

# Prevalence and Associated Factors of Back Pain among Medical Students in Sudan

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## Abstract

**Background:** Back pain affects old and young adults, and it is a common complain among medical students. **Objective:** To estimate the prevalence of back pain and associated factors among medical students in Sudan. **Method:** An observational multi-universal cross-sectional study was conducted from December 2021 to February 2022, involving 433 medical students selected by simple random sampling. Data were collected by electronic Google Form questionnaire designed to assess demographic features, back pain characteristics, and triggering factors. Data analysis was done by statistical package for social sciences. **Result:** The prevalence of back pain among medical students in Sudan is 69.3%, with a statistically insignificant difference between pre-clinical and clinical students (*p value*: 0.378), and between male and female students (*p value*: 0.826). The lower back is the commonest site of pain (75%). The majority of the students experience moderate pain (53.9%). They did not use medications (81%). Sitting for long hours is the most common trigger (87.9%) and the pain did not interfere with the daily activities (71%). **Conclusion:** Back pain is a common complain among medical students in Sudan. Medical schools should raise the awareness of the students about back pain.

## Keywords

Back Pain, Medical Students, Medical School, Sudan

## 1. Introduction

Back pain affects older and younger adults, and it is a common complain among students [1]. In a comprehensive search of all accessible bibliographic databases, the

pooled lifetime, annual and point prevalence of low back pain in Africa was 47% (95% CI 37; 58), 57% (95% CI 51; 63), and 39% (95% CI 30; 47), respectively [2].

Across the western world, it is believed that most people would experience back pain during their lives, with a prevalence of 70% - 95% according to different studies [3] [4]. Fortunately, most cases of acute pain improve within one month of onset [5].

In a European study, lifetime prevalence was estimated from 59% to 90% and the incidence of low back pain in any one year was 5%. However, one third of sufferers reported persistent back pain one year after an acute episode, and 20% of those participants reported a substantial limitation in activity [6].

Medical students are more vulnerable to back pain due to stress and several hours of training and studying [1]. The curriculum in medical colleges is associated with long study hours leading to the sedentary lifestyle of medical students and thus making them prone to repeated episodes of back pain. Also, with the increased use of computers and laptops, physical activity is decreased among undergraduate students. Bad postural habits during the study may also contribute to the prevalence of back pain [7] [8].

The goals of a medical school are to produce competent, professional doctors and promote the health care of society. But during the period of medical training, students are exposed to stress, study problems, and long training hours in hospital wards and clinics [9] [10].

Although it is a serious problem, there are no certain figures or any significant data about back pain among medical students in Sudan. So, the purpose of this study is to evaluate the prevalence of back pain and associated factors among medical students in Sudan.

## **2. Materials and Methods**

### **2.1. Study Setting**

This study was done at the faculties of medicine of Aljazeera University, Omdurman Islamic University, Elneleen University, Khartoum University, and Elimam El Mahdi University, in the period from 22 November 2021 to 22 February 2022.

### **2.2. Study Design**

This is a multi-universal observational descriptive cross-sectional study.

### **2.3. Study Population**

All medical students (from 1<sup>st</sup> to 5<sup>th</sup> or 6<sup>th</sup> year) in the above-mentioned settings with the exclusion of students who have a history of accident or trauma and those who suffer from back pain with constitutional symptoms. The target population was 1520 students.

### **2.4. Sample Size**

The sample size is 433 medical students which is taken by simple random sam-

pling. We used Slovin's *formula* ( $n = N/(1 + Ne^2)$ ) to calculate the sample size, where  $n$  is the sample size,  $N$  is the population size, and  $e$  is the margin of error.

## 2.5. Data Collection

The researcher collect the data through an electronic Google Form questionnaire, which is structured into three sections; A for socio-demographic data, B for characters and triggers of back pain such as the history of physical trauma and family history of musculoskeletal disorders, and C for the impact of back pain. We informed the students using social media groups.

## 2.6. Data Analysis

We use Statistical Package for social sciences (SPSS) version 24 for data analysis. The categorical and numerical variables are described by frequency and percentage, and mean  $\pm$  standard deviation, respectively. Chi-square test is used for cross tabulation of variables and  $p$  value of .05 is considered as significance level.

## 2.7. Variables

The variables are age, gender, level of education, presence of back pain, history of back trauma, a previous doctor visit for the pain, any medication used for the pain, history of back pain before entering the university, and family history of back pain. A numerical Rating Scale (NRS) was used to describe intensity of pain where zero indicates no pain and 10 indicate the most worst of pain [11].

