

Sleep Disturbance Scale for Children - Gujarati Translation, Reliability and Validity in Children with Cerebral Palsy

Maitree Shah¹, Jalpa Parikh²

¹Pursuing MPT in Neurology, Ahmedabad Institute of Medical Sciences

²MPT Neurology, PhD Scholar and Lecturer, Ahmedabad Institute of Medical Sciences

Abstract: ***Background:** Children with Cerebral palsy (CP) are more prone to sleep disturbances than their peers. Sleep Disturbance Scale for Children (SDSC) originally in English language, is a tool to evaluate sleep disorders in children with age 6 to 15 years. **Aim:** To translate SDSC into Gujarati language and to evaluate psychometric characteristics of SDSC in CP children to use it clinically on Gujarati population. **Method:** SDSC questionnaire was translated into Gujarati language from English using forward-backward translation method. Content validity for the SDSC-Gujarati version (SDSC-G) was examined by the group of expert members using consensus method. Test-retest reliability for SDSC-Gujarati version (SDSC-G) was examined in 30 CP children. Subjects completed questionnaire twice with in interval of 48 hours. **Results:** Content Validity was found to be excellent and ICC indicated good reliability. **Conclusion:** The SDSC-G is reliable in screening for sleep disorders in CP children having Gujarati speaking families.*

Keywords: Cerebral palsy, SDSC-G Sleep disorders, Reliability, Validity

1. Introduction

There is a growing body of evidence that children with cerebral palsy (CP) are at increased risk of sleep disturbances.[1] They may have multiple risk factors for sleep disturbance because of the nature of their primary brain injury. Various factors contributing to sleep disorders include visual impairment, seizures, anti-epileptic medications, obstructive sleep apnea, restricted movements due to contractures, spasticity and motor impairment, pain due to spasticity, dental caries, use of orthoses, etc. Sleep disturbance in children with cerebral palsy significantly affects the child's daytime function[2] as well as physical, emotional and cognitive development and performance.[3] A measure is valid when it fully & accurately captures the attribute that it is intended to measure. Face validity is most basic type of validity which simply examines whether an instrument appears to be measuring what it is meant to measure. Content validity examines the extent to which the attribute of interest is comprehensively sampled by items or questions in instrument [4]

Reliability is the degree to which an assessment tool produces stable and consistent results and test-retest reliability is a measure of reliability obtained by administering the same test twice over a period of time to a group of individuals.[5]

To precisely assess the sleep disorders in children with cerebral palsy, the Sleep Disturbance Scale for Children (SDSC) questionnaire, originally in English language is effective method to evaluate sleep disorders.[6] So, this study is done to translate SDSC questionnaire in Gujarati language and to evaluate the psychometric characteristics of Gujarati version of questionnaire, in order to test its equivalence to the original and allow for its use in children with cerebral palsy with Gujarati speaking families.

2. Literature Survey

In the last 20 years, there has been a large number of studies on sleep disorders in Children with cerebral palsy in the literature but only limited epidemiological research has accrued in CP children with Gujarati families. As a developing country, India varies greatly from developed countries in social demography and economic status that may make children's sleep characteristics different from their peers in other countries.[7] SDSC is originally published by Bruni et al., in 1996, and is a validated caregiver-reported questionnaire that has been used as a screening tool for sleep disorders in Paediatric samples.[8] SDSC is available in various other languages but not in Gujarati language[9], hence the aim of the present study is to translate and assess the reliability and validity of the SDSC in Gujarati population.

3. Method

Present study is translation and psychometric testing type of study.

3.1 Participants

Children with cerebral palsy of all GMFCS level & all clinical types aged 6 to 15 years and willing to participate were recruited from pediatric clinics and OPDs of general hospitals. CP Children were excluded if their primary caregiver was either illiterate or did not know Gujarati language.

3.2 Translation

The translation of the original English version was performed after getting approval from the original author of SDSC questionnaire. The questionnaire was translated using forward-backward translation method. The translation of the

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questionnaire was done in the sequential manner. The process of translation is shown below in fig.1.

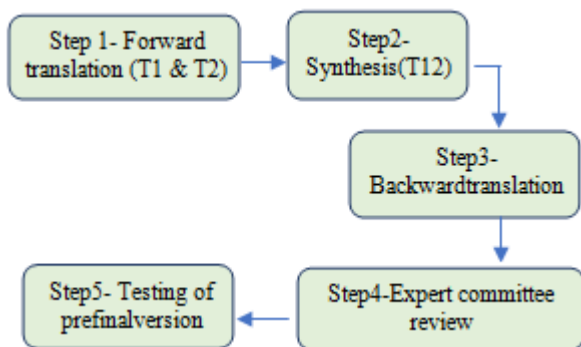


Figure 1: Translation Process

Step 1: Forward translation (T1&T2) was done in which both English and Gujarati translators knew both the languages with the Gujarati language as their mother tongue and they made T1 and T2 Gujarati version.

