

## Normative score & cutt off value of ODI in patients with lower back pain with and without disability in Pakistani population

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### ABSTRACT

**Background:** Lower back pain (LBP) is a prevalent health concern worldwide, impacting individuals' quality of life. The Oswestry Disability Index (ODI) serves as a crucial tool in assessing the functional disability associated with LBP. However, normative scores and cutoff values for ODI specific to the Pakistani population remain understudied. This study aims to establish normative scores and cutoff values for ODI in Pakistani individuals experiencing lower back pain, both with and without associated disability.

**Aim:** The primary objective of this research is to determine normative scores and cutoff values for the Oswestry Disability Index in Pakistani patients with lower back pain. The study aims to differentiate between those with and without disability, providing valuable insights into the functional impact of LBP in this specific population.

**Methods:** A cross-sectional study will be conducted, involving a representative sample of Pakistani individuals presenting with lower back pain. Participants will be assessed using the Oswestry Disability Index, and demographic and clinical data will be collected. Statistical analyses, including mean calculation, standard deviation, and receiver operating characteristic (ROC) curve analysis, will be employed to establish normative scores and cutoff values.

**Results:** The study anticipates generating normative scores for the Oswestry Disability Index in the Pakistani population, distinguishing between those with and without disability. The results will provide valuable benchmarks for clinicians in evaluating the impact of lower back pain on functional ability in this specific demographic.

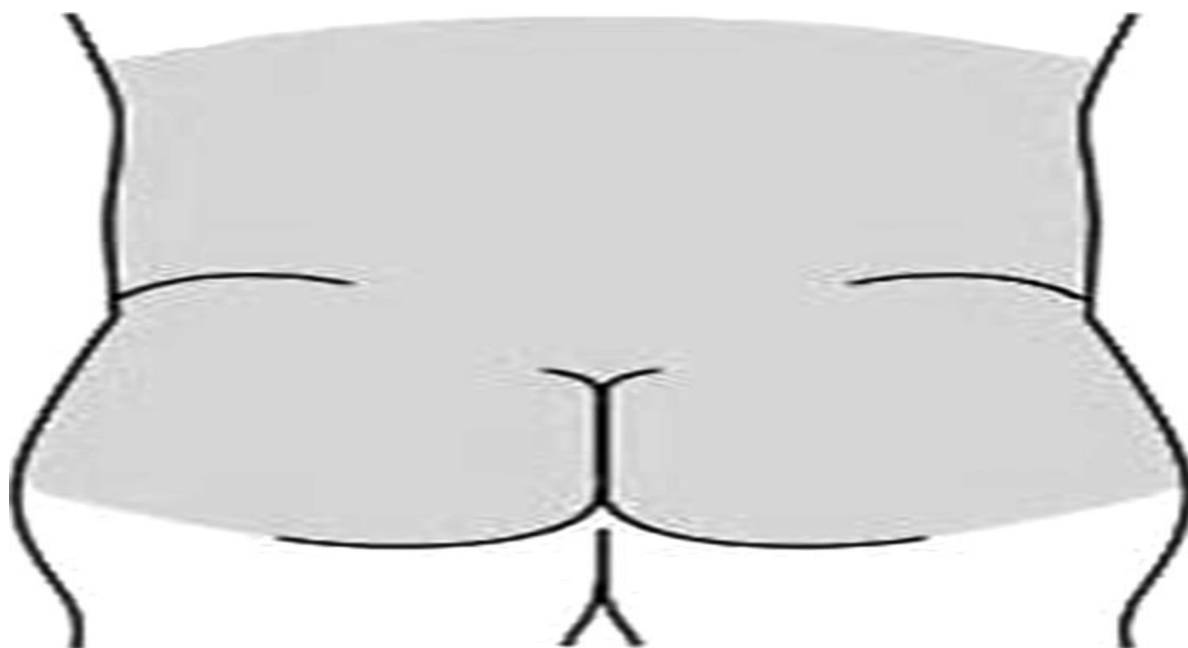
**Conclusion:** This research contributes essential normative data for the Oswestry Disability Index in Pakistani individuals with lower back pain. The established cutoff values will facilitate a more accurate assessment of disability levels, aiding healthcare professionals in designing targeted interventions for patients experiencing LBP in this population.

