

Translating and Validating a Hindi Version of the Spine Functional Index: Cross-cultural Adaptation and Psychometric Testing in an Indian Orthopedic Population

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Learning Point of the Article:

The Hindi-translated Spine Functional Index (SFI-Hi) is a reliable and internally consistent whole-spine patient-reported outcome measure for Hindi-speaking patients, with excellent test-retest reliability but only partial confirmation of its predefined construct-validity hypotheses.

Abstract

Introduction: Existing Hindi patient-reported measures for spinal disorders assess the cervical and lumbar spine separately. The spine functional index (SFI) evaluates whole-spine functional limitation using 25 items, with validated Spanish, Turkish, and Chinese versions, but not Hindi. This study aimed to translate and culturally adapt the SFI into Hindi (SFI-Hi) and evaluate its measurement properties, including responsiveness and the minimal clinically important difference (MCID), in Indian patients with spinal disorders.

Materials and Methods: The SFI was translated and culturally adapted using forward-backward translation, expert review, and pilot testing. One hundred eighty-six consecutive adults with chronic (≥ 12 weeks) cervical, lumbar, or combined spinal disorders completed the SFI-Hi, Hindi functional rating index (FRI-Hi), Hindi SF-12, and a pain visual analog scale (VAS); cervical patients also completed the Hindi neck disability index (NDI-Hi), and lumbar patients the Hindi Oswestry disability index (ODI-Hi). Ninety stable participants repeated the SFI-Hi after 5–7 days, and 92 treated patients were reassessed at 6 weeks for responsiveness and MCID. Internal consistency, test-retest reliability, measurement error, construct validity, principal component analysis (PCA), responsiveness, MCID, and floor/ceiling effects were assessed.

Result: Mean SFI-Hi score was 49.0 ± 16.6 on a 0–100 disability scale. Internal consistency was high (Cronbach's $\alpha = 0.92$), and test-retest reliability was excellent ($ICC_{2,1} = 0.96$, 95% CI 0.94–0.98), with a standard error of measurement of 2.8% and minimal detectable change of 6.5%. PCA identified a single dominant component explaining 35.0% of variance. Correlations were observed with the ODI-Hi ($r = 0.64$), FRI-Hi ($r = 0.56$), NDI-Hi ($r = 0.53$), VAS ($r = 0.46$), and SF-12 physical functioning ($r = -0.54$); only three of six prespecified hypotheses were confirmed. The SFI-Hi demonstrated good responsiveness (standardized response mean 0.84), with a 13.2-point improvement at 6 weeks ($P < 0.001$); the anchor-based MCID was 8 points (AUC 0.81). No clinically important floor or ceiling effect was observed.

Conclusion: The SFI-Hi demonstrated high internal consistency, excellent test-retest reliability, good responsiveness, and a predominantly unidimensional structure in this Indian cohort, with partial support for construct validity. It is a promising whole-spine outcome measure for Hindi-speaking patients, warranting further evaluation in larger, more diverse populations.

Keywords: Spine functional index, Hindi, cross-cultural adaptation, psychometric validation, patient-reported outcome.

Introduction

Neck and low back disorders are major causes of pain, activity

limitation, and disability worldwide. Functional assessment in clinical practice commonly uses region-specific patient-

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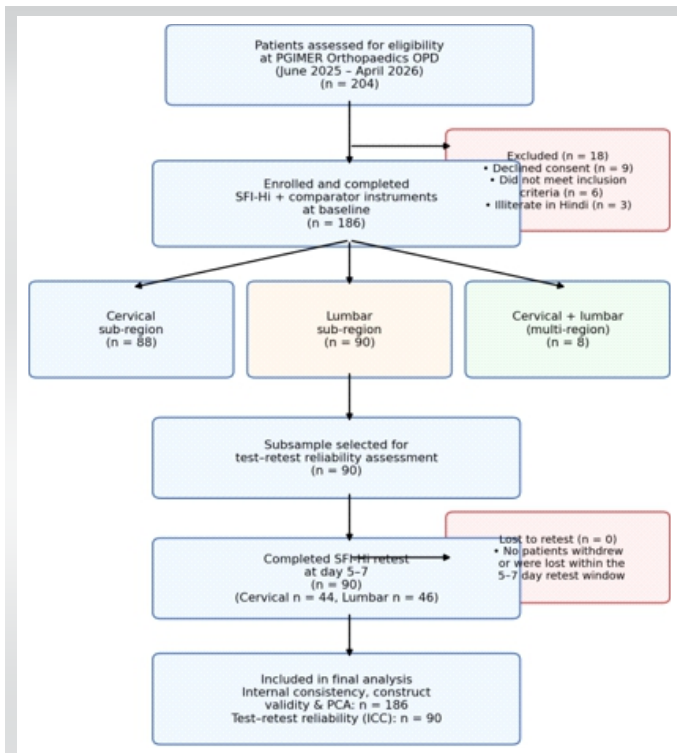


