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Demographic Profiles of Prolapse Lumbar Intervertebral Disc (PLID) Patients attended at a Tertiary Care Hospital in Dhaka City

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Abstract

Background: Prolapse lumbar intervertebral disc (PLID) can occur in different age and gender patients. **Objective:** The purpose of the present study was to observe the demographic profiles of prolapse lumbar intervertebral disc (PLID) patients. **Methodology:** This cross-sectional study was carried out in the department of Neurosurgery at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from March 2006 to October 2007 for a period of one and half year. Prolapse lumbar intervertebral disc (PLID) patients who were admitted in the Department Neurosurgery at BSMMU, Dhaka, Bangladesh after clinical and radiological evaluation were selected as study population. Age, sex, occupations of the patients were recorded. **Results:** A total number of 59 PLID patients were recruited of this study. Among them 54 cases were male and the rest 5 cases were female patients. The mean age of the patients was 40.8±11.9 years and the lowest and highest ages were 21 and 65 years respectively. The male to female ratio was 11:1. Nearly 55.0% cases of the patients engaged with manual work and the rest 45.8% cases were non-manual worker. **Conclusion:** In conclusion young adult male patients engaged in manual works are the most commonly suffering from PLID. *[Journal of National Institute of Neurosciences Bangladesh, July 2024;10(2):83-86]*

Keywords: Demographic profiles; prolapse lumbar intervertebral disc; PLID

Introduction

Low back pain is the second leading cause of doctor visits each year which is afflicting over 65 million[1]. The precise cause of back pain is largely unknown; however, degeneration of the intervertebral disc has been implicated as a possible source[2]. It is known that disc degeneration begins with changes in the biochemical content of the nucleus pulposus. However, little is known about the mechanism by which degeneration progresses, leading to structural damage and tears in the annulus fibrosus[3].

Low back problems are one of the most prevalent health care challenges worldwide[4]. For working adults, low back pain is the most common ailment causing disability for men and women less than 45 years of age[5]. On any given day, up to 2% of US population is disabled by back pain; half of these victims are chronically disabled and half are temporarily disabled by their symptoms[6].

In the United Kingdom, approximately 20 million working days are lost each year because of low back pain[7]. Low back pain accounts for 30 to 40% of time lost due to industrial injury[4]. It is generally agreed that the heavier the work, the more likely it is that back pain will develop. However, the mechanisms that cause low back pain are poorly understood[3]. The purpose of the present study was to observe the demographic profiles of prolapse lumbar intervertebral disc (PLID) patients.

Methodology

Study Settings and Population: This was a cross-sectional study. This study was carried out in the Department of Neurosurgery at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh from March 2006 to October 2007 for a

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period of one and half year. PLID patients who were admitted in the Department Neurosurgery at Bangabandhu Sheikh Mujib Medical University, after clinical and radiological evaluation. Patients who were clinical diagnosis of PLID and MRI done for confirmation were selected as study population.

Study Procedure: Convenient and purposive sampling was applied. Clinical diagnosis of PLID patients but refuse MRI for confirmation were excluded from this study. Age, sex, occupations of the patients were recorded. The research protocol was approved by the department of Neurosurgery, BSMMU. One admission, detailed history of the patients was taken and thorough general and neurological examinations were performed by the researcher. Then the data collection sheet was filled accordingly.

Statistical Analysis: Statistical analysis was performed by Windows based software named as Statistical Package for Social Science (SPSS), versions 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.). Continuous data were expressed as mean, standard deviation, minimum and maximum. Categorical data were summarized in terms of frequency counts and percentages. Chi-square test was used for comparison of categorical variables and Student t test was applied for continuous variables. Every efforts were made to obtain missing data. A two-sided P value of less than 0.05 was considered to indicate statistical significance. Differences between case and control were tested.

Ethical Consideration: All procedures of the present study were carried out in accordance with the principles for human investigations (i.e., Helsinki Declaration) and also with the ethical guidelines of the Institutional research ethics. Formal ethics approval was granted by the Ethics Review Committee of Local Institute. Participants in the study were informed about the procedure and purpose of the study and confidentiality of information provided. All participants consented willingly to be a part of the study during the data collection periods. All data were collected anonymously and analyzed using the coding system.

Results

A total of 59 hospital-admitted cases of PLID were included in the study. Of the 59 patients 20.3% cases were below 30 years, 8.5% cases were in between 30 to 35 years, 15.3% cases were in 35 to 40 years, another 15.3% were in 40 to 45 years and 40.7% cases were 45 or above 45 years of age. The mean age of the patients was 40.8 11.9 years and the lowest and highest ages were 21 and 65 years respectively (Table 1).

Table 1: General Characteristics of the Patients (n = 59)

Age Group	Frequency	Percent
Less Than 20 Years	0	0.0
20 to 25 Years	4	6.7
25 to 30 Years	8	13.5
30 to 35 Years	05	8.5
35 to 40 Years	09	15.3
40 to 45 Years	09	15.3
More Than 45 Years	24	40.7
Total	**59**	**100.0**

* Mean age = (40.8 ± 11.9) years; range = (21 - 65) years

Majority (92%) of the patients were male and only 8% were female. The male to female ratio was 11:1 (Figure I).

