ORIGINAL ARTICLE

Translation and Validation of Barthel Index in Urdu Language for Stroke Patients

KASHMALA MUSTAFA[1], SHOAIB WAQAS[2], RIDA KHAWAR DAR[3], RIDA KHAWAR DAR[4], QURAT UL AIN SHERAZI[5], MUHAMMAD TARIQ[6], HAFIZ MUHAMMAD ASIM[7]

[1]Student, Lahore College of Physical therapy, (LM & DC), Lahore
[2]Associate Professor, Lahore College of Physical therapy, (LM & DC), Lahore
[3]Demonstrator. Lahore College of Physical therapy, (LM & DC), Lahore
[4]Demonstrator, Lahore College of Physical therapy, (LM & DC), Lahore
[5]Assistant Professor, Lahore College of Physical therapy, (LM & DC), Lahore
[7]Professor, Lahore College of Physical therapy, (LM & DC), Lahore
Correspondence to Dr. Shoaib Waqas, Email: shoaib.waqas@lmdc.edu.pk

ABSTRACT

Aim: To translate and validate of Barthel index in Urdu language for stroke patients

Methodology: From June 2020 to January 2021, a descriptive linguistic validation research was done using convenient sampling at Ghurki Trust and Teaching Hospital in Lahore. Twenty neurological rehab professionals and 200 stroke survivors who could understand Urdu were used to validate the content. Two translators, one with a medical background and the other with a technical background in Urdu language, forward translated the BI English version into Urdu. The backward translation of the translated versions BI-Urdu-I and BI-Urdu-II into English was done by two professionals with medical and technical backgrounds who are fluent in Urdu to English translation. After that, the re-translated versions BI-English-III and BI-English-IV were compared to the original BI-English (English version) by expert committee. Data was collected by Final version of Urdu while considering inclusion and exclusion. Patients gave their consent in advance, and anonymity was guaranteed.

Results: The mean age of stroke patients was 54.87 and standard deviation was 0.7648. The Chronbach's alpha of translated version of BI questionnaire is 0.732. The inter item correlation (Pearson Correlation) after testing and re-testing on stroke patients was ranged from (0.425-0.945). The Intra-class Correlation after the translation of BI ranged from 0.314-0.732.

Conclusion: Urdu version of Barthel index is a valid and reliable tool for stroke patients.

Keywords: Validation, Barthel Index and Stroke

INTRODUCTION

The Barthel index is widely regarded as the most widely used scale for assessing daily living skills[1]. It is a ten-point scale on which ADL and mobility are rated, with a higher number indicating more ability to function independently after being discharged from the hospital. The Barthel index assesses an individual's need for assistance with ten activities of daily living (ADLs) related to mobility and self-care. Individuals with stroke, patients with other neuromuscular and musculoskeletal diseases, and oncology patients are all treated with it. Feeding, personal toileting, bathing, dressing and undressing, getting on and off a toilet, bladder and bowel control, moving from wheelchair to bed and returning, walking on level surface (propelling a wheelchair if unable to walk) and ascending and descending stairs are all included in the Barthel[2].

Stroke is a clinical syndrome defined as a rapidly developing symptoms or signs of loss of cerebral functional because of interruption in the blood supply of brain .Symptoms last more than 24 hours or leads to death[3].

The BI is an instrument of clinical application, which can be directed by a member of the medical staff, in 2–5 min or self administered in about 10 min and it has been used in many studies. Whereas the evidence of its reliability is excellent, the evidence of its validity is only satisfactory[4].

Many people who survive cerebrovascular illness become disabled. These disabled people require assistance with their activities of daily living, which should be supplied by their family, the health-care system, or other social organizations. To quantify the functional independence of stroke survivors, a variety of measurement techniques have been developed[5].

Urdu is the common language spoken and understood by the majority of the population in Pakistan, which is multilingual and multiethnic. No disability scale has been translated and validated for use in a stroke clinical study as of yet. The goal of this study was to translate the Barthel index into Urdu and ensure that it was accurate and dependable. It gives professionals a new method to

----

assess functional disability in Urdu-speaking disabled people in health and social care settings across the continuum of care.

