



Turkish Journal of Geriatrics
2017;20 (1):30-37

- Semiha AYDIN ÖZKAN¹
- Türkan KARACA²
- Emine Derya İSTER²

Correspondance

Semiha AYDIN ÖZKAN
Adiyaman University, Vocational School of Health,
Department of Midwifery
ADİYAMAN

Phone: 0212 4400000
Fax: 0212 224 49 90
e-mail: semihaydin44@gmail.com

Received: 10/08/2016
Accepted: 12/01/2017

¹ Adiyaman University, Vocational School of Health,
Department of Midwifery
ADİYAMAN

² Adiyaman University, Vocational School of Health,
Department of Nursing,
ADİYAMAN

RESEARCH

VALIDITY AND RELIABILITY OF THE “PERCEPTIONS OF RESTRAINT USE QUESTIONNAIRE” FOR USE IN TURKEY

ABSTRACT

Introduction: The purpose of this study was to test the reliability and validity of the Perceptions of Restraint Use Questionnaire, which assesses nurses' perceptions about the use of physical restraints when caring for older patients.

Materials and Method: Ninety-five nurses working in a university hospital in Adiyaman were involved in this methodological study. Questionnaire translation, content validity, internal consistency, and total item score correlation were conducted for validity and reliability purposes.

Results: Six instructors assessed the Questionnaire for the validity analysis. After the pilot study, final revisions were made based on the instructors' suggestions. The Questionnaire item total score correlation reliability coefficients were found to range between $r=0.26$ and 0.81 . The Questionnaire internal consistency analysis revealed a Cronbach's alpha reliability coefficient of $\alpha=0.93$. An analysis of test-retest time invariance revealed no differences between the two test administrations ($p>0.05$).

Conclusion: The Turkish version of the Questionnaire was found to have acceptable psychometric features and was adequately adapted to the cultural context of this country. It could be a useful tool for the assessment of situations when nurses feel the use of physical restraints is necessary.

Key Words: Physical Restraint; Aged; Nurse; Reliability and validity

ARAŞTIRMA

TESPİT KULLANIMI ALGI ANKETİ'NİN TÜRKİYE'DE KULLANIMI İÇİN GEÇERLİK VE GÜVENİRLİĞİ

Öz

Amaç: Bu çalışmanın amacı hemşirelerin yaşlı hastalarda fiziksel tespit kullanımı konusundaki algılarını ölçen Tespit Kullanımı Algı Anketi'nin (PRUQ-T) geçerlilik ve güvenilirliğini test etmektir.

Gereç Yöntem: Metodolojik türde yapılan çalışmaya Adiyaman'da bulunan bir üniversite hastanesinin servislerinde çalışan 95 hemşire alındı. Ölçeğin geçerliğine ilişkin çeviri ve kapsam geçerliği çalışmaları yapılırken güvenilirliğine yönelik iç tutarlık ve madde toplam puan korelasyonlarına yapıldı.

Bulgular: Ölçeğin geçerliğini değerlendirmede altı öğretim üyesinin görüşü alındı ve öneriler doğrultusunda hazırlanan ölçeğe pilot uygulama sonrası son şekli verildi. Ölçeğin maddelerinin madde toplam puan korelasyon güvenilirlik katsayıları $r=0.26 - 0.81$ arasında saptandı. Ölçeğin iç tutarlık analizinde Cronbach alfa güvenilirlik katsayısı $\alpha=0.93$ olarak bulundu. Ölçeğin zamana göre değişmezliği test-tekrar test analizi ile incelendiğinde her iki uygulama arasında fark olmadığı saptandı ($p>0.05$).

Sonuç: Tespit Kullanımı Algı Anketi'nin Türkçe formunun psikometrik özelliklerinin iyi düzeyde olduğu ve bu ülkenin kültürel durumuna uygun olduğu saptanmıştır. Hemşirelerin fiziksel tespit kullanımını en gerekli bulduğu durumları değerlendirebilmeleri açısından faydalı bir araç olduğu düşünülmektedir.

