VOJNOSANITETSKI PREGLED Vojnosanit Pregl 2020; 77(12): 1266–1270.

Surgical fear questionnaire (SFQ) – Serbian cultural adaptation

Upitnik za merenje straha od operacije – kulturološka adaptacija na srpski jezik

Slobodan M. Janković, Gordana V. Antonijević, Snježana N. Mirković,
Katarina M. Raspopović, Ljiljana R. Radoičić, Srdjan S. Putnik, Marija N.
Živković-Radojević, Ivana R. Vasić, Boško V. Nikolić, Dragan R. Stanojević,
Sladjana D. Teofilov, Katarina V. Tomašević, Valentina D. Opančina

University of Kragujevac, Faculty of Medical Sciences, Kragujevac, Serbia

Abstract

Background/Aim. After having established an indication for surgery, some patients experience sense of fear, unpleasantness and embarrassment due to the expectance of adverse consequences of surgical intervention. Recently an instrument for measuring fear of surgery – the Surgical Fear Questionnaire (SFQ) – was developed and validated on a sample of Dutch patients awaiting surgery. The objective of this study was to translate the SFQ to Serbian language, make cultural adaptation of the translation and test its reliability and validity in a sample of outpatients in Serbia. **Methods.** The SFQ was translated and adapted according to the accepted international standards (double forward translation, harmonization, backward translation, and piloting). The study was multicentric, involving patients from 7 cities in 3 countries: Serbia, Montenegro, Bosnia and Hercegovina. It was conducted at state-owned health facilities. The sample was of consecutive nature and consisted of 330 outpatients who visited specialists of either internal medicine or general surgery. **Results.** Translated SFQ showed excellent reliability, both when rated by the investigators (Cronbach's alpha 0.915), and by the patients themselves (Cronbach's alpha 0.917). It is temporally stable, and both divergent and convergent validity tests had good results. Factorial analysis revealed one domain on the whole study sample and two domains like in original on the subsample of patients without experience with surgery in general anesthesia. **Conclusion.** Identification of patients with high level of fear of surgery by this questionnaire should help clinicians to administer measures which may decrease fear and prevent avoidance of absolutely necessary surgery by such patients.

Key words:
fear; surgical procedures, operative; surveys and questionnaires; serbia; language.

Apstrakt

Uvod/Cilj. Nakon uspostavljene indikacije za operaciju, neki bolesnici imaju osećaj straha, neprijatnosti i stida zbog očekivanja nepovoljnih posledica hirurške intervencije. Upitnik za merenje straha od operacije (engl. *the Surgical Fear Questionnaire* – SFK) je instrument koji se razvijen i validiran za primenu kod bolesnika iz Holandije podvrgnutih operaciji. Cilj ovog rada je bio da se nakon prevoda SFK na srpski jezik, izvrši kulturološka adaptacija prevoda i testira njegova pouzdanost i validnost na uzorku bolesnika iz Srbije, lečenih ambulantno. **Metode.** SFK je preveden i prilagođen srpskom jeziku u skladu sa prihvaćenim međunarodnim standardima (dvostruko prevođenje unapred, usklađivanje, prevođenje unazad i pilot studija). Studija je bila multicentrična i sprovedena je na 330 bolesnika iz 7 gradova Srbije, Crne Gore i Bosne i Hercegovine, lečenih ambulantno u državnim zdravstvenim ustanovama od strane specijalista interne medicine ili opšte hirurgije. **Rezultati.** Preveden SFK je pokazao odličnu pouzdanost, i prilikom ocene istraživača (Cronbach-ov alpha 0,915), kao i samih bolesnika (Cronbach-ov alpha 0.917). Vremenski je bio stabilan, a i divergentni i konvergentni testovi validnosti su imali dobre rezultate. Faktorska analiza je otkrila jedan domen na celom uzorku i dva domena kao u originalom upitniku na poduzorku bolesnika bez iskustva sa opštom anestezijom u hirurgiji. **Zaključak.** Identifikacija bolesnika sa visokim stepenom straha od operacije pomoću ovog upitnika trebalo bi da pomogne lekarima da primene mere koje mogu da smanje strah i spreče izbegavanje apsolutno neophodne operacije od strane takvih bolesnika.

Ključne reči:
strah; hirurgija, operativna, procedure; ankete i upitnici; srbija, jezici.

