Indonesian Journal of Global Health Research
Volume 8 Number 6, December 2026
e-ISSN 2715-1972; p-ISSN 2714-9749
http://jurnal.globalhealthsciencegroup.com/index.php/IJGHR

THE ASSOCIATION BETWEEN PAIN INTENSITY AND DELAYED EARLY MOBILIZATION AMONG WOMEN AFTER CESAREAN SECTION: A LITERATURE REVIEW

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ABSTRACT
Cesarean section (CS) is a surgical mode of delivery that may cause postoperative pain and affect a mother's ability to move and perform activities during recovery. Increased pain during movement may lead to limited mobility and potentially delay early mobilization. This literature review aimed to analyze pain intensity as a factor associated with delayed early mobilization among mothers after CS. This study used a Systematic Literature Review (SLR) approach following the PRISMA 2020 guidelines. Literature searches were conducted through Google Scholar, PubMed, ScienceDirect, and GARUDA using keywords related to cesarean section, pain intensity, postoperative pain, and early mobilization. Articles published between 2016 and 2026 in Indonesian or English were included. Of the 128 articles initially identified, 16 met the eligibility criteria and were analyzed descriptively. Higher pain intensity was generally associated with delayed early mobilization after CS, including greater difficulty in changing positions, sitting, standing, and walking. Lower pain intensity was associated with better mobility and increased physical activity. However, not all studies reported statistically significant associations. Pain intensity is an important factor associated with early mobilization after CS, although it is not the only factor involved. Regular pain assessment and appropriate pain management should be accompanied by education, support, and gradual assistance with early mobilization according to the mother's condition.

Keywords: cesarean section; early mobilization; pain intensity; postoperative pain

How to cite (in APA style)
Saryani, D. T., Amal, A. I., Sulistyaningsih, D. R., & Wahyuningsih, I. S. (2026). The Association between Pain Intensity and Delayed Early Mobilization among Women after Cesarean Section: A Literature Review. *Indonesian Journal of Global Health Research*, *8*(6), 895–906. https://doi.org/10.37287/ijghr.v8i6.2787.

INTRODUCTION

Childbirth is the final stage of pregnancy, marked by the delivery of the fetus, placenta, and fetal membranes. Based on the mode of delivery, childbirth may occur vaginally or through a surgical procedure known as Sectio Caesarea (SC) (Akbar & Parhusip, 2024). Under certain circumstances, vaginal delivery may not be possible, making SC an alternative mode of delivery based on obstetric indications and the condition of both the mother and fetus (Yanti & Dewi, 2024).

SC is performed by making incisions in the abdominal and uterine walls to deliver the fetus. This surgical procedure causes tissue disruption and creates a surgical wound that requires time to heal (Yanti & Dewi, 2024). Tissue damage resulting from the incision can stimulate pain receptors, leading to acute pain during the postoperative period (Rizki et al., 2024). Pain following SC not only causes discomfort but may also affect a mother's ability to perform activities during the recovery period (Uzlifatul et al., 2024).

The use of SC as a mode of delivery has continued to increase. The World Health Organization (WHO) reported that the global proportion of births by SC increased from approximately 6% in 1990 to 21% in 2018 and is projected to reach approximately 30% by 2030 (WHO, 2025). In Indonesia, the 2023 Indonesian Health Survey reported that 25.9% of deliveries were performed by cesarean section, while the proportion in Central Java Province reached 24.9% (BKPK, 2023). The

high proportion of cesarean deliveries highlights the importance of maternal recovery after surgery as an essential component of postpartum care, including the management of postoperative pain. Surgical wound pain can be one of the barriers preventing mothers from initiating activities after SC. Pain that occurs during movement may cause mothers to feel anxious about changing positions, leading them to limit their movements or remain in bed. This condition may interfere with the appropriate implementation of early mobilization and may ultimately affect maternal recovery (Sylvia & Rasyada, 2023). Syarifah et al., (2019) reported a significant relationship between surgical wound pain and early mobilization among post-SC mothers ($p = 0.002$; $r = 0.515$). These results indicate that higher levels of pain are associated with greater difficulty in initiating movement after surgery.

Early mobilization refers to activities that are gradually initiated after surgery according to the mother's condition and physical ability as part of the post-SC recovery process (Sylvia & Rasyada, 2023). Mobilization may begin with simple movements of the extremities, changing body position, turning from side to side, and then gradually progressing to sitting, standing, and walking according to the mother's ability (Rachman et al., 2023). Early mobilization helps maintain physical function, improve blood circulation, and support the mother's return to activity after surgery (Nisa et al., 2024). In addition, gradual mobilization may help reduce pain intensity by improving circulation and reducing the response to painful stimuli (Cahyani & Maryatun, 2023).

Delayed early mobilization after cesarean section (CS) may occur when mothers are unable to initiate or gradually progress with physical activity following surgery. This delay may be reflected in difficulties changing position, sitting up, getting out of bed, standing, or beginning to walk. Pain at the surgical site often becomes more noticeable during movement, which may lead mothers to limit movement or postpone activity due to concerns that the pain will worsen (Syarifah et al., 2019). Higher pain intensity has also been associated with a longer time to initiate unassisted ambulation (Hooda et al., 2023). In addition, greater pain fo\\\lowing CS has been associated with lower levels of physical activity during recovery (Sharpe et al., 2019). These findings suggest that pain intensity may be an important factor associated with delayed early mobilization among mothers after CS.