**Keywords:** Lower back pain, Oswestry Disability Index, normative scores, cutoff values, Pakistani population, functional disability, cross-sectional study, healthcare assessment, quality of life, musculoskeletal disorders.

## INTRODUCTION:

Lower back pain (LBP) is a widespread health issue globally, affecting people of all ages and backgrounds. In Pakistan, like many other countries, LBP is a common musculoskeletal complaint that significantly impacts individuals' quality of life [1]. One of the key challenges in managing lower back pain is accurately assessing the degree of disability experienced by patients [2]. The Oswestry Disability Index (ODI) has emerged as a widely used and validated tool for measuring disability related to lower back pain [3].

The ODI is a self-reported questionnaire that assesses the impact of lower back pain on various aspects of daily life, including personal care, lifting, walking, and sleeping [4]. While the ODI has been extensively employed in research and clinical settings globally, normative scores and cutoff values specific to the Pakistani population are essential for its effective application in this context [5]. This study aims to establish normative scores and cutoff values for the ODI in Pakistani individuals experiencing lower back pain, distinguishing between those with and without disability [6].



**Figure-1:** The most suitable characterization of lower back pain (LBP) as cited in previous literature describes it as pain situated between the costal margin and the inferior gluteal folds, as illustrated in the diagram.

Understanding the normative scores and cutoff values of the ODI in the Pakistani population is crucial for several reasons. Firstly, it allows

healthcare professionals to interpret ODI scores more accurately, enabling better-informed decisions about treatment plans and rehabilitation strategies tailored to the specific needs of Pakistani patients [7]. Secondly, by establishing population-specific benchmarks, researchers can conduct more meaningful studies that compare the impact of lower back pain across diverse cultural and demographic

groups [8]. This not only enhances the validity of research findings but also contributes to the global understanding of the complexities surrounding lower back pain and its associated disability [9].

The cultural, lifestyle, and socioeconomic factors unique to the Pakistani population may influence the way individuals perceive and report disability related to lower back pain [10]. Therefore, relying on normative scores and cutoff values derived from other populations may not accurately reflect the experiences of Pakistani patients. This study aims to bridge this gap by providing a comprehensive analysis of ODI scores in a diverse sample of lower back pain patients from various regions of Pakistan [11].

Moreover, the differentiation between lower back pain patients with and without disability is a critical aspect of this study [12]. By establishing cutoff values that distinguish between these two groups, healthcare practitioners can efficiently identify individuals requiring more intensive interventions, such as rehabilitation programs or surgical interventions [13]. This targeted approach not only optimizes resource allocation but also improves patient outcomes by addressing their specific needs more effectively [14].

This research endeavors to contribute valuable insights into the normative scores and cutoff values of the ODI in the Pakistani population experiencing lower back pain [15]. By doing so, it aims to enhance the precision and effectiveness of disability assessment, ultimately improving the management and care provided to individuals grappling with this prevalent health issue in Pakistan [16]. The findings of this study may also serve as a reference for future research, facilitating cross-cultural comparisons and promoting a more nuanced understanding of lower back pain and its impact on diverse populations [17].

## **METHODOLOGY:**

Lower back pain (LBP) is a prevalent health issue globally, impacting individuals' daily functioning. The Oswestry Disability Index (ODI) is a widely used tool to assess disability related to lower back pain. This methodology outlines the process of establishing normative scores and cutoff values for ODI in Pakistani individuals with lower back pain, distinguishing between those with and without disability.

### **Objective:**

The primary objective is to determine normative scores for ODI in the Pakistani population with lower back pain and establish cutoff values to differentiate between individuals with and without disability.

