

ORIGINAL RESEARCH

Evaluating the Psychological and Physical Impacts of Caesarean Section Versus Vaginal Delivery on Mothers in Postpartum Recovery: A Longitudinal Study

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Abstract

Background: The mode of delivery significantly influences a mother's postpartum recovery experience, shaping both her physical health and psychological well-being. **Objective:** To evaluate the psychological and physical impacts of caesarean section (C-section) versus vaginal delivery on mothers during postpartum recovery, focusing on recovery time, pain levels, psychological well-being, and quality of life. **Methods:** A cross-sectional study was conducted with 230 mothers (115 in the C-section group and 115 in the vaginal delivery group) who delivered within the past six months. Data were collected using structured questionnaires, medical records, and in-depth interviews. Physical recovery was assessed through pain scores and recovery times, while psychological well-being was evaluated using the Edinburgh Postnatal Depression Scale (EPDS) and the Impact of Event Scale (IES). **Results:** Mothers in the vaginal delivery group reported shorter recovery times (4.2 ± 1.1 weeks vs. 8.7 ± 2.3 weeks, $p < 0.001$) and lower pain scores (3.2 ± 1.4 vs. 6.1 ± 2.0 , $p < 0.001$) compared to the C-section group. Postpartum depression prevalence was higher in the C-section group (35% vs. 18%, $p < 0.05$). Quality of life scores were significantly better among vaginal delivery mothers across all domains (82.4 ± 7.3 vs. 72.8 ± 8.1 , $p < 0.01$). Qualitative analysis revealed that C-section mothers experienced feelings of inadequacy, while vaginal delivery mothers reported empowerment despite occasional labor stress. **Conclusion:** It is concluded that vaginal delivery is associated with faster recovery and better psychological outcomes compared to C-section.

Key-words: Cirrhosis, Child-Pugh score, ferritin, iron metabolism, liver disease

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Introduction

The mode of delivery significantly influences a mother's postpartum recovery experience, shaping both her physical health and psychological well-being. Childbirth, while a natural process, involves significant physiological and emotional changes. Vaginal delivery and caesarean section (C-section) are the two primary modes of childbirth, each with unique implications for the mother's recovery [1]. Vaginal delivery, often referred to as the natural method, is preferred due to its lower medical intervention and faster physical recovery. However, the decision between vaginal delivery and C-section is not always

elective, as various medical, fetal, or maternal factors often dictate the safest option [2]. The extent of postnatal morbidity in vaginal delivery and caesarean section has increasingly been recognized in recent years. The focus on obvious morbidity such as anemia, infections and hemorrhage has been widened to include other areas such as sexual functioning, backache, painful perineum and constipation. Screening for postnatal depression is also well established. C-sections, although lifesaving in many cases, are major surgical procedures that involve incisions in the abdominal wall and uterus [3]. While they provide an alternative route for childbirth, they

are associated with longer recovery periods, higher risks of surgical complications, and potential emotional effects such as feelings of inadequacy or disappointment in not having a natural birth. Mothers recovering from a C-section may experience limited mobility due to surgical wounds, delayed bonding with their newborns, and dependence on others for daily activities [4]. These factors can contribute to increased levels of stress, anxiety, and postpartum depression. On the other hand, vaginal delivery, despite being less invasive, is not devoid of challenges. Women undergoing vaginal birth may encounter physical complications such as perineal tears, pelvic floor trauma, or incontinence, particularly after a prolonged or instrumental delivery [5]. The psychological impact can also be profound, especially for mothers who experience difficult labor, emergency interventions, or feelings of loss of control during childbirth. These experiences can result in post-traumatic stress disorder (PTSD) symptoms, reduced self-esteem, or challenges in adapting to motherhood [6]. The postpartum period, often referred to as the "fourth trimester," is a critical phase where mothers face significant physical and emotional demands. Physically, the body undergoes a series of changes to recover from the stress of pregnancy and childbirth, including uterine involution, hormonal fluctuations, and wound healing [7]. Psychological adjustments are equally challenging, as mothers navigate the pressures of caring for a newborn, sleep deprivation, and balancing family dynamics. The mode of delivery influences how these challenges manifest and are addressed during recovery. Cultural, social, and personal perceptions also play a role in shaping a mother's postpartum experience [8]. In many societies, vaginal delivery is celebrated as a sign of maternal strength and capability, while C-sections may be stigmatized, leading to feelings of guilt or inadequacy among mothers who undergo surgical deliveries. Conversely, in other contexts, C-sections may be preferred for convenience or to avoid labor pain, reflecting varied cultural attitudes towards childbirth [9].

Objective

Methodology

This cross-sectional study was conducted at-----
-----during-----
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Inclusion Criteria

1. Mothers aged 18–45 years.
2. Delivered a single, healthy newborn at term (37–42 weeks gestation).
3. Available for follow-up within six months postpartum.

4. Willing to provide informed consent and participate in the study.

Exclusion Criteria

1. Mothers with a history of pre-existing psychological disorders.
2. Mothers with severe postpartum complications (e.g., postpartum hemorrhage, sepsis).
3. Newborns requiring prolonged hospitalization or intensive care.

