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## Research Article

### PREVALENCE OF LOW BACK PAIN AND ITS IMPACT ON QUALITY OF LIFE IN POST PARTUM WOMEN

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Low back pain, Post partum women, Quality of life, Oswestry Disability index, Prevalence

#### ABSTRACT

**Background:** Back pain is one of the most common problems during post-partum period. In the present scenario, the families are not aware of different delivery methods and their advantages and disadvantages and there is no system to consult them on the matter.

**Objective:** To compare the prevalence of back pain and its impact on quality of life after normal vaginal delivery and after cesarean section.

**Methods:** After obtaining written informed consent from the patient, they were assessed for back pain using Numerical rating scale. For the subjects who complained of back pain, Oswestry Disability Index was taken to assess the disability level. Short Form-36(SF-36) was used to assess the quality of life in patients with back pain.

**Results:** The prevalence of postpartum back pain in women with cesarean section is 56.67%. The prevalence of postpartum back pain in women with normal vaginal delivery is 33.33%. The mean quality of life of women with cesarean delivery with back pain is 37.25 with SD of 4.67. The mean quality of life of women with normal vaginal delivery with back pain is 43.10 with SD of 4.6.

**Conclusion:** The prevalence of low back pain is higher in post-partum women with cesarean section compared to normal vaginal delivery. The quality of life is higher (BETTER) in postpartum women with normal vaginal delivery than the women with cesarean section. The disability level is lower in postpartum women with normal vaginal delivery than the women with cesarean section.

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#### INTRODUCTION

The postnatal period – defined as the first six weeks after birth – is critical to the health and survival of a mother and her newborn<sup>1</sup> (Charolette & Pat, 2014). It is the time after childbirth, lasting approximately 6 weeks, during which the anatomic and physiologic changes brought about by pregnancy resolve and a woman adjusts to the new or expanded responsibilities of motherhood and nonpregnant life. During the postpartum period, hormone levels fluctuate causing musculoskeletal issues such as excessive joint mobility, weakness of core stabilizers, and altered spinal mobility and function.

Common Problems during post partum period are: Backache, perineal pain, bowel problems, mastitis, psychological problems, postpartum haemorrhage, thromboembolism, postnatal anaemia.<sup>2</sup> (Colin Tidy *et al.*, 2011)

Back pain is one of the most common problem during post partum period, It is defined as axial or para-sagittal discomfort

or pain in lower lumbar region and is musculoskeletal in nature due to combination of multiple factors like mechanical, physiological, hormonal, circulatory, and psychosocial factors.<sup>3</sup> (Sarvaiya Bhavisha *et al.*, 2008).

Back pain can affect women of child bearing age whether pregnant or not. Approximately 70% of women will report low back pain at some point in their lives.<sup>4</sup> (American Society of Regional Anesthesia and Pain medication). According to F.Turgut. *al.*, 59.1% pregnant women had low back pain at time of delivery and 43.2% women had low back pain 6 months post partum. It has been reported that the incidence of back pain is significantly higher after cesarean section as compared to normal vaginal delivery.<sup>5</sup> (Ingrid Mogren *et al.*, 2005).

Backache after delivery may last up to one year and above. While the etiology of low back pain during pregnancy remains theoretical, three mechanisms regularly are described: biomechanical, musculoskeletal, hormonal and vascular.

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The classical hypothesis of low back pain postulates that weight gain experienced during pregnancy results in postural changes that produce pain. Due to the anterior displacement of the center of gravity of the trunk and abdomen, women may unconsciously shift their head and upper body posteriorly over their pelvis, inducing hyperlordosis of the lumbar spine. This shift generates stress on intervertebral disks, facet joints and ligaments, promoting joint inflammation. Inflammation and distension of the joint capsule create pain and increase sensitivity to movement.<sup>6</sup> (Ostgard C. *et al*, 1991).

Other postural changes that contribute to pain in the low back are:

- Joint laxity in the anterior and posterior longitudinal ligaments of the lumbar spine creates more instability in the lumbar spine and can predispose to muscle strain.
- There is widening and increased mobility of the sacroiliac joints and pubic symphysis in preparation for the fetus' passage through the birth canal.
- A significant increase in the anterior tilt of the pelvis occurs, with increased use of hip extensor, abductor, and ankle plantar flexor muscles.<sup>7</sup> (Gutke A., 2007)

The overall incidence of back pain 1-2 months post partum was 44%. Greater BMI, younger age, a history of low back pain during pregnancy, before pregnancy, multiparity and joint hypermobility have been found to be predisposing factors of low back pain in women after childbirth.<sup>8</sup> (Glanzener CMA *et al*, 2009).

