Research Article

Study of the hormonal and reproductive factors associated with low back pain in reproductive female

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ABSTRACT

Background: Low back pain related disability and work absence accounts for high economical costs in modern society. A prevalence of 28-80% has been found with increase of prevalence with age and female preponderance.
Methods: The present study was conducted on 250 non pregnant women complaining of low back pain attending department at Upper India Sugar Exchange Maternity Hospital, Department of Obstetrics and Gynaecology, GSVM Medical College, Kanpur during the period of one year. A brief questionnaire was used to screen, among the respondents, the occurrence of low back pain in the past year.
Results: Low back pain was associated with high BMI, high waist circumference, more number of children, irregular and prolonged duration of menstruation, young maternal age at first birth and with history of abortion.
Conclusions: Hormonal and reproductive factors are associated with low back pain.

Keywords: Hormonal factors, Reproductive factors, Reproductive female

INTRODUCTION

Low back pain is defined as pain and discomfort, localised below the costal margin and above the inferior gluteal folds, with or without referred leg pain. Chronic low back pain is defined as low back pain persisting for at least 12 weeks, unless specified otherwise.

A simplified and practical classification, which has gained international acceptance, is to divide low back pain into three categories-the so called "diagnostic triage"[1]:

1. Specific spinal pathology
2. Nerve root pain pain/radicular pain
3. Non-specific low back pain

Low back pain is common disorder, affecting around one-third of UK adult population each year. About 20% of people of low back pain (that is 1 in 15 of population) will consult their GP about it. The presence of low back pain during pregnancy is widely reported.[2-5]

One systematic review identified 56 population prevalence studies of low back pain (Walker 2000). Thirty studies were of acceptable quality. Point prevalence of low back pain ranged from 12-33%. The two reviews on low back pain in school children and adolescents reported a prevalence approaching that reported for adults.[6,7]

Low back pain fluctuates over time with frequent recurrences and exacerbations.[8] The first review reported

that, after a first episode of low back pain, the proportion of patient who still experienced pain after 12 months was on average 62% (range 42-75%), the percentage who experienced relapses of pain was 60% (range 44-78%) and the percentage who had relapses of work absence was 33% (range 26-37%).[9]

Factors which are associated with low back pain are young age at menarche, irregular or prolonged menstruation, past pregnancy, young maternal age at first birth, and duration of oral contraceptive use, hysterectomy and use of estrogens during menopause.[10] Other factors associated with low back pain are previous miscarriage, presence of endometriosis, clinically suspected pelvic inflammatory disease, caesarean section scar, pelvic adhesions, sexual abuse, anxiety, and depression. Back pain is a commonly described symptom of the premenstrual syndrome.[11]

The aim and objectives of the study was to study the hormonal and reproductive factors associated with low back pain in reproductive female.

METHODS

The present study is a prospective study conducted on 1000 subjects attending department of Upper India Sugar Exchange Maternity Hospital, Department of Obstetrics and gynaecology, GSVM Medical College, Kanpur over a period of 18 months. The subjects were randomly allocated and found 250 patients suffering from low back pain.

Inclusion criterion

1. Women attending outpatient department of obstetrics and Gynecology in UISEMH.
2. All females of age 20-45 yrs. of any religion and socioeconomic status.

Exclusion criterion

1. Women who have attained physiological menopause.
2. Subjects who were not able to communicate because of dialect or hearing problems.

Study protocol

A brief questionnaire was used to screen, among the respondents, the occurrence of low back pain in the past year. The questions included occurrence of low back pain, demographic factors and reproductive health history. Low back pain was identified among subjects who have back pain lasting for more than a day in an area between the lower coastal margin and the gluteal folds with or without radiation into leg to below the knees during the past one year. The anthropometric measurements included measures of body height (cm) and weight (kg) using standard measurement equipment's. Waist and hip circumference (cm) were assessed using a measuring tape while the subject was standing. Other factors evaluated were occupation, education and smoking.

Sociodemographic profile, menstrual and obstetric history were noted and also the use of oral contraceptives.

RESULTS

Table 1: Association of low back pain with anthropometric measures.

