RESEARCH PAPER

Development And Validation of Questionnaire to Assess the Knowledge Attitude and Practice About Unilateral Spatial Neglect Post Stroke Among Physiotherapist

Gayatri G Marar[1*],Dr Raghavendrasingh Dharwardkar, MPT, (PhD) [2]

[1]*Post graduate student, Department of neurology physiotherapy*
KLE Academy of Higher Education and Research Institute of Physiotherapy, Nehru Nagar Belagavi Karnataka 590010
Email id: gayatrimarar23@gmail.com
[2]*Assistant professor, Department of neurology physiotherapy*
KLE Academy of Higher Education and Research Institute of Physiotherapy, Nehru Nagar Belagavi Karnataka 590010
Email id: raghavendrasingh@klekipt.edu.in

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ABSTRACT
Background: Unilateral spatial neglect (USN) is a disabling post-stroke condition which is described as an impairment of perception, attention and behaviour that affects the contralateral side of the cerebral lesion leading to impaired functional outcomes and quality of life, hence early identification and appropriate rehabilitation are crucial. Despite of the increased incidence of USN in post stroke, limited evidence exists regarding Indian physiotherapists' knowledge, attitudes, and practices (KAP) towards USN.
Objective: This study aimed to develop and validate a structured questionnaire assessing the KAP of Indian physiotherapists in post-stroke USN.
Methods: The study was conducted in 2 phases, in phase I questionnaire development and content validation by 20 expert physiotherapists across India was done. In phase II, validation of the tool was done through pilot study of 26 physiotherapists using convenient sampling method. The statistical analysis was performed using SPSS 23 and reliability of questionnaire was obtained using Cronbach's Alpha.
Results: The questionnaire demonstrated excellent reliability: knowledge (a = 0.958), attitude (a = 0.913), and practice (a = 0.958). EFA supported construct validity with KMO values > 0.8 .
Conclusion: This study presents a statistically valid and reliable questionnaire to assess USN related knowledge, attitude and practice among physiotherapist..
Keywords: Perceptual disorders, stroke, questionnaire, physiotherapist, validation.
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INTRODUCTION

Unilateral spatial neglect (USN) is a neurological illness that occurs after brain trauma or disease that causes brain hypoxia which can be caused by stroke, traumatic brain injury, brain tumor or aneurysm [(1)]. It is described as an impairment of perception, attention and behaviour which is contralateral to the cerebral lesion due to which individuals affected by USN are unable to orient or react to the input from opposite side of the lesion and perform their activities of daily living (ADL) from the ipsilateral [(1,2)]. USN presents in 25-30% of total stroke survivors, amongst which right hemisphere stroke is predominantly seen [(1)]. Damage to the two fundamental attentional networks result in various types of USN. Topdown stimulus selection is controlled by the intraparietal and superior frontal brain parts that compromise the dorsal fronto parietal network. The ventral frontoparietal network which detects inputs for behaviour includes the tempero parietal and inferior frontal cortex [(3)]. Symptoms can be classified by sensory modality, sectors of space and reference frame [(4)]. Sectors of space are defined as personal which is the subjects' body, peri personal which is within the subjects' arm reach and extra personal which is outside the subjects' arm reach. Sensory modality is correlated with perceptual unawareness of sensory stimuli opposite to the lesion. It may affect tactile/somatosensory, visual/visuospatial, auditory sensory modality [(4)]. The reference frame is characterized as egocentric which is the inability to focus attention on the hemispace opposite to the lesion relative to the observer's midline and allocentric neglect which is the inability to focus attention on one side of a stimulus independent of its space in relation to the midline of body [(4)]. When standing or walking, there is a deviation in the mediolateral stability, which results in poor balance and an asymmetrical gait leading to reduced

**Author for Correspondence: Gayatri G Marar*

potential for functional ambulation, such as stair climbing which causes functional dependency, long-term difficulties in ADL, and an increased risk of falls [2]. USN clinical assessment include pencil and paper tests, behavioural evaluation tools, clinical observations and virtual reality techniques [4]. Strategies for treating USN symptoms can be classified as bottom up or top down viz prism adaptation, constrained induced movement therapy, transcutaneous electrical nerve stimulation, transcranial magnetic stimulation, virtual reality and exercises which include visual scanning, rotation of trunk as some of the many treatment options [5].