The objective of the study was to translate and validate of Barthel index in Urdu language for stroke patients

METHODOLOGY

From June 2020 to January 2021, a descriptive linguistic validation research was done using convenient sampling at Ghurki Trust and Teaching Hospital in Lahore. Twenty neurological rehab professionals and 200 stroke survivors who could understand Urdu were used to validate the content. Two translators, one with a medical background and the other with a technical background in Urdu language, forward translated the BI English version into Urdu. The backward translation of the translated versions BI-Urdu-I and BI-Urdu-II into English was done by two professionals with medical and technical backgrounds who are fluent in Urdu to English translation. After that, the re-translated versions BI-English-III and BI-English-IV were compared to the original BI-English (English version) by expert committee. Data was collected by Final version of Urdu while considering inclusion and exclusion. Patients gave their consent in advance, and anonymity was guaranteed. Data was analyzed by using Statistical Package for Social Sciences (SPSS) version 21 and presented in the form of Descriptive statistics.

RESULTS

The mean age of stroke patients was 54.87 and standard deviation was 0.7648[6].

Internal consistency: The Chronbach's alpha of translated version of BI questionnaire is 0.732.

Chronbach's Alpha	No of Items
.732	10

Test-retest Reliability: The inter item correlation (Pearson Correlation) after testing and re-testing on stroke patients was ranged from (0.425-0.945).

Inter-Rater and Intra-Rater reliability: The Intra-class Correlation after the translation of BI ranged from 0.314-0.732.

	ICC	95% CI		F Test with True Value			
		Lower Bound	Upper Bound	Value	df1	df2	Sig
Single Measures	.314	.106	.389	3.725	24	216	.000
Average Measures	.732	.542	.864	3.725	24	216	.000

Domains	Statistics	Total score of BI
Feeding	Pearson Correlation	.510
	Sig.(2-tailed)	.052
Bathing	Pearson Correlation	.610
	Sig.(2-tailed)	.030
Grooming	Pearson Correlation	.425
	Sig.(2-tailed)	.071
Dressing	Pearson Correlation	.945
	Sig.(2-tailed)	.000
Bowel	Pearson Correlation	.510
	Sig.(2-tailed)	.052
Bladder	Pearson Correlation	.610
	Sig.(2-tailed)	.030
Toilet use	Pearson Correlation	.425
	Sig.(2-tailed)	.071
Transfer	Pearson Correlation	.450
	Sig.(2-tailed)	.061
Mobility	Pearson Correlation	.785
	Sig.(2-tailed)	.035
Stairs	Pearson Correlation	.842
	Sig.(2-tailed)	.0321

DISCUSSION

The goal of current study was to translate and evaluate the original Barthel index (BI) for stroke victims into Urdu. Physical therapists confirmed the scalene, and then pilot testing was conducted. This Urdu version of BI was put to the test in a hospitalized Pakistani population.

Test analysis was used to compare the differences between the translated and original versions of BI in order to explain the differences. Chronbach's alpha calculated the internal consistency of this translated version to be 0.732. The intra-class coefficient was 0.214. Chronbach's alpha for the original BI was found to be 0.87. The Dutch version of BI has a Chronbach's alpha of 0.87, according to reports as reported in The Turkish version of BI with an internal consistency of 0.88[7].

Japanese version have been reported Chronbach's alpha 0.93, the Chinese version 0.92, and the Brazilian version 0.967.as in current study, the calculated value of Chronbach's alpha was 0.732[8,9].

In International Journal of Neurology and Neurotherapy to determine the Translation and Overall inter-observer reliability of standard administration of the BI was published with excellent (κw, 0.93; 95% confidence interval, 0.90–0.96 random effects modeling). The BI has excellent inter-rater reliability for standard administration after stroke and in current study inter-rater reliability was 0.314-0.732[10].

The Iranian version BI has a significant reliability of 0.938. Functional Ambulation Category (FAC) and Foot and Ankle Ability Measure (FAAM-subscales ADL) have significant correlations in criterion validity study, with 0.947 and –0.945, respectively. In factor analyses, two domains were discovered, and the variance of ten items was found to be 69.79%; also, the Item Total Correlation (ITC) of each item was determined and in current study, almost similar results were noted[11].

