The Risk Factors of Chronic Low Backache in Patients Presenting to a Tertiary Care Hospital of Pakistan

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ABSTRACT

Objective: To identify the risk factors of chronic low backache in patients presenting to a tertiary care hospital of Pakistan.
Study Design: Cross sectional study.
Place and Duration of Study: Department of Rheumatology, Fuji Foundation Hospital, Rawalpindi Pakistan, from Nov 2018 to Apr 2019.
Methodology: Patients of ages between 18-80 years of ages with mechanical low backache were selected excluding those with malignancy and inflammatory backache. Patient's characteristics including gender, age, education, monthly income, smoking status, exercise, previous back trauma, spinal surgery, posture mostly adopted, sleeping material, body mass index (BMI), and co-morbidities were noted down. For assessment of disability and depression Quebec disability index and patient health questionnaire (PHQ9) were used.
Results: This study included 155 patients with backache with mean age (in years) of 55.45 ± 10.772. Mean duration of backache was 4.78 ± 4.36 years. Most common risk factor for low backache was age >40 years present in 144 patients (92.9%). 136 patients (87.7%) were not doing regular physical exercise.62.5% patients (97) were uneducated and 90 patients (58%) had low income. 82 patients (52.9%) used soft sleeping material. By using Quebec disability index, 57 patients (36.7%) were classified as having severe disability. Mild depression was present in 75 patients (48.3%) when assessed on PHQ-9 scale.
Conclusion: Back pain was caused by many factors. Lack of regular exercise and education, use of soft sleeping material and in appropriate sitting posture can be addressed by education of the patients.

Keywords: Disability, Low backache, Risk factors.

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INTRODUCTION

Chronic low back pain (LBP) is a common health problem resulting in physical disability and also affecting quality of life. People who have chronic backache face great social, mental, physical and occupational challenges.[1] Major musculoskeletal problems which cause disability include rheumatoid arthritis, osteoarthritis, osteoporosis and low back pain.[2]

Lifetime prevalence of low back pain has been estimated to be 65-80%.[3] Prevalence of low back pain in the USA and Australia is 26.4-79.4%.[4] According to a study carried out in Thailand, chronic low back pain is common with 30% prevalence.[5] A study carried out in South Asia shows that prevalence of low backache in Pakistan is 40.6%.[6]

After the common cold, low backache is the second most common cause of sick absences from work, estimated to be 40%.[7]

LBP affects the area between the lower rib cage and gluteal folds and has been divided into mechanical and inflammatory sub-types based on nature. Mechanical backache is defined as the backache which aggravates on activity and improves on rest whereas inflammatory backache worsens with rest. Based on the duration of the symptoms, LBP has been divided into acute and chronic types. Acute low backpain lasts less than 6 weeks and is usually self-limiting whereas chronic low backpain is defined as the one which lasts 3 months or more. Mechanical LBP is caused by infections, tumors, vertebral fractures and degenerative spinal changes whereas inflammatory LBP is caused by spondyloarthropathies.[8] Management of acute low backache is centered on simple analgesia and muscle relaxants, however, chronic backache is managed with analgesics, low dose anti-depressants and additional physical therapy but not without disappointing results.

The economic burden of LBP on society and health budget is immense and continues to rise.Risk factors for causing low backache include modifiable and non-modifiable. Age, parity, previous history of LBP and spinal deformity are classified as non-modifiable risk factors whereas tobacco smoking, obesity, inactive life

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style, drug dependence and occupational and daily life related ergonomics are modifiable ones.[9]

Scarce data is available regarding LBP in resource poor countries like Pakistan. Reason for this may be that when comparing other medical conditions like diabetes mellitus and hypertension, LBP is given little public health importance.[10] This study was carried out to determine various risk factors underlying LBP in Pakistan so that we may address them on time and thus help in management of the patients in reducing their morbidity and promoting disability free life. This study also aims to quantify patient's disability using a validated scale and also assesses patient's depression as a potential risk factor by using a related question naire.

METHODOLOGY

This was a cross sectional descriptive study conducted in the Rheumatology department of Fauji Foundation Hospital (FFH) Rawalpindi Pakistan, from November 2018 to April 2019. Approval was taken from the institutional ethics review board. Patients were selected by non-probability consecutive sampling and informed written consent was taken from the patients. One hundred and fifty five patients were taken and the sample size was calculated using WHO sample size calculator (46.3% anticipated population, 8% absolute precision, 95% confidence interval).[1] Patients having chronic mechanical backache of at least 3 months duration, between 18-80 years were included in the study. Patients who had inflammatory backache, metastatic disease, acute trauma, infections and bed bound status were excluded from the study.