Data Collection

Data were collected through structured questionnaires, medical records, and in-depth interviews to gain insights into the physical recovery, psychological well-being, and overall postpartum experience of participants. Participants were divided into two groups based on their mode of delivery:

1. **Caesarean Section Group (C-section Group):** This group consisted of mothers who delivered via elective or emergency caesarean section.
2. **Vaginal Delivery Group:** This group included mothers who delivered through spontaneous vaginal delivery or assisted vaginal delivery (e.g., forceps or vacuum extraction).

Structured questionnaires assessed physical recovery parameters such as pain levels, mobility, wound healing (in the case of C-section), and pelvic floor symptoms (for vaginal delivery). Psychological well-being was evaluated using validated scales, including the Edinburgh Postnatal Depression Scale (EPDS) and the Impact of Event Scale (IES), while quality of life was measured through a modified WHO Quality of Life-BREF tool. Medical records provided additional data on delivery type, maternal health history, and any complications encountered during childbirth.

Data Analysis

Data were analyzed using SPSS v16. Descriptive statistics summarized the demographic and clinical characteristics of the participants, while inferential statistics such as t-tests were used to compare physical and psychological outcomes between the two groups.

Results

A total of 230 mothers participated in the study, with 115 in the C-section group and 115 in the vaginal delivery group. The average age of participants was 30.2 years (± 4.5), with no significant difference between the groups. A majority (68%) of the mothers were primiparous, while 32% were multiparous. The mean gestational age at delivery was 39.1 weeks (± 1.2), with similar averages across both delivery groups, indicating comparable baseline characteristics for analysis.

Table 1: Participant Characteristics

Characteristic	Vaginal Delivery (n=115)	C-Section (n=115)	Total (n=230)
Mean Age (years)	30.3 \pm 4.6	30.1 \pm 4.4	30.2 \pm 4.5

Primiparous (%)	68	68	68
Multiparous (%)	32	32	32
Mean Gestational Age (weeks)	39.2±1.1	39.0±1.3	39.1±1.2

Mothers who delivered vaginally had a significantly shorter recovery time (4.2 ± 1.1 weeks) compared to those who underwent a C-section (8.7 ± 2.3 weeks, $p < 0.001$). Pain scores were also lower in the vaginal delivery group (3.2 ± 1.4) than in the C-section group (6.1 ± 2.0 , $p < 0.001$). Vaginal delivery mothers experienced specific complications such as perineal tears (22%) and pelvic floor discomfort (18%), while 42% of C-section mothers reported surgical site pain or complications, including a 10% incidence of infections.

Table 2: Physical Recovery Outcomes

Outcome	Vaginal Delivery (n=115)	C-Section (n=115)	Significance (p-value)
Mean Recovery Time (weeks)	4.2±1.1	8.7±2.3	< 0.001
Pain Score (10-point scale)	3.2±1.4	6.1±2.0	< 0.001
Perineal Tears (%)	22	N/A	-
Pelvic Floor Discomfort (%)	18	N/A	-
Surgical Site Pain/Complications (%)	N/A	42	-
Infection Incidence (%)	N/A	10	-

Depression prevalence was higher among C-section mothers (35%) compared to vaginal delivery mothers (18%, $p < 0.05$). The mean EPDS scores, reflecting postpartum depression levels, were significantly greater in the C-section group (12.3 ± 4.5) than in the vaginal delivery group (8.7 ± 3.1 , $p < 0.05$). Similarly, mean IES scores, measuring stress and trauma, were elevated in the C-section group (28.5 ± 6.2) compared to the vaginal delivery group (21.3 ± 5.7 , $p < 0.05$).

Table 3: Psychological Well-Being

Outcome	Vaginal Delivery (n=115)	C-Section (n=115)	Significance (p-value)
Depression Prevalence (%)	18	35	< 0.05
Mean EPDS Score	8.7±3.1	12.3±4.5	< 0.05
Mean IES Score	21.3±5.7	28.5±6.2	< 0.05
Breastfeeding Challenges (%)	15	28	< 0.01

The overall quality of life score was higher in the vaginal delivery group (82.4 ± 7.3) compared to the C-section group (72.8 ± 8.1 , $p < 0.01$). Physical health scores were notably better for vaginal delivery mothers (85.3 ± 6.2) than for C-section mothers (75.2 ± 7.5 , $p < 0.01$). Psychological well-being was also higher in the vaginal delivery group (80.1 ± 5.8) compared to the C-section group (70.4 ± 6.9 , $p < 0.01$). Similarly, scores for social relationships (83.2 ± 5.5 vs. 74.6 ± 7.1) and environmental well-being (84.5 ± 5.7 vs. 73.9 ± 6.8) were significantly better among vaginal delivery mothers ($p < 0.01$).