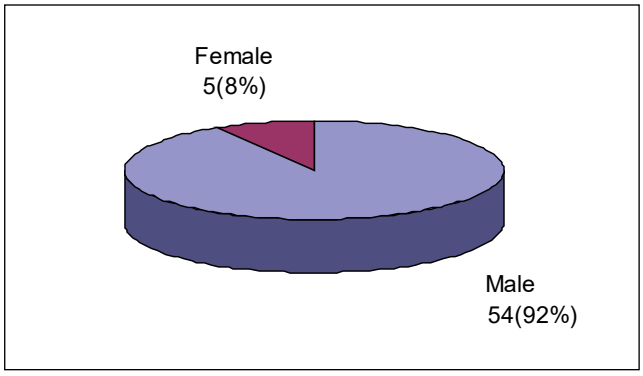

Figure I: Distribution of Patients by Gender (n = 59)

Nearly 55.0% cases of the patients engaged with manual work and the rest 45.8% cases were non-manual worker (Table 2).

Table 2: Distribution of Patients by Occupation (n = 59)

Occupation	Frequency	Percent
Manual worker	32	54.2
Non-manual worker	27	45.8
Total	**59**	**100.0**

Discussion

A total number of 59 hospital-admitted cases of PLID were included in the study. Of the 59 patients 20.3% were below 30 years, 8.5% were in between 30 to 35 years, 15.3% were in 35 to 40 years, another 15.3% were in 40 to 45 years and 40.7% were 45 or above 45 years of age. The mean age of the patients was 40.8±11.9 years and the lowest and highest ages were 21 and 65 years respectively.

Lumbar disc herniation occur most commonly from 3rd to 5th decade with peak incidence in the 4th decade of life and less commonly in the 6th and 7th decade (Hardy & Ball). Lumbar disc herniation is the most common at the level of L4 to L5 and L5 to S1 levels. Less than 5% of disc herniation occur at L1, L2 and L3 levels. The earliest evidence of root involvement, in a lumbar disc prolapse, is radiating pain along the course of the sciatic nerve, commonly called sciatica[8].

The present study showed that the mean age of the PLID cases was 40.8 years with lowest and highest ages were 21 and 65 years respectively which is consistent with the findings two other studies where mean ages of the study patients were 42.9 years and 41.6 years respectively[9-10]. Lumbar disc herniation in childhood and adolescence is a relatively rare condition. Only 1 to 3% of lumbar disc herniation occurs in individuals under 21 years of age[11]. This is usually a consequence of aging processes and the abnormalities are confined to the structures of the disc itself. The diminution in disc height follows a reduction in the water content and may start early as third or fourth decade[12].

Gender distribution of the lumbar disc prolapse in the United States and other developed countries is almost equal[13-14] which sharply contrast with male, female ratio (11:1) observed in the present study. The reason of such wide variation in male to female ratio is likely due to proportionately higher bed allocation for male in the neurosurgery ward. Besides this, in the sociocultural context of our country female patients get less preference for sophisticated medical treatment which might be another reason of low inclusion of female patients in this study.

Men particularly those involved in heavy manual labour and those with a weak general constitution, are more commonly affected than women[12]. In this study nearly 55% of the patients were manual worker. Mechanism of development of PLID is mechanical stress to the spine which accelerates the development of disc degeneration and increases the risk for disc herniation[15]. Heavy lifting, repeated loads to the spine from manual handling of material, work postures incurring postural stress and whole-body vibration associated with driving all are predisposing factors for lumbar disc prolapse[12].

Conclusion

In conclusion young adult age patients are most commonly reported about PLID. Furthermore, male patients are predominant than female. The patients who work manual are the most commonly suffering from PLID. This is a small-scale study. Therefore, a large-scale study should be conducted for real scenario.

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Conflict of interest
There is no conflict of interest relevant to this paper to disclose.

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Contribution to authors
Ali MR, Chowdhury AA, Haque MM contributed from the protocol preparation, data collection, statistical analysis up to report writing. Manuscript writing was performed by Ali MR; Hossain MI, Khaled Ahmadur Rahman KA, Howlader MRA involved in supervision of the research work and revision of manuscript. All authors read and approved the final manuscript.

Data Availability
Any inquiries regarding supporting data availability of this study should be directed to the corresponding author and are available from the corresponding author on reasonable request.

Ethics Approval and Consent to Participate
Ethical approval for the study was obtained from the Institutional Review Board. As this was a prospective study the written informed consent was obtained from all study participants. All methods were performed in accordance with the relevant guidelines and regulations.

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Contribution to authors
Ali MR, Chowdhury AA, Haque MM contributed from the protocol preparation, data collection, statistical analysis up to report writing. Manuscript writing was performed by Ali MR; Hossain MI, Khaled Ahmadur Rahman KA, Howlader MRA involved in supervision of the research work and revision of manuscript. All authors read and approved the final manuscript.

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