## 2.8. Ethical Consideration

The research unit ethics committee of the faculty of medicine, Omdurman Islamic university approved this study. Informed written consent was taken from all the participants

## 3. Results

Our study was conducted on 433 students. The age of the students range between 17 - 21 years old (Mean =  $19 \pm 2.5$  SD). Only 133 of the participants (30.7%) denied any history of back pain. 300students (69.3%) confirmed the history of back pain during years of study.

56 students (18.7%) are males, and 244 (81.3%) are females. (51%) are clinical phase students, while (49%) are preclinical students.

The prevalence of back pain among medical students is 300 (69.3%) (**Figure 1**). 222 (74%) of them have lower back pain, while 78 (26%) of them have upper back pain.

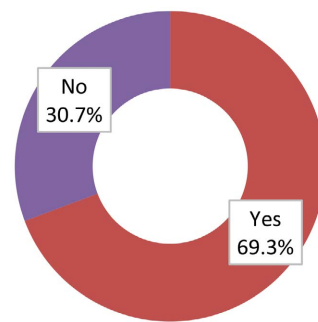
144 students (48%) suffer from back pain for weeks, 75 students (25%) for months, and 81 students (27%) for years.

The intensity of back pain is reported as follow:113 (37.7%) mild, 160 (53.3%) moderate, 22 (7.3%) severe, 5 (1.7%) very severe. 56 students (18.7%) received medical care for their back pain., 28 of them (50.0%) used medication, while 9 of

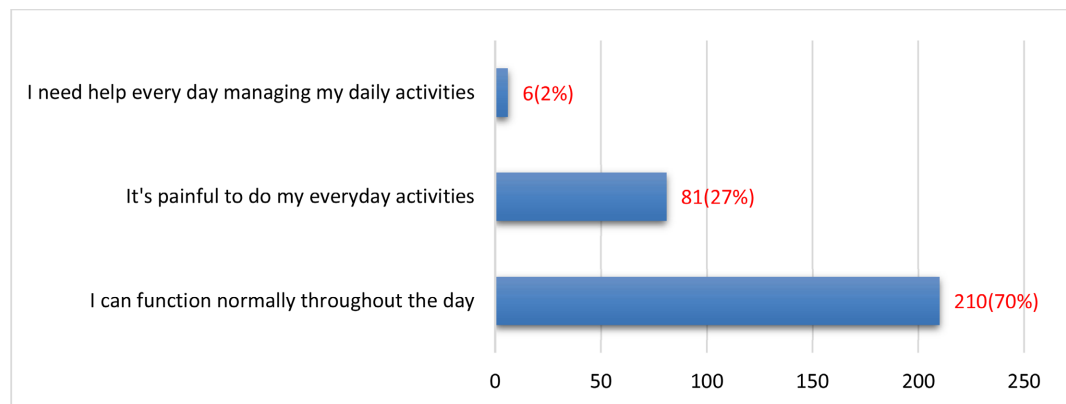
them (16.1%) received physiotherapy and 19 of them (33.9%) had both. The majority of the sufferers (77 students; 25.9%) reported back pain during their first year.

In terms of daily activities, low back pain impacts 87 students (29.3%); 81 of them (27.3%) experienced pain in everyday activity, and 6 students (2%) had needed help to manage their daily activities (**Figure 2**). Regarding the academic performance, 77 students (25.9%) feel that the pain had affected their studies; (**Figure 3**) 24 of them (31.6%) have difficulties in sitting for a long period in classrooms, and 52 of them (68.4%) were no longer able to sit for long hours while studying.

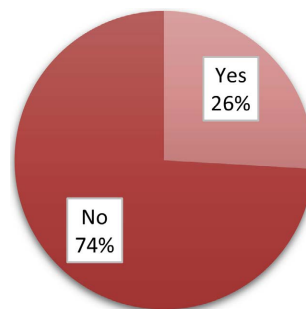
The study revealed that the preclinical students experience back pain more frequent than clinical students, but it is statistically not significant ( $P$  value =



**Figure 1.** Prevalence of back pain among medical students.



**Figure 2.** The impact of back pain on medical students.



**Figure 3.** The impact of back pain on medical students' academic performance.

0.378) (**Table 1**). The same result appears when cross tabulating gender with back pain. Female students complain more frequent than male students but still it is statistically insignificant ( $P = 0.826$ ) (**Table 2**).

