Validity and Reliability of the Turkish Version of the Prosthesis Donning and Doffing Questionnaire for Persons with Transtibial Amputations

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ABSTRACT

Introduction: Satisfaction with the donning and doffing procedure of prosthesis is related to the quality of life of individuals with amputation, and it should be assessed to gather information about related challenges, thus forming the basis for possible solutions. This study aimed to investigate the construct validity and reliability of the Turkish version of the Prosthesis Donning and Doffing Questionnaire for individuals with transtibial amputation.

Materials and Methods: After a translation/retranslation process, 30 individuals with transtibial amputation were recruited to evaluate the validity and reliability of the questionnaire. The participants were asked to fill in the Turkish version of the Prosthesis Donning and Doffing Questionnaire, Satisfaction with Prosthesis Survey, and the Nottingham Health Profile. The Prosthesis Donning and Doffing Questionnaire was readministered after 3 days.

Results: Test-retest reliability showed good intraclass correlation coefficient (ICC, 0.739; 95% confidence interval, 0.46–0.87). There was a statistically significant correlation between the Prosthesis Donning and Doffing Questionnaire, the Satisfaction with the Prosthesis Survey (rho = 0.419, $P = 0.02$), and Nottingham Health Profile (rho = −0.656, $P = 0.0001$), and its subsets ($P < 0.05$) showed construct validity.

Conclusions: The Turkish version of the Prosthesis Donning and Doffing Questionnaire is a reliable and valid tool to assess donning and doffing of prostheses for individuals with transtibial amputation. (*J Prosthet Orthot.* 2022;34:122–130)

KEY INDEXING TERMS: amputation, prosthesis, Prosthesis Donning and Doffing Questionnaire, psychometrics, rehabilitation, satisfaction, validation

Rehabilitation of individuals with amputation is mainly based on the appropriate prosthesis application that ideally compensates for lost limb functions with the main objective of lower-limb prosthesis to regaining mobility.[1] The loss of a limb causes important physical, psychological, and social impacts on the life of the person with amputation. Thus, satisfaction level from the artificial limb, which is designed to gain independence after amputation, is strongly correlated to the quality of life of persons with amputation.[2] Satisfaction with the prosthesis plays a crucial role in the acceptance, the compliance with the prosthesis, and the mobility.[3] According to the results of a recent systematic review, factors related to prosthesis satisfaction in individuals with lower-limb amputation are diverse and include several factors such as prosthetic fit, properties of functional use of prosthesis, and aspects of the residual limb.[3] The review has concluded that the available questionnaires assessing patient satisfaction with their prosthesis evaluate different aspects of satisfaction, hindering comparability of future studies and pooling of data for meta-analysis. Therefore, although the ideal way of evaluating prosthetic satisfaction is the assessment of all known factors influencing satisfaction, specific aspects of prosthetic satisfaction such as the satisfaction with the donning/doffing process should be assessed to ease comparison of future studies on prosthetic satisfaction.[3]

Easy donning and doffing have positive effects on the satisfaction with a prosthesis. Depending on the type of socket and suspension system, putting on and taking off a prosthesis can be time-consuming, can be difficult, and may need cognitive skills and hand dexterity.[4] This may also influence decision making for prosthetic prescription and interventions for persons with transtibial amputation. For example, wearing a pin-lock suspension system does not need as much time and fine hand dexterity as a seal-in system. However, wearing a seal-in system may take longer to don than the pin-lock system because the person with amputation uses spray to ease donning before wearing this system.[4] Abu Osman

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et al.[4] have developed a questionnaire that particularly assesses donning and doffing a prosthesis. There are several questionnaires validated in Turkish that measure users' experience and satisfaction with prostheses. However, none of these instruments specifically address the satisfaction or ability of persons with amputation with donning and doffing of their prosthesis.[3] However, we needed a validated tool to assess the ability level of Turkish individuals with transtibial amputation to don and doff their prosthesis and to provide the data of Turkish individuals with amputation. The lack of a validated tool for specifically assessing the donning and doffing procedure of the prostheses in Turkish individuals with amputation led us to perform this study. Thus, the objective of this study was to investigate the construct validity and reliability of the Turkish version of the Prosthesis Donning and Doffing Questionnaire for individuals with transtibial amputation.