The relationship between pain and early mobilization among post-SC mothers has been reported in several studies. Rachman et al., (2023) found a significant relationship between early mobilization and post-SC pain intensity ($p = 0.004$). Similarly, Nurhayati et al., (2025) reported that pain intensity was significantly associated with the implementation of early mobilization ($p = 0.010$), along with other factors such as knowledge, family support, and motivation. Meanwhile, Sari et al., (2026) demonstrated that early mobilization had an effect on surgical wound pain intensity among post-SC mothers. Collectively, these studies suggest that pain and early mobilization are closely related during the maternal recovery process following SC.

Although the relationship between pain and early mobilization has been widely studied, several studies have primarily examined early mobilization as an intervention to help reduce pain intensity among mothers after cesarean section (CS) (Ekawati et al., 2024; Safitri et al., 2024; Sari et al., 2026). However, evidence specifically examining pain intensity as a factor that may hinder or delay early mobilization remains limited. Pain experienced during movement may affect a mother’s readiness to begin physical activity during the early postoperative period. Therefore, this literature review aimed to examine pain intensity as a factor associated with delayed early mobilization among mothers after CS, based on evidence from previous studies.

METHOD

Literature Search Strategy

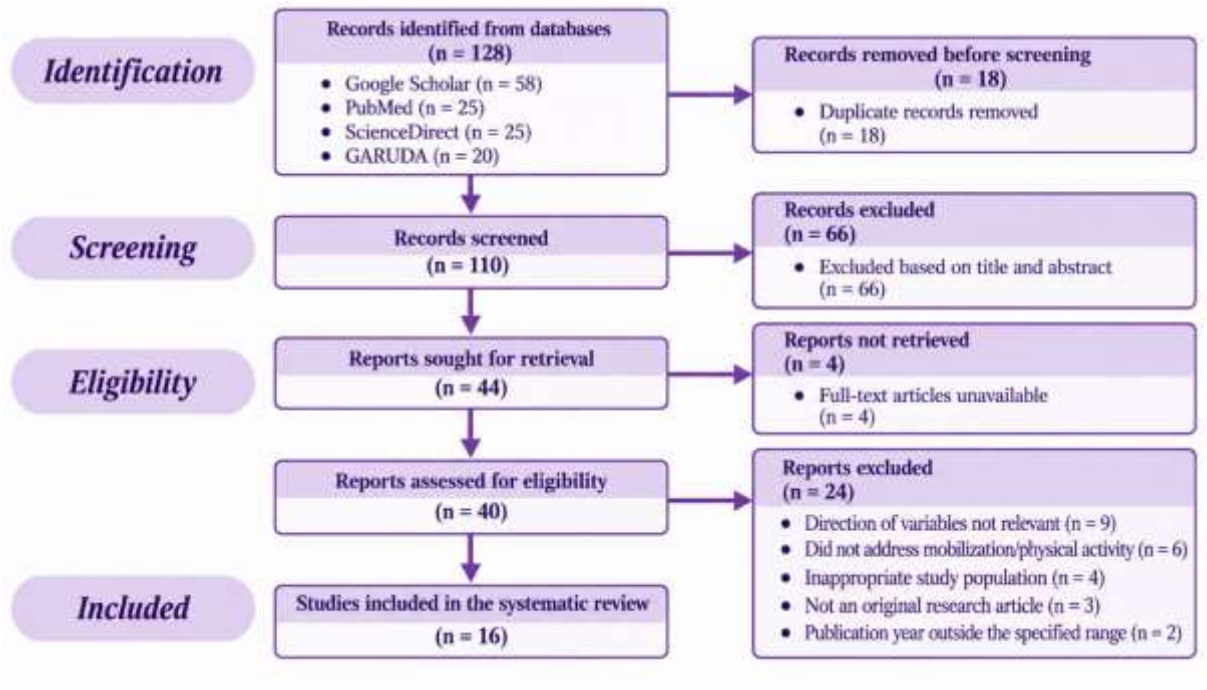
This study employed a *Systematic Literature Review* (SLR) approach following the PRISMA 2020 guidelines. The literature search strategy used a combination of Indonesian keywords, including

"Sectio Caesarea," "intensitas nyeri," "nyeri post Sectio Caesarea," and "mobilisasi dini," as well as English keywords, including "Cesarean Section," "Pain Intensity," "Postoperative Pain," and "Early Mobilization." These keywords were combined using the Boolean operators AND and OR to identify articles relevant to the topic of this review.

The inclusion criteria were as follows: (1) Articles examining pain intensity and early mobilization or related movement outcomes, such as ambulation, physical activity, walking ability, and functional recovery, among mothers after cesarean section (CS)**;** (2) studies involving post-cesarean mothers as the study population; (3) studies using quantitative, qualitative, or other research methods relevant to the purpose of the review; (4) articles available in full text; (5) articles published in Indonesian or English; and (6) articles published between 2016 and 2026.

