



Influence of Mode of Delivery on Kinesiophobia in Postpartum Women: A Pilot Study

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Abstract:

Introduction:

The postpartum period involves significant physiological and psychological adjustments that may influence a woman's functional recovery after childbirth. Pain, reduced mobility, and surgical trauma following delivery can contribute to fear of movement, known as kinesiophobia. Women undergoing Lower Segment Caesarean Section (LSCS) may experience greater fear of movement compared to those with normal vaginal delivery. This cross-sectional observational pilot study aimed to evaluate the influence of mode of delivery on kinesiophobia in postpartum women. Thirty postpartum women aged 20–35 years and within 1–6 months postpartum were included and divided into two groups: normal vaginal delivery (n = 15) and LSCS (n = 15). Fear of movement was assessed using the Tampa Scale for Kinesiophobia (TSK-17). The mean TSK score in the normal delivery group was 30.2 ± 4.3 , while the LSCS group demonstrated a higher mean score of 39.1 ± 5.0 . Statistical analysis using an independent t-test revealed a significant difference between the groups ($p = 0.01$). The findings suggest that mode of delivery may influence fear of movement in postpartum women, with higher levels observed in those who underwent LSCS. Early physiotherapy assessment and rehabilitation strategies may help reduce fear-avoidant behaviour and improve functional recovery.

Keywords: Postpartum, Mode of Delivery, Kinesiophobia, Rehabilitation.

Introduction

The postpartum period, commonly referred to as the postnatal phase, represents a crucial stage in a woman's life characterized by multiple physiological, biomechanical, and psychological adaptations following childbirth. During this period, the body undergoes a gradual process of recovery as reproductive organs return to their pre-pregnancy state, hormonal levels stabilize, and musculoskeletal structures regain strength and function. In addition to these physiological changes, women also face emotional and psychological adjustments associated with caring for a newborn and adapting to new maternal responsibilities. These changes can significantly influence the overall well-being and recovery of postpartum women.

Postpartum recovery is influenced by several factors, including maternal health status, level of physical activity, social support, and most importantly, the mode of delivery. Vaginal delivery is generally associated with faster recovery and earlier return to functional activities compared to Caesarean section. In contrast, Caesarean delivery is a major surgical procedure that involves incision through the abdominal wall and uterus, which can lead to postoperative pain, reduced abdominal muscle function, delayed mobility, and prolonged recovery time. Studies have reported that women undergoing Caesarean section may experience increased discomfort, limitations in daily activities, and a slower return to normal physical functioning during the early postpartum period.

Lower Segment Caesarean Section (LSCS) is one of the most commonly performed obstetric surgical procedures worldwide. Although LSCS can be life-saving for both mother and baby in certain clinical conditions, it is associated with various postoperative challenges. Pain at the incision site, abdominal muscle weakness, and fear of movement may discourage women from engaging in early mobilization and physical activity. Such avoidance behavior may negatively impact physical recovery and contribute to functional limitations.

One important psychological factor that may influence postpartum recovery is kinesiophobia, which is defined as an excessive, irrational, and debilitating fear of physical movement resulting from a feeling of vulnerability to pain or reinjury. The concept of kinesiophobia was first introduced by Kori and colleagues in 1990 and has since been widely studied in musculoskeletal and rehabilitation settings. Individuals experiencing kinesiophobia tend to avoid movements or activities that they perceive as painful or harmful. This avoidance behavior may result in decreased physical activity, reduced muscle strength, impaired mobility, and delayed functional recovery.

The fear-avoidance model of pain suggests that individuals who perceive pain as threatening may develop fear related to movement or activity. This fear leads to avoidance behaviors, which can further contribute to physical deconditioning, disability, and persistent pain. In the context of postpartum recovery, women who experience surgical pain following Caesarean delivery may develop fear-avoidance behaviors that limit their willingness to move, exercise, or participate in rehabilitation programs.

Early mobilization and gradual return to physical activity are essential components of postpartum rehabilitation. Movement helps improve blood circulation, restore abdominal muscle function, reduce the risk of complications such as deep vein thrombosis, and promote overall physical recovery. Physiotherapists play an important role in guiding postpartum women through safe exercises, posture correction, and gradual functional restoration. However, fear of movement may act as a psychological barrier preventing women from participating fully in these rehabilitation activities.

