Kastamonu Sağlık Akademisi

Araştırma Sunumu / Research Article

Validity and Reliability of Turkish Version of Bristol COPD Knowledge Questionnaire (BCKQTR) / *Bristol KOAH Bilgi Düzeyi Soru Formu'nun Türkçe Versiyonunun Geçerlik ve Güvenirliği*

Dr.Sadık HANÇERLİOĞLU[1]; Dr.Gülbin KONAKÇI[2];Orhan ÇAKIR[3]; Dr.Fisun ŞENUZUN AYKAR[4]

1. Ege University Faculty of Nursing,s_hancerlioglu@hotmail.com

2. Izmir University of Democracy, ygulbin@gmail.com

3. Ege University Medical Faculty Hospital, orhancakir3535@gmail.com

4. Ege University Faculty of Nursing, fisun.senuzun@gmail.com

Gönderim Tarihi | Received: 07.07.2020, Kabul Tarihi | Accepted: 11.09.2020, Yayım Tarihi | Date of Issue: 01.12.2021, DOİ: 10.25279/sak.765483

Atıf | Reference: "HANÇERLİOĞLU, S; KONAKÇI, G; ÇAKIR, O; ŞENUZUN AYKAR, F. (2021). Validity and Reliability of Turkish Version of Bristol COPD Knowledge Questionnaire. *Health Academy Kastamonu (HAK),* 6 (3), s.172-181."

Öz

Giriş: Kronik Obstrüktif Akciğer Hastalığı hastaları için bilgi düzeyi değerlendirme formları incelendiğinde, Bristol Kronik Obstrüktif Akciğer Hastalığı Bilgi Düzeyi Soru Formu'nun Türkçeye uyarlanması ve psikometrik çalışmaların yapılması, Kronik Obstrüktif Akciğer Hastalığı hastalarının eğitiminde önemli bir gereksinimi karşılayacağı düşünülmektedir. Amaç: Bu araştırma Bristol Kronik Obstrüktif Akciğer Hastalığı Bilgi Düzeyi Soru Formu'nu Türkçeye uyarlamak, geçerliliğini ve güvenilirliğini test etmek için metodolojik bir çalışma olarak yürütülmüştür. Gereç ve Yöntem: Araştırma verileri bir üniversite hastanesinin acil servisine Mayıs ve Aralık 2019 arasında Kronik Obstrüktif Akciğer Hastalığı akut alevlenme belirtileri ile başvuran ve daha önce Kronik Obstrüktif Akciğer Hastalığı tanısı almış ve durumu acil serviste stabilize olmuş, çalışmaya katılmak için gönüllü olan 173 kişiden toplanmıştır. Dil geçerliliğinde ileri ve geri çeviriler kullanılmıştır. İçerik Geçerlilik İndeksini belirlemek için uzman görüşleri alınmıştır. Güvenilirliği değerlendirmek için Cronbach'ın alfa ve test-tekrar test güvenilirliği kullanılmıştır. Bulgular: Form, analizler sonucunda İçerik Geçerlilik İndeksi 0.88 (0.82-1.00), Cronbach Alpha değeri 0.75 ve test-tekrar test Sınıflararası Korelasyon Katsayısı değeri 0.95 olarak bulunmuştur. Sonuç: Sonuç olarak formun Türk toplumu için yüksek geçerlilik ve güvenilirliğe sahip olduğuna karar verilmiştir.

Anahtar Kelimeler: Geçerlik; Güvenirlik; KOAH; Bilgi

Abstract

Introduction: When the level of knowledge assessment forms for Chronic Obstructive Pulmonary Disease patients are investigated, it is thought that adapting the Bristol Chronic Obstructive Pulmonary Disease Knowledge Questionnaire to Turkish and conducting psychometric studies will meet an important requirement in the education of Chronic Obstructive Pulmonary Disease patients. Aim: This research was carried out as a methodological study to adapt Bristol Chronic Obstructive Pulmonary Disease Knowledge Questionnaire to Turkish and test its validity and reliability. Materials and Methods: The research data were collected from 173 individuals who applied to the emergency department of a university hospital with signs of acute exacerbation of Chronic Obstructive Pulmonary Disease between May and December 2019 and were previously diagnosed with Chronic Obstructive Pulmonary Disease, and whose condition has stabilized in the emergency department, who volunteered to participate in the study. Forward and backward translations were used in language validity. Expert opinions were obtained to determine the Content Validity Index. Cronbach's alpha, and test-retest reliability were used to evaluate reliability. Results: As a result of the analysis of the form, it was determined that the Content Validity Index of the scale was 0.88 (0.82-1.00), Cronbach Alpha value was 0.75 and the test-retest intraclass correlation coefficient value was 0.95. Conclusion: As a result, it was decided that the scale has high validity and reliability for Turkish society.