Article Selection Process

The literature search was conducted across several databases and scientific sources, including Google Scholar, PubMed, ScienceDirect, and GARUDA. The article selection process followed the PRISMA 2020 framework, which included the identification, screening, eligibility assessment, and inclusion stages. During the identification stage, a total of 128 articles were retrieved from all search sources. The identified articles were then reviewed to detect and remove duplicates.



The remaining articles were screened based on their titles and abstracts to determine their relevance to the purpose of the review. Articles that passed the screening stage were subsequently assessed in full text according to the predefined inclusion and exclusion criteria. Following the entire selection process, 16 articles met the eligibility criteria and were included in the review.

Data from the 16 selected articles were then extracted and presented in a table summarizing the study characteristics and main results. The data were subsequently synthesized descriptively to identify and explain the evidence regarding pain intensity as a factor associated with delayed early mobilization among mothers after *Sectio Caesarea*.

Data Extraction

Following the article selection process, data were extracted from the 16 studies that met the inclusion criteria. The information extracted from each article included the authors and year of publication, study title, study objective, research design, population and sample, research instruments, and study results. The extracted data were systematically organized to facilitate comparison and analysis across the included studies.

RESULT

Table 1.
Characteristics and Main Results of the Included Studies

No.	Authors	Year	Title	Objective	Study Design	Sample	Instruments	Results
1	Syarifah, Ratnawati, & Kharisma	2019	*Relationship Between Surgical Wound Pain and Early Mobilization Among Post-Cesarean Mothers at Melati Pavilion, Jombang Regional Hospital*	To examine the relationship between surgical wound pain and early mobilization among post-cesarean mothers.	Correlational, cross-sectional	34 post-cesarean mothers	Pain assessment and early mobilization observation	Surgical wound pain was significantly associated with early mobilization ($p = 0.002$; $r = 0.515$). Higher pain intensity was associated with greater difficulty in performing early mobilization.
2	Duch, Nedergaard, & Jørgensen	2026	*Mobilisation, Breastfeeding, and Quality of Recovery After Caesarean Delivery*	To examine the association between severe pain, mobilization, and maternal recovery after cesarean delivery.	Prospective cohort	583 mothers after elective cesarean delivery	NRS and assessments of mobilization and recovery	Mothers experiencing severe pain were less likely to walk independently within 24 hours (86% vs. 94%; $p = 0.030$) and to get out of bed within the first 6–12 hours (89% vs. 96%; $p = 0.028$).
3	Nurhayati et al.	2025	*Factors Associated with Early Mobilization Among Post-Cesarean Mothers*	To identify factors associated with early mobilization among post-cesarean mothers.	Analytical, cross-sectional	88 post-cesarean mothers	Questionnaire and observation sheet	Pain intensity was significantly associated with early mobilization ($p = 0.010$). Mothers with severe pain were more likely not to perform early mobilization than those with mild pain.
4	Marta et al.	2022	*Pain Experience After Caesarean Section: A Qualitative Study*	To explore mothers' experiences of pain following cesarean section.	Qualitative case study	1 post-cesarean mother and 2 supporting participants	Interviews, observation, and PQRST assessment	Pain made it more difficult for the mother to move and perform activities. When pain increased, she tended to stop activities and rest.
5	Duch, Ekelund, & Nedergaard	2025	*What Matters to Mothers: A Qualitative Exploration of Pain and Recovery After Cesarean Section*	To explore mothers' experiences of pain and recovery following cesarean section.	Exploratory qualitative study	25 post-cesarean mothers	Semi-structured interviews	Pain was identified as a barrier to initiating movement, particularly when getting out of bed and moving from a lying to a sitting position.
6	Hooda et al.	2023	*Impact of Postoperative Pain on Early Initiation of Breastfeeding and Ambulation After Cesarean*	To assess the association between postoperative pain and the time to initiate ambulation and	Randomized trial	300 post-cesarean mothers	Pain scale and measurement of time to ambulation	Higher pain intensity was associated with a longer time to initiate unassisted ambulation. This association was observed for pain