Post partum pain remains under evaluated and under managed while evidence is growing that post partum treatments strongly influence patients' outcome. In the present scenario, the families are not aware of different delivery methods and their advantages and disadvantages and there is no system to consult them on the matter. Regarding this, tendency toward caesarian to prevent labor pain and to save the genital system is increasing.

Although regarding the family planning programs in our country, physical complications of normal vaginal delivery such as pelvic floor muscles loosening and dissatisfaction of sexual intercourse would reduce. Not many well-documented studies have been conducted on this subject in India, especially in our state. So, this study will help us provide prevention and early intervention for post-partum back pain.

#### Aims and Objectives

- To study the prevalence of low back pain and its impact on quality of life after normal vaginal delivery.
- To study the prevalence of low back pain and its impact on the quality of life after cesarean section.
- To compare the prevalence of back pain and its impact on quality of life after normal vaginal delivery and after cesarean section.

#### REVIEW OF LITERATURE

Lena Nilsson- Wikmar *et al* (2010) found in this descriptive study that back pain in post-partum period considerably hampers daily activities and also suggested that it's important

to pay special attention to them. The women should be identified early in the post-partum period so that adequate treatment can be initiated.<sup>9</sup> (Nilsson -Wikmar L, Pilo C, 2003)

Cheng CY, Li Q *et al*. in 2008 in their study ' Integrative review of research on general health status and prevalence of common physical health conditions of women after childbirth' concluded that postpartum mothers experience certain physical health problems that may affect their quality of life, future health, and health of their children. Yet, the physical health of postpartum mothers is relatively neglected in both research and practice. In this study women after normal vaginal delivery showed significant higher physical functioning<sup>10</sup> (Cheng CY, Li Q, 2008)

J.C.Fairbanks *et al* have originally described Oswestry Disability Questionnaire and tested the reliability and internal consistency for the questionnaire in assessing low back pain and suggest that the Oswestry tests pain-related disability in patients with low back pain.<sup>11</sup> (Fairbank JC *et al*, 1980).

#### SUBJECTS AND METHODS

"An observational, cross-sectional study was conducted among the women visiting Obstetrics and gynecology department of Shree Krishna Hospital, Karamsad, Gujarat, India. The study proposal was prepared and submitted to Human Research Ethical Committee for its approval. This cross sectional study was conducted between November -2015 and February- 2016. Inclusion criteria: Women between age group of 20-35 years ; All post-partum women upto 6 months after delivery. Exclusion Criteria (self-reported/observational):

Back pain before pregnancy, Systemic diseases/ known other gynecological diseases, Known spinal/congenital deformities, Psychiatric diseases, Any previous lumbar or abdominal surgery except cesarean section. All the subjects who had undergone normal vaginal delivery and cesarean section in the last 6 months; and who visited the Shree Krishna Hospital were screened for the inclusion and exclusion criteria. For the subjects who fulfilled the inclusion criteria, written informed consent was taken and the purpose of study was explained to the patient beforehand. Back pain was assessed using Proforma which included demographic data, gynecological history, Numerical rating scale, BMI, occupation.

The primary outcome measures were Oswestry Disability Index and Short Form-36 (SF-36) questionnaire. Patients were interviewed personally in their first language and questionnaires were explained to them. Oswestry disability Index version 2.1 a, which has previously been used to estimate the level of disability caused by back pain.<sup>12</sup> (Vincent JI, Macdermid JC: 2014). Each section, scores from 0 to 5 points, contains 6 statements that describe an increasing pain severity associated with a particular activity. Finally, the scores are summated, multiplied by 2 to provide a percentage of disability.

The score ranges from 0-5- and the lowest score represents better health status.

The disability score is divided into 5 grades:

- 0-20%- Minimal disability
- 20-40%-Moderate disability
- 40-60%-Severe disability

- 60-80%- Crippled back pain
- 80-100%- Bed bound(or exaggerating symptoms)

Short Form-36(SF-36) -a scale for HRQL (health related quality of life) was also included to assess the quality of life<sup>13</sup> (Kainu JP, Sarvela J, 2010). The SF-36 Health Survey includes one multi-item scale measuring each of the following eight health concepts:

1. Physical functioning;
2. Role limitations because of physical health problems;
3. Bodily pain;
4. Social functioning;
5. General mental health (psychological distress and psychological wellbeing);
6. Role limitations because of emotional problems;
7. Vitality (energy/fatigue); and
8. General health perceptions.<sup>14</sup> (E.G.Subcoz,2007)

Higher the value of SF-36, better is the quality of life and lower value suggests impaired quality of life. The participants who did not complain of back pain were also asked to fill the Oswestry Disability Index Questionnaire and SF-36 scale and scores were interpreted and analysis was done.