Figure 1: Recruitment and retest flow for the Hindi-translated spine functional index validation cohort (n = 186 enrolled; n = 90 retest subsample). Flow diagram showing screening, enrolment, and follow-up of study participants.

reported outcome measures, particularly the Oswestry disability index (ODI) [1] for lumbar disorders and the NDI [2] for cervical disorders. Although well established, these instruments become less useful when patients present with symptoms spanning more than one spinal region.

Patient-reported outcome measures require careful translation and cultural adaptation for use in other languages, so that conceptual meaning is preserved while the instrument remains understandable to the target population. Gabel and colleagues developed the spine functional index (SFI) to evaluate functional limitation across the spine as a single kinetic chain; the original English version showed good clinimetric properties, and Spanish, Turkish, and simplified Chinese adaptations have since demonstrated satisfactory reliability and validity [3,4,5,6].

Validated Hindi instruments already exist for regional spinal disability. The Hindi ODI (ODI-Hi) shows high internal consistency and excellent test-retest reliability in low back pain [7], and Hindi versions of the NDI show good to excellent reliability in chronic neck pain, including rural populations [8,9]. However, no Hindi instrument assesses

functional limitation across the whole spine.

This study aimed to translate and culturally adapt the SFI into Hindi (SFI-Hi) and to evaluate its internal consistency, test-retest reliability, measurement error, construct validity, factor structure, responsiveness, and minimal clinically important difference (MCID), and floor/ceiling effects in Indian patients with cervical, lumbar, and combined spinal disorders.

Materials and Methods

Study design and setting

This prospective, single-center, cross-sectional validation study was conducted in the orthopedics outpatient department of a tertiary-care postgraduate teaching institute in northern India between June 2025 and April 2026. The center functions as a high-volume tertiary referral site serving patients from several neighboring states in northern India, in addition to the local population. The study was approved by the Institutional Ethics Committee (IRB No. DRB/Ortho/2025/56). Written informed consent was obtained from all participants before enrolment. This research was conducted in accordance with the World Medical Association Declaration of Helsinki.

Translation and cross-cultural adaptation

The Hindi SFI (SFI-Hi) was developed using a double forward-backward translation procedure based on Beaton et al. [10] and the COSMIN framework [11,12], to achieve semantic, idiomatic, experiential, and conceptual equivalence. Two bilingual, native Hindi-speaking translators, independently prepared forward translations; an expert committee comprising an orthopedic spine surgeon, a physiotherapist, a clinical psychologist, and both translators developed a consensus version, which two further bilingual translators back-translated independently. The committee resolved discrepancies by consensus and adapted units for the Indian context (e.g., kilograms rather than pounds) [6]. The near-final questionnaire was pilot tested in 22 patients, and three items

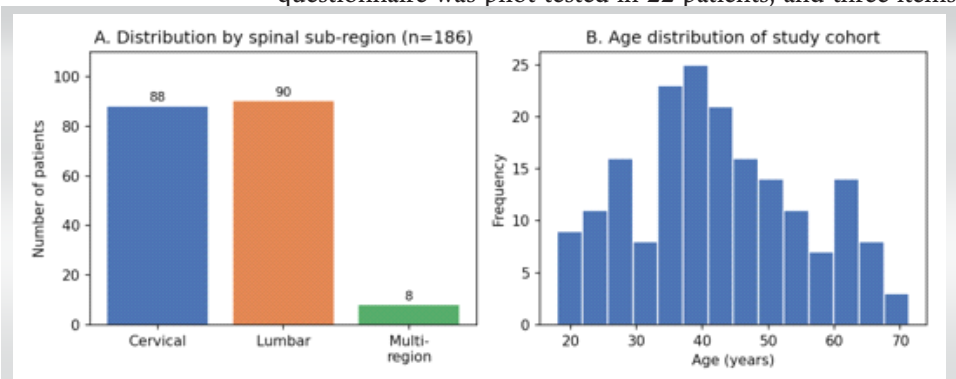


Figure 2: Distribution of the study cohort by spinal sub-region (a) and age (b) (n = 186).

