Translation, Cultural Adaptation, and Psychometric Properties of the Surgical Fear Questionnaire in Brazilian Surgery Patients

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The Surgical Fear Questionnaire (SFQ) - Brazilian Portuguese version was found to be consistent with the conceptualization that underlies the original SFQ. However, the structure factor differed from its original version.

Most patients in a queue for surgery commonly feel surgical fear that can be considered a risk factor for significant personal and socioeconomic discomfort (Theunissen et al., 2014). Numerous researchers have determined surgical fear is related to psychosocial and physical recovery, thus being the cause of higher levels of intense and chronic postsurgical pain, losses in physical functioning, poor quality of recovery, impaired general recovery, and worse quality of life (Hoofwijk et al., 2015; Stessel et al., 2015; Theunissen et al., 2014). This indicates the need to develop means to identify the fear related to surgery. Preoperative assessment of surgical fear would provide important data, which in turn would enhance perioperative nursing care and open ways to designed intervention (Theunissen et al., 2014).

Significance of Research

Not many tools are available to assess surgical fear, and the few available are very specific to certain diseases (Theunissen et al., 2014). The availability of a specific instrument to identify fear related to surgery, coupled with the knowledge and clinical judgment of nurses, will be key in identifying the addressed situation and developing specific interventions. In this context, the Surgical Fear Questionnaire (SFQ), an instrument developed to assess self-reported surgical fear, can be used to identify various fears related to the surgical procedure (Peters et al., 2007). No studies about SFQ validity in the Brazilian culture exist to date, reinforcing the need to clarify the gaps in clinical practice. In addition, because there is no Brazilian tool specifically to measure fear related to surgery, it is difficult to identify and resolve or minimize this condition in surgical patients. In this context, the translation and cultural adaptation of the SFQ to the Brazilian culture is an important contribution to the care of surgical patients.

Purpose

The purpose of this study was to adapt the SFQ culturally to Brazilian Portuguese-speaking patients and analyze the psychometric properties of this scale in its use with patients who are in the preoperative period.

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Background

The Surgical Fear Questionnaire (SFQ) was developed to assess self-reported surgical fear. The availability of a specific instrument for the identification of fears related to surgery will help nurses identify the cause of fear and start the development of specific interventions.

Aims

To culturally adapt the SFQ to Brazilian Portuguese-speaking people and analyze the psychometric properties of this scale in patients in the preoperative period.

Method

A convenience sample of 112 preoperative patients was included in this descriptive cross-sectional study. The convergent construct validity between the SFQ and Hospital Anxiety and Depression Scale (HADS) was assessed through the Pearson's correlation coefficient. Internal reliability was evaluated by Cronbach's alpha. The discriminant construct validity was investigated through the Student's *t*-test for male and female.

Results

The SFQ correlated positively with the HADS (HADS-Anxiety: r=0.51 and p=0.01; HADS-Depression: r=0.33 and p=0.01), providing evidence for its construct validity. Cronbach's alpha coefficients showed satisfactory internal consistency (0.85). There was evidence for discriminant validity in relation to gender (Student's t p<0.05).

Limitations and Implications

The study used a convenience sample and was conducted at a single institution. This scale can be used in research or in clinical practice to identify surgical fear.

Conclusion

The SFQ Brazilian version is a valid and reliable instrument to assess the fear of patients who will undergo a surgical procedure.

Review of the Literature

A review of literature was completed from 2014 to 2018 in CINAHL and PubMed. Search terms included *surgery*, *fear,* and *psychometrics*. Of 35 identified articles, only three were included in this discussion. The other studies were excluded because they were not related to instruments for evaluation of fears related to surgery.

Theunissen and colleagues (2014) developed a study to assess the validity and reliability of the SFQ. Data on the SFQ were obtained from five prospective studies (N=3,233) of inpatient or surgery day patients. Across all studies, significant correlations of the SFQ with pain catastrophizing, anxiety state, and preoperative pain intensity indicated good convergent validity. Internal consistency was between 0.765 and 0.920. The SFQ proved to be sensitive to detecting differences based on age, gender identity, education level, employment status, and preoperative pain intensity.