Anahtar Sözcükler: Fiziksel tespit; Yaşlı; Hemşire; Geçerlik ve güvenilirlik

INTRODUCTION

One of the main nurse care responsibilities is to prevent patients and relatives from harming themselves and others (1). Therefore, nurses may need to use physical restraints to protect patients and other people. Restraint practice refers to the use of physical, mechanical or chemical agents to limit movements in one part of the body to prevent patients harming themselves or others (2–6).

Patient restraints can be either physical or chemical. Physical restraints are defined as the limiting or prevention of patient movement using physical or mechanical devices on the body, or the use of bodily force for a short time by a health professional (7–9). Chemical restraints are defined as bringing freedom of action and behavior under control, using chemical means, in patients who are not receiving treatment for any mental disease symptoms (10,11).

As restraints limit movement, their use inevitably hinders the patients' autonomy-with the aim of preventing them from harming themselves or others. Besides the existing physiopathological problems, a majority of elderly people in nursing homes experience various changes in their cognitive levels and behavior, tend to adjust poorly to the care and treatment processes, and may harm themselves (1). Research has found that 80% of older patients in intensive care units have experienced various degrees of cognitive and behavioral agitation, and have harmed themselves by pulling out endotracheal tubes, tracheostomy tubes or removing dressings (12,13). In these cases, limiting movement through the use of restraints may become part of their care. Nurses are primarily responsible for patient care and safety; therefore, it is important to identify their perceptions about restraint use to raise awareness about this issue.

The main purpose of this study was to test the reliability and validity of the Perceptions of Restraint Use Questionnaire (PRUQ) in Turkish.

MATERIALS and METHOD

Study design and Subjects

This study was methodological in nature. It was conducted on nurses working in a university hospital in

Adiyaman. Ninety-five nurses working in eight service areas were involved in the study, of which 78.9% were female. The average age was 30.62 ± 6.34 (min 19, max 47), and average time working in their respective service areas was 3.08 ± 3.27 years.

Study Sample

The study sample was made up of nurses working in the Internal Diseases, Reanimation, Palliative Care, Neurology, and Chest Diseases service areas of the Internal Diseases, Surgery, and Cardiology intensive care units at a university hospital in Adiyaman. The number of items in the questionnaire determined that five to ten times more participants should be involved. For this study, the participant number targeted was six times more than the number of items in the questionnaire (102 nurses). However, the study was completed by 95 nurses, all of whom had volunteered to participate. Thirty nurses were contacted for the test-retest.

Data Collection Tools

Data were collected using a PRUQ.

Personal Identification Form

The participants were asked seven questions about their demographic details and the services they worked in.

Perceptions of Restraint Use Questionnaire:

The "Perceptions of Restraint Use Questionnaire" was developed by Lois Evans and Neville Strumpf in 1993 and has 17 of the most-cited reasons for using restraints. These were assessed using a Likert scale, ranging from 1 (not important) to 5 (very important). To calculate the average (mean) score for the questionnaire, the value of each answer was summated (ranging from 17 to 85 points) and divided by 17. Higher values indicated that the situation described was considered an important justification for using physical restraints, and vice versa. No cut-off value has been indicated in any related literature (14,15).

Data Collection

Data collection forms, which were completed during available time, were administered to the nurses at the workplace. A test-retest was conducted on 30 nurses after a two-week interval. Form completion took about 15 minutes.



