

The incidence and risk factors of low back pain in rural communities of Bangladesh

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ABSTRACT

Background: Low back pain (LBP) has become a major public health concern. It is a leading cause of activity limitation. The risk variables were not fully examined. **Aim of the study:** The study aimed to assess the prevalence of low back pain (LBP) among middle-aged and elderly rural community participants in Bangladesh, as well as the associated risk factors. **Methods & Materials:** This cross-sectional study was conducted in the Department of Orthopedics & Traumatology, TMSS Medical College, Bogura and Natore Trauma Centre & Hospital, Natore, Bangladesh from January 1, 2023 to January 1, 2025. The study involved 5181 participants. The study measured the prevalence and severity of LBP across time. All data was collected, documented in a Microsoft Excel work sheet, and analyzed using descriptive statistics in SPSS 17.0. **Results:** The average age of the study participants was 57.7 years, with 55.7% being women. Women had a greater lifetime prevalence of LBP (73.1%), compared to men. Women had greater prevalence rates at both the point and 6-month levels. LBP was significantly linked with age, female sex, obesity (point only), and osteoporosis (lifetime alone). LBP was found to be negatively linked with both lifetime and point exercise, as well as point-only manual activity. **Conclusion:** Our findings suggest that the prevalence of LBP in Bangladesh's rural communities is comparable to that of other populations. LBP risk factors include advanced age, female sex, and osteophytes.

Keywords: Low back pain (LBP), risk factors, rural communities.

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INTRODUCTION

Low back pain (LBP) is a significant public health issue in industrialized cultures due to its widespread prevalence and accompanying impairment. It is the largest cause of work absenteeism, resulting in significant healthcare and societal expenditures [1]. The lifetime prevalence ranges from 54% to more than 80%, with a point prevalence rate of roughly 20% in the general population. This makes it the most prevalent musculoskeletal symptom [2,3]. As population aging and economic expansion accelerate in Asian countries like Bangladesh, low back pain is projected to become a significant public health issue worldwide. Rural Asian communities, including China, India, the Philippines, Indonesia, and Pakistan, have reported incidence rates ranging from 4% to 35% [4,5]. The prevalence of LBP varies according on its definition (lifetime vs. 1-year prevalence) and risk factors (e.g., psychosocial and work compensation). A cross-sectional study in Anhui Province, China, found a 1-year prevalence of LBP of 64%. Women of all ages were at a higher risk [2]. Farmers, moderate or heavy physical stress, and exposure to vibration were shown to be related with lower back pain. The study found that the frequency of LBP was comparable in rural Asian and Western populations with similar risk factors. However, most of these reports targeted younger demographics. Previous estimates have underestimated the prevalence and impact of LBP among the elderly, particularly

Asians. However, population aging will have a significant impact on healthcare in the 21st century. There is limited evidence on the risk factors associated with Asian lifestyles and radiographic characteristics in this population. We conducted this study to investigate the prevalence of LBP among middle-aged and elderly rural community inhabitants in Bangladesh. We investigated lifestyle risk variables and the correlation between lumbar spine radiographs and LBP.

METHODS & MATERIALS

This cross-sectional study was conducted in the Department of Orthopedics & Traumatology, TMSS Medical College, Bogura and Natore Trauma Centre & Hospital, Natore, Bangladesh from January 1, 2023 to January 1, 2025. A survey of 5261 participants was conducted using random sampling. After eliminating 80 ineligible or unwilling participants from the LBP study, data for 5181 patients were obtained. To compare normal and LBP participants, continuous variables were assessed using Student t test and categorical variables using Pearson's χ^2 test. Multivariate logistic regression was used to determine odds ratios (ORs) and 95% confidence intervals (CIs) for LBP risk variables, after adjusting for covariates significantly related with LBP in univariate analysis. Logistic regression analysis was performed to discover risk factors that best predict a specific condition among numerous variables. Non-relevant

variables were excluded through adjustment. All data was collected, documented in a Microsoft Excel work sheet, and analyzed using descriptive statistics in SPSS 17.0.