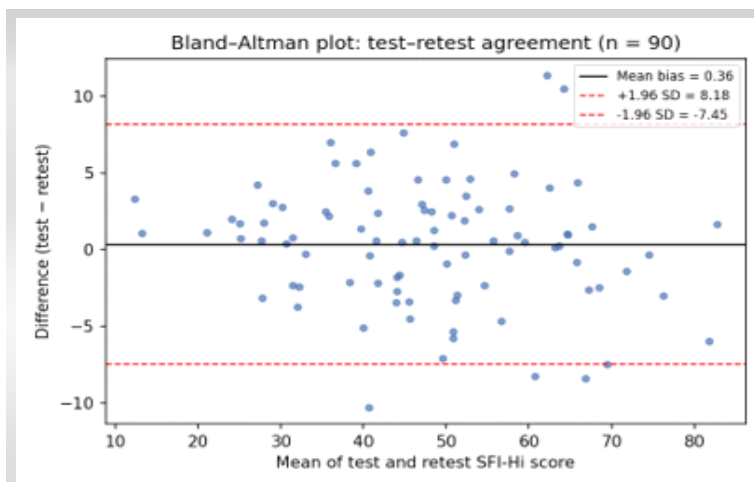


Figure 3: Bland–Altman plot of test-retest agreement for the Hindi-translated spine functional index in the 90-patient retest subsample, obtained 5–7 days apart. Solid line indicates the mean bias; dashed lines indicate the 95% limits of agreement.

underwent minor wording changes based on their feedback to produce the final SFI-Hi.

Participants

Eligible participants were aged 18 years or older, literate in Hindi, symptomatic for at least 12 weeks, and diagnosed with a cervical, lumbar, or combined spinal disorder. Exclusion criteria were spinal tumor, infection, or fracture; pregnancy; systemic rheumatological or inflammatory disease; previous spinal surgery; or neurological or psychiatric conditions likely to interfere with self-reported assessment. Of 204 eligible patients approached, 186 (91.2%) consented and completed baseline assessment; 90 clinically stable participants repeated the SFI-Hi after 5–7 days for test-retest analysis.

Outcome instruments

All participants completed the 25-item SFI-Hi (response options “Yes,” “Partly,” and “No”), the ten-item Hindi Functional Rating Index (FRI-Hi) [13], Hindi SF-12, and a 100-mm pain VAS. Cervical patients also completed the Hindi NDI (NDI-Hi) [8,9], and lumbar patients completed the ODI-Hi [7]. SFI-Hi total scores were expressed on a 0–100 scale for comparison with the disability-oriented comparators, with higher scores indicating greater functional limitation. Baseline variables, included age, sex, body mass index, residence, education, occupation, smoking status, comorbidities, symptom duration, prior treatment, radiating pain, and magnetic resonance imaging (MRI), confirmed degenerative changes where available.

Apriori hypotheses for construct validity

Six hypotheses were prespecified for construct validity: High correlation ($r \geq 0.60$) with the FRI-Hi, with the ODI-Hi in the lumbar subgroup, and with the NDI-Hi in the cervical subgroup; high correlation ($|r| \geq 0.60$) with the SF-12 physical functioning domain; weak correlation ($|r| \leq 0.30$) with the SF-12 mental health domain; and moderate correlation ($r = 0.31–0.60$) with VAS pain. Construct validity was considered supported if at least 75% of hypotheses were confirmed [14].

