

Translation and Psychometric Evaluation of the Gujarati Version of Participation Scale for Stroke Patients: A Cross-sectional Study

SURBALA LOUREMBAM¹, DHRUV DAVE²

ABSTRACT

Introduction: Social participation is increasingly recognised as fundamental to stroke rehabilitation outcomes and quality of life. However, existing participation measures for stroke often face cultural and linguistic challenges when used with the Gujarati population. The Participation Scale (PS) provides a culturally appropriate, comprehensive tool for evaluating participation restrictions across various conditions but has yet to be validated for Gujarati-speaking stroke patients.

Aim: To estimate the reliability and validity of the Gujarati version of the PS-V6.0 among Gujarati-speaking stroke patients.

Materials and Methods: This cross-sectional observational study was conducted between February 2022 and December 2022 at the Ashok & Rita Patel Institute of Physiotherapy, Charotar University of Science and Technology (CHARUSAT), Anand, Gujarat, India. The study involved a convenience sample of 86 stroke participants. The Gujarati version of the PS-V6.0, the Modified Rankin Scale (mRS), the Social Domain of Stroke Impact Scale (SIS-S), and the Barthel Index (BI)

were administered during the initial visit. The Gujarati PS was administered again after one week. Psychometric testing of the scale included an investigation of internal consistency measured by Cronbach's alpha, the Intraclass Correlation Coefficient (ICC) for test-retest reliability, and construct validity (known group and convergent validity).

Result: The study included 86 stroke patients aged 50.47 ± 14.13 years (59.3% males), with a mean stroke duration of 19.31 ± 20.16 months. The Gujarati PS scale items demonstrated good internal consistency (Cronbach's $\alpha = 0.875$). Test-retest reliability revealed a high correlation (ICC=0.998). Construct validity was confirmed by a moderate correlation with SIS-S (r-value=-0.507, p-value <0.001) and BI (r-value=-0.434, p-value <0.001). The scale differentiated patients with low and high disability severity (with a mean difference of 21.48, 95% CI=13.4 to 29.5).

Conclusion: The Gujarati version of the PS is a reliable and valid patient-reported clinical instrument for the assessment of social participation in Gujarati-speaking stroke patients.

Keywords: Construct validity, Known-group validity, Test-retest reliability

INTRODUCTION

Social participation is a patient-valued outcome and a key determinant of self-perceived quality of life among stroke survivors [1]. It is an emerging intervention goal for healthcare professionals and a discharge destination for stroke rehabilitation. "The International Classification of Functioning, Disability and Health (ICF) defines participation as involvement in life situations and the problems an individual may experience in their involvement in life situations are classified as participation restrictions" [2]. Many stroke survivors report a lack of meaningful activities, indicating a need for organised intervention strategies to optimise social participation [3-6]. Limitations on social participation are viewed as a significant concern for stroke survivors rather than the underlying health condition itself [7,8]. Hence, it is essential to objectively measure and understand the extent of participation restrictions experienced by stroke survivors, as this is a valuable component of situational analysis for planning, monitoring and evaluating stroke rehabilitation services. This necessitates a validated tool in the local dialect to accurately measure participation restrictions, which can be effectively used by communities.

Many instruments have been used to measure 'handicap', quality of life, or, more recently, even participation restrictions among stroke patients. Some of the commonly used measures for evaluating activity limitation and participation of stroke patients include the BI, Functional Independence Measure (FIM), SIS, London Handicap Scale, Assessment of Life Habits (LIFE-H), Frenchay Activities Index (FAI), Activity Card Sort (ACS), Impact on Participation and Autonomy (IPA), Participation Survey/Mobility (PARTS/M), Medical Outcomes Study Questionnaire Short Form (SF-36), etc. [9]. Among these, the

SIS, LIFE-H and ACS have been reported to cover the ICF activities and participation domain categories most comprehensively and they are some of the most frequently used tools to measure participation among stroke survivors. Despite their widespread use, these tools do not fully capture all the categories within the ICF activities and participation domain [9]. Moreover, these participation measures have been designed in the context of Western countries and only a few are available in Indian languages. The SIS has been translated into Gujarati and is recommended as a valid tool for use in clinical practice among Gujarati-speaking stroke patients [10]. However, many items of the SIS have been identified as "not relevant" by Indian stroke survivors, highlighting the need for better tools that capture the contextual realities of stroke survivors in India [11].

