



## Original Article

## Do Undergraduate Physiotherapy Students Believe Back Pain Myths? A Cross-sectional Survey

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### ABSTRACT

**Background:** Low back pain (LBP) is a global public health issue. Physiotherapy is one of the most imperative conservative approaches for LBP patients. Beliefs of physiotherapists are seen to have a significant impact on treatment choices; however, beliefs that are not based on current evidence may lead to erroneous clinical decision-making. The present study explored the beliefs of physiotherapy students about low back pain.

**Methods:** This cross-sectional study was designed to detect the presence of myths among Indian undergraduate physiotherapy students using a predesigned survey outlining the “myths of back pain.” Bachelor of Physiotherapy students from different academic years of various colleges across India’s north zone participated in the study. Survey questions were designed to identify the myths related to disease pathophysiology, treatment, and diagnostic tools.

**Results:** A total of 265 physiotherapy students participated in the study. Among the participants, 31.7% were males, and 61.3% were females. The data revealed that most physiotherapy students hold incorrect beliefs, with major myths being (1) LBP is caused by poor posture when sitting, standing, and lifting; (2) LBP will become persistent and deteriorate in later life; and (3) LBP is caused by weak core muscles, and having a strong core protects against future LBP. There were some differences in a few myths based on academic years.

**Conclusion:** Physiotherapy students have wrong beliefs associated with LBP. Educational programs should work towards developing courses that dispel these erroneous “beliefs.”

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### Introduction

Low back pain (LBP) is a prevalent symptom with significant clinical, societal, and economic burdens [1, 2]. The Global Burden Disease (GBD) study reported that LBP results in around 601 million years lived with disability (YLD) [3]. The prevalence of LBP has risen exponentially, with an approximately 50% increase over the last 20 years [1]. Recent data shows increasing trends in back pain among lower- and middle-income countries

attributable to rapid urbanization [4]. The epidemiological data thrusts the need to explore the different domains of back pain care using relevant research into the forefront.

Back pain can be subclassified as non-specific LBP, where the cause of pain is not identifiable, and specific LBP, which has a definite underlying cause [2, 5]. Most clinical practice guidelines recommend that the diagnosis of non-specific LBP should rely on thorough history taking and physical examination to identify red flags and neurological testing for the radicular syndrome [5]. In terms of management, guidelines recommend multimodal rehabilitation and psychosocial interventions [6]. Despite clear evidence, most interventions remain focused on the anatomical structure and biomedical model, resulting in

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over-imaging and overtreatment [7-9].

Different factors influence treatment choices made by healthcare providers (HCPs). One factor that hinders the implementation of evidence-based management strategies is prevailing wrong and unhelpful beliefs among HCPs [10]. Among all HCPs, physiotherapists (PTs) spend the most time with patients and play the most crucial part in delivering information about LBP [11]. The attitudes and views of physiotherapists concerning low back pain impact their therapeutic decisions and advice [12]. Currently, the literature suggests that holding negative beliefs and attitudes contributes to the chronicity of LBP, associated disability, and increasing health costs [13-16].

Studies have shown that PTs may hold erroneous beliefs about LBP [14]. It has been demonstrated that clinicians may disseminate these beliefs to patients, shaping their health behavior [17]. Adherence to wrong beliefs results in management strategies that resonate more with the biomedical model and less with the evidence-based guidelines. A healthcare provider can cling to wrong or negative beliefs acquired during or even before their early professional coursework. It is of paramount importance to understand the beliefs held by practicing PTs and physiotherapy students.

Physiotherapy students learn about LBP in their coursework and get to see LBP patients during their clinical rotations. They are in the phase where beliefs and attitudes towards LBP evolve. Therefore, exploring their beliefs may help understand the need for change in educational programs or coursework to shape students' ideas. Keeping this objective in mind, we sought to explore physiotherapy students' beliefs regarding LBP. Identifying whether the prevalence of myths varies across different academic years was also interesting.

## Methods

An online cross-sectional questionnaire survey was developed using Google forms for undergraduate physiotherapy students. The study is confirmed to be in accordance with the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) [18].