The pain triggers that were included in the study are sitting for a long time, standing for a long time in clinical rounds, having too many stairs to climb in their faculties, and stress during the exam period.

#### 4. Discussion

Lower back pain has the highest burden related to disabilities worldwide. Our study is a cross sectional study conducted to evaluate the prevalence of back pain among medical students in Sudan. This study is the first of its kind in the country.

The current study finds that the prevalence of back pain was 69.3% of all questioned students out of which 61.6% reported having back pain at the time of data collection. This comes in agreement with the result of the medical college in Delhi where the prevalence was 33% [11].

Our study exhibits a statistically non-significant relationship between the prevalence rate for men and women (18.7%, 81.3, respectively), which agreed with the paper in the Journal of Pakistan Medical Association [12]. In our study this could be referred to the fact that most of the participants were of the female gender.

**Table 1.** Cross tabulation between educational level and back pain.

|              |       | Do You suffer from back pain Nowadays |          | Total  | Chi-Square P -Value |
|--------------|-------|---------------------------------------|----------|--------|---------------------|
|              |       | Yes                                   | No       |        |                     |
|              |       | Educational Level                     | Clinical | N      |                     |
| %            | 30.3% |                                       |          | 20.2%  | 50.5%               |
| Pre-Clinical | N     |                                       | 93       | 54     | 147                 |
|              | %     |                                       | 31.3%    | 18.2%  | 49.5%               |
| Total        | N     | 183                                   | 114      | 297    |                     |
|              | %     | 61.6%                                 | 38.4%    | 100.0% |                     |

**Table 2.** Cross tabulation between gender and back pain.

|        |       | Do You suffer from back pain Nowadays |       | Total  | Chi-Square P-value |
|--------|-------|---------------------------------------|-------|--------|--------------------|
|        |       | Yes                                   | No    |        |                    |
|        |       | Gender                                | Male  | N      |                    |
| %      | 10.5% |                                       |       | 8.1%   | 18.6%              |
| Female | N     |                                       | 151   | 90     | 241                |
|        | %     |                                       | 51.0% | 30.4%  | 81.4%              |
| Total  | N     | 182                                   | 114   | 296    |                    |
|        | %     | 61.5%                                 | 38.5% | 100.0% |                    |

In line with another study, The current study finds that the prevalence of lower back pain among medical students is 74,7%, which is nearly the same as that reported at Paracelsus medical university and the University of Salzburg, Austria (72.1%) [13].

In this study, 93.3% didn't have a history of back injury. This is in disagreement with the study of Dighriri *et al.*, which shows that a history of trauma is a risk factor for back pain [14].

In the current study, 86% of students have reported no previous history of back pain. This comes in disagreement with medical students in Malaysia which showed that 230 out of 339 students reported a previous history of back pain [15].

In terms of chronicity and intensity, our study shows that the majority suffer from back pain for a short period (38.4%). Also, 53.9% have a moderate intensity of pain. Unfortunately, the majority didn't seek medical care; this could be referred to the busy schedule of medical students.

According to our study, (51%) have started suffering from back pain in pre-clinical years. A study conducted among medical students in Malaysia also showed the prevalence of low back pain during the pre-clinical years more than in clinical years(53.6% and 14.5% respectively) [15].

The main triggering factor is sitting for a long time (87.9%), in comparison with a study in Zigzag University which found a significant association between prolonged sitting and lower back pain [16].

Concerning affection for daily performance, 70.7% reported that they can function normally throughout the day. This comes in contrast with a study done in Belgrade (Serbia) that found that back pain significantly affects their everyday functioning and mood [17].

Our data provide some interesting findings, that even with the presence of the back pain. This had not affected the academic performance of 74.1% of the participants. In conclusion, the majority (83.3%) consider back pain as a great deal.

Regarding limitations, this study has been taken in only three states, which can't be taken as representative of all medical students in Sudan. Also, factors such as pain intensity, triggers, and impact on daily activities and academic performance were based on self-report and information bias is probably present.

## 5. Conclusion

The prevalence of back pain is high among medical students in Sudan which significantly affects their daily activities. Lower back pain is more common than upper back pain and most of the students consider it a great matter in their life. The study provides a useful insight into the problem of back pain among medical students.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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