



ASSESSMENT OF PAIN AND FUNCTIONAL DISABILITY IN PHARMACY STUDENTS BY USING MODIFIED OSWESTRY LOW BACK PAIN DISABILITY INDEX

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Abstract

A Pharmacy institute is a specialized educational institution focused on training and educating future pharmacists and pharmaceutical scientists. Pharmacy students, spanning from first to fourth year across four batches, often find themselves grappling with the challenge of standing for extended periods during practical sessions. This demanding aspect of their academic journey can lead to an increased risk of low back pain. As these dedicated students engage in hands-on learning experiences, the strain imposed by prolonged standing becomes a prevalent concern, necessitating a closer examination of strategies to mitigate and manage this prevalent issue.

Study Objective: To assess the incidence of work related musculoskeletal disorders and incidence of severity of disability due to low back pain among pharmacy student using Modified Oswestry Low Back Pain Disability Index

Methodology: A cross-sectional study was conducted on 100 pharmacy students at TMV's Lokmanya Tilak Institute of Pharmacy, Kharghar. Data was collected through a structured questionnaire incorporating the Modified Oswestry Low Back Pain Disability Index to evaluate the level of disability associated with low back pain. Numerical Pain Rating Scale(NPRS) was used to assess pain intensity. The findings revealed that low back pain is prevalent among the study population and significantly affects functional ability. Of the 100 students surveyed, 56% experienced minimal disability, 24% moderate disability, and 20% reported severe disability due to low back pain.

Key Words- Pharmacy students, Numerical Pain Rating Scale(NPRS), Oswestry Disability Index (ODI), Low Back Pain

Introduction

Low back pain is characterized as pain and uneasiness, restricted beneath the costal margin and superior to the inferior gluteal folds, regardless of leg pain. Another definition, as per S.Kinkade, which bears resemblance to the European rules is that low back pain is “pain that occurs posteriorly in the area between the lower rib edge and the proximal thighs.” Low back pain is normally classified into 3 subtypes: intense, sub intense and persistent low back pain. This classification depends on how long you have had the back pain. Acute LBP is an episode of LBP for less than a month a half, sub-acute LBP lies somewhere in the range of 6 and 12 weeks and chronic LBP is for 3 months or more. LBP that has been bothering you for longer than 90 days is thought of as chronic. Over 80% of all medical care expenses can be credited to chronic LBP. 1

The pharmacy Is the branch of health care service. The scope of pharmacy practice includes more traditional role such as compounding & dispensing of medications. It in compasses a wide range of scientific disciplines, including chemistry, biology, pharmacology, and medicine, to investigate various aspects of drug discovery, development and utilization. A Pharmacy institute is a specialized educational institution focused on training and educating future pharmacists and pharmaceutical scientists. The Bachelor of Pharmacy is a 4 years undergraduate degree program that provides comprehensive training in pharmaceutical sciences. The demand for standing for practical sessions vary from 3-4 hours daily to 3-4 hours weekly. Pharmacy students, spanning from first to fourth year across four batches, often find themselves grappling with the challenge of standing for extended periods during practical sessions. This demanding aspect of their academic journey can lead to an increased risk of low back pain.

Standing places significant pressure on the joint of the hips, knees, ankle and feet but without any significant movement of it. This reduces the normal lubrication and cushioning of synovial joints, causing them to tear. The combined effect of pressure and tearing can cause extensive amounts of pain and make it difficult to move or walk. Muscles kept in a constant stress position quickly become exhausted and can result in pain and swelling in the lower back, legs, ankles and feet. Research has shown that the body experiences muscle fatigue after standing for five hours; this fatigue persists for more than 30 minutes after the end of the work day according to electronic measurements of fatigue. 2

The Oswestry Disability Index (ODI) a patient-completed questionnaire which gives a subjective percentage score of level of function (disability) in activities of daily living in those rehabilitating from low back pain. It was developed by Jeremy Fairbank and Graham Pynsent in Oswestry, England in 1980 and considered one of the best accepted tools for assessment of low back pain. Acute or chronic low back pain. Most effective for persistent severe disability, while the Roland-Morris is better for mild to moderate disability. The test is considered the ‘gold standard’ of low back functional outcome tools. 3

