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Research

Translation, Cross-Cultural Adaptation, and Psychometric Properties of the Chinese Version of the Surgical Fear Questionnaire

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A B S T R A C T

Purpose: To translate the Surgical Fear Questionnaire into Chinese, to culturally adapt, and test the validity and reliability of the Chinese version of the Surgical Fear Questionnaire.
Design: The translation and cultural adaptation process followed Sousa's guidelines, including the evaluation of this scale by the selected participants and content validity measurement by experts. A cross-sectional design was employed to the psychometric properties evaluation phase.
Methods: A convenience sample of 336 participants from three hospitals was recruited between July 2019 and December 2019. Internal consistency reliability, construct validity, and convergent validity with the Hospital Anxiety and Depression Scale were analyzed.
Findings: Confirmatory and exploratory factor analyses of the Chinese version of the Surgical Fear Questionnaire yielded a two-factor solution, with each factor comprised of four items, which were the same as the original English scale. The Chinese version showed a moderate correlation with the two domains of the Hospital Anxiety and Depression Scale. Cronbach's alpha and McDonald's Omega in the present sample showed excellent internal consistency.
Conclusions: The Chinese version of the Surgical Fear Questionnaire is a reliable and valid instrument to assess the fear before surgical procedures under general anesthesia.

Fear is a fundamental, intense emotion, evoked by the detection of an imminent threat, involving an immediate alarm response that mobilizes the organism by triggering a series of physiological changes.[1] These changes include an increased heart rate, blood flow from the periphery to the gut, muscle tension, and a general mobilization of the organism into action. Fear differs from anxiety in that the former is regarded as an appropriate short-term response to a recognizable threat in the present, whereas the latter is a future-oriented long-term response with an eye toward a diffuse threat. Psychophysiological evidence suggests that the central mechanisms underlying fear and anxiety states are similar and that fear and anxiety processes are mediated by partially overlapping neuronal substrates, and the ultimate behavioral output circuits might be largely shared between fear and anxiety.[2] However, regardless of the differences in their precise meanings, the two terms are often used interchangeably in common parlance.[3-5]

A surgical procedure is a treatment with various degrees of risk, as is general anesthesia. Fear and anxiety before elective surgery under general anesthesia is widespread.[6] It may be related to a lack of knowledge about anesthesia and surgery, possible surgical and anesthetic incidents and accidents, possible postoperative discomfort such as pain and vomiting, and the possible physical and functional damage such as bleeding, loss of body parts and the immediate and long-term consequences caused by the procedure.[7] Surgical fear or anxiety was recognized as a potential risk factor for intraoperative and postoperative complications, both in the short term and in the long term.[8] Preoperative anxiety and fear may contribute to insomnia, procedures being postponed or canceled, increased anesthetic requirements intraoperative, unstable hemodynamic parameters, associated with poorer surgical outcomes, delayed postoperative

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recovery, several postoperative complications such as nausea and vomiting, prolonged postoperative recovery and hospital stay, lower surgical satisfaction, postoperative pain, delirium and so on.[9-12] The level of preoperative anxiety or fear was related to the patients' gender, the provision of preoperative information, social support, some types of surgery such as heart surgery or coronary artery bypass surgery, and the patients' previous experience of surgery and anesthesia.[7,13-16] The anxiety or fear level is different at different time points. For instance, compared with the week prior to hospitalization, and the decision stage, the anxiety level on the day prior to surgery is higher.[14] Therefore, the anxiety or fear caused by surgery attracts the interest of surgeons, anesthesiologists, and perioperative nurses. Identifying high levels of anxiety or fear in preoperative patients is helpful to provide appropriate care to improve medical outcomes.[17]

There are a number of instruments to measure anxiety or fear before a surgical procedure. The most frequently used instruments were general anxiety scales, rather than the instruments initially developed specifically for the assessment of preoperative anxiety. The representatives of which are the Spielberger State-Trait Anxiety Inventory (STAI) (1977) and the Hospital Anxiety and Depression Scale (HADS).[11,15,18] Also available are the self-rating anxiety scale (1971), and the Hamilton anxiety scale (1959). All of these instruments have a broader measurement scope, do not address a specific population. Therefore, using these instruments cannot reveal the exact source of anxiety or fear.