Step 2: Synthesis (T12) was done in which third unbiased person did work on original questionnaire, T1 and T2 and did synthesis of both translation and made common translation.

Step 3: Back translation (BT1& BT2) is a process of translating back into the original language. 2 persons were taken who were totally blind to original version to make sure translated version accurately reflects the item content of original version.

Step 4: Expert committee review which included a methodologist, one pediatric physiotherapist, one language expert and all translators who made pre final version of SCDC-G.

Step 5: Pre final version in which test of pre final version of questionnaire was done on 30 subjects. After completing questionnaire, subjects were asked about what they meant by each question and their response to it to ensure that adapted version is still equivalent to original version.

3.3 Psychometric Testing

Questionnaire

Sleep Disturbance Scale for Children-Gujarati version was used for data collection. It is a 26-item scale rated on a 5-point Likert-type scale, which uses five subdomains: Disorders of Initiating and Maintaining Sleep, Sleep Breathing Disorders, Disorders of Arousal, Sleep-Wake transition Disorders, Disorders of Excessive Somnolence, and Sleep Hyperhidrosis.

Face Validity

30 patients were asked that ‘Do you think this scale is relevant to your condition?’ Patients were expected to give answer in ‘Yes’ or ‘No’ and then face validity was established.

Content validity

Content validity of Gujarati version was determined using group consensus method. For content equivalence, SDSC-G was given to the members of the expert panel which included experts in field of paediatric, paediatric neurology, paediatric orthopaedic and paediatric physiotherapy. Each member was contacted personally by the primary author.

Scale’s equivalence was assessed in areas (semantic and idiomatic equivalence; and content relevance and) to original version on a 7- point likert scale. Professionals were asked to locate between ‘strongly disagree’ to ‘strongly agree’ and for content representativeness they were asked about how well the content is. For that they were given 5-point likert scale and asked to locate between ‘very poor’ to ‘excellent’.

Test-Retest Reliability: Test-retest reliability for the SDSC-G was examined in 30 CP children. Patients completed the questionnaire twice with an interval of 48 hours.

4. Results

Translation: The translated version was approved by the HOD of Gujarati department of Gujarat Vidhyapeeth.

Face validity: All 30 patients gave answer YES to the question: ‘Do you think this scale is relevant to your condition?’, hence face validity of SDSC-G was found to be excellent.

Content validity: For the content validity on a 7-point likert scale, answers from the expert members were found to be located between ‘agree’ to ‘strongly agree’ and for the Content representativeness (conceptual validity) on a 5-point Likert scale, answers were found to be located between ‘Good’ to ‘Excellent’.

Test – retest reliability: SPSS version 20 was used to analyze the data obtained. Internal consistency was examined with Cronbach’s α coefficient and test-retest reliability was determined by intra-class using Correlation Coefficient (ICC) with level of significance of about 5%.

Table 1: Gender Distribution of the Participants

Total number of patients	Male	Female
30	19	11

Total 30 subjects, between the age 6 to 15 years with the mean age of 10.0 ± 3.10 years participated in the study.

Table 2: Internal Consistency and Intra-Class Correlation of SDSC-G

Cronbach’s alpha	Intraclass Correlation	Lower Band	Upper Band
0.91	0.84	0.68	0.92

SDSC-G exhibited over all good internal consistency with Cronbach’s α value = 0.91. The intraclass correlation coefficient for test-retest reliability was found to be 0.84 (ICC = 0.84, 0.68-0.92) which suggested good test-retest reliability.

5. Discussion

This study describes for the first time the translation and the psychometric properties of the SDSC into Gujarati in cerebral palsy patients. SDSC-G is useful to detect Sleep disorders in children with cerebral palsy. Interpretation of scale is done on the basis of T-score. Cut-off points are

given. In general, all the subjects clearly understood the translated version.

Primarily, the translation of SDSC into Gujarati language was done. All steps were followed in the sequential manner and was finalized by getting approval from the Gujarati department of the institute.

Secondarily, in analysing the psychometric validation of the SDSC-G, the positive response was found from all the subjects regarding the relevance of sleep disorders to the cerebral palsy suggesting excellent face validity and for the content validity, the translated questionnaire was analyzed and finalized in a consensus meeting including paediatric professionals from Ahmedabad and most of the members gave an agreement for semantic and idiomatic equivalence; and content relevance and representativeness.

Test-retest reliability was analyzed with interval of 48 hours in a CP children sample. The reliability was found to be good for CP patients (SDSC-G = 0.84).

6. Conclusion

Gujarati version of SDSC is reliable and valid instrument for screening of sleep disorders in children with cerebral palsy with Gujarati speaking families.

7. Future Scope

Reliability and validity of SDSC-G can be done in healthy children.

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Author Profile



Dr. Maitree Guruswarup Shah is Pursuing MPT in Neurology



Dr. Jalpa Parikh, MPT neurology, PhD Scholar; Lecturer at AIMS since 5 years; Worked in Wadia hospital, Mumbai 4 years