### Survey Development

A previously used survey which explored the prevalence of myths among young college students with back pain was modified for the present study [19]. The initial survey was designed using Deyo's "Myths of Back Pain" questionnaire and an editorial published by O'Sullivan et

al. [20, 21]. The survey was piloted by six experienced physiotherapists and physicians for comments on phrasing, response logic, and survey completion time, and there were no amendments suggested.

The survey comprised two sections: the first section investigated the demographic information and educational levels, and the second section explored the myths regarding LBP held by the study participants. The survey consisted of ten statements (Table 1) to which participants responded with either "agree" or "disagree." An "agree" response was associated with holding a wrong belief (myth), while a "disagree" response suggested that the respondent identified the statement as a myth.

### Participants

Authors identified colleges located in India's northern zone with an affiliation with the Indian Association of Physiotherapy (IAP) as an essential criterion. Bachelor of Physiotherapy students (1<sup>st</sup> year to 4<sup>th</sup> year) were invited to participate in the survey through social media websites using convenient sampling. The data was collected from January 2020 to March 2020. A priori sample size was calculated using the formula:  $n = Z\alpha^2 P(1-P)/d^2$ , where  $Z\alpha = 2.575$ ;  $P = 90\%$  as the response rate of the online survey; and  $d = 5\%$ . Thus, the minimum required number of participants was 239.

The survey had to be completed on any electronic device with Internet access. The participants had to provide consent to complete the survey, and any who declined to give consent were unable to proceed to the questionnaire. As the surveys were designed on Google Forms and participants could only submit the responses when all the required questions were completed, there were no incomplete responses. The responses were anonymous, no IP address was collected, and participation was completely voluntary. The survey could not be accessed by the same IP address more than once and required about 5-10 minutes to complete. Participants were given no promise of compensation or reimbursement.

Participants in the study completed the survey after providing written informed consent. The study protocol was approved by the Institutional Ethical Committee of Lovely Professional University, Kapurthala, Punjab, India. The approval number of the study is LPU/IEC/2019/03/13. The authors adhered to the principles laid down by the World Medical Association (WMA) Declaration of Helsinki.

### Data Analysis

The data from Google Forms was transferred to and

**Table 1:** Survey questions used to identify the beliefs of physiotherapy students [20, 21]

Myth 1: LBP is usually a serious medical condition.
Myth 2: LBP will become persistent and deteriorate in later life.
Myth 3: Persistent LBP is always related to tissue damage.
Myth 4: Everyone with back pain should have a spine radiograph.
Myth 5: Pain related to exercise and movement is always a warning that harm is being done to the spine and a signal to stop or modify activity.
Myth 6: LBP is caused by poor posture when sitting, standing, or lifting.
Myth 7: LBP is caused by weak "core" muscles, and having a strong core protects against future LBP.
Myth 8: Bed rest is the mainstay of therapy.
Myth 9: I For a slipped disc (also known as a herniated or ruptured disc), the patient must undergo surgery.
Myth 10: Treatments such as strong medications, injections, and surgery are effective and necessary to treat LBP.

LBP: Low back pain

stored in an encrypted computer for the purpose of data analysis, to which access was available to the authors. Incomplete surveys were not processed further. Descriptive statistics explain the demographic characteristics of the participants. Myths were calculated as frequencies and percentages. A chi-squared independent test was applied to analyze any difference between responses of participants from different academic years. The level of significance was set at P value < 0.05.

Data analysis was performed on Statistical Package for the Social Sciences, Version 20, for Windows (SPSS Inc., Chicago, IL, USA, 2004).

**Results**

Two hundred and sixty-five physiotherapy students with a mean (SD) age of 20.48 (2.45) years took part in the study. Among the participants, 68.3% were females (n=181), and 31.7% were males (n=84). A total of 77.3% of participants reported a previous episode of LBP. It was observed that females (82.9%) had higher exposure to LBP than males (65.5%). The other characteristics are

highlighted in Table 2.