No.	Authors	Year	Title	Objective	Study Design	Sample	Instruments	Results
			Section	breastfeeding.				assessed at 0, 1, and 6 hours after cesarean section.
7	Emrich et al.	2023	*Risk Factors for Severe Pain and Impairment of Daily Life Activities after Cesarean Section*	To assess severe pain and impairment of daily activities following cesarean section.	Multicenter prospective cohort	11,932 post-cesarean mothers	NRS 0–10 and activity assessment	Severe pain was experienced by 53.9% of mothers and was associated with a higher rate of impaired ambulation (88.6% vs. 70.1%; OR = 3.31; p < 0.001).
8	Liu et al.	2024	*Effect of Psychological Nursing Intervention Combined with Acupressure on Postoperative Recovery of Women After Cesarean Section*	To assess the effects of psychological nursing intervention combined with acupressure on pain and recovery following cesarean section.	Retrospecti ve study	150 post-cesarean mothers	VAS and time to out-of-bed activity	The group with lower pain levels was able to initiate out-of-bed activity earlier (18.72 vs. 20.04 hours; p = 0.027).
9	Moreira, Nascimento, & Moreira	2026	*Pain, Activity Limitations, and Functioning Among Women After Vaginal Birth and Cesarean Section*	To assess pain, activity limitations, and maternal functioning following childbirth.	Cross-sectional	148 postpartu m mothers	NPRS, TUG, and WHODAS 2.0	Post-cesarean mothers experienced greater pain and limitations when sitting, standing, and walking (p < 0.001).
10	Pereira et al.	2017	*Is There Association Between the Discomforts of the Immediate Postpartum Period and Type of Delivery?*	To examine the association between mode of delivery and discomfort during the immediate postpartum period.	Observation al, retrospectiv e cross-sectional	346 postpartu m mothers	Medical record data	Abdominal pain was more frequently reported among post-cesarean mothers (40.4% vs. 20.3%; p = 0.001). Postoperative pain may also limit maternal movement.
11	Sharpe et al.	2019	*Recovery of Physical Activity After Cesarean Delivery and Its Relationship with Pain*	To examine the relationship between pain and recovery of physical activity following cesarean delivery.	Prospective observation al study	98 post-cesarean mothers analyzed	0–10 pain scale and Fitbit accelerometer	As pain decreased, maternal physical activity increased (r = −0.54; p < 0.0001). Each one-point increase in pain was associated with approximately 119 fewer steps.
12	Puspitaningsih et al.	2026	*Effect of Early Mobilization on Pain Intensity and the Speed of Functional Recovery After Cesarean Section*	To assess the effect of early mobilization on pain and functional recovery following cesarean section.	Quasi-experiment al	34 post-cesarean mothers	NRS and assessment of independent mobilization	Early mobilization helped reduce pain and accelerate functional recovery. All participants in the intervention group achieved

No.	Authors	Year	Title	Objective	Study Design	Sample	Instruments	Results
								functional recovery within 24 hours.
13	Hamzaoğlu et al.	2026	*Effect of a Guide-Suture-Assisted Modified Fascial Closure Technique on Postoperative Pain and Early Mobilization After Cesarean Section*	To assess pain and mobilization ability following the use of different fascial closure techniques.	Mixed-methods	60 mothers undergoing elective cesarean section	VAS, NRS, SF-MPQ, and mobilization assessment	Mothers with lower pain levels were able to walk farther at 12, 24, and 48 hours. Qualitative data also indicated that severe pain was accompanied by fear of movement and difficulty standing and walking.
14	Suryanti, Handayani, & Purwati	2025	*A Cross-Sectional Study of the Relationship Between Pain Levels and Mobilization Among Post-Cesarean Section Patients Using the ERACS Method*	To examine the relationship between pain intensity and mobilization among post-cesarean patients undergoing ERACS.	Correlational, cross-sectional	51 post-cesarean patients	NRS and mobilization observation	Pain intensity was significantly associated with the timeliness of mobilization ($p = 0.000$). Patients with moderate pain were more likely to experience delayed mobilization.
15	Pusphita, Sianipar, & Ningrum	2026	*Factors Affecting Early Mobilization Among Patients After Cesarean Section*	To identify factors associated with early mobilization among post-cesarean patients.	Correlational, cross-sectional	47 post-cesarean patients	Questionnaire and mobilization assessment	Pain intensity was significantly associated with early mobilization ($p = 0.003$). Good early mobilization was more commonly observed among patients with mild pain.
16	Ciechanowicz et al.	2026	*Biopsychosocial Predictors of Chronic Pain After Caesarean Delivery*	To assess factors associated with chronic pain and activity impairment following cesarean delivery.	Prospective cohort	143 mothers; 100 completed follow-up	SPACE-Postpartum and assessments of pain and activity	Higher early postoperative pain was associated with greater activity impairment ($p = 0.034$). However, the difference in walking ability at 24–48 hours was not statistically significant ($p = 0.395$).

Based on the 16 articles analyzed, pain intensity was generally associated with mothers' ability to initiate movement after Sectio Caesarea (SC). The results can be grouped into three main areas: pain intensity and delayed early mobilization, pain and limitations in physical activity or ambulation, and pain reduction and recovery of mobility. Several studies showed that pain intensity was associated with delayed early mobilization. Syarifah et al., (2019) found a significant relationship between surgical wound pain and early mobilization ($p = 0.002$; $r = 0.515$). Similar results were reported by Nurhayati et al., (2025) who found that pain intensity was significantly associated with early mobilization ($p = 0.010$). Mothers with severe pain were less likely to perform early mobilization than those with mild pain.

A similar association was also observed among post-SC patients undergoing the ERACS protocol. Suryanti et al., (2025) reported a significant relationship between pain intensity and the timeliness of mobilization ($p = 0.000$), with delayed mobilization occurring more frequently among patients with moderate pain. Pusphita et al., (2026) also found a significant association between pain intensity and early mobilization ($p = 0.003$), with adequate mobilization more commonly observed among patients experiencing mild pain. These results were further supported by Duch et al. (2025) who reported that fewer mothers with severe pain were able to walk independently within 24 hours compared with those without severe pain (86% vs. 94%; $p = 0.030$). Similarly, fewer mothers with severe pain were able to get out of bed within the first 6–12 hours (89% vs. 96%; $p = 0.028$). Meanwhile, Hooda et al., (2023) showed that higher pain intensity was associated with a longer time to initiate unassisted walking. Together, these studies suggest that mothers experiencing more severe pain may require more time to begin moving after SC.

