

Low Back Ache in Working Women of Reproductive Age Group

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ABSTRACT

Background: Pain in the soft tissues of the back is extremely common among adults and frequently affects individuals in their working years. Although low back ache (LBA) is suggested to be linked to hormonal and reproductive factors in women, results from various studies are inconclusive. The relationship between the work environment and LBA, though clearly perceived by the women to be causative, may be less certain. In addition to the financial losses to society and patients, LBA also has a major impact on various aspects of patients' everyday lives.

Materials and methods: It was a cross-sectional study of reproductive women presenting with LBA, included after a questionnaire survey. Statistical analysis were used to correlate LBA with overweight, posture during working and reproductive factors, like age at marriage, marriage duration, past pregnancy, number of children and number of abortions, and to explore individual and work-related risk factors.

Results: Past pregnancy (including previous deliveries or abortions), age at marriage, obesity and posture while working were associated with LBP. No positive association was found for marriage duration.

Conclusion: Ergonomics has a crucial role in preventing LBA. In working women, hormonal and reproductive factors along with posture and duration of working hours are associated with chronic musculoskeletal pain in general.

Keywords: Low back ache, Working women, Reproductive factors, Posture.

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INTRODUCTION

Back pain is a common presenting complaint and frequently affects individuals in their working years.¹ It is a major cause of sickness, disability and absence from work.² It may be caused by gynecologic, vascular, neurologic, psychogenic, spondylogenic or discogenic pathology. But mostly the cause remains unidentifiable and is encompassed under the umbrella term—mechanical or postural back pain.³

Low back ache (LBA) more often affects women than men and this leads to assumption that its cause lies in female reproductive system. The sex difference in incidence is mainly explained by the fact that the female muscular and ligamentary supports are not as strong as of males. Further, during pregnancy and labor the mobility of the pelvic girdle exposes the muscles and ligaments to undue strains which after delivery involute suboptimally. A higher number of live births are suggested to be associated with LBA.^{4,5} Postpartum, women is exposed to additional physical work, including prolonged bending during household work or lifting the baby. She is subjected to considerable nervous and emotional stresses of motherhood and has inadequate rest and sleep during that period.

Minor repeated trauma is commonly accounted for by obesity, bending and lifting, poor posture, pendulous abdomen, flat feet, badly designed shoes with high heels and long hours at work or an office desk. These conditions are characterized by spasm of muscles and it is suggested that spasm may be the cause rather than the effect. Any LBA caused by gynecological lesion is diffuse, situated in midline and importantly associated with anterior pelvic pain. Any backache which can be pointed with a finger, or associated with local tenderness, is usually not due to intrapelvic lesion.⁶

The essential step in the management of LBA is to determine the cause by meticulous, detailed history and examination including pelvic examination. Radiological and sometimes MRI is useful in evaluation. Treatment depends on cause, but when definitive lesion is not found, reassurance and understanding, correction of

Table 1: Distribution of subject according to symptoms, i.e. only LBA

Symptoms	No. of women
Without LBA	36
With LBA	40

Table 2: Distribution of subjects according to symptoms of LBA and reproductive characteristics

	Percentage prevalence	p-value
Age at marriage (years)		
20-24	33.3	$\chi^2 = 37.53$ df = 2, significant, p < 0.001
25-29	5.5	
30-34	53.8	
Marriage duration (years)		
<5	40	$\chi^2 = 9.1$, df = 5 not significant, p > 0.05
5-9	61.5	
10-14	35.2	
15-19	50	
20-24	66.6	
≥25	70	
Number of deliveries		
0	12.5	$\chi^2 = 28.07$, df = 2 significant, p < 0.001
1	46.15	
≥2	60	
Number of abortion		
0	26.3	Significant p < 0.001
1	51.3	
≥2	80	

posture, abdominal-spinal exercises, appropriate foot wear and adequate rest is recommended. Local injections of anesthetic solutions or rarely if there is significant neurological deficit, spinal decompression (laminectomy, discectomy) may be required.

AIM OF THE STUDY

The aim of this study was to establish the prevalence of LBA in a group of working women of reproductive age group. In addition, it was hoped to correlate LBA with overweight, posture during working and reproductive factors, like age at marriage, marriage duration, past pregnancy, number of children or abortions, and to explore individual and work-related risk factors.

MATERIALS AND METHODS

It was a prospective study conducted in Department of Obstetrics and Gynecology, and Orthopedics at Subharti Medical College, Meerut, between Jan 2012 and Jun 2012. Eighty-two women in reproductive age group working in areas surrounding the hospital, who presented with complaint of LBA, were included in the study.

The women were assessed by detailed history and then clinical examination. They were interviewed

through a *de novo* predesigned and pre-tested schedule after obtaining an informed consent. They were approached with covering letter outlining the purpose of the survey and brief questionnaire. The first part of it consisted of the following questions—age, height, weight, number of years in working and main posture (sitting, standing, bending, twisting or lifting weight) during working, medical history, sexual behavior, reproductive history and obstetrics history.

The second part consisted of questions related to LBA particularly its duration, occurrence in the past, location, radiation to legs, aggravating or relieving factors, any previous treatment or admission required for it. The subjects were also asked whether they had to stop working during the episode of LBA. Symptoms suggestive of reproductive tract infection (RTI) in past week or 6 months were recorded, depicting acute or chronic infection.

Women having symptoms suggestive of RTI in the form of abnormal vaginal discharge, lower abdominal pain, urinary symptoms, vaginal pruritis, dyspareunia and suspected cases of sexually transmitted diseases (trichomonas vaginitis, gonorrhoea, syphilis, candidiasis) were excluded from the study. Women using intrauterine contraceptive devices were also excluded. Further questions consisted of need for orthopedic consultation and investigations in the form of X-rays or MRI.