After the complete assessment, the subjects were educated about back ergonomics and if needed, they were referred for further physiotherapy interventions ."

#### **Study Design**

Cross sectional study

#### **Sampling Method**

Convenient sampling method

#### **Place of Study**

Obstetrics and gynecology department of Shree Krishna Hospital, Karamsad.

**Ethical Approval:** Human Resource Ethical Committee, Sardar Patel University

#### **Subject Recruitment Procedure**

All the women who fulfilled the inclusion criteria and who had signed a written informed consent form were recruited in the study.

All women in their post-partum period were taken from the Obstetrics and Gynaecology department of Shree Krishna Hospital, Karamsad.

#### **Inclusion Criteria**

Women between age group of 20-35 years  
All post-partum women upto 6 months after delivery

#### **Exclusion Criteria (self-reported/observational)**

Back pain before pregnancy  
Systemic diseases/ known other gynecological diseases  
Known spinal/congenital deformities  
Psychiatric diseases  
Any previous lumbar or abdominal surgery except cesarean section

## **METHODOLOGY**

The study proposal was prepared and submitted to Human Research Ethical Committee for its approval. This cross sectional study was conducted between November -2015 to February- 2016. All the subjects who had undergone normal vaginal delivery and cesarean section in the last 6 months; and who visited the Shree Krishna Hospital were screened for the inclusion and exclusion criteria. For the subjects who met the inclusion criteria, written informed consent (Annexure 1,2) was taken and the purpose of study explained to the patient.

Back pain was assessed using Proforma (Annexure 3) which included demographic data, gynecological history, Numerical rating scale, BMI, occupation. Patients were interviewed personally and questionnaires were explained to them. The proforma includes questions about demographic data, and number of previous pregnancies.

#### **Following were the outcome measures**

Oswestry disability Index version 2.1 a, which has previously been used to estimate the level of disability caused by back pain.<sup>12</sup> (Annexure 5) (Vincent JI, Macdermid JC: 2014). It includes 10 sections relating to questions about activities of daily living and pain. Each section, scores from 0 to 5 points, contains 6 statements that describe an increasing pain severity associated with a particular activity. Finally, the scores are summated, multiplied by 2 to provide a percentage of disability.

The score ranges from 0-5- and the lowest score represents better health status.

The disability score is divided into 5 grades:

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After the complete assessment, the subjects were educated about back ergonomics and if needed, they were referred for further physiotherapy interventions.

**STATISTICAL ANALYSIS**

- A frequency table was prepared and prevalence was calculated.
- Descriptive statistics like mean, SD were calculated for pain, quality of life and disability scores.
- Chi- square test was performed to demonstrate the correlation between mode of delivery and low back pain.
- Unpaired T-test was used to determine whether the difference in Quality of life in both groups was statistically significant or not.
- Unpaired T-test was also used to determine if the changes in disability score in both groups was statistically significant.
- Correlation coefficient was calculated for the relationship between pain and quality of life.
- Correlation coefficient was also calculated to determine the relationship between pain and disability score.
- The statistical analysis was performed using SPSS Version 16. All tests were performed at 95% level of significance.

**RESULTS**

In the present study 60 participants were recruited as per inclusion criteria, out of which 30 participants had undergone cesarean section and 30 had undergone normal vaginal delivery. Out of the 30 participants who had undergone cesarean section, 17(56.67%) participants were having low back pain and 13(43.33%) participants were not having low back pain. Out of 30 participants who had undergone normal vaginal delivery, 10 (33.33%) participants were having low back pain and 20 (66.67%) participants were not having low back pain.

AGE	LSCS	LSCS	NVD	NVD	Primigravida	Multigravida
Groups	With	Without	With	Without		
	Back	Back	Back	Back		
	Pain	Pain	Pain	Pain		
15-20	6.66%	6.66%	0%	6.66%	10%	0%
21-25	3.33%	10%	13.33%	23.33%	11.66%	13.33%
26-30	30%	26.66%	16.66%	26.66%	11.66%	38.33%
31-35	16.66%	0%	3.33%	10%	0%	15%

The prevalence of postpartum back pain in cesarean section= $17/30*100=56.67\%$

The prevalence of postpartum back pain in normal vaginal delivery= $10/30*100=33.33\%$

The average NRS of women with cesarean section is 4.82 with SD of 1.5.