In addition to delaying the initiation of mobilization, pain was also associated with limitations in physical activity and ambulation. Emrich et al., (2023) reported that 53.9% of post-SC mothers experienced severe pain. Mothers with severe pain had a higher rate of impaired ambulation than those without severe pain (88.6% vs. 70.1%; OR = 3.31; $p < 0.001$). Sharpe et al., (2019) also demonstrated that as pain decreased, maternal physical activity increased ($r = -0.54$; $p < 0.0001$). Each one-point increase in pain score was associated with approximately 119 fewer steps.

Limitations in activity were also evident in simple movements such as sitting, standing, and walking. Moreira et al., (2026) showed that post-SC mothers experienced greater pain and activity limitations when performing these activities ($p < 0.001$). This was consistent with Marta et al., (2022) who reported that mothers found it more difficult to move as pain increased, leading them to stop their activities and rest. Duch et al., (2025) also identified pain as a barrier to movement, particularly when mothers attempted to get out of bed or move from a lying to a sitting position.

Several studies also demonstrated an association between reduced pain and the mother's ability to resume movement and progress through recovery. Liu et al., (2024) reported that mothers with lower pain levels were able to initiate out-of-bed activity earlier (18.72 vs. 20.04 hours; $p = 0.027$). Puspitaningsih et al., (2026) showed that early mobilization helped reduce pain while accelerating functional recovery, with all participants in the intervention group achieving functional recovery within 24 hours. Hamzaoğlu et al., (2026) also reported that mothers with lower pain levels were able to walk farther at 12, 24, and 48 hours after SC. More severe pain was also accompanied by fear of movement and difficulty standing and walking.

However, the relationship between pain and mobility was not consistently observed across all indicators. Ciechanowicz et al., (2026) found that higher early postoperative pain was associated with greater activity impairment ($p = 0.034$), whereas the difference in walking ability at 24–48 hours was not statistically significant ($p = 0.395$). This suggests that maternal mobility after SC is not solely associated with pain and may also be influenced by other conditions and factors during the recovery process. Overall, most of the included studies indicate that higher pain intensity after SC is associated with greater difficulty in initiating movement and performing physical activities. Pain may cause discomfort when changing position, getting out of bed, standing, or walking, which may delay mobilization. In contrast, as pain decreases, mothers tend to move more easily and gradually resume their activities during the recovery period.

DISCUSSION

The review of 16 articles showed a fairly consistent association between pain intensity and mothers' ability to move and engage in physical activity after cesarean section (CS). Most studies indicated that higher pain intensity was associated with greater difficulty in changing position, getting out of bed, standing, and walking. These limitations may delay mobilization, particularly during the early postoperative period. However, the relationship between pain and mobilization does not occur in

isolation, as recovery after SC may also be influenced by the mother's physical condition, support, motivation, pain management, and postoperative care.

Pain Intensity and Delayed Early Mobilization

Pain is a common complaint experienced by mothers after SC because the surgical procedure causes tissue trauma. Postoperative pain may affect the recovery process, maternal activity, breastfeeding, and mother–infant interaction. The PROSPECT guidelines indicate that cesarean delivery may be associated with moderate to severe postoperative pain, making effective pain management an important component of postoperative care (Roofthooft et al., 2021).

The association between pain and mobilization was demonstrated in several of the included studies. Syarifah et al., (2019) reported a significant relationship between surgical wound pain and early mobilization ($p = 0.002$; $r = 0.515$). Similar results were reported by Nurhayati et al. (2025), who found that pain intensity was significantly associated with early mobilization ($p = 0.010$), with mothers experiencing severe pain being less likely to perform early mobilization than those with mild pain. Among post-SC patients undergoing the ERACS protocol, Suryanti et al. (2025) also reported an association between pain intensity and the timeliness of mobilization ($p = 0.000$), while Pusphita et al., (2026) found a significant relationship between pain intensity and early mobilization ($p = 0.003$).

Pain may cause mothers to become more cautious or fearful of movement because certain activities can increase discomfort around the surgical site. This may occur when mothers attempt to move from a lying to a sitting position, stand, and eventually begin walking. Marta et al., (2022) described how pain after SC may lead to fear of movement and limitations in daily activities. Other local studies have also reported that post-SC pain may restrict mobility and slow the recovery process. Therefore, a mother's ability to begin moving may be influenced not only by her physical capacity but also by how she responds to pain during movement.

Studies involving larger samples demonstrated a similar pattern. Duch et al., (2025) showed that fewer mothers with severe pain were able to walk independently within 24 hours than those without severe pain (86% vs. 94%; $p = 0.030$). Hooda et al., (2023) also found that higher pain intensity was associated with a longer time to initiate unassisted walking. These results suggest that mothers experiencing more severe pain may require more time and assistance to begin early mobilization.