Height	No. of subjects	Percentage
Below median (<153cm)	151	60.4%
Above median (>153cm)	99	39.6%
Weight		
Below median (<60kg)	138	55.2%
Above median (>60kg)	112	44.8%
BMI(Kg/m2)		
>25	136	54.4%
<25	114	45.6%
Waist circumference		
<80cm	111	44.4%
>80cm	139	55.6%
Waist-Hip ratio		
<0.8	132	52.8%
>0.8	118	47.2%

Out of 1000 subjects, 250 were patients of low back pain. Majority of patients, 56.8% were in age range of 40-45 years and only 11.6% in 20-30 years of age group. Out of 250, 56.4% belongs to socioeconomic class 1 and 2. Only 73 patients had education of university and above. 24.8% (62/250) were labourers and rest 75.2% had some other occupation. In our study 60.4% (151/250) patients had height below median (153 cm) whereas 39.6% (99/250) had their heights above median.

Similarly 55.2% (138/250) had weight below median (60 kg) and only 44.8% had weight above median.

Patients with BMI (>25kg/m2) were 54.4% and 45.6% had BMI below 25 kg/m2. 111 out of 250 had waist circumference of <80cm and 139 (55.6%) had more than 80cm. Their waist-hip ratio is <0.8 in 132 patients (52.8%).

Majority of patients had more than two parity (64.8%). Patients with vaginal and caesarean delivery were 122 (48.8%) and 128 (51.2%) respectively. 144 patients out of 250 had irregular menstruation. Majority of them (64.8%) had duration of flow of more than 8 days. 164 patients had premenstrual syndrome. 69.2% patients had undergone sterilisation and 41.2% (103/250) were using oral contraceptives. 161 patients had history of abortion and 38.8% patients had pelvic organ prolapse.

Table 2: Association of low back pain with demographic profile.

Age(years)	No. of subjects	Percentage
20-30	29	11.6%
30-<40	79	31.6%
40-45	142	56.8%
Socioeconomic class		
Class 1,2	141	56.4%
Class 3,4,5	109	43.6%
Education		
University and above	73	29.2%
Up to higher education	177	70.8%
Occupation	62	24.8%
Manual labourers Others	188	75.2%

DISCUSSION

The study showed that hormonal and reproductive factors like irregular or prolonged menstrual cycle were associated with low back pain. Estrogen related factors like past pregnancy, young maternal age at first birth, oral contraceptive use were specifically associated with low back pain. Young age at menarche was also associated with low back pain. One theory is that increased estrogen results in increased laxity of joints and ligaments. This increased laxity then leads to LBP.

Like results from other studies, association was found between the number of children and low back pain.[12,13] A previous population based survey found a linear association between the number of live births and chronic low back pain. Results from our study suggest that there is association between the parity and low back pain.

In a population based survey among women younger age at first pregnancy was also associated with a high prevalence of ever having low back pain.[13] Our study shows association between younger age at first pregnancy and low back pain (Table 3).

In 1995, Brynhildsen et al reported that many health professionals believe that there is an association between oral contraceptive uses with low back pain, despite the lack of scientific evidence.[14] Unlike this study our study showed no association between oral contraceptive use and LBP.

We found menarche at young age (<11 years) to be not associated with LBP and irregular or prolonged menstrual cycle to be associated with LBP. Although LBP is positively correlated with menstruation in women and back pain is a common symptom of the premenstrual syndrome, there are only few studies describing the association between the menstrual pattern and musculoskeletal disorders.[12,15]

Table 3: Association of low back pain with reproductive history and hormonal factors.

Parity	No. of subjects	Percentage
<2	88	35.2%
>2	162	64.8%
Type of delivery		
Vaginal	122	48.8%
cesarean	128	51.2%
Menstruation		
Regular	106	42.4%
Irregular	144	57.6%
Length of cycle		
<26 days	32	30.1% (32/106)
26-30	36	33.96% (36/106)
>30	38	35.84% (38/106)
duration of flow		
>8 days	162	64.8%
<8 days	88	35.2%
premenstrual syndrome		
present	164	65.6%
absent	86	34.4%
Sterilisation		
Yes	173	69.2%
no	77	30.8%
Maternal age at first birth (yr.)		
<20	132	52.8%
20-30	97	38.8%
>30	21	8.4%
Oral contraceptives		
Yes	103	41.2%
No	147	58.8%
Age at menarche		
<11	56	22.4%
11-15	143	57.2%
>15	51	20.4%
History of abortion		
Present	161	64.4%
Absent	89	35.6%
Pelvic organ prolapsed		
Present	97	38.8%
Absent	153	61.2%

CONCLUSION

Hormonal and reproductive factors like an irregular or prolonged menstrual cycle are associated with low back pain, suggesting that these factors are associated with musculoskeletal pain in general. Factors related to increased estrogen levels like past pregnancy, young

maternal age at first birth, duration of oral contraceptive use may specifically increase the risk of low back pain. More research is needed to examine these associations and unravel biologic explanations.

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