Table 1. PRUQ Expert Review Evaluations

Perceptions of Restraint Use Questionnaire	Mean	sd	Min	Max
1- Protecting an older person from:	3.50	0.55	3.00	4.00
a- Falling out of bed?	3.50	0.55	3.00	4.00
b- Falling out of a chair?	2.83	0.98	2.00	4.00
c- Unsafe ambulation?	3.00	0.89	2.00	4.00
2- Preventing an older person from wandering?	3.17	0.75	2.00	4.00
3- Preventing an older person from taking things from others?	3.83	0.41	3.00	4.00
4- Preventing an older person from getting into dangerous places or supplies?	3.33	0.82	2.00	4.00
5- Keeping a confused older person from bothering others?	3.83	0.41	3.00	4.00
6- Preventing an older person from:	3.83	0.41	3.00	4.00
a- Pulling out a catheter?	3.83	0.41	3.00	4.00
b- Pulling out a feeding tube?	3.83	0.41	3.00	4.00
c- Pulling out an IV?	3.83	0.41	3.00	4.00
d- Breaking open sutures?	3.33	0.82	2.00	4.00
e- Removing a dressing?	3.50	0.55	3.00	4.00
7- Providing quiet time or rest for an overactive older person?	3.17	1.33	1.00	4.00
8- Providing for safety when judgment is impaired?	4.00	0.00	4.00	4.00
9- Substituting for staff observation?	3.83	0.41	3.00	4.00

Data Analysis

Statistical analyses were performed using the SPSS 16 programming package. A content validity index based on expert reviews was utilized to assess the content validity of the questionnaire. Pearson's correlation analysis was used for item analysis, and internal consistency was tested using Cronbach's alpha reliability coefficient. The time invariance of the scale was tested using a t-test for dependent groups.

Ethical Considerations

Permission to use the PRUQ for Turkish validity and reliability purposes was obtained from Lois Evans and Neville Strumpf, its developer. Written permission was obtained from the Ethics Committee of the hospital at which the study was conducted (protocol no. 2016/3-19), and verbal informed consent was received from the participants after the purpose of the study was fully explained.

RESULTS

Validity Results

Analysis of Language Equivalence

The English version of the PRUQ was translated into Turkish by two project-unrelated individuals who were fluent in both Turkish and English. The questionnaire that had been translated into Turkish was reviewed by the researchers and a revised Turkish text was developed. This text was then back-translated into English by a Turkish instructor who taught English in the Department of Foreign Languages; she was informed about the study but was not given the original questionnaire. The original text and the back-translated form were compared, and any changes in meaning were evaluated, after which final revisions were made.

The Turkish questionnaire was sent to six instructors to be reviewed for appropriateness to Turkish culture, language equivalence, and content validity.

After revisions were made in line with their suggestions, the questionnaire was piloted with 10 nurses not involved in the study.

Analysis of Content Validity

The Content Validity Index (CVI) was used in the expert review evaluations (16–18). Accordingly, the instructors were asked to evaluate the items as 1=not appropriate, 2=somewhat appropriate (the item and the statement should be revised), 3=appropriate (minor changes needed), and 4=very appropriate. The CVI score was determined by dividing the number of experts who gave 3–4 points by the total number of experts altogether. Of all the questionnaire items,

88.5% were given 3–4 points. Table 1 shows the PRUQ Expert Review Evaluations.

Reliability Results

Item Analysis

The PRUQ Turkish adaptation included an evaluation of the item-total score correlations for reliability. As there were no items with item correlations below 0.20, the correlation reliability coefficients (Pearson’s Product-Moment Correlation Coefficient) were between $r=0.26$ and 0.81 . The relationship between the item scores and total scale scores was found to be positive and statistically significant (Table 2).

Table 2. PRUQ total score item correlations (n=120)

Perceptions of Restraint Use Questionnaire	r	p
1- Protecting an older person from:		
a- Falling out of bed?	0.74	0.001
b- Falling out of a chair?	0.81	0.001
c- Unsafe ambulation?	0.66	0.001
2- Preventing an older person from wandering?	0.26	0.011
3- Preventing an older person from taking things from others?	0.39	0.001
4- Preventing an older person from getting into dangerous places or supplies?	0.60	0.001
5- Keeping a confused older person from bothering others?	0.38	0.001
6- Preventing an older person from:		
a- Pulling out a catheter?	0.70	0.001
b- Pulling out a feeding tube?	0.70	0.001
c- Pulling out an IV?	0.56	0.001
d- Breaking open sutures?	0.61	0.001
e- Removing a dressing?	0.55	0.001
7- Providing quiet time or rest for an overactive older person?	0.42	0.001
8- Providing for safety when judgment is impaired?	0.65	0.001
9- Substituting for staff observation?	0.41	0.001
10- Protecting staff or other patients from physical abusiveness/combativeness?	0.58	0.001
11- Managing agitation?	0.46	0.001



PRUQ Internal Consistency Reliability Coefficient

The PRUQ internal consistency was evaluated using Cronbach's Alpha, which is an appropriate measure for Likert-type scales. Total item scale correlations were evaluated when all items were analyzed. The PRUQ total item correlations were found to range from 0.26 to 0.81; no items were excluded from the questionnaire. The Cronbach's Alpha Reliability Coefficient value analysis for the Questionnaire was 0.93. From this, the Turkish form of the 17 to item PRUQ was developed.

