

# Urdu Translation and Validation of Activities-Specific Balance Confidence (ABC) Scale

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## ABSTRACT

**Objective:** To translate and validate the ABC-Scale in Urdu language to predict risk of fall in older population.

**Study design:** Cross-cultural Translation and validation

**Place and Duration:** Study was conducted in older adult community of Sialkot from March 2020 to December 2020.

**Methodology:**

Translation of ABC in Urdu was conducted by using Beaton et al guidelines. Two bilingual translators translated the original version into Urdu language step wise, correction process was followed. Then two backward translations were done by language expert. After all this process, the translated version was reviewed by the professionals and the final version was applied on 15 individuals. Its reliability and validity was tested on 60 older adults.

**Results:**

For test re test reliability, intra class correlation coefficient ICC was measured with a value of 0.984 Which shows good test re-test reliability. The internal consistency and reliability of ABC was calculated by Cronbach's alpha for total score with a value of 0.985. Content validity was good with values of CVI ranging from 0.767 to 0.955. To test the discriminative validity, independent t test was used to show the difference between the healthy and unhealthy adults. Factor analysis of UABC showed total variance 81.277 and cumulative variance was also 81.277. To calculate construct validity of U-ABC Pearson's correlation coefficient was used and measured as 0.558.

**Conclusion:**

It was concluded that Urdu version of UABC is a valid assessment tool for older adults with fear of fall. It has good content validity, construct validity and reliability.

**Keywords:** activities specific balance scale, validation, Urdu translation, reliability, tool translation

## INTRODUCTION

To evaluate fear of fall in community-dwelling, ambulatory and geriatric population a standard, hypothetically created, reliable and valid tool was designed named Activities Specific Balance Confidence (ABC) scale by Powell and Mayer's. This scale is reputable with acceptable internal reliability, convergent reliability, and construct reliability for psychometric properties <sup>(1)</sup>. The Activities-specific Balance Confidence (ABC) scale checks the subject's confidence to accomplish several actions lacking and compromising balance and falling <sup>(2)</sup>. Patient rate how confident they were not to lose their balance while performing 16 moving tasks, such as walking around the house, and cleaning the floor. ABC scale includes more challenging mobility tasks, such as transferring elevators, as it's a better choice for ambulated people. ABC scale is also helpful for the patients of SCI <sup>(3)</sup>. As fall in older adults is a challenging situation for both rehabilitation and prevention. 30-50 % of persons over age 65 fall each year <sup>(4)</sup>. An increase level of fear links with postural unsteadiness and increase the risk of fall in future. With the help of experts and geriatric population, the 16 item Activity-specific balance confidence scale is developed to explain brief description about difficulties faced by older adults while performing daily activities and this ABC scale was the extension of Falls Efficacy scale <sup>(5)</sup>.

In a latest research 2019, Michal Elboim- Gabyzon et al. conducted a study in which translation and cultural adaptation of the Activity Balance Confidence (ABC) into Arabic version was determined with psychometric properties of Arabic version in Public dwelling and Ambulatory elder adults. The main result of this study included the high internal consistency, good to excellent structural coherence, excellent test retest reliability and correlations were excellent with performance based on medical measures of balance and self-reported disability questionnaires and bodily function and a maximum result. They concluded in elderly Arabic individuals the Arabic version of Activity Balance Confidence (A-ABC) demonstrate the excellent psychometric properties, in individually living people and can be used as a

balance confidence measurement tool in research and clinical setups <sup>(6, 7)</sup>.

Jamal Ali Moiz et al. In 2017 after translation of Hindi version of Activity Balance Confidence Scale also examined a predictive validity of prospective falls then discriminated (H-ABC) version of Activity Specific Balance Confidence Scale among individuals with fall and non-fallers. They conducted a Prospective cohort study. 125 public dwelling elder population were chosen to conduct a research and all the individuals participated in this research and completed (H-ABC) Scale version. They concluded that in the community dwelling Indian older adults the H-ABC scores are significantly and independently relate with future falls. <sup>(8-10)</sup>.