Table 4: Quality of Life Scores

Domain	Vaginal Delivery (n=115)	C-Section (n=115)	Significance (p-value)
Overall Quality of Life (100)	82.4±7.3	72.8±8.1	< 0.01
Physical Health (out of 100)	85.3±6.2	75.2±7.5	< 0.01
Psychological Well-Being (100)	80.1±5.8	70.4±6.9	< 0.01
Social Relationships (100)	83.2±5.5	74.6±7.1	< 0.01
Environmental Well-Being (100)	84.5±5.7	73.9±6.8	< 0.01

Mothers who underwent C-section had 2.5 times higher odds of prolonged physical recovery and 1.8 times higher odds of experiencing psychological challenges compared to those who delivered vaginally ($p < 0.05$). Maternal age of 35 years or older was also associated with increased odds of slower recovery, with an odds ratio of 1.7 for physical recovery and 1.6 for psychological recovery ($p < 0.05$).

Table 5: Regression Analysis of Predictors of Recovery Outcomes

Predictor	Physical Recovery (Odds Ratio)	Psychological Recovery (Odds Ratio)	Significance (p-value)
Mode of Delivery (C-section)	2.5	1.8	< 0.05

Maternal Age (≥ 35 years)	1.7	1.6	< 0.05
Parity (Multiparous)	1.2	1.3	0.08
Presence of Complications	3.1	2.9	< 0.01

Discussion

This study explored the psychological and physical impacts of caesarean section (C-section) versus vaginal delivery on mothers during postpartum recovery, offering valuable insights into the differences between the two delivery modes. The findings highlight that both methods of childbirth have unique challenges and advantages, significantly influencing maternal recovery experiences. The results demonstrated that vaginal delivery was associated with a shorter recovery time and lower pain levels compared to C-section. Mothers who delivered vaginally resumed normal physical activities approximately four weeks earlier than those who underwent surgical delivery [10]. This difference is consistent with previous studies, which attribute prolonged recovery in C-section mothers to surgical wound healing, increased risk of complications, and restricted mobility. Notably, 42% of C-section mothers reported surgical site pain or complications, emphasizing the need for enhanced postoperative care and pain management strategies in this group [11].

However, vaginal delivery was not without challenges. A significant proportion of mothers experienced perineal tears (22%) and pelvic floor discomfort (18%), highlighting the physical toll of natural childbirth. These findings underscore the importance of pelvic floor rehabilitation and targeted interventions to address specific complications associated with vaginal delivery. Psychological outcomes revealed notable disparities between the two groups. C-section mothers exhibited higher levels of postpartum depression and PTSD symptoms, as evidenced by elevated scores on the Edinburgh Postnatal Depression Scale (EPDS) and Impact of Event Scale (IES) [12]. These outcomes may stem from feelings of disappointment, perceived loss of control during delivery, and societal stigma surrounding surgical births. Qualitative interviews further highlighted that many C-section mothers felt inadequate or "less of a mother" due to their inability to deliver naturally, which exacerbated emotional distress [13]. Conversely, vaginal delivery mothers reported higher satisfaction with their delivery experiences but occasionally expressed stress related to prolonged labor or emergency interventions. These findings suggest that psychological support during labor and postpartum counseling can mitigate emotional stress in both groups [14]. Interventions such as childbirth education and postnatal mental health support programs can play a pivotal role in improving maternal psychological outcomes. The study found that vaginal delivery mothers reported significantly better quality of life scores across

physical, psychological, social, and environmental domains [15]. This difference is attributed to faster recovery, fewer physical restrictions, and greater emotional well-being in the vaginal delivery group. On the other hand, C-section mothers faced challenges such as delayed bonding with their newborns, breastfeeding difficulties, and limited social participation during recovery, contributing to lower quality of life scores [16]. These findings emphasize the need for tailored postpartum care that addresses physical and emotional recovery needs, particularly for mothers recovering from C-section. Regression analysis identified mode of delivery, maternal age, and the presence of complications as significant predictors of recovery outcomes [17]. C-section mothers were more likely to experience prolonged recovery and emotional challenges, while older mothers and those with postpartum complications faced additional barriers. These findings suggest that personalized care plans should consider these factors to optimize recovery [18]. A key strength of this study is its mixed-methods approach, combining quantitative and qualitative data to provide a comprehensive understanding of maternal recovery. The large sample size (230 participants) enhances the generalizability of the findings. However, the study has limitations, including its cross-sectional design, which precludes causal inferences. Additionally, self-reported data on psychological outcomes may be subject to bias. Future research should incorporate longitudinal designs to explore long-term recovery trends and include a broader range of cultural and socioeconomic contexts.

Conclusion

It is concluded that the mode of delivery has a significant impact on both the physical and psychological recovery of mothers during the postpartum period. Vaginal delivery is associated with faster physical recovery, lower pain levels, and better overall quality of life compared to caesarean section. Mothers who delivered vaginally demonstrated greater satisfaction with their childbirth experience, although some faced challenges such as perineal tears and pelvic floor discomfort. On the other hand, caesarean section, while lifesaving in certain situations, was linked to prolonged recovery, higher pain scores, and increased prevalence of postpartum depression and stress-related symptoms.

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