Assessment of Factors Responsible for Low Back Pain Among Pregnant Women Attending Tertiary Care Hospital of Lahore, Pakistan

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ABSTRACT

Background: Low back pain (LBP) is a common disorder involving the muscles, nerves, and bones of the back. Pain can vary from a dull constant ache to a sudden sharp feeling. This can be due to a combination of mechanical, hormonal, and psychosocial factors. These have a negative impact on their quality of life. Treatment options are often poor, as the cause of back pain is not always fully understood. Furthermore, treatments that are available usually have a low success rate and consist mainly of lifestyle adjustments and bed rest.

Material and Methods: Two hundred and ten women were selected from the OPD of genecology and obstetrics department of Jinnah hospital Lahore for interview, a structured questionnaire was used for information, data entered in computer software SPSS version 22.0. A cross sectional survey was done. Participants of the study are 15 to 45 years old having established diagnosis of low back pain. Duration of the study was 3 months.

Result: Among 210 females, 22.22% noted ongoing back pain at the time they became pregnant. 54% were multigravidas and 41% were grand multigravidas. In the latter group, 19% patients had backache before pregnancy and 81% had during pregnancy. No treatment was taken in 61% patients, rest in 19%, analgesic in 12% and light exercise by 9% patients. The present study revealed that backache is more prevalent in multigravidas, grand multigravidas and associated factors like weightlifting, heavy work, bending, standing posture etc. are main causes of backache. Analgesics are effective in relieving backache in pregnancy. The appropriate treatment aims to reduce the discomfort and the impact on the pregnant woman's quality of life.

Conclusion: Back pain is a common problem in pregnant women and many factors contribute to it. About half of the patients are taking rest to treat LBP. It is advised that the patient should be given special advice regarding posture and exercise, training of health care provider, education of the pregnant during antenatal sessions, about proper nutrition, weight control, and family planning.

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Keywords: Low Back Pain; pregnancy; trimesters.

1. Introduction:

Low Back Pain (LBP) is pain felt in the back that usually originates from the muscles, nerves, bones, joints or other structures in the spine (Shimul, 2014). LBP is a common musculoskeletal disorder affecting 84% pregnant ladies at some point in their lives. As there is considerable evidence demonstrating that ethnicity is associated with musculoskeletal pain disorders, therefore association between ethnicity and Low Back pain is needed to be investigated. LBP can affect the both genders. The pain is classified on the basis of its duration (Western Sydney local health district, 2019), like the pain lasting less than a week is called acute pain and the pain which lasting more than a week is called chronic low back pain (Esther, 2012). Low Back Pain is a common in women of childbearing age (Svensson et al., 1990; Fast et al.,

1987). In one study of Swedish women between the ages of 38 and 64, two third had reported experiencing low back pain at some point in their life during pregnancy (MacEvilly and Buggy, 1996). If laxity of ligament not treated by changed neuro motor mechanism can cause separation and widening of the symphysis pubis (Mahishale & Borkar, 2015). Most of the time the reason of sick leave is low back pain after delivery (Vleeming et al., 2008). The prevalence rate of LBP during pregnancy increase 61% to 88% (Slipman et al., 2007), and mostly low back pain occurs in first sixth months of pregnancy.

Changes to the musculoskeletal system during pregnancy include changes in posture, spinal or pelvis as well as lengthening of the abdominal and pelvic floor muscles, weight gain and odd distribution of weight in the lower abdomen increases the incidence of back pain in pregnancy. The incidence of some degree of back pain during pregnancy was reported between 30 and 70% in 2007 which increased as per another study of 2008 from 61-88% (Kristiansson et al., 1996).

Pregnancy results in an increase of overall body mass and a change in the centre of gravity. As the pregnancy progresses, the posture adapts to the changing weight and subsequent forces imposed on the body. There is an exaggeration of the curve in the lumbar spine (Sneag & Bendo, 2007). Relaxin, a polypeptide hormone that regulates collagen, softens the ligaments in preparation for parturition. Hormonal changes that occur during pregnancy cause softening of ligaments and the joints, particularly of the pelvis, to enable the fetus to pass through the birth canal more easily. This results in increased joint looseness and decreased stability. This may be the cause of pain in the lower back and posterior pelvis. Various forms of corsets and supportive braces are available which may provide an increase in joint stability and alleviate low back and posterior pelvic pain (Sabino & Grauer, 2008).