Correspondence to: Slobodan Janković, University of Kragujevac, Faculty of Medical Sciences, Svetozara Markovića Street, 69, 34 000 Kragujevac, Serbia. E-mail: sjankovic@medf.kg.ac.rs.

Introduction

Fear of medical treatment relates to the fear of diagnostic and/or therapeutic procedures involving medical staff in healthcare settings [1]. Preoperative or surgical fear is frequently encountered in patients who are waiting for surgical intervention and is associated with prolonged psychophysical recovery [2, 3]. Within the fear of surgery, researchers have found the following components: fear of needles, blood and injuries, fear of pain or fear of infections which may happen during the invasive diagnostic and surgical procedures [4–7]. The observational study [8] devoted to the fear of anesthesia revealed the following main sources of anxiety in patients waiting for surgery: concerns about postoperative pain (84%), prolonged unconsciousness after the surgery (64.8%) and injury by catheters or needles (59.5%). It was also shown in the same study that women are more anxious preoperatively than men (85.3% vs. 75.6%, respectively; $p = 0.014$).

Although several rating instruments were developed for measuring fear from blood, injury or dental treatments [9–11], only recently, reliable and valid instrument was developed for measuring fear of surgery. The Surgical Fear Questionnaire (SFQ) was developed in Dutch and its aim was to assess the level of fear of surgical intervention in patients who are waiting for elective operation [12]. It has 8 questions and two-factor structure: one factor is related to fear of the short-term consequences of surgery (items 1–4) and the other to fear of the long-term consequences of surgery (items 5–8). Up to now, this instrument was translated only to Portuguese and validated in that cultural setting, showing similar psychometric properties as the original.

The aim of this study was to translate the SFQ to Serbian language, make cultural adaptation of the translation and test its reliability and validity in a sample of outpatients in Serbia.

Methods

Translation and cultural adaptation

Translation and cultural adaptation of the SFQ was made according to International Society for Pharmacoeconomics and Outcomes Research (ISPOR) guidelines [13]. Permission for translation of the SFQ (version with 8 items) from English to Serbian was granted by the first author of the original scale Mr. Maurice Theunissen, MSc, epidemiologist from the Maastricht University Medical Center, Netherlands. The original scale was first translated to Serbian by two independent translators who were Serbian native language speakers. They translated the scale independently of each other, and then the translations were harmonized to one Serbian version at the meeting of the study investigators and the translators. The harmonized Serbian version was then translated back to English by native English speaker, citizen of Australia. When translated back to English, the translator was not aware of the original English version of the SFQ. The back-translation to English was then compared with original English version by the study investigators at the new meeting of the investigators, where final Serbian version of the SFQ was agreed on. The final translation of the SFQ to Serbian was then tested on 5 PhD students (at the Faculty of Medical Sciences, University of Kragujevac, Serbia) for clarity and comprehension. After the pilot, a few minor changes were made, and then the final Serbian version of the SFQ was copied and prepared for reliability and validity testing.

The study was approved by the Ethics Committee of Clinical Center Kragujevac, Serbia. The patients were treated, with due respect and care, according to the principles stated in Declaration of Helsinki.

Population and the sample

The final Serbian version of the translated (SFQ) questionnaire was tested for reliability on outpatients who visited specialists of either internal medicine or general surgery at state-owned health facilities in seven cities, in three countries [Serbia (SER), Montenegro (ME) and Bosnia and Herzegovina (B&H)]: Belgrade (SER), Podgorica (ME), Kragujevac (SER), Bijeljina (B&H), Vršac (SER), Kraljevo (SER) and Soko Banja (SER). The visits took place in April and the first two weeks of May, 2016. The inclusion criteria were literacy, and age over 18. The exclusion criteria were pregnancy, lactation, cognitive disorders, mood disorders, mental retardation and incomplete patient's files. The sample of the patients was of consecutive nature, i.e. all patients who visited their general practitioner on the survey day (and satisfied inclusion and exclusion criteria) were offered the questionnaire. During the first encounter the questionnaire was completed in two ways: at first, by the investigators who were questioning the patients, and second, by the patients themselves.

Reliability testing

Reliability of the questionnaire was tested using three methods. First, internal consistency was determined through calculation of Cronbach's alpha for the questionnaire as a whole. Second, the questionnaire was divided by split-half method to two parts with the same number of questions, and Cronbach's alpha for each of the parts was calculated. Using the alphas for both parts, number of questions in each part and average correlation between questions in both parts of the original questionnaire, the Spearman-Brown coefficient for the questionnaire as a whole was calculated by the Spearman-Brown "prediction" formula [14]. Third, for each question mean score and their variances were calculated, in order to check their suitability for measurement of whole extent of fear.