Responsiveness and MCID

A subgroup of 92 participants who received a defined treatment intervention (physiotherapy, pharmacological management, or a combination) during the study period returned for a scheduled clinical follow-up visit 6 weeks after baseline and completed a repeat SFI-Hi assessment together with a patient-reported global rating of change (GRC) anchor question. Responsiveness was evaluated by comparing baseline and 6-week SFI-Hi scores and calculating the standardized response mean (mean change divided by the standard deviation of the change score). The MCID was estimated using an anchor-based approach, comparing the observed SFI-Hi change among patients reporting meaningful improvement on the GRC anchor with that among patients reporting no meaningful improvement; receiver operating characteristic (ROC) curve analysis was used to identify the SFI-Hi change score that best discriminated between these groups [12,14].

Statistical analysis

Item distributions were assessed for skewness ($|Z| > 1.96$

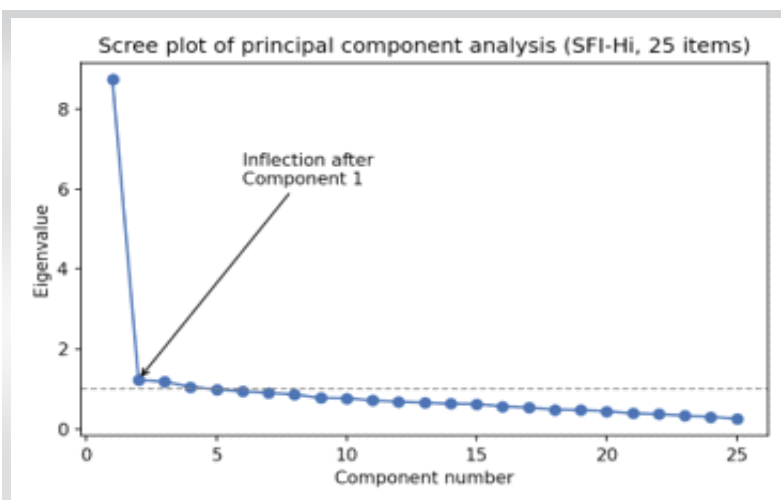


Figure 4: Scree plot from the principal component analysis of the Hindi-translated spine functional index (25 items, $n = 186$).

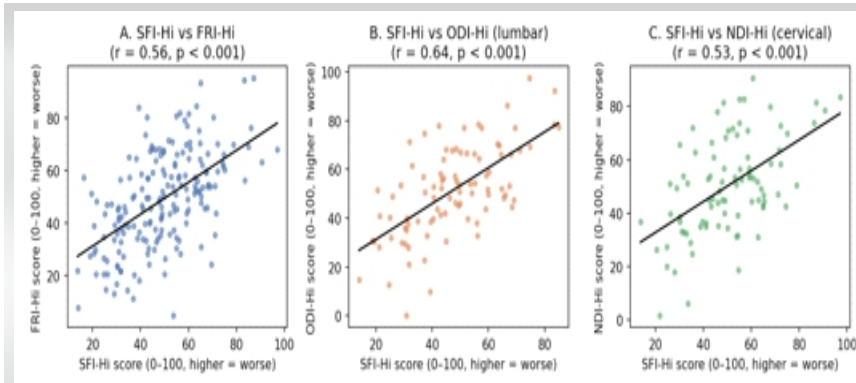


Figure 5: Scatterplots of construct validity between the Hindi-translated spine functional index (SFI-Hi) and (a) Hindi functional rating index, (b) Hindi Oswestry disability index in the lumbar subgroup, and (c) Hindi neck disability index in the cervical subgroup. Higher scores on the SFI-Hi and comparator disability instruments indicate greater disability.

indicating non-normality), and item-total correlations below 0.30 were flagged for review. Internal consistency was assessed using Cronbach's alpha (0.70–0.95 interpreted as acceptable to excellent) [15]. Test-retest reliability was assessed using the two-way random-effects, single-measure intraclass correlation coefficient (ICC2,1) with 95% confidence intervals, and Bland–Altman analysis was used to assess agreement. Standard error of measurement (SEM) was calculated as $SD\sqrt{(1-ICC)}$, and minimal detectable change at 90% confidence (MDC90) as $SEM \times \sqrt{2} \times 1.65$ [5]. Construct validity was assessed using Pearson correlation coefficients, interpreted as low (0.00–0.30), moderate (0.31–0.60), or high (≥ 0.60) [6]. Principal component analysis (PCA) explored factor structure using eigenvalues > 1.0 and the scree plot as extraction criteria. Responsiveness was interpreted using conventional standardized-response-mean benchmarks (< 0.2 trivial, 0.2–0.5 small, 0.5–0.8 moderate, and > 0.8 large) [14], and the anchor-based MCID analysis used ROC-derived sensitivity, specificity, and area under the curve (AUC). Floor and ceiling effects were considered present when more than 15% of participants scored