*Myths about LBP among Undergraduate Physiotherapy Students*

Many myths were widely prevalent among physiotherapy students. The most frequently present myths, M1 (LBP is usually a serious medical condition), was answered favorably by 82.3% of participants; M2 (LBP will become persistent and deteriorate in later life) was agreed to by 83.4% of participants; M6 (LBP is caused by poor posture when sitting, standing, or lifting) was responded to in the affirmative by 94.7% of participants; and 87.5% students confirmed the presence of M7 (LBP is caused by weak “core” muscles, and having a strong core protects against future LBP). The frequency with percentages of the myths is illustrated in Table 3 and Figure 1.

*Association of Myths with Academic Years*

The evaluated data showed significant differences in 4 out of 10 myths based on education (BPT 1<sup>st</sup> to 4<sup>th</sup> year), namely M4, M8, M9, M10. The myth “Everyone with

**Table 2:** Characteristics of the study participants

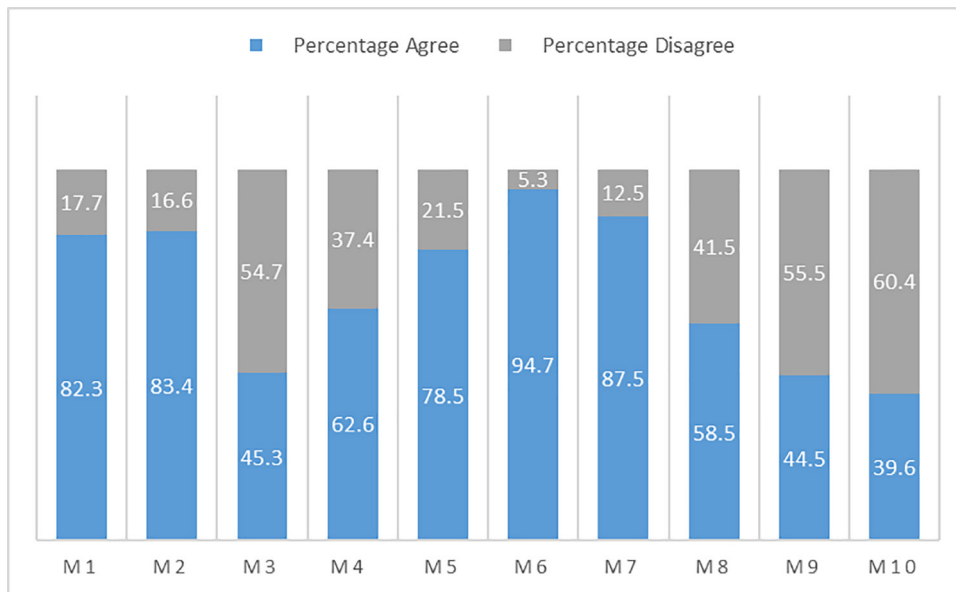
Variables	Mean	SD
Age	20.48	2.45
	Frequency (n)	Percentage (%)
Gender		
Male	84	31.7
Female	181	68.3
Education Level		
BPT 1 <sup>st</sup> Year	88	33.2
BPT 2 <sup>nd</sup> Year	58	21.9
BPT 3 <sup>rd</sup> Year	45	17.0
BPT 4 <sup>th</sup> Year	74	27.9
Family history of LBP		
Yes	235	88.6
No	30	11.4
Self-History of LBP		
Yes	205	77.3
No	60	22.7
History of LBP among Females		
Yes	150	82.9
No	31	17.1
History of LBP among males		
Yes	55	65.5
No	29	34.5

BPT: Bachelors of Physiotherapy; LBP: Low back pain; SD: Standard deviation

**Table 3:** Beliefs about Low back Pain (LBP) among the study participants

Myths	Frequency (Percentages)	
	Agree	Disagree
M1	218 (82.3%)	47 (17.7%)
M2	221 (83.4%)	44 (16.6%)
M3	120 (45.3%)	145 (54.7%)
M4	166 (62.6%)	99 (37.4%)
M5	208 (78.5%)	57 (21.5%)
M6	251 (94.7%)	14 (5.3%)
M7	232 (87.5%)	33 (12.5%)
M8	155 (58.5%)	110 (41.5%)
M9	118 (44.5%)	147 (55.5%)
M10	105 (39.6%)	160 (60.4%)

M1–M10 are myth statements highlighted in Table 1



**Figure 1:** Graphical representation of frequencies (%) of individuals responding as agreeing or disagreeing with the belief statements associated with Low back Pain (LBP); M1–M10 are myth statements highlighted in Table 1.