Factorial analysis

Exploratory factorial analysis of the questionnaire was made in order to discover principal factors [15]. First, suitability of the questionnaire and sample for factorial

analysis was tested by the Kaiser-Meyer-Olkin measure of sampling adequacy and by the Bartlett's test of sphericity. Then, the factors were extracted at first without rotation, with conditions that Eigenvalues had to be greater than 1.0, and using Scree-plot (the extracted factors were above the "elbow" of the graph). Second, referent axes were rotated orthogonally, by the varimax method, and another extraction of the factors was made, using the same criteria as for the unrotated solution. Extracted factors were than named accordingly.

Validity

Construct validity of the questionnaire was evaluated by an independent panel of three experienced clinicians at the Clinical Center Kragujevac, Serbia: a psychiatrist and two general surgeons.

The criterion validity was tested by two methods: (1) convergent validity testing by comparison of the SFQ score with the Visual Analogue Scale (VAS) value measuring fear of hospitalization, and (2) divergent validity testing by comparison of the SFQ score with the score of the Short Subjective Well-being Scale (SSWS). The permission to use the SSWS in Serbian language (which measures feeling of well-being, and was previously validated in Serbian population [16, 17]) was granted by a psychologist. The correlations between scores on the questionnaires and/or VAS values were calculated. All calculations were performed by the SPSS statistical software, version 18.0.

The results are presented in the multi-method, multi-trait matrix.

Temporal stability

Temporal stability of the SFQ results was tested by second completion of the questionnaires by the investigators who repeatedly interviewed the patients one month after the first encounter. The patients were then invited to the second encounter by phone.

Results

The study sample consisted of 330 outpatients: mean age 45.9 ± 16.1 years, male/female ratio 141/189 (42.7/57.3%), years of formal education 14.0 ± 3.6, place of residence, urban/rural = 246/84 (74.5/25.5%), living alone/in a family = 37/293 (11.2/88.8%), previous experience with surgery in general anesthesia (194 [58.8%] yes /136 [41.2%] no). The distributions of diagnoses within the study sample was as following: hypertension (17%), chronic heart failure (0.6%), coronary disease (2.4%), chronic obstructive pulmonary disease (COPD) (3.9%), asthma (6.1%), diabetes mellitus (0.9%), cancer (3.6%), surgical disease (24.2%), other (18.2%) and no diagnosis of a chronic disease (23%).

Reliability testing

Results of testing original 10 items from the questionnaire, and examining results of correlation matrix, mean values, variance, skewness and kurtosis of distributions of responses for each of the items, are shown in Table 1. Cronbach's alpha of the version with 10 items was 0.915, when the scale was rated by the investigators. After division of the questionnaire by the split-half method, the Spearman-Brown coefficient for the questionnaire as a whole was calculated by the Spearman-Brown "prediction" formula, and its value was 0.822. When the scale was rated by the patients themselves (a week after the rating by the investigators), Cronbach's alpha was 0.917.

Factorial analysis

Factorial analysis was made by the principal components method. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.884 and the Bartlett's test of sphericity was significant ($p = 0.000$). Only one factor was extracted, explaining in total 62.85% of the variance. This factor bore 5.028 eigenvalues, and included all 8 items.

Validity

Construct validity of the questionnaire was confirmed by the panel of experts, who also helped with slight rephrasing of the questions.

Divergent criterion validity was tested through non-parametric correlation between scores of the SFQ (when it

Table 1

Mean values, standard deviation, skewness and kurtosis of responses to items of the Surgical Fear Questionnaire (SFQ)

Item	Mean response*	Standard deviation	Skewness	Kurtosis
I am afraid of the operation	5.14	3.26	-.051	-1.168
I am afraid of the anaesthesia	4.48	3.49	.174	-1.347
I am afraid of the pain after the operation	4.94	3.10	.056	-1.045
I am afraid of the unpleasant side effects (like nausea) after the operation	4.35	3.13	.286	-1.031
I am afraid my health will deteriorate because of the operation	3.41	3.07	.691	-.576
I am afraid the operation will fail	3.79	3.12	.462	-.895
I am afraid that I won't recover completely from the operation	3.81	3.05	.455	-.777
I am afraid of the long duration of the rehabilitation after the operation	4.16	3.15	.312	-.972