Moura, Ferreira, Barbosa, and Mourão (2014) assessed patient satisfaction with anesthesia care by using the Heidelberg Peri-anaesthetic Questionnaire in a Portuguese hospital. The Portuguese version of the questionnaire has 32 items distributed in three dimensions: staff, discomfort, and fear. The internal consistency was demonstrated by a Cronbach's alpha coefficient ranging from 0.77 to 0.87 in the three dimensions. The questionnaire has good psychometric characteristics. Its application revealed high satisfaction levels regarding the staff. Dissatisfaction was seen mainly in the *fear* and *discomfort* dimensions, the latter being significantly lower in males.

Korukcu, Bulut, and Kukulu (2016) assessed the overall psychometric quality of the Wijma Delivery Expectancy/Experience Questionnaire version B. A six-factor model was proposed to explain instrument results. Factors included concerns about labor pain, lack of positive behaviors, loneliness, lack of positive feelings, concerns about childbirth, and concerns about the baby. The internal consistency was demonstrated by a Cronbach's alpha coefficient ranging from 0.77 to 0.95 in these subscales. The questionnaire is presented as a reliable instrument to measure fear of delivery after childbirth.

No evidence was found in the literature for the use of other instruments that specifically assess fear related to surgery in adult patients. Additional research has been conducted using tools that were not specific for detection of such fear, such as the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983).

Ethics

The research protocol was approved by the Ethics Committee on Human Research of the University Hospital and by the Ethics Committee on Human Research of the University of São Paulo, Brazil, at the Ribeirão Preto College of Nursing.

Sample Selection

The non-probabilistic sample was comprised of 112 patients in the preoperative period of minor, medium, and major surgeries. Twelve patients participated exclusively in the semantic validation step. Sample size was established following the general guideline of

5-10 subjects per item of the instrument (Streiner, Norman, & Cairney, 2015). The SFQ has eight items; the final sample included 100 adult patients. Inclusion criteria were age 18 or older, hospitalization for surgery, and sufficient cognitive abilities to answer the instruments used in the study. Exclusion criteria were limited understanding of the Portuguese language or presenting an unstable medical condition (e.g., severe pain, dyspnea, social isolation) that made it difficult for the patient to participate in the research.

This study was conducted in the surgical clinic of the University Hospital, a tertiary care facility affiliated with the School of Medicine of the University of São Paulo, campus of Ribeirão Preto, Brazil.

Design and Method

This study used a cross-sectional design. Data collection was performed by applying self-administered tools, such as a sociodemographic questionnaire, the Hospital Anxiety and Depression Scale (HADS), and the SFQ. Approximately 10-20 minutes were provided to the patients to answer the questionnaires.

Instruments

Sociodemographic and clinical characteristics. A questionnaire was designed by the researchers to characterize participants regarding sociodemographic aspects (age and gender identity) and describe the type of surgery to be performed.

Surgical Fear Questionnaire. The SFQ was created in the Netherlands and has eight items divided into two subscales: *fear of immediate consequences of surgery* (four items) and *fear of the long-term consequences of surgery* (four items) (Peters et al., 2007). The score of each item varies from 0 to 10, and the total score is calculated by summing the scores for each item; thus, higher values reflect higher levels of fear (Theunissen et al., 2014).

Hospital Anxiety and Depression Scale. The HADS was created by Zigmond and Snaith (1983) and validated in Brazil in the next decade (Botega, Bio, Zomignani, Garcia, Jr., & Pereira, 1995). It was used to test the validity of convergent construct and assess anxiety and depression in hospitalized patients. Authors of the current study expected a stronger association between the SFQ and the anxiety subscale (HADS-A) would be found. The HADS-A consists of 14 items, of which seven are focused on the assessment of HADS-A and seven on the assessment of depression (HADS-D) (Botega et al., 1995). The scoring system is a 4-point Likert scale (0-3), with different response options for each item and a possible score of 0 to 21 points for each scale.