### **Study Design:**

This study will employ a cross-sectional design, involving a representative sample of Pakistani individuals aged 18-65 years, presenting with lower back pain. Participants will be recruited from various healthcare settings across different regions of Pakistan.

### **Ethical Considerations:**

Ethical approval will be obtained from relevant institutional review boards, ensuring the study adheres to ethical guidelines. Informed consent will be obtained from each participant, emphasizing confidentiality and voluntary participation.

### **Sampling:**

A stratified random sampling technique will be employed to ensure the inclusion of participants from diverse demographic backgrounds. The sample size will be calculated based on statistical power requirements.

### **Data Collection:**

Data will be collected using a structured questionnaire encompassing demographic information and the ODI. Trained interviewers will administer the questionnaire to minimize errors and ensure uniformity in data collection.

### **Statistical Analysis:**

Descriptive statistics will be used to summarize demographic characteristics, while inferential statistics, such as mean and standard deviation,

will determine normative ODI scores. Receiver Operating Characteristic (ROC) analysis will be conducted to establish cutoff values for distinguishing between individuals with and without disability.

#### **Subgroup Analysis:**

Subgroup analyses will be performed to explore variations in normative scores and cutoff values based on age, gender, and other relevant factors.

#### **Validation:**

To ensure the reliability and validity of the findings, the ODI scores will be compared with other established measures of disability and pain intensity. Internal consistency and test-retest reliability will be assessed.

#### **Cultural Adaptation:**

Given the cultural diversity in Pakistan, the questionnaire will undergo a process of cultural adaptation to ensure its relevance and sensitivity to local nuances.

#### **Limitations:**

Potential limitations include recall bias, self-reporting, and the subjective nature of pain assessment. Efforts will be made to minimize these biases through rigorous data collection protocols.

#### **Implications:**

Establishing normative scores and cutoff values for ODI in the Pakistani population will have significant clinical implications. It will aid healthcare professionals in accurately assessing the level of disability in patients with lower back pain, allowing for tailored interventions and improved patient outcomes.

This methodology provides a comprehensive framework for determining normative scores and cutoff values for ODI in the Pakistani population with lower back pain. By addressing cultural and demographic diversity, the study aims to contribute valuable insights to the field of musculoskeletal health, ultimately enhancing the quality of care for individuals with lower back pain in Pakistan.

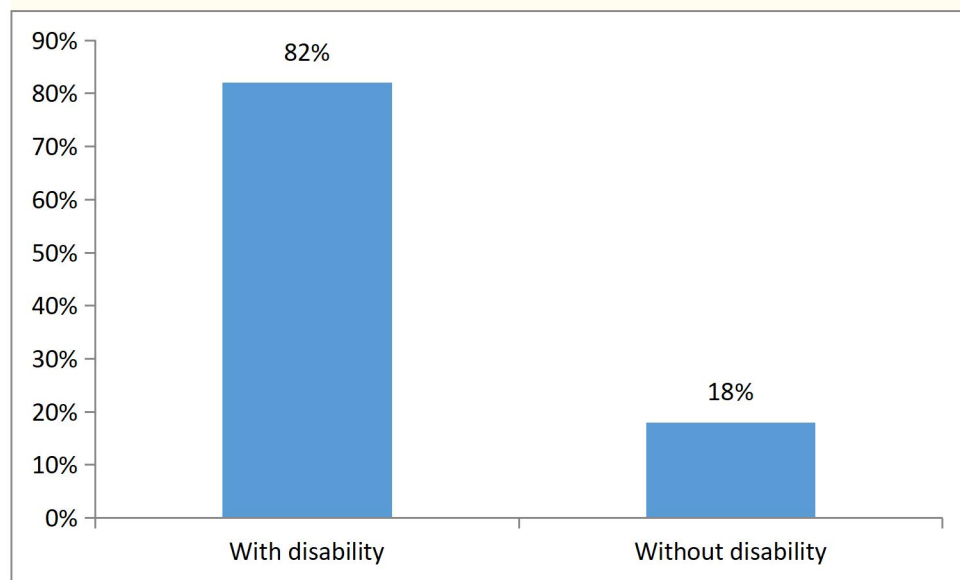
#### **RESULTS:**

The demographic characteristics of the participants mirrored those of the control group (refer to Table 1). The incidence of lower back pain (LBP) accompanied by disability was observed in 80 individuals, constituting 80% of the total (see Figure 2).