The risk factors for straining are poor body posture, overweight, past history of Low Back Pain, parity, and physically strenuous employment. Back pain can be reduced by taking antenatal classes, yoga or consultation with a physiotherapist or other health care professional. Certain medicines are unsafe during pregnancy so, non-pharmacological treatment may be treatment of choice and beneficial for pain management (Ansari et al., 2010).

Exercise intervention with patient education, nerve stimulation, physiotherapy, yoga stabilization belts, relaxation, pharmacological treatment, and massage are the gold standards conservative treatment of Low back pain. However, posture is a vital component for the management of low back pain during the working environment and daily living (Bailey, 2009).

Low back pain experienced during pregnancy is more severe and disabling it increases with gestation concentrations and is often associated with symphyseal pain. The ability to perform housework, care for children and undertake duties of employment are all diminished, with the major cause of back pain during pregnancy (Malmqvist et al., 2015). About 10% of women may be prevented by it from working and over a third report that it interferes with daily life (Osterman & Martin, 2011).

Currently, many women do not receive adequate information about low back pain management and may not be aware that there are appropriate management strategies which may benefit them (Phty, 2017). The management of low back pain is not a glamorous aspect of medicine, yet it has attracted attention recently, because of growing evidence that previous strategies such as bed rest, corsets, traction, and physical treatment were valueless. Prevention may be easier than cure for pregnant women and mothers, to whom general advice on back care would seem to be eminently applicable.

Immediately after delivery, up to two thirds of mothers may suffer back pain due to epidural analgesia in labor, which may be reported by 40% of mothers who do not receive regional analgesia (Ostgaard et al., 1993). The present study was carried out to assess the frequency, manifestations and the contribution of various factors to the development of lumber back pain assess the efficacy of various treatment modalities used for the management of low back pain in pregnancy.

1.1. Aims

This study was conducted to assess the frequency of different factors responsible for the development of the low back pain in pregnant women, and to assess the different treatment modalities for lowering the back pain.

1.2. Objectives

The main objectives of the current study are: To find out the frequency of low back pain among pregnant ladies in different trimesters of pregnancy, to identify the factors responsible for low back pain and to identify the treatment modalities for low back pain.

2. Material and Methods:

2.1. Study Design:

It was a cross-sectional descriptive study.

2.2. Study Settings:

Study was conducted in the OPD of obstetric department of Jinnah hospital Lahore.

2.3. Study Population:

All the pregnant ladies of age group from 26-45 years had low back pain were selected.

2.4. Duration of Study:

The duration of study was 6 months.

2.5. Sampling Technique:

Purposive sampling technique using predetermined selection criteria were used for this study.

2.6. Sample Size:

The sample size was determined 210 pregnant ladies having low back pain, visited OPD of Jinnah Hospital, Lahore. The margin of error was 5% and confidence level 95%.

2.7. Inclusion criteria:

The inclusion criteria were all the Pregnant ladies of different trimesters having low back pain, age group 26-45 years and residents of district Lahore.

2.8. Exclusion criteria:

The exclusion criteria were: Research subject with serious ailment and research subject of other district.

2.9. Data Collection Procedure:

A semi-structured questionnaire was prepared and finalized after pre-testing. Research subject having low back pain were interviewed and response was noted.

2.10. Data Analysis:

The collected data was entered in computer software SPSS (Statistical Package for Social Sciences) version 22.0. The data was cleaned and statistically analyzed with same software. For quantitative variables mean and standard deviation was calculated and for qualitative variables frequency and percentages were calculated. Data was presented in tables and graphs for both quantitative and qualitative variables. Chi-square test, was used to estimate the association between qualitative variables. P-value <0.05 was considered significant.

