Original Article

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Validation and Test-retest Reliability of Hindi Version of Istanbul Low Back Pain Disability Index in Patients with Chronic Mechanical Low Back Pain: A Cross-sectional Study

Physiotherapy Section

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ABSTRACT

Introduction: Globally, Chronic Mechanical Low Back Pain (CMLBP) is a significant cause of disability. Patient-reported outcome measures are essential for assessing functional limitations, however majority of tools now in use were created in Western contexts and might not accurately represent the culturally distinctive daily activities of Hindi-speaking individuals. There is currently no validated Hindi version of the multidimensional Istanbul Low Back Pain Disability Index (ILBPDI), despite its proven psychometric qualities.

Aim: To evaluate the content validity and test-retest reliability following linguistic translation and cultural adaptation of ILBPDI in Hindi for CMLBP patients.

Materials and Methods: This cross-sectional study was conducted at Maharishi Markandeshwar (MM) Superspeciality Tertiary Care Hospital, Mullana-Ambala, Haryana, India from March 2025 to January 2026. In accordance with Beaton's recommendations, the ILBPDI underwent forward translation, synthesis, backward translation, expert committee evaluation, and pilot testing. The participants included 51 Hindi-speaking patients with CMLBP aged between 25-60 years. The Delphi method, which provided Item-Level and Scale-Level Content Validity Indices {I-CVI, S-CVI Universal Agreement Average (S-CVI/Ave) and S-CVI Universal Agreement (S-CVI/UA)}, was employed by 10 experts to determine content validity. Test-retest reliability was evaluated after 72 hours by Intraclass Correlation Coefficients (ICC), and Internal Consistency (IC) was evaluated by Cronbach's alpha.

Results: Excellent comprehensibility was shown in pilot testing (96-100%). S-CVI/Ave=0.98 and S-CVI/UA=0.88 indicated strong content validity. The H-ILBPDI demonstrated exceptional test-retest reliability (ICC=0.989) and great IC (Cronbach's α=0.994).

Conclusion: For evaluating functional impairment in Hindi-speaking patients with persistent mechanical Low Back Pain (LBP), the H-ILBPDI is a viable, dependable, and culturally relevant instrument.

Keywords: Delphi method, Linguistic, Patient-reported outcome measures, Psychometric

INTRODUCTION

The LBP is the most common cause of years lost to disability worldwide and the incidence is rising with ageing population and growth [1]. LBP is characterised as discomfort, muscular tension, or tightness above inferior gluteus fold and beneath the costal margins which may or may not be radiating to the legs from lower back. LBP that lasts more than three months is referred to as Chronic LBP (CLBP) [2]. Mechanical LBP is the pain in lower back having spinal origin and may include underlying soft-tissues and intervertebral disc. Lumbosacral muscular strain, lumbar spondylolisthesis, spondylosis, spondylolysis, spinal compression fractures, etc. are among these conditions [3]. In 2017, 577 million individuals globally experienced LBP, with a point prevalence of 7.83% (95% CI 7.04 to 8.64) [4]. According to the Global Burden of Disease (GBD) 2021 study, 619 million people were affected worldwide by LBP in 2020 [5]. LBP places an extensive financial strain on the sufferer, caregivers, and the community as a whole. In High Income Countries (HICs), LBP causes a severe medical and economic burden that differs considerably based on the geographic setting [6].

Due to the diverse nature of LBP, Patient Reported Outcome Measures (PROMs) are crucial in assessing the patients with disability caused due to LBP. To the best of the authors' knowledge, several types of PROMs exists for assessing the degree of symptoms severity and functional limitations among LBP patients such as Oswestry Disability Index (ODI), Roland-Morris Disability Questionnaire (RMDQ) and Numerical Pain Rating Scale (NPRS) and majority of them focus primarily on physical constraints or severity of pain, and might not accurately represent more extensive functional and contextual barriers that are significant in many cultural and lifestyle contexts [7,8].