Several instruments specifically measure anesthesia and surgery-related anxiety or fear. The widely used Amsterdam preoperative anxiety and information scale (APAIS) comprises six items with five-point response format, four of the items measured patients' anxiety related to anesthesia and surgical procedure, and two other items measured their information needs.[19-21] The surgical anxiety questionnaire (SAQ) includes 17 items, concerns about health (six items), recovery (four items) and procedures (four items), and three additional items.[22] The Preoperative Anxiety Visual Analog Scale comprises three dimensions, include fear of the unknown (four items), fear of feeling ill (four items), and fear for one's life (two items).[5,23] Anxiety Specific to Surgery Questionnaire (ASSQ), composes of 10 items with a five-point Likert response format.[4] Items of ASSQ are mainly about death, consciousness, pain, recovery, and family relationships. The modified Yale Preoperative Anxiety Scale is a behavioral observational tool for five to 12 years children that assesses their behaviors in terms of activity, vocalizations, emotional expressivity, state of apparent arousal, and use of parents to predict children's preoperative anxiety.[24,25] Other instruments measure anxiety and fear for a particular type of surgery, such as the Bypass Grafting Fear Scale by Koivula et al,[26] which contains 12 items, both for general surgery-related items, and specific surgery-related items such as myocardial infarction.

The Surgical Fear Questionnaire (SFQ) is an eight-item instrument developed by Theunissen et al[27] in 2014 to measure adult patients' fear before elective surgical procedures under general anesthesia. The SFQ is now available in two translations, Hungarian and Turkish, both of which show relatively sound reliability and validity.[28,29]

China is the most populous country in the world. In 2019, more than 69 million inpatient surgical procedures were performed in mainland China.[30] Preoperative fears of patients in China had also received increased attention. One study indicated that the prevalence of preoperative anxiety in patients with gastric cancer was 20.75%, which employed the HADS as an instrument to measure preoperative anxiety, with a cutoff value of 11.[31] Another study that employed HADS found that 29.3% of patients undergoing abdominal aortic aneurysm repair experienced borderline anxiety (score 8-10), or clinical anxiety (score 11-21).[32] A study of preoperative patients who visited a cosmetic plastic surgery clinic using the same instrument concluded that the prevalence was 10.8%, whereas they chose a cut-off value of nine.[33] The incidence in patients with total hip arthroplasty with a cut-off value of seven was 28.8%.[12] This difference in cut-off value selection and difference in outcomes was associated with a unique target population and the surgical procedures they underwent.

As outlined above, the most common approach to measure preoperative anxiety in China was to employ general anxiety scales, such as HADS. These scales cannot explain the source of anxiety or fear associated with surgery. There is a need to develop or translate a Chinese version of the fear instrument for general anesthesia surgery. The Surgical Fear Questionnaire (SFQ) measures both short-term and long-term fears for patients undergoing general anesthesia surgery. It is a relatively short scale that can be easily administered. Therefore, the SFQ is an appropriate instrument for assessing the fear or anxiety of patients undergoing general anesthesia surgery. The aims of the present study were to translate the Surgical Fear Questionnaire into Chinese, and to test the psychometric properties of the Chinese Version of the SFQ.