Need for study

- A study on low back pain in pharmacy students during prolonged standing, sitting and lifting heavy objects are crucial to understand and address the potential health risks associated with their work environment.
- Identifying ergonomics factors, assessing postural habits, and exploring preventive measures can contribute to the well-being of pharmacy students, ensuring they maintain optimal health throughout academics and professional journey.
- Research involving pharmacy students can enhance their education and training by providing practical experience in managing low back pain, which can be benefit their future practice.
- To improving patient education this findings can help educate pharmacy students about low back pain prevention and management strategies, empowering them to take proactive steps to protect their back health.
- By studying pharmacy students, physiotherapy researchers can gain a better understanding of low back pain risk factors, develop effective interventions and ultimately improve the back health of this and other at-risk populations.

Aim

To assess the pain and functional disability in pharmacy students between the age of 18-25 years.

Objective

To assess screening sample by using NPRS (Numerical Pain Rating Scale).

To assess the incidence of work related musculoskeletal disorders and incidence of severity of disability due to low back pain among pharmacy student using Modified Oswestry Low Back Pain Disability Index.

Methodology

- **Study Design** – Cross sectional study
- **Sampling Design**- Convenience Sampling
- **Sample Size** – 100
- **Study Setup** – TMV's Lokmanya Tilak Institute Of Pharmacy, Kharghar Navi Mumbai.
- **Instrumentation** -

Consent Form.

Demographic Data Sheet.

Modified Oswestry low back pain disability Index.

- **Inclusion criteria:**

Students within the age group of 18-25 years.

Students studying in 2nd& 3rd year of Bachelor of Pharmacy.

Including both male and female.

Students having NPRS score 3 or more than 3.

- **Exclusion criteria:**

Students studying in 1st and 4th year of Bachelor of Pharmacy.

Students with any recent or previous history of injury or trauma to back and spine.

Previous surgical history (surgery in the pelvic region, spinal surgeries.)

Those with a history of any neurological & cardiovascular problems.

Procedure

A cross sectional study was conducted. The data was collected from TMVs Lokmanya Tilak Institute of Pharmacy, Kharghar, Navi Mumbai.

A total of 100 pharmacy students studying in TMVs Lokmanya Tilak Institute of Pharmacy were recruited in the study.

After approval was obtained from the Institutional Ethics Committee of TMVs Lokmanya Tilak College of Physiotherapy, Kharghar, permission was obtained from the principal of TMVs Lokmanya Tilak Institute Of Pharmacy, Kharghar to conduct the study in their department.

Purpose and the procedure of the study were explained to all the participants and informed consent was obtained.

The subjects were interviewed and individual's demographic data – age, gender and pain intensity was obtained.

The data was collected via Oswestry Low Back Pain Disability Questionnaire.

The scale was used for functional limitation. The score is categorized as Minimal, Moderate, Severe, Crippled and Exaggerated.

Numeric Pain Rating Scale was used for pain intensity.

The data was analysed with help of Microsoft excel. The frequency and percentage were calculated. The data were presented in the form of tables and charts.

Statistical Analysis

The data was analysed with help of Microsoft excel. The frequency and percentage were calculated. The data were presented in the form of tables and charts.

Data Analysis

The objective of this study is to assess the pain and functional disability in pharmacy students between the age of 18-25 years with Oswestry Low Back Pain Disability Questionnaire. A total of 100 students studying in TMVs Lokmanya Tilak Institute Of Pharmacy, Kharghar participated in the research. Male students are **40 (40%)** and female students are **60 (60%)**.

Gender	Frequency (%) (n=100)
Male	40(40%)
Female	60(60%)

Table1:Frequency and percentage of participants
gender.