**Table 4:** Evaluation of the responses based on educational level

Myths	1 <sup>st</sup> Year		2 <sup>nd</sup> Year		3 <sup>rd</sup> Year		4 <sup>th</sup> Year		P value
	Agree (%)	Disagree (%)	Agree (%)	Disagree (%)	Agree (%)	Disagree (%)	Agree (%)	Disagree (%)	
M1	79.5	20.5	82.8	17.2	84.4	15.6	83.8	16.2	0.51
M2	81.8	18.2	86.2	13.8	84.4	15.6	82.4	17.6	0.60
M3	50	50	48.3	51.7	33.3	66.7	44.6	55.4	0.43
M4	63.6	36.4	37.9	62.1	48.9	51.1	45.9	54.1	0.001*
M5	75	25	74.1	25.9	53.3	46.7	44.6	55.4	0.07
M6	80.7	19.3	84.5	15.5	80.0	20.0	70.3	29.7	0.94
M7	94.3	5.7	91.4	8.6	97.8	2.2	95.9	4.1	0.06
M8	93.2	6.8	69.0	31.0	93.3	6.7	91.9	8.1	0.001*
M9	56.8	43.2	39.7	60.3	53.3	46.7	28.4	71.6	0.01*
M10	55.7	44.3	37.9	62.1	33.3	66.7	25.7	74.3	0.004*

M1–M10 are myth statements highlighted in Table 1, and the *p* value is significant at <0.05. Each row represents one question. The percentages of agreement and disagreement for each education level and the *p* value for the chi-square test of independence are shown.

back pain should have a spine radiograph” showed inconsistency in the number of participants agreeing to the myth with increases in the academic year. Treatment-based myths (M9 and M10) were less prevalent among students in the higher academic years. Although myth 8 showed a statistically significant difference, there was a negligible difference in increasing order among 1<sup>st</sup>- to 4<sup>th</sup>-year participants.

**Discussion**

The results suggest that several back-pain myths were commonly present among the study participants. From the ten myths explored in the study, seven were predominantly present among the participants. “LBP is caused by poor posture when sitting, standing, or lifting” was the myth believed to be true by most of the students across different academic years. Our data suggests that erroneous beliefs vary according to the academic year of the students.

Four myths (M4, M8, M9, M10) were more prevalent among the 1<sup>st</sup> year students than the 4<sup>th</sup>-year students (Table 4). Although the data suggests differences in these myths across academic years on comparing the

percentages, it was evident that these differences were not consistent. McCabe et al. reported a similar trend [14]. In the present study, myths that showed differences were related to two broad themes: medical management (M8, M9, M10) and the use of scans for back pain patients (M4). Participants from the first year could not identify these myths, whereas their senior colleagues correctly identified them. The reason for this dissimilarity remains unclear, as the study could not explore individual factors associated with the results, like social and informal learning and their pain experiences.

Most of the students believed that back pain is a serious medical condition and will become persistent and deteriorate in later life (M1 and M2). These findings indicate that students have a poor understanding of the natural course of pain. These wrong beliefs may lead to inaccurate information being relayed by PTs to their patients and may result in negative patient behavior towards back pain [22, 23]. It is evident through the literature that the words of PTs may act as a deterrent to the recovery of patients [24]. Students’ beliefs are contrary to the evidence that indicates most LBP episodes are self-limiting and improve considerably within one week of the initial episode [25]. The presence of misconceptions

about the diagnosis and prognosis of LBP among budding health professionals may hinder proper care.