The ILBPDI uses a multidimensional approach and provides a comprehensive evaluation of impairment having 18 items designed to evaluate the functional status of individuals with LBP. The overall value varies from 0 to 90 points; with greater value denotes more significant impact on the functional state [9]. Because of its cultural adaptability, ILBPDI is more applicable to a wide range of patient populations, particularly in areas where regular tasks and activities differ greatly from those in Western contexts.

Although commonly used PROMs like the ODI and the RMDQ have verified Hindi versions, they are mainly based on measuring physical disability and the level of the pain. ILBPDI on the other hand uses a multidimensional construct in which the functional, social and contextual dimensions are considered. It can therefore provide a more extensive evaluation of disability, especially in culturally diverse groups of people. The ILBPDI has been translated in Turkish and English language till date [10]. Since majority of the Indian population speaks Hindi as their native language, currently there is no developed and standardised ILBPDI questionnaire for evaluating the LBP patients in rural area. This study aimed to evaluate the content validity and test-retest reliability of ILBPDI by translating

and cross-culturally adapting it into Hindi [11]. The original ILBPDI is a Western-based construct that might not adequately represent culturally specific stressors, social factors that might be encountered by LBP population in India where a vast population speaks Hindi. Translation of ILBPDI scale in CMLBP patients enables the more accurate assessment among Hindi-speaking populations, contributing to more effective assessment strategies and improved public health outcomes in India. The objective was to translate, cross-culturally adapt ILBPDI scale in Hindi language to assess its validity and test-retest reliability among Hindi speaking population having CMLBP.

MATERIALS AND METHODS

The present cross-sectional study was conducted at MM Superspeciality Tertiary care Hospital, Mullana-Ambala, India between March 2025 to January 2026 on CMLBP patients. The research was conducted in compliance with the ethical guidelines established by the World Medical Association in the Declaration of Helsinki, 2013. Formal E-permission to translate and adapt the ILBPDI in Hindi language was obtained from the author on 15th January, 2025 who developed the original Turkish and English version of ILBPDI. On August 18, 2025, the trial was registered in the Clinical Trial Registry with CTRI no. CTRI/2025/08/093178 after getting ethical approval from the Institutional Ethical Committee (IEC-3460).

Inclusion criteria: Both male and female population who had fluency in Hindi language with age group between 25-60 years, patients who had a history of CMLBP exceeding three months, participants willing to participate and had sufficient cognitive ability to comprehend the questionnaire were included.

Exclusion criteria: Patients with the history of any spinal surgery in last one year, vertebral fractures, acute mechanical or non mechanical LBP (less than three months), patients with serious cognitive impairments, infectious and inflammatory disorders, malignancy causing CLBP, pregnant ladies and children, patients who do not speak Hindi language and uncooperative patients were all excluded from the study.

Sample size: 51 samples with CMLBP based on adopted guidelines by Beaton et al., were included for the study [12].