To assess fear of movement in clinical populations, the Tampa Scale for Kinesiophobia (TSK) has been widely used as a reliable and valid assessment tool. The scale evaluates an individual's beliefs about pain, movement, and potential injury. Higher scores on the TSK indicate greater levels of fear related to physical activity. The tool has been extensively used in patients with chronic pain conditions, musculoskeletal disorders, and rehabilitation settings.

Despite the growing recognition of psychological factors in physical recovery, research examining kinesiophobia in postpartum women remains limited. Most postpartum studies have primarily focused on physical complications such as pelvic floor dysfunction, back pain, or abdominal muscle weakness. The potential influence of psychological factors such as fear of movement on postpartum recovery has received comparatively less attention.

Understanding the relationship between mode of delivery and kinesiophobia may provide valuable insights for healthcare professionals involved in postnatal care. Identifying women who experience high levels of fear of movement can help physiotherapists design individualized rehabilitation programs that address both physical and psychological barriers to recovery.

Therefore, the present pilot study was conducted to investigate the influence of mode of delivery on kinesiophobia in postpartum women, comparing fear of movement between women who underwent normal vaginal delivery and those who delivered via Lower Segment Caesarean Section.

Methodology

Study Design

A cross-sectional observational pilot study was conducted to evaluate the relationship between mode of delivery and fear of movement in postpartum women.

Study Setting

The study was carried out among postpartum women attending physiotherapy and postnatal care services. Participants were recruited through convenience sampling.

Participants

A total of 30 postpartum women participated in the study. Participants were aged between 20 and 35 years and were within 1–6 months postpartum.

The participants were divided into two groups based on their mode of delivery:

Group A: Normal Vaginal Delivery (n = 15)

Group B: Lower Segment Caesarean Section (LSCS) (n = 15)

Inclusion Criteria

Participants were included in the study if they met the following criteria:

- Women aged between 20–35 years
- Postpartum duration between 1–6 months
- Women who had undergone normal vaginal delivery or LSCS
- Ability to understand and complete the questionnaire
- Willingness to participate and provide informed consent

Exclusion Criteria

Participants were excluded from the study if they had:

- History of musculoskeletal disorders affecting mobility
- Neurological conditions eg stroke
- Severe postpartum complications
- Women diagnosed with Psychological disorders

Outcome Measure

Tampa Scale for Kinesiophobia (TSK-17)

Fear of movement was assessed using the Tampa Scale for Kinesiophobia (TSK-17), which is a widely used self-report questionnaire designed to evaluate fear of movement and fear of reinjury.

The scale consists of 17 items, each scored on a 4-point Likert scale ranging from:

- 1 – Strongly Disagree
- 2 – Disagree
- 3 – Agree
- 4 – Strongly Agree

The total score ranges from 17 to 68.

- Higher scores indicate greater fear of movement
- Lower scores indicate minimal fear or absence of kinesiophobia

The TSK has demonstrated good reliability and validity in assessing fear-avoidance beliefs in clinical populations.

Procedure

Participants who satisfied the inclusion criteria were recruited after explaining the purpose of the study and obtaining written informed consent.

Demographic information including age, postpartum duration, and mode of delivery was recorded.

Participants were then asked to complete the Tampa Scale for Kinesiophobia (TSK-17). The questionnaire was administered under supervision to ensure that participants clearly understood each item and responded accurately.

After completion of the questionnaire, the responses were scored and recorded for further statistical analysis.

Statistical Analysis

Data were analyzed using descriptive and inferential statistical methods.

- Mean and standard deviation were calculated for TSK scores in both groups.
- An independent t-test was used to compare kinesiophobia levels between the two groups.
- Statistical significance was set at $p < 0.05$.

Results

Table 1: Comparison of TSK Scores Between Groups

| Group | Sample Size | Mean TSK Score | Standard Deviation |
|-------------------------|-------------|----------------|--------------------|
| Normal Vaginal Delivery | 15 | 30.2 | ±4.3 |
| LSCS | 15 | 39.1 | ±5.0 |

The results of the study demonstrated a higher mean TSK score among women who underwent LSCS compared to those who had normal vaginal delivery.

Women in the normal delivery group showed a mean score of 30.2 ± 4.3 , indicating relatively lower fear of movement. In contrast, women in the LSCS group demonstrated a mean score of 39.1 ± 5.0 , suggesting greater levels of kinesiophobia.