“Persistent LBP is always related to tissue damage” was perceived as a reality by 45.3% of participants, which is a high proportion, although 54.7% disagreed with the statement. Recent evidence shows that LBP is a multifactorial problem and is not limited to tissue damage [2, 26]. Intriguingly, a large number of students believed that scans are required for back pain patients. The responses differed across the academic years, with 1<sup>st</sup>-year students agreeing more to the myth; however, this variation was inconsistent. This finding suggests that PTs may be over-scanning patients, resulting in overtreatment of patients and increasing health costs without additional benefits [10, 27].

Our findings suggest that many physiotherapy students may evaluate LBP from a biomechanical perspective. Participants believed that the back can be damaged if overused and that activities should be reduced until pain stops. According to current evidence, the back is robust, and LBP is best controlled with progressive back usage and loading [2, 20]. Because ideas about vulnerability and protection drive pain-related fear and avoidance behaviors, physiotherapists must be able to detect and treat these beliefs rather than reinforcing them [28, 29].

An extensive 87.5% of the study participants believed that weak “core” muscles cause back pain, and having a strong core protects against future LBP (M7). It is alarming when the concept of “core” stability has been refuted in the literature [30-32]. The claim of participants that a causal relationship exists between core stability and LBP development needs to be addressed. Lederman et al. highlighted in their paper that a weak or dysfunctional abdominal muscle would not necessarily lead to LBP [31]. Similarly, a systematic review by Smith et al. reported that stabilization exercises are no better than any other form of exercise [33]. The mechanism attributed to focusing on the importance of core stability exercises is flawed. This mechanism is based on a common belief that core stability training improves muscle onset timing, which is not supported by the evidence [31, 34]. The authors suggest that this belief must be replaced with the belief that exercises in general are helpful, especially at the beginning of a progressive loading program for the spine.

The myth “LBP is caused by poor posture when sitting, standing, or lifting” was the most widespread myth among the participants (Figure 1). The causal link between LBP and posture is yet to be established. The postural-structural-biomechanical model has failed to explain the link between asymmetries and alterations to LBP development [35]. It is suggested that posture is not associated with pain, and regular variations of different postures are essential for a healthy spine [20]. This startling result may be attributed to over-reliance on the biomedical model in the physiotherapy curriculum. The authors expected this, as the curriculum followed in most colleges relies heavily on biomedical constructs. Further studies need to evaluate the reasons for such high dependence of participants on posture as a reason for LBP.

The participants correctly identified the myths related

to treatment. Surgery for a herniated disc was not considered an option by 55.6% of participants. Similarly, other medical treatments like injections and medications are necessary for patients with LBP was correctly identified as a myth. These findings may be attributed to treatment bias, as physiotherapy students must believe that their treatment may be more beneficial. Thus, one must identify treatment-related myths that may prevent the over-medicalization of LBP.

Considering the widespread presence of the LBP myth among students, educational programs must address these myths. The literature suggests that clinicians who hold wrong beliefs may pass on these beliefs to their patients, leading to unsuccessful health outcomes. Future studies may explore the impact of these myths on the clinical decision-making of the students and clinicians.

The present study had its own strengths and limitations. The study’s main limitation is the recruitment of participants from only a few colleges located in the north zone of India. India is a vast country with numerous physiotherapy colleges, and selecting one area may limit the generalizability of the study findings. However, it is assumed that identified myths in the study reflect the emphasis on a postural-structural-biomechanical model of LBP in the teaching system. To the best of our knowledge, this is the first study conducted in India to identify the beliefs of physiotherapy students.

## Conclusion

Widespread myths were present among undergraduate physiotherapy students. There was an association of academic year with a prevalence of myths; however, this remained inconsistent. The most prevalent myth identified in the study is “LBP is caused by poor posture when sitting, standing, or lifting.” The presence of such myths may lead to increased healthcare costs and overutilization of advanced imaging in the society. The development of beliefs during the learning phase may be a cause of concern and must be addressed by better development of curriculum.

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