



Prevalence of low back pain-related disability and its impact on quality of life among primigravida women following caesarean delivery: A multi-center cross-sectional study

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Abstract

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Keywords: Prevalence, disability, caesarean section, low pelvic pain, primigravida.



Background: The post-partum period after Caesarean C-section is really the most difficult and crucial period for a woman, in which Low pelvic pain lasts for almost 6 weeks between the 12th vertebra and the gluteal fold. It is of unknown cause and pathophysiology with severe backache, sometimes associated with epidural and spinal anesthesia before caesarean, which tends to reduce their quality of life and later on affects their activities of daily living.

Objective: To determine the prevalence of low back pain-related disability and its Impact on quality of life among primigravida women following caesarean deliveries, thereby informing supportive practice and policy.

Methods: A multicenter cross-sectional study was done employing non-probability convenience sampling, on 150 females with a maximum age of 25–35 years from multiple hospitals in Lahore. The SF12 questionnaire is used for assessing the quality of life, and the Oswestry low back disability index for disability. All eligible primigravida women took part in the study, with a response rate of 100%. Results: The prevalence of low back pain-related disability accounts for 46% of participants' mild disability, 25.3% of moderate disability, and 24.7% of the participants having severe disability, which significantly affects their quality of life. One third (31.3%) of the participants reported poor health in general, whereas 92% of participants claimed that their moderate activities were also somewhat restricted. In addition, 62.7% of women reported that their discomfort and pain interfered with their regular employment.

Conclusion: Overall, the study found that the majority of participants had moderate-severe levels of low back pain-related disability, which could have a negative impact on their quality of life. Physiotherapists should play a vital role in the improvement of low backache and in minimizing disabilities.

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Highlights

Moderate to severe disability was observed in over one-quarter of primigravida women, indicating a substantial functional burden.

Postpartum low back pain significantly restricted daily activities, including mobility and household tasks.

Only 38.7% of women reported very good overall health, reflecting compromised quality of life after caesarean delivery.

Findings emphasize the neglected need for early physiotherapy-based intervention in post-caesarean care.

Background

The postpartum period is really the most difficult and crucial period for a woman, especially after a C-section¹. Women experience lots of structural, functional, hormonal, postural, vascular, respiratory, and psychological changes. Problems related to them are mainly low back pain (LBP), neurological symptoms, inflammation, anemia and its related symptoms, fatigue, and restlessness. The most common among them is low back pain².

Lumbo-pelvic pain or low back pain is the pain felt between the 12th vertebra and the gluteal fold. It affects almost every woman during or after pregnancy, and it's of unknown cause and pathophysiology³. Although the primary aetiology of low back discomfort is uncertain, a compensating anterior shift of the centre of gravity may be a contributing factor. This results in weight gain, alters the posture and develops lordosis in most of the cases⁴. In order to accommodate the expanding uterus, positional changes occur in the body, and abdominal muscles become weak. Furthermore, hormonal changes loosen the joints and ligaments of the pelvic girdle that causes unstable walking. Due to repetitive stress, the integrity of the spine is compromised in holding and lifting the child. As a result causes repetitive injury to the spine, ultimately causing low backache⁵.

One out of three women suffers from a low backache after delivery⁶. Females having C-sections have been noticed developing more lower pelvic pain and related disability than women having normal vaginal delivery. They complain of severe backache, which tends to reduce their quality of life and later on affects their activities of daily living. It remains for almost one year after delivery, depending upon the condition of the mother⁷. Women suffer from pain as well as deficits in functional capacity, which mostly affects homemakers, as they have to perform household activities on their own without any aid. It also affects the female's next pre-pregnancy normal health status^{8,9}. Moreover, low backache can also result in lifelong disability, which may undergo limitation in performing even simple household tasks. A vicious impediment to quality of life may occur among primigravida women who experience postpartum low back pain¹⁰.

Families in the current situation in Lower-middle income countries (LMICs) like Pakistan are ignorant about the benefits and drawbacks of various delivery procedures. Due to a lack of awareness of postpartum low back pain for those women who willingly opt for caesarean, it is still undermanaged¹¹. Prevention and treatment of this condition are fundamental for women and society in order to improve the quality of life. The physical therapists and the physicians should play their role and avoid caesarean section as much as possible, unless in complicated situations¹².

To the best of our knowledge, the goal and significance of this study is to focus on primigravida women with caesarean delivery, unlike previous studies^{3,13}, in which there is a comparison of low back pain after normal vaginal delivery and caesarean delivery. This study's goal is to establish the likelihood of low back pain in primigravida women post caesarean delivery. This study will provide literature that can be used for future investigation, especially for those who need further studies associated with this topic, thereby informing the community, supportive practice, and policy.