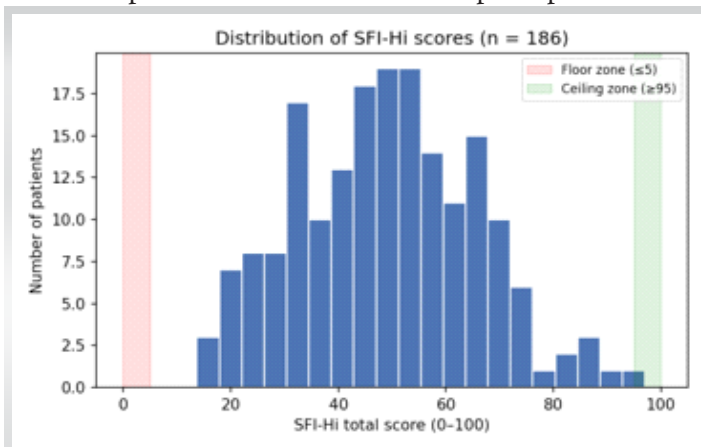


Figure 6: Distribution of Hindi-translated spine functional index total scores across the study cohort ($n = 186$), with the prespecified floor (≤ 5) and ceiling (≥ 95) zones indicated.

at the lowest or highest possible score [1,16]. All tests were two-sided, with $P < 0.05$ considered statistically significant. Analyses were performed using IBM Statistical Package for the Social Sciences Statistics version 31 (IBM Corp., Armonk, NY, USA).

Result

Of 204 eligible patients approached, 186 (91.2%) were enrolled and completed the baseline assessment; overall questionnaire completion was 96.8%. Fig. 1 summarizes recruitment and retest flow. Table 1 and Fig. 2 summarize the demographic and clinical characteristics of the cohort ($n = 186$): mean age 42.1 ± 12.9 years; 98 (52.7%) male; mean body mass index 25.4 ± 3.8 kg/m²; cervical involvement in 88 (47.3%), lumbar in 90

Table 1: Demographic and clinical characteristics of the study cohort ($n=186$)

Characteristic	Value ($n=186$)
Age, years (mean $\pm$ SD)	42.1 $\pm$ 12.9
Sex, male / female, n (%)	98 (52.7)/88 (47.3)
BMI, kg/m ² (mean $\pm$ SD)	25.4 $\pm$ 3.8
Symptom duration, months (mean $\pm$ SD)	15.9 $\pm$ 9.6
Cervical, n (%)	88 (47.3)
Lumbar, n (%)	90 (48.4)
Cervical+lumbar (multi-region), n (%)	8 (4.3)
Residence, urban / rural, n (%)	121 (65.1) / 65 (34.9)
Education—up to secondary school, n (%)	61 (32.8)
Education—higher secondary / graduate, n (%)	99 (53.2)
Education—postgraduate, n (%)	26 (14.0)
Occupation—manual/labor-intensive, n (%)	103 (55.4)
Occupation—sedentary/desk-based, n (%)	83 (44.6)
Current smoker, n (%)	34 (18.3)
Comorbidity present (any), n (%)	58 (31.2)
Diabetes mellitus, n (%)	22 (11.8)
Hypertension, n (%)	31 (16.7)
Prior treatment—physiotherapy only, n (%)	74 (39.8)
Prior treatment—analgesics/NSAIDs only, n (%)	56 (30.1)
Prior treatment—none, n (%)	56 (30.1)
Pain radiation to limb, present, n (%)	67 (36.0)
MRI-confirmed degenerative changes, n (%)*	129 (79.1)
SFI-Hi score, 0–100 (mean $\pm$ SD) [†]	49.0 $\pm$ 16.6
VAS, 0–100 mm (mean $\pm$ SD)	52.3 $\pm$ 19.8
FRI-Hi, 0–100% (mean $\pm$ SD)	38.7 $\pm$ 17.2
NDI-Hi, 0–100%—cervical subgroup (mean $\pm$ SD)	31.4 $\pm$ 12.6
ODI-Hi, 0–100%—lumbar subgroup (mean $\pm$ SD)	33.9 $\pm$ 15.1