Jamal Ali Moiz et al. in latest research 2016, translated and cross culturally adapted the Activity Balance Confidence scale original English version into the Hindi version and also assessed the psychometric properties and established the normative values of self-perceived balance confidence scores in Hindu community elder population. 100 community dwelling, Indian geriatric adults took part in the study. They concluded that the Hindi version of Activity Balance Confidence scale is proved as adequate tool for assessing the balance confidence of Hindi-speaking people and public dwelling Hindi elder population <sup>(11, 12)</sup>.

Ylva Nilsagaerd et al. in 2012 conducted a study in the individuals of Sweden suffering from multiple sclerosis and evaluated the validity of original version the Activities-specific Balance Scale. The study conducted was the cross sectional. A sample of 84 MS subjects was taken by identifying subjects balance impairment and gait problems but they were still capable to walk. Among multiple fallers and non-fallers in both genders was discriminated by Activity Specific Balance Confidence Scale. They concluded that this research provides the good validity of the ABC for persons with slight to moderate multiple sclerosis because a patients be deficient in balance confidence in many everyday activities, and restricted their contribution in the social order <sup>(13, 14)</sup>.

ABC has been commonly used and become a standard assessment tool for clinical cases. As this scale has standard validity and reliability, therefore it was the demand of time to cross-

culturally adapt it into a regional Pakistani language (Urdu) so this tool was selected for linguistic study.

**MATERIAL AND METHODS**

The original ABC was chosen for translation and linguistic validation to facilitate the use of ABC in regional languages for Urdu speaking patients with Fear of fall. The whole protocol was divided into two stages, Stage 1 includes Translation and Stage 2 evaluates the Reliability and validity.

**Stage 1:**

**Step 1 Forward Translation:** Researcher used two language experts to develop forward translation of the English ABC into Urdu version of ABC. The two independent translators who were fluent in English and Urdu translated the English version of ABC into the Urdu version.

**Step 2 Translation Consolidation:** The two translations of Urdu version of ABC were compared to create the first draft. The translators assessed the discrepancies and consolidated the Urdu version.

**Step 3 Backward Translation:** Two English experts independently back translated the Urdu version into English. They did not have any access to the original version of ABC scale.

**Step 4 Final Review:** A steering committee consisting of 4 members' two translators and two physical therapists revised the final version and finalized the Urdu version of ABC-Scale.

**Stage 2:**

**Urdu version of ABC and its validity and reliability analysis:** To measure internal consistency reliability was measured by Cronbach's Alpha and to check the test re-test reliability intra class correlation co-efficient ICC was computed.

Each of the categories of the CVI has been arranged on four point Likert scale. Relevance question has four point responses, 1= not relevant, 2= item needs some revision, 3= clear but needs some revision and 4= very clear. Clarity question has four-point response, 1= not clear, 2= item needs some revision, 3=clear but need some revision and 4= very clear. Simplicity has four-point response, 1= not simple, 2= item need some revision, 3= simple but need some revision and 4= very simple. Ambiguity question has four-point response, 1= doubtful, 2= item needed some revision, 3= relevant but need some revision and 4= meaning is clear. Initial construct validity of U-ABC was calculated by applying U-ABC in 28 healthy bilingual adults and 32 patients of fear of fall or any geriatric problem who can understand Urdu language. The age group of participants was between 60 to 75 years. Descriptive statistics was also included for UABC.

**Participants:** The subjects for this study were taken from general population having knee pain or any other disease in older population from Sialkot Punjab, Pakistan. Patients of both genders were randomly taken, age between 60 to 85 years and who were able to communicate in Urdu included in the study. Older adults who were unable to communicate in Urdu was excluded from the research procedure. The sample of the research study consisted of total 60 individuals, including 32 patients with knee arthritis, stroke, knee pain or any other geriatric disease and 28 healthy individuals. The institution has issued the ethical approval and a consent form was obtained from all the individuals participated in the study.

**Psychometric properties testing in older population:** Factor analysis was used to measure validity of UABC in older population. Kaiser in 1974 introduced values for KMO analysis, according to which the minimum sample size should be greater than or equals to 0.05.