MATERIALS AND METHODS

PARTICIPANTS

Thirty individuals with transtibial amputation who attended the Prosthetics and Orthotics Unit of Marmara University Research and Training Hospital were recruited into the study. The inclusion criteria were as follows: 1) unilateral transtibial amputation; 2) age of 18 to 65 years; 2) using a well-fitted prosthesis for at least 6 months; and 3) no cognitive disorder. The original questionnaire has been validated among individuals with unilateral transtibial amputation. So, we had to include only individuals with transtibial amputation. The exclusion criteria were as follows: 1) bilateral amputation; 2) amputation levels other than transtibial; 3) presence of neuroma, bony growth, skin lesions, and wounds leading to inability to use prosthesis; and 4) illiteracy.

Both written and verbal consent for participation in the study were obtained from the participants. Ethical approval for this study was obtained from the Ethics Committee of Marmara University School of Medicine (approval number: 09.2017.659). The trial was registered with ClinicalTrials.gov under the number NCT03347682.

TRANSLATION

After permission from the developers of the instrument was granted, the Turkish version of the Prosthesis Donning and Doffing Questionnaire was developed. Established guidelines for translation of patient-reported outcome instruments were followed for the translation process. Both forward and backward (reverse) translations of instructions, items, and response options were done by independent translators and reviewed by bilingual experts. Reconciliation of translations and cognitive testing of the translated instruments were completed as defined by Eremenco et al. and Reeve et al. (Figure 1).[5–7] The Prosthesis Donning and Doffing Questionnaire was translated into Turkish by a physiatrist and a physician who were not given information about the aim of the translation. The discrepancies among the translations were discussed by another physiatrist who was not involved in the forward translation process, and a consensus was reached on a common text. A professional sworn translator who was not informed about the original questionnaire back-translated the common text into English. The back-translated form was seen and approved by the developer, a prosthetist. The Turkish version was then jointly reviewed by a bilingual team and the need for a cross-cultural adjustment for the use of the Turkish version among the Turkish persons with amputation was discussed. The level of education was rearranged because it did not correspond to the level of education in Turkey. The education system is different in Turkey. The education levels in the original questionnaire were "diploma," "undergraduate," "postgraduate," and "none" in the original questionnaire. These items were adapted and changed to "ilkokul," "ortaokul," "lise," and "üniversite." After the interviews between the translators and study investigators, a Turkish version of the Prosthesis Donning and Doffing Questionnaire that is as close as possible to the original questionnaire was prepared (see Supplemental Digital Content 1, http://links.lww.com/JPO/A52).

OUTCOMES

To test reliability, each participant was requested to complete the Turkish version of the Prosthesis Donning and Doffing Questionnaire twice (3 days apart). Like the original questionnaire, the Turkish version has two main sections: a demographics section and a section related to donning and doffing. The demographics section is assessed and completed by the prosthetist and includes information about the level of hand dexterity, absence or presence, and the amount of contracture and the activity level. The section related to the donning and doffing consists of numeric questions asking about the time needed for donning and doffing the prosthesis, the number of times the person with amputation needs to take off and put on the prosthesis throughout the day, and the person's satisfaction level with the donning and doffing process on a visual analog scale (0–100). Yes/no questions ask whether the individual can put on or take off his/her prosthesis at night or in dark places, whether she/he needs any device(s) to ease donning and doffing, and whether she/he feels embarrassed to put on or take off the prosthesis in the community. The time needed to put on or take off a prosthesis is measured by the assessor by using the stopwatch feature of the chronograph on a smartphone.