2.11. Data Analysis:

Formal approval was taken from Institute of Public Health Research Committee to conduct the study. Informed consent was taken from patients. Privacy and confidentiality was ensured that data would not be utilized except for academic purpose.

3. Results:

Interpretation of the data was done, which showed socio demographic characteristics of study participants, like there were 2 (1%) subjects of age 15-20 years, 5 (2%) subjects of age 21-25 years, 57 (27%) subjects of age 26-30 years, 44(21%) were of 31-35 years old, 45(22%) were 36-40 years old, 57(27%) were 41-45 years old.

Educational status of women was as; 140(66%) were illiterate, 60(28%) were below Matric, only 10(5%) were Matric.

Occupational status of women was 25(12%) were working as maids in homes, 47(22%) were factory workers, 30(15%) were field workers, and 108(51%) were in some other occupation.

Educational status of husbands showed 100(48%) were illiterate, 80(37%) were below Matric, and 30(15%) were up to Matric. Almost 60(29%) were laborer, 56(26%) were factory workers, 43(21%) were chowkidar, and 51(24%) were other workers.

Very important socio-economic factor was found, 107(51%) had monthly income of five thousand to ten thousand, 67(32%) had fifteen thousand, and only 36(17%) had more than fifteen thousand.

As far as the family status is concerned 47(22%) were living independently, and 163(78%) were living in joint family system.

3.1. Reproductive Characteristics of Women::

The reproductive characteristics of the respondents were also checked and found, duration of marriage was less than 10 years of 77(37%) women, and 133(63%) had more than 10 years. As far as parity is concerned 52(24%) had one to two children, 158(76%) had three to four children, it means women having more than three pregnancies were at increased risk of having Low Back Pain then women having one or two pregnancies.

Gravidity status shows 12(6%) were Primigravida, 113(54%) were multigravida, 85(40%) were grand multigravida, Regarding inter pregnancy interval 186(89%) had equal or less than two years inter pregnancy interval, 24(11%) had more than two years inter pregnancy interval. Body Mass Index (BMI) of the respondents was observed <18.5 in 15(7%), 20(9%) had 18.5 – 24.9, 50(25%) had in 25 – 29.9, and 125(59%) were 30 or above.

3.2. Characteristics of last Delivery:

The result shows 90 (43%) had normal vaginal delivery, 45(21%) had instrumental delivery, 75(36%) had lower segment Caesarean section (LSCS). As far as anesthesia during last delivery is concerned 113(54%) had spinal anesthesia, 56(27%) had epidural anesthesia, and 41(19%) had any other anesthesia.

3.3. Status of present pregnancy:

The result shows that regarding gestational age; 33(16%) were in first trimester, 54(26%) were in second trimester, and 123(58%) were in third trimester. As far as regular sleep is concerned 164 (78%) had regular sleep cycle, 46(22%) had irregular sleep cycle. Regarding regular milk intake 36 (17%) were taking milk regularly, 174(83%) were not taking milk regularly. Daily exercise status shows 17(8%) had daily exercise, 193(92%) had no daily exercise.

Table 1 shows the socio-demographic characteristics of study participants regarding age, 2 (1%) were 15-20 years old, 5 (2%) were 21-25 years old, 57(27%) were 25-30 years old, 44(21%) were 31-35

years old, 45(22%) were 36-40 years old, 57(27%) were 41-45 years old.

Educational status of women shows 140(66%) were illiterate, 60(29%) were below Matric, only 10(5%) were Matric. Occupational status of women shows 25(12%) were working as maids in homes, 47(22%) were factory workers, 30(15%) were field workers, and 108(51%) were in some other occupation.

Regarding monthly income, 107(51%) had monthly income of five thousand to ten thousand, 67(32%) had fifteen thousand, and only 36(17%) had more than fifteen thousand.

