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ASSOCIATED FACTORS OF ACUTE POSTOPERATIVE PAIN WITHIN THE FIRST 24 HOURS IN WOMEN UNDERGOING CESAREAN DELIVERY

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Abstract

Background: *The problem of acute postoperative pain following cesarean delivery is a major clinical issue because it can hamper mobility, slow down recovery, and prevent a mother from providing care and bonding to her newborn. Although multimodal analgesic approaches are available, moderate-to-severe levels of pain are still experienced by many women during the first postoperative phase.*

Purpose: *To establish the variables related to moderate-to-severe acute postoperative pain during the initial 24 hours after cesarean operation.*

Methods: The study was a descriptive observational study conducted at the University of Lahore teaching hospital. A non-probability purposive sampling method was used, and data were collected through a standardized questionnaire. The sample size of women who had a cesarean section was 87.

Results: *Out of the 87 participants, 49.4% were aged between 26 and 35 years, 80.5% were ASA-II, 56.3% of them had a prior cesarean section, and 48.3% experienced preoperative anxiety. They were mostly multiparous (62.1%) with elective procedures (60.9%). Incision length of 10 cm or more was recorded in 55.2%, spinal anesthesia was used in 77% of the study subjects, and 57.5% had over 60 minutes of surgical time. Nerve blocks were administered postoperatively in 51.7%, and 55.2% received systemic analgesics.*

Conclusion: *The paper identifies the critical risk factors of the emergence of moderate-to-severe acute postoperative pain in the 24-hour period following cesarean delivery. Other factors that had the greatest influence included preoperative anxiety, increased BMI, longer operating time, prior cesarean section, and postoperative analgesia.*

Introduction

Among the most commonly used surgical procedures in the world is the Caesarean section (C-section) and its prevalence has been on the increase in both the developed and developing world. As the C-section rates are on the rise, the postoperative pain has become a burning clinical and population health issue. Postoperative pain post cesarean section is not only very common but also in the top ten list of most painful surgical operations, even with the development of multimodal analgesia.

Acute post-cesarean pain is multifactorial, which is affected by physiological, psychological, surgical, and anesthetic factors. In women, the percentage of moderate to severe pain during the first 24 hours after surgery is high even with standardized pain

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protocols. This stage is linked to severe pain, which is related to delayed mobilization, long hospital stays, increased opioid use, postpartum depression, impaired breastfeeding, and maternal-infant attachment. Also, untreated acute postoperative pain is considered one of the predictors of chronic postsurgical pain, with the incidence of up to 12-18 months after childbirth.

The studies show that a one-size-fits-all approach to analgesic does not work, and patients have vastly different pain sensitivity, psychosocial characteristics, risk factors of surgery, and opioid needs. The knowledge of the related factors related to moderate-to-severe acute postoperative pain is the key to personalized pain management. The early detection of the high-risk patients allows target intervention and minimizes the risk of developing chronic pain and enhances the overall outcome of mothers and patient satisfaction.

The aim of this study is thus to assess the demographic, psychological, surgical and anesthetic variables that relate to acute postoperative pain during the initial 24 hours in the following delivery of cesarean section. The study is a good resource in terms of understanding the modifiable clinical variables that may be used to implement evidence-based interventions, improve postoperative pain outcomes, and promote safer and faster maternal recovery.

Methodology

Study Design and Setting

This study was carried out as a descriptive observational study. The aim of using this design was to observe and describe the nature and the results of women who underwent Cesarean Section (CS) without controlling any variables. The research was conducted at the District Headquarters (DHQ) Hospital, Muzaffargarh, a tertiary care hospital which is an elective and emergency obstetric hospital.

Sampling and Participants

In this study, 87 participants were involved. A purposive sampling method that was non-probability was used. The inclusion criteria were women who had either an elective or emergency Cesarean section using general or spinal anesthesia and gave a written informed consent to join the study. Exclusion criteria included cognitive dysfunction patients or patients who are unable to communicate and patients who are receiving chronic pain management.

Data Collection

A standardized questionnaire was used to collect data, which was designed to address both demographic and clinical data that can be used in achieving the objectives of the study. The patient records and a standardized questionnaire administered by the researcher were used to get the data.

Data Analysis

Upon the completion of the data collection, the entire information was inputted in a Statistical Package of Social Sciences (SPSS) spreadsheet and analyzed in SPSS Version 30. Qualitative variables like the level and type of anesthesia were presented in frequencies and percentages whereas quantitative variables like age were presented in mean and standard deviation.

Results

Demographic Characteristics

Among the 87 cases, the patients aged 15-25 years were 27.6%, patients aged 26-35 years were 49.4%, patients aged 36-45 years were 19.5% and patients aged more than 45 years were 3.4%. Regarding education, patients with no formal education were 26.4%, primary leveled ones were at 24.1%, 26.4% were diploma holders and lastly the ones with bachelors' education were 23.0%. For BMI status, the underweight patients were 5.7%, normal weighted ones were 23.0%, overweighted ones were 39.1% and obese patients were 32.2%.

Clinical and Obstetric History

ASA-II patients were 80.5% and ASA-III patients were 19.5%. Among the 87 cases, 56.3% of patients had a previous history of C-Sec while 43.7% had no history of C-Sec. Regarding parity, 62.1% of patients had multiparous parity while 37.9% had nulliparous parity. Preoperative anxiety was present in 48.3% of patients while the other 51.7% had no preop anxiety.