Process of Cultural Adaptation

For the process of cultural adaptation, authors used the model of translation and back translation of the DISABKIDS® (The DISABKIDS Group, 2004), through formal written permission granted by the group's representative. The items were translated from the original language (Dutch) into Portuguese by two bilingual professionals, with translations occurring independently. The versions were reviewed by a three-judge committee and a consensus version was produced. This version was back-translated into Dutch by a third bilingual translator who was unaware of the study theme, and then compared with the original version of the instrument.

After this phase, there was the semantic validation as well as the conceptual and face validation of the SFQ by means of two specific forms provided by The DISABKIDS Group (2004). The first form about the face validity addresses general impressions of the instrument, the difficulty in answering it, and if the items are important for the evaluated condition. The specific form of semantic validation lists the questions of the SFQ and queries the relevance of each item, the difficulty in understanding the issue, and the response categories, with the possibility of reconstructing items and space based on the suggestion of their reformulation.

The number of participants for semantic validation was defined according to the DISABKIDS method (The European DISABKIDS Group, 2006). Four groups were formed considering two groups of each age group: ages 18-64, and age 65 and over. The eight items in the SFQ were divided in two subgroups: subgroup A, comprising items 1-4; and subgroup B, comprising items 5-8. For each of the four groups, three patients were considered, totaling 12 participants. They initially responded to the SFQ in full, using the first form relating to the general impressions. Thereafter, the individuals in each subgroup answered the questions in the specific form, which were related to items of their subgroup.

Data Analysis

The conceptual and semantic equivalences were analyzed by calculating the percentages of responses provided by the subjects for each component of the general assessment instrument as well as for each evaluated SFQ item, considering its relevance and difficulty of understanding it. Results equal to or greater than 80% for acceptance in each analyzed element were considered valid for this stage of the study (for the semantic validity and general impressions of the instrument). Results for sociodemographic and clinical characterization of participants according to the SFQ responses were analyzed using descriptive statistics.

Analysis of the SFQ psychometric properties was done by checking the construct reliability and validity (including factor analysis as well as convergent and discriminant construct validity). Realization of the discriminant validity is based on the assumption women are more afraid of surgery than men. Internal consistency determined by the Cronbach's alpha for each SFQ dimension and total score was used to analyze reliability. The alpha ranges between 0 and 1; in the present study, values between 0.70 and 0.8 were considered acceptable (Theunissen et al., 2014).

To identify the construct validity through the scale dimensionality, authors used Confirmatory Factor Analysis (CFA). The following indexes of model fitting were checked: Minimum Fit Function chi-square (*df*), Root Mean Square Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Tucker Lewis Index (TLI), and Comparative Fit Index (CFI). The *df* identifies if the observed covariance matrix is equal to the estimated matrix. The RMSEA and SRMR reflect the deviation of the factor structure of data, with lower values indicating good results. The TLI and CFI reflect the deviation of the factor structure with an independent model; in these adjustments, high values are considered good results. The results considered as good fit indexes were RMSEA ≤0.06; SRMR ≤0.09; TLI and CFI ≤0.95 (Hu & Bentler, 1999).

The Principal Component extraction method was considered for the Exploratory Factor Analysis (EFA), and the orthogonal rotation method was oblimin. The adequacy of the sample size and factor analysis were identified *a priori* to test the null hypothesis of the identity matrix through the Kayser-Meyer-Olkin index (KMO) and Bartlett's sphericity test. The expected results for these tests were from 0.5 to 1 for the KMO test, and $p<0.05$ for the Bartlett's test (Hair, Jr., Black, Babin, Anderson, & Tatham, 2006).