Statistical analysis using an independent t-test revealed a significant difference between the two groups ($p = 0.01$).

These findings suggest that mode of delivery may play an important role in influencing fear of movement during the postpartum period, with Caesarean delivery associated with higher levels of kinesiophobia.

Discussion

The present study aimed to investigate the influence of mode of delivery on fear of movement among postpartum women. The results demonstrated that women who underwent Lower Segment Caesarean Section exhibited significantly higher levels of kinesiophobia compared to those who had normal vaginal delivery.

Several factors may explain the increased fear of movement observed among women following Caesarean delivery. LSCS is a major abdominal surgical procedure that involves incision through the abdominal wall and uterine tissues. This surgical intervention often results in postoperative pain, discomfort at the incision site, and temporary impairment of abdominal muscle function. Such physical discomfort may lead women to perceive movement as painful or potentially harmful, thereby contributing to fear-avoidance behavior.

Pain perception plays a crucial role in the development of kinesiophobia. When individuals associate movement with pain, they may become hesitant to perform activities that involve trunk movement, bending, or lifting. In postpartum women recovering from LSCS, movements such as sitting up, walking, or caring for the newborn may initially cause discomfort. Over time, this experience may reinforce the belief that movement should be avoided to prevent further pain or injury.

Previous studies examining postpartum recovery have reported that women who undergo Caesarean section often experience slower physical recovery compared to those who deliver vaginally. Increased postoperative pain, fatigue, and limited mobility are commonly reported during the early postpartum period. These factors may contribute to reduced physical activity and delayed return to normal functional activities.

The findings of the present study are also consistent with the fear-avoidance model, which explains how pain-related fear can influence physical activity and functional outcomes. According to this model, individuals who perceive pain as threatening may develop fear of movement, leading them to avoid activities that they believe may cause further pain. This avoidance behavior may result in decreased physical conditioning, reduced muscle strength, and prolonged recovery.

In postpartum women, early mobilization is essential for restoring physical function and preventing complications. Movement helps stimulate circulation, enhance tissue healing, improve abdominal muscle activation, and promote overall recovery. Physiotherapy interventions such as breathing exercises, pelvic floor strengthening, and gradual mobility training play a crucial role in facilitating safe and effective postpartum rehabilitation.

However, psychological barriers such as fear of movement may limit participation in these rehabilitation activities. Women who experience high levels of kinesiophobia may hesitate to engage in exercises or physical activities recommended by healthcare professionals. As a result, recovery may be delayed and functional outcomes may be compromised.

Physiotherapists therefore play an important role not only in addressing physical impairments but also in managing psychological factors that influence recovery. Educating postpartum women about the safety of gradual movement, explaining the healing process, and providing reassurance can help reduce fear-

related beliefs. Graded exposure to movement and progressive exercise programs may help women regain confidence in their ability to move without causing harm.

Early screening for kinesiophobia using validated tools such as the Tampa Scale for Kinesiophobia may help identify women who are at risk of developing fear-avoidance behaviors. Once identified, targeted interventions such as pain education, graded activity exposure, and supportive counseling may help reduce fear and promote active participation in rehabilitation.

Although the findings of this pilot study provide useful insights, several limitations should be considered. The sample size was relatively small, which may limit the generalizability of the results. In addition, the cross-sectional design of the study does not allow determination of cause-and-effect relationships. Longitudinal studies are needed to examine how kinesiophobia evolves over time during the postpartum recovery process.

Future research with larger sample sizes, multi-center recruitment, and long-term follow-up could provide deeper understanding of the relationship between mode of delivery, pain perception, and psychological factors affecting postpartum rehabilitation.

Conclusion

The findings of this pilot study indicate that mode of delivery may significantly influence fear of movement in postpartum women. Women who underwent Lower Segment Caesarean Section demonstrated higher levels of kinesiophobia compared to those who had normal vaginal delivery.

These findings highlight the importance of addressing both physical and psychological aspects of postpartum recovery. Early identification of fear-avoidance behaviors and timely physiotherapy interventions may help reduce fear of movement and promote better functional outcomes.

Integrating patient education, reassurance, and graded rehabilitation exercises into postpartum care programs may assist women in regaining **confidence in movement and returning to their daily activities more effectively**

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