For the domains 1 (the time needed for donning the prosthesis), 2 (the time needed for doffing the prosthesis), and 5 (the number of times that the individual with amputation needed to don and doff the prosthesis per day), the median is used as a cutoff point to generate dichotomous variables. Respondents with a value less than the "median" are considered as "1," and respondents with a value more than the "median" are considered as "0." For the domains 6 (satisfaction with donning process) and 7 (satisfaction with amputation doffing process), "50" is used as the median and thus serves as the cutoff point to generate a dichotomous variable. Respondents with a value of less than "50" were considered as "0," and respondents with a value of more than "50" were considered as "1." The total score of the questionnaire is calculated by summing all domains together. The obtained total score is thereafter categorized into "low,

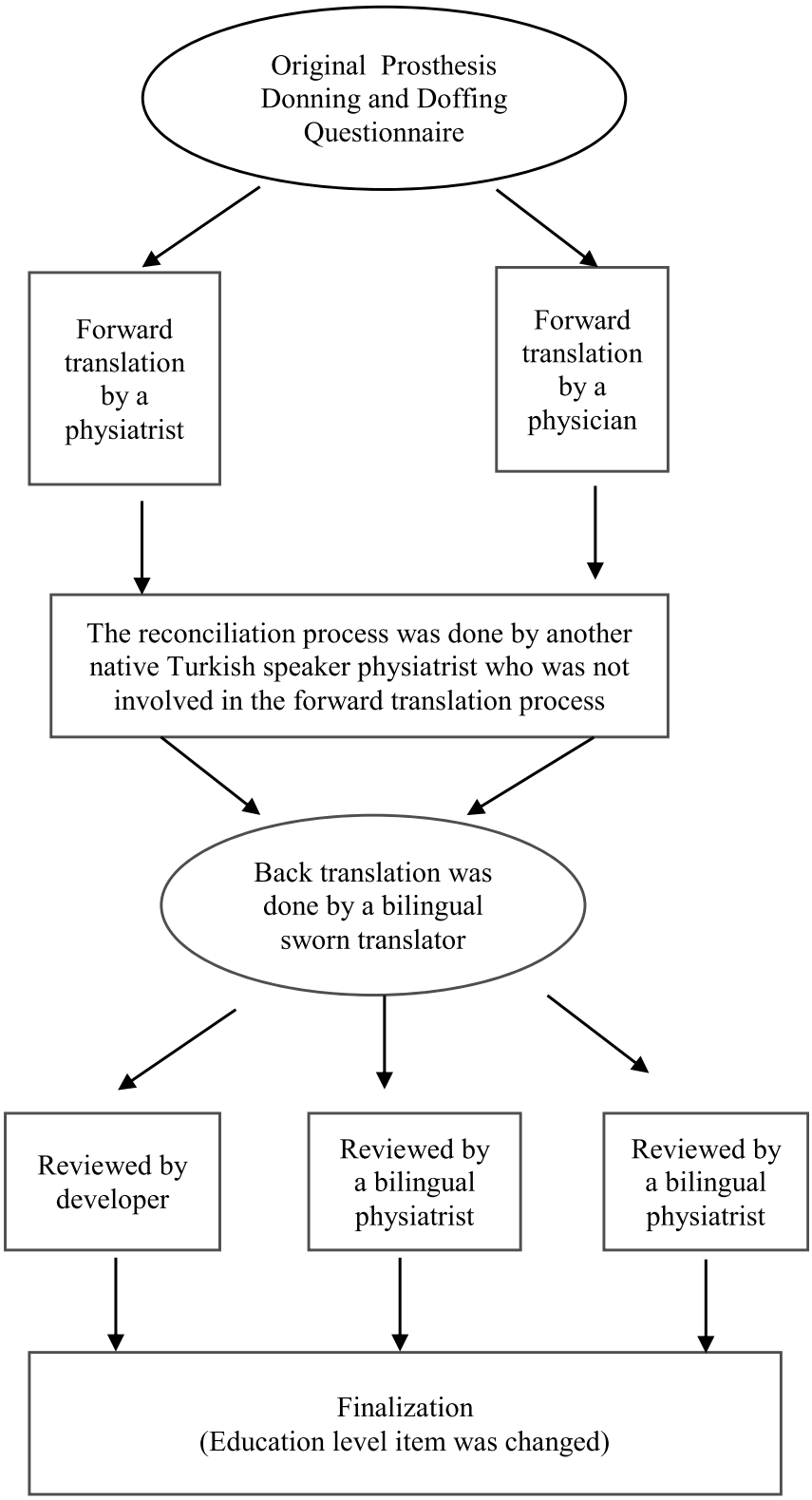

Figure 1. Translation process.