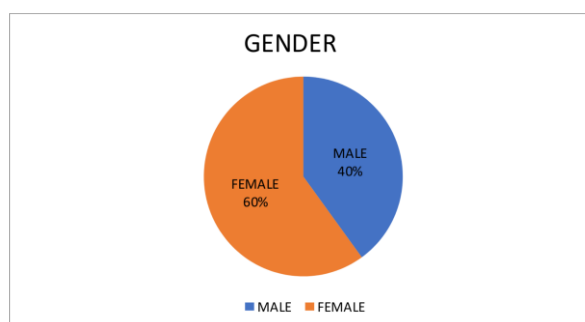


Figure 1: Frequency and percentage of. participant's gender

The study indicates that 51(51%) students have low back pain and 49 (49%) students don't have low back pain.

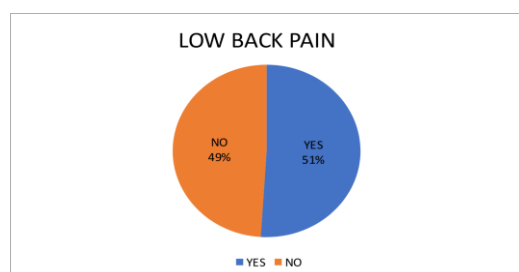


Figure 2: Frequency and percentage of .
participant's having low back pain

Low Back Pain	Frequency (%) (n=100)
Yes	51(51%)
No	49(49%)

Table2:Frequency and percentage of .

participant's having low back pain

Based upon the Numerical Pain Rating Scale, the study indicates that 52% of participants reported intensity of pain as 0, 0% reported as 1, 1% reported as 2, 4% reported as 3, 8% reported as 4, 15% as 5, 8% as 6, 7% as 7, 4% as 8, 1% as 9 on activity, thus the Mean (+SD) of pain intensity- NPRS on activity is 21.59. The study also indicates that 57% of participants reported no pain, 4% reported as 1, 8% reported as 2, 13% reported as 3, 5% reported as 4, 4% reported as 5, 5% reported as 6, 0% reported as 7, 3% reported as 8, 1% reported as 9 on rest, thus the Mean (SD+) of pain intensity- NPRS on rest is 0 ± 1.04 .

Intensity	Frequency (%) of PAIN INTENSIT Y- NPRS ON ACTIVITY (n=100)
0	52
1	0
2	1
3	4
4	8
5	15
6	8
7	7
8	4
9	1

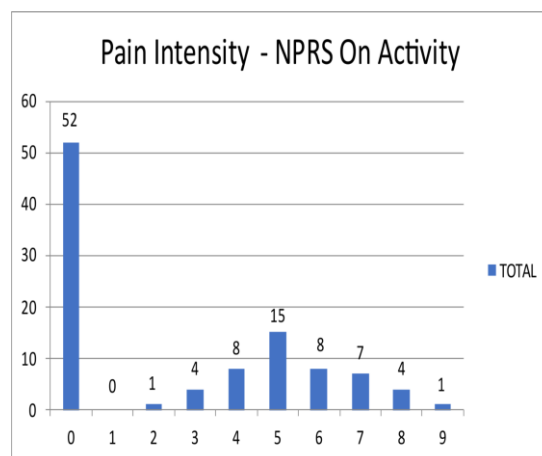


Figure 3: Frequency and percentage of participants pain intensity – NPRS on Activity

Table 3: Frequency and percentage of participant pain intensity –NPRS on Activity

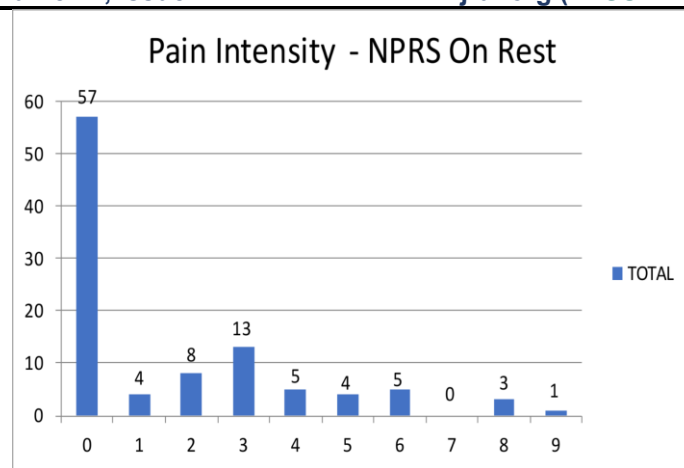


Figure 4: Frequency and percentage of participants pain intensity – NPRS on Rest

Intensity	Frequency (%) of PAIN INTENSITY- NPRS ON REST (n=100)
0	57
1	4
2	8
3	13
4	5
5	4
6	5
7	0
8	4
9	1