*Among patients who underwent MRI as part of routine clinical care ($n=163$). [†]SFI-Hi reported on a 0–100 disability-oriented scale, where 0 indicates no functional limitation and 100 indicates maximum functional limitation. SFI-Hi: Hindi version of the spine functional index, FRI-Hi: Hindi functional rating index, NDI-Hi: Hindi neck disability index, ODI-Hi: Hindi Oswestry disability index, VAS: Visual analog scale, SF-12: Short form-12 health survey, SD: Standard deviation, BMI: Body mass index, MRI: Magnetic resonance imaging

Table 2: Internal consistency and test-retest reliability of the SFI-Hi

Analysis sample	Cronbach's α	SEM (%)	MDC90 (%)	ICC (2,1) [95% CI]
Full cohort ($n=186$)	0.92	—	—	—
Cervical subgroup ($n=88$)	0.9	—	—	—
Lumbar subgroup ($n=90$)	0.91	—	—	—
Retest subsample ($n=90$; day 5–7)	—	2.8	6.5	0.96 [0.94–0.98]
SEM: Standard error of measurement, MDC90: Minimal detectable change at 90% confidence, ICC: Intraclass correlation coefficient, SFI-Hi: Hindi version of the spine functional index				

(48.4%), and combined cervical-lumbar involvement in eight (4.3%); and mean SFI-Hi score 49.0 ± 16.6 on the 0–100 disability scale.

Content validity and item analysis

All 25 items met the prespecified item-level criteria; no item exceeded the skewness threshold or had an item-total correlation below 0.30, so none was removed. Missing responses occurred in fewer than 2% of administrations, most often for items concerning lifting/carrying and assistance with personal care.

Internal consistency and test-retest reliability

Overall Cronbach's alpha was 0.92 (item-deleted range 0.90–0.93; Table 2). In the ninety-patient retest sample, test-retest reliability was excellent (ICC_{2,1} = 0.96, 95% CI 0.94–0.98), with an SEM of 2.8% and an MDC90 of 6.5%. Bland–Altman analysis demonstrated a mean test-retest bias of 0.4%, with 95% limits of agreement from approximately –7.5% to +8.2% (Fig. 3).

Structural (factor) validity

PCA identified a single dominant component, with an eigenvalue of 8.74 explaining 35.0% of the total variance; the scree plot showed a clear inflection after the first component (Fig. 4). Item loadings ranged from 0.46 to 0.75, with the highest loadings for difficulty with walking/recreation/sport, transport independence, and getting in and out of chairs, and the lowest for appetite and concentration (Table 3).

Construct validity: Hypothesis testing

Three of the six prespecified hypotheses were confirmed – those concerning the ODI-Hi, the SF-12 mental health domain, and VAS pain (Table 4 and Fig. 5). Correlations with the FRI-Hi ($r = 0.56$) and NDI-Hi ($r = 0.53$) were moderate rather than high, and the correlation with the SF-12 physical functioning

Table 3: Item-total correlations and principal component loadings for the 25 SFI-Hi items

Item	Item-total r	PCA loading
1. Stay at home most of the time	0.45	0.66
2. Change positions frequently for comfort	0.38	0.55
3. Avoid heavy household/occupational tasks	0.42	0.62
4. Rest more often than usual	0.39	0.57
5. Ask others to help with tasks	0.48	0.71
6. Pain present almost all the time	0.35	0.51
7. Difficulty lifting and carrying	0.44	0.64
8. Appetite affected by symptoms	0.33	0.48
9. Difficulty walking/recreation/sport	0.51	0.75
10. Difficulty with home/family duties	0.49	0.72
11. Sleep less well than usual	0.46	0.68
12. Need assistance with personal care/hygiene	0.32	0.46
13. Difficulty with regular daily/work/social activity	0.43	0.63
14. More irritable/short-tempered	0.44	0.65
15. Feel weaker or stiffer than usual	0.4	0.59
16. Reduced independence with transport	0.5	0.73
17. Need assistance or slower while dressing	0.42	0.61
18. Difficulty moving in bed	0.4	0.58
19. Difficulty concentrating and/or reading	0.35	0.5
20. Sitting tolerance affected	0.46	0.67
21. Difficulty getting in/out of chairs	0.5	0.74
22. Can only stand for short periods	0.48	0.7
23. Difficulty squatting/kneeling	0.49	0.72
24. Difficulty reaching down (e.g., pick up objects)	0.47	0.69
25. Slower on stairs or needs a rail	0.44	0.65
SFI-Hi: Hindi version of the spine functional index, PCA: Principal component analysis		