* **the responses are rated from 0 (not at all afraid) to 10 (very afraid).**

Table 2

Multi-method, multi-trait correlation matrix (non-parametric Spearman's coefficients)

	SSWS score, rated by an investigator	SSWS score, rated by a patient	SFQ score, rated by an investigator	SFQ score, rated by a patient	VAS score
SSWS score, rated by an investigator	1	0.919**	-0.113	-0.109	0.004
SSWS score, rated by a patient	0.919**	1	-0.108	-0.107	0.032
SFQ score, rated by an investigator	-0.113	-0.108	1	0.950**	0.645**
SFQ score, rated by a patient	-0.109	-0.107	0.950**	1	0.652**
VAS score	0.004	0.032	0.645**	0.652**	1

SFQ – Surgical Fear Questionnaire; SSWS – Short Subjective Well-being Scale; VAS – Visual Analogue Scale.
**significant correlation at *p* < 0.001.

was rated by investigator and by patients themselves) and scores of the SSWS scale (when it was rated by investigator and by patients themselves). Convergent criterion validity was tested through non-parametric correlation between scores of the SFQ (when it was rated by investigator and by patients themselves) and VAS scores. Non-parametric correlation was chosen due to non-normal distribution of some of the scores. Spearman's correlation coefficients are shown in the Multi-trait, multi-method matrix (Table 2).

Temporal stability

The SFQ showed satisfactory temporal stability: when rating (by the investigator) was repeated on the same patients one month later, the correlation between the scores (Spearman's coefficient) was 0.930 (*p* < 0.001). Cronbach's alpha after the repeated rating was 0.892.

Discussion

Version of the SFQ scale with 8 questions showed excellent reliability, both when rated by the investigators, and by the patients themselves. It was temporally stable, and both divergent and convergent validity tests had good results. Factorial analysis revealed only one domain, unlike the analysis of original scale, where two domains were established: the fear of the short-term consequences of surgery and the fear of the long-term consequences of surgery.

Although short- and long-term consequences of surgery are well defined clinical entities [18], there is no research about characteristics of fear of these entities. In a Portuguese study, on 203 women undergoing hysterectomy, it was shown that preoperative anxiety was strong predictor of chronic or persistent postsurgical pain (PPSP), which is one of the long-term adverse consequences of surgery [19]. Division of the SFQ scale into two parts (the first 4 questions relate to fear of short-term and next four questions to fear of long-term consequences of surgery) seems intuitively logical, and worked well in the studies of Theunissen et al. [12] on patients awaiting surgery. In our study sample, which was composed of outpatients currently not scheduled for any surgical intervention in close future, the SFQ behaved as a whole, i.e. the patients had the same attitude towards the possible short-

and long-term consequences of hypothetical surgery. Only one factor emerged when analysis was made on the questionnaires rated by investigators, by the patients themselves and when the rating was repeated by the investigators a month later (results not shown, available on request).

However, when we tried factor analysis on subsamples of patients who had and who had not previous experience with surgery in general anesthesia, those who had the experience behaved as the whole sample, i.e. only one factor was extracted. On the other hand, the factor analysis of the SFQ on the subsample of patients without previous experience with surgery in general anesthesia revealed two factors after rotation: the first composed of the questions 1–4 (explaining 34.3% of variance), and the second composed of questions 5–8 (explaining 38.5% of variance). Inexperienced patients also scored higher on the first 4 questions than the patients with previous experience and then on the questions 5–8 (results not shown, available on request), showing that they were more afraid of short-term consequences of surgery. Experience with surgery and general anesthesia obviously has alleviating effect on fear of next surgery, at least when short-term adverse consequences are in question. It would be very interesting to see whether the two-factor structure of original instrument would remain as such if factor analysis was made on a subsample of patients having previous experience with surgery in general anesthesia.

Main limitation of this study was the fact that the patients from the study sample were not scheduled for a surgery in close future, since this was the main characteristic of the study sample on which original instrument was developed and validated. This is probably the reason why the translated instrument did not show the same factorial structure as the original. Future studies with the same translated questionnaire should be conducted on a group of patients who are scheduled for surgery in near future, in order to get complete insight into its functionality.

Conclusion

The translated SFQ to Serbian language is reliable and valid instrument for the surgical fear measurement. Identification of patients with high level of fear of surgery by

this questionnaire should enable administration of measures which may decrease that fear and prevent avoidance of absolutely necessary surgery by such patients.

