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Original Article

DOI: 10.55735/fq82sn38

The Healer Journal of Physiotherapy and Rehabilitation Sciences

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Journal homepage: www.thehealerjournal.com

Knowledge, Attitudes and Beliefs about Chronic Low Back Pain among Final Year Physical Therapy Students in Universities of Islamabad

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KEYWORDS

Attitude
Beliefs
Chronic low back pain
Knowledge

DECLARATIONS

Conflict of Interest: None
Funding Source: None

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ABSTRACT

Background: Low back pain is the leading cause of disability worldwide and is associated with a significant reduction in quality of life. Reports have shown that the global burden due to low back pain has increased by 54%, primarily due to aging and population growth. **Objective:** To assess the knowledge, attitudes, and beliefs about chronic low back pain among final year physical therapy students. **Methodology:** The cross-sectional study was conducted from March to July 2023 in universities of Islamabad including final year physical therapy students. After approval from the ethical review committee of university IIUI-FAHS/DPT/1020-1307. The sample was calculated using non-probability convenience sampling techniques from final year physiotherapy students of private sector , both genders participated in the study. The Health Care Providers' Pain and Impairment Relationship Scale was used to quantify beliefs and attitude of healthcare providers towards chronic low back pain patients while the Neurophysiology of Pain Questionnaire measures how an individual understands the mechanism that pain. Cross-tabulation and independent t-test were used for comparison. Pearson correlation coefficient test was used to find out the relationship between HCPAIRS and NPQ. **Results:** Out of 277 participants, 67 (24.2%) were male and 210 (75.8%) were female with mean age 23.38±0.6. There was a weak positive correlation between NPQ and HCPAIRS (r=0.227, p=.0001) which showed the students with higher pain neurophysiology knowledge held stronger beliefs that pain justifies activity limitation and impairment. **Conclusion:** The study concluded that final-year physical therapy students have a good understanding of pain neurophysiology. HC-PAIRS higher score indicates a moderately strong belief of students that pain is closely linked to disability and limitation. Additionally, a weak positive significant association was found between NPQ and HC-PAIRS.

How to cite the article: Arshad H, Fatima A, Khan S, Imtiaz H, Khattak HG, Anwar K, Habiba UE, Bhatti ZR. Knowledge, Attitudes and Beliefs about Chronic Low Back Pain among Final Year Physical Therapy Students in Universities of Islamabad. The Healer Journal of Physiotherapy and Rehabilitation Sciences. 2025;5(2):118-124.

INTRODUCTION

Low back pain (LBP) is the leading cause of disability worldwide and is associated with significant reduction in quality of life. It affects individuals of all ages, from children to adults. Reports have shown that the global burden due to low back pain between 1990 and 2015 has increased by 54%, primarily due to aging and population growth, with greatest increase observed in middle and low income countries.[1] In 2020, over half a billion people worldwide suffered from low back pain, which continues to be the primary cause of years lived with disability. It is estimated that by 2050, there will be more than 800 million people worldwide who experience low back pain.[2] Pain or stiffness that persists for more than 3 months is located below coastal margin and above gluteal fold is known as chronic low back pain. This condition is result of numerous pathogenic causes.[3]

Chronic low back pain (CLBP) is a significant public health concern, with its associated costs steadily increasing over the past four decades. In France, the National Technical Group for Defining Health Objectives (Groupe technique national de définition des objectifs, GTNDO) reported notable epidemiological data in 2003. CLBP accounted for 6 million physician visits, with 90% involving general practitioners, making it the third most common reason for visits among males and the sixth among females, representing 6% of all consultations. The CLBP also constituted nearly one-third of physiotherapy sessions, 2.5% of drug prescriptions, and 5–10% of imaging studies.[4] Additionally, it was linked to 13% of work-related injury claims, was the leading cause of disability in individuals under 45 years old, and was the primary reason for sick leaves, with an average duration of 33 days. Collectively, this resulted in 3.6 million workdays lost annually.[5] The LBP is linked to various psychosocial factors including stress, depression, anxiety and patient's expectations for recovery. Additionally, it involves structural changes in the brain, such as increased cortical thickness and a medial shift in the homunculus representation.[6]