Pain and Activity Limitations After Sectio Caesarea

The impact of pain is reflected not only in the time required to initiate mobilization but also in the mother's ability to perform activities throughout the recovery period. In a multicenter study involving 11,932 post-SC mothers, Emrich et al. (2023) reported that 53.9% experienced severe pain, defined as an NRS score of ≥ 7. Severe pain was associated with impairment in several activities, including ambulation, sleep, deep breathing, and mood. Impaired ambulation was more common among mothers with severe pain than among those without severe pain. These results suggest that postoperative pain may affect mothers' ability to perform daily activities in addition to causing physical discomfort.

This is consistent with Sharpe et al., (2019) who showed that reductions in pain were accompanied by increases in physical activity after cesarean delivery. Each one-point increase in pain score was associated with approximately 119 fewer steps on the same day. The use of an accelerometer to measure activity provided an objective indication that changes in pain were also reflected in changes in maternal physical activity.

Moreira et al. (2026) also reported greater limitations among post-SC mothers when sitting, standing, and walking. These quantitative results were consistent with mothers' experiences described in qualitative studies. Marta et al. (2022) reported that as pain increased, mothers

experienced greater difficulty moving and tended to stop their activities and rest. Duch et al. (2025) similarly identified pain as a barrier, particularly when mothers attempted to move from a lying to a sitting position or get out of bed. These findings illustrate how pain may become particularly noticeable during movements involving the muscles and tissues surrounding the surgical site.

Relationship Between Pain, Early Mobilization, and Recovery

The relationship between pain and early mobilization after SC should be considered from both directions. Higher pain intensity may make it more difficult for mothers to initiate activity, while gradual early mobilization may also support recovery and contribute to pain reduction. Therefore, mothers do not necessarily need to wait until the pain has completely resolved before beginning mobilization. Instead, mobilization should be adjusted to the mother's condition, introduced gradually, and supported by healthcare professionals.

Puspitaningsih et al., (2026) reported that early mobilization contributed to reduced pain intensity and faster functional recovery. In their study, all participants in the intervention group achieved functional recovery within 24 hours, whereas 52.9% of participants in the control group required 48 hours. Another local study by Ekawati et al. (2024) also demonstrated a significant difference in pain intensity before and after early mobilization ($p = 0.000$). Similar results were reported by Safitri et al. (2024), with mean pain intensity decreasing from 6.30 to 3.50 after early mobilization ($p = 0.004$).

These results highlight the close relationship between pain, mobilization, and recovery. Pain may limit a mother's willingness and ability to move, while gradually increasing physical activity can form an important part of the recovery process. Therefore, pain management and early mobilization should not be viewed as separate interventions but rather as complementary components of post-cesarean care.

Pain management remains important before and during the initiation of mobilization. The PROSPECT guidelines recommend a multimodal approach to pain management after cesarean delivery, including regular administration of paracetamol and nonsteroidal anti-inflammatory drugs, neuraxial opioids when indicated, and selected regional or local analgesic techniques when necessary (Roofthooft et al., 2021). Adequate pain control may help mothers feel more comfortable when changing position and gradually resuming activity after surgery.

Pain Is Not the Only Factor Associated with Early Mobilization

Although most of the included articles demonstrated an association between pain and early mobilization, significant relationships were not observed across all mobility indicators. Ciechanowicz et al. (2026), for example, found that higher early postoperative pain was associated with greater overall activity impairment ($p = 0.034$), but the difference in walking ability at 24–48 hours was not statistically significant ($p = 0.395$). Hamzaoğlu et al. (2026) similarly reported that mothers with lower pain levels were able to walk farther at 12, 24, and 48 hours, although the time to first mobilization did not differ significantly.

These differences suggest that pain intensity is an important factor, but not the only factor associated with a mother's ability to mobilize after SC. Maternal physical condition, the type of anesthesia and analgesia used, motivation to move, support from family and healthcare professionals, knowledge of the benefits of mobilization, and the postoperative care protocol may all influence when and how a mother begins to move. This may also explain why two mothers experiencing similar levels of pain do not necessarily demonstrate the same ability to mobilize.

Implications for Post-Cesarean Maternal Care

The results of this review highlight the importance of assessing pain and mobility together in post-SC mothers. Healthcare professionals should regularly assess pain intensity, particularly before

mothers begin changing position, sitting, standing, or walking. The use of standardized tools such as the Numeric Rating Scale (NRS) can help determine the level of pain experienced and guide appropriate pain management.

Mobilization should also be introduced gradually according to the mother's condition. Mothers may begin with simple movements in bed, followed by changing position, sitting, standing, and eventually walking with assistance when necessary. Support during the first attempt at mobilization is particularly important because mothers may experience fear, weakness, dizziness, or concern that movement will increase their pain. Providing clear information about the benefits of mobilization may help mothers feel more prepared and confident to begin moving (Suryanti et al., 2025).

This approach should be accompanied by appropriate pain management. Post-cesarean pain control is not only intended to improve maternal comfort but also to support mobility, self-care, breastfeeding, and overall recovery. The multicenter study by Emrich et al., (2023) demonstrated that severe pain was associated with limitations in daily activities, including ambulation. Therefore, regular pain assessment, appropriate analgesia, education, psychological support, and gradual mobilization should be integrated as complementary components of post-cesarean care.