Acknowledgement

Conflict of Interest

The authors declared that they had no competing interests.

R E F E R E N C E S

1. *Steward MS, Steward DS*. Children's conceptions of medical procedures. New Dir Child Adolesc Dev 1981; 1981(14): 67–83.
2. *Theunissen M, Peters ML, Bruce J, Gramke HF, Marcus MA*. Preoperative anxiety and catastrophizing: a systematic review and meta-analysis of the association with chronic postsurgical pain. Clin J Pain 2012; 28(9): 819–41.
3. *Zieger M, Schwarz R, Konig HH, Harter M, Riedel-Heller SG*. Depression and anxiety in patients undergoing herniated disc surgery: relevant but underresearched - a systematic review. Cent Eur Neurosurg 2010; 71(1): 26–34.
4. *Jolley S*. Assessing patients' knowledge and fears about MRSA infection. Nurs Times 2008; 104: 32–3.
5. *Koivula M, Tarkka M, Tarkka M, Laippala P, Paunonen- Ilmonen M*. Fear and in-hospital social support for coronary artery bypass grafting patients on the day before surgery. Int J Nurs Stud 2002; 39(4): 415–27.
6. *McCartney M*. Are superbug fears turning patients into hospital cleaners? BMJ 2009; 338: b729.
7. *Schmid M, Wolf RC, Freudenmann RW, Schönfeldt-Lecuona C*. Tomophobia, the phobic fear caused by an invasive medical procedure - an emerging anxiety disorder: a case report. J Med Case Rep 2009; 3: 131.
8. *Mavridou P, Dimitriou V, Manataki A, Arnaoutoglou E, Papadopoulos G*. Patient's anxiety and fear of anesthesia: effect of gender, age, education, and previous experience of anesthesia. A survey of 400 patients. J Anesth 2013; 27(1): 104–8.
9. *Page AC, Bennett KS, Carter O, Smith J, Woodmore K*. The Blood-InjectionSymptom Scale (BISS): assessing a structure of phobic symptoms elicited by blood and injections. Behav Res Ther 1997; 35(5): 457–64.
10. *Kleinknecht RA, Thorndike RM, Walls MM*. Factorial dimensions and correlates ofblood, injury, injection and related medical fears: cross validation of themedical fear survey. Behav Res Ther 1996; 34(4): 323–31.
11. *Newton JT, Edwards JC*. Psychometric properties of the modified dental anxiety scale: an independent replication. Community Dent Health 2005; 22(1): 40–2.
12. *Theunissen M, Peters ML, Schouten EG, Fiddelers AA, Willemsen MG,* et al. Validation of the Surgical Fear Questionnaire in Adult Patients Waiting for Elective Surgery. PLoS One 2014; 9(6): e100225.
13. *Wild D, Grove A, Martin M, Eremenco S, McElroy S, Verjee-Lorenz A,* et al. ISPOR Task Force for Translation and Cultural Adaptation. Principles of Good Practice for the Translation and Cultural Adaptation Process for Patient-Reported Outcomes (PRO) Measures: report of the ISPOR Task Force for Translation and Cultural Adaptation. Value Health 2005; 8(2): 94–104.
14. *Streiner DL, Norman GR*. Health Measurement Scales - a practical guide to their development and use. 4th edition. Oxford: Oxford University Press; 2008.
15. *Badia X, Arribas F, Ormaetxe JM, Peinado R, de Los Terreros MS*. Development ofa questionnaire to measure health-related quality of life (HRQoL) in patientswith atrial fibrillation (AF-QoL). Health Qual Life Outcomes 2007; 5: 37.
16. *Jovanovic V, Novovic Z*. Short Subjective Well-being Scale - new instrument for estimate of positive mental health. Primenjena psihologija 2008; 1(1–2): 77–94. (Serbian)
17. *Jovanovic V*. Validation of the Short Subjective Well-being Scale. Primenjena psihologija 2010; 3(2): 175–90. (Serbian)
18. *Peters ML, Sommer M, de Rijke JM, Kessels F, Heineman E, Patijn J,* et al. Somatic and Psychologic Predictors of Long-term Unfavorable Outcome After Surgical Intervention. Ann Surg 2007; 245(3): 487–94.
19. *Pinto PR, McIntyre T, Nogueira-Silva C, Almeida A, Araújo-Soares V*. Risk factors for persistent postsurgical pain in women undergoing hysterectomy due to benign causes: a prospective predictive study. J Pain 2012; 13(11): 1045–57.