Neurochemical alterations, including reduced levels of N-acetyl-aspartate, glutamate, glucose, choline, and myo-inositol, further contribute to changes in pain perception at central levels [7]. Non-specific low back pain, which is defined as back pain without an identifiable specific cause, represents over 90% of chronic low back pain cases and constitutes a significant portion of the workload in primary care settings.[8] Weakness of extensor truck muscles and increasing age is another risk factor reported for non-specific low back pain.[9] Traditionally physiotherapist play a key role in managing low back patients and their training mainly focuses on biomedical model, where pain is thought to be caused due to biomechanical and structural factors and treatment protocols are directed towards managing the causative factors.[10] However, the integration of a biopsychosocial approach, which considers psychological and social dimensions alongside physical factors, remains limited in physiotherapy education.[11]

Healthcare professional's attitude and belief regarding knowledge of pain in chronic low back patients plays an important role in determining the best treatment strategy for patients.[12] The healthcare professionals are not adopting biopsychosocial approach well due to poor understanding of neurophysiology of pain and unfavorable attitude towards low back pain.[13] The attitude and beliefs of physical therapy students can be modified by education them about the neurophysiology of pain. This will also help in applying biopsychosocial approach for treatment.[14] There was limited research assessing knowledge of pain and attitudes and beliefs in final year physical therapy students. The current study aimed to determine the knowledge, attitudes and beliefs of final year physical therapy students about chronic low back pain. This will be greatly beneficial as the knowledge, attitude and beliefs of pain influence the management of pain immensely and aim to identify gaps that can reform future curriculum improvements. The study was designed to assess the knowledge, attitudes and beliefs about chronic low back pain among final year physical therapy students.

METHODOLOGY

The cross-sectional study was conducted from March 2023 to July 2023 in universities of Islamabad including final year physical therapy students. After approval from the ethical review committee of university IIUI-FAHS/DPT/1020-1307. The sample size was calculated using from Slovin's formula; n=N/(1+Ne2), while assuming the population to be 900 at 95% confidence interval. The sample size turned out to be 277. The sample was raised using non-probability

convenience sampling techniques from final year physiotherapy students of private sector, both genders and willing to participate in the study. Written informed consent was taken from study participants. Data was collected using semi structured questionnaire.

The data collection tools are two questionnaires: Health Care Providers' Pain and Impairment Relationship Scale (HC-PAIRS), and Neurophysiology of Pain Questionnaire (NPQ). The HC-PAIRS is used to quantify beliefs and attitude of healthcare providers towards chronic low back pain patients. It has four dimensions: Functional expectations (item 1,2,3,6,7,8,9,11,12), social expectations (item 5,7,11,14), need for cure (item 4,9,15) and projected cognition (item 10,13). It consists of 15 items marked on a 7-point Likert scale. Items 4, 6 and 14 must be recorded. Completely disagree is marked 1 and completely agree is marked as 7 points. The total score is from 15-105. Higher scores on this scale indicate that the health provider agrees strongly with the notion that chronic low back pain justifies disability and the limiting of activities. The NPQ measures how an individual understands the mechanism that pain. There was a total of 12 questions, answered to be true or false. True gets 1 point whereas false option gets o point. The score ranges from 0-12. The highest score indicates most understanding of pain neurophysiology .[15,16]

Data was analyzed using SPSS version 26. Descriptive statistics were applied for categorical variables, frequency and percentage and for numerical variables. The mean and standard deviation were calculated. Cross-tabulation and independent t-test were used for comparison. Pearson correlation coefficient test was used to find out the relationship between HCPAIRS and NPQ. The value of r ranges from -1 to +1. Value near to 0 had no correlation value between 0.1 and 0.3 had weak correlation, between 0.3 to 0.5 moderate correlation and greater than 5 had strong correlation. The p-value <0.05 was considered significant.

RESULTS

Out of 277 participants, 67 (24.2%) were male and 210 (75.8%) were female. The mean age of the sample was 23.38±0.6. Regarding age groups, 193 (69.7%) were between 21-23 years and 84 (30.3%) were in 24-26 years. Overall, 162(58.5%) were in 9th semester and 115 (41.5%) were in the 10th semester. The details of frequency and percentages for NPQ and HCPAIRS responses by participants are given in Tables 1 and 2. The