Outcome Measure

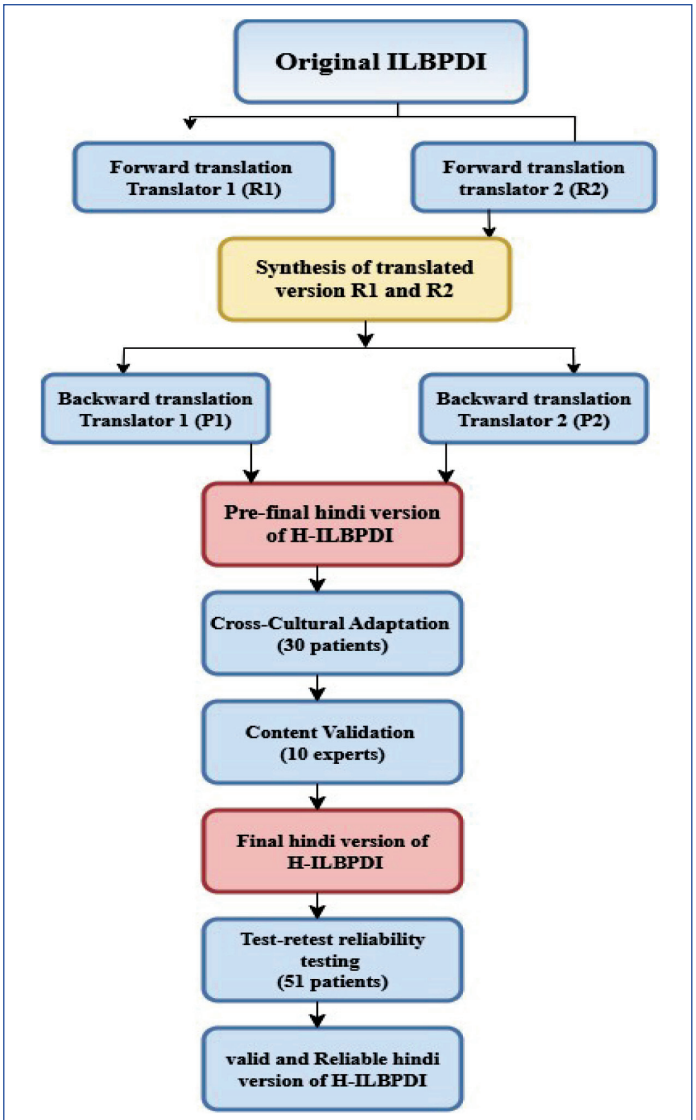
Istanbul Low Back Pain Disability Index (ILBPDI): The ILBPDI is a practical, precise and affordable tool for evaluating the functional impairment in CMLBP patients. It has good psychometric properties, easy to use, does not consume extra time and equipment, economical and is valid and reliable in number of conditions [10].

Duruoz MT et al., created and validated the 18-item ILBPDI questionnaire to evaluate the functional state among LBP individuals [10].

Procedure: Using Beaton's guidelines [12], the translation procedure was done from English, the source language, to Hindi, the target language [13]. The process included the following steps and translation steps had been depicted in the [Table/Fig-1].

Stage I: Forward translation: Two independent translators with distinct professional backgrounds were selected to carry out the forward translation of original ILBPDI questionnaire and to prepare Hindi version of the scale. Translator 1 (R1) was a licensed practitioner working in the medical field having 20 years plus of clinical experience in the spine rehabilitation ensuring conceptual accuracy and clinical relevance. Translator 2 (R2) was a Hindi language educator with non medical background but with extensive proficiency in Hindi making sure the translated version is clear, cultural relevant and contributing linguistic precision with natural use of language [12,13].

Stage II: Synthesis of the translations: To create the synthesis version R-12 from the two forward translations, two translators (R1 and R2) and recording observer assessed and examined each



[Table/Fig-1]: Steps for translation of ILBPDI.

domain of the translated scale thoroughly. All items were compared with original questionnaire, any differences in meaning and wording were fixed emphasising conceptual equivalency and patient comprehension [12,13].

Stage III: Backward translation: In back translation step, two translators namely P1 and P2 with prior teaching experience in bilingual settings (English and Hindi), independently translated the synthesised Hindi version (R-12) back into English while being blinded to original English version of ILBPDI scale. The backward translation process ensures the validity testing of the scale, prevents information bias, and to extract the unanticipated meaning from the items of translated questionnaire [12,13].

Expert committee review: For determining cross-cultural equivalency, the composition and review of an expert committee was required. The expert committee team included methodologists, medical experts, translators and linguistic experts so as to create the questionnaire's prefinal version. Wherever required, few modifications were made in some questions to make it more relevant in Hindi speaking population.