The convergent construct validity between the SFQ and HADS scales was assessed through the Pearson's correlation coefficient. It was considered valid when the correlation values were greater than 0.40 (moderate correlations) (Dancey & Reidy, 2008). The discriminant construct validity was investigated through the Student's *t*-test for independent samples. It was considered valid when the null hypothesis was rejected, and significance level was ≤0.05. The hypothesis tested was the SFQ would present higher scores for the women in the sample (Bheemanna, Channaiah, Gowda, Shanmugham, & Chanappa, 2017). The significance level was 5% (α=0.05).

Findings

Processes of Translation and Back Translation

The back-translated version was sent to the author of the original instrument in The Netherlands, who then approved it, ensuring its conceptual equivalence. In that author's opinion, the back-translated version is 100% identical to the original version in Dutch (M. Peters, personal communication, March 3, 2014).

Semantic Validation

Among the 12 participants in this phase of the study, only one suggested changes in the instrument's questions. However, the suggestions were not adopted because they would change the meaning of the SFQ items. For instance, one of the patient's suggestions was to change the item, "I am afraid of the long duration of the rehabilitation after the operation," to "Does the recovery after surgery take long?"

Regarding the form of general impressions about the SFQ, among the options of *good, regular*, and *bad*, all participants classified the instrument as good and easy to understand. Ten of the 12 participants indicated they had no trouble answering the instrument, while two chose the option *some difficulties*. However, they did not state their difficulties or suggest changes in the instrument.

In relation to the importance of the issues of their health condition, all patients considered it very important. The specific form of semantic validation was answered by all participants, who affirmed all items were understood without difficulty. None of the participants had any suggestions to reformulate questions.

Descriptive Statistics of the Instrument and Psychometric Properties

Of the various types of surgery experienced by the participants, the most common procedures were urologic (22%), cardiac (15%), proctologic (14%), gastric (13%), and angiography (11%). Of all participants, 57% were men and 43% were women. Their average age was 58.7 (*SD*=12.9).

The average of the SFQ total score in the sample was 18.5 (minimum value=0; maximum value found=68). For the subscales *fear of immediate consequences of surgery* and *fear of the long-term consequences of surgery*, the averages were 10 (minimum value=0; maximum value found=34) and 8.7 (minimum value=0; maximum value found=40), respectively.

Construct Validity

With respect to construct validity, a positive Pearson's correlation coefficient (r) with the HADS-A (r=0.51 and p=0.01) and with the HADS-D (r=0.33 and p=0.01) was found. This result points to the confirmation of the hypothesis the SFQ would have a positive correlation with the HADS, and more specifically with the anxiety subscale (HADS-A). The CFA indicated the model fit was not fully adequate in accordance with the previously determined reference values (see Table 1).

Because the results of the fit indexes indicated the scale composition obtained for the sample of the present study deviated from the structure assumed by the authors of the original version of the SFQ, an EFA was conducted to determine the number of factors and their composition. For the identification number of the extracted factors, the percentage of variance explained should be greater than 60% (Jung, 2013).

The EFA indicated two factors explained 66.4% of the variance. The first factor, explaining 49.6% of the variance, consisted of items 3, 5, 6, 7, and 8 and represented the domain *fear of long-term consequences of surgery*. The second factor, explaining 16.8% of the variance, consisted of the items 1, 2, and 4 and represented the domain *fear of immediate consequences of surgery* (see Table 2). The KMO value was 0.82 and the Bartlett's sphericity test resulted in $p<0.000$, indicating adequacy of data to complete the factor analysis.