moderate, and high" as follows: total score, 2 or lower (low); total score, 3 and 4 (moderate); and total score, 5 or higher (high). A higher score indicates higher quality and satisfaction with the donning and doffing procedure.[4]

To evaluate the validity of the Turkish version of the Prosthesis Donning and Doffing Questionnaire, a generic quality of life measurement tool, the Nottingham Health Profile (NHP), and a disease-specific tool that measures general satisfaction

with a prosthesis, the Satisfaction with Prosthesis (SATPro), were performed.

We have chosen NHP to analyze the construct validity of the Prosthesis Donning and Doffing Questionnaire because of its several advantages; these are as follows: 1) being a valid and reliable outcome measurement tool that is used to measure quality of life[8]; 2) it also had been shown to be a reliable tool in individuals with lower-limb amputations[9]; 3) it has easy to respond (yes/no) items, making it easier to administer and to calculate scores compared with the multiple-choice Likert scales of other generic questionnaires that evaluate quality of life; 4) it had been chosen to evaluate the validity of the previous questionnaires assessing satisfaction with prostheses and therefore allows comparability of our results. NHP, translated into Turkish by Kücükdeveci et al., consists of six subdomains including 38 questions that are answered as yes or no: energy (three questions), pain (eight questions), emotional reaction (nine questions), sleeping (five questions), social isolation (five questions), and physical mobility (eight questions). The number of questions with the answer "yes" in each subgroup is divided by the total number of questions in the same subgroup, and the result is multiplied by 100. Each subscore ranges between 0 and 100 (higher scores indicate poor health).[8,10]

The SATPro is a disease-specific quality of life measurement tool that has been shown to be valid and reliable.[11] For this reason, it was chosen as a reference to evaluate the validity of the Prosthesis Donning and Doffing Questionnaire. The SATPro is a 15-item questionnaire that evaluates general satisfaction with a prosthesis. Turkish validation study of SATPro has been conducted by Safaz et al. and Şimşek et al.[1,2] Each item is scored between 0 and 3.[12] "0" refers to dissatisfaction, whereas "3" refers to satisfaction. Two questions (6 and 14) are reverse scored. The patient score is divided by the maximum score, and the result was multiplied by 100 to calculate the total score (45). Higher scores represent higher satisfaction with the prosthesis.

STATISTICAL ANALYSIS

SPSS Version 20.0 statistic software package was used for data analysis. Histogram, normality plots, and Shapiro-Wilk normality test were performed to assess the distribution of the data. Descriptive statistics were used to describe demographic characteristics and the basic features of the data. The intraclass correlation coefficient (ICC; range, 0.00–1.00) (for numeric question items) and Cohen kappa (κ) coefficient (for yes/no question items) were calculated to determine test-retest reliability. A reliability coefficient between 0.60 and 0.80 is considered as very good, whereas a value over 0.80 is considered as excellent reliability.[13] For construct validity analysis, Spearman rank correlation coefficient (rho) was used. A correlation coefficient, rho, of 0.35 or less was described as a weak correlation, 0.36 to 0.50 as a moderate correlation, and 0.5 to 1.0 as a strong correlation.[14] To compare the two suspension types in terms of questionnaire items, χ^2 test was used for categorical variables, whereas Mann-Whitney *U* test was used for continuous variables. *P* values less than 0.05 were considered to be significant.

