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### **Translation, Cross cultural adaptation and validation of the Activity Specific Balance Scale for use in Gujarat.**

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#### **ABSTRACT:**

The Activities-specific Balance Confidence (ABC) scale is a reliable and valid tool to quantify balance confidence and fall risk among older adults, Parkinson's disease, stroke, brain injury, vestibular disorder and non-specific patient population. Availability of self-administered scale in a native language would make research and the clinical management more effective so this study aimed to translate, culturally adapt and validate this scale for use in Gujarat. This is a methodological and cross-sectional study. Translation process is carried out according to the guidelines of WHO (forward backward translation). Face content validity of Gujarati version was carried out by expert panel verification. A total of 30 number of subject 16 male and 14 females were included with age mean  $69.16 \pm 5.93$  for validation of this study. Every question from ABC-E and ABC-G has excellent Internal consistency. Test-Retest reliability has shown positive significant co-relation and strong association between ABC-E and ABC-G for every question. ABC-G and BBS has shown significant correlation and moderate validity (concurrent validity). Gujarati version of activity-specific balance scale is a valid and reliable measure for older adults of the Gujarati population.

**KEY WORDS:** ABC-G, Gujarati version of activity specific balance scale, reliability and validity of ABC-G.

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## **INTRODUCTION**

Balance is the condition in which all the forces acting on the body are balanced such that the centre of mass is within the stability limits. Balance emerges from a complex interaction of (1) sensory/perceptual systems responsible for the detection of body position and motion, (2) motor systems responsible for organization and execution of motor synergies, and (3) higher-level CNS processes responsible for integration and action plans.<sup>1</sup> However, on its negative aspects, there are psychological factors which needs to equal emphasis. In addition, these factors lead to loss of confidence leading to frequent fall, subsequently resulting into further worsening of condition.<sup>2</sup>

Balance confidence has been defined as a cognitive component of fear of falling where older adults subjectively estimate their ability to avoid a fall or maintain their balance. Study also found important relationships between decreasing balance confidence and increasing disability, providing evidence that it is an important intra-individual factor in the disablement process.<sup>3</sup>

In India, “older adults” are defined as individuals aged  $\geq 60$  years, accounting for 8.6% of the country’s population. It is expected that the proportion of the older population will increase to 11% by 2025 and 19% by 2050. This concern has led to consideration of bio psychosocial wellbeing of the elderly population to promote and support their healthy ageing. Nevertheless, there are various factors which hinders their normal ageing process, among these one is fall. Falls are a leading public health issue in the older adults. In the Indian population, the prevalence of falls among elderly was between 14% and 53%. In a previous study, the prevalence of fall-related injuries in elderly in developing countries ranged from 1.0% to 6.6%.<sup>(4) (5)</sup> And also balance impairment also common in various type of neurological condition like post stroke paralysis, multiple sclerosis, Parkinson etc. And other health issue.

The Activities-specific Balance Confidence (ABC) scale was developed to numerically quantify the level of confidence in performing specific activities without losing balance or becoming unsteady.<sup>6</sup> The Activities-Specific Balance Confidence Scale is a self-questionnaire and confidence to carry out daily living activity in the elderly population. The scale was originally devised in English by Powell and Myers in 1995 for the population of Canada.<sup>26</sup> It is a 16-item questionnaire related to daily living activities. The older adult has to score himself for each of the questionnaires from no confidence (0) to complete confidence (100) in percentage. The overall score is calculated by adding individual item scores and then dividing by the total number of items. ABC scale has excellent test retest reliability, internal consistency and construct validity in older adults, Parkinson’s disease, stroke, brain injury, vestibular disorder and non-specific patient population.<sup>7-24</sup>

The use of a self-administered scale in a native language would make research and the clinical management more effective. It is recommended that a self-reported measure is translated and

adapted to the appropriate culture before it is used with subjects whose first language is not English. Apart from the English version, this scale has been translated and adapted into French-Canadian, Chinese, German, Turkish, British English, and Brazilian Portuguese. More recently, Moiz et al had reported the psychometric properties of the cross-culturally adapted Hindi version of the ABC scale (ABC-H).<sup>25, 26, 27</sup> and also UR Sahu et.al was done successful translation and adaptation of the ABC scale in Marathi (ABC-M).<sup>27</sup>