Methods

Study Design

This descriptive cross-sectional research sought to determine the prevalence of back pain-related disability and compromised quality of life as a consequence of C-section procedures.

Study Setting

This study was carried out across different hospitals in Lahore (i.e., Jinnah Hospital and Hameed Latif Hospital). The survey targeted postpartum females from the gynecological ward of hospitals.

Study Population and Sampling

The targeted population was primigravida women having caesarean delivery within the 25-35 age group¹⁰ (see Table 1). For this non-probability convenience sampling was adopted, and 276 participants were initially screened to identify primigravida women having a caesarean delivery with low back pain. However, women who already had low backache before pregnancy, back pain due to any other systemic pathology, low backache due to any congenital deformity, and multigravida women were excluded from the study. Among these, 150 eligible participants provided complete responses and were included in the final analysis.

Sample Size

The sample size for this study was calculated by using the Sample Size Calculator (Raosoft®), available at raosoft.com/samplesize.html. The response distribution was assumed to be 50%, and the margin of error was set at 5% with a 95% confidence level. For this study, a minimum screening sample size was determined to be 276.

Data Collection Procedure

The head of the institution and hospital administrations reviewed the study while it was being conducted, and

the participants who met the inclusion and exclusion criteria were asked for their consent. The data collection was carried out over the course of two months, from June 2022 to August 2022. In order to ensure that participants were recruited during the early postpartum phase, when musculoskeletal complaints are most pertinent for clinical characterisation, data collection was conducted over a predetermined period of time. Non-probability convenience sampling was used. The objective and procedure were elucidated to every individual, and the demographic data were obtained. Each and every question was written out in simple, straightforward terms so that everyone could understand what was being asked. Response sheets were used to record the data. The SF-12 questionnaire and the Oswestry low backache disability questionnaire were used to obtain data from individuals in the local Urdu language. The questionnaire was filled out under supervision, and help was provided when filling out the response sheets.

Ethical Consideration

The study was conducted in accordance with the guidelines established by the university's ethics committee, and the participants' rights were upheld while concentrating on Helsinki's declaration. Every participant provided written informed permission to participate. Anonymity and confidentiality were maintained for all research participants throughout the study.

Statistical Analysis

Before analysis, missing data were checked. Version 21 of SPSS was used to analyse the data. Mean, SD, and range were used to present quantitative variables. Variables that could be categorized were displayed as frequencies, percentages, bar charts, and pie charts. Percentages are based on the total sample (N=150) for each item, with no missing data reported. Due to the use of validated instruments with standardized response categories (e.g., the SF-12's Likert scales), some items were dichotomized or grouped for summary analysis. No inferential statistical tests were conducted, as the study was designed to provide baseline prevalence data. All percentages are reported to one decimal place and may not sum to exactly 100.0% due to rounding.

Results

This study demonstrates that low back pain is highly prevalent among primigravida women following caesarean delivery and is associated with meaningful physical, emotional, and social limitations during the postpartum period. Although severe disability was uncommon, a substantial proportion of women experienced persistent functional restriction and reduced quality of life, indicating that postpartum low back pain represents a clinically relevant yet under-recognised problem.

Prevalence and severity of low back pain-related disability

Low back pain-related disability was assessed using the Oswestry Disability Index. According to the data,

46% of the participants had minimal disability. While moderate disability was found in 25.3% majority and 24.7% reported severe disability (Table 2). A smaller proportion (4.0%) fell into the crippled category, reflecting severe impairment. The further distribution of disability categories is illustrated in Figure 1.

General health perception

One third (31.3%) of the participants reported poor health in general, assessed by the Short Form Health Survey. Detailed, item-wise responses for all SF-12 questions are provided in Supplementary Table S1. 92% of the participants reported that their moderate activities were limited (a little or a lot). 86.7% of the participants reported that their climbing activities also remained limited (a little or a lot) (Table 3). Furthermore, physical functioning is markedly affected during the postpartum period, as summarized in Figure 2.

Mental, emotional, and social impact of low back pain
More than half of the participants (56.7%) reported that they are not able to accomplish their work as a result of emotional problems. 59.3% of the participants reported that they did not do work or other activities as carefully as usual (Table 4). Moreover, 62.7 % of the participants reported that pain interferes with their normal work from moderate to extreme level. Furthermore, health-related interference with social activities was reported by 82.7%. The extent of pain interference with work is depicted in Figure 3.