**Data analysis:** All analyses were done through using IBM SPSS 23.

**Content validity:** After translation content validity index was measured by a CVI method introduced by Waltz and Bausell.

**Factors Analysis:** In current study, factor analysis needs accurate sample size which follows KMO criteria of sampling adequacy.

**Construct validity:** To calculate construct validity of U-ABC, Pearson's correlation coefficient was used with 5% significance. Data was collected in two steps for U-ABC, as data was gathered

on Day 1 firstly and then second time after 24 hours. The construct validity of UABC was measured by confidence interval 95% and level of significance at 5%.

**RESULTS**

**Descriptive statistics:** The scale item statistics of UABC are mean  $\pm 87.1652$  in healthy population and  $\pm 36.6699$  in unhealthy population where as in all population the mean value is  $\pm 67.8510$ .

Table.1 : Descriptive Statistics

Total no 28	Mean	Standard deviation
Healthy adults	87.1652	5.13274
Unhealthy adults	36.6699	19.95411
In total population	67.851	52.95537

**Test Retest Reliability of UABC:** The test re test reliability is calculated by intraclass correlation coefficient. The value of ICC was concluded as 0.98 for UABC. This value shows high test retest reliability of UABC in the older population

Table.2: Intra class correlation coefficient of UABC

	Intraclass Correlation	95% Confidence Interval	
		Lower Bound	Upper Bound
Average measures	0.984	0.971	0.992

To evaluate the test re test reliability intraclass correlation coefficient was calculated of UABC. The average measure of ICC was 0.984 which indicates good test re-test reliability of UABC.

**Content validity:** content validity of each item was Walk around the house 0.817, up and down stairs 0.929, pickup slipper from floor 0.936, reach at eye level 0.767, reach up on tip toes 0.916, stand on chair to reach 0.936, sweep floor 0.917, walk outside to nearby car 0.911, get in or out of car 0.920, walk across parking slot 0.916, walk up and down ramp 0.890, walk in crowded mall 0.922, walk in crowd 0.927, ride escalator holding on 0.955, ride escalator not holding rail 0.855, walk on icy sidewalk 0.843.

Table 3: Independent T test for Validity

HEALTHY POPULATION			UNHEALTHY POPULATION		
Mean	SD	SE	Mean	SD	SE
±99.2857	±3.77964	.71429	±66.4063	±23.63139	4.17748
±92.8571	±9.37180	1.77110	±37.6563	±31.34059	5.54029
±95.3571	±8.81167	1.66525	±37.6563	±28.87639	5.10467
±97.5000	±5.18188	.97928	±57.6563	±30.40014	5.37404
±91.4286	±8.03432	1.51834	±34.8438	±33.15371	5.86080
±91.0714	±9.94030	1.87854	±32.3438	±30.18717	5.33639
±87.5000	±15.78208	2.98253	±30.4688	±31.11787	5.50091
±98.5714	±3.56348	.67344	±50.7813	±25.08403	4.43427
±94.2857	±8.78912	1.66099	±49.5313	±22.37364	3.95514
±95.0000	±8.38870	1.58532	±46.0938	±26.72242	4.72390
±77.1429	±15.83647	2.99281	±30.7813	±28.34435	5.01062
±91.0714	±6.85257	1.29501	±43.2813	±25.82851	4.56588
±77.8571	±13.43217	2.53844	±39.2188	±28.57106	5.05070
±84.2857	±10.33820	1.95374	±36.7188	±26.50652	4.68574
±67.5000	±20.66039	3.90445	±29.5313	±28.69077	5.07186
±53.9286	±17.70944	3.34677	±20.2813	±22.05453	3.89873