The PS is a culturally appropriate measure of participation restriction, designed for cross-cultural use and validated across diverse global communities with disabilities. Initially developed for individuals with stigmatised conditions such as leprosy, spinal cord injuries and mental illness, the PS was first published by van Brakel WH et al., [12]. It has been translated into several languages, including Bengali, Hindi, Tamil, Telugu and Maithili and is validated for chronic conditions such as leprosy, HIV/AIDS and epilepsy. The scale has also been recommended for use in chronic neurological disorders, such as spinal cord injury and multiple sclerosis [13].

The PS demonstrates strong content validity, with high internal consistency (Cronbach's $\alpha = 0.92$), excellent inter-rater reliability (r-value=0.80) and strong discriminant validity across various groups [12]. However, it is rarely used to assess participation restriction among stroke patients and its reliability and validity in this population remain unknown [14]. Furthermore, no Gujarati version of the PS

has been reported. Given that translating a questionnaire is essential when the target population speaks a different language, this study aimed to translate and estimate the reliability and validity of the Gujarati version of the PS-V6.0 for use among Gujarati-speaking stroke patients.

MATERIALS AND METHODS

This cross-sectional observational study was conducted between February 2022 and December 2022 at the Ashok & Rita Patel Institute of Physiotherapy, CHARUSAT, Gujarat, India. This study was approved by the Institutional Ethics Committee (IEC) (CHA/IEC/ADM/21/07/723.01). Written consent was obtained from all participants prior to their participation.

Inclusion criteria: Stroke patients aged 18 years and above, with a poststroke duration of at least three months were included in the study.

Exclusion criteria: Patients with any communication disorder (such as aphasia) or severe co-morbidities, such as severe joint pain were excluded from the study.

Sample size: The psychometric properties of the PS V6.0 PS-G were examined in 86 Gujarati-speaking stroke patients, who were selected using a convenience sampling method from various institutional outpatient departments, clinics, hospitals and rehabilitation centres in Gujarat, India. The sample size was determined using the subject-to-item ratio guidelines. The recommended ratio varies between 1:2 and 1:10 (participants per item) [15]. Given that the PS-G consists of 18 items, a minimum sample size of 36 (1:2 ratio) to 180 (1:10 ratio) would be acceptable. To ensure a reliable psychometric evaluation, a sample size of 86 falls within the accepted range for validation studies.

Scale translation process: Permission to translate the PS into Gujarati was obtained from the scale developer, van Brakel WH et al., [12]. The translation of the PS into Gujarati followed the five-step process outlined by Beaton DE et al., and Guillemin F et al., [Annexure-1] [16,17]. First, two independent bilingual translators created forward translations—one by a physiotherapy expert familiar with the scale and another by an English professor unfamiliar with the scale. These versions were synthesised into a unified translation. Next, two bilingual translators performed back translations into English. An expert committee, which included the authors and translators, then reviewed the equivalence of the translations in semantic, idiomatic, experiential and conceptual terms, producing a prefinal version. This version was tested on 10 Gujarati-speaking stroke patients, whose feedback informed the final version of the scale. The final version of the PS-G was completed by 86 stroke patients.

Measurement tools: The measurement tools included the PS-G, the participation domain of the SIS-S for assessing concurrent validity, the mRS for evaluating known-group validity and the BI for assessing convergent validity of the PS-G.

The PS is an interview-based measure consisting of 18 questions regarding patient-perceived participation for individuals with disabilities, aimed at evaluating their level of participation restriction. It covers all nine ICF participation domains: “learning and applying knowledge, general tasks and demands, communication, mobility, self-care, domestic life, interpersonal interactions and relationships, major life areas and community, social and civic life.” In the PS, if respondents report experiencing restrictions in a specific area (by answering “no” or “sometimes”), they are subsequently asked to specify the degree of restriction they face, choosing from: “(1) no problem; (2) a small problem; (3) a moderate problem; or (4) a large problem.” The sum of the scores is calculated, with a higher total score representing a lower level of general participation. Scores are ranked into five

levels of participation: “(1) no significant restriction: 0-12; (2) mild restriction: 13-22; (3) moderate restriction: 23-32; (4) severe restriction: 33-52; and (5) extreme restriction: 53-90” [12].

The SIS contains 64 questions divided across eight domains, including “strength, hand function, mobility, Activities of Daily Living (ADL)/instrumental ADL, emotion, communication, memory and social participation.” The SIS is reliable, valid and sensitive to changes related to stroke recovery [18]. For this study, the social participation domain of the SIS-G, comprising eight items, with a score ranging from 8 to 40 was utilised. A higher score indicates greater social participation [10]. The social participation domain of the SIS is one of the most commonly used measures of social participation among stroke patients [9].