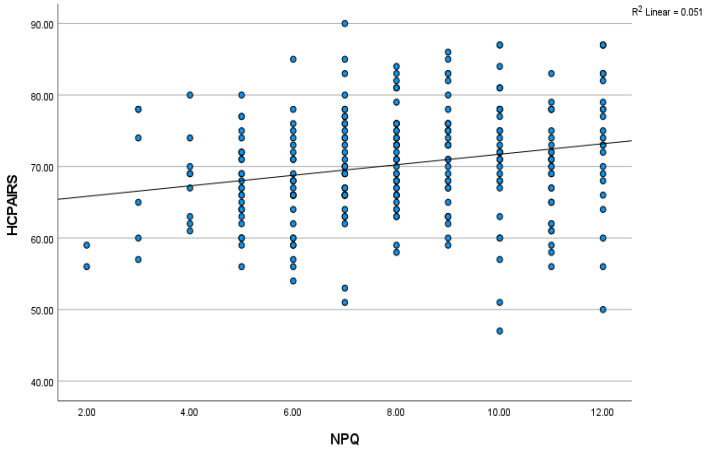
Table 1: Neurophysiology of pain questionnaire responses by participants

Statement	True response	False/ undecided response
When part of your body is injured, special pain receptors convey pain messages to your brain	267(96.4)	10(3.6)
Pain only occurs when you are injured	106(38.3)	171(61.7)
The timing and intensity of pain match the timing and number of signals in nociceptors	206(74.4)	71(25.6)
In chronic conditions, the central nervous system becomes more sensitive to nociception	116(41.9)	161(58.1)
The brain decides when you will experience pain	172(62.1)	105(37.9)
Nerves adapt to their resting level of excitement	181(65.3)	96(34.7)
Chronic pain means that an injury has not healed properly	206(74.4)	71(25.6)
Worse injuries always result in worse pain	207(74.7)	70(25.3)
The second-order nociceptor post-synaptic membrane potential is independent of descending modulation	121(43.7)	156(56.3)
When you are injured, the environment that you are in will not affect the amount of pain you experience	136(49.1)	141(50.9)
It is possible to have pain and know about it.	224(80.9)	53(19.1)
When you are injured, chemicals in your tissues can make nerves more sensitive	222(80.1)	55(19.9)

Table 2: HC-PAIRS questionnaire and the four domains across gender

Domains	Mean±SD	Male	Female
Functional expectation	43.9±5.7	43.7±5.7	44.0±5.8
Social expectation	16.8±3.2	17.0±3.3	16.7±3.1
Need for cure	13.1±2.3	12.5±2.5	13.3±2.2
Projected cognition	10.9±2.0	10.7±2.2	10.9±2.0

Figure 1: Scatter plot showing weak positive relationship between NPQ and HC-PAIRS scores



overall mean score for the Neurophysiology of Pain Questionnaire was 8.09±2.40. The mean score among males and females was 7.91±2.24 vs 8.14±2.44. The mean score for Health Care Providers' Pain and Impairment Relationship Scale was 70.3±7.8. The mean score in male vs female participants was 69.8±7.9 and 70.4±7.7. The mean and standard deviation scores of all domains across gender are mentioned in Table 3. There was a weak positive correlation between NPQ and HCPAIRS (r=0.227, p=.0001) which showed the students with higher pain neurophysiology knowledge held stronger beliefs that pain justifies activity limitation and impairment (Figure 1).

DISCUSSION

The current study was conducted to find out the knowledge, attitudes and beliefs about chronic low back pain among final physical therapy students. The findings indicate a moderate understanding of pain neurophysiology, with an average Neurophysiology of Pain Questionnaire (NPQ) score of 8.09±2.4. The mean HC-PAIRS score was 70.3±7.8, with males scoring 69.8±7.9 and females 70.4±7.7. Patient responses showed that, 83.6% of participants agreed to some extent that chronic back pain patients need to be careful not to worsen their pain, and 75.9% agreed that patients find it hard to concentrate when pain increases. The weak positive correlation (r=0.227, p=0.001) between NPQ and HC-PAIRS scores in our study suggests that students with a better A similar study of knowledge, attitudes and beliefs about chronic low back pain among final year physical therapy students conducted in India showed NPQ mean±S.D 5.86±1.98. They also concluded that knowledge, attitude and beliefs were significantly associated with chronic low back pain.[17] According to study by Mukoka et al, conducted in South Africa, score for NPQ was 6.01±1.98. Most 115 (79%) of the participants were female students. They also reported a mean score of 63.1± 8.9 for HC-PAIRS. The score among female were found to be higher than male students with a p-value of 0.04. There was an inverse relation (p<0.002) between knowledge, attitude and belief towards chronic low back pain patients. There was a notable gap between knowledge of low back pain among final year students. Many students demonstrated misconceptions, such as equating prolonged pain with disability, and exhibited limited understanding of the neurophysiological mechanisms underlying pain.[15]