RESULTS

Thirty-five individuals with transtibial amputation were assessed for eligibility, but only 30 of them were included. The flow chart of the study participants is depicted in Figure 2. The

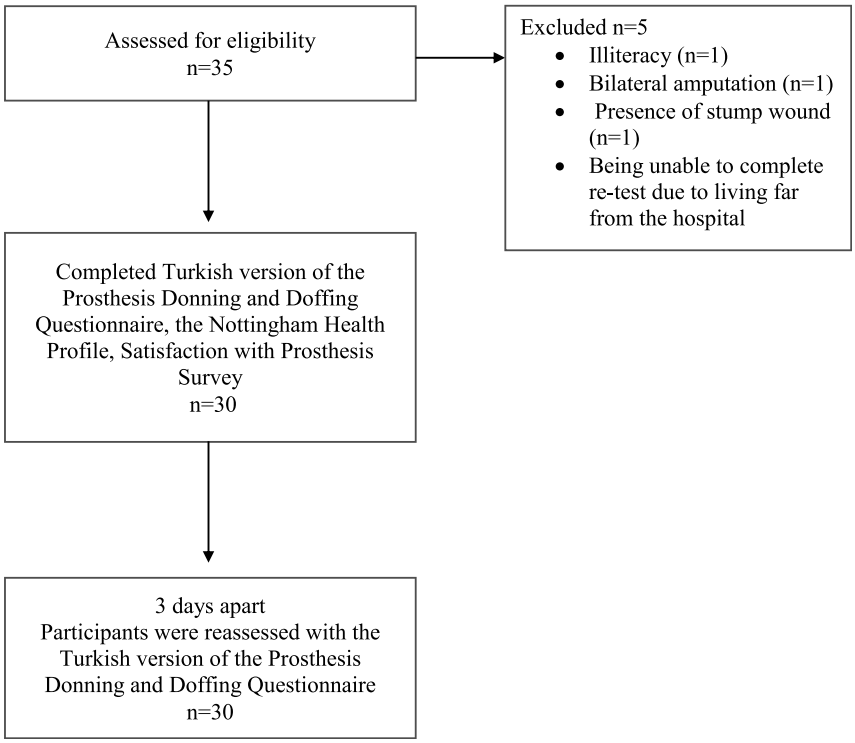

Figure 2. Flow chart of the study.

demographic characteristics of the participants are shown in Table 1. The responses to the domains of the questionnaire at the first assessment are shown in Table 2. The medians for domains 1, 2, and 5 were found to be 32 seconds, 15.5 seconds, and two times, consecutively. The total score was calculated as outlined in the *Materials and Methods* section.

Table 1. Characteristics of participants

Age, y	**47.06 ± 15.99**
Sex	
Female	4 (13.3%)
Male	26 (86.7%)
Height, cm	170.1 ± 9.43
Mass, kg	79.63 ± 12.08
Education level	
Primary school	5 (16.7%)
Secondary school	11 (36.7%)
High school	10 (33.3%)
University	4 (13.3%)
Amputation side	
Right	18 (60%)
Left	12 (40%)
Cause of amputation	
Trauma	18 (60%)
Diabetes	5 (16.7%)
Peripheric vascular disease	1 (3.3%)
Tumor	2 (6.6%)
Osteomyelitis	3 (10%)
Activity level	
K2	5 (16.7%)
K3	15 (50%)
K4	10 (33.3%)
Residual limb length	10.96 ± 3.13
Presence of contracture	
No contracture	30 (100%)
Prosthetic suspension	
Pin lock	5 (16.7%)
Active vacuum	23 (76.6%)
Passive vacuum	2 (6.7%)
Hand dexterity impairment	
Yes	4 (13.3%)
No	26 (86.7%)
Hand dexterity level	
Cylindrical grasp	30 (100%)
Tip	27 (90%)
Hook or snap	28 (93.3%)
3 Jaw chuck	27 (90%)
Spherical grasp	30 (100%)
Lateral	29 (96.7%)
NHP total score	23.86 ± 1.38
NHP energy	38.9 ± 40.19
NHP pain	20 ± 24.03
NHP emotional reaction	20.37 ± 27.07
NHP sleeping	29.33 ± 34.33
NHP social isolation	10 ± 23.92
NHP physical mobility	24.58 ± 27.36
SATPro total score	76.94 ± 19.72
Prosthesis Donning and Doffing Questionnaire total score	4.26 ± 1.39

NHP, Nottingham Health Profile; SATPro, Satisfaction with Prosthesis Survey.