Overall, the evidence reviewed suggests that higher pain intensity tends to be associated with delayed and limited mobilization after Sectio Caesarea. Pain may make it more difficult for mothers to change position, get out of bed, stand, and walk. In contrast, when pain is adequately managed and mothers receive appropriate assistance and education, mobilization may become easier. Nevertheless, pain should not be considered the sole cause of delayed mobilization, as maternal mobility is also influenced by a range of other factors throughout the recovery process.

CONCLUSION

Based on the review of 16 articles, pain intensity was found to be associated with early mobilization among mothers after Sectio Caesarea. Higher pain intensity tends to make it more difficult for mothers to change position, get out of bed, stand, and begin walking, which may delay early mobilization. Pain is also associated with limitations in physical activity during the postoperative recovery period. In contrast, when pain decreases or is adequately managed, mothers tend to move more easily and gradually resume their activities during recovery. However, pain intensity is not the only factor associated with early mobilization. A mother's ability to move may also be influenced by her physical condition, motivation, knowledge, support from family and healthcare professionals, and postoperative management.

REFERENCES

Akbar, A., & Parhusip, T. A. (2024). Faktor-Faktor yang Mempengaruhi Persalinan Per Vaginam dan Caesarean Section. Jurnal Pandu Husada, 5(2). https://jurnal.umsu.ac.id/index.php/JPH

Badan Kebijakan Pembangunan Kesehatan. (2023). Survei Kesehatan Indonesia (SKI) 2023 dalam angka. .

Cahyani, A. N., & Maryatun Maryatun. (2023). Penerapan Mobilisasi Dini terhadap Penurunan Intensitas Nyeri pada Ibu Post Sectio Caesarea. Jurnal Riset Rumpun Ilmu Kesehatan, 2(2), 58–73. https://doi.org/10.55606/jurrikes.v2i2.1688

Ciechanowicz, S., Michel, G., Panigrahy, N., Sukhdeo, H., Carvalho, B., & Sultan, P. (2026). Biopsychosocial predictors of chronic pain after Caesarean delivery: a prospective cohort evaluation of the SPACE (Sleep, Pain, Affect, Cognition, Energy)-Postpartum framework. BJA Open, 18, 100560. https://doi.org/10.1016/j.bjao.2026.100560

Duch, P., Ekelund, K., & Nedergaard, H. K. (2026). What matters to mothers: A qualitative exploration of pain and recovery after cesarean section. Acta Anaesthesiologica Scandinavica, 69(3). https://doi.org/10.1111/aas.14579

Dwi Marta, O. F., Nurhaliza, S., Aini, N., Setyowati, L., Mashfufa, E. W., & Ariani, T. A. (2022). Pain Experience After Caesarean Section: A Qualitative Study. KnE Medicine. https://doi.org/10.18502/kme.v2i3.11927

Ekawati, E., Meity Albertina, & Hesti Prawita Widiastuti. (2024). Pengaruh Mobilisasi Dini Terhadap Nyeri Luka Ibu Post Operasi Secsio Caesarea di Ruang Nifas RSUD Panglima Sebaya Tana Paser Tahun 2022. Jurnal Ilmu Kebidanan Dan Kesehatan (Journal of Midwifery Science and Health), 15(1), 14–20. https://doi.org/10.52299/jks.v15i1.156

Emrich, N. L. A., Tascón Padrón, L., Komann, M., Arnold, C., Dreiling, J., Meißner, W., Strizek, B., Gembruch, U., & Jiménez Cruz, J. (2023). Risk Factors for Severe Pain and Impairment of Daily Life Activities after Cesarean Section—A Prospective Multi-Center Study of 11,932 Patients. Journal of Clinical Medicine, 12(22), 6999. https://doi.org/10.3390/jcm12226999

Hamzaoğlu, F. K., Dik, B., Türen Demir, E., & Energin, H. (2026). Effect of a Guide-Suture-Assisted Modified Fascial Closure Technique on Postoperative Pain and Early Mobilization After Cesarean Section: A Mixed-Methods Study. Healthcare, 14(7), 972. https://doi.org/10.3390/healthcare14070972

Hooda, R., Malik, N., Pathak, P., More, H., & Singh, V. (2023). Impact of Postoperative Pain on Early Initiation of Breastfeeding and Ambulation After Cesarean Section: A Randomized Trial. Breastfeeding Medicine, 18(2), 132–137. https://doi.org/10.1089/bfm.2022.0208

Liu, X.-Y., Chen, X.-B., Wen, Y.-L., Guo, X.-P., & Zhou, X.-B. (2024). Effect of psychological nursing intervention combined with acupressure on postoperative recovery of women after cesarean section. World Journal of Clinical Cases, 12(21), 4527–4535. https://doi.org/10.12998/wjcc.v12.i21.4527

Moreira, B. M. de A., Nascimento, S. L. do, & Moreira, M. A. (2026). Pain, activity limitations, and functioning among women after vaginal birth and Cesarean section: a cross-sectional study. Fisioterapia e Pesquisa, 33. https://doi.org/10.1590/1809-2950/e24014026en