Table 4: Frequency and percentage of participants pain intensity- NPRS on Rest

Based on the Oswestry Low Back Pain Disability Questionnaire, **56%** (n=56) of the total participants are found to have minimal disability, **12%** (n=12) of the total participants are found to have moderate disability and **20%** (n=20) of the total participants are found to have severe disability. The Mean ($\pm$ SD) of disability scores are 19 ± 0.073 .

Interpretation	Frequency(%) of Interpretation (n=100)
Minimal Disability	56(56%)
Moderate Disability	24(24%)
Severe Disability	20(20%)

Table 5. Frequency and percentage of participant's disability

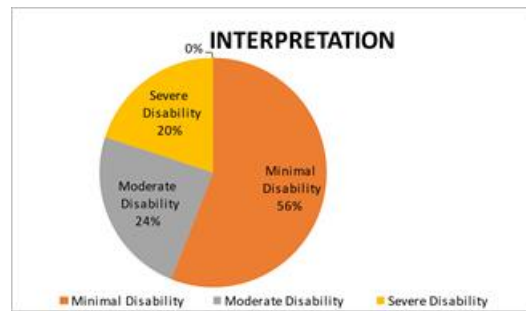


Figure 5: Frequency and percentage of participant's disability

The current research indicates that in the female students, 68%(n=68) participants have minimal disability, 14% (n=14) participants have moderate disability and 18% (n=18) participants have severe disability.

Interpretation	Frequency (%) of female participants
Minimal Disability	68. (68%)
Moderate Disability	14(14%)
Severe Disability	18(18%)

Table 6: Frequency and percentage of disability in female participants

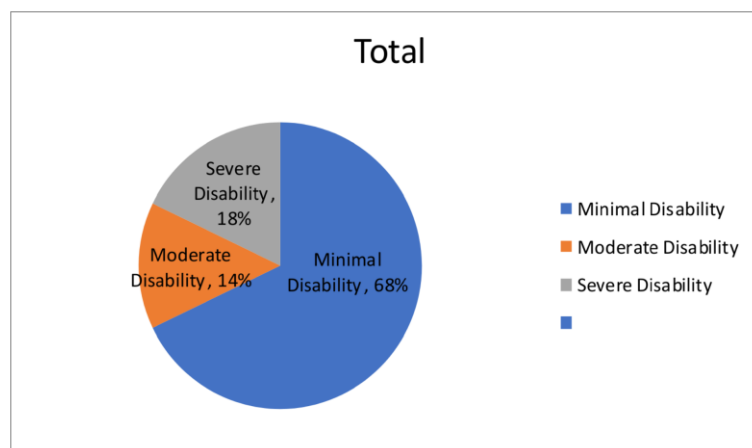


Figure 6: Frequency and percentage of disability in female participants.

The current research indicates that in the male students, 41%(n=41) participants have minimal disability, 36% (n=36) participants have moderate disability and 23% (n=23) participants have severe disability.

Interpretation	Frequency (%) of male participants
Minimal Disability	41(41%)
Moderate Disability	36(36%)
Severe Disability	23(23%)