Cross-cultural adaptation: Thirty patients as per guidelines by Beaton DE et al., (2000) with CMLBP were chosen for the prefinal questionnaire pilot testing in order to assess the linguistic, cultural, contextual, and conceptual similarities between the cross-cultural adaptation of the original and modified version of the scale [12,13]. Responses were categorised as either 'clear' or 'unclear'. The positive responses were an indication of the item being easily understood and culturally suitable and the negative responses were an indication of difficulty in understanding it or lack of clarity [Table/Fig-2].

S. No.	Domains of ILBPDI	Positive response	Negative response	Total %
1.	क्या आप सीढ़ियों से एक मंज़िल नीचे उतर सकते हैं?	30	0	100%
2.	क्या आप सीढ़ियों से एक मंज़िल ऊपर चढ़ सकते हैं?	30	0	100%
3.	क्या आप अपनी नियमित गति से चल सकते हैं?	30	0	100%
4.	क्या आप धीमी गति से चल सकते हैं?	30	0	100%
5.	क्या आप सड़क के उस पार दौडकर जा सकते हैं?	30	0	100%
6.	क्या आप शहर का सफ़र गाड़ी/दोपहिया वाहन/सार्वजनिक परिवहन में बैठकर कर सकते हैं?	29	1	96.6%
7.	बिना अपना स्थान बदले?	30	0	100%
8.	अपना स्थान बदलकर?	30	0	100%
9.	अपने टांगों का खिंचाव करते हुए?	30	0	100%
10.	क्या आप फर्श पर पालथी मारकर या कुर्सी पर बैठकर पूरा भोजन कर सकते हैं?	29	1	96.6%
11.	क्या आप लंबे समय तक बैठने के बाद कुर्सी या सोफे से स्वयं उठ सकते हैं?	30	0	100%
12.	क्या आप आगे झुककर फर्श से अपने कपड़े उठा सकते हैं?	30	0	100%
13.	क्या आप अपने दांतों का मंजन सिंक पर झुककर कर सकते हैं?	30	0	100%
14.	क्या आप स्नान करते समय अपने पैरों को धो सकते हैं?	30	0	100%
15.	क्या आप एक सामान्य कुर्सी उठाकर उसे कमरे में इधर से उधर कर सकते हैं?	30	0	100%
16.	क्या आप अपने सिर के ऊपर स्थित शेल्फ से हल्की वस्तुएं (जैसे किताबें, प्लेटें, जार) रख और वापस निकाल सकते हैं?	30	0	100%
17.	क्या आप अपने मोज़े पहन सकते हैं?	30	0	100%
18.	क्या आप अपनी पैंट/सलवार/पलाज़ो पहन सकते हैं?	29	1	96.6%

[Table/Fig-2]: Cross-cultural adaptation of ILBPDI.

Content validity of the Hindi version of ILBPDI scale: The Delphi method was used for assessing the content validity.

- **Content validation form:** To ensure that specialists on the board for review had a thorough understanding of the work, the first step was to create the form for content validation. Using 3-point Likert scale, each item on the ILBPDI scale were rated as "agree", "disagree", or "neutral" to determine its level of relevance [14].
- **Panel composition:** A panel of 10 experts with minimum six years of academic or clinical experience was considered including physiotherapists specialised in musculoskeletal conditions, orthopaedic surgeons and rehabilitation specialists as recommended by Lynn (1986), which suggests a minimum of 5-10 experts for content validity assessment [15]. Experts were selected based on more than six years of clinical/research experience in musculoskeletal rehabilitation and familiarity with PROMs.
- **Delphi round:** The experts received an online form for content validation, along with detailed instructions to make the process easier.

A Google Form was filled with the study's aim and the expert's contact information. Items were rated as "agree", "disagree", or "neutral" by experts. A consensus threshold value for at least 80% was employed [16].