Nurhayati, Y. T., Afrika, E., Anggraini, A., & Amalia, R. (2025). Faktor-Faktor Yang Berhubungan Dengan Pelaksanaan Mobilisasi Dini Pada Ibu Post Sectio Caesarea. Jurnal Kesehatan Saintika Meditory, 8(1), 7. https://doi.org/10.30633/jsm.v8i1.3067

Pereira, T. R. C., Montesano, F. T., Ferreira, P. D., Minozzi, A. S., & Beleza, A. C. S. (2017). Existe associação entre os desconfortos no puerpério imediato e a via de parto? Um estudo observacional. ABCS Health Sciences, 42(2). https://doi.org/10.7322/abcshs.v42i2.1007

Pusphita, R., Sianipar, B. K., & Ningrum, K. M. (2026). Faktor-Faktor Yang Mempengaruhi Mobilisasi Dini Pada Pasien Post Operasi Sectio Caesarea Di Rumah Sakit Ar Bunda Prabumulih. Excellent Midwifery Journal, 9(1), 542–550. https://doi.org/10.55541/emj.v9i1.410

Puspitaningsih, D., Prastya, A., Wahyu Ariyanti, F., Studi, P. S., Keperawatan, I., & Tinggi Ilmu Kesehatan Majapahit, S. (2026). Pengaruh Mobilisasi Dini terhadap Tingkat Nyeri dan Kecepatan Pemulihan Fungsional Pasca Sectio Caesarea The Effect of Early Mobilization on Pain Intensity and Functional Recovery Time After Cesarean Section. In Jurnal Penelitian Sains dan Kesehatan Avicenna (Vol. 5, Number 1). https://jurnal.itk-avicenna.ac.id/index.php/jkma/

Rachman, A., Purnamasari, I., & Trihandini, B. (2023). Hubungan Mobilisasi Dini Dengan Intensitas Nyeri Post Operasi Sectio Caesarea Di Rsud H. Boejasin Pelaihari. Jurnal Keperawatan Suaka Insan (JKSI), 8(2), 90–97. https://doi.org/10.51143/jksi.v8i2.464

Roofthooft, E., Joshi, G. P., Rawal, N., & Van de Velde, M. (2021). PROSPECT guideline for elective caesarean section: updated systematic review and procedure‐specific postoperative pain management recommendations. Anaesthesia, 76(5), 665–680. https://doi.org/10.1111/anae.15339

Safitri, Y., Fauziah, Y., & Nasution, Y. F. (2024). Pengaruh mobilisasi dini terhadap intensitas nyeri pada pasien post operasi Sectio Caesarea di Rumah Sakit Universitas Sumatera Utara Medan. . Excellent Midwifery Journal, 7(1).

Sari, S. A., Nurainih, N., & Hardiana, H. (2026). Pengaruh Mobilisasi Dini Terhadap Intensitas Nyeri Luka Operasi Sectio Caesarea (Sc) Di Ruang Kebidanan Rsud Malingping. Jurnal Kebidanan Khatulistiwa, 12(1), 41. https://doi.org/10.30602/jkk.v12i1.2037

Sharpe, E. E., Booth, J. L., Houle, T. T., Pan, P. H., Harris, L. C., Aschenbrenner, C. A., & Eisenach, J. C. (2019). Recovery of physical activity after cesarean delivery and its relationship with pain. Pain, 160(10), 2350–2357. https://doi.org/10.1097/j.pain.0000000000001628

Suryanti, A., Handayani, D. S., & Purwati, Y. (2025). A cross-sectional study of the relationship between pain levels and mobilization among post-Cesarean section patients using the ERACS method. Journal of Nursing Palliative Care, 1(2).

Syarifah, A. S., Ratnawati, M., & Kharisma, A. D. (2019). Hubungan Tingkat Nyeri Luka Operasi Dengan Mobilisasi Dini Pada Ibu Post Sectio Caesarea Di Pavilyun Melati Rsud Jombang. Jurnal Ilmiah Kebidanan (Scientific Journal of Midwifery), 5(1), 66–73. https://doi.org/10.33023/jikeb.v5i1.238

Sylvia, E., & Rasyada, A. (2023). Mobilisasi Dini Terhadap Penurunan Intensitas Nyeri Post Operasi Sectio Caesarea. Babul Ilmi Jurnal Ilmiah Multi Science Kesehatan, 15(1). https://doi.org/10.36729/bi.v15i1.1064

Uzlifatul, O., Oktaviyana, C., & Nursaadah, N. (2024). Pengaruh Mobilisasi Dini Terhadap Intensitas Nyeri Pasien Post Sectio Caesarea Di Rumah Sakit. Jurnal Ilmu Kesehatan Insan Sehat, 12(2), 75–79. https://doi.org/10.54004/jikis.v12i2.260

Yanti, Y., & Dewi, F. K. (2024). Faktor Predisposing Persalinan Sectio Caesarea Di Rsud Simo Boyolali. Jurnal Kebidanan, 154–163. https://doi.org/10.35872/jurkeb.v16i02.555