Many studies have been done regarding the treatment strategies for post stroke. However, in India the number of studies specifically focusing on unilateral spatial neglect are limited. Understanding unilateral spatial neglect is critical for a physiotherapists' since it helps in early diagnosis and individualized rehabilitation, which enhances the patient's recovery and quality of life. As a result, this study is crucial for determining physiotherapists' knowledge, attitudes, and practice of unilateral spatial neglect following stroke.

METHODOLOGY:

The Institutional Research Committee approved this study and was carried out in two phases. The first phase included development of questionnaire and validation of the developed questionnaire was done in the second phase.

PHASE I – The phase I was further sub divided into two steps

STEP 1 -ITEM GENERATION: This phase primarily concentrated on domain recognition and item generation. A thorough review of the existing literature was done to find out the current perspective of physiotherapist towards post stroke USN. However, by the literature review we discovered that there is a gap in addressing the knowledge, attitude and practice about post stroke USN among the Indian physiotherapist. Hence Three domains were identified viz knowledge, attitude and practice. The "knowledge" questions included the neuroanatomy, neurophysiology aspect while "attitude" questions were developed to understand practitioners' beliefs, values and perception regarding USN. The "practice" domain covered assessment and rehabilitation of USN.

STEP 2 – CONTENT VALIDATION: This process involved selection of experts to review and evaluate the questionnaire which consisted of 20 expert physiotherapists with a minimum clinical experience of 10 years. The experts were sent an online content validation form with clear instruction. The clarity and relevance of topics were evaluated using a four points Likert scale ranging from 1 to 4 with 1 indicating not appropriate, 2 indicating fairly appropriate, 3 indicating moderately appropriate and 4 indicating highly appropriate. The average content validity index across all items was calculated to assess the questionnaire's overall content validity. The final copy of questionnaire consisted of 2 parts where the first part consisted demographic characteristics, the second part consisted of 30 items labelled into 3 domains.

PHASE II – Validation of Questionnaire: To validate the questionnaire a pilot study was conducted using convenient sampling method on 26 physiotherapists across India. The participants were explained about the study and obtained an informed consent through Google form.

INCLUSION CRITERIA: Physiotherapist of both genders having masters degree in neurology physiotherapy or having minimum of 5 years of experience in neurology physiotherapy.

STATISTICAL ANALYSIS

Statistical analysis was performed using Statistical Product and Service Solutions (SPSS) version 23 for windows. (IBM, SPSS Inc, USA) Confidence interval was set at 95% with level of significance at 5%. Power of the study was set at 80%.

RESULT

The content validity index (CVI) for two rounds were calculated. The CVI of knowledge domain increased from 0.8 – 0.9, of attitude domain increased from 0.9 – 1 and practice domain increased from 0.9 to 1. (**TABLE 1,2)** The S-CVI/Ave score for the questionnaire is 0.91 according to the rating of all 20 experts.

Further for the pilot study, the questionnaires were sent to 34 participants, out of which 26 responded. Their demographic profile revealed a predominance of clinicians with a Master's qualification (96.2%), a substantial number specialized in neurological rehabilitation (81.5%), with most practitioners working in clinical settings (73.1%) and multi-specialty hospitals (69.2%).

RELIABILITY AND VALIDITY

The Cronbach's Alpha value for knowledge, attitude and practice is 0.958, 0.913 and 0.958, respectively and the overall value is 0.983, which is statistically excellent. (**Table 3,4,5**)

The results are statistically significant at 5% level (p-value <0.001). Hence all the statements are distributed normally.

DISCUSSION

This study evaluated the knowledge, attitudes, and practices (KAP) of Indian physiotherapists regarding unilateral spatial neglect (USN) following stroke, using a newly developed and validated questionnaire. There were 30 items divided into three categories: knowledge, attitude, and practice. The psychometric evaluation of the questionnaire demonstrated excellent reliability, with Cronbach's Alpha values of 0.958 for the knowledge and practice domains and 0.913 for the attitude domain suggesting a high degree of internal consistency among items.

The knowledge domain of our study encompasses a more comprehensive and contemporary understanding of USN, integrating advanced neuroanatomical, neurophysiology and subtypes of neglect concepts. In contrast the previously published surveys in South Africa and Nigeria primarily focused on definitions, etiology, incidence and screening tools [5,6]. Unlike the study conducted by South Africa, which revealed poor familiarity with pharmacological interventions, our questionnaire omits pharmacotherapy-related content [5]. The high item-total correlations across

the knowledge items (all above 0.77) suggest that respondents' understanding is multidimensional and well-aligned with current evidence.