Statistical analysis data obtained was collected and analyzed statistically by proportions and tests of significance (Chi-square and Z-test).

RESULTS

Of the 82 patients analyzed, 76 patients returned with completed questionnaire thus, response rate was 93%. Table 1 shows, out of total 76 working women in reproductive age group interviewed, only 40 women (52.6%) had LBA as past and present complaints. Thirty-six women although complained of discomfort in back had chronic cervicitis which got relieved after specific treatment for it.

The occupation of working women in reproductive age group presenting to us commonly were teachers, nurses, computer operators, housemaids and other desk jobs. Many females had to commute considerable distance by various modes of transportation to reach their destination of work.

In Table 2, it is evident that the symptoms of LBA were more among women who were married at later age (30-34 years) or had more ≥2 children or ≥2 abortions. The relevant difference was statistically significant.

Table 3 shows the association between occurrence of LBA and other variables analyzed. The prevalence of LBA was more among women with BMI ≥30 then those with ≥20 to 29 and it was statistically significant.

Table 3: Different variables in subjects and relation with low back ache

Variable		LBA	No LBA	p-value
BMI		≥30	20-29	<0.003
Position during Working (hours/day)	Standing	14.09 ± 0.31	8.8 ± 0.2	<0.03
	Sitting	7.4 ± 1.8	6.2 ± 2.9	<0.05

DISCUSSION

The etiology of back pain is multifactorial and it is very prevalent in the general population. The working subjects are required to adopt awkward postures during prolonged sitting in office or working place. Many have prolonged standing, bending or twisting activities at workplace. These prolonged static postures have been shown to lead to musculoskeletal stress in different occupational groups.⁷ One study of middle aged woman found a variety of musculoskeletal diseases associated with several reproductive factors: young maternal age at first birth (fibromyalgia), high maternal age at last birth and having ≥ 2 children (pelvic joint syndrome).⁸

This study reports a 53% prevalence of LBA in a group of working women included. Various authors have reported prevalence rate ranging from 44 to 72% in echocardiographers, ophthalmologists and gynecologists.⁹⁻¹¹ The higher incidence reported in their study could be due to the fact that these authors have also included pain in the cervicothoracic region along with LBA. As shown in Table 2, associations is observed between age at marriage and number of subjects with LBA, maximum prevalence is observed among woman with late age, i.e. 32 to 34 years. It is explained by the fact that late age may be a risk factor for musculoskeletal pains. Women having LBA in higher age group at marriage indirectly demonstrates that carrier oriented women marry late, thus predisposing not only to obstetric risks but also increasing their chances of back pain.

As depicted in Table 2, no association is observed between length of marriage and number of subjects with symptoms of LBA. There is association observed with number of deliveries and number of subjects with LBA. The prevalence is observed more among woman with ≥2 deliveries (60%) than those with 1 delivery (46.15%) and no delivery (12.5%). The observation is consistent with a previously population based survey which found a linear association between the number of live births and chronic LBA.⁵ Number of abortions and LBA has also got an association which is significant with a p-value of <0.001. The prevalence is observed to be more with ≥ 2 abortions (80%) than those with one (51.3%) or no abortions (26.3%). During pregnancy/abortion biomechanical stress on ligaments and joints, muscle fatigue and affect

on hormone relaxin on joint laxity, with ≥ one factors dominating in an individual case. Past pregnancy with whatever outcome, either live children or abortions is related with chronic LBA. A high estrogen level during this phase is postulated for this effect.¹² But a study found that increased peripheral joint laxity in pregnant women was not associated with increased serum relaxin or estradiol levels.¹³

The present study has demonstrated a bearing of body weight on LBA. Subjects who reported LBA weighed significantly more – 65 ± 10 kg vs 59 ± 3 kg (p < 0.003) of subjects who did not have LBA. Obesity is known to increase both the direct vertebra compressive load on the spine and the anteriorly acting loads, which through the action of the muscles creates very large joint reaction forces.¹⁴

In present study, position of working has a significant association. Among the standing group, those who worked for 14.09 ± 0.3 hours per day had more LBA than those with less duration of working hours (8.8 ± 0.2) with a p-value of < 0.03 which is statistically significant. Prolonged duration at work, especially in standing exposes women to repeated muscle trauma and muscle spasm. Dolan and Martin¹¹ have reported back pain in 54% of gynecologist who performed surgery while sitting and 48% had back pain while performing standing surgery. The use of seating with adjustable backrests may improve operator positioning and thus, decreasing incidence of back pain.

The reason explained for back pain in certain postures is due to generation of high stress concentrations on spinal segments (intervertebral disk, ligaments and apophyseal joints). If posture is held for long time, some heavily loaded tissues gradually 'creep' from load.¹⁵ Kwon et al¹⁶ in a systematic review found conflicting evidence between LBA and bending, twisting, lifting or pushing/pulling, but only for statistical association, not causation. Strong evidence against a causal relationship was found between LBP and manual handling/assisting patients, awkward postures, carrying, sitting, standing or walking.

The present study also demonstrated that LBA had a significant impact on the individual with 25% having to stop working. These figures are higher than those reported by Dolan and Martin.

CONCLUSION

We conclude that the prevalence of LBA is more in working women in reproductive age group. Correlation between LBA and reproductive factors, like age at marriage, number of deliveries and number of abortions is also well established. Other variables, like BMI, position at work

and prolonged duration at work was also analyzed and its association with LBA was recognized. Attention must be paid to control weight, posture and time duration at work place. It is further concluded that most of the cases responded well to conservative management in the form of adequate rest, correction of posture, physiotherapy and most women continued to work without difficulty. This is where role of ergonomics come, to reduce absentee from work and to increase work output.

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