A data collection form was prepared and patient's age, gender, marital status, number of children, duration of LBP, height, weight and BMI were documented. The selected patients were interviewed regarding their occupation, smoking history, working hours, nature of job, regular physical exercise, previous history of back trauma, spinal injection, spinal surgery, sleeping material,monthly income and comorbidities like hypertension, diabetes mellitus, ischemic heart disease, osteoporosis and rheumatoid arthritis. Patient's disability was assessed using Quebec disability index.[11] Similarly patient's depression was assessed using patient health questionnaire-9.[12] Patient's examination of spine, hip and knee was also done in OPD.

The results were analyzed using SPSS version 23. Mean and Standard deviation (SD) were calculated for numeric variables. Percentages were calculated for categorical variables and percentages of patients having spinal deformity, hip disease or knee osteoarthritis and radiological diagnosis of patients (if done) was also noted.

RESULTS

Total number of patients were 155 out of which 45.7% patients were either overweight or obese, 87.7% patients have sedentary lifestyle and hypertension is the most common comorbidity present in 29.7% of patients.

Age more than 40, sedentary life style, uneducated and low income are the most important risk factors for backache according to the study.

Details of the results are shown in the Table-I, II & III.

Table-I: Baseline characteristics of population

Total number of patients n=155. Female=152 (98.1%) Male=3 (1.9%)	Mean ± SD
Age (years) Mean ± SD	55.45 ± 10.77
Duration (years) Mean ± SD	4.78 ± 4.36
BMI (kg/m²) Mean ± SD	25.15 ± 4.43
Quebec Disability Index Mean ± SD	43.31 ± 19.89

Table-II: Baseline characteristics of population.

Base line characteristics	n (%)
Age	
≤40	11 (7%)
>40	144 (92.9%)
Marital Status	
Married	153 (98.7%)
Unmarried	2 (1.7%)
Children	
Nulliparous	8 (5.1%)
1-5	114 (73.5%)
>5	32 (20.6%)
BMI	
<18.5	5 (3.2%)
18.5-24.9	79 (50.9%)
25-29.9	49 (31.6%)
>30	22 (14.1%)
Quebec Disability Index	
0-9 mild	8 (5.1%)
10-30 moderate	37 (23.8%)
31-54 severe	57 (36.7%)
55-75 very severe	47 (30.3%)
76-100 extreme	6 (3.8%)
PHQ-9	
0-4 none	43 (27.7%)
5-10 mild	75 (48.3%)
11-15 moderate	23 (14.8%)
16-20 severe	9 (5.8%)
>20 very severe	5 (3.2%)
Radicular Pain	84 (54.2%)
Smoking	20 (12.9%)
Exercise	
Yes	19 (12.3%)
No	136 (87.7%)

Posture	
Sitting	79 (51%)
Standing	62 (40%)
Lying	9 (2.6%)
Stooping	4 (5.8%)
Trauma history	31 (20%)
History of spinal injection	28 (18.1%)
Spinal surgery	11 (7.1%)
Sleeping Material	Soft=82 (52.9%) Hard=73 (47.1%)
Co-Morbids	
Hypertension	46 (29.7%)
DM	17 (11%)
IHD	5 (3.2%)
Dyslipidemia	6 (3.9%)
RA	6 (3.9%)
Osteoporosis	9 (5.8%)
Examination Findings	
Osteoarthritis Knee	68 (43.9%)
Spinal deformity	12 (7.7%)
Hip disease	3 (1.9%)
Radiological Diagnosis	
Normal	141 (90.9%)
Degenerative spine	9 (5.8%)
Vertebral collapse	3 (1.9%)
Muscle spasm	2 (1.3%)
Education	
Uneducated	97 (62.5%)
Primary	25 (16.1%)
Secondary	9 (5.8%)
Matric	18 (11.6%)
Graduation	5 (3.2%)
Higher	1 (6%)
Monthly Income	
Low	90 (58%)
Moderate	50 (32.2%)
High	15 (9.67%)
Pain VAS	
0-4	8 (5.1%)
5-7	77 (49.6%)
>7	70 (45.1%)
Nature of Job	
Unemployed	82 (52.9%)
Sedentary	61 (39.3%)
Mild active	3 (1.9%)
Moderately active	7 (4.5%)
Very active	2 (1.2%)

DISCUSSION

Low backache (LBP) is a common health problem which is present across the globe. This has got great economic implications stressing importance of risk factors underlying it and addressing them.

Ogunbode[1], Adebusoye and Alonge in a study conducted in Nigeria exploring risk factors for low backache showed that majority of the patients were married (68%), educated (63.1%), had 0 more than 5 children (52.3%), having good income (80%), mostly adopted stooping posture during their daily activities (63.6%), had previous back injury (91.3%),were smokers (91.7%) and were overweight (46.8%).[1] As compared to it, our study showed similar results of 98.7% being married but mostly uneducated (62.5%), having low income (58%), adopted sitting posture mostly during daily activities (51%), only 12.9% were smokers with 20% having back trauma and 50.9%were of normal weight.