Fitzgerald et al in their study about knowledge of pain and attitude of allied health students reported mean NPQ score to be 10.09±1.91.[18] Another study found first-year physiotherapy students had lower NPQ scores compared to second- and fourth-year students, suggesting that exposure to pain education enhances understanding over time. The correlation between HC-PAIRS and NPQ scores among fourth-year students showed a moderate negative relationship (r =−0.462, p=0.01), suggesting that greater knowledge of pain neuroscience was linked to weaker beliefs that chronic pain necessarily leads to disability.[19] The moderate knowledge and beliefs observed in our study highlight the necessity for comprehensive pain education within physical therapy curricula. Implementing targeted educational interventions, such as workshops and modules focusing on pain neurophysiology and biopsychosocial models, can enhance students' understanding and attitudes towards chronic low back pain.[20] Most students 112 (40.4%) agreed on the statement that an

increase in pain is an indicator that a chronic back pain should stop what he is doing until the pain stops and most of the students 50 (18.1) disagreed that chronic back patients should have the same benefits as the handicapped because of their chronic pain problem.

In another cross-sectional study by Khan et al. concluded that clinical physiotherapists in the study demonstrated a moderate level of knowledge about chronic low back pain, with an average score of 7.8. However, the range of scores from 2.00 to 12.00 indicated considerable variability in understanding among participants. Moreover, many physiotherapists agreed the idea that persistent low back pain justifies disability and activity restriction.[21] Clenzos et al. found that there was a lack of sufficient knowledge among therapists regarding neurophysiology of pain. This suggests that healthcare professionals still lack a thorough understanding of neurophysiology, even after studying pain during their undergraduate studies.[22] Female students achieved higher mean scores on the HC-PAIRS questionnaire compared to their male counterparts, indicating a stronger tendency to associate chronic pain with impairment and disability. This suggests that female students may be more inclined to adopt a biopsychosocial approach when addressing chronic pain management.

Kennedy in their cross-sectional study used Back Beliefs questionnaire and Fear Avoidance Beliefs questionnaire to find out beliefs of Irish students towards low back pain. The study included 271 participants, where female students were 78% and male were 22%. They found that physiotherapy students had more positive beliefs regarding low back pain and its consequences. There was association between gender and belief towards LBP.[23] In another study on gender differences regarding pain behavior in healthcare and non-healthcare professionals.[24] The results showed that gender had significant effect on attitude and beliefs toward low back pain. Females had a strong belief that if a person experiences low back pain than heavy work should be avoided by them.[25] A cross-sectional study in Saudi Arabia reported that physiotherapists demonstrated relatively low levels of both biomedical and biopsychosocial treatment orientations. While evidence-based interventions such as home exercises and patient education were commonly used, many physiotherapists continued to use passive and traditional treatments that are not recommended by clinical practice guidelines.[26]

Another study including 381 Spanish physiotherapists, where 230 were men and 151 were women participants reported that participants have better understanding and knowledge about neurophysiology of pain based on a psychosocial model of care.[27] The study findings may not be generalized as the selection may be biased due to a non-probability sampling method. Moreover, we did not compare physical therapy students and other allied health professionals.

CONCLUSION

The study concluded that final year physical therapy students have a good understanding neurophysiology of pain. The HC-PAIRS score showed moderately strong belief of students that pain is closely linked to disability and limitation. Additionally, a weak positive significant association was found between NPQ and HC-PAIRS, indicating that greater pain neurophysiology knowledge among final year students was minimally linked with the stronger beliefs that pain justifies disability. The future studies can focus on the comparison of 1st year and final-year physical therapy students. Further studies can also consider evaluating knowledge, attitudes and beliefs of internees, postgraduate physical therapy students and practicing physiotherapists.

DECLARATIONS

Consent to participate: Written consent had been obtained from patients. All methods were performed following the relevant guidelines and regulations.

Availability of data and materials: Data will be available on request. The corresponding author will submit all dataset files.

Competing interests: None

Funding: No funding source is involved.

Authors' contributions: All authors read and approved the final manuscript.

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