The mRS was used to measure the degree of disability and has been referred to as the “gold standard” for measuring stroke outcomes. The mRS grades a patient’s disability from 0 (no symptoms) to 6 (death) [19]. The 10-item BI was also utilised, which is a widely used measure in research for assessing functional independence in ADLs. The score for the BI ranges from 0 to 100, with zero indicating complete dependence and 100 indicating complete independence [20].

Reliability: Reliability is the degree to which the results of measurements are consistent and accurate. It demonstrates homogeneity, consisting of the internal consistency of a scale and reproducibility, comprising the test-retest reliability of scores. The internal consistency of the PS-G was assessed by inter-item correlation, measured by Cronbach’s alpha, with the scores recorded during the first visit. Internal consistency was considered acceptable when the Cronbach’s alpha value exceeded 0.70, using the following criteria: ≥ 0.90 (excellent reliability), 0.70-0.89 (good reliability), 0.50-0.69 (moderate reliability) and < 0.50 (poor reliability) [21].

Test-retest reliability was estimated by administering the PS-G twice by the same physiotherapist, with a one-week interval between the assessments to minimise the influence of potential confounding factors, such as recovery or learning effects, which could affect the data. Before conducting the second interview, clinical stability was confirmed by asking patients to evaluate their overall health status during the interval between the two interviews using the clinical global impressions scale: “1-very much improved, 2-much improved, 3-minimally improved, 4-no change, 5-minimally worse, 6-much worse and 7-very much worse” [22]. The retest was administered only if patients responded with 3, 4, or 5, ensuring clinical stability. The test-retest reliability of the PS-G was measured by the ICC using the scores from the initial and second visits. The ICC values were reported as follows: greater than 0.90 = excellent reliability, 0.70 to 0.89 = good reliability, 0.50 to 0.75 = moderate reliability and less than 0.50 = poor reliability [23].

Construct validity: Indicators of construct validity in relation to convergent and known-group validity were assessed. Known-group validity refers to the extent to which an instrument differentiates between groups that are known to be different, whereas convergent validity examines whether the PS correlates with other instruments to the expected degree.

Known group validity: To assess known-group validity, the mRS was used, which measures disability on a scale from 0 (no symptoms) to 5 (severe disability). Following the approach by Gandek B et al., and Prakash V and Ganesan M, participants were categorised into two groups based on disability severity: low severity (mRS scores 0-2) and high severity (mRS scores 3-5) [24,25]. In this study, authors hypothesised that stroke patients with low severity of disability would have significantly higher participation, that is, lower participation scores, than patients with high severity. Known-group validity was evaluated using an Independent t-test, with statistical significance set at p-value < 0.05 .

Convergent and concurrent validity: Convergent (criterion) validity assesses the correlation between measures of a similar construct, while concurrent validity evaluates how well a new test aligns with an established one. Present study examined convergent validity by comparing the total mean scores of the PS-G with the BI and concurrent validity by comparing the PS-G with the social participation domain of the SIS-G, using Pearson's correlation test. Authors hypothesised that the validity of the PS-G would be supported by a moderate correlation (0.40-0.69) [26] between the total PS-G scores and both the BI and the social participation domain of the SIS-G. A moderate correlation was expected because certain items in the SIS may not be entirely relevant to the Indian context [11] and the BI focuses solely on mobility and self-care, while the PS encompasses all nine domains of the ICF activities and participation.

STATISTICAL ANALYSIS

All statistical analyses were performed using the pooled dataset collected from multiple centres. The data were analysed using Statistical Package for the Social Sciences (SPSS) version 23.0. The analysis assessed the reliability and validity of the PS-G. Reliability was evaluated through internal consistency (Cronbach's alpha) and test-retest reliability (ICC). Construct validity was assessed by examining known-group validity, convergent validity, and concurrent validity. Descriptive statistics were used to summarise participant characteristics, while inferential tests, including independent t-tests and Pearson correlation, were used to establish validity.

RESULTS

Total of 86 stroke patients participated in the psychometric evaluation study. The participants had a mean age of 50.47 ± 14.13 years and included a higher proportion of males (59%), exhibiting diverse demographic characteristics [Table/Fig-1] [27]. The Gujarati version of the scale was successfully translated with minimal difficulty. Pilot testing revealed that the average time to administer the PS-G ranged from 5 to 10 minutes. Individual cognitive debriefing confirmed that patients understood the Gujarati version in the same way that the original would be understood. The prefinal version of the PS-G was tested on 10 Gujarati-speaking stroke patients and was subsequently accepted as the final version.