Table 1: *Socio-Demographic Characteristics*

Characteristics	Frequency	Percentage %
Age of respondent		
15-20	2	1
21-25	5	2
26-30	57	27
31-35	44	21
36-40	45	22
41-45	57	27
Education of respondent		
Illiterate	140	66
Below Matric	60	29
Matric	10	5
Occupation of the respondent		
Maids	25	12
Factory workers	47	22
Field workers	30	15
Another	108	51
Income/Month		
Rs. 5000 - 10,000	107	51
Rs. 11,000 - 15,000	67	32
Rs. >15,000	36	17

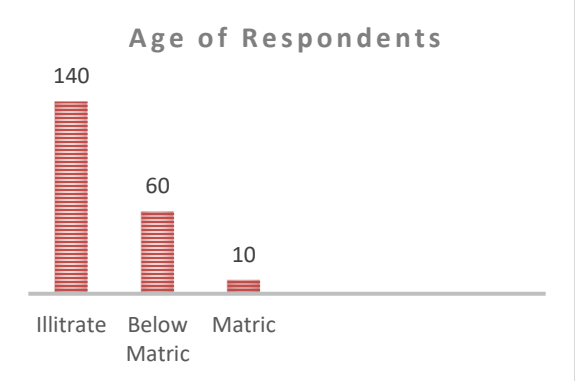

Figure 1. Age of respondents

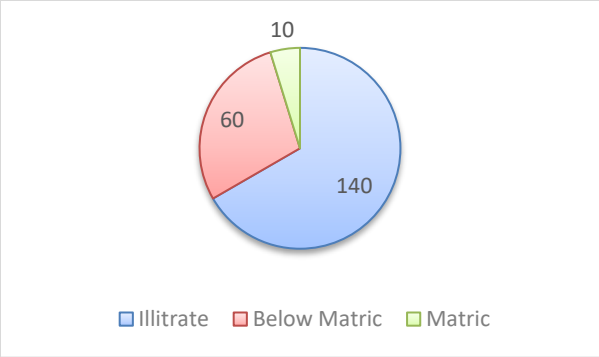

Figure 2. Education of respondents

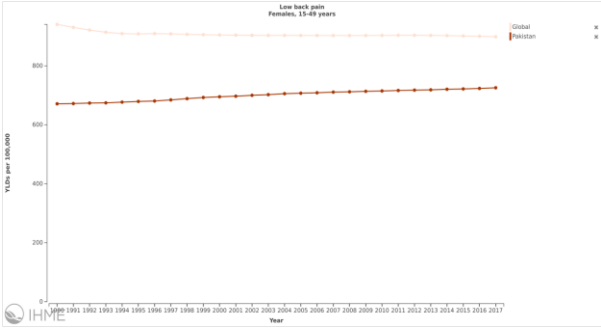

Figure 3. Years lived with Disability of low back pain of pregnant females of age group 15- 45 years (With the courtesy of IHME).

Figure shows globally 940.4YLDs Per 100,000 (S.D 658.95-1317-62) in 1990. YLD non-significantly decreased up to 2017 and reported 8998.58/100,000(S.D 626.02-1251.97). It is also reported in Pakistan YLD due to Low Back Pain was reported in 1990, 671.2/ 100,000(4671.76-932.46) which increased in 2017 up to 725.42/100,000(499.9-1017.9) as shown in the figure Low Back Pain in female of age group 15-45 years is a significant issue and needs special attention to research to find out the causes and better intervention in future.

Table 2 shows the reproductive characteristics of the respondent regarding their duration of marriage, 77(37%) had less than 10 of married life and 133(63%) had more than 10 years.

As far as parity is concerned 52(24%) had one to two children, 158(76%) had three to four children, it means women having more than three pregnancies were at increased risk of having backache then women having one or two pregnancies.

Gravidity status shows 12(6%) were Primigravida, 113(54%) were multigravida, 85(40%) were grand multigravida.

Regarding interpregnancy interval 186(89%) had equal or less than two years interpregnancy interval, 24(11%) had more than two years interpregnancy interval.