RESULT

Table-I displays the baseline characteristics of the study participants. The average age of the study participants was 57.7 years, with 55.7% being women. Table-2 displays the lifetime, point, and 6-month prevalence of LBP. In this sample,

women had a greater lifetime prevalence of LBP (73.1%), compared to men. Women had greater prevalence rates at both the point and 6-month levels. Next, we assessed risk factors related with LBP. Table-3 shows that after controlling for other factors, LBP was significantly linked with age, female sex, obesity (point only), and osteoporosis (lifetime alone). LBP was found to be negatively linked with both lifetime and point exercise, as well as point-only manual activity.

Table – I: Baseline characteristics of the participants

Variables	Subjects (N = 5181)	Men (N = 2361)	Women (N = 2820)
Age (yr, mean \pm SD)	57.7 \pm 14.4	55.7 \pm 13.8	57.2 \pm 13.0
Body mass index (kg/m ² , mean \pm SD)	24.3 \pm 3.3	23.9 \pm 3.1	24.6 \pm 3.4
Education \geq 12 yr	1751 (33.8)	1043 (44.2)	708 (25.1)
Manual occupation	1918/5178 (37.0)	625/2160 (28.9)	1393/2818 (49.4)
Regular exercise	1881 (36.3)	897 (37.9)	984 (34.9)
Previous or current smoker	1128 (21.8)	929 (39.3)	199 (7.1)
Alcohol	2247 (43.4)	1448 (61.3)	799 (28.3)
Married	4183 (80.7)	2028 (85.9)	2155 (76.4)
Diabetes mellitus	948 (18.3)	436 (18.5)	512 (18.2)
Hypertension	926 (17.9)	368 (15.5)	558 (19.8)
Self-reported hand or knee arthritis	1766 (34.1)	635 (26.9)	1131 (40.1)

Table – II: Prevalence of back pain

Variables	Lifetime Prevalence		Point Prevalence		6-m Prevalence	
	No.	% (95% CI)	No.	% (95% CI)	No.	% (95% CI)
Men (2361)	1501	63.6 (50.8–56.9)	693	29.4 (21.9–25.8)	917	38.8 (36.3–40.8)
Women (2820)	2061	73.1 (65.3–69.2)	1205	42.7 (39.2–43.2)	1489	52.8 (53.3–57.6)
All (5181)	3562	68.6 (59.8–62.7)	1898	36.6 (32.0–34.9)	2406	46.4 (46.5–49.5)

