancy;
2. Co-existing severe systemic diseases prior to pregnancy;
3. Infants experiencing severe critical conditions or passing away during delivery.

Sample size was estimated using Lemeshow's formula for estimated proportions in cross-sectional studies ($Z_{1-\alpha/2}$ =1.96,p=0.50,d=0.10), yielding a minimum requirement of 96 respondents. Although primary hypothesis testing involved Chi-Square correlation, this proportion-based formula was selected to guarantee sufficient subgroup representation across severity categories of anxiety and mobilization levels. The total sample of 112 respondents fulfilled all statistical power requirements.

D. Research Instruments and Measurement

Data collection was conducted in a structured sequential manner on Day 1 post-surgery (18–24 hours postoperatively) after patients received routine postoperative analgesia as prescribed by attending physicians:

1. Demographic and Psychosocial Data: Collected via questionnaire (age, education, employment, payment mode, and husband/family support adapted from the MSPSS instrument, α=0.851).
2. Anxiety Level Assessment: Measured prior to observing mobilization using the validated Indonesian version of the State-Trait Anxiety Inventory (STAI) Form Y-1 (State Anxiety) containing 20 Likert items (1–4). Internal consistency in this sample yielded Cronbach's α=0.884. Total scores (20–80) were categorized based on standard STAI cut-offs: Mild (20–39), Moderate (40–59), and Severe (60–80).
3. Early Mobilization Evaluation: Directly observed during the 24-hour postoperative care window using a 10-item checklist based on standard post-C-section mobilization SOPs: (1) deep breathing/foot ankle exercises, (2) leg flexing/extending, (3) side-to-side turning (right/left), (4) half-sitting position (30°), (5) sitting upright (60°–90°), (6) dangling feet at bedside, (7) standing with support, (8) stepping around the bed, (9) unassisted walking to the bathroom, and (10) independent room ambulation. Each step executed correctly was scored 1, otherwise 0 (total score 0–10). Categorization based on percentage of SOP execution was defined as: Good (80%–100%, corresponding to 8–10 steps executed), Fair (60%–70%, corresponding to 6–7 steps executed), and Poor (<60%, corresponding to 0–5 steps executed).

E. Data Analysis

Data were processed using IBM SPSS Statistics version 28.0. Univariate analysis presented frequency distributions (n, %). Bivariate analysis was conducted using the Chi-Square test (χ^2) at α=0.05. As 2 cells in the 3×3 crosstabulation had expected counts <5, Monte Carlo simulation / Fisher-Freeman-Halton Exact Test p-value was reported alongside Pearson χ^2 , degrees of freedom (df), and Cramér's V to measure association strength.

F. Ethical Consideration

This study obtained official ethical approval from the Health Research Ethics Committee (KEPK) of ITSKes Insan Cendekia Medika Jombang with Ethical Clearance Letter Number: 148/KEPK-ICME/VI/2026. Data collection was performed after patients voluntarily provided written Informed Consent.

Results

A. Demographic Characteristics and Psychosocial Response of Respondents

The demographic distribution of the 112 primiparous respondents showed that the majority were aged 20–35 years (73.2%), completed secondary education (58.0%), were unemployed or housewives (66.1%), and utilized BPJS Kesehatan for healthcare financing (81.3%). Moderate level of support from husbands and families was reported by 42.9% and 46.4% of participants, respectively (Table 1).

Table 1. Demographic characteristics and psychosocial response of post-emergency C-section mothers (n=112)

General Data	Category	Frequency (n)	Percentage (%)
Maternal Age	<20 Years	14	12.5
	20–35 Years (Healthy Reproductive Age)	82	73.2
	>35 Years	16	14.3
Educational Level	Basic Education (Elementary/Junior High)	28	25.0
	Secondary Education (Senior High/Vocational)	65	58.0
	Higher Education (Diploma/Bachelor)	19	17.0
Employment Status	Unemployed / Housewife	74	66.1
	Employed	38	33.9
Payment Status	BPJS Kesehatan / JKN	91	81.3
	Self-pay / General	21	18.7
Husband Support	Less Supportive	29	25.9
	Moderately Supportive	48	42.9
	Highly Supportive	35	31.3
Family Support	Less Supportive	24	21.4
	Moderately Supportive	52	46.4
	Highly Supportive	36	32.1
Total		112	100.0

B. Univariate Analysis of Main Variables

Analysis of primary variables revealed that 60 respondents (53.6%) experienced severe anxiety, 38 (33.9%) experienced moderate anxiety, and 14 (12.5%) experienced mild anxiety. Regarding early mobilization compliance on Day 1 post-C-section, 48 respondents (42.9%) performed in the Poor category (<60%), 36 (32.1%) in the Fair category (60%–70%), and 28 (25.0%) in the good category (80%–100%) (Table 2).

Table 2. Frequency distribution of anxiety level and early mobilization in post-emergency C-section patients (n = 112)

Variable	Category	Frequency (n)	Percentage (%)
Anxiety Level	Mild (Score 20–39)	14	12.5
	Moderate (Score 40–59)	38	33.9
	Severe (Score 60–80)	60	53.6
Early Mobilization	Good (80%–100%, 8–10 SOP steps)	28	25.0
	Fair (60%–70%, 6–7 SOP steps)	36	32.1
	Poor (<60%, 0–5 SOP steps)	48	42.9
Total		112	100

C. Bivariate Analysis

Cross-tabulation indicated an inverse relationship between anxiety level and early mobilization execution. Among mothers with severe anxiety, 66.7% (n=40) demonstrated poor early mobilization performance, whereas 78.6% (n=11) of those with mild anxiety achieved good early mobilization performance (Table 3).

