

Frequency of Non-Specific Lower Back Pain in Female University Students due to Conventional Classroom Seats

Samraiz Mughal¹, Sahreen Anwar², Wajda Parveen³, Abdul Hafeez⁴

¹Research Officer, Department of Physical Therapy, GC University Faisalabad

²Assistant professor, Head of physical Therapy, Independent Medical College Faisalabad

³Assistant Professor, Sialkot College of Physical Therapy

⁴Lecturer, Abwa Medical College, Faisalabad

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⁴Conception and design, Acquisition of Data

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Address of Correspondence

Samraiz Mughal

Email: sahreenanwar@yahoo.com

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A B S T R A C T

Background: In the present era, low back pain (LBP) is one of the destructive health problems. It affects large number of people and accounts for huge economic loss. Students remain seated during lectures and other lab work for a considerable time period. Despite of other factors, type of the seat/chair being used, duration of sitting and body posture also contributes to cause backache. Poor design of classroom furniture causes musculoskeletal loads and strains resulting in the decline of health and reduced productivity of students.

Objective: The objective of this study was to find the Frequency of low back pain in female university students of Pakistan due to improper seats.

Material and Methods: This is a cross-sectional study conducted in different universities of Punjab, Pakistan. 300 Female university students of age 18-28 were included in the study through purposive sampling method. Data was collected through a customized questionnaire. Data collected was analyzed through SPSS version 23 for frequency distribution and graphical representation.

Results: Results revealed that out of 300 participants 68% suffered from back pain, out of which 49% suffered from lower back pain and 19% suffered from upper back pain. 78% students were using wooden seats and 21% were using plastic seats. 70% students stated that they are more comfortable in using plastic wear seats and type of seat is a major contributor in back pain along with sitting hours.

Conclusion: The study effectively depicts that there is high frequency of non-specific LBP in female university students due to conventional classroom seats/chairs. This phenomenon needs further investigation so that this major contributing factor can be addressed.

Introduction

Low back pain is leading cause of disability and putting a lot of burden on health system in industrialized countries. More than 50% of the adult population suffer from low back pain in their life, 33% people working in office environment experience back pain at any time of their career.^{1,2} Lower Back pain is a big challenge for researchers and clinicians because of limited success in finding appropriate treatment, variation in course and prognosis, variation in clinical presentation, no unanimous clinical classification or methodology to

diagnose. But new research has found large number of researches and trials for risk factors, supportive therapies and treatment of backache.³

Students remain seated in classroom for a long period of time.⁴ Recent studies has proved that sitting for extending period in static, stooped or otherwise awkward posture in classroom increases stress to spinal structures^{5,6} and increase in cervical and upper back pain as well as lower back pain (LBP) among teen agers.^{7,8}

Long term static posture while sitting in the class exerts abnormal load on soft tissue structures, on the lumbo sacral spine and spinal disc.⁹ Health problems due to poor sitting have been increased recently Back pain is common among students. Such problems occur due to ill-fitted improperly designed classroom tables and chairs. Non comfortable classroom furniture for the students results in bad postures while sitting.^{10, 11}

Bernard *et al.* has found the association between works related Musculoskeletal disorders of the upper extremity, low back pain, and physical factors at work. According to hundreds of studies reviewed by them an awkward posture is strongly associated with low back pain.¹²

A growing number of new cases of backache in young adults are being noted in modern day clinical setting. The purpose of this study is to find the prevalence of lower back pain in university students due to the ergonomically uncomfortable classroom chairs and to make a comparison of most commonly used classroom seats as a factor for causing LBP.

Methodology

It was a cross sectional study design. The study was started in September 2018 and completed in January 2019. Purposive sampling technique was used. Data was collected from Government College University Faisalabad, University of Agriculture Faisalabad and Govt. College Women University Faisalabad. Sample size was calculated through effect size sampling technique .300 female students participated in the study. A customized questionnaire was used for data collection. Questions related to demographics, pain location, pain intensity, aggravating and relieving factors, type of seats being used by the student, duration of sitting, posture of sitting and recommendations for betterment were added in the questionnaire. Data was checked for normality through Shapiro-Wilks test. As data was normally distributed, descriptive statistics applied through SPSS 23 software.