Keywords: Reliability, Validity; COPD; Knowledge

1. Introduction

Chronic Obstructive Pulmonary Disease (COPD); is a preventable and treatable disease characterized by increased chronic inflammatory response of airlines and lungs against harmful gases and particles (Vogelmeier ve diğerleri, ,2017). While COPD ranks 8th among the Disability-adjusted life year (DALY) in 2005, it is ranked 5th in 2013 (Vogelmeier ve diğerleri, 2017). Data from the WHO and Global Burden of Disease (GBD) 2015 study assumed that the number of deaths from COPD worldwide is 3.2 million (Wang ve diğerleri, 2016; Forouzanfar ve diğerleri, 2016). Nearly 3 million people die each year due to COPD. It is estimated that the prevalence of COPD will increase in the next 30 years with the increasing prevalence of cigarette use in developing countries and the increase in the elderly population in developed countries, and by 2030 deaths from COPD and related causes will exceed 4.5 million per year (Vogelmeier ve diğerleri, 2017). COPD, which is an important public health problem worldwide, cannot be diagnosed in many COPD patients due to the fact that it is not fully known by the public and not adequately applied to the health care institution. Considering the rate of COPD diagnosed, it constitutes only 25-40% of patients with COPD in the world and 8.4% in our country (Erdinç ve diğerleri, 2010).

COPD is a chronic disease in which symptom management can be achieved with the patient's self-care and self-management. The patient's education is the most important component in maintaining the patient's self-care and self-management. In the planning of patient education, it is very important to evaluate the patient's level of knowledge and to determine what level of information to be given in which areas (Uzel ve diğerleri, 2017).

When the level of knowledge assessment forms for COPD patients are examined, it is thought that adapting the Bristol COPD Knowledge Questionnaire to Turkish and conducting psychometric studies will meet an important requirement in the studies to be conducted in our country and in the education of COPD patients.

2. Materials and Methods

2.1. Type of Study

This study has a methodological design.

2.2. Sample of Study

The sample of this study was consisted of 173 individuals who applied to the emergency department of a university hospital with the findings of acute exacerbation of COPD between May and December 2019 and volunteered to participate in the study.

2.3. Instruments

The data collection forms, the Patient Information Form, which included sociodemographic variables related to the individual, and Bristol COPD Knowledge Questionnaire (BCKQ) were used in the study.

2.3.1. Patient Information Form

It was created by the researchers in accordance with the literature information. The form consists of questions about socio-demographic characteristics such as age, gender and marital status.

2.3.2. Bristol COPD Knowledge Questionnaire (BCKQ)

BCKQ is a form developed by White ve diğerleri, (2006) BCKQ is a 65-item instrument assessing the level of knowledge relating to COPD, aggregating 13 knowledge topics including epidemiology, etiology, symptoms, breathlessness, phlegm, infections, exercise, smoking, vaccination, inhaled bronchodilators, antibiotics, oral steroids, and inhaled steroids. Each topic has five items, and for each item, there are three response options "True", "False", and "Don't know". A correct answer scores one point, while an incorrect answer or "don't know" scores zero point. Total score ranges from 0 to 65. Low score indicates low, high score indicates high level of knowledge.

2.4. Validity

2.4.1. Language Validity

The scale was first translated from English to Turkish by the researcher to ensure the validity of the scale. Subsequently, it was translated from English to Turkish by ten faculty members who are fluent in Turkish and English and whose mother tongue is Turkish. As a result of these translations, the most appropriate expressions were determined and the translation of the scale back to English was made by a native English speaker. The original version of the BCKQ was compared with the translations and appropriate corrections were made in accordance with expert opinions.

2.4.2. Content Validity

The Turkish version of the scale was evaluated by the ten academics and clinicians working in the Faculty of Nursing and Medicine of a university in terms of content validity. The experts were asked to evaluate the suitability, comprehensibility and simplicity of each item in the scale.