Sociodemographic characteristics		Mean \pm SD/ Frequency (%)
Age (years)-Mean \pm SD		50.47 \pm 14.13
Duration of stroke in months-Mean \pm SD		19.31 \pm 20.16
Gender	Male	51 (59.3)
	Female	35 (40.7)
Marital status	Never married	7 (8.1)
	Currently married	71 (82.6)
	Divorced	2 (2.3)
	Widowed	6 (7)
Educational level	None	5 (5.8)
	Primary	29 (33.7)
	Secondary	38 (44.2)
	Graduate or above	14 (16.3)
Living arrangement	Family (living with children)	30 (34.9)
	Extended family (children, parents, siblings or close relatives)	48 (55.8)
	Alone (living with spouse)	8 (9.3)
Revised Kuppaswamy Economic status [27]	Upper	11 (12.8)
	Upper middle	29 (33.7)
	Lower middle	35 (40.7)
	Upper lower	10 (11.6)
	Lower	1 (1.2)

Post-stroke employment status	Employed	3 (3.5)
	Unemployed due to stroke	50 (58.1)
	Unemployed due to other reasons	2 (2.3)
	Self employed	11 (12.8)
	Non-paid work, volunteer/charity	1 (1.2)
	Retired	6 (7.0)
	Never worked/Homemaker	13 (15.1)
Type of stroke	Ischaemic	45 (52.3)
	Haemorrhagic	18 (20.9)
	Not known (due to lack of imaging studies)	23 (26.8)
Side of stroke	Right	33 (38.4)
	Left	53 (61.6)

[Table/Fig-1]: Participant characteristics (N=86).

Internal consistency: Cronbach's alpha was used to examine internal consistency. Inter-item correlations of 0.7 or more were considered acceptable. The Cronbach's alpha for inter-item correlation was $\alpha=0.875$ overall [Table/Fig-2], reflecting good internal consistency [21].

Items	Mean \pm SD	Inter-item correlation	Cronbach's alpha if item deleted
"Do you have equal opportunity as your peers to find work?"	1.253 \pm 1.937	0.260	0.877
"Do you work as hard as your peers do?"	1.831 \pm 2.151	0.339	0.875
"Do you contribute to the household economically in a similar way to your peers?"	1.710 \pm 2.127	0.403	0.872
"Do you make visits outside your village/ neighborhood as much as your peers do?"	1.313 \pm 1.834	0.725	0.859
"Do you take a part in major festivals and rituals as your peers do?"	1.747 \pm 2.035	0.621	0.863
"Do you take as much part in casual recreational/ social activities as do your peers?"	1.722 \pm 2.026	0.563	0.865
"Are you as socially active as your peers are?"	1.626 \pm 1.948	0.703	0.859
"Do you have the same respect in the community as your peers?"	0.674 \pm 1.608	0.485	0.869
"Do you have opportunity to take care of yourself as well as your peers?"	1.241 \pm 1.903	0.529	0.867
"Do you have same opportunities as your peers to start or maintain a long-term relationship with a life partner?"	0.216 \pm 0.911	0.189	0.876
"Do you visit other people in the community as often as other people do?"	1.494 \pm 1.940	0.782	0.856
"Do you move around inside and outside the house and around the village/ neighborhood just as other people do?"	1.204 \pm 1.917	0.678	0.861
"In your village/ neighborhood, do you visit public places as often as other people do?"	1.771 \pm 2.079	0.619	0.863
"In your home, do you do house hold work?"	1.674 \pm 2.113	0.526	0.867
"In family discussions, does your opinion count?"	0.650 \pm 1.509	0.377	0.872

"Do you help other people?"	1.951±2.100	0.544	0.866
"Are you comfortable meeting new people?"	0.469±1.223	0.325	0.873
"Do you feel confident to try to learn new things?"	0.301±0.920	0.025	0.880

[Table/Fig-2]: Results of item analysis.

Test-retest reliability: The test-retest reliability of the PS-G was estimated using the ICC with a two-way random effects model. The value of the ICC for average measures obtained was 0.998 (95% Confidence Interval=0.995-0.999), indicating excellent test-retest reliability [23].

Construct validity: All hypotheses regarding the relationship of the PS-G with the mRS, BI and SIS were confirmed. Known-group validity was estimated using an independent t-test, with the significance level set at p-value <0.05. A significant difference (p-value=0.001) was found in PS-G total scores between patients with low disability severity (mRS 1 and 2) and those with high disability severity (mRS 3, 4 and 5), with a mean difference of 21.48 [Table/Fig-3]. Convergent validity and concurrent validity were estimated using Pearson's correlation test. A moderate correlation was observed between the PS-G total score and the SIS (r-value=-0.507) and the BI (r-value=-0.434) [Table/Fig-4-6].