The average NRS of women with normal vaginal delivery is 4.1 with SD of 0.99.

The mean quality of life of women with cesarean delivery without back pain is 50.95 with an SD of 3.15.

The mean quality of life of women with cesarean delivery with back pain is 37.25 with SD of 4.67.

The mean quality of life of women with normal vaginal delivery without back pain is 51.18 with SD of 2.69.

The mean quality of life of women with normal vaginal delivery with back pain is 43.10 with SD of 4.6.

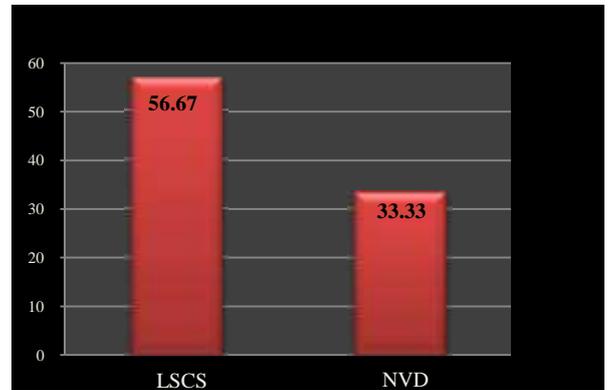
The mean disability score of women with cesarean delivery without back pain is 20% with SD of 0.03.

The mean disability score of women with cesarean delivery with back pain is 51% with an SD of 0.09.

The mean disability score of women with normal vaginal delivery without back pain is 21% with SD of 4.

The mean disability score of women with normal vaginal delivery with back pain is 38% with SD of 0.063.

**Prevalence of Back Pain**



The prevalence of post partum back pain is significantly higher in women who have undergone cesarean section than women with normal vaginal delivery. ( P value<0.05)

**Association between Mode of Delivery and Back Pain**

CHI Square Table	NVD	LSCS	TOTAL
With back pain	10	17	27
Without back pain	20	13	33
Total	30	30	60

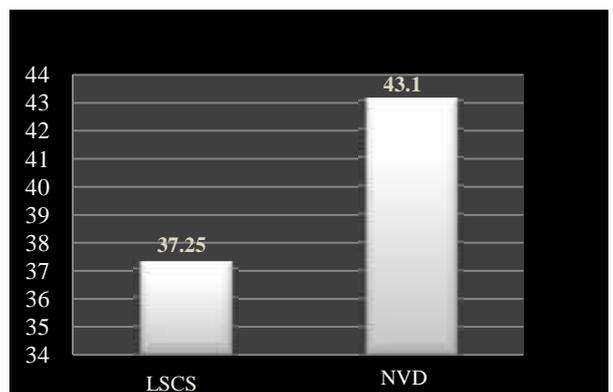
The Chi square value is 4.96 at 5% level of significance, thus there is an association between low back pain and mode of delivery.

**Association between Back Pain and Parity**

CHI Square Table	Primigravida	Multigravida	Total
With Back Pain	21	7	28
Without Back Pain	18	14	32
TOTAL	39	21	60

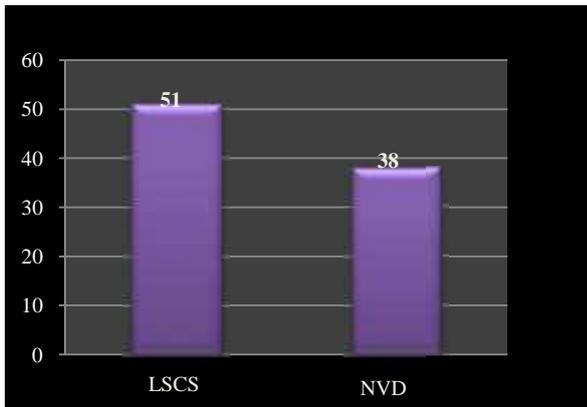
The Chi square value is 2.3 at 5% level of significance, thus there is no association between low back pain and parity.