Discussion

One of the most prevalent musculoskeletal symptoms in pregnant and postpartum women is LBP, which has a significant negative impact on their quality of life. It may be the burst of chronic low back pain for certain women, or it may be incapacitating discomfort during pregnancy and for a varying amount of time after delivery. LBP during pregnancy may be caused by physiological changes to the body, including those brought on by mechanical, hormonal, and other reasons. Literature demonstrates unequivocally that LBP should not be neglected or handled inadvertently because it may be debilitating, restrict daily activities, and affect productivity. This cross-sectional study highlights a substantial burden of low back pain-related disability and reduced quality of life among primigravida women following caesarean delivery. The findings indicate that the majority of participants had moderate levels of low back pain and disability, which could have a negative impact on their quality of life.

Both parallels and differences are highlighted by comparison with research from high-income nations. According to a systematic research conducted recently, 47.8% of women reported having low back pain within the first three months after giving birth, and over one-third were still experiencing symptoms at that time¹⁴. However, the frequency in the present research was universal, which could be a reflection of sociocultural variations in Pakistani new mothers' support networks, healthcare-seeking habits, and

patterns of physical activity¹⁵. Similarly, a study conducted in central Africa revealed that about 53.9% of expectant mothers had low back discomfort, especially those who did not have help with domestic chores¹⁶.

The fact that impairment was discovered in all categories, from minimum to severe disability, as well as some crippled, illustrates the clinical relevance of the present results. The functional load caused by moderate disability, which accounted for the majority of cases, falls into these categories¹⁷. Significant limits in mobility, stair climbing, self-care, and occupational functioning are associated with moderate ODI scores, and these limitations might negatively impact mothers' health and quality of life during the crucial postpartum phase¹⁸. Due to physical limitations, the study discovered that the majority of the women had poor overall health. Additionally, discomfort interfered with daily normal work and social activities; in other words, low back pain and disability impacted every aspect of quality of life. This implies that to detect functional impairment early and carry out preventative or rehabilitative measures, frequent screening of postpartum women, especially primigravida mothers, is necessary. Physiotherapy, ergonomic and occupational training, and organized postpartum exercise regimens have been shown to lessen the duration of symptoms and the development of chronic low back pain^{19,20}.

Limitations and Future Directions

There are some limitations in the present study that must be acknowledged and rectified in further studies. First, due to the cross-sectional design, no causal inferences can be drawn from the findings, and the use of only descriptive statistics limits identification of predictors or confounding factors. There is also a potential that response bias could skew the results. Secondly, the study's limited sample size may have an impact on how broadly the results may be applied, and thus, the sample may not be representative of all primigravida women in Pakistan. Moreover, only one aspect of musculoskeletal problems of pregnancy was compared, i.e., low back pain. Physiological measurements of participants were not taken into account. In order to evaluate preventative and treatment strategies in wider populations and improve the health of women, bigger mixed-method studies of higher epidemiological designs are required due to the high frequency of LBP during pregnancy²¹.

Recommendations

Based on the findings, normal vaginal delivery should be promoted by implementing a course or awareness through social and electronic media on pregnancy and its management. Girls should learn and implement suitable hygienic practices and their health management, followed by facing the challenges willingly. Females need lots of care during this period so that they can overcome their fear and depression.

Conclusion

Women's lives are significantly impacted by low back discomfort due to pregnancy. This study revealed minimal disability to moderate disability among the primigravida women after the cesarean delivery method. The quality of life was so much disturbed that only one-third of the participants enjoyed good health whereas the other participants reported that their moderate activities were limited. This finding highlights the need for rigorous efforts by healthcare professionals to develop proper support services targeting primigravida women to identify, prevent, and treat low back pain.

Abbreviations

LBP Low Back Pain, ODI Oswestry Low Back Pain Disability Index, SF-12 12-Item Short Form Health Survey, HRQoL Health-Related Quality of Life, PCS Physical Component Summary, and MCS Mental Component Summary.

Declarations

Ethical Standards Disclosure

Written consent was taken from all participants and their guardians. Participants were assured of confidentiality, anonymity, and the voluntary nature of participation. Data were password-protected; identifiers were removed at analysis.

Conflict of Interest

All authors declared no conflict of interest related to the publication of this study.

Consent for Publication

All participants provided consent related to the publication of this study

Data Availability Statement

Data will be available upon request to the corresponding author.

Financial Statement

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Table 1. Characteristics of the study participants

Variable	Value
Age range (years)	25–35
Gravidity	Primigravida (100%)
Mode of delivery	Caesarean section
Study design	Cross-sectional
Sampling method	Non-probability convenience
Screening details	n (%)
Initially screened	276 (100%)
Eligible after screening	210 (76.1%)
Final participants enrolled	150 (71.4% of eligible)

Notes. The table summarizes baseline demographic and methodological information. Screening details show the flow from the initial target to the final sample. All percentages for outcome measures are based on the final sample (n=150).