Table 2: *Reproductive Characteristics*

Characteristics	Frequency	Percentage %
Duration of marriage		
< 10 years	77	37
> 10 years	133	63
Parity		
P1	12	6
P2	40	19
P3	73	34
P4	85	41
Gravidity		
Primigravida	12	6
Multigravida	113	54
Grand multigravida	85	40
Inter pregnancy interval		
≤ 2 year	186	89
> 2 years	24	11

Table 3 shows characteristics of last delivery regarding their mode of delivery, 90(43%) had normal vaginal delivery, 45(21%) had instrumental delivery, 75(36%) had LSCS. As far as anaesthesia during last delivery is concerned, 113(54%) had spinal anaesthesia, 56(27%) had epidural anaesthesia, and 41(19%) had any other anaesthesia.

Table 3: *Characteristics of Last Delivery*

Characteristics	Frequency	Percentage %
Mode of last delivery		
NVD	90	43
Instrumental delivery	45	21
LSCS	75	36
Anesthesia during last delivery		
Spinal	113	54
Epidural	56	27
Any other	41	19

Table 4: *Status of Present Pregnancy*

Characteristics	Frequency	Percentage %
Gestational age		
1st trimester	33	16
2nd trimester	54	26
3rd trimester	123	58
Regular sleep		
Yes	164	78
No	46	22
Regular milk intake		
Yes	36	17
No	174	83
Daily exercise		
Yes	17	8
No	193	92

Table 4 shows status of pregnancy regarding gestational age, 33(16%) were in first trimester, 54(26%) were in second trimester, and 123(58%) were in third trimester. As far as regular sleep is concerned, 164 (78%) had regular sleep cycle, 46(22%) had irregular sleep cycle. Regarding regular milk intake, 36 (17%) were taking milk regularly, 174(83%) were not taking milk regularly. Daily exercise status shows that 17(8%) had daily exercise, 193(92%) had no daily exercise.

Table-5 shows backache during pregnancy and associated factors regarding initiation of backache, 40(19%) had backache before the pregnancy, 170(81%) had started backache during pregnancy. As far as burning micturition concerned 27(13%) had burning micturition, 183(87%) had no burning micturition. Among those having burning micturition, 26(12%) had vaginal discharge, and 184(88%) had no vaginal discharge. Among those having vaginal discharge 15(58%) had colored / odourable discharge, 11(42%) had colorless / odorless discharge.

Table 5: *Backache during Pregnancy & Associated Factors*

Characteristics	Frequency	Percentage %
Initiation of backache		
Before pregnancy	40	19
During pregnancy	170	81
Burning micturition		
Yes	27	13
No	183	87
Vaginal discharge		
Yes	26	12
No	184	88
If Yes,		
Colored/odourable	15	58
Clear/odorless	11	42
Standing for long time		
Yes	125	60
No	85	40
Heavy weightlifting		
Yes	135	64
No	75	36
Swing/bending position		
Yes	143	68
No	67	32
Over worked and stressed		
Yes	187	89
No	23	11

Regarding long time standing is concerned, 125(60%) were working in standing position for long time, 85(40%) were not working in standing position for

long time. Regarding heavy weightlifting, 135(64%) were lifting heavy weight, 75(36%) were not lifting heavy weight. Regarding bending postures, 143(68%) were working in bending or swinging position, 67(32%) were not working in bending or swinging position. As far as overworked and stressed is concerned, 187(89%) were overworked and stressed, and 23(11%) were not overworked and stressed.

Table-6 shows the treatment modalities for backache, 82(39%) females received treatment, 128(61%) did not receive treatment. Regarding use of different treatment modalities 25(12%) took analgesics, 40(19%) were advised rest, 17(8%) were advised light exercises and 128(61%) were not taking any treatment.

Table 6: *Treatment modalities for backache*

Characteristics	Frequency	Percentage %
Received treatment for backache		
Yes	82	39
No	128	61
If Yes		
Analgesia	25	12
Rest	40	19
Light exercise	17	8
No treatment	128	61

4. Discussion:

Prevalence and factors influencing pelvic joint and low back pain during pregnancy can be associated with considerable disabilities as far as daily activities are concerned. Women concerned may have a preexisting bone disease revealed by the physiological bone loss that occurs during pregnancy and breastfeeding (Nor et al., 1997).