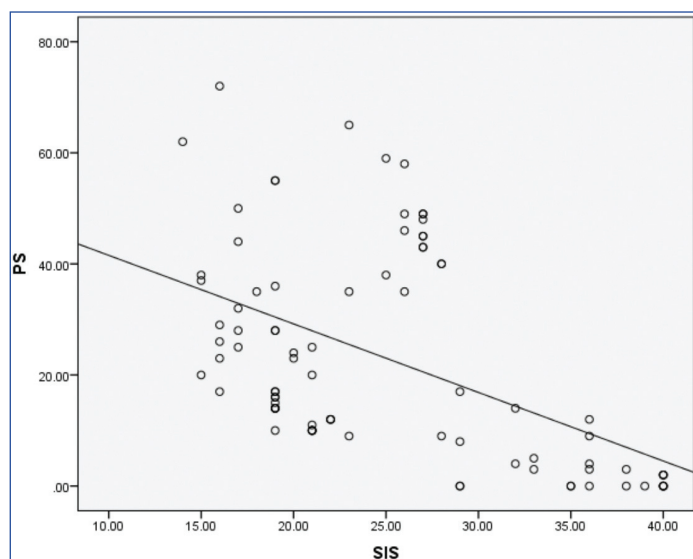
MRS	N	Mean±SD	Mean difference	p-value	t-value
Low severity (mRS 1 and 2)	59	16.03±15.5	21.48	0.001	5.6854
High severity (mRS 3, 4, 5)	27	37.51±17.84			

[Table/Fig-3]: Known group analysis.

Measures	SIS	BI
Pearson correlation coefficient	-0.507**	-0.434**

[Table/Fig-4]: Correlation statistics of PS-G with Social domain of SIS and Barthel Index (BI).

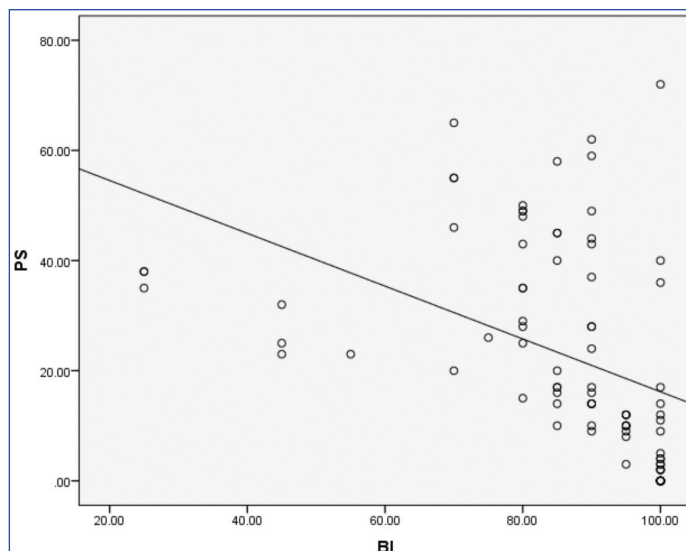
** : Correlation is significant at the 0.01 level (2-tailed)



[Table/Fig-5]: Relationship between Participation Scores (PS-G) and SIS-S.

DISCUSSION

This study aimed to translate and conduct the psychometric evaluation of the PS V6.0 for Gujarati-speaking stroke patients. The translation process followed the guidelines of the Mapi Research Institute, including forward translation, synthesis, back translation, expert committee review and testing of the prefinal version. The results of this study indicate that the Gujarati version of the PS (PS-G) is a reliable and valid tool for assessing participation restriction among stroke patients. The general aim of using the PS is to gain comparable information on participation restriction and to utilise it in



[Table/Fig-6]: Relationship between Participation Scores (PS-G) and Barthel Index (BI).

rehabilitation, stigma reduction and social integration programmes to evaluate the effect of different types of interventions. The PS is a generic tool designed to measure participation restriction specifically for middle- and low-income countries.

The internal consistency of the questionnaire, reflected by a strong Cronbach's alpha of 0.875, indicates that the items within the PS-G effectively measure a unified construct of participation restriction. This finding aligns with previous research on the original and translated versions of the PS, such as the Indonesian version (0.796-0.814) [28], Chinese version (0.93) [29], Igbo version (0.91) [30] and the Turkish version (0.852) [31], further supporting its cross-cultural adaptability.