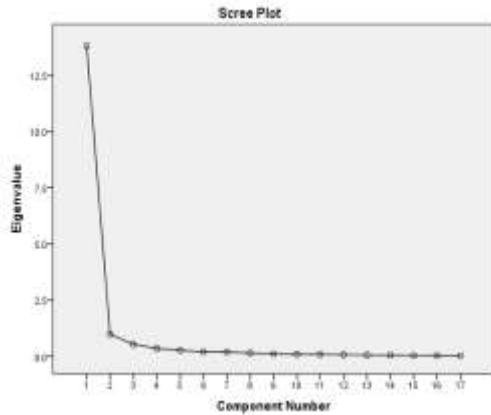
**Factors Analysis:** In research for factor analysis accurate sample size require which follows KMO criteria of sampling adequacy. After factor analysis for sample size of 60 older adults KMO was as follows 0.938 and p value is taken less than 0.05 which shows the test is highly significant.

Table 4: KMO and Bartlett's test

Kaiser Meyer Oklin measuring of sampling adequacy	0.938
Bartlett's test of sphericity approx. chi-square	1689.074
Df.	136
Sig.	0.000

A scree plot shows one component eight value

approximately 1 out of 16 items. Hence, the on one component all items were loaded. The factor analysis showed 81.277% total variance of all items.



**DISCUSSION**

Current study was conducted to translate and validate Urdu version of ABC scale for the community to express balance related issues with ease in native language. The original English-language version reported by Powell and Myers was having the internal consistency ( $\alpha=0.976$ ) (15) and in North America internal consistency was ( $\alpha=0.96$ ), as well as in the modified British version the internal consistency was ( $\alpha=0.98$ ) (16). In current study Construct validity was measure by Pearson correlation coefficient 0.558. Whereas Reliability and internal consistency is calculated by Cronbach's Alpha 0.985 which shows that UABC is highly reliable tool.

A study was conducted in china, ABC scale was translated into Chinese version and Mandarin Chinese version, the internal consistency was  $\alpha = 0.94, 0.97$  (17, 18). The Arabic version(A-ABC) shows excellent test-retest reliability (ICC=0.99) (6, 7), which was comparable to the Chinese version and the Mandarin Chinese versions (ICC=0.98;  $\alpha=0.92$ ) (17, 18), and was greater than the original English ABC version which was ( $\alpha=0.89$ ) (15). While in current study the average measure of ICC was 0.984 which indicates good test re-test reliability of UABC.

The Arabic version of ABC recognized self-perceived balance confidence, as assessed by the A-ABC, of 68.65 ( $\pm 27.51$ ) in elderly Arab residents in northern Israel (6, 7). This result was in accordance with those reported for public-dwelling elderly grown person in Hong Kong (71.6 $\pm$ 23.7) and in India (average =71, range 41.25–95.63). Though, the present result is less than the ABC score reported by Hatch et al between aging people in the larger Boston area (78.87 $\pm$ 19.1) and in Brazil (81.7 $\pm$ 10.1), but higher than the score reported by Powell and Myers in a Canadian population (59.6 $\pm$ 17.7) (19, 20).

Original scale of ABC has excellent internal consistency (Cronbach's  $\alpha = 0.96$ ) in elder population. While other researches, Cronbach's  $\alpha$  was also same when compared in other geriatric population, as reported by Steffen and Seney ( $\alpha = 0.95$ ), Hsu and Miller ( $\alpha = 0.98$ ), and Talley et al. ( $\alpha = 0.95$ ). In the current study, Cronbach's  $\alpha$  coefficient for specific items ranged from 0.88 to 0.97, whereas, in the Chinese version, this ranged between 0.71 and 0.88.

ABC-H version has high internal consistency whereas in Canadian French version values of the Cronbach were .94 and .93 for the ABC scale and the ABC-CF scale, individually. As compared to all linguistic studies of ABC conducted till now the current study show good reliability and validity of UABC with the slightly higher value of Cronbach's Alpha 0.985 and showed that it was a valid and reliable assessing scale for assessment of fear of fall in older population.

**CONCLUSION**

It was concluded that Urdu version of UABC is a valid assessment tool for older adults with fear of fall. It has good content validity, construct validity and reliability.

**Acknowledgement:** All praises to Allah

**Conflict of Interest:** The study has no conflict of interest to declare by any author.



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