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Original Research Article

Prevalence of low back ache and disability among the elderly patients attending tertiary care hospital in Andhra Pradesh: a cross-sectional analytical study

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ABSTRACT

Background: Low back pain (LBP) is seen in about 600 million people worldwide. The purpose of the study was to determine the prevalence of LBP and disability among elderly patients.
Methods: This cross-sectional study was conducted at AIIMS, Mangalagiri. A semi-structured interview schedule including sociodemographic details, and the Oswestry low back pain disability questionnaire was used for data collection. Descriptive variables were described as mean±standard deviation, Chi-square and Fisher's exact tests were used to assess associations between variables.
Results: A total of 358 patients participated in the study, and the prevalence of LBP was found to be 61.5% which was higher among females than males. There was moderate disability in 46.4%, and severe disability in 34.5% of our study population.
Conclusions: This study adds to the epidemiological evidence that reveals a high prevalence of LBP and disability among elderly patients. Identified risk factors in this study may also reinforce the importance of setting different interventions and preventive measures to reduce lower back pain risk.

Keywords: Disability, Elderly, Low back pain, Oswestry

INTRODUCTION

Low back pain (LBP) is the pain or discomfort between the inferior gluteal folds and the costal margins, with or without leg pain, is among the common symptoms encountered in primary healthcare setup. It was predicted that by 2050, there will be about 800 million cases of LBP worldwide.[1] Approximately 31.7% of middle-aged and older adults reported low back pain.[2] Almost half of work-related musculoskeletal disorders were reported to be due to low back pain.[3]

About 80% of people experienced back pain at some point in their lives, the point prevalence, annual prevalence and lifetime prevalence of LBP in India was 48%, 51% and 66% respectively.[4] While studies have shown the prevalence of LBP, they have not sufficiently addressed how LBP contributes to functional disability in the elderly.[2,5-7] Considering this, we carried out this study with the aim of determining the prevalence of LBP and disability in elderly patients.

METHODS

Study design and participants

This cross-sectional study was conducted from April to July 2024, involving geriatric patients of both sexes at the

Out-Patient Department of AIIMS, Mangalagiri, Andhra Pradesh. Those participants with a history of back injury, surgery, or inflammation were excluded, and the study was done using purposive sampling technique. A semi-structured interview schedule consisting of sociodemographic details and the Oswestry Low Back Pain Disability Questionnaire was used, and the collected data was kept confidential. Using the OpenEpi, Version 3 tool, a sample size of 329 participants was calculated based on a 31% prevalence and a 95% confidence level. Accounting for a 10% non-response rate, the final sample size was adjusted to 358 participants.

Data collection

After obtaining approval from the Institutional Ethics Committee, informed consent was secured from all participants before data collection. Sociodemographic information was collected followed by the Oswestry Low Back Pain Disability Questionnaire, which evaluated the ten areas affected by low back pain.[8]

Statistical analysis

The primary outcome was the presence of Low Back Pain (LBP) in the past 6 months, and the secondary outcome was disability in elderly LBP patients. Continuous variables are presented as means±standard deviation, and categorical variables as frequencies and percentages. Chi-square, Fisher's exact tests, t-tests, and ANOVA were used for associations. Odds Ratios (ORs) and 95% Confidence Intervals were calculated using binary logistic regression. A 5% significance level was set, and analyses were conducted using Excel.

RESULTS

A total of 358 patients participated in the study. The mean age was 65.55±5.5 years, and the male-to-female ratio was 0.88:1. Socio-demographic characteristics of study sample are mentioned in Table 1.

Among the participants 220 (61.5%) reported LBP for the last 6 months. About 140 (73.7%) of females reported LBP whereas it was 80 (47.6%) in males. About 173 (78.6%) of patients reported LBP sought medical consultation for the same, of which 74% were advised to take medication followed by 28% were advised to take back support,14% with relieving exercises and 5% advised for surgery. About 40% reported sleep disturbances due to LBP.

