

# Translation and Validation of Hindi Version of Patient Scar Assessment Scale in Patients with Postburn Facial Scar

Arkopal Bandopadhyay, Akshay Kapoor<sup>1</sup>, Kaustav Kundu<sup>2</sup>, Manish Jagtap<sup>1</sup>, Debarati Chattopadhyay<sup>1</sup>

Departments of Pharmacology, <sup>1</sup>Burns and Plastic Surgery, <sup>2</sup>Psychiatry, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India

## Abstract

**Background:** Patient scar assessment scale (PSAS) is a reliable and standard tool for assessment of scars by the observer and the patient. Till now the scale has not been translated to Hindi. The objective of the study was to translate and validate the PSAS to Hindi. **Materials and Methods:** We did forward and backward translation of the English PSAS together with its validation. In total, 64 patients with postburn facial scars were included. The validation committee consisted of 6 bilingual members. **Results:** The PSAS-Hindi showed good internal consistency with Cronbach's  $\alpha$  of 0.86. Test-retest reliability showed good correlation with intra class coefficient being 0.94 (95% confidence interval: 0.83–0.97). **Conclusion:** The PSAS was successfully translated to Hindi, and cross-cultural adaptation was made.

**Keywords:** Cross-cultural adaptation, Hindi validation, PSAS

## INTRODUCTION

Postburn scars on in face have a deep impact on the quality of life of patients.<sup>[1]</sup> Scars cause a multitude of functional, aesthetic, and psychosocial problems.<sup>[2]</sup> To assess these scars, scar assessment scales are used by researchers.<sup>[3]</sup> A number of such scales, like Vancouver scar scale, are available that have been tested and validated to evaluate scar quality.<sup>[4-6]</sup>

The patient and observer scar assessment scale (POSAS) was introduced by Draaijers *et al.*<sup>[7]</sup> to evaluate the quality of scar tissue. The scale is composed of two parts, namely, the patient scale and the observer scale. There are six items of each of the scales, each item having a 10-point score, with “10” indicating the worst score and “1” indicating a score comparable to normal skin. The patient scale deals with his/her perception of the scar with respect to pain, itch, color, stiffness, thickness, and relief.<sup>[8]</sup> The patient scar assessment scale (PSAS) section of the POSAS is of particular value since no other scar scale deals with the patient's subjective perception of scar.<sup>[9]</sup> This subscale reinforces the fact that scars cause an important impact on quality of life, and the symptoms of scars have to be taken

into account, along with the visibility for comprehensive evaluation of scars.<sup>[10]</sup>

A comparison between the POSAS and the Vancouver scar scale revealed that the former was more reliable than the latter for the evaluation of scars.<sup>[7,11]</sup> At present, the POSAS is a reliable tool used for scar assessment.<sup>[2,12]</sup>

Since it is such a widely used scar assessment tool, it is also essential to translate the patient scale into different languages for a better understanding of various language-speaking patients. Till now, the scale has been translated and culturally adapted to French, Italian, and Arabic.<sup>[13-15]</sup> However, there is no Hindi version of the scale. In the absence of translation in the native language, the usage of this tool is limited in the Hindi-speaking population.

Thus, the purpose of this study was to translate and culturally adapt a Hindi version of the PSAS.

**Address for correspondence:** Dr. Debarati Chattopadhyay, Department of Burns and Plastic Surgery, All India Institute of Medical Sciences, Rishikesh 249203, Uttarakhand, India. E-mail: debarati1981@gmail.com

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## MATERIALS AND METHODS

A prospective observational study was conducted in a tertiary care teaching institute in North India from January 2021 to June 2021. The study received ethical and institutional review board approval. The research was carried out in accordance with the Helsinki Declaration.

The objective of the study was to translate and validate PSAS in the Hindi language.

### Translation and cross-cultural adaptation

Initially, permission was taken from the original developers of the POSAS scale. In accordance with the International Quality of Life Assessment guidelines, the original version of PSAS was initially forward-translated into two initial Hindi versions (named H1 and H2) by two independent professional translators. The translators then combined the two versions into a test Hindi version (named HT). Back-translation was done by an independent translator.

Finally, an expert committee was created comprising six bilingual persons (two plastic surgeons, one plastic surgery resident, one nursing officer, one research fellow, and one nonhealth worker). They reviewed and compiled the forward and backward translations to make a final Hindi version of PSAS (called HF1). The final version was created when all six members reached a unanimous decision. Operational equivalence was ensured after discussion with subject experts and members of the target population. Pilot study findings were used to assess the questionnaire.

Only minor modifications were made to ensure adequate cultural adaptation of the Hindi version [Table 1].