The Kappa (inter-rater reliability coefficient) for each item was more than 0.6. The whole BI has an inter-rater reliability of 0.998. The internal consistency of the questionnaire was 0.96-0.99, and item-total correlation also verified its reliability. The findings of factor analysis revealed that the component was monofactorial, with an Eigen value of 8.268 and the ability to explain 82.68 percent of the total variation as concluded in current

study that The Intra-class Correlation after the translation of BI ranged from 0.314-0.732[12].

Internal consistency as measured by Chronbach's alpha was 0.96, with test-retest reliability ranging from 0.967 to 0.992, suggesting that the current study's internal consistency of 0.732 is acceptable[13].

Because only physical therapists and occupational therapists were included in this study, the reliability of ADL assessment may not be generalizable to other health care personnel. Post-comatose patients, individuals with spinal cord injuries, cognitive impairments, or psychiatric disease are not eligible for this scale.

CONCLUSION

The Urdu translated BI indicates acceptable internal consistency, reliability and easy to understand by expert panel after forward and backward translation of original version of Barthel index.
Conflict of interest: Nil

REFERENCES

1. Morley D, Selai C, Thompson A. The self-report Barthel Index: preliminary validation in people with Parkinson's disease. European journal of neurology. 2012;19(6):927-9.
2. Sulter G, Steen C, De Keyser J. Use of the Barthel index and modified Rankin scale in acute stroke trials. Stroke. 1999;30(8):1538-41.
3. Li Q-X, Zhao X-J, Wang Y, Wang D-L, Zhang J, Liu T-J, et al. Value of the Barthel scale in prognostic prediction for patients with cerebral infarction. BMC cardiovascular disorders. 2020;20(1):1-5.
4. Cabañero-Martínez MJ, Cabrero-García J, Richart-Martínez M, Muñoz-Mendoza CL. The Spanish versions of the Barthel index (BI) and the Katz index (KI) of activities of daily living (ADL): a structured review. Archives of gerontology and geriatrics. 2009;49(1):e77-e84.
5. Minosso JSM, Amendola F, Alvarenga MRM, Oliveira MAdC. Validation of the Barthel Index in elderly patients attended in outpatient clinics, in Brazil. Acta Paulista de Enfermagem. 2010;23:218-23.
6. Franjoine MR, Darr N, Held SL, Kott K, Young BL. The performance of children developing typically on the pediatric balance scale. Pediatric physical therapy. 2010;22(4):350-9.
7. Küçükdeveci AA, Yavuzer G, Tennant A, Süldür N, Sonel B, Arasil T. Adaptation of the modified Barthel Index for use in physical medicine and rehabilitation in Turkey. Scandinavian journal of rehabilitation medicine. 2000;32(2):87-92.
8. Reis NFd, Biscaro RRM, Figueiredo FCXS, Lunardelli ECB, Silva RMd. Early Rehabilitation Index: translation and cross-cultural adaptation to Brazilian Portuguese; and Early Rehabilitation Barthel Index: validation for use in the intensive care unit. Revista Brasileira de terapia intensiva. 2021;33:353-61.
9. Cincura C, Pontes-Neto OM, Neville IS, Mendes HF, Menezes DF, Mariano DC, et al. Validation of the National Institutes of Health Stroke Scale, modified Rankin Scale and Barthel Index in Brazil: the role of cultural adaptation and structured interviewing. Cerebrovascular Diseases. 2009;27(2):119-22.
10. 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):462-8.
11. Hormozi S, Alizadeh-Khoei M, Sharifi F, Taati F, Aminalroaya R, Fadaee S, et al. Iranian version of barthel index: validity and reliability in outpatients' elderly. International journal of preventive medicine. 2019;10.
12. Tagharrobi Z, Sharifi K, Sooki Z. Psychometric evaluation of Shah version of modified Barthel index in elderly people residing in Kashan Golabchi nursing home. Feyz Journal of Kashan University of Medical Sciences. 2011;15.
13. Galeoto G, Lauta A, Palumbo A, Castiglia S, Mollica R, Santilli V, et al. The Barthel Index: Italian translation, adaptation and validation. Int J Neurol Neurother. 2015;2(2):2378-3001.