**SF-36 Scale (Quality of Life)**



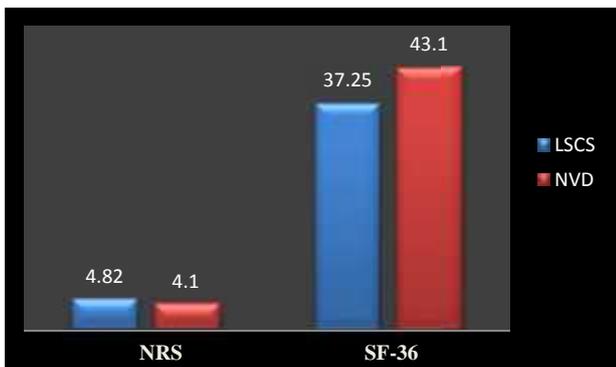
The quality of life with back pain is higher in women with normal vaginal delivery than in women who have undergone cesarean delivery. (P value<0.05).

**Oswestry Disability Rating**



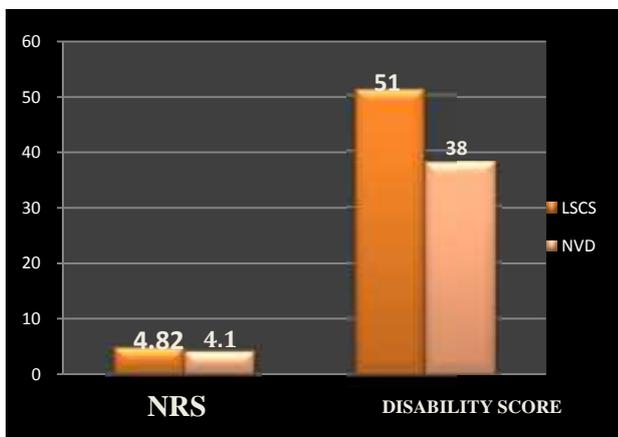
The mean disability level due to back pain is higher in women with cesarean section than women with normal vaginal delivery. (P value<0.05).

**Correlation Between Pain and Quality of Life**



The higher the NRS (pain), the lower is the quality of life. Thus level of pain is significantly higher and quality of life significantly lower in women with cesarean section (correlation coefficient(-0.925)).

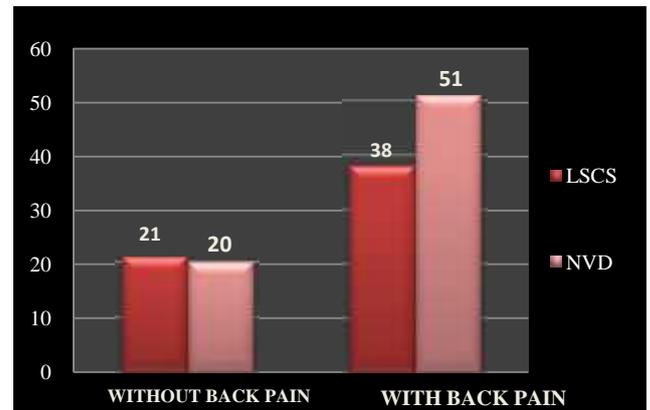
**Correlation between Pain and Oswestry Disability Score**



The higher the pain intensity, i.e. NRS; the higher is the disability level. Thus the pain intensity and consequently the

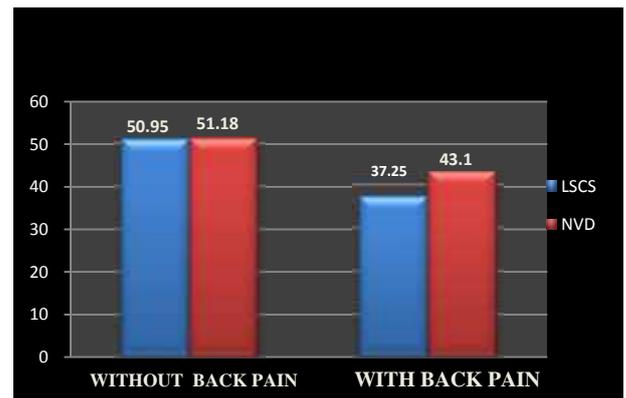
disability level is significantly higher in women with cesarean section. (correlation coefficient 0.919).

**Disability Score in Women with and Without Back Pain**



The mean disability level is higher in women with back pain as compared to those without back pain, irrespective of cesarean section or normal vaginal delivery. However, women with LSCS show a higher disability level, compared to those with normal vaginal delivery.

**Quality of Life in Women With and Without Back Pain**



The quality of life is higher in women without back pain as compared to those with back pain, irrespective of cesarean section or normal vaginal delivery. However, women undergoing LSCS show a lesser quality of life compared to those with normal vaginal delivery.