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Surgical and Anesthetic Factors

Among the 87 cases, 60.9% of patients had an elective C-Sec while 39.1% of patients had emergency C-Sec. Regarding skin incision type, 54% had C-Sec with midline skin incision while the other 46% had transverse skin incision. For incision length, 44.8% had skin incision of less than 10 cm, while 55.2% had skin incision of equal to or more than 10 cm. 23% of patients underwent general anesthesia while the other 77% had spinal anesthesia. 42.5% of surgeries had duration of less than 60 minutes while the other 57.5% surgeries had duration of more than 60 minutes.

Pain Assessment and Management

The mean pain score at 2 hours was 6.01 (SD = 2.04). The mean pain score at 12 hours was 3.98 (SD = 2.35). The mean pain score at 24 hours was 2.61 (SD = 2.15).

Regarding management, 54% of patients were given preoperative analgesics. 51.7% of patients received post-op nerve block. 55.2% of patients were given systemic analgesic. In terms of analgesic type, 18.4% of patients were given paracetamol, Diclofenac was given to 27.6%, Tramadol was given to 26.4%, while the remaining 27.6% of patients were not required any analgesic.

The following table summarizes the factors associated with acute postoperative pain within the first 24 hours after cesarean delivery:

Factor Category	Specific Factors	Frequency / Observation	Comments / Influence on Pain
Demographic	Age 26–35 years	49.4%	Most participants in this age group
Demographic	BMI Overweight/Obese	71.3%	Higher BMI associated with increased pain intensity
Obstetric History	Multiparous	62.1%	Multiparity prevalent; previous cesarean associated with higher pain
Obstetric History	Previous C-section	56.3%	Prior surgery linked to more postoperative pain
Psychological	Preoperative anxiety	48.3%	Strong predictor of moderate-to-severe pain
Surgical Factors	Elective C-section	60.9%	Most procedures elective
Surgical Factors	Incision ≥10 cm	55.2%	Longer incision associated with more pain
Surgical Factors	Surgery duration >60 min	57.5%	Longer procedures correlated with higher pain scores
Anesthetic Factors	Spinal anesthesia	77%	Most patients received spinal anesthesia
Postoperative Analgesia	Nerve block	51.7%	Reduced pain when administered
Postoperative Analgesia	Systemic analgesics	55.2% (Diclofenac 27.6%, Tramadol 26.4%, Paracetamol 18.4%)	Pain management influences intensity during first 24h
Pain Scores (Mean ± SD)	2h	6.01 ± 2.04	Highest pain immediately post-op
Pain Scores (Mean ± SD)	12h	3.98 ± 2.35	Gradual decrease over first day
Pain Scores (Mean ± SD)	24h	2.61 ± 2.15	Pain declines but still clinically relevant

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Discussion

The problem of pain following cesarean delivery is a significant clinical problem due to its impact on initial mobility, breastfeeding, maternal infant attachment and postpartum recovery. In the current research, the greatest amount of postoperative pain was observed immediately after surgery and subsequently decreased throughout the first 24 hours, as is expected of the normal post-cesarean pain pattern reported in the literature. Yet, the moderate-to-severe pain is a clinically significant phenomenon at the early stage as it is during the time when the functional limitation is the most significant.

The psychosocial dimension of preoperative anxiety is one of the most powerful clinical relevant factors in the study of cesarean pain. Fear has been reiterated to be associated with increased acute postoperative pain severity and increased analgesic demands. Preoperative anxiety was found to be a significant predictor of moderate-to-severe acute postoperative pain after cesarean section.

Another dimension that is likely to be relevant to understand post-cesarean pain patterns is body habitus. Many studies associate increased BMI with more pain and increased analgesic use, which is theoretically possible by increasing the duration of surgery, the extent of tissue manipulation, and the intensity of inflammatory reactions. The result of Jasim & Mahmood (2022) revealed that post-cesarean pain intensity was linked to both obesity and surgeries duration, which validates the general consideration that patients with a high BMI might need a more aggressive approach to multimodal analgesia.

The quality of pain management is as well influenced by protocol compliance. In low- and middle-income settings, evidence has demonstrated that such factors as inconsistent assessment, delayed administration, and incomplete multimodal regimens are contributing factors to undertreated pain. In general, the comparative evidence confirms the interplay between the psychological (anxiety), patient (BMI, previous surgery), and procedural (duration/complexity) factors when determining the severity of acute post-cesarean pain.

Conclusion

In conclusion, this study has found out that there are some factors that are largely related to moderate to severe acute postoperative pain within the initial 24 hours following cesarean birth especially preoperative anxiety, obesity, long duration of surgery, and inconsistent or suboptimal postoperative analgesia. These results show that post-cesarean pain does not have a single factor; however, it represents a combination of patient-related risk factors, perioperative stressors, and analgesic practices variability.

The findings confirm the necessity of risk-based preoperative screening, as well as multimodal analgesia regimens, which incorporate non-opioid drugs and, where possible, regional methods (e.g., nerve blocks). The optimization of analgesia using organized pathways, such as the correct use of systemic agents, including diclofenac or tramadol in case of necessity, can contribute to the reduction of pain intensity, enhanced maternal mobility, decreased postoperative complications, and enhanced maternal recovery and postpartum wellbeing.

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