The excellent test-retest reliability (ICC=0.998) observed in this study, which was higher than the ICC limit of 0.70, confirms the stability and reproducibility of the scale. In the present study, the Gujarati version test-retest scores (ICC) were taken at a one-week interval, similar to the reliability studies of other versions, such as that by Espindula PAV et al., which reported an ICC of 0.992 [32]. Similar findings were also observed in another published study by Silva e Dutra F et al., (ICC=0.95) with intervals ranging from one week to ten days [14], reflecting its robust psychometric properties, regardless of language or cultural differences.

All predetermined hypotheses for construct validity were met and confirmed. The results demonstrate that the PS-G effectively differentiated between known groups based on functional impairment, specifically patients with varying levels of severity (mild vs. severe), further supporting its usefulness in assessing different degrees of participation restrictions. Notably, this study was the first to report on the known-group validity of the PS. The PS total scores also moderately correlate with the SIS (-0.507) and the BI (-0.434). These moderate correlations were expected, as the SIS does not fully capture all relevant aspects of social participation in the Indian context [11] and the BI is limited to mobility and self-care domains, whereas the PS comprehensively addresses all the participation domains of the ICF.

Social participation is a multifaceted domain influenced by cultural, social and environmental factors. The PS, having been developed specifically for use in low- and middle-income countries, is also a culturally and contextually appropriate measure, particularly well-suited to capture participation restrictions. Given the increasing emphasis on social participation in rehabilitation, validated tools like the PS-G can play an essential role in identifying participation restrictions and evaluating the effectiveness of interventions aimed at improving social participation for stroke patients. Additionally, the PS's ease of administration makes it a practical tool for clinicians in resource-limited settings.

Limitation(s)

This study had a few limitations. Although the sample size was adequate for psychometric evaluation, a larger sample size could provide greater statistical power and enhance the generalisability of the findings. The study focused solely on Gujarati-speaking stroke patients and additional validation in other regional languages would strengthen the applicability of the scale across diverse populations. Future longitudinal studies are needed to establish the scale's responsiveness to changes over time and to determine the minimal clinically important difference scores.

CONCLUSION(S)

This study establishes the PS-G as a reliable and valid instrument for assessing participation restrictions among Gujarati-speaking stroke patients. The scale demonstrated good internal consistency, excellent test-retest reliability and satisfactory construct validity. These psychometric properties, combined with its cultural suitability, make the PS-G a valuable tool for both research and clinical practice in the Indian context. Given its ease of use and comprehensiveness, the PS-G can also serve as a model for further translations and adaptations in other Indian languages, contributing to the broader goal of addressing participation restrictions, which is often an overlooked aspect of recovery across diverse populations.