domain ($r = -0.54$) did not reach the prespecified threshold. The observed results therefore supported several expected construct relationships but did not meet the predefined criterion of 75% of hypotheses.

Floor and ceiling effects

No participant (0/186) scored at the floor, and 1 (0.5%) scored

Table 4: Construct validity — correlations between the SFI-Hi and comparator instruments

Comparator measure	Total (n=186)	Cervical (n=88)	Lumbar (n=90)
FRI-Hi	r=0.56**	r=0.51**	r=0.60**
NDI-Hi	r=0.53**	r=0.53**	—
ODI-Hi	r=0.64**	—	r=0.64**
VAS	r=0.46**	r=0.42**	r=0.50**
SF-12 PF domain	r=-0.54**	r=-0.49**	r=-0.58**
SF-12 BP domain	r=-0.48**	r=-0.45**	r=-0.51**
SF-12 MH domain	r=-0.07 (ns)	r=-0.06 (ns)	r=-0.09 (ns)

FRI: Functional rating index, NDI: Neck disability index, ODI: Oswestry disability index, VAS: Visual analog scale, SF-12: Short form-12 health survey, PF: Physical functioning, BP: Bodily pain, MH: Mental health, ns: Not significant ($P>0.05$). Negative correlations for PF and BP reflect opposite scoring directions: higher SF-12 domain scores indicate better health, whereas higher SFI-Hi scores indicate greater disability. ** $P<0.001$

at the ceiling; both values were well below the prespecified 15% threshold for a clinically important floor or ceiling effect (Fig. 6).

Responsiveness

Ninety-two treated participants completed follow-up assessment at 6 weeks. Mean SFI-Hi score improved from 51.3 ± 15.8 at baseline to 38.1 ± 16.4 at follow-up, a mean improvement of 13.2 points (95% CI, 10.8–15.6; $P < 0.001$), with a standardized response mean of 0.84, indicating good responsiveness (Table 5). Patients reporting meaningful improvement on the GRC anchor showed a significantly greater SFI-Hi change than those reporting no meaningful improvement.

MCID

Anchor-based analysis identified an estimated MCID of 8 points on the 0–100 SFI-Hi scale. ROC analysis identified an optimal discriminating threshold of 7.8 points, with an AUC of 0.81, sensitivity of 78%, and specificity of 76% (Table 5).

Discussion

This study translated and culturally adapted the SFI-Hi and evaluated the measurement properties of the resulting SFI-Hi in an Indian orthopedic cohort. The questionnaire demonstrated high internal consistency, excellent test-retest reliability, and a predominantly unidimensional factor structure. The observed relationships with established measures of spinal disability, pain, and health-related quality of life were generally consistent

Table 5: Responsiveness and minimal clinically important difference of the SFI-Hi (treated subgroup, $n=92$, 6-week follow-up)

Parameter	Value
Baseline SFI-Hi score, mean $\pm$ SD	51.3 $\pm$ 15.8
Six-week SFI-Hi score, mean $\pm$ SD	38.1 $\pm$ 16.4
Mean improvement (95% CI)	13.2 (10.8–15.6)
<i>P</i> -value	<0.001
Standardized response mean	0.84
Anchor-based MCID	8 points
ROC-derived threshold	7.8 points
Area under the curve	0.81
Sensitivity	78%
Specificity	76%

MCID: Minimal clinically important difference, ROC: Receiver operating characteristic, CI: Confidence interval, SFI-Hi: Hindi version of the spine functional index

with the expected construct relationships, although the predefined 75% criterion for construct validity was not reached. The overall Cronbach's alpha of 0.92 indicates strong internal consistency and is comparable with the values reported for the original English version ($\alpha = 0.91$) and the simplified Chinese version ($\alpha = 0.91$) [3,6]. It was higher than the values reported in the Turkish and Spanish adaptations ($\alpha = 0.85$ for both) [4,5] and is comparable with the internal consistency reported for the Hindi ODI and Hindi NDI [7,8,9]. Test-retest reliability was excellent (ICC2,1 = 0.96, 95% CI 0.94–0.98); the SEM of 2.8% and MDC90 of 6.5% provide useful estimates for interpreting change in SFI-Hi scores among stable patients.