Method

The Surgical Fear Questionnaire

The Surgical Fear Questionnaire was a self-reported numeric rating scale scored on an eleven-point ranging from 0 (not at all afraid) to 10 (very afraid) suitable for general use among all types of adult surgery patients. The SFQ consists of two subscales: fear of the short-term consequences of surgery (SFQ-S), involving surgical procedure, anesthesia, pain, and side effects, and fear of the long-term consequences of surgery (SFQ-L), involving health deterioration, surgical failure, recovery, and rehabilitation, with each subscale containing four items. The total score is a sum of two subscales or the eight item scores. The scoring was achieved by accumulating the items by the total score and two subscale scores, and the score ranges are 0 to 80 and 0 to 40, respectively. The correlations of the two subscales SFQ-S and SFQ-L with the preoperative fear numerical analog score reached 0.898 and 0.828, respectively.[34] The SFQ displayed good reliability and validity through strict performance tests in the original language of Dutch and English, and the scale was able to predict patients' acute and chronic postoperative pain as well as surgical recovery, especially for the SFQ-L subscale.

Study Design

This study has two phases, the first phase of which is the translation and cultural adaptation process, and the second is reliability and validity testing. A cross-sectional survey design with convenience sampling was employed for the reliability and validity testing phase.

Translation and Cultural Adaptation

Translation and cultural adaptation process followed Sousa's guidelines of adaptation and validation of instruments in cross-cultural health care research.[35]

The first author obtained authorization from Dr. Theunissen to translate the SFQ into Chinese. Dr. Theunissen provided two versions of the scale, Dutch and English respectively. We chose to translate the English version, which is in line with the choice of the translators of the other two language versions.[28,29]

The first step, forward translation process was performed by two native Chinese translators independently. One of them is the third author of this paper and the other is an English teacher in a foreign language university who does not possess a professional background in medical and health sciences and was uninformed of the research. The two translations were SFQ-C draft 1 and SFQ-C draft 2, respectively.

The second author of this paper first reviewed the two drafts and identified six differences between the two drafts. Afterward, a synthesis committee of two translators and the second author was held in order to integrate the drafts. The synthesis draft (SFQ-C draft 3) was subject to approval by all three members.

Two translators back-translated the SFQ-C draft three into English. One of them is a nurse who has studied and practiced nursing in an English-speaking country for 8 years, and the other is an American who studied and was living in China for 10 years. The back-translation was made by them separately. SFQ-BT draft one and SFQ-BT draft two were generated.

The synthesis II committee was organized by the first and second authors, including all the four translators to discuss the wording, sentence structure, and semantic consistency between the two SFQ-BT draft and the English version of SFQ, which differed slightly in terms of wording but had good structural and semantic consistency. After discussion, six members agreed to form the Pre-Final SFQ-C.

The last step was cognitive debriefing. The first author of this paper invited 20 preoperative patients with different genders, ages, literacy levels, and surgical procedures to evaluate the pre-final draft. They were asked to contribute their responses on whether the scale items were easy to understand, whether there were ambiguities, and if so, how they should be modified. Twenty preoperative patients proposed a total of two modifications to individual terms, and after discussion by the above committee, it was decided to accept one of these modifications. The expert consultation questionnaire was constructed subsequently to ask seven experts, including two perioperative nursing experts, two experts in anesthesiology, one professor in nursing, and two professors in psychology, to rate the important of a particular item in terms of content, with one to four being very unimportant, unimportant, important, and very important. The number of scores of three and four divided by the total number of experts, that is, seven, obtained the content validity index at the item level (I-CVI). The content validity index at the scale level (S-CVI/Ave) was determined as the average of the I-CVI. The I-CVI and S-CVI/Ave were 1.0, respectively. The final Chinese version (Final SFQ-C) was developed after the above procedures were done. Translation and cultural adaptation process are shown in Figure 1.

Sample

Study participants were recruited from the surgical wards of three hospitals. Patients who were ready to undergo general anesthesia surgery were eligible participants. Other inclusion criteria were patients, (1) aged 18 years or older; (2) whose native language is Chinese; and (3) can complete the questionnaire independently or with the help of others. Since the sources of fear may have changed after the procedure, for instance, fear of anesthesia may be diminished or nonexistent, it might not be an appropriate time to complete the SFQ in the postoperative period. Those who responded to the questionnaire after surgery or those who was unable to complete all items were excluded.