Comparison of Test-Retest Mean Scores for the PRUQ and the Correlations

Test-retest reliability is the power of an instrument to demonstrate consistent results from one administration to another, and to show time invariance. Correlations obtained from two questionnaire administrations are calculated to determine the test-retest reliability, which results in a retest reliability coefficient. Pearson's Product-Moment Correlation Coefficient and a t-test on dependent groups were used for the PRUQ test-retest measurements, which was administered to 30 people over a two-week interval (Table 3).

Table 3. Comparison of Test-Retest Mean Scores For The Questionnaire And Correlations (n=30)

Questionnaire	First Admst. Mean±SD	Second Admst. Mean ±S D	t	p	r	p
PRUQ	4.77±0.42	4.72±0.29	0.472	0.64	0.94	< 0.00

The PRUQ time invariance reliability analysis included a comparison of the mean scores obtained from the test-retest and a dependent group t-test; no statistically significant difference was found between the mean scores (see Table 3). The relationship between the scores obtained from the first and second administrations of the questionnaire was analyzed using Pearson's Correlation Analysis. The reliability coefficient between the two measurement scores over the two-week interval was found to display a very strong and statistically significant relationship, with an r=0.94 reliability coefficient (Table 3).

DISCUSSION

The PRUQ is used to assess the physical restraint use perceptions of nurses who provide care to older patients. This study tested the reliability and validity of the PRUQ, and it was found that the Turkish version of PRUQ had exceptional psychometric features.

As intercultural questionnaire adaptations require permission from the owners of the questionnaire, written permission was obtained through e-mail for

this study. Furthermore, the translation of a questionnaire to another language may change its nature (18). To minimize these differences, questionnaire items should be examined carefully. Necessary transformations are made with a view to giving meaning to the target language, and the questionnaire standardized in line with the norms of the participants. Back-translation is the most commonly used method to enhance cultural equivalence in an original questionnaire in the target language (18). Back-translation was performed in this study with a view to enhancing cultural equivalence.

Content validity is used to evaluate whether the questionnaire and each item in it measures the correct concepts. This method requires a group of experts which can range from 3 to 20 (18–20). In line with the related literature, this study sought advice from six experts in the field. Scores obtained from the expert reviews (1 to 4) were evaluated using the CVI. Eighty-eight point five percent of the questionnaire items received 3–4 points, indicating that there was a consensus between the experts, so the questionnaire was deemed to be culturally appropriate.

Item total score analysis, which gives information about the reliability of each item, is one of the methods used to assess internal consistency in terms of the reliability of the questionnaire adaptation. If the items in a scale are equally-weighted and independent, high correlation coefficients are expected between each item and the total score. Although there is no standard cut-off point that indicates sufficient reliability, it has been reported to be over 0.50 by Karasar (20), over 0.30 by Öner (21), and over 0.25 by Akgül and Çevik (22) and Gözüm and Aksayan (17).

Item total score correlations for the PRUQ reliability in this study showed that the correlation reliability coefficient (Pearson's Product-Moment Correlation Coefficient) was between $r=0.26$ and 0.81 and the relationship between the item scores and the total scale scores were found to be positive and statistically significant. This result indicated that all items contributed to the questionnaire's total score, had good distinguishing features, and were reliable (14-15).