### Pilot study

POSAS was evaluated for comprehensibility, readability, cultural suitability, and acceptability on 15 monolingual patients from the plastic surgery outpatient department having postburn facial scars. On a Likert scale of 1–5, the patients rated each question (from highly unsuitable to highly suitable). Following the pilot testing, the main study was conducted. The main study did not include data from the pilot study.

### Study population

In total, 64 patients with postburn facial scars were included in the present study for assessment. Patients were interviewed during their routine follow-up visits in the outpatient department. Informed and written consent was obtained from all the patients. Patients who were not able to comprehend the Hindi language fluently were excluded from the study. The sample size calculation was based on the recommendation that there should be at least 10 patients per question in a questionnaire.<sup>[16]</sup>

For assessment of test–retest reliability, patients filled the Hindi PSAS questionnaire again 2 weeks after the primary evaluation. A duration of 2 weeks was chosen so that recall bias was taken care of, but at the same time, a significant clinical change in the measured outcomes did not occur. The Hindi version of PSAS was tested methodologically for validity, reliability, and responsiveness according to

**Table 1: Hindi translation of PSAS questionnaire**

SL no.	English POSAS validation questionnaire	Hindi POSAS validation questionnaire	Hindi POSAS validation questionnaire
1	Has the scar been painful the past few weeks?	क्या निशान पिछले कुछ हफ्तों से दर्द कर रहा है?	Kya Nishan pichle kuch hafton se dard kar raha hey?
2	Has the scar been itching the past few weeks?	क्या इस निशान में पिछले कुछ हफ्तों से खुजली हुई है	Kya is Nishan mein pichle kuch hafton se khujli hui hai?
3	Is the scar color different from the color of your normal skin at present?	क्या अब निशान का रंग आपकी सामान्य त्वचा के रंग से अलग है	Kya abhi Nishan ka rang aapki samanya tacha ke rang se alag hai?
4	Is the stiffness of the scar different from your normal skin at present?	क्या अब निशान का कड़ापन आपकी सामान्य त्वचा से अलग है	Kya abhi Nishan ka kadapan aapki samanya tvacha se alag hai?
5	Is the thickness of the scar different from your normal skin at present?	क्या अभी निशान की मोटाई आपकी सामान्य त्वचा से अलग है	Kya abhi Nishan ki motai aapki samanya tvacha se alag hai?
6	Is the scar more irregular than your normal skin at present?	क्या अब छूने पर निशान आपकी सामान्य त्वचा से अनिमित महसूस होता है	Kya ab choone par Nishan aapki samanya tvacha se aneymit mahsoos hota hai?
7	What is your overall opinion of the scar compared to normal skin?	सामान्य: त्वचा की तुलना में आपकी निशान के बारे में संपूर्ण राय क्या है	Samnaya tvacha ki tulna me aapki Nishan ke bare mein sampoorna rai kya hai?
8	No, not at all	नहीं, बिल्कुल भी नहीं	Nahin, bilkul bhee nahin
9	Yes, very much	हाँ, बहुत ज्यादा	Ha, bahut jyada
10	No, as normal skin	नहीं, सामान्य त्वचा की तरह	Nahin, samanya tvacha ke tarah
11	Yes, very different	हाँ, बहुत अलग	Ha, bahut alag
12	As normal skin	सामान्य त्वचा की तरह	Samanya tvacha ke tarah
13	Very different	बहुत अलग	Bahut alag

the consensus-based standard for the selection of health status measurement instruments checklist.<sup>[17]</sup>

### Validity

The validity of a score is a measure of how closely an instrument can measure the parameter that it is intended to measure.<sup>[18]</sup> Construct validity was tested for the Hindi PSAS. It tests the correlation of the score with other scoring systems. A correlation coefficient  $>0.7$  was taken as good,  $0.3-0.7$  as moderate, and  $<0.3$  relates as poor.<sup>[19]</sup>

### Reliability

It was measured over three domains.

1. Internal consistency: It is the relation between individual items in a questionnaire. It was expressed in terms of Cronbach's  $\alpha$ . Values between 0.7 and 0.95 are acceptable.<sup>[20]</sup>
2. Test-retest reliability or reproducibility: It is the extent to which the score remains unchanged on repeated measurements. It was expressed as an intraclass correlation coefficient (ICC).
3. Measurement error: It was expressed as the standard error of measurement (SEM). SEM is the standard deviation of repeated measures and was calculated as  $SEM = SD\sqrt{1 - ICC}$ , where SD is the standard deviation of the sample. The smallest detectable change (SDC) is the minimal change with significance that can be interpreted as a "real" change. It was calculated using the formula  $SDC = SEM \times 1.96 \times \sqrt{2}$ . This would result in SDC at the sample level (rather than at the individual level).<sup>[16]</sup>

### Responsiveness

It is a measure of the longitudinal validity of the construct and detects a clinically important change over time. It was considered positive if the SDC was smaller than minimal important change (MIC).