- **Indices and thresholds:** Calculations were made for I-CVI, CVR, S-CVI/Ave, and S-CVI/UA. A minimum S-CVI/UA of 0.80 and I-CVI of 0.80 were deemed acceptable. The formulas used for the calculations are mentioned below [1,15,17]:
- **I-CVI:** Total number of agreed items/total number of evaluators who verified the item. The specific validity of each item of scale was determined via independent evaluation [14,18].
- **CVR:** Content Validity Ratio

CVR=(Ne-N/2)÷(N/2)

Where, N=total number of experts

Ne=number of evaluators who agreed on the item.

The CVR for each item was determined separately [14,16].

- **S-CVI:** Two approaches had been used to determine it. The average value was calculated in the first and Universal Agreement (UA) was taken into account in the second.
- **S-CVI/Ave:** Sum of I-CVI scores for each item/total number of items on scale [14].
- **S-CVI/UA:** Determines the percentage of components of the scale agreed upon by all the experts. To achieve universal agreement, an item must be approved by all experts; even if one expert disagrees, the item does not meet the criteria and is calculated as:

Sum of all UA scores/ total number of items in questionnaire [13,16,19,20].

Reliability testing: Based on widely acknowledged Beaton's DE et al., guidelines for validity and reliability studies, which recommends a minimum of 50 participants for reliable ICC calculation, the sample size of 51 CMLBP patients was established [12,14]. A total of 51 patients with CMLBP were included in the test-retest reliability testing. The H-ILBPDI questionnaire was given to the patients twice with the interval of 72 hours in order to evaluate test-retest reliability. A 72-hour interval was chosen to minimise recall bias while ensuring that no significant clinical change occurred, as recommended in reliability studies [21]. During this period, only those patients were incorporated for the analyses who had reported no symptomatic variations [13,14].

STATISTICAL ANALYSIS

The statistical evaluations were conducted using Statistical Package for the Social Sciences (SPSS) version 27.0. Kolmogorov-Smirnov test was performed to check whether the data was normally distributed or not. I-CVI, CVR, S-CVI/Ave and S-CVI/UA were utilised for measuring the content validity [13,16]. A probability value of p-value <0.05 was considered as a threshold for statistically significant. To assess the test-retest reliability, ICC based on a two-way mixed-effects model with absolute agreement was calculated. Cronbach's alpha was used to quantify IC and values less than 0.5 had been viewed as poor reliability, values between 0.5 and 0.75 were regarded moderate reliability, values between 0.75 and over 0.9 were interpreted as excellent reliability.

RESULTS

Cross-cultural adaptation findings: During pilot testing with 30 Hindi speaking CMLBP patients, H-ILBPDI questions demonstrated exceptional comprehensibility; clarity scores ranged from 96% to 100% [Table/Fig-2]. A few changes were made to several questions where necessary to make them more pertinent to the Hindi-speaking community. Three questions from original English version of ILBPDI questionnaire like "Can you eat an entire meal seated in a chair?" was changed to "क्या आप फर्श पर पालथी मारकर या कुर्सी पर बैठकर पूरा भोजन कर सकते हैं?", "Can you travel around town while seated in a car?" to "क्या आप शहर का सफ़र गाड़ी/दोपहिया वाहन/सार्वजनिक परिवहन में बैठकर कर सकते हैं?" and "Can you put your trousers on?" was modified to "क्या आप अपनी पैंट/सलवार/पलाज़ो पहन सकते हैं?" for the target population based on cross-cultural adaptation in order to define relevance to their Activities of Daily Living (ADLs) [12,13].