TABLE 1.
Fit Indices of the Confirmatory Factor Analysis of the Adapted Version of the SFQ

Adequacy Fit Measures	Found Values	References
Minimum Fit Function chi-square (*df*)	79.13	30.14
RMSEA	0.178	<0.06
SRMR	0.099	<0.09
TLI	0.730	>0.95
CFI	0.817	>0.95

CFI = Comparative Fit Index; RFSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual; SFQ = Surgical Fear Questionnaire; TLI = Tucker Lewis Index

TABLE 2.
Exploratory Factor Analysis of the SFQ

Scale	Factor 1	Factor 2
Item 7	0.82	0.16
Item 6	0.79	0.16
Item 5	0.74	0.24
Item 3	0.74	0.01
Item 8	0.67	0.52
Item 2	-0.09	0.90
Item 1	0.29	0.77
Item 4	0.43	0.58

Factor 1 = fear of long-term consequences of surgery; Factor 2 = fear of immediate consequences of surgery

Reliability

The Cronbach's alpha (α) of the original global instrument was 0.85 (0.66 for the subscale *fear of immediate consequences of surgery*, 0.84 for the subscale *fear of long-term consequences of surgery*). In the adapted version, considering the distribution obtained from the EFA, the first subscale with items 1, 2, and 4 showed α=0.71, and the subscale with the other items (3, 5, 6, 7, and 8) presented α=0.85.

The Pearson correlation between the subscales of SFQ was r=0.63 (p<0.01), between the subscale *fear immediate consequences of surgery* with the total score of SFQ as r=0.88 (p<0.01); and between the subscale *fear of long-term consequences of the surgery* with the total score of SFQ as r=0.92 (p<0.01).

When assessing internal consistency of the SFQ, authors calculated the inter-item and total-item correlation values (see Table 3). The inter-item correlations were positive for the most part, except between items I2 and I3, which showed a negative correlation; item I2 had zero correlation with I7.

Discriminant Validity

The hypothesis that this scale would present different scores between genders was supported. The difference between the scores of men (average=13.5) and women (average=25.2) (Student's t p<0.05) was evident.

Discussion

The process of translation and semantic analysis of the SFQ allowed the composition of an instrument that was compatible with the original version. The SFQ was well understood by the target population. The cross-cultural adaptation used in this study (DISABKIDS) is validated in six European countries and Brazil (Crispim et al., 2016). The analysis of the convergent construct validity identified a moderate correlation of the SFQ with the HADS-A, comparable to a previous validation study of the SFQ conducted in Portugal that indicated consistency between these measures (Theunissen et al., 2014).

The exploratory and confirmatory factor analysis revealed the clustering of items was different from that found in the original validation study (Theunissen et al., 2014). Item 3 deals with the fear of pain after surgery, and it was assigned originally to the subscale *fear of immediate consequences of surgery*. However, in the Brazilian sample, this item was grouped in the subscale *fear of long-term consequences of surgery*. The interpretation of this item by Brazilian patients may include the fear of pain as a clinical manifestation starting soon after surgery, but also felt over a considerable length of time.

As for the factor structure of the SFQ, high correlations between the subscales of the instrument with the total score and subscales between the two were identified, suggesting an appropriate relationship between these items and the output generated in total SFQ score.

The present study found a reliability of 0.85, which lies within the range of adequate reliability (Theunissen et al., 2014). The Cronbach's alpha coefficient results of the validation study of the original scale were similar to those found in this study (Theunissen et al., 2014). The validation was performed in a European sample (Dutch and Portuguese subjects), with values for the total scale ranging from 0.80 to 0.92. Values for the subscale *fear of immediate consequences of surgery* were 0.83-0.88; 0.82-0.90 for the subscale *fear of long-term consequences of surgery* (Theunissen et al., 2014). The Brazilian version of the

TABLE 3.
Inter-Item and Total-Item Correlation of the SFQ

Item*	I1	I2	I3	I4	I5	I6	I7	I8
I1								
I2	0.54							
I3	0.26	-0.03						
I4	0.40	0.40	0.38					
I5	0.42	0.19	0.39	0.31				
I6	0.35	0.16	0.42	0.33	0.65			
I7	0.33	0.09	0.46	0.46	0.56	0.62		
I8	0.55	0.36	0.51	0.57	0,54	0.51	0.61	
Total	0.70	0.49	0.61	0.69	0.74	0.73	0.74	0.84

*I1 = I am afraid of the surgery; I2 = I am afraid of anesthesia; I3 = I am afraid of the pain after the operation; I4 = I am afraid of unpleasant side effects (like nausea) of the operation; I5 = I am afraid my health will deteriorate because of the operation; I6 = I am afraid the operation will fail; I7 = I am afraid I won't recover completely from the operation; I8 = I am afraid of the long duration of the rehabilitation after the operation.