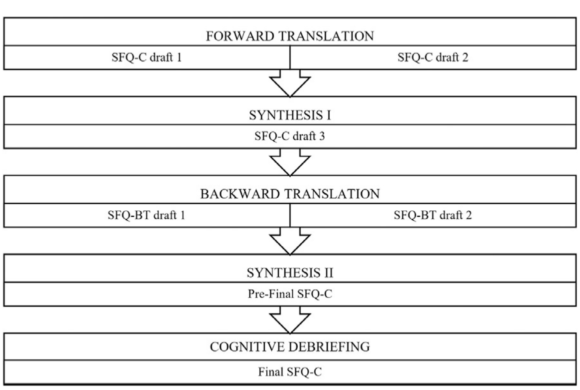

Figure 1. Flowchart of translation and cross-cultural adaptation.

A total of 422 completed informed consent forms were collected, 382 questionnaires were received, and 46 questionnaires were excluded (among them, 16 were answered after surgical procedures and 30 were incomplete). There were 336 valid questionnaires.

Data Collection

Data were collected between July 2019 and December 2019. Patients from the surgical departments of three hospitals in Beijing, China were selected. Research assistants approached potential participants in their inpatient wards 2 days before their surgery to introduce the study and invite them to participate. All potential participants received a leaflet with information about the study. Research assistants explained if they had any questions. Patients voluntarily provided written informed consent forms to participate in the study. A Quick Response code was shown to the participants on the morning of the day before surgery and they were invited to scan the code to fill out the questionnaire. We requested participants to complete the questionnaire on the day before surgery. In order to ensure this, a question was set in the questionnaire inquiring about the day of surgery, which was compared with the day of participants responding to the survey. The research complied with the STROBE Checklist for cross-sectional studies.

The questionnaire was completed and presented on https://www.wjx.cn/, a widely used opinion-gathering platform in China. Since the SFQ items were on an 11-point Likert scale, we replaced the circled scores in the paper-based questionnaire with a slider selection in the online questionnaire. The online questionnaire was repeatedly tested to verify that its efficacy was the same as that obtained with the paper-based questionnaire prior to release. The questionnaire for this study can be accessed at https://www.wjx.cn/vj/mDYXdKk.aspx.

The questionnaire consisted of three parts. The first part was the demographic information and surgery-related information. Patients' gender, age, type of procedure, and previous experience with general anesthesia surgery were included.

The second part was the Chinese Version of the Surgical Fear Questionnaire, that is, Final SFQ-C. It was a self-reported numeric rating scale (NRS) scored on an 11-point ranging from 0 (not at all afraid) to 10 (very afraid).

The third part of the questionnaire was the Hospital Anxiety and Depression Scale (HADS). HADS was developed by Zigmond and Snaith in 1983.[18] The intention was to screen for clinical anxiety (HADS-A) and depressive (HADS-D) symptoms in medical patients. HADS was a self-rating scale with 14 items, seven in the anxiety domain and another seven in depression. Responses were rated on a four-point Likert scale and range from 0 to 3. The Chinese version of the HADS was being used widely in China to measure preoperative anxiety.[36] So the HADS was used in this study to estimate convergent validity.

Ethical Considerations

The study was reviewed and approved by the institutional review board of one of the three hospitals and documented in the other two hospitals. The study was conducted following the World Medical Association Declaration of Helsinki. Informed consent was obtained from all participants in the study. Participants responded to the questionnaire anonymously through an online survey. Once data collection was completed, the first author deleted the web database after retrieving all data from the web database.

Data Analysis

Statistical processing of the results was carried out using IBM SPSS Statistics, version 26.0 (IBM Corporation, Armonk, NY), the Amos add-on (Armonk, NY), and jamovi version 1.6.23 (the jamovi project).

Descriptive statistics were used to summarize the demographic and surgery-related data of the sample, as well as the item or summary score of SFQ-C and HADS. The continuous variable data were tested for normality distribution with the Kolmogorov-Smirnov test and normal distribution parameters were presented as the mean and standard deviation (SD). Frequencies and percentages were used to describe ordinal and nominal data.