Each item on a scale needs to have a consistent internal reliability. The most appropriate method to assess this is Cronbach's alpha reliability coefficient, which has been frequently used to assess the internal consistency of Likert-type scales (18–20). The higher the alpha coefficient of the scale is, the more consistent the items in the scale are with each other; i.e., it is assumed the items predict components of the same feature (16, 17). The alpha coefficient, which is calculated by averaging the coefficients that result from all variances to the general variances and which ranges from 0 to 1, examines whether the questions in the scale have the integrity to explain a homogenous structure (16). A Cronbach's alpha coefficient between 0.60 and 0.80 indicates a very reliable scale and a Cronbach's alpha coefficient between 0.80 and 1.00 (23) is considered highly reliable.

The Cronbach's alpha reliability coefficient for the Turkish PRUQ was 0.93, indicating that the questionnaire items in this study were internally consistent and clearly tested physical restraint use perceptions; therefore, it was found to be a reliable scale. Although the number of studies that have used this scale has been quite limited, the Cronbach's Alpha value in the

Spanish adaptation of the scale by Farina-Lopez et al., (2016) was 0.94, and 0.908 in a study that assessed nurses' Perceptions of Restraint Use (2014) (24,25).

Test-retest reliability is the power of one instrument to display consistent results and time invariance from one measurement to another. Test-retest reliability is identified by calculating the correlations with the scores obtained from two administrations of an instrument or test. As test scores generally change and are equally spaced, reliability is usually found using Pearson's Product-Moment Correlation Coefficient which has values that range between (r) "0" and "1." Effectiveness of the statement increases with an increase in correlation (r) and, conversely, decreases with a decrease in correlation. A correlation coefficient that is high enough indicates that the measurements obtained from the two administrations are stable, and that there has been little change within the time that the quality was measured (16-17,21).

The PRUQ reliability analysis included the administration of the questionnaire to 30 participants at a two-week interval to assess the time invariance. The mean scores obtained from the test-retest were compared with a dependent group's t-test and no statistically significant differences were identified between the mean scores ($p>0.05$). The relationship between the scores obtained through the Pearson's Correlation Analysis of the first and second administration of the PRUQ found that the reliability coefficient between the two measures was $r=0.94$, indicating a positive, very strong and statistically significant relationship between the scores from the two administrations. The statistical significance of the test-retest scale correlation supported the reliability of the scale over time in terms of consistency.

Conducting the study at a single small university hospital was a limitation. Nursing staff at a single, particular hospital setting may not represent all nursing staff in the Turkey.

In conclusion; given that the Turkish adaptation of the PRUQ has 17 items and is easy, comprehensible, and brief, it is considered to be a reliable and valid tool for assessing nurses' perceptions about the use



of physical restraints on older patients. It is recommended that the questionnaire be further tested, in terms of its validity and reliability, with other health professionals providing care to older patients.

Acknowledgements

The authors thank the nurses who participated in this study.

Declaration of Interest Statement

The authors have indicated no financial conflicts of interest about this research. This was not an industry supported study.