2.5. Reliability

2.5.1. Internal Consistency

The most widely used reliability determination method. There are many methods in which different statistical formulas are used to calculate the internal consistency coefficient. In this research, Cronbach's Alpha method were used to calculate internal consistency.

2.5.2. Test-Retest Reliability

A total of 173 COPD patient were surveyed. Three weeks after the first interview, 32 patient were re-interviewed by the phone and the BCKQ was re-administered. The relationship between the scale scores obtained from the test and retest was evaluated by using the intraclass correlation coefficient (ICC).

2.6. Research Ethics

In order to evaluate the validity and reliability of BCKQ, necessary permissions were obtained from Roger White and the Ethics Committee of Medical Research (Decision no:19-3.1T/51). All directives of the Helsinki Declaration have been followed and informed consent was obtained from the participants.

2.7. Statistical analysis

IBM SPSS 25.0 package program was used for Cronbach's alpha reliability coefficient, CVI and Correlations.

3. Results

The mean age of the patients included in our study was 66.72 ± 10.44 years, 62.5% male, 65.8% married, 25.4% primary school graduates, 69.9% have children, 47.9% were living in the city center. Of the patients, 36.4% quit smoking, 62.4% applied to the emergency service due to COPD in the last six months, 60.1 % going to regular controls, their score on the question "how do you evaluate your current health status" was 55.34 ± 16.50, their score on the question "how do you evaluate your quality of life" was 53.97 ± 16.72, Their score for the question "how do you evaluate your level of knowledge about the disease" was found to be 63.15±16.31.

After translation of the scale, CVI was used to determine content validity. The CVI of the scale was 0.88 (0.82-1.00). Cronbach's Alpha value of the BCKQ form answered by 173 COPD patients included in the research sample within the scope of internal consistency studies was found to be 0.75. Test retest reliability of the form was evaluated by calculating the Intraclass Correlation Coefficient (ICC). ICC value of BCKQ was determined as 0.95 (0.82 - 0.97).

4. Discussion

COPD, which is an important public health problem worldwide, is not fully known to the public and applications to the health institution remain insufficient (Vogelmeier ve diğerleri, 2017). Therefore, many COPD patients cannot be diagnosed. Individuals who are diagnosed cannot manage their symptoms well because they do not have information about the disease (Iglesias ve diğerleri, 2020). COPD is a chronic disease in which multiple symptoms are seen together, where patients' self- management and self-management and symptom management can be achieved. In order to improve the self-care and self-management skills of the patients, it is necessary to plan trainings in this regard (Guo ve diğerleri, ,2020). In order for the trainings to be planned, it should be determined what

patients know and not (Stellefson ve diğerleri, 2018). There are many tools to evaluate the level of knowledge about the disease. BCKQ is one of the most important ones because it is easy to apply and can appeal to all ages and educational levels.

In our study we carried out to examine the psychometric properties of BCKQ and adapt it to Turkish society, studies on language validity were carried out first. There are rules to be followed in order to translate a scale written for a certain language into another language and apply it in that language. First, the scale needs to be translated from the original language to the language of the target audience, then the scale translated back to the original language, and finally the equality between the two translations should be evaluated by experts who speak both languages (WHO, 2019). In our study, in parallel with the literature, a panel of 10 people consisting of academicians and clinicians who have studies on COPD first translated the form from English in to Turkish. These translations were compared by the researchers and the most appropriate expressions were determined and a common text was created. The created Turkish common text was translated back into English by a language specialist who is a native English speaker. The original English form and the most recently translated English form were compared by the researchers and checked whether they provide meaning integrity.

The form evaluated for the integrity of the meaning has been passed to the Content validity evaluation phase. Content validity indicates whether the items in the measurement tool represent the area of the feature desired to be measured adequately. The most frequently used method in content validity is to get expert opinion (Salkind, 2010; Shi ve diğerleri, 2012). To evaluate the BCKQ form in terms of content validity, 10 faculty members working on COPD were asked to evaluate the suitability, comprehensibility and simplicity of the items. With respect to expert reviews, CVI was 0.88 (0.82- 1.00) for the current study. It was reported in the literature that the cut-off for an acceptable in CVI is 0.78 (Yusoff, 2019). So, all items of BCKQ were acceptable with regards to content.