The results of the bi-variate analyses have showed that a high statistically significant difference was observed between age and presence of LBP ($p<0.001$). Back pain was also significantly high among females than males. Significant difference was observed in perception of stress, presence of any chronic condition (HTN, DM, CVD), regular exercise and LBP. No statistically significant difference was observed with smoking status, regular exercise (Table 2).

Table 1: Sociodemographic characteristics of study sample.

Characteristic	Frequency (%)
Age in years, Mean±SD	65.55±5.5 years
Age categories, N (%)	
Young old (60-69 years)	276 (77.1)
Old old (70-79 years)	75 (20.9)
Very old (>80 years)	7 (2)
Gender, N (%)	
Male	168 (46.9)
Female	190 (53.1)
Marital status, N (%)	
Married	357 (99.7)
Divorced	1 (0.3)
Chronic conditions, N (%)	
Yes	268 (74.8)
No	90 (25.2)
Perceived stress, N (%)	
Never	62 (17.3)
Sometimes	184 (51.4)
Often	45 (12.6)
Always	67 (18.7)
Smoking status, N (%)	
Non-smoker	277 (77.4)
Ex-smoker	25 (7)
Current smoker	56 (15.6)
Regular exercise, N (%)	
Yes	51 (14.2)
No	307 (85.8)

Table 2: Associations between self-reported low back pain and sociodemographic characteristics.

Characteristic	Frequency (%)	Presence of low back pain		P value
		Present (220), N (%)	Absent (138), N (%)	
Age (years)	65.55±5.5	66.03±5.8	64.79±4.7	0.039
Age category				
Young old	276 (77.1)	160 (58)	116 (42)	0.046
Old old	75 (20.9)	55 (73.3)	20 (26.7)	
Very old	7 (2)	5 (71.4)	2 (28.6)	
Gender				
Male	168 (46.9)	80 (47.6)	88 (52.4)	<0.0001

Continued.

Characteristic	Frequency (%)	Presence of low back pain		P value
Female	190 (53.1)	140 (73.7)	50 (26.3)	
Marital status				
Married	357 (99.7)	0	1 (100)	0.206
Divorced	1 (0.3)	220 (61.6)	137 (38.4)	
Chronic conditions				
Yes	268 (74.8)	177 (66)	91 (36)	0.03
No	90 (25.2)	43 (47.8)	47 (52.2)	
Perceived stress				
Never	62 (17.3)	29 (46.8)	33 (53.2)	<0.001
Sometimes	184 (51.4)	114 (62)	70 (38)	
Often	45 (12.6)	35 (77.8)	10 (22.2)	
Always	67 (18.7)	42 (62.7)	25 (37.3)	
Smoking status				
Non- smoker	277 (77.4)	174 (62.8)	103 (37.2)	0.32
Ex- smoker	25 (7)	17 (68)	8 (32)	
Current smoker	56 (15.6)	29 (51.8)	27 (48.2)	
Regular exercise				
Yes	51 (14.2)	22 (43.1)	29 (56.9)	0.002
No	307 (85.8)	198 (64.5)	109 (35.5)	

Table 3: Subgroup analyses of disability among geriatric people with self-reported low back pain.

	No disability (15), N (%)	Mild (10), N (%)	Moderate (102), N (%)	Severe (76), N (%)	Completely disabled (17), N (%)	p value
Age (years)						
Young old	13 (8.1)	8 (5)	83 (51.9)	48 (30)	8 (5)	0.001**
Old old	2 (3.6)	2 (3.6)	18 (32.7)	27 (49.1)	6 (10.9)	
Very old	0	0	1 (20)	1 (20)	3 (60)	
Gender						
Male	10 (12.5)	4 (5)	39 (48.8)	23 (28.8)	4 (5)	0.072**
Female	5 (4.2)	6 (5)	63 (52.5)	53 (44.2)	13 (10.8)	
Marital status						
Married	15 (6.8)	10(4.5)	102 (46.4)	76 (34.5)	17 (7.7)	NA
Divorced	0	0	0	0	0	
Perceived stress						
Never	3 (10.3)	1 (3.45)	19 (65.5)	6 (20.7)	0	0.61**
Sometimes	10 (8.8)	4 (3.5)	52 (45.6)	47 (41.2)	1 (0.9)	
Often	2 (5.7)	2 (5.7)	16 (45.7)	12 (34.3)	3 (8.6)	
Always	0	3 (7.1)	15 (35.75)	11 (26.2)	13 (31)	
Smoking status						
Non- smoker	11 (6.3)	6 (3.45)	82 (47.1)	61 (35.15)	14 (8)	0.24**
Ex- smoker	2 (11.8)	3 (17.6)	7 (41.2)	4 (23.5)	1 (5.9)	
Current smoker	2 (6.9)	1 (3.4)	13 (44.8)	11 (37.9)	2 (6.9)	
Regular exercise						
Yes	12 (55.4)	6 (27.3)	4 (18.2)	0	0	0.18**
No	3 (1.5)	4 (2)	98 (49.5)	76 (38.4)	17 (8.6)	