Gujarati is an Indo-Aryan language native to the Indian state of Gujarat and spoken predominantly by the Gujarati people. Gujarati is part of the greater Indo-European language family. In India, it is the official language in the state of Gujarat, as well as an official language in the union territories of Daman and Diu and Dadra and Nagar Haveli. As of 2011, Gujarati is the 6th most widely spoken language in India by number of native speakers, spoken by 55.5 million speakers which amounts to about 4.5% of the total Indian population. According linguistic survey of India and Census of India: Comparative speaker's strength of Scheduled Languages-1971, 1981, 1991 and 2001, Gujarati is the 26th most widely spoken language in the world by number of native speakers. Currently, no measure is available for assessing balance confidence in patient and older adults whose primary language is Gujarati. When the self-administered scales are not available in the native language of the patient, the therapist may be forced to self-translate or interpret the scale to the patient, which may affect the essential construct of the measurement. A Gujarati version of the ABC scale would provide Gujarati community opportunity to communicate more effectively with their therapist. The availability of a self-administered scale in their native language will make clinical management and research more effective.

## **METHODOLOGY**

This is a methodological and cross-sectional study. Translation process is carried out according to the guidelines of WHO. These methodological steps for cultural adaptation of measuring instruments were followed so that there is equivalence between the modified version and the original version, ensuring the quality of this process.

1st phase: Forward translation:

Forward translation was carried out by one independent bilingual Gujarati language expert translator who was advised that the translation should be natural, conceptual, and acceptable to the broadest audience. In addition, he can also modify questions according to the culture and environment of Gujarat. The first Gujarati translated version was termed as ABC-G(f).

2nd phase: Expert panel

In this phase, 5 people were approached by the researcher and with their consent one expert panel was formed. The panel included 3 physiotherapists (MPT/Ph.D.), 1 general physician, 1 person who understand medical terminology and regional language and works in direct contact with common people. Each member of the panel was provided original English version and ABC-G(f) version via google form and asked to respond by selection one of the options (accepted, rejected and other). On selecting the ‘other’ option, panel member was directed to give suggestion regarding the modification required for particular question item. The result of the expert panel review showed that consensus was achieved for more than 80% of the questions. The modifications suggested for other question items were accepted by the researcher and none of question items were rejected. In this phase face lingual validity of the Gujarati version of the scale is assessed.

3rd phase: Backward translation

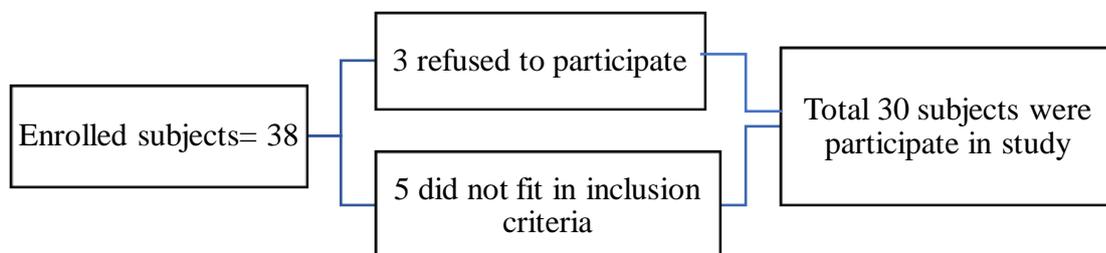
After the required modifications were done as per the suggestion of the expert panel member, the scale was provided to an independent bilingual English language expert translator for backward translation. This backward translated scale was termed as ABC-E(b). The original English version of ABC and ABC-E(b) were conceptually equivalent but some questions were culturally different. But ABC-E(b) adheres to the sense of the original version. After this 3-phase process, one final scale was developed which was termed as ABC-G.

PRE – TESTING:

We approached, 38 healthy old age people. Inclusion exclusion criteria and procedure of enrolment given below:

**Table 1:Inclusion and Exclusion criteria**

Inclusion criteria	Individuals aged above 60, who could read and understand Gujarati as well as the English language
Exclusion criteria	Individuals with past/present diagnosis of neurodegenerative disease, TBI, SCI and stroke.



**Figure 1:Procedure of enrolment of subject:**

All participants were explained about the type and nature of the study, the use of ABC scale and also the grading system. 1st English version was provided to the subjects and they were

requested to fill the scale of 0 to 100% according to their confidence for a particular question. After a week, the final Gujarati version was given to these subjects and after completion of this scale, the Berg balance scale was taken for concurrent validity.