Content validity: The Delphi method had been adopted by 10 experts including six physiotherapists, two orthopaedic surgeons, and two rehabilitation specialists, with a mean experience of 10.4±3.4 years to evaluate the content validity [19]. The study's aim and the contact details of the experts were entered into a Google Form. Each of the 18 original and translated items on the form had 'Agree', 'Neutral', or 'Disagree' response option in which 'Agree' was rated as one, while 'Neutral' and 'Disagree' were rated as

zero as per standard CVI calculation methods. For the purpose of content validation, the responses from 10 experts were entered into an Excel database**.** The validity of each scale item was highlighted by CVR, which shows the degree of agreement on each item. The CVR values for items seven and nine were 0.80 while all other items demonstrated CVR as 1. S-CVI results ranged from good to excellent, with S-CVI/UA came out to be 0.88 and S-CVI/Ave being 0.98. The I-CVI for all items of Hindi version of ILBPDI was equal to or more than 0.90. Summary of the expert consensus is demonstrated in [Table/Fig-3].

Items	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	Expert 7	Expert 8	Expert 9	Expert 10	Experts in agreement	I-CVI	UA
Q1	1	1	1	1	1	1	1	1	1	1	10	1	1
Q2	1	1	1	1	1	1	1	1	1	1	10	1	1
Q3	1	1	1	1	1	1	1	1	1	1	10	1	1
Q4	1	1	1	1	1	1	1	1	1	1	10	1	1
Q5	1	1	1	1	1	1	1	1	1	1	10	1	1
Q6	1	1	1	1	1	1	1	1	1	1	10	1	1
Q7	1	1	0	1	1	1	1	1	1	1	9	0.9	0
Q8	1	1	1	1	1	1	1	1	1	1	10	1	1
Q9	1	1	1	1	1	1	1	1	1	0	9	0.9	0
Q10	1	1	1	1	1	1	1	1	1	1	10	1	1
Q11	1	1	1	1	1	1	1	1	1	1	10	1	1
Q12	1	1	1	1	1	1	1	1	1	1	10	1	1
Q13	1	1	1	1	1	1	1	1	1	1	10	1	1
Q14	1	1	1	1	1	1	1	1	1	1	10	1	1
Q15	1	1	1	1	1	1	1	1	1	1	10	1	1
Q16	1	1	1	1	1	1	1	1	1	1	10	1	1
Q17	1	1	1	1	1	1	1	1	1	1	10	1	1
Q18	1	1	1	1	1	1	1	1	1	1	10	1	1
											SCVI/Ave	0.98	
Proportion relevance	1	1	0.94	1	1	1	1	1	1	0.94	SCVI/UA		0.88
	Average proportion of items judged as relevance across the ten experts									0.98			

[Table/Fig-3]: Content Validation of ILBPDI.

Demographic and clinical characteristics: The primary validation phase included 51 CMLBP patients. There were 30 females (58.8%) and 21 males (41.2%), with an average age of 41.33±10.17 years. The average BMI was 23.92±2.81 kg/m^2. The Kolmogorov-Smirnov test for normality revealed that while age, weight, and BMI had normal distributions (p-value >0.05), height did not (p-value=0.036) exhibit normal distribution [Table/Fig-4].

Demographic variables	Mean±SD	p-value
Age (in years)	41.33 ±10.178	0.200*
Height (in cm)	165.29±6.730	0.036
Weight (in Kg)	65.73±8.971	0.200*
BMI (Kg/m^2)	23.925±2.810	0.200*

[Table/Fig-4]: Normality of demographic data.

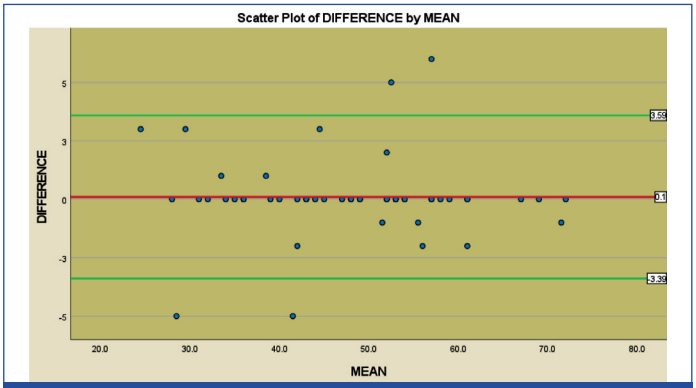
Reliability testing: The mean H-ILBPDI score at baseline was 47.90±11.66 and at 72 hours was 47.80±11.67. Excellent IC and test-retest reliability were exhibited by the H-ILBPDI questionnaire as shown in [Table/Fig-5]. With a Cronbach's α of 0.994, it was over the excellent IC level. Excellent stability was indicated by the ICC (3,1) of 0.989 (95% CI :0.980 to 0.993) for test-retest reliability.