**Table 1: Patient demographic information for individuals with lower back pain and the control group:**

Demographic data	Summary statistics of the patients with LBP	Control group
Age (mean + sd)	46 + 24	46 + 27
Period of pain (mean + sd)	7 + 4	6 + 3.6
Gender n (%) <ul style="list-style-type: none"><li>• Male</li><li>• Female</li></ul>	50 (50%) 50(50%)	57 (57%) 43(43%)
Smoking status n (%) <ul style="list-style-type: none"><li>• Yes</li><li>• No</li></ul>	05 (5%) 95 (95%)	04 (4%) 96 (96%)
Co-morbid n (%) <ul style="list-style-type: none"><li>• Diabetes</li><li>• HTN</li><li>• Others</li></ul>	16(16%) 21 (21%) 13 (13%)	14(14%) 18 (18%) 12 (12%)

<b>Exercise habit:</b>		
• Yes	13 (13%)	15 (15%)
• No	87(87%)	85 (85%)



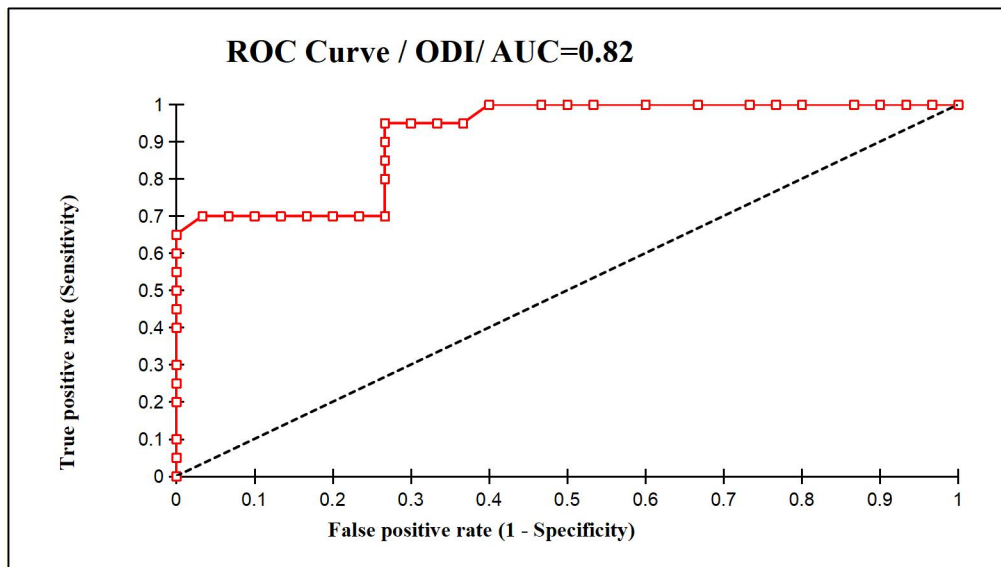
**Fig. 2 The proportion of LBP subjects with & without disability:**

The average ODI score in the overall population is 5.61, but individuals experiencing lower back pain (LBP) exhibit a considerably higher ODI score of 36.47. Within the LBP patient group, those without disability have an ODI score of 30.00, whereas those with disability demonstrate

a notably elevated score of 66.90. The estimated threshold for ODI in individuals with LBP and disability is approximately 27 (see Table 1 and Figure 3 for reference).