The test-retest reliability of the Turkish version of the Prosthesis Donning and Doffing Questionnaire and its domains were observed to be very good (ICC, 0.739; 95% confidence interval, 0.46–0.87) (Table 3). A statistically significant negative strong correlation was found between the Turkish version of Prosthesis Donning and Doffing Questionnaire and the NHP (total, energy, pain, and sleeping subsets), whereas a negative moderate correlation was observed between the Prosthesis Donning and Doffing Questionnaire and the other subsets of the NHP (Table 4). The Prosthesis Donning and Doffing Questionnaire demonstrated a statistically significant, moderately positive correlation with the SATPro (Table 4). There was a strong statistically significant positive correlation between domain 6 (the domain asking satisfaction with the donning process) and SATPro (rho = 0.711, $P = 0.0001$), and domain 7 (the domain asking satisfaction with doffing process) and SATPro (rho = 0.642, $P = 0.0001$).

Different suspension types were compared in terms of the responses to questionnaire items. Time for doffing the prosthesis was detected to be statistically significantly lower for the pin-lock systems than the vacuum suspension systems. There were no significant differences between the suspension type groups in terms of other items (Table 5). Four of the participants answered question 8, which was an open-ended question. Three of them indicated that it is hard to don and doff the prosthesis with usual clothes, and they wished to have quick opening pants from the bottom to able to don and doff quickly in public. One of them wished the pin-lock release button to be located on the lower part of the prosthesis so that he can reach it easily. The total score of the subjects in this study ranged between 3 and 7 with a median of 5. Based on the aforementioned scoring system of the questionnaire, the level of satisfaction with donning and doffing the prosthesis of 10 (33.3%) subjects was detected as moderate, whereas the level of satisfaction with donning and doffing of the prosthesis of 20 subjects (66.7%) was detected as high.

DISCUSSION

The present study demonstrated that the Turkish version of the Prosthesis Donning and Doffing Questionnaire is a valid and reliable instrument for assessing the donning and doffing procedures of transtibial prostheses.

Several prosthetic measurement tools have been translated and validated into Turkish, but none of them focuses on donning and doffing. A validated and reliable tool may provide detailed assessment of the factors related to donning and doffing of lower-limb prostheses, allowing the improvement of prosthetic applications and quality of life of individuals with amputtion.[4] The questionnaire provides information about age, education level, occupation, etiology of amputation, hand dexterity level, residual limb length, suspension type, and presence of contracture. The effect of these features on the donning and doffing procedure of prostheses can now be further evaluated in Turkish individuals

Table 2. Statistical results for the domains of the Prosthesis Donning and Doffing Questionnaire

Domain	Min	Max	Median	Mean	SD
Numerical questions					
D1: Time for donning the prosthesis (soft liner and socket), in seconds	3	120	32	38.5	27.02
D2: Time for doffing the prosthesis (socket and soft liner), in seconds	3	105	15.5	23.97	22.77
D5: How many times the person with amputation needs to don and doff the prosthesis per day?	1	6	2	2.2	1.27
D6: The satisfaction of the person with amputation with the donning process	10	100	80	72.5	30.33
D7: The satisfaction of the person with amputation with the doffing process	10	100	80	72.83	28.96
Yes/no questions	Yes	No			
D3: Can the person with amputation don/doff in the dark?	22 (73.3%)	8 (26.7%)			
D4: Does the person with amputation need any device to facilitate donning the prosthesis	3 (10%)	27 (90%)			

Min, minimum observed values in participants' scores; Max, highest value achieved; SD, standard deviation; D, domain.

with amputation. Also, challenges pertaining to donning and doffing prosthetic devices can be determined and handled.[4]

RELIABILITY

Test-retest reliability was detected as very good (ICC, 0.739). All the domains showed very good consistency, and the top two rating consistencies were with "time for doffing the prosthesis (soft liner and socket)" and "the satisfaction of the person with amputation with the donning process." These results indicate that the questionnaire can be used to query satisfaction regarding quality of the donning and doffing. Especially the time for doffing the prosthesis and satisfaction with the donning process should be considered when decision making for prosthetic prescription and intervention for individuals with transtibial amputation.