REFERENCES

1. Bray K, Hill K, Robson W, et al. British Association of Critical Care Nurses position statement on the use of restraint in adult critical care units. *Nurs Crit Care* 2004;9(5):199-11. (PMID:15462118).
2. Adams D, Allen D. Assessing the need for reactive behaviour management strategies in children with intellectual disability and severe challenging behaviour. *J Intellect Disabil Res* 2001;45:335-43. (PMID:11489055).
3. Jones P, Kroese BS. Service users' views of physical restraint procedures in secure settings for people with learning disabilities. *Br J Learn Disabil* 2007;35:50-4.
4. Allen D, Lowe K., Brophy S, Moore K. Predictors of restrictive reactive strategy use in people with challenging behaviour. *Journal of Applied Research in Intellectual Disabilities* 2009;22:159-68.
5. Luiselli JK. Physical restraint of people with intellectual disability: a review of implementation reduction and elimination procedures. *Journal of Applied Research in Intellectual Disabilities* 2009;22:126-34.
6. Sturmey P. It is time to reduce and safely eliminate restrictive behavioural practices. *Journal of Applied Research in Intellectual Disabilities* 2009;22:105-10.
7. Cotter VT. Restraint free care in older adults with dementia. *Keio J Med* 2005;54(2):80-4. (PMID:16077257).
8. Gallinagh R, Slevin E, McCormack B. Side rails as physical restraints in the care of older people: a management issue. *J Nurs Manag* 2002;10:299-306. (PMID:12191076).
9. Vassallo M, Wilkinson C, Stockdale R, Malik N, Baker R, Allen S. Attitudes to restraint for the prevention of falls in hospital. *Gerontology* 2002;51(1):66-70. (PMID:15591759).
10. Braun JA, Frolik LA. Legal aspects of chemical restraint use in nursing homes. *Marquette Elder's Advisor* 2000;2(2):70-7.
11. Hofsø K, Coyer FM. Part 2. Chemical and physical restraints in the management of mechanically ventilated patients in the ICU: a patient perspective. *Intensive Crit Care Nurs* 2007;23(6):316-22. (PMID:17512200).
12. Jacobi J, Fraser GL, Coursin DB. Clinical practice guidelines for the sustained use of sedatives and analgesics in the critically ill adult. *Crit Care Med* 2002;30:119-41. (PMID:11902253).
13. Chang LY, Wang KW, Chao YF. Influence of physical restraint on unplanned extubation of adult intensive care patients: a case control study. *Am J Crit Care* 2008;17 (5): 408-15. (PMID:18775996).
14. University of Pennsylvania School of Nursing. Perceptions of Restraint use Questionnaire (PRUQ), 2010. [Internet] Available at <http://www.nursing.upenn.edu/cisa/Pages/Resources.aspx> Accessed: 20.01.2016.
15. Evans LK, Strumpf NE. Frailty and physical restraint. In: Perry HM, Morley JE, Coe RM.(Eds). *Aging and musculoskeletal disorders*. Springer, New York 1993, pp 324-33.
16. Akgül A, Çevik O. *Statistical Analysis Techniques*. Emek Ofset Ltd. Şti, Ankara 2005, pp 417-23.
17. Gözüm S, Aksayan S. A guide for transcultural adaptation of the scale II: Psychometric Characteristics and cross-cultural comparison. *Journal of Research and Development in Nursing* 2002; 4(2): 9-20. (in Turkish).
18. Esin N. Data collection methods and Instruments & Reliability and Validity of Data Collection Tools. Erdoğan S, Nahcivan N, Esin N. (Eds). *Research in Nursing*. First edition. Nobel Medical Bookstore, Istanbul 2014, pp 217-33. (in Turkish).
19. Polit DF, Beck CT. *Essentials of Nursing Research: Appraising evidence for nursing practice*. 7th edition. Wolters Kluwer Health, Lippincott Williams & Wilkins, Philadelphia 2010, pp 440-62.

20. Karasar N. Scientific Research Methods. 23th edition, Nobel Academic Publishing Education-Consultation, Ankara 2012, pp 148-53. (in Turkish).
21. Öner N. A Reference Guide for the Psychological Tests used in Turkey. 3th edition, Istanbul Bogazici University Printing Press, Istanbul 1997, pp 33-9. (in Turkish).
22. Akgül A, Çevik O. Statistical Analysis Techniques-Business Management Practices. Second edition, Emek Ofset, Ankara 2005, pp 435-6. (in Turkish).
23. Tavşancıl E. Assessment of Attitudes and SPSS Data Analysis. 4th edition, Nobel Publications, Ankara 2010, pp 54-6. (in Turkish).
24. Fariña-López E, Estévez-Guerra GJ, Núñez-González E, Calvo-Francés F, Penelo E. Spanish adaptation and validation of the Perception of Restraint Use Questionnaire (PRUQ) on the use of physical restraints on the elderly An Sist Sanit Navar 2016;39(1): 13-22. (in Spanish). (PMID:27125606).
25. Fariña-López E, Estévez-Guerra GJ, Gandoy-Crego M, Polo-Luque LM, Gómez-Cantorna C, Capezuti EA. Perception of Spanish nursing staff on the use of physical restraints. J Nurs Scholarsh 2014;46(5):322-30. (PMID:24754778).