Table 7: Frequency and percentage of disability in male participants

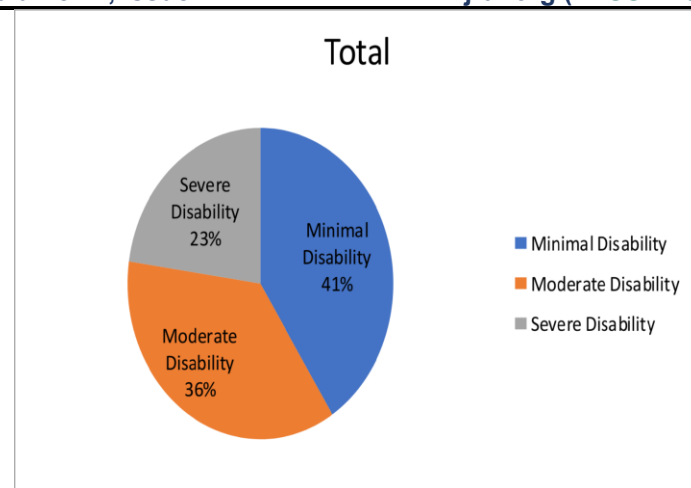


Figure 7: Frequency and percentage of disability in male participants

Discussion

This study was done to investigate the functional disability caused by Low back pain in pharmacy students. This cross – sectional study demonstrated that a remarkable number of pharmacy student’s had developed lower back pain.

In Pharmacy students, due to prolonged standing and sitting, it become an important risk factor in developing low back pain which in turn leads to functional disability. Based upon the Numerical Pain Rating Scale, the study indicates that 52% of participants reported intensity of pain as 0, 0% reported as 1, 1% reported as 2, 4% reported as 3, 8% reported as 4, 15% as 5, 8% as 6, 7% as 7, 4% as 8, 1% as 9 on activity. The study also indicates that 57% of participants reported no pain, 4% reported as 1, 8% reported as 2, 13% reported as 3, 5% reported as 4, 4% reported as 5, 5% reported as 6, 0% reported as 7, 3% reported as 8, 1% reported as 9 on rest.

Thus the study indicates that student’s complaining 56% minimal disability, 24% moderate disability and 20% severe disability due to low back pain. A study indicate that five students were exclude from the research. Three of them did not meet the inclusion criteria. One student had undergone Fisher surgery, in the context of spine, referring to minimally invasive spine surgery (MISS), a technique using smaller incisions to treat spinal conditions. Another student had fallen on their back two months prior.

The current research indicates that among pharmacy student’s, female student’s suffer more frequently from low back pain and thus leading to functional disability than Male student’s because in the study setup selected for research there were more female as compared to male.

Sitting for prolonged period results in posture changes such as the flatness of the lumbar-lordotic curve and chronic muscle deconditioning that decreases muscle activity. This can cause muscular fatigue even at low loads, when adopting static posture for a long period. When sitting in a slumped position for a long time, the discomfort in the lower back increases regardless of muscle fatigue, and adolescent patients with LBP are more affected by these postures.⁴

Standing with a majority of body weight on one leg results in higher muscle activity on the load bearing side and a reduction of muscle activity of the unloaded leg, which in theory should provide periodic unloading and relaxation of the musculature of one limb at a time (Carlsöö,1961).⁵

The duration of pain (i.e. acute versus chronic) can also impact posture, such that people with chronic low back pain may adapt to their pain by changing their posture to balance their upper spine and maintain their upright stance, while people with acute pain may alter their posture in hopes to reduce the pain immediately (Christie et al., 1995).⁵

Sagittal spinal alignment also affects regional trunk muscle activity. There is lower trunk extensor and internal oblique muscle activity in sway standing (where the pelvis translates anteriorly relative to the trunk), while muscle activity was higher during upright standing postures (O’Sullivan et al., 2002).⁵

Proper breaks at work are necessary to prevent the risk of causing prolonged standing pain or discomfort. A seated break with mild lumbar flexion may alleviate LBP induced by prolonged standing. Alternatively, standing intervention, such as the use of a standing aid, could potentially reduce LBP. Standing on a floor mat and/or wearing shoe in-soles also reportedly provided comfort and alleviated or reduced fatigue from standing.

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Conclusion

The present study indicates low back pain has an impact on the functional disability among pharmacy students in TMV's Lokmanya Tilak Institute of Pharmacy, Kharghar with 56% having minimal disability, 24% having moderate disability and 20% having severe disability.

Limitation

The study purposes that more detailed research, with a larger sample size, be conducted on the causes of Low back pain disability, effects on quality of life and work productivity thus to generalize the results and conclusion.

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