Evaluation of Chi-Square test assumptions revealed that 2 cells (22.2%) in the 3×3 crosstabulation had expected counts <5. Therefore, Monte Carlo exact test results were reported alongside Pearson Chi-Square. The analysis confirmed a statistically significant association between anxiety levels and early mobilization compliance (χ^2 =47.32, df=4, p<0.001, Monte Carlo p<0.001). Cramér's V coefficient was 0.46, indicating a strong magnitude of association.

Table 3. Correlation between anxiety level and early mobilization in post-emergency C-section mothers (n = 112)

Anxiety Level	Early Mobilization						Total		Statistical Test
	Good		Fair		Poor				
	n	%	n	%	n	%	n	%	
Mild	11	78.6	2	14.3	1	7.1	14	100	Pearson Chi-Square = 47.32
Moderate	13	34.2	18	47.4	7	18.4	38	100	df = 4
Severe	4	6.7	16	26.7	40	66.7	60	100	p < 0.001
Total	28	25	36	32.1	48	42.9	112	100	Cramér's V = 0.46

Discussion

A. Anxiety Level in Post-Emergency C-Section Mothers

Based on the research findings, more than half of the respondents experienced severe anxiety (53.6%), nearly one-third experienced moderate anxiety (33.9%), and a minor proportion experienced mild anxiety (12.5%). The high prevalence of severe anxiety among primiparous mothers undergoing emergency surgery aligns with Lazarus' stress and coping theory, where the absence of prior surgical or delivery experience causes the primary appraisal of invasive procedures to be perceived as a major threat [9], [10]. Coupled with the unplanned nature of emergency C-sections, patients have minimal time to build effective psychological coping mechanisms [9], [10]. In terms of age distribution, the majority of respondents were in the healthy reproductive age group of 20 to 35 years (73.2%). According to cognitive development theories, early adulthood is characterized by greater emotional maturity [11]. However, in acute obstetric emergencies, cognitive maturity alone does not guarantee psychological readiness, as acute physical stress and surgical apprehension frequently override emotional adaptation in primiparous mothers.

B. Early Mobilization in Post-Emergency C-Section Mothers

Regarding early mobilization compliance on Day 1 post-surgery, nearly half of the respondents were categorized as Poor (42.9%), while 32.1% were Fair, and 25.0% achieved good compliance. According to postoperative rehabilitation theory, progressive physical movement starting within 24 hours post-surgery is clinically crucial to stimulate gastrointestinal peristalsis, enhance circulation, and prevent systemic complications [6], [12]. The high rate of poor mobilization reflects persistent compliance barriers during initial recovery. Although most respondents completed secondary education (58.0%),

which generally facilitates health information processing [13], [14] , theoretical comprehension of mobilization benefits often fails to translate into physical execution when mothers face acute surgical wound pain and apprehension regarding suture integrity.

C. Correlation Between Anxiety Level and Early Mobilization in Post-Emergency C-Section Mothers

Statistical testing demonstrated a significant inverse association between anxiety levels and early mobilization execution (χ^2=47.32, p<0.001, Cramér's V = 0.46). Cross-tabulation indicated that 66.7% of mothers with severe anxiety exhibited poor mobilization, whereas 78.6% of those with mild anxiety achieved good mobilization performance. From a psychophysiological perspective, acute anxiety triggers sympathetic nervous system activation, elevating cortisol and catecholamine levels, which lowers pain tolerance thresholds and heightens pain perception during physical movement [15].

These findings correspond with Leeuw's Fear-Avoidance Model, which states that elevated anxiety promotes avoidance behaviors toward physical activities perceived as potential sources of discomfort [5]. In primiparous post-emergency C-section mothers, apprehension breeds fear of movement, leading to physical immobility; this prolonged immobility induces joint and muscle stiffness, which subsequently intensifies pain upon initial movement attempts [5].

Conclusion

In conclusion, most primiparous mothers undergoing emergency C-section delivery experienced severe anxiety, and compliance with Day 1 early mobilization was predominantly poor. A statistically significant inverse association was observed between anxiety levels and early mobilization execution. Higher anxiety levels are associated with reduced compliance in performing early mobilization stages post-emergency C-section. Nursing interventions aimed at perioperative anxiety reduction should be integrated into standard postpartum care to support early physical recovery.

Limitation and Suggestions

This study has several limitations that should be considered when interpreting the results. First, the cross-sectional design only evaluates anxiety levels and early mobilization execution at a single time point (24 hours post-surgery), preventing the assessment of causal relationships or dynamic changes over time. Second, anxiety levels were evaluated using self-reported measures, which may be subject to response bias. Third, unmeasured potential confounding variables, such as objective pain intensity scores (e.g., Visual Analog Scale), individual variation in residual anesthetic effects, surgical wound size, and specific clinical intraoperative factors, may also influence mobilization execution alongside anxiety.

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Conflict of Interest

All authors declare that there is no conflict of interest, whether financial, personal, or professional, regarding the execution of this research and the publication of this scientific article.

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