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REFERENCES

- Vecchia CD, Viprey M, Haesebaert J, Termoz A, Giroudon C, Dima A, et al. Contextual determinants of participation after stroke: A systematic review of quantitative and qualitative studies. *Disabil Rehabil.* 2021;43(13):1786-98.
- World Health Organization, editor. *International classification of functioning, disability and health: ICF.* Geneva: World Health Organization; 2001. 299 p.
- Norlander A, Iwarsson S, Jönsson AC, Lindgren A, Månsson Lexell E. Living and ageing with stroke: An exploration of conditions influencing participation in social and leisure activities over 15 years. *Brain Inj.* 2018;32(7):858-66.
- Norlander A, Carlstedt E, Jönsson AC, Lexell EM, Ståhl A, Lindgren A, et al. Long-term predictors of social and leisure activity 10 years after stroke. *PLoS One.* 2016;11(2):e0149395.
- Norlander A, Iwarsson S, Jönsson AC, Lindgren A, Månsson Lexell E. Participation in social and leisure activities while re-constructing the self: Understanding strategies used by stroke survivors from a long-term perspective. *Disabil Rehabil.* 2022;44(16):4284-92.
- Zhou X, Du M, Weng Y, Zhou L. Hard return: The development and transformation process of social participation in stroke survivors: A qualitative study and initial theory. *Clin Rehabil.* 2020;34(6):824-36.
- Pollock A, St George B, Fenton M, Firkins L. Top 10 research priorities relating to life after stroke--consensus from stroke survivors, caregivers, and health professionals. *Int J Stroke Off J Int Stroke Soc.* 2014;9(3):313-20.
- Skolarus LE, Burke JF, Brown DL, Freedman VA. Understanding stroke survivorship: Expanding the concept of poststroke disability. *Stroke.* 2014;45(1):224-30.
- Tse T, Douglas J, Lentini P, Carey L. Measuring participation after stroke: A review of frequently used tools. *Arch Phys Med Rehabil.* 2013;94(1):177-92.
- Diwan SJ, Shah ZR, Joshi PB. Validation of Gujarati translated version of stroke impact scale. *J Clin of Diagn Res.* 2018;12(8):YC13-YC16.
- Prakash V, Ganesan M, Vasanthan R, Hariom K. Do commonly used functional outcome measures capture activities that are relevant for people with stroke in India? *Top Stroke Rehabil.* 2017;24(3):200-05.
- van Brakel WH, Anderson AM, Mutatkar RK, Bakirtziev Z, Nicholls PG, Raju MS, et al. The participation scale: Measuring a key concept in public health. *Disabil Rehabil.* 2006;28(4):193-203.
- Participation scale (P-scale) | InfoNTD [Internet]. [cited 2024 Aug 28]. Available from: <https://www.infond.org/toolkits/ntd-morbidity-and-disability-toolkit/participation-scale-p-scale>.
- Silva e Dutra F, Cavalcanti A, Alves A, Aramaki A, Amaral M. Inter-rater reliability and test-retest of the Participation Scale (P-Scale) in patients after stroke. *Acta Fisiátrica.* 2022;29:42-49.
- Anthoine E, Moret L, Regnault A, Sébille V, Hardouin JB. Sample size used to validate a scale: A review of publications on newly-developed patient reported outcomes measures. *Health Qual Life Outcomes.* 2014;12:2.
- Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine.* 2000;25(24):3186.
- Guillemin F, Bombardier C, Beaton D. Cross-cultural adaptation of health-related quality of life measures: Literature review and proposed guidelines. *J Clin Epidemiol.* 1993;46(12):1417-32.
- Duncan PW, Wallace D, Lai SM, Johnson D, Embretson S, Laster LJ. The stroke impact scale version 2.0. Evaluation of reliability, validity, and sensitivity to change. *Stroke.* 1999;30(10):2131-40.
- Banks JL, Marotta CA. Outcomes validity and reliability of the modified Rankin scale: Implications for stroke clinical trials: A literature review and synthesis. *Stroke.* 2007;38(3):1091-96.
- Duffy L, Gajree S, Langhorne P, Stott DJ, Quinn TJ. Reliability (inter-rater agreement) of the Barthel Index for assessment of stroke survivors: Systematic review and meta-analysis. *Stroke.* 2013;44(2):462-68.
- Taber KS. The use of Cronbach's alpha when developing and reporting research instruments in science education. *Res Sci Educ.* 2018;48(6):1273-96.
- Busner J, Targum SD. The clinical global impressions scale. *Psychiatry Edmont.* 2007;4(7):28-37.
- Koo TK, Li MY. A guideline of selecting and reporting intraclass correlation coefficients for reliability research. *J Chiropr Med.* 2016;15(2):155-63.
- Gandek B, Sinclair SJ, Jette AM, Ware JE. Development and initial psychometric evaluation of the Participation Measure for Post-Acute Care (PM-PAC). *Am J Phys Med Rehabil.* 2007;86(1):57-71.
- Prakash V, Ganesan M. The Indian Stroke Scale: Development and validation of a scale to measure participation in daily activities among patients with stroke in India. *Int J Stroke Off J Int Stroke Soc.* 2021;16(7):840-48.
- Schober P, Boer C, Schwarte LA. Correlation coefficients: Appropriate use and interpretation. *Anesth Analg.* 2018;126(5):1763.
- Radhakrishnan M, Nagaraja SB. Modified Kuppuswamy socioeconomic scale 2023: Stratification and updates. *Int J Community Med Public Health.* 2023;10(11):4415-18.
- Kelders R, van Brakel W, Beise K, Irwanto. Testing and validating a simplified scale to measure social participation of people with disabilities in Indonesia. *Disabil Rehabil.* 2012;34(8):638-46.
- Chung EY han, Lam G. Validation of two scales for measuring participation and perceived stigma in Chinese community-based rehabilitation programs. *Health Qual Life Outcomes.* 2018;16(1):105.
- Ibikunle PO, Oladipo SE, Chukwu JN, Okeke AI. Establishing the psychometric properties of the IGBO version of the participation scale. *Leprosy Review.* 2016;3:396-404.
- Altuntaş O, Özkan E, Köse B, Aran OT, Huri M, Akı E. Assessment of participation within the International Classification of Functioning, Disability, and Health (ICF): The Turkish validity and reliability of the participation scale. *GI Ssel A, editor. Occup Ther Int.* 2021;2021:6658773.
- Espindula PAV, de Carvalho Bastone A, Paula Santos A. Construct validity and reliability of the participation scale (P-scale) in individuals with spinal cord injury. *J Spinal Cord Med.* 2024;47(5):661-68.