The most frequently used method in reliability studies is the calculation of Cronbach's Alpha coefficient. The alpha coefficient is used to test the consistency of all sub-sections of the measuring tool relative to each other, as well as to test whether the items of each sub-dimension are consistent within each other. The reliability coefficient that can be considered sufficient in a measurement tool should be as close to 1 as possible. If the alpha coefficient is less than 0.40, the measuring tool is not reliable, it is considered to be low reliability between 0.40 and 0.59, highly reliable between 0.60 and 0.79, and highly reliable between 0.80 and 1.00 (Tavakol, 2011). The original study of BCKQ developed by White ve diğerleri, (2006) Cronbach Alpha value was found 0.73 (White ve diğerleri, ,2006). In the adaptation study by Staiou ve diğerleri, (2018) the knowledge level of the nurses in Greece, was found to be 0.91. In our study, the Cronbach Alpha value of the scale was found to be 0.75. This value is higher than the original development study of the scale, and is also stated to be very reliable in the literature.

In order to test the invariance of BCKQ against time, it was re-applied to 32 patients with a three-week interval, and the results were evaluated using the correlation coefficient analysis. In the methodological studies, it is reported that the number of individuals to be re-tested should be at least 30 in testing the invariance against time (Bujang and Baharu, 2017). In this study, retesting was accepted as a sufficient number since it was performed on 32 individuals with COPD. The ICC value ranges from 0.00 to 1.00, indicating that the reliability is good for values between 0.60-0.80 and values above 0.80 are excellent (DeVon ve diğerleri, 2007). In the original study of BCKQ developed by White ve diğerleri, (2006), ICC value was found to be 0.82. In the adaptation study in which the knowledge level of the nurses in Greece was determined by Staiou ve diğerleri, (2018) The ICC value of the form was found to be 0.96. In our study, the ICC value of the form was found to be 0.95.

This value shows that the test-retest values of the scale are in perfect level in parallel with the original study.

5. Conclusion

It is concluded that BCKQ is a valid and reliable tool for Turkish culture in line with all the statistical analysis results made to evaluate the validity and reliability of Bristol COPD Knowledge Questionnaire (BCKQ). In line with this result obtained from the research, it is recommended to evaluate the validity and reliability of the scale in larger multi-center sample groups.

References

Bujang, M. A., and Baharum, N. (2017). A simplified guide to determination of sample size requirements for estimating the value of intraclass correlation coefficient: a review. *Archives of Orofacial Science*, *12*(1), 1-11.

DeVon, H. A., Block, M. E., Moyle‐Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J.,...and Kostas‐Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing scholarship*, *39*(2), 155-164.

Erdinç, E., Polatlı, M., Kocabaş, A., Yıldırım, N., Gürgün, A., and Saryal, S. (2010). Türk Toraks Derneği kronik obstrüktif akciğer hastalığı tanı ve tedavi uzlaşı raporu. *Türk Toraks Dergisi*, *11*(1), 1-64.

Forouzanfar, M. H., Afshin, A., Alexander, L. T., Anderson, H. R., Bhutta, Z. A., Biryukov, S.,... and Cohen, A. J. (2016). Global, regional, and national comparative risk assessment of 79 behavioural, environmental and occupational, and metabolic risks or clusters of risks, 1990– 2015: a systematic analysis for the Global Burden of Disease Study 2015. *The Lancet*, *388*(10053), 1659-1724.

Guo, S. E., Chi, M. C., Hwang, S. L., Lin, C. M., and Lin, Y. C. (2020). Effects of Particulate Matter Education on Self-Care Knowledge Regarding Air Pollution, Symptom Changes, and Indoor Air Quality among Patients with Chronic Obstructive Pulmonary Disease. *International Journal of Environmental Research and Public Health*, *17*(11), 4103.

Iglesias, J. R., Díez-Manglano, J., García, F. L., Peromingo, J. A. D., Almagro, P., and Aguilar, J. M. V. (2020). Management of the COPD Patient with Comorbidities: An Experts Recommendation Document. *International Journal of Chronic Obstructive Pulmonary Disease*, *15*, 1015.

Salkind, N. J. (Ed.). (2010). *Encyclopedia of research design* (Vol. 1). Sage.

Shi, J., Mo, X., and Sun, Z. (2012). Content validity index in scale development. *Zhong nan da xue xue bao. Yi xue ban= Journal of Central South University. Medical Sciences*, *37*(2), 152.

Staiou, M., Kotrotsiou, E., Gourgoulianis, K., and Raftopoulos, V. (2018). The Psychometric Properties and Test-Retest Reliability of the Bristol COPD Knowledge Questionnaire when Adapted in a Sample of Greek Nurses. *International Journal of Caring Sciences*, *11*(1), 157.