Table-III: Common risk factors associated with backache in our population

Common Risk Factors	n (%)
Age>40	144 (92.9%)
Lack of regular exercise	136 (87.7%)
Uneducated	97 (62.5%)
Low income	90 (58%)
unemployment	61 (52.9%)
Soft sleeping material	82 (52.9%)
Sitting posture	79 (51%)
Back trauma	31 (20%)
Spinal injection	28 (18.1%)
Smoking	20 (12.9%)
Spinal surgery	11 (7.1%)

Another study conducted by Gotfryd *et al*,[3] in Brazil revealed mean age of 39.1 years and BMI of 26 kg/m² whereas in our study majority (92.9%) patients were >40 years of age and of normal BMI (50.9%). Although they used different disability index (Oswestry) from ours (Quebec) but their study showed low physical disability in majority (83.3%) as compared to our study which showed severe disability in most (36.7%) of the patients. As far as smoking is concerned 85.2% in this study were non smokers and 87.1% in our study were non smokers. In our study, 48.3% of the patients have mild depression whereas in their study 51.5% were depressed who were having increased physical disability.

A local study,[13] conducted at shifa international hospital Islamabad showed age group of 21-40 years in 48% as compared to our study where 92.9% of the patients were more than 40 years of age. In this study, lack of exercise (76.3%), use of soft mattress (52%), prolonged sitting (50%), hypertension (32.2%) and depression (28.8%) were major identified risk factors. These results are comparable to our study where lack of exercise, use of soft mattress, sitting posture, hypertension and depression were found in 87.7%, 52.9%, 51%, 29.7%, and 48.3% respectively. However, in our study being married (98.7%), uneducated (62.5%) and low income (58%) were also important risk factors.

Considering our study, marital status has been found to be most frequent risk factor as 98.7% were married. As most of our patients were female, this may be due to the fact that they have a tiring routine for many household chores where little importance is given to comfort, posture and exercise. Another reason for it may be that our institution is entitlement based where mostly families of ex-army men come for treatment and hence most patients fall into married category. Similarly increasing age above 40 years is present in 92.9% of the patients. This may be due to the degenerative changes occurring in spine with increasing age.

We also studied various comorbidities found in patients with low backache. Our study showed that 46 of 155 patients (29.7%) had hypertension, defined as systolic blood pressure ≥140 mmHg and diastolic blood pressure ≥90 mmHg. However, a previously study done in Korea in 2015 showed inverse relation of hypertension with low backache.[14] Diabetes mellitus was found in 17 patients (11%) which is consistent with the previous study done in Spain where it was found to 10.9%.[15] Surprisingly, only 12.9% of our patients were smokers which is contrary to previous study done by Lizuka *et al,* which showed increased prevalence of backache in smokers with *p*-value of 0.021.[16] This fact may be due to the fact that most of the patients in our population are females they smoke less as compared to males. Lack of regular exercise has been another important risk factor in our population as it is present in 87.7% of the patients. Previous study done in Japan have also showed less physical activity as a predictor of low backache with *p*-value of 0.003.[17] Regular physical activity has been shown to reduce backache by increasing bloodflow to the soft tissues of the back which helps to hasten the healing process and has also been shown to decrease the pain perception.

Rheumatoid arthritis was found in 3.9% whereas 3.2% of patients had ischemic heart disease. Dyslipidemia was also found in 3.9%of the patients and according to a study done by Brady *et al,* in Australia, increased serum lipid levels cause backache by causing atherosclerosis of the related arteries which results in disc degeneration.[18] 5.8% patients with low backache had osteoporosis which has been shown to as high as 28%in study conducted by Alkozum and collegues.[19] This difference may be due to the fact that patients with osteoporosis usually have back pain after vertebral fracture presenting as acute low backache and our study included patients with chronic backache.

Most causes of low back pain are modifiable ones as shown by this study. Thesecommonly found risk factors can be addressed easily by just educating patients about care observed during their daily life activities. Patients should be advised to remain active and undergo regular physical exercise which will help alleviate symptoms. Similarly work related ergonomics should be emphasized as sitting posture and sedentary job are two important risk factors for this problem found in this study as well as in previous studies.

LIMITATIONS OF THE STUDY

The major limitation of our study was that it is a multicentric study as it has been carried out in a single set up hence inferences involving whole population cannot be concluded. Secondly, most of our patients were females; hence it is difficult to assess risk factors for male population on its basis. Comparison and associations between different risk factors were not donein this study.

CONCLUSION

Back painwas caused by many factors. Age, lack of regular exercise, lack of education, low income, use of soft sleeping material, sitting posture and back trauma have been found to be important risk factors. Most of these can be addressed by education of the patients and thus morbidity due to such a common problem can be reduced.

Conflict of Interest: None.

Author's Contribution

SM: Design of study, data collection, conception, analysis of data, SM: Design, analysis of data, BS: Drafting of abstract, revision of work deign, An: Supervision of work, critical revision, analysis, SS: Design, drafting of work, SS: Acquisition of data, interpretation of data.

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