A pregnant woman's center of gravity shifts forward under the baby's weight. She also arches her back to accommodate the extra weight. But this stresses the facet joints and discs and makes them sensitive – causing pain. The results of this hospital-based study show that Low Back Pain is a common complaint in pregnant ladies. Age, weight and mode of delivery are not directly related to occurrence of Low Back Pain (Olsson & Lena, 2004).

The result of this study is similar to that hospital-based study, which showed more Low Back Pain among multigravida and grand multigravidas especially grand multigravida. This study showed that with increasing age, number of pregnancies there was more increase in Low Back Pain. As general changes in laxity of supporting soft tissues occur under the hormonal influences, pain represents a relative 'overuse', with repetitive overloading of pre weakened structures. This study also showed that it is more common in third trimester of pregnancy. In this descriptive study results showed that long term standing, bending posture, heavy weightlifting, overworked and stressed condition enhanced the back pain among pregnant females. Gravidity of mother and interpregnancy interval showed that shorter interval causes more back pain (Norén et al., 2002). The study showed that lack of nutrition of the pregnant females, regular sleep, milk intake, and daily exercise also influence in the severity of back pain.

A similar study done in Pretoria (South Africa) has shown that the presence of severe low back pain was strongly affected by intensive farm work, residential area (rural) and gravidity of the mother. Epidural analgesia for labor has been implicated in the development of chronic Low Back Pain in two retrospective studies. It was suggested that mothers receiving epidural analgesia adopted positions stressful to the lower back for prolonged periods and this, combined with muscle weakness and immobility, resulted in postnatal back pain. However, when this theory was tested in a prospective study, neither motor block nor the use of epidural analgesia was associated with the development of chronic Low Back Pain (Ostgaard & Andersson, 1991). Upright posture and activity throughout the day can logically lead to increased pain from paraspinal muscle strain, fatigue and subsequently exaggerated muscle, spinal and pelvic stress.

Some patients complain of Low Back Pain at night. It was proposed that increased venous flow through ascending lumber veins, vertebral venous plexus, and paraspinal and azygous veins occurs particularly at night in response to redistribution of already large extra cellular an venous fluid volumes and to the mechanical vena cava compression, especially in the supine patient. Edema, stasis, and increased pressure occur in vertebral bodies and around neurovascular elements with subsequent pain (Östgaard et al., 1996).

Before a woman becomes pregnant encouraging her to become fit resolving existing back pain is the key to back pain prevention. Most obstetricians recommend conservative treatment for gestational back pain. This study showed that most of the pregnant females were not taking any medication for treatment, some were on light exercise, fewer were on analgesics, and most of them were not taking any medication. The use of support binder for pregnancy–low back pain is promising intervention and was well accepted by the participants. Exercise and posture correction will minimize but not completely prevent lumbar or sacroiliac pain during pregnancy. Therapeutic stretches and exercise are an excellent way to keep the pregnant body flexible, strong and mobile. Water gymnastics appear to reduce back pain in pregnancy.

Acupuncture offers a natural alternative to taking painkillers and anti-inflammatory (Mogren, & Pohjanen, 2005). This was a hospital-based study showing strenuous work and improper posture as the most

common causes of Low Back Pain in pregnancy. The study may be different in general population.

5. Conclusion:

Back pain is a common problem in pregnant females and many factors contribute to it like physiological, psychosocial, and socio-demographic factors. The present study revealed that low back pain is more prevalent in multigravidas, grand multigravidas, and associated factors like weightlifting, standing posture, bending, swing posture and heavy work were the most common causes of low back pain. About half of the patient's treatment is mainly in the form of rest. Analgesics are also effective in relieving low back pain in pregnancy. To remain in appropriate posture and exercise was found very useful. This study may serve as a base for further recommendations to improve the health status of the females before pregnancy and during pregnancy, by the following activities:

- Training of health care provider.
- Education of the pregnant ladies during antenatal sessions, about proper nutrition, weight control, family planning.
- Correction of bad postures, long standing.
- Avoid weightlifting during pregnancy.
- Perform light exercises during pregnancy.

Conflict of Interest

The authors have no conflict of interest to declare.

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