## RESULT

### Translation of the PSAS scale in Hindi

#### Pilot study

In the pilot study, all questions were answered by most of the participants. The mean age of patients was 26.06 ( $\pm 7.59$ ) years, with 53.3% females. Patients rated the questionnaire on a Likert scale of 1–5. All the patients were satisfied with scar pain, scar itching, and scar color-related question, whereas 93.3%, 86.6%, and 80% patients were fully satisfied with scar thickness, scar stiffness, and scar irregularity-based questions, respectively. The mean sum score was 25 ( $\pm 7.5$ ). The mean of overall opinion score was 7 ( $\pm 1.84$ ). The results of the pilot study are summarized in Table 2. The pilot study showed good cross-cultural adaptation of the Hindi POSAS. Patient response to each question has been given in Figure 1.

#### Final study

Total 64 participants were included in the final analysis after the initial pilot study. Mean age of participants was 24.6 years, with 56.3% female participation. Sociodemographic parameters are shown in Table 3.

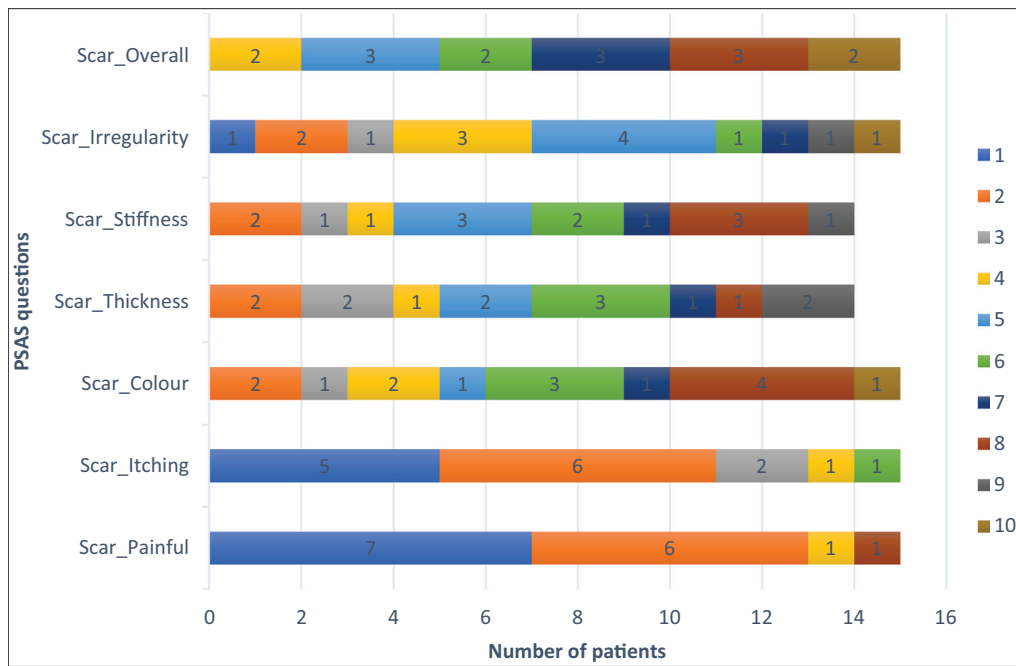
The summary of responses given by the patients in the final study is represented in Table 4.

Mean time gap between two responses of the participants was  $18.17 \pm 2.72$  days. POSAS Hindi showed good construct validity. Hindi POSAS showed good internal consistency with Cronbach's  $\alpha$  of 0.86. Test-retest reliability showed a good correlation with intraclass coefficient = 0.94 (95% confidence interval: 0.83–0.97).

SDC was 6.94. Since there is no consensus on MIC for POSAS, it was calculated by dividing the standard deviation by two, as proposed by Norman *et al.*<sup>[21]</sup> It came out to be 3.45. Thus, the SDC was higher than MIC.

**Table 2: Pilot study findings**

Sl no.	English PSAS	Hindi PSAS	Pilot study	
			Mean $\pm$ SD	Percentage of response
1	Has the scar been painful the past few weeks?	क्या निशान पिछले कुछ हफ्तों से दर्द कर रहा है?	2.06 $\pm$ 1.83	100
2	Has the scar been itching the past few weeks?	क्या इस निशान में पिछले कुछ हफ्तों से खुजली हुई है?	2.2 $\pm$ 1.37	99
3	Is the scar color different from the color of your normal skin at present?	क्या अब निशान का रंग आपकी सामान्य त्वचा के रंग से अलग है?	5.8 $\pm$ 2.42	99
4	Is the stiffness of the scar different from your normal skin at present?	क्या अब निशान का कड़ापन आपकी सामान्य त्वचा से अलग है?	5.06 $\pm$ 2.54	98
5	Is the thickness of the scar different from your normal skin at present?	क्या अभी निशान की मोटाई आपकी सामान्य त्वचा से अलग है?	5.26 $\pm$ 2.49	98.6
6	Is the scar more irregular than your normal skin at present?	क्या अब छूने पर निशान आपकी सामान्य त्वचा से अनिमित महसूस होता है?	4.8 $\pm$ 2.48	100
7	Sum score (questions 1–6)		25.2 $\pm$ 7.51	–
8	What is your overall opinion of the scar compared to normal skin?	सामान्य: त्वचा की तुलना में आपकी निशान के बारे में संपूर्ण राय क्या है?	6.66 $\pm$ 1.91	99