**P-value obtained from Fisher's exact test.

There was mild or no disability in 11.4% of the 220 patients who reported LBP, moderate disability in 46.4%, and severe disability in 34.5%, and only 7.7% were with complete disability score. Females had moderate to severe categories, and perceived stress levels generally increased mean disability scores (Table 3). The mean scores of disabilities among male and female and the perceived stress is depicted in Figure 1.

Age was associated with the disability score, and an increase in age was observed with an increase in severity (p=0.039). A statistically significant difference in the

disability score was observed with sex, where females were seen more frequently in the moderate and severe categories (p=0.005). No other significant associations were observed. A gradual increase in disability was observed with increasing levels of perceived stress but was not statistically significant (Table 3).

In the simple logistic regression model, age, sex and perceived stress were statistically significant. The multiple logistic regression has found that age was a significant predictor of LBP after adjusting for all other variables (adjusted OR=1.02, 95% CI=1.01-1.06). Similarly, sex was a significant predictor; a more than 2-fold increase in odds for females was observed compared to males (adjusted OR 2.18, 95% CI=1.51-3.12). A significantly increased odds was observed in patients who reported perceived stress all the time compared to those who had never reported stress (adjusted OR = 1.99, 95% CI=1.04-4.19) (Table 4).

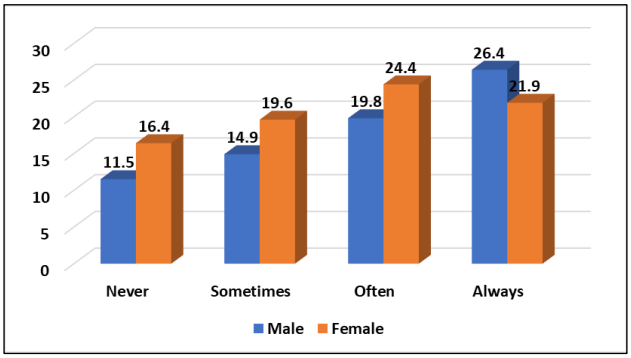

Figure 1: The mean scores of disabilities among male and female and the perceived stress.

Table 4: Unadjusted and adjusted binary logistic regression analysis.

	Unadjusted model			Adjusted model		
Predictors	**Unadjusted OR**	**95% CI**	**p value**	**OR**	**95% CI**	**p value**
Age	1.02	1.01-1.06	<0.001	1.02	1.01-1.06	<0.001
Gender						
Male	Ref					
Female	2.62	1.81-3.71	<0.001	2.18	1.51-3.12	<0.001
Perceived stress						
Never	Ref					
Sometimes	1.49	1.01-2.31	0.03	1.18	0.61-1.82	0.41
Often	3.01	1.51-5.49	<0.001	1.95	1.86-3.28	0.03
Always	3.62	1.82-6.64	0.001	1.99	1.04-4.19	0.03
Regular exercise						
Yes	Ref					
No	1.21	0.91-1.86	0.01	1.11	1.87-1.72	0.19