Table 2. Severity of low back pain-related disability assessed by the Oswestry Disability Index. Distribution of low back pain-related disability among primigravida women following caesarean delivery.

Disability category	n (%)
Minimal disability	69 (46.0)
Moderate disability	38 (25.3)
Severe disability	37 (24.7)
Crippled	6 (4.0)

Notes. All values are presented as Frequency n (Percentage %) of responses for each item.

Table 3. Physical health limitations assessed by selected SF-12 items. Summary of physical health limitations reported by participants during the postpartum period.

SF-12 domain	Response indicating limitation	n (%)
General health	Fair/Poor	47 (31.3)
Moderate activities	Limited (a little or a lot)	138 (92.0)
Climbing stairs	Limited (a little or a lot)	130 (86.7)
Work limited due to physical health	Yes	130 (86.7)

Notes. All values are presented as Frequency n (Percentage %) of responses for each item. Responses are not mutually exclusive, as each SF-12 item was analyzed independently.

Abbreviation: SF-12, Short Form-12 Health Survey.

Table 4. Mental, emotional, and social health impact assessed by SF-12. Consequences of postpartum low back pain among primigravida women.

SF-12 domain	Response indicating impact	n (%)
Work limited due to emotional problems	Yes	85 (56.7)
Reduced work carefulness	Yes	89 (59.3)
Pain interference with normal work activities	Moderate to extreme	94 (62.7)
Social activities affected	At least some of the time	124 (82.7)

Notes. All values are presented as Frequency n (Percentage %) of responses for each item. Categories represent independent SF-12 items and therefore do not sum to 100%.

Abbreviation: SF-12, Short Form-12 Health Survey.

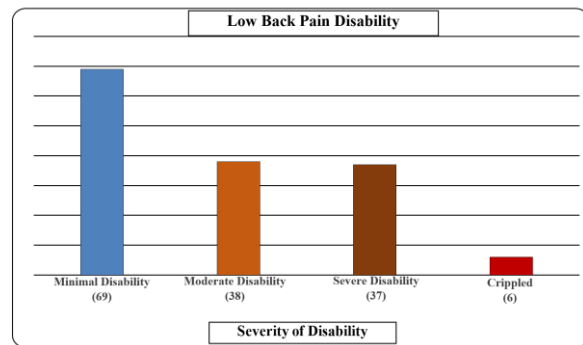


Figure 1.

Distribution of low back pain-related disability Bar chart illustrating the severity of disability assessed using the Oswestry Disability Index among primigravida women following caesarean delivery. Minimal disability was the most prevalent category.

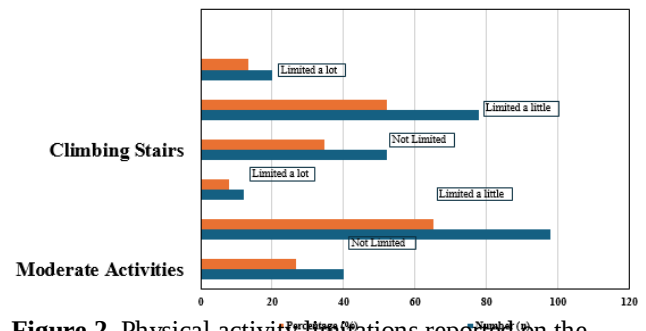


Figure 2. Physical activity limitations reported on the SF-12

Graphical summary of limitations in moderate activities and stair climbing due to health problems. Most participants reported at least mild limitation in physical functioning.

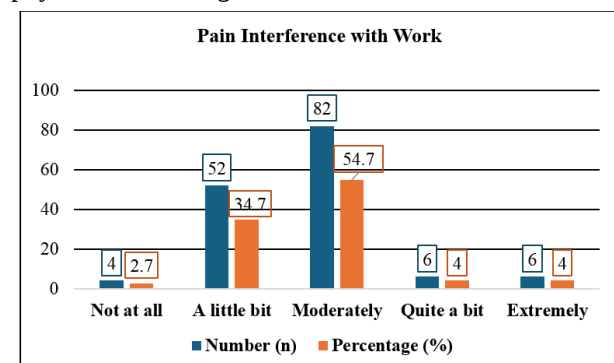


Figure 3. Interference of pain with normal work

Distribution of responses to the SF-12 item assessing pain interference with work, including household activities. Over half of the participants reported moderate interference.