Inclusion and Exclusion Criteria: Regular female university students between age 18-28 years of age, and who suffered from low back pain in last 6 months were included in the study. Any student with inflammatory arthropathy, spinal tumor or back pain due to any sort of trauma was excluded from the study.

Results

The total sample of the study was 300. Results revealed that out of 300 participants 68% (n=204) suffered from back pain, out of which 49% (n=147) suffered from lower back pain and 19% (n=57) suffered from upper back pain. The study sample of this study revealed that out of high percentage of people suffering from back pain 78% (n=237) students were using wooden seats in form of wooden chairs 30.7% (n=92), wooden benches 34.3% (n=103) and wooden stools 14%(n=42) and 21% (n=63) were using plastic seats. 70% students stated that they are more comfortable in using plastic wear seats and type of seat is a major contributor in back pain along with sitting hours. Details of the location of pain and type of seats used by the student are explained in Table I, and Table II respectively.

Table I: Location of discomfort or pain?

	Frequency	%	Valid Percent	Cumulative Percent
Low back	147	49.0	49.0	49.0
Upper back	57	19.0	19.0	68.0
Neck	75	25.0	25.0	93.0
Pelvis	21	7.0	7.0	100.0
Total	300	100.0	100.0	

Table II: Type of seats used in class.

	Frequency	%	Valid Percent	Cumulative Percent
Plastic	63	21.0	21.0	21.0
Wooden chair	92	30.7	30.7	51.7
Wooden bench	103	34.3	34.3	86.0
Wooden stool	42	14.0	14.0	100.0
Total	300	100.0	100.0	

Discussion

Currently lower back pain (LBP) is one of the leading causes of absence from work. Humans spend approximately 8 to 25 years of their life in educational environment and most of the educational activities are conducted in sitting position.¹³ When assumed for longer period of sitting time, body posture as well as the type of chair or seat put considerable load to the lumbar spine. Above other factors that contributes to backache (age, gender, physical and sports activities, food, psychosocial habits, poor posture and others), type of seat/chair and other classroom furniture contributes to posture problems,

backache and sitting discomfort.¹⁴ Dia Shehab *et al.* in 2004 conducted a prevalence study in Kuwaiti school children in Hawalli Governorate to measure the magnitude of Low Back Pain, having sample size of 400(199 males and 201 females) of age 10-18, showed that 237 students (57.8%) having suffered low back pain at some time in their life (Males 50.8% and 64.7% females). Prolong static sitting on an uncomfortable chair exerts negative load on the spine. Biomechanically, increased spinal load causes increase in these negative effects lead to the anatomical, physiological and psychological problems. Conventional classroom seats and desks not only contribute to backache, defective posture, increased muscle tension and fatigue but also decline the academic performance, learning and motivation of students.¹⁵

Class room environment in university is not supporting enough to sit comfortably for long duration because it causes discomfort which leads to chronic low back pain in students as they have to sit daily 5 hours on same type of seating arrangement.¹⁶

Students remain seated during lectures and other lab work for a considerable time period. Despite of other factors, type of the seat/chair being used, duration of sitting and body posture also contributes to cause backache. Poor design of classroom furniture causes musculoskeletal loads and strains resulting in the decline of health and reduced productivity of students.¹⁷ Prolong sitting in classroom increases stress to spinal structures which ultimately leads to increase in muscular stress resulting in back pain. Nonadjustable conventional classroom furniture forced the students to adopt bad postures while sitting.¹⁸ Ramadan MZ explained that classroom furniture and the anthropometrics of students were not matched.¹⁹

Conclusion

The study concluded that there is high frequency of non-specific LBP in female university students due to conventional classroom seats/chairs. The pain was more associated with hard wooden benches, chairs and stools.

This phenomenon needs further investigation along with sitting duration, sitting with and without back support so that these leading contributing factors can be addressed.

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