VALIDITY

The results of the present study showed that correlation between the Prosthesis Donning and Doffing Questionnaire and SATPro was moderate, whereas domains 6 and 7 of the Prosthesis Donning and Doffing Questionnaire evaluate satisfaction with donning and doffing, measured on a 0- to 100-mm visual scale, which was observed to be highly correlated with the SATPro. Also, the correlation between the Prosthesis Donning and Doffing Questionnaire and NHP was strong. These results mean that domains 6 and 7 have very good validity as well as the Prosthesis Donning and Doffing Questionnaire. These results imply that high satisfaction with the prosthesis is related to the better quality of life in persons with amputation.

We have found significant correlations among the Prosthesis Donning and Doffing Questionnaire, NHP social isolation, and

Table 3. Test-retest reliability of the Turkish version of Prosthesis Donning and Doffing Questionnaire

Domain	κ	Interclass Correlation	95% Confidence Interval	
			Lower Bound	Upper Bound
Total score	—	0.739	0.460	0.87
D1: Time for donning the prosthesis (soft liner and socket), in seconds	—	0.767	0.549	0.884
D2: Time for doffing the prosthesis (socket and soft liner), in seconds	—	0.759	0.492	0.885
D3: Can the person with amputation don/doff in the dark?	0.630	—	—	—
D4: Does the person with amputation need any device to facilitate donning the prosthesis	0.783	—	—	—
D5: How many times the person with amputation needs to don and doff the prosthesis per day?	—	0.692	0.353	0.853
D6: The satisfaction of the person with amputation with the donning process	—	0.778	0.540	0.893
D7: The satisfaction of the person with amputation with the doffing process	—	0.683	0.334	0.849

Domains 3 and 4 are yes/no questions. D1, D2, D5, D6, and D7 are numeric questions.

r/κ value was calculated for yes/no questions, whereas the interclass correlation coefficient was calculated for numeric questions. Test-retest measurements were taken twice, 3 days apart.

D, domain.

Table 4. Correlation analysis of the Turkish version of the Prosthesis Donning and Doffing Questionnaire with Nottingham Health Profile and Satisfaction with Prosthesis Survey

		Prosthesis Donning and Doffing Questionnaire Total Score
NHP total score	rho	−0.656
	P	0.0001
NHP energy	rho	−0.604
	P	0.0001
NHP pain	rho	−0.656
	P	0.03
NHP emotional reaction	rho	−0.466
	P	0.001
NHP sleeping	rho	−0.546
	P	0.0002
NHP social isolation	rho	−0.494
	P	0.005
NHP physical mobility	rho	−0.474
	P	0.008
SATPro total score	rho	0.419
	P	0.021

the NHP emotional reaction domain scores, which may reflect the fact that depression, decreased self-esteem, distorted body image, increased dependency, and social isolation can be observed in short-term and long-term follow-up after amputation.[15,16] We have also observed significant relationships between the Prosthesis Donning and Doffing Questionnaire and the energy, pain, sleeping, and physical mobility domains of NHP. These results were expected because there is an interaction between the quality of donning and doffing procedure of the prosthesis and quality of life. For example, the silicone liners provide enhanced suspension and fit within the socket and thus improve function, which may result in less pain, improved physical mobility, and good sleep.[17,18]

Similar to the results of the present study, in their pilot study investigating the validity and reliability of the Turkish version of SATPro in individuals with unilateral lower-limb amputation, Şimşek et al. observed strong negative correlation with the NHP physical activity and SATPro, and weak negative correlation between the NHP energy and SATPro.[2] Akarsu et al. has found a positive correlation between the frequency of prosthetic use and the Short Form-36 subgroups in their study assessing the prosthesis usage, life quality, and functionality.[19] Demir et al.[11] investigated the use of and satisfaction with prosthesis and quality of life in patients with lower-limb amputation and found a negative correlation between daily prosthesis wearing time and cosmetic anxiety. However, none of the previous studies in Turkish demonstrated the level of satisfaction with donning and doffing.