Stellefson, M. L., Shuster, J. J., Chaney, B. H., Paige, S. R., Alber, J. M., Chaney, J. D., ve Sriram, P. S. (2018). Web-based Health Information

Seeking and eHealth Literacy among Patients Living with Chronic Obstructive Pulmonary Disease (COPD). *Health communication*, *33*(12), 1410–1424. https://doi.org/10.1080/10410236.2017.1353868

Tavakol, M., and Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal Of Medical Education*, *2*, 53.

Uzel, F. I., Karadağ, P., Önür, S. T., Turan, D., Yentürk, E., and Tuncay, E. (2017). A Basic Question: Are Patients with Chronic Obstructive Pulmonary Disease Aware of Their Disease?. *Turkish Thoracic Journal*, *18*(4), 114.

Vogelmeier, C. F., Criner, G. J., Martinez, F. J., Anzueto, A., Barnes, P. J., Bourbeau, J., ... and Frith, P. (2017). Global strategy for the diagnosis, management, and prevention of chronic obstructive lung disease 2017 report. GOLD executive summary. *American Journal Of Respiratory And Critical Care Medicine*, *195*(5), 557-582.

Wang, H., Naghavi, M., Allen, C., Barber, R. M., Bhutta, Z. A., Carter, A., ... and Coggeshall, M. (2016). Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015. *The Lancet*, *388*(10053), 1459-1544.

White, R., Walker, P., Roberts, S., Kalisky, S., and White, P. (2006). Bristol COPD Knowledge Questionnaire (BCKQ): testing what we teach patients about COPD. *Chronic Respiratory Disease*, *3*(3), 123-131.

World Health Organization. (2009). Process of translation and adaptation of instruments.https://www.who.int/substance_abuse/research_tools/translation/en/ Access date: june 2020

Yusoff, M. S. B. (2019). ABC of content validation and content validity index calculation. *Resource*, *11*(2).

Table 1. Distribution of Socio-demographic Data of COPD Patients

	n	%
Gender		
Female	65	37.5
Male	108	62.5
Maritial status		
Married	114	65.8
Single	59	34.2
Education		
Literate	25	14.4
Primary school	44	25.4
Secondary school	32	18.4
High school	43	24.8
University	29	17
Child status		
Yes	121	69.9
No	52	30.1
Place of residence		
City center	83	47.9
Town	51	29.4
Village	39	22.7
Age (**Mean ± SD)**		66.72 ± 10.44

Table 2. Findings About the Disease and Lifestyle

Smoking		
yes	61	35,2
no	49	28,3
Quit smoking	63	36,4
Have you applied to the emergency for the last six months due to COPD?		
Yes	108	62,4
No	65	37,6
Do you go to regular control for your disease?		
Yes	104	60.1
No	69	39.9
	Mean ±SD	
How do you evaluate your current health status?	55.34 ± 16.50	
How do you evaluate your quality of life?	53.97 ± 16.72	
How do you evaluate your level of knowledge about COPD?	63.15±16.31	

Table 3. Cronbach's Alpha Value of BCKQ

Number of items	Cronbach's Alpha
65	**.75**

Table 4. BCKQ Test-Retest reliability

	ICC (Min - Max.)
Epidemiology	.93 (.85 - .96)
Etiology	.99 (.97 - .99)
Symptoms	.94 (.88 - .97)
Breathlessness	.95 (.89 - .97)
Phlegm	.91 (.83 - .96)
Infections	.92 (.79 - .96)
Exercise	.89 (.78 - .94)
Smoking	.93 (.84 - .96)
Vaccination	.97 (.95 - .98)
Inhaled bronchodilators	.98 (.95 - .99)
Antibiotics	.87 (.64 - .93)
Oral steroids	.95 (.90 - .97)
Inhaled steroids	.97 (.94 - .97)

BCKQ Total	.95 (.82 - .97)

Declarations: This article was not produced from the thesis study. It was not presented as a verbal / poster presentation at any meeting. No kind of support has been received from any institution / organization / person. The authors declared that there is no conflict of interest. In order to evaluate the validity and reliability of BCKQ, necessary permissions were obtained from Roger White and the Ethics Committee of Medical Research (Decision no:19-3.1T/51). All directives of the Helsinki Declaration have been followed and informed consent was obtained from the participants