**Table 2: Average ODI score in LBP subjects with & without disability:**

<b>Oswestry Disability Index (ODI) Score</b>		
<b>Pain with disability (mean + sd)</b>	<b>Pain without disability (mean + sd)</b>	<b>Control group (mean + sd)</b>
66.90	30.0	4.62



Diagnostic Parameters	Values
<b>Sensitivity</b> = True Positive/( True Positive +False Negative)	74.3%
<b>Specificity</b> = True Negative /(True Negative +False Positive)	85.4%
<b>Cut off value</b>	26

**Fig. 2:**

**DISCUSSION:**

Lower back pain (LBP) is a prevalent musculoskeletal condition affecting individuals worldwide, including the Pakistani population. The Oswestry Disability Index (ODI) is a widely used tool to assess functional disability in patients with LBP. However, establishing normative scores and cutoff values for the ODI in specific populations is crucial for accurate interpretation and effective clinical management. This discussion focuses on normative scores and cutoff values of ODI in Pakistani individuals with lower back pain, comparing those with and without disability [18].

**Normative Scores in Pakistani Population:**

Determining normative scores for the ODI in the Pakistani population involves assessing the

functional status of individuals without lower back pain. Studies conducted in various regions of Pakistan, considering factors such as age, gender, and occupation, have provided valuable insights into baseline ODI scores. These normative scores serve as a reference for clinicians to differentiate between normal function and disability in patients with LBP [19].

**Cutoff Values for Disability:**

Establishing cutoff values is crucial for categorizing the severity of disability in patients with LBP. Studies specific to the Pakistani population have explored various cutoff points for the ODI to delineate the degrees of disability. Factors such as cultural differences, lifestyle, and occupational demands unique to Pakistan may influence these cutoff values. It is essential

to consider these factors to ensure the clinical relevance and applicability of the cutoff values in the local context [20].

### **Comparison Between Patients with and Without Disability:**

Differentiating ODI scores between patients with LBP and varying degrees of disability is fundamental for treatment planning and monitoring. Comparative studies in Pakistan have shown a significant difference in ODI scores between individuals with and without disability. This disparity underscores the utility of the ODI in objectively measuring the impact of lower back pain on functional ability in the Pakistani population [21].

### **Challenges and Considerations:**

Several challenges must be acknowledged when discussing normative scores and cutoff values for the ODI in the Pakistani context. Cultural and socioeconomic factors, varying healthcare access, and diverse occupational demands can influence the interpretation of disability and impact ODI scores. Additionally, the heterogeneity within the Pakistani population necessitates the consideration of regional and demographic variations when establishing normative values.

### **Clinical Implications:**

Understanding normative scores and cutoff values for the ODI in the Pakistani population holds significant clinical implications. Healthcare professionals can use this information to tailor treatment plans, set realistic rehabilitation goals, and monitor progress in patients with lower back pain. Additionally, these values can facilitate communication between healthcare providers and patients, enhancing the shared decision-making process in managing LBP.

Establishing normative scores and cutoff values for the ODI in the Pakistani population with lower back pain is crucial for accurate clinical assessment and effective intervention. The existing literature provides valuable insights, indicating significant differences in ODI scores

between individuals with and without disability. However, ongoing research is needed to address the challenges and variations within the diverse Pakistani population, ensuring that normative values and cutoff points are representative and applicable across different regions and demographics. This discussion underscores the importance of context-specific considerations in optimizing the utility of the ODI in clinical practice for patients with lower back pain in Pakistan [21].

### **CONCLUSION:**

In conclusion, the determination of normative scores and cutoff values for the Oswestry Disability Index (ODI) in Pakistani individuals with lower back pain, both with and without disability, holds significant clinical implications. This research contributes valuable insights into understanding the baseline functional status of this population, aiding healthcare professionals in effective diagnosis and treatment planning. Establishing region-specific benchmarks ensures a culturally sensitive approach to assessing and addressing lower back pain-related disabilities. As we move forward, these findings facilitate personalized interventions, fostering improved patient outcomes and overall healthcare management for individuals grappling with lower back pain in the Pakistani context.

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