COMPARISON BETWEEN THE CURRENT STUDY AND THE DEVELOPMENT AND VALIDATION STUDY RESULTS OF THE ORIGINAL QUESTIONNAIRE

Medians for time needed to don the prosthesis, time needed to doff the prosthesis, and the number of times the participant needed to take off and put on the prosthesis throughout the day were 32 seconds, 15.5 seconds, and two times, respectively. In the original development and validation study of the "Prosthesis Donning and Doffing Questionnaire," the median for number of times that the participant needed to don and doff the prosthesis per day was also two times, but medians for time to don and doff a prosthesis were lower than as they are in the original study. This can be explained by the presence of different types of suspension systems in the current study compared with the original study. Different from the present study, the original

Table 5. Comparison between the suspension types

	Suspension Type	Median	Min	Max	P^a
D1: Time for donning the prosthesis (soft liner and socket), in seconds	Pin Lock	32	3	45	0.62
	Vacuum	32	5	120	
D2: Time for doffing the prosthesis (socket and soft liner), in seconds	Pin Lock	6.65	3	23	**0.01**
	Vacuum	16	5	105	
D5: How many times the person with amputation needs to don and doff the prosthesis per day?	Pin Lock	2	1	4	0.55
	Vacuum	2	1	6	
D6: Satisfaction of the person with amputation with the donning process	Pin Lock	90	10	100	0.48
	Vacuum	80	10	100	
D7: Satisfaction of the person with amputation with the doffing process	Pin Lock	80	10	100	0.91
	Vacuum	80	10	100	
		Yes	No		P^b
D3: Can the person with amputation don/doff in the dark?	Pin Lock	3 (60%)	2 (40%)		0.41
	Vacuum	19 (76%)	6 (24%)		
D4: Does the person with amputation need any device to facilitate donning the prosthesis	Pin Lock	0	5 (100%)		0.56
	Vacuum	3 (12%)	27 (90%)		

[a] *P* value by Mann-Whitney *U* test.
[b] *P* value by χ^2 test.
D, domain.

study included patellar tendon-bearing prostheses. The mean time needed for donning the PTB was found to be longer. Both studies included participants who used prostheses for at least 6 months, so subjects were users with a sufficient prosthetic fit. Supporting this information, total scores of the participants fell into moderate and high satisfaction levels, similar to the findings of the original study. Abu Osman et al. compared pin-lock and patellar tendon-bearing prostheses and found a significant difference in satisfaction of persons with amputation with the doffing process between the two systems. In the present study, the time for doffing the prostheses with vacuum suspension was higher than the time for doffing the prostheses with pin-lock suspension. Similar to the findings of the original study, there were no differences between the two different suspension types in terms of the response to domain 1 and domains 3 to 6.

STRENGTHS AND LIMITATIONS OF THE STUDY

The present study is the first study that translated, cross-culturally adapted, and validated the Prosthesis Donning and Doffing Questionnaire. The study has several limitations. The study was conducted with a relatively small sample size, so no statistical analysis could be performed to evaluate between-group differences regarding participants' characteristics such as differences between various suspension systems and individuals with different hand dexterity levels. The effect of participant characteristics on satisfaction with the donning and doffing procedure needs to be evaluated in further studies with larger sample sizes. Also, the study excluded individuals with bilateral amputation or individuals with amputation levels other than transtibial; thus, the results cannot be generalized to all lower-limb prosthesis users. Validation of the questionnaire among individuals having other levels of amputation should be further evaluated. Also, median values may differ in different populations. Cutoff values of the questionnaire for each prosthetic type should be determined by including larger sample sizes.

CONCLUSIONS

The Turkish version of the Prosthesis Donning and Doffing Questionnaire is a valid and reliable tool to assess the donning and doffing procedures of prostheses of individuals with transtibial amputation. It can be used by health professionals working in the area of prosthetics for evidence-based evaluation of prosthetic use, specifically in terms of donning and doffing.

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