The PCA findings support a predominantly one-factor structure, with the first component explaining 35.0% of the total variance and item loadings ranging from 0.46 to 0.75. This finding is consistent with previous SFI adaptations, although the proportion of variance explained differs among language versions [3,4,5,6]. Because PCA is exploratory, the present factor structure should be regarded as preliminary; confirmatory factor analysis in a larger, independent cohort would be appropriate in future studies.

Construct validity showed a mixed but clinically interpretable pattern. The high correlation with the ODI-Hi ($r = 0.64$)



supported the expected relationship between whole-spine and lumbar disability, whereas correlations with the FRI-Hi ($r = 0.56$) and NDI-Hi ($r = 0.53$) were moderate rather than high. The correlation with the SF-12 physical functioning domain was moderate and inverse ($r = -0.54$), whereas the relationship with the SF-12 mental health domain was negligible ($r = -0.07$), supporting the expected distinction between physical disability and mental health. The VAS correlation was moderate ($r = 0.46$), as hypothesized. Overall, three of the six a priori hypotheses were confirmed, so the predefined 75% criterion was not achieved; this should be considered when interpreting the construct-validity evidence for the SFI-Hi.

The SFI-Hi also demonstrated good responsiveness to clinical change, with a standardized response mean of 0.84 in the treated subgroup, conventionally regarded as indicating large responsiveness [14]. The anchor-based MCID of approximately 8 points, supported by a ROC-derived AUC of 0.81, provides an initial benchmark for interpreting clinically meaningful change on the SFI-Hi and complements the measurement-error estimates reported above (SEM 2.8%, MDC90 6.5%); the MCID reflects a clinically important change, whereas the MDC90 reflects the smallest change exceeding measurement error, and the two should be interpreted separately.

Several limitations should be considered. The study was conducted at a single tertiary-care orthopedic center, which may limit generalizability to primary-care, community, rural, or other regional populations. Participants were required to be literate in Hindi and able to complete a written questionnaire, so the findings may not extend to individuals with limited literacy or those who primarily use regional dialects. Responsiveness and the MCID were evaluated in a subgroup of 92 treated participants using a single 6-week follow-up assessment and an anchor-based method; longer-term responsiveness, and MCID estimation using additional distribution-based and multiple-timepoint anchor methods, warrant further study. Confirmatory factor analysis was not performed, and the factor

structure identified by PCA therefore remains exploratory. Only eight participants had combined cervical-lumbar disease, reflecting consecutive clinical recruitment during the study period; this limits conclusions about multiregional spinal disease, and larger studies with more patients with multiregional involvement would be valuable.

Conclusion

The SFI was successfully translated and culturally adapted into Hindi, resulting in the SFI-Hi. In this cohort of 186 Indian patients with chronic cervical, lumbar, or combined spinal disorders, the instrument demonstrated high internal consistency, excellent short-term test-retest reliability, low measurement error, and a single dominant component on exploratory factor analysis. The observed correlations with established disability, pain, and health measures provided partial support for construct validity, although the predefined 75% hypothesis-confirmation threshold was not reached. The SFI-Hi also demonstrated good responsiveness to clinical change (standardized response mean 0.84) and an anchor-based MCID of approximately 8 points, supporting its use for monitoring clinically meaningful change. Further multicenter studies involving larger and more diverse Hindi-speaking populations, including confirmatory factor analysis, are warranted before broader generalization of the instrument's measurement properties.

Clinical Message

The SFI-Hi provides Hindi-speaking clinicians with a single, reliable, and responsive, instrument for assessing functional limitation across the whole spine, rather than relying on separate cervical- or lumbar-specific tools, and may be useful for tracking outcomes – including clinically meaningful change of approximately 8 points or more – in patients with mixed or multi-regional spinal complaints, pending further multicenter validation.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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