The attitude domain included questions focusing on the importance of early detection, multidisciplinary approaches, emotional needs of the patients as well as the need of caregiver education. This lacuna was found in both of the studies thereby emphasizing the importance of therapists' perception in rehabilitation outcome [5,6].

The practice domain also revealed high reliability and variance, suggesting that clinical approaches to USN are diversified and evidence-based. Our study not only focused on the standardized assessment tools but also probes the application of it along with the incorporation of the emerging therapeutic modalities like prism adaptation, mirror therapy, galvanic vestibular stimulation and multisensory stimulation which was minimally addressed in one of the study where they focused on traditional approaches such as Constraint-Induced Movement Therapy and screening tools like Comb and Razor Test [5].

Therefore, the previous studies, though informative, was developed within a different healthcare context, and did not comprehensively assess physiotherapists' attitudes. Also, variations in educational curriculum, clinical protocols, cultural perspectives, and professional scope of practice between South Africa and India necessitated the development of the questionnaire tailored to the Indian physiotherapists.

Despite the strong psychometric properties of the tool used in this study, broader sample sizes and cross-regional studies would help generalize the findings and provide deeper insight into regional variations in practice.

The limitation of this study is that the questionnaire was validated through online google forms therefore took longer time to get responses than offline questionnaire.

CONCLUSION

This study presents a statistically valid and reliable questionnaire to assess knowledge, attitude and practice about USN post stroke among Indian physiotherapist. Future research should focus on evaluating the questionnaire in diverse settings and populations.

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Conflict of interest: none

Table 1: Validation of questionnaire by experts

Cronbach's Alpha = 0.958				
KNOWLEDGE (K)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
K1	25.3462	38.635	.905	.950
K2	25.8846	40.666	.815	.954
K3	23.9231	45.354	.809	.955
K4	25.1538	42.535	.855	.952
K5	23.9231	44.394	.836	.954
K6	24.1538	44.935	.802	.955
K7	24.5000	39.380	.896	.950
K8	24.0769	41.034	.777	.956
K9	23.8077	44.082	.780	.955
K10	25.0000	41.360	.858	.951

Table 2: Validation of revised questionnaire

Cronbach's Alpha = 0.913				
ATTITUDE (A)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
A1	16.6154	7.286	.891	.881
A2	15.3077	8.702	.824	.888
A3	15.8846	8.426	.850	.884
A4	14.7692	10.105	.700	.909
A5	14.3462	10.635	.710	.913
A6	15.7692	8.505	.734	.903
A7	14.6729	10.654	.723	.925
A8	15.4087	8.145	.831	.875
A9	14.4527	10.202	.739	.931
A10	15.9954	8.524	.814	.893

Table 3: Reliability for knowledge domain

Cronbach's Alpha = 0.958				
PRACTICE (P)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
P1	41.5385	57.778	.906	.952
P2	41.1154	59.866	.783	.955
P3	40.8462	63.415	.796	.954
P4	41.1154	63.066	.825	.953
P5	41.6923	61.822	.896	.952
P6	40.5769	66.414	.739	.956
P7	40.1538	67.575	.778	.957
P8	41.6923	61.822	.896	.952
P9	40.5769	66.414	.739	.956

P10	40.1538	67.575	.778	.957

Table 4: Reliability for attitude domain

Cronbach's Alpha = 0.913				
ATTITUDE (A)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
A1	16.6154	7.286	.891	.881
A2	15.3077	8.702	.824	.888
A3	15.8846	8.426	.850	.884
A4	14.7692	10.105	.700	.909
A5	14.3462	10.635	.710	.913
A6	15.7692	8.505	.734	.903
A7	14.6729	10.654	.723	.925
A8	15.4087	8.145	.831	.875
A9	14.4527	10.202	.739	.931
A10	15.9954	8.524	.814	.893

Table 5: Reliability for practice domain

Cronbach's Alpha = 0.958				
PRACTICE (P)	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
P1	41.5385	57.778	.906	.952
P2	41.1154	59.866	.783	.955
P3	40.8462	63.415	.796	.954
P4	41.1154	63.066	.825	.953
P5	41.6923	61.822	.896	.952
P6	40.5769	66.414	.739	.956
P7	40.1538	67.575	.778	.957
P8	41.6923	61.822	.896	.952
P9	40.5769	66.414	.739	.956

P10	40.1538	67.575	.778	.957

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