**Figure 1:** Patient responses in the pilot study

\*number within colored bars represents the number of patients who had given a response on the scale

**Table 3: Baseline characteristics of the patients in the final study**

Parameter (n = 64)	Mean ± SD	Range
Age	24.6 (±7.1)	17–43
Sex		
Male	28 (43.7%)	–
Female	36 (56.3%)	–
Mean years of schooling	11.8 (±4.2)	0–17
Occupation		
Homemaker	12 (18.7%)	–
Student	26 (40.6%)	–
Unskilled	8 (12.5%)	–
Semiskilled	8 (12.5%)	–
Skilled	10 (15.6%)	–
Marital status		
Unmarried	50 (78.13)	–
Married	12 (18.7)	–
Divorced	2 (3.1)	–
Socioeconomic status		
Lower	38 (59.3)	–
Middle	26 (40.7)	–
Time elapsed since burn (in days)	11.42 (±10.44)	0.5–39

## DISCUSSION

The POSAS is the first scar assessment scale of its kind where the patient scale is taken into consideration. Since scars, especially facial scars or scars on any exposed body parts, has a high impact on body image, patient perspective is of utmost importance in the assessment and management of scars. This makes POSAS an invaluable tool. The observer scale in POSAS is assessed by health professionals who are usually proficient in English; hence its translation is not necessary. However, the patient

version of the same scale needs to be understood by the native-speaking patients, and thus a properly validated translation needs to be available.

Hindi is the official language of India and is spoken in seven more countries as a mother tongue by part of the population. With 566 million people in the world speaking Hindi, Hindi translation of standard scales is required.<sup>[22]</sup> Our study found good validity and reliability for the Hindi version of PSAS. It also shows good internal consistency with Cronbach’s  $\alpha$  as 0.86 and high test–retest reliability. The Hindi translation of POSAS will be useful for researchers and clinicians dealing with patients who understand only Hindi.

## Limitations

The study being cross-sectional, did not use the Hindi version of POSAS to assess the longitudinal change of scar over time.

## CONCLUSION

The study shows a successful translation of PSAS to Hindi and establishes its validity and reliability.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

**Table 4: Summary of patient response in the final study**

SL no.	English PSAS	Hindi PSAS	Baseline values		Retest values	
			Mean $\pm$ SD	Percentage of response	Mean $\pm$ SD	Percentage of response
1	Has the scar been painful the past few weeks?	क्या निशान पिछले कुछ हफ्तों से दर्द कर रहा है?	1.68 $\pm$ 1.5	100	1.69 $\pm$ 1.48	100
2	Has the scar been itching the past few weeks?	क्या इस निशान में पिछले कुछ हफ्तों से खुजली हुई है	1.56 $\pm$ 1.23	100	1.59 $\pm$ 1.22	100
3	Is the scar color different from the colour of your normal skin at present?	क्या अब निशान का रंग आपकी सामान्य त्वचा के रंग से अलग है	5.65 $\pm$ 2.2	100	5.56 $\pm$ 2.16	100
4	Is the stiffness of the scar different from your normal skin at present?	क्या अब निशान का कड़ापन आपकी सामान्य त्वचा से अलग है	4.35 $\pm$ 2.2	100	4.45 $\pm$ 2.17	100
5	Is the thickness of the scar different from your normal skin at present?	क्या अभी निशान की मोटाई आपकी सामान्य त्वचा से अलग है	4.29 $\pm$ 2.31	100	4.22 $\pm$ 2.18	100
6	Is the scar more irregular than your normal skin at present?	क्या अब छूने पर निशान आपकी सामान्य त्वचा से अनिमित महसूस होता है	4.84 $\pm$ 2.14	100	4.86 $\pm$ 2.12	100%
	Sum scores (questions 1–6)		22.41 $\pm$ 6.87	–	22.38 $\pm$ 6.77	–
7	What is your overall opinion of the scar compared to normal skin?	सामान्य: त्वचा की तुलना में आपकी निशान के बारे में संपूर्ण राय क्या है	6.51 $\pm$ 1.81	90%	6.53 $\pm$ 1.79	100%

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