Bland-Altman plot: The Bland-Altman graph was used to determine the Level of Agreement (LOA). Since over 90% of the data points came within the permissible ranges of agreement, the Bland-Altman analysis likewise showed that there was an agreement between repeated measurements. Four outliers were anticipated

Type of reliability	Coefficient	95% CI	Interpretation
Internal Consistency (IC) (Cronbach's α)	0.994	0.990-0.997	Excellent
Test-retest ICC (3,1)	0.989	0.980-0.993	Excellent

[Table/Fig-5]: Reliability indices of the Hindi Istanbul Low Back Pain Disability Index (H-ILBPDI).

based on the ILBPDI mean score of 51 participants, as seen in [Table/Fig-6], while the remaining agreement scores for the next two sessions remained within the mean difference. Because, it



[Table/Fig-6]: Bland Altman Plot.

improves the H-ILBPDI consistency over several administrations, this graphical depiction of consistency aligns with the ICC findings. This combination of the reliability evidence increases dependence in the scale's capacity to track both group-level research findings and individual patient outcomes.

DISCUSSION

The H-ILBPDI for people having CMLBP was successfully translated, cross-culturally adapted, and psychometrically assessed in this study. Because of its high content validity, IC, and test-retest reliability, these results provide credence to the H-ILBPDI's appropriateness as a clinical and research tool in Hindi-speaking populations. This fills a significant gap in LBP PROMs in India,

where language and cultural differences can limit the generalisability of current impairment indices.

The psychometric attributes witnessed in the current study are within those of the original development study of ILBPDI. The original scale showed good IC, (Cronbach's alpha=0.90), good reliability (ICC=0.79) and high content validity based on a daily activity, which is related to clinical relevance [10]. Comparatively, higher IC of 0.994 and high level of test-retest reliability (ICC>0.98) were obtained in the Hindi version in the present study, which demonstrates better homogeneity and stability.

Despite the lack of translated versions of ILBPDI, there is limited evidence showing that available versions of the scale have a high degree of psychometric qualities regardless of population. The original Turkish and English versions of ILBPDI stressed semantic and conceptual equivalence by means of the back translation methodology, as in the case in current research. The reliability results in the present research (ICC>0.98) are similar or even better than the one found in other cross-cultural PROMs musculoskeletal adaptation, in which the ICC results above 0.80 are regarded as excellent [22,23]. This implies that ILBPDI has excellent cross-cultural stability.

The Hindi ILBPDI shows similar or better psychometric performance when compared to other validated Hindi PROMs including Hindi ODI and Hindi RMDQ. The Hindi ODI reported very high IC (Cronbach's alpha=0.99) and a high correlation with the pains scores, as it is also seen in the present research. ODI however gives emphasis on pain related disability in limited functional domains [24]. The ILBPDI in contrast takes a more multidimensional methodology and includes range of everyday activities such as mobility, posture and functional independence, thus offering a more holistic evaluation. In the same way, the Hindi RMDQ also had high reliability (Cronbach's alpha=0.989 and ICC=0.978) and convergent validity when compared to other scales that measure disability [22]. Nonetheless, RMDQ is mostly a symptom-based questionnaire that is dichotomous, making the questionnaire less sensitive in the ability to capture different levels of disability. Comparatively, ILBPDI has a graded scoring and a broader range of functional activities thus, it is more responsive and clinically applicable.

