The Persian version of Penn Parkinson's Daily Activities Questionnaire-15: Face and Content Validity

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Abstract

Introduction: Cognitive deficits impact the ability to perform instrumental activities of daily living (IADL) in patients diagnosed with Parkinson's disease (PD). Improved IADL measurement plays an important role in the assessment of functional independence and new cognition-enhancing treatments in PD. The purpose of this study was to translate and investigate the face and content validity of Penn Parkinson's Daily Activities Questionnaire-15 in Persian. **Materials and Methods:** This was a methodological study where the forward-backward method was used for the translation process. Face validity by 15 knowledgeable informants (KI) of PD participants and content validity by 15 occupational therapists were evaluated. Face validity was measured using quantitative and qualitative approaches, and quantitative content validity was determined by calculating Content Validity Ratio (CVR) and Content Validity Index (CVI). **Results:** Face validity was high (2/92-5), and all items were reported to be acceptable and understandable by KI, except for one question that needed to be explained to them with an example. Final corrections were done. Also, CVR (0.73-1) and CVI (0.86-1) were found to be within the acceptable range. **Discussion:** The Persian version of PDAQ-15 shows strong psychometric properties and also appears suitable for use as a clinical and research tool to evaluate daily cognitive functioning in PD patients.

Key words: Parkinson's disease, instrumental activities of daily living, cognition, face validity, content validity

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Introduction

Cognitive impairment is recognized as a common and important non-motor symptom of Parkinson disease (PD) that is associated with disability, poor quality of life, mortality, and caregiver burden (1, 2). Cognitive deficits in PD range from mild cognitive impairment (PD-MCI) to PD dementia (PDD), with PD-MCI representing a risk factor for PDD that includes several domains such as attention, memory, visuospatial abilities, and executive functions (3, 4).

According to the Movement Disorder Society, 26.7% of PD patients live with PD-MCI, whereas another 30% to 40% have PDD and one 20-year, longitudinal study suggested that up to 83% of PD patients will develop dementia in their lifetime (5).

Cognitive deficits in PD-MCI impact to perform instrumental activities of daily living (IADLs) such as driving, financial skills, and medication management, and cognitive impairment in PDD have profound functional consequences (6-8). Cognitive impairment in PD is a potential therapeutic target, and treatment benefit should reflect improvement in function (9).

Improved IADL measurement facilitates testing of disease progression, cognitive-enhancing treatment, and rehabilitation services in PD (9, 10). The PD patient's ability to execute IADLs is often judged using several existing scales that were developed for use in Alzheimer's disease. But, these scales do not take into account the specific features of PD, such as motor symptoms and impairments in multiple cognitive domains. Therefore, there is a need for a specific IADL scale to evaluate cognitive IADLs in PD (9, 11).

The Penn Parkinson's Daily Activities Questionnaire-15 (PDAQ-15) is considered as a specific IADL tool for assessing daily cognitive functioning in PD. The PDAQ is a 15-items questionnaire filled by a knowledgeable informant (KI) of a PD patient, such as spouse, child, or other individual close to the patient (e.g. paid caregiver). The items were scored based on the ratings given by KI of PD patients regarding their difficulty in performing each IADL: "none," "a little," "somewhat," "a lot," and "cannot do." Each item is scored on a scale of 0-4 (total score range=0-60) with higher scores indicating better IADL function (12). This questionnaire was first developed in 2016 in the United States and has not been translated into any other language.

Since there is a lack of a valid and reliable instrument to screen and monitor daily cognitive functioning in PD patients among Iranian population, this study aimed to translate and determine the face and content validity of the Persian version of PDAQ-15.

Materials and Methods

In the current methodological study, the participants were KIs of PD patients who were referred to the most advanced neurology clinic in the center of Tehran with the highest number of referrals from all over Iran. The recruited Occupational Therapists (OT) were experienced in clinical and research rehabilitation of neurological patients. The Shahid Beheshti University of Medical Sciences approved this study. Permission for translation was taken from the corresponding author of the original version of PDAQ-15. Informed consent was obtained from all participants. The characteristics of PD participants are presented in Table 1.

Translation:

The PDAQ-15 was translated using the forward-backward process. First, two language experts translated the questionnaire into Persian. Then another two language experts, who were blinded to the English version of PDAQ-15, back-translated it into English. Finally, by comparing the two versions and consulting with the test developer, the Persian version of PDAQ-15 was presented.

Face validity:

To evaluate the face validity, the questionnaire was given to 15 KIs who were selected using convenience sampling. In the qualitative phase, the KIs were interviewed and asked for their views on the difficulty of understanding, relevancy, and ambiguity of the questions. In the quantitative phase, the KIs were asked to rate the importance of each item using a 5-point Likert scale ranging from 1 (not important at all) to 5 (highly important). Then, all the questionnaires were collected, and the Impact Score (IS) was calculated for each item using the following formula, and a score > 1.5 were considered acceptable (13, 14).