**Statistical analysis:**

Statistical analysis was done with SPSS version 20. For data normality Shapiro-wilk test was used. Pearson correlation was used to see test-retest reliability between English and Gujarati version. Internal consistency of the English and Gujarati version was checked by calculating Cronbach’s alpha coefficient. Concurrent validity calculated between BBS and ABC -G by using Spearman rank correlation because this data was not normally distributed.

**RESULT:**

A total of 30 number of subject 16 male and 14 females were included with age mean  $69.16 \pm 5.93$  for validation of this study. Every question from ABC-E and ABC-G has excellent Internal consistency. Test-Retest reliability has shown positive significant co-relation and strong association between ABC-E and ABC-G for every question. ABC-G and BBS has shown significant correlation and moderate validity (concurrent validity).

**Table 2: Test retest reliability between ABC-E and ABC-G : Pearson correlation r value**

Questionnumber	R- value	Question number	R- value
1	1	9	1
2	1	10	1
3	1	11	0.991
4	1	12	1
5	0.989	13	0.989
6	1	14	1
7	1	15	1
8	1	16	0.939

**Table 3:Internal consistency for ABC-E and ABC-G:**

QUESTION NUMBER	CRONBACH’S ALPHA VALUE		QUESTION NUMBER	CRONBACH’S ALPHA VALUE	
	ABC-E	ABC-G		ABC-E	ABC-G
Que-1	0.973	0.973	Que-9	0.973	0.973
Que-2	0.972	0.972	Que-10	0.973	0.973
Que-3	0.973	0.973	Que-11	0.971	0.971
Que-4	0.972	0.972	Que-12	0.971	0.971
Que-5	0.971	0.972	Que-13	0.971	0.971
Que-6	0.971	0.971	Que-14	0.971	0.971
Que-7	0.973	0.973	Que-15	0.972	0.972
Que-8	0.972	0.972	Que-16	0.971	0.971

**Table 4:Concurrent validity: spearman’s correlation r value**

ICC	R- value	P value
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	0.759	0.01
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## DISSCUSION:

To best of our knowledge, this is the first study to validate the psychometric properties of this scale considering its translation of the activity specific balance scale in the Gujarati language. The process of translation and cultural adaption of the English to Gujarati was completed under the recommended guidelines of WHO. Further, this study provides the reliability and validity of the Gujarati version.

In 1<sup>st</sup> step of forward translation total six questions was modified according to culture and environment of Gujarat. Question number 3 was modified because most Indians do not have closets in their homes in which to keep their slippers so in modified version “closets” was deleted. Further in 7<sup>th</sup> question of English version- ‘sweeping the floor’ was translated as, ‘સફાઈકરવામાં’ in Gujarati version. Translated question gives generalised aspect of cleaning not just sweeping the floor. In 8<sup>th</sup> and 9<sup>th</sup> question the particular word used is “car”. However, considering Gujarat’s financial aspects, not all individuals can afford car. Hence, to address this issue, a translator modified this question. The word ‘car’ was replaced with ‘vehicle’ so in Gujarati this word is ‘વાહન’. In question number 12<sup>th</sup> and 13<sup>th</sup> the word used is ‘mall’. In Gujarati version these two questions were revised, and two options were given that is mall/market as majority of Gujarat’s cities and villages does not have mall culture. And in last question of Gujarati version ‘slippery/wet surface’ was used instead of ‘icy sidewalk’ of English version according to Gujarat environment. All of the above modifications were found similar to the Marathi and Hindi version of this scale.<sup>26,27</sup>

In 2<sup>nd</sup> step face content validity none of the translated questions were rejected by panel though some linguistic and grammatical corrections were suggested. And at the end of backward translation both versions have same conceptual meaning.

Test-retest reliability shows significant correlation between this two-language scale and this is similar to Hindi version of this scale which has been done by Moiz JA et al in 2016.<sup>(26)</sup> ABC-G has good concurrent validity with berg balance scale which is a gold standard in measuring fall risk. We could not correlate this validity with any other translated scale because in other Indian languages no article was found for this particular scale up to our knowledge.

The present study has some limitations. First, as it is self-reported questionnaire, the participant has a chance to recall questions and may give score accordingly and this can lead to subjective bias. Secondly, Data of this study may not represent the population of the whole Gujarat. In the future, construct validity for this scale should be considered and it can also be carried out on a larger population with various district population with various age group.

## CONCLUSION:

Gujarati version of activity-specific balance scale is a valid and reliable measure for older adults of the Gujarati population.

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