SFQ resulted in a reduced value for the subscale *fear of immediate consequences of surgery* (α=0.66). However, when calculating α without item 3 of this subscale, the value was 0.71; this was an appropriate value according to the literature (Theunissen et al., 2014).

As for discriminant validity, it was confirmed females are more afraid of surgery than males. Social and societal expectation and pressure placed on men to behave fearlessly and not to exhibit weakness may be the reason for this result (Bheemanna et al., 2017).

Limitations

Study findings have limited generalization due to use of a convenience sample. Also, participants were alert and oriented adult medical-surgical patients who could read and write Portuguese in acute care hospitals in the southeast region of the Brazil. Caution should be exercised when generalizing the results of this study because it was performed in a single hospital with a specific profile of patients, and may not represent other realities.

Recommendations for Future Research

The validation process of an instrument cannot depend on a single study (Spadoti Dantas, Silva, & Ciol, 2014). Given the findings and limitations of this study, additional research should be conducted with a larger sample. Replication of this study in different healthcare settings with a more diverse sample of patients is also a consideration. The reliability and validity of the SFQ version adapted for the Brazilian culture needs to be confirmed by evidence from other studies in Brazil.

Authors also recommend the SFQ be used to assess the efficacy of nursing interventions to reduce fears related to surgery. An intervention study could involve administering the SFQ before interventions; then the SFQ could be re-administered to determine if fear scores decreased. Furthermore, the SFQ can be used in mixed-methods studies, which will provide a more complete account of the subject.

Nursing Implications

Nurses must be accountable for ensuring patients receive quality care based on evidence (Moore et al., 2018). The nurse's role in the preoperative assessment is that of advocate who identifies patients' needs and risk factors that may be affected by the surgical experience. The preoperative nursing assessment can be useful in identifying and defining patients' risk factors not only for surgery, but also for the entire perioperative care trajectory (Malley, Kenner, Kim, & Blakeney, 2015).

Patients undergoing surgery often are affected by negative feelings (e.g., fear and anxiety) (Feuchtinger et al., 2014). Nurses need to aid in the advancement, development, and use of tools that can assist in the process of diagnosis and treatment of such feelings.

The SFQ may be used in research and clinical practice to assess nursing interventions aimed at decreasing surgical fear. This questionnaire is a straightforward instrument for assessment of surgical fear, appropriate for most types of elective adult surgery (Theunissen et al., 2014). The use of a scientific instrument enables improvements in the quality of nursing care by planning individualized actions, which are designed to provide continuous and comprehensive care (Schmitz, Gelbecke, Bruggmann, & Luz, 2017). Using a validated tool to evaluate surgical fears can make nursing practice more efficient and organized, and contribute to greater quality care. The SFQ thus can add to the systematization of nursing care to preoperative patients.

Conclusion

The adaptation process of the SFQ for the Brazilian Portuguese language maintained the conceptual and semantic equivalence with its original version. The SFQ is a concise, generic, valid, and reliable evaluation tool of fears related to surgery. It can be used in its entirety or separately according to its subscales. The analysis of the psychometric properties yielded adequate results for internal consistency, convergent construct validity, and discriminant construct validity. The factor analysis resulted in a slightly different constellation from the one proposed by the authors of the scale, with the relocation of an item of the subscale *fear of immediate consequences of surgery* to the subscale *fear of long-term consequences of surgery*. SFQ uses include evaluation and clinical practice in Brazil to evaluate nursing measures, with the goal of lowering or minimizing surgical fear. MSN

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