PARTICULARS OF CONTRIBUTORS:

- Assistant Professor, Ashok & Rita Patel Institute of Physiotherapy, Charotar University of Science and Technology, Anand, Gujarat, India.
- Associate Professor, Ashok & Rita Patel Institute of Physiotherapy, Charotar University of Science and Technology, Anand, Gujarat, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Surbala Lourembam,
Ashok & Rita Patel Institute of Physiotherapy, CHARUSAT Campus,
Anand-388421, Gujarat, India.
E-mail: lsurbala.phy@charusat.ac.in

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- For any images presented appropriate consent has been obtained from the subjects. NA

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Sl. No	Participation Scale - Gujarati version (PS-G) (ક્યારેક અથવા હોય તો) ના (તે તમારા માટે કેટલી મોટી સમસ્યા છે?)	હા - 0	ક્યારેક	ના	વાતુ નથી પડતું બહાર નથી - 0	કોઈ સમસ્યા નથી - 1	નાનું - 2	મધ્યમ - 3	મોટું - 5
1	તમને કામ શોધવામાં તમારા સાથીદારો જેટલી સમાન તક મળે છે?								
2	તમે તમારા સાથીદારો જેટલી જ મહેનત કરો છો?								
3	શું તમે તમારા સાથીદારો જેટલી સમાન રીતે ઘરમાં આર્થિક ફાળો આપો છો?								
4	શું તમે તમારા ગામડાની બહાર અથવા પડોશની તમારા સાથીદારો જેટલી મુલાકાત લો છો?(બજાર)								
5	શું તમે મોટા તહેવારો અને ધાર્મિક વિધિઓમાં તમારા સાથીદારો જેટલી જ ભાગ લો છો?(જેવા કે વ્રજ પ્રસંગ, ધાર્મિક પ્રસંગ, બેસણું)								
6	શું તમે તમારા સાથીઓની જેમ જ રોજ ના મનોરંજન અથવા સામાજિક પ્રવૃત્તિઓમાં ભાગ લો છો?(જેવા કે રમતગમત, વાતચીત, બેઠક)								
7	શું તમે તમારા સાથીદારો જેટલા સામાજિક રીતે સક્રિય છો?(જેવા કે ધાર્મિક, સામુદાયિક સંવાદ)								
8	શું તમે તમારા સાથીઓની જેમ સમુદાયમાં સમાન આદર ધરાવો છો?								
9	શું તમારી પાસે તમારા સ્વયંની કાળજી (દેખાવ, પોષણ, સ્વાસ્થ્ય) સાથે સાથે તમારા સાથીઓની કાળજી લેવાની તક છે?								
10	શું તમારા જીવનસાથી સાથે લાંબા ગાળાના સંબંધોનો પ્રારંભ અથવા જાળવવા માટે તમને તમારા સાથીદારો જેટલી સમાન તક મળે છે?								
11	શું તમે અન્ય લોકોની જેમ સમુદાયમાં અન્ય લોકોની મુલાકાત લો છો?								
12	શું તમે ઘરની અંદર કે બહાર તથા ગામડા અથવા પડોશમાં આસપાસ બીજા લોકોની જેમ ફરો છો?								
13	તમારા ગામ/પડોશમાં, શું તમે અન્ય લોકો જેટલી વાર જાહેર સ્થળોની મુલાકાત લો છો?(જેવા કે શાળા, દુકાન, બજાર, કચેરી તથા ચા/કોફીની દુકાન)								
14	તમારા ઘરમાં તમે ઘરનું કામ કરો છો?								
15	કૌટુંબિક ચર્ચામાં તમારા અભિપ્રાયની ગણતરી થાય છે?								
16	શું તમે અન્ય લોકોની મદદ કરો છો?(પાડોશી, મિત્રો, સંબંધીઓ)								
17	શું તમને નવા લોકો ને મળવાનું ફાવે છે?								
18	શું તમે નવી વસ્તુઓ શીખવાનો પ્રયત્ન કરવા માટે પુસ્તો આત્મવિશ્વાસ અનુભવો છો?								
Total Score									

Comment:

નામ: _____

ઉંમર: ____ પુરુષ/ સ્ત્રી/ અન્ય: ____

Interviewer: _____ Date of interview: ____ / ____ / ____

Grades of participation restriction	Mild restriction	Moderate restriction	Severe restriction	Extreme restriction
No significant restriction				
0-12	13-22	23-32	33-52	53-90