Table – II: Risk factors of low back pain

	Lifetime Odds Ratio (95% CI)			Point Odds Ratio (95% CI)				
	P	Unadjusted OR	P	Adjusted OR*	P	Unadjusted OR	P	Adjusted OR*
Age (yr)								
\geq 50, <60 (vs. \geq 40, <50)	0.488	1.06 (0.90–1.26)	0.217	1.17 (0.91–1.51)	<0.001	1.51 (1.24–1.83)	0.043	1.35 (1.01–1.80)
\geq 60, <70 (vs. \geq 40, <50)	<0.001	1.48 (1.25–1.75)	0.022	1.37 (1.05–1.80)	<0.001	2.33 (1.94–2.80)	<0.001	1.88 (1.39–2.54)
\geq 70 (vs. \geq 40, <50)	<0.001	1.52 (1.26–1.84)	0.064	1.33 (0.98–1.80)	<0.001	3.13 (2.56–3.83)	<0.001	2.37 (1.70–3.29)
Female	<0.001	1.77 (1.56–2.00)	<0.001	1.69 (1.38–2.08)	<0.001	2.24 (1.96–2.56)	<0.001	2.11 (1.69–2.63)
Hypertension	<0.001	1.32 (1.12–1.57)	0.160	1.15 (0.95–1.41)	<0.001	1.50 (1.27–1.77)	0.454	1.08 (0.89–1.31)
Obesity	<0.001	1.37 (1.02–1.84)	0.284	1.22 (0.85–1.76)	<0.001	1.45 (1.24–1.70)	0.002	1.71 (1.21–2.41)
Alcohol	<0.001	0.75 (0.66–0.85)	0.501	1.06 (0.89–1.26)	<0.001	0.59 (0.52–0.67)	0.750	1.03 (0.86–1.23)
Smoking	<0.001	0.73 (0.63–0.85)	0.847	1.02 (0.82–1.27)	<0.001	0.65 (0.55–0.77)	0.611	1.07 (0.84–1.36)
Exercise	0.005	0.83 (0.73–0.95)	0.007	0.81 (0.69–0.94)	<0.001	0.70 (0.61–0.80)	<0.001	0.70 (0.59–0.83)
Diabetes mellitus	0.534	1.05 (0.90–1.23)	0.501	0.94 (0.78–1.13)	0.007	1.25 (1.06–1.46)	0.817	0.98 (0.81–1.18)
Osteoporosis	<0.001	1.84 (1.59–2.13)	0.029	1.24 (1.02–1.50)	<0.001	2.18 (1.89–2.51)	0.191	1.14 (0.94–1.38)
Manual work	0.658	1.03 (0.91–1.17)	0.882	1.01 (0.85–1.20)	0.767	1.02 (0.89–1.16)	0.047	0.84 (0.70–0.99)
Self-reported hand and knee arthritis	<0.001	1.47 (1.27–1.70)	0.136	1.14 (0.96–1.36)	<0.001	1.70 (1.47–1.97)	0.376	1.08 (0.91–1.30)

DISCUSSION

In this study of middle-aged to elderly people in Bangladesh, the lifetime prevalence of LBP was 68.6%, with women having a greater prevalence than men. In addition, high-grade LBP was significantly more prevalent in women. Risk factors for LBP include senior age, female gender, and Asian lifestyle habits such as squatting and sitting without back support. Comparing the prevalence of LBP across epidemiological studies is difficult due to variances in study population demographics, a lack of a consistent case definition, and methodological variability. While few researches have focused on the epidemiology of LBP in underdeveloped nations, emerging data indicates a significant incidence [6]. Our findings align with previous research, which found a point prevalence of 34.1% among rural Tibetan people and a lifetime prevalence of 61% among Chinese laborers in Shanghai. However, our study included more advanced-aged subjects than prior investigations [7]. Women are more likely to experience LBP and disability, while being less likely to engage in hard manual labor, as documented in previous studies. Our findings support this [8]. Our study found that the prevalence and severity of LBP differed significantly between genders and by age. There is controversy about whether the prevalence of LBP diminishes in the elderly. Research suggests that persons of working age are more vulnerable, and the prevalence of LBP decreases after the sixth decade [9,10]. Studies on working populations may be biased because to the "healthy worker effect," which occurs when people with LBP are excluded from the workforce [11]. A recent comprehensive study found that the prevalence of benign LBP reduced with age after reaching a high in the sixth decade, but severe LBP increased with age [12]. Our study focused on individuals over 40 years old, and neither gender's lifetime or point prevalence peaked at a younger age. The ongoing growth in LBP among our population may be due to the exclusion of those under 40 years old, as well as variances in genetics, lifestyle, and cultural background. Severe LBP became more common among women as they aged, indicating that it may become a significant health issue for this demographic. Many occupational activities, including standing, walking, lifting, pushing/pulling, and carrying, have not been linked to lower back pain, according to recent systematic evaluations [13, 14, 15].

Limitation of the study:

Because the study location was chosen especially, the findings may not accurately reflect the overall picture.

CONCLUSION & RECOMMENDATION

Our study concludes that the frequency of LBP among Bangladesh rural community people is equivalent to other population groups. Risk factors for LBP include advanced age, female sex, osteophytes. To verify the cause-and-effect relationship, a prospective longitudinal study should corroborate the risk factors revealed in our cross-sectional research.

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