DISCUSSION

The study aimed to assess the prevalence of LBP among elderly, and it was found to be 61.5% and it also found that the pain intensity increased gradually on increasing age and was more frequent among female participants (73.7%). In contrast, in a study done by Joel et al, the experienced pain intensity gradually decreased in the elderly patients.[9] The discrepancy between the study findings may arise from several factors, including variations in sample demographics, methodological approaches, and cultural perceptions of pain. Additionally, hormonal differences, a higher prevalence of musculoskeletal disorders among women, and age-related physical and physiological changes could also influence pain perception and reporting.[9]

Low Back Pain (LBP) significantly impacts elderly populations globally, reducing mobility, independence, and quality of life, with up to 68.3% affected in low- and middle-income countries, posing major healthcare and socioeconomic challenges.[10-15]

In developing countries, LBP prevalence (33.6%-68.3%) highlights socio-economic factors and healthcare limitations affecting its detection and management.[10-16] Fejer et al report LBP prevalence peaks by age 80, then declines, likely from various factors.[17] A community-based study in Northern India by Bansal et al reported lifetime, point, 1-year, and age-standardized prevalence as 57%, 32%, 48%, and 59%, respectively.[18]

As global life expectancy rises, LBP emerges as a growing public health concern, requiring proactive management to preserve elderly independence.[19] Rising life expectancy and chronic non-communicable diseases contribute to increased morbidity and disability globally.[19] Pain in older adults threatens safety, independence, and self-care, hindering daily tasks, social interactions, and significantly reducing Quality of Life.[20] Coates et al highlight that low ergonomic awareness and limited social security access worsen musculoskeletal disorders.[3] Pain in the elderly should be seen as a continuation from earlier years, despite aging-related pain.[21,22] Treatment approaches were tabulated in Table 5.

Table 5: Treatment approaches.

Treatment approach[23]	Interventions
Medical management	Pain relief medications (NSAIDs, analgesics), muscle relaxants
Physical therapy	Stretching, strengthening exercises, and posture correction
Lifestyle modifications	Weight management, regular physical activity, ergonomic practices
Surgical interventions	Reserved for severe cases like spinal stenosis or herniated discs
Alternative therapies	Yoga, acupuncture, chiropractic care

Our study found that 52.5% of women with LBP had moderate disability, 44.2% severe, and 10.8% reported being crippled. These results align with the similar research carried out by Ahdhi et al and Koley et al.[24,25]

According to Ahdhi et al, age, marital status, education, income, delivery type, children number, daily chores, menopause, and chronic illness significantly correlated with LBP scores ($p<0.001$), with similar studies linking LBP to gender, obesity, and socio-economic factors.[5,7,15,26-28] According to Bansal et al, there was a significant influence of LBP on social life (28%) and depression/psychological issues (24%), as well as sleep (24%).[29]

Lower backache in the elderly significantly affects mobility, quality of life, and independence, with aging increasing degenerative spine conditions and LBP risk.[23]

Primary healthcare systems are crucial in managing LBP in the elderly, with early screening, education, and follow-ups reducing burden. Initiatives like Health and Wellness Centres in India improve access to care.[16,30] Regular exercise, healthy nutrition, weight management, and good posture preserve spinal health, preventing complications and promoting an active, fulfilling life for the elderly.[23,30]

Frailty prevalence in the elderly is strongly linked to age, chronic diseases, and lifestyle choices. Our study suggests these risk factors contribute significantly to the onset and worsening of LBP in older adults.[16,23]

Primary healthcare facilities can manage LBP effectively, but secondary healthcare for referral and coordination is essential. Telemedicine and tele-radiology services are valuable in remote areas for optimal LBP management.

This single centre cross-sectional design comes with the limitations of its own. The recall bias may have had an impact on assessing the severity of the LBP. Similarly, when evaluating the disability, subjective bias might have happened.

CONCLUSION

The study revealed a high prevalence of low back pain, highlighting the importance of addressing it as a significant public health issue among the elderly. To reduce the burden of LBP, interventions and preventive strategies should be tailored to the specific needs of this population, focusing particularly on identified risk factors such as age, gender, and stress. Future research should explore targeted approaches for managing and preventing LBP in order to improve the quality of life for older adults.

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