Impact score = Frequency (%) × Importance

Content validity:

To confirm content validity, the Content Validity Ratio (CVR) and Content Validity Index (CVI) were calculated. To determine the CVR, KIs were questioned by 15 OT experts to rate each item on a three-part scale: necessary, helpful but unnecessary, and unnecessary. Based on Lawshe table, the list value of content validity and the items whose CVR was judged to be above 0.62 by the experts were considered significant and were maintained. Subsequently, the CVI was analyzed based on Waltz and Bausell's method; the experts were asked to evaluate the relevancy, clarity, and simplicity of each item based on a 4-point Likert scale ranging from 1 (the lowest) to 4 (the highest). Hyrkas *et al.* recommended the score of 0.79 and above for accepting the CVI of an item (14).

$$CVR = \frac{n_e - \frac{N}{2}}{\frac{N}{2}}$$

$$N = total\ number\ of\ experts$$

$$n_e = number\ of\ experts\ who\ have\ marked\ the\ necessary\ option$$

$$CVI = \frac{number\ of\ raters\ giving\ a\ rating\ of\ 3\ or\ 4}{\text{total number of raters}}$$

Results

Face validity and Content validity

The participants stated that all questionnaire items were acceptable and understandable, only item 10 was not clear and needed an example to be clearer. Thus, "How much DIFFICULTY does the patient currently have doing more than one thing at the time" was changed into "How much DIFFICULTY does the patient currently have doing more than one thing at a time (e.g. preparing a meal and keeping an eye on the stove while preparing something on the counter)." Additionally, the impact scores of all items were in the acceptable range (2.92-5). Considering the experts' opinion, CVR (0.73-1) and CVI (0.86-1) were in the acceptable range. The results of the face and content validity are presented in Table 2.

Table 1. The Mean (SD) Characteristics of PD participants

Variable	Male (n=8)	Female (n=7)
Age	63 (9)	63 (8)
Education, years	12 (5)	8 (4)
Age of onset, years	55 (14)	56 (6)
Disease duration, years	7 (5)	7 (4.03)
Knowledgeable informants Relationship n=15 (%)		
Spouse	5 (56)	4 (44)
Child	3 (50)	3 (50)

Table 2. Result of face validity and content validity

Questions	IS	CVR	CVI
1. Because of the Parkinson's disease, how much DIFFICULTY does the patient currently have while reading the newspaper or magazine?	2.92	0.73	0.86
2. How much DIFFICULTY does the patient currently have in keeping track of time (e.g. using a clock)?	5	1	1
3. How much DIFFICULTY does the patient currently have in counting the correct amount of money when making purchases?	5	1	1
4. How much DIFFICULTY does the patient currently have while reading and following complex instructions (e.g. directions for a new medication)?	5	1	1
5. How much DIFFICULTY does the patient currently have in handling an unfamiliar problem (e.g. getting the refrigerator fixed)?	4.6	0.73	0.86
6. How much DIFFICULTY does the patient currently have in explaining how to do something involving several steps to another person?	5	1	1
7. How much DIFFICULTY does the patient currently have in remembering a list of 4 or 5 errands without writing it down?	5	1	1
8. How much DIFFICULTY does the patient currently have in using a map to tell where to go?	3.78	0.86	0.93
9. How much DIFFICULTY does the patient currently have in remembering new information like phone numbers or simple instructions?	4.86	0.86	0.93
10. How much DIFFICULTY does the patient currently have in doing more than one thing at a time?	5	1	1
11. How much DIFFICULTY does the patient currently have in learning to use new gadgets or machines around the house?	3.3	0.73	0.86
12. How much DIFFICULTY does the patient currently have in understanding his/her personal financial affairs?	5	1	1
13. How much DIFFICULTY does the patient currently have in maintaining or completing a train of thought?	5	1	1
14. How much DIFFICULTY does the patient currently have in remembering a tv show, book, movie, or current events?	4.86	0.86	0.93
15. How much DIFFICULTY does the patient currently have in remembering day and month it is?	5	1	1

Discussion

In this study, the psychometric properties of the Persian version of PDAQ-15 were examined. To achieve the study goals, the questionnaire was translated into Persian, and then its Face and Content validity were assessed. The results of face validity indicated that the items of the questionnaire were understandable and related to Iranian culture. In addition to regarding the content validity of scale according to the opinion of experts, all items were essential and appropriate with acceptable CVR and CVI. Thus, PDAQ-15 is apt for evaluating daily cognitive functioning in PD. This is relevant for treatment studies that have the possibility of improving cognition and function.

Laura Brennan *et al.* reported that PDAQ-15 had strong psychometric properties across the spectrum of cognitive impairment in PD patients of United States. It is potentially valuable for the study of PD that look to separate the force of cognition from the motor function on IADLs. The only existing PD-specific IADL scale besides PDAQ-15 is Parkinson's Disease Cognitive Functional Rating Scale (PD-CFRS), a 5min questionnaire that explores a wide range of functional aspects suspected to be sensitive to cognitive impairment in PD, minimizing the motor impact of the disease. The scale is administered to a KI in an interview form of 12 items selected to cover the spectrum of instrumental cognitive changes seen in PD over the last two weeks before the evaluation. The advantages of PDAQ-15 include utilizing item-response theory and a large sample size, which is about three times the size of PD-CFRS validation sample. PD-CFRS utilizes a 3-point Likert scale to measure the psychometric perspective while PDAQ-15 uses a 5-point Likert scale, thus allowing for a wider range of ability to be estimated by KIs. There are also important difference between the PD-CFRS and PDAQ-15 as regards to cultural factors.. Some items of the PD-CFRS, such as the use of "public transport," may impact the population being examined (12).

Conclusion

The main results show that the Persian version of PDAQ-15 is a valid and useful clinical and research tool for assessing daily cognitive functioning in PD among the Iranian population. Future studies are needed to replicate these results in other populations.

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Conflict of interest:
None

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Authors' contributions:
All authors made substantial contributions to conception, design, acquisition, analysis and interpretation of data.

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