This study's strong adherence to the well-known Beaton DE et al., cross-cultural adaptation paradigm [12], which guarantees the theoretical, semantic, and pragmatic consistency of the source and translated texts, is one of its main advantages. Through a multi-step procedure that comprised forward translation, synthesis, backward translation, expert committee review, and pilot testing, the language bias was reduced and each item's intent was maintained. When translating PROMs into culturally varied groups, this kind of methodological rigour is crucial since it preserves the instruments' psychometric integrity, especially in investigations on musculoskeletal health.

The cross-cultural adjustments made to the expert committee's evaluation of issues pertaining to clothing, transportation, and sitting posture were particularly pertinent to the Indian sociocultural context. These modifications made sure that the activities that the H-ILBPDI measures on a regular basis reflected the kinds of functional difficulties that Hindi speakers actually encounter in the real world. In cross-cultural validation research of musculoskeletal disability questionnaires, comparable culturally sensitive item adaptations have been indicated to be necessary to retain content relevance. Cultural modifications such as inclusion of floor sitting and Indian clothing styles reflect lifestyle differences, which are not captured in Western instruments.

Excellent expert agreement was found through content validity analysis using the Delphi technique, with S-CVI/Ave and S-CVI/UA values above acceptable levels. This suggests that the translated items were diagnostic of functional disability in CMLBP, clinically relevant, and linguistically accurate. The robustness of these results is strengthened by the use of various CVI (I-CVI, CVR, S-CVI/Ave, and S-CVI/UA), which is consistent with best practices for PROM validation research.

With a Cronbach's alpha of 0.994, the H-ILBPDI demonstrated exceptionally excellent IC. Despite the scale's high item homogeneity, this high score shows that it is highly successful at evaluating the idea of functional impairment. Similar levels of IC that are consistent across languages and cultures are demonstrated by the original ILBPDI and other validated instruments of LBP impairment.

Test-retest reliability ratings, which showed exceptional dependability with ICC values > 0.98, further demonstrated the consistency over time. Since the short retest period of 72 hours decreased the likelihood of actual clinical change, score consistency is more likely to represent measurement reliability than symptom variation. These levels are above the minimal criteria recommended for PROMs and consistent with earlier validation studies of LBP disability indices.

When combined, these results make the H-ILBPDI a valid, trustworthy, and culturally sensitive tool for evaluating functional impairment in Hindi-speaking CMLBP patients. Given that LBP is highly common in India and that PROMs are used to assess outcomes, these findings have significant implications for clinical decision making, outcome monitoring, and future epidemiological and interventional research.

The strength of the modified tool is demonstrated by these values that adhere to or surpass desired standards of PROMs. Lastly, the research provides a culturally and linguistically acceptable instrument that can allow measuring the quality of life in relation to the LBP with greater reliability among Hindi-speaking people.

Limitation(s)

This study had several limitations despite its strengths. Although, sample size was similar to earlier cross-cultural validation studies, a formal power analysis was not used to determine it. The findings may not be as applicable to other Hindi-speaking communities in various geographical and sociocultural contexts because data were gathered from a single centre. The study also evaluated content, IC, and reliability, but it skipped over other crucial psychometric attributes including construct, predictive, and responsiveness-to-change validity. Finally, despite careful consideration of linguistic and cultural adaptation, slight differences in interpretation may still exist among regional Hindi dialects.

CONCLUSION(S)

The Hindi version of ILBPDI has been shown to be highly valid and reliable in patients with CMLBP. The tool is also culturally applicable and easily understandable to the Hindi speaking people hence it can be used in clinical and research contexts in functional assessment. It has been made culturally sensitive by including culturally adjusted items, which make it more applicable in the Indian context. Its responsiveness and construct validity need to be studied in future. In general, H-ILBPDI is a strong PROM for the evaluation of LBP in India.

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