**DISCUSSION**

Our study aims at estimating the difference in the prevalence of postpartum back pain and the resultant disability and affection in quality of life. In industrialised countries medical attention is usually high during and after pregnancy, but still some problems like low back pain are ignored and left untreated. All these problems cause considerable disability in their daily life.<sup>15</sup> (Jennifer Sabino, Jonathan N.2008). A knowledge regarding the incidence of back pain can promote prior education during pregnancy to minimize severity of pain. Also, timely intervention can reduce the affection on quality of life.

In previous studies the prevalence of postpartum back pain in normal vaginal delivery was found to be 27%<sup>16</sup> (N. Dooley, T. Tan: 2013) and in this study the prevalence of disability due to back pain in postpartum women was found to be 33.33%. Also

the prevalence of postpartum back pain in cesarean section was found to be 45-54% and in this study it was found to be 56.67%<sup>17</sup>(ShuttLE, Valentine SJ:1992).

The possible causes of back pain after normal vaginal delivery are hormonal changes, sudden lifting or twisting from the back, weakened abdominal muscles and incorrect posture.

But apart from the above mentioned causes, in cesarean section, there is also local inflammation of skin and the tissues through which needle was inserted, causing trauma to skin, muscles, ligaments or nerves of back. This might be lead to higher prevalence of back pain in LSCS than NVD.<sup>18</sup>(Breen TW, Ransil BJ, 1994)

The results comply with previous study which states that there is increased incidence of back pain in patients who had undergone cesarean section, than in patients with normal vaginal delivery.<sup>19</sup>(De BritoCançado TO, Omais M, 2012)

In the study conducted by Kehlet H, Pavlin D J, *et al.* in 2011, it was concluded that persistent pain is more common after cesarean section than vaginal birth.<sup>20</sup>(Kehlet H, Pavlin D J, 2011).

There was no significant difference seen in low back pain between primigravida and multigravida, which is in agreement with literature that previous pregnancy is not the risk factor for low back pain after pregnancy.

In many studies NRS has been used for understanding pain intensity. In this study, the average NRS was 4.82 in women with cesarean section, while 4.1 in women with normal vaginal delivery. This complies with previous findings that the average NRS is about 5 in postpartum women.<sup>21</sup>(Nilsson-Wikmar L, Pilo C, 2003)

Oswestry Index questionnaire was used to understand the limitation of activity and to find the disability scores. The maximum disability score in postpartum women with cesarean section was 51% i.e. severe disability; while the maximum disability score in postpartum women with normal vaginal delivery was found to be 38%, i.e. moderate disability. Thus we infer that the disability level is lower in postpartum women with normal vaginal delivery than the women with cesarean section.

In this study the quality of life was found to be higher in women with normal vaginal delivery than cesarean section. This is in accordance with the study which states that overall mothers in normal delivery group reported a better health related quality of life and slightly scored higher (better) on the SF-36 questionnaire.<sup>22</sup>(Seyed Abbas Mousavi, Forough Mortazavi, 2013)

A significant effect of pain intensity on disability was found. Pain intensity can affect disability, but the episodic nature of low back pain also affects the ability to function in both work and personal life. Intermittent increases in pain can markedly alter disability.<sup>23</sup>(McGorry RW, Webster BS: 2000)

## CONCLUSION

The prevalence of low back pain in postpartum women with cesarean section is 56.67%. The prevalence of low back pain in postpartum women with normal vaginal delivery is 33.33%.

The quality of life is higher in postpartum women with normal vaginal delivery than the women with cesarean section. The disability level is lower in postpartum women with normal vaginal delivery than the women with cesarean section.

## Limitations and Recommendations

### Limitations

- The questionnaire used to assess disability was not specifically designed for Indian population.
- Only one aspect of musculoskeletal problems of pregnancy is compared, i.e. low back pain.
- The BMI of the postpartum women was not taken into account.

### Recommendations

- Interventional study can be carried out for management of low back pain during postpartum period.
- Disability caused due to other musculoskeletal problems like diastasis recti, pelvic girdle pain etc. and also the severity of these problems can be known.
- Prevalence of depression or other psychosocial changes and its influence on back pain and quality of life can be assessed.

## Acknowledgement

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- Also we are thankful to all the staff members of KMPPI and our colleagues for their support. We are thankful to all our subjects who participated in our study, without whom this study would have not been possible.

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