Internal consistency reliability was determined using Cronbach's alpha and McDonald's Omega,[37] which were conducted using jamovi, item-to-total, and inter-item correlation coefficients. The higher the item-to-total value, the better the reliability indicated.

Confirmatory and exploratory factor analyses (CFA and EFA) were carried out to test the construct validity of SFQ-C. The sample was randomly divided into two groups stratified by hospitals (each with a sample size of 168), one for EFA (group A) and another for CFA (group B). Prior to performing EFA, the suitability of data for factor analysis was assessed. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy ranges from 0 to 1 with a value > 0.50 and Bartlett's Test of Sphericity should get a *P*-value less than .05 considered eligible to perform EFA. The following criteria were used to determine the number of meaningful factors: (1) eigenvalues greater than 1.0, (2) Cattell scree plot, (3) the percentage of total variance explained, and (4) items with loadings greater than 0.40 in absolute value. Factors were estimated using principal component analysis with varimax rotation and maximum likelihood estimation in the EFA.

Goodness of model fit of the CFA was evaluated by the following indices: χ^2-value / degrees of freedom (χ^2/df, values < 3 indicate good model fit), root mean square error of approximation (RMSEA, values < 0.08 indicate acceptable model fit, < 0.05 indicate good model fit), standardized root mean-square residual (SRMR, values < 0.05 indicate good model fit), comparative fit index (CFI, values > 0.95 indicate good model fit), Tucker-Lewis index (TLI, values > 0.9 indicate good model fit), adjusted goodness of fit index (AGFI, values > 0.9 indicate good model fit), and normed fit index (NFI, values > 0.9 indicate good model fit).

The convergent validity of the SFQ-C with the HADS-A and HADS-D were calculated by using Pearson's correlation coefficients.

Results

Demographic Characteristics and Surgery-Related Data of Participants

The sample comprised 336 valid responses. Of these, 56.5% were female, 66.4% were under 44 years of age, 59.8% had a university degree, and 62.5% had never undergone general anesthesia previously. The sample was randomly divided into two groups and subjected to exploratory factor analysis and confirmatory factor analysis, respectively. The details of the sample and the two groups are presented in Table 1.

The Score and Internal Consistency Reliability of SFQ-C

The mean score for the items of SFQ-C ranged from 3.87 to 5.63. Cronbach's alpha of SFQ-C in this population was 0.914, alpha of subscale one (SFQ-C-S) was 0.909, and subscale two (SFQ-C-L) was 0.886. Removing any one of the eight items from the scale would reduce alpha value to between 0.908 and 0.898. McDonald's Omega was 0.916 and the two subscales were 0.912 and 0.889 respectively, which were similar to Cronbach's alpha (Table 2). The Pearson correlation coefficients for each of the items with one another ranged from 0.463 to 0.783. The correlation coefficients between the items and the total score ranged from 0.706 to 0.832. The correlation matrix between the items is shown in Table 3.

Exploratory Factor Analysis

The Kaiser-Meyer-Olkin (KMO) value of sampling adequacy value for Group A was 0.876, while Bartlett's test of sphericity approximate chi-square value was 916.139, *df* = 28, *P* < .001, suggesting a suitable sample for EFA. Two components were extracted with eigenvalues greater than 1.0. A scree plot of the unrotated eigenvalues supported a two factors solution (Figure 2). The rotated two factors solution accounted for 78% of the overall variance. The factors solution after rotation are given in Table 4. The subscales to which the items were attributed followed the original structure of the SFQ.

Table 1
Demographic Characteristics and Surgery-Related Data of Participants

Variables	Category	Total N = 336		Group A n = 168		Group B n = 168	
		n	%	n	%	n	%
Gender	Male	146	43.5	75	44.6	71	42.3
	Female	190	56.5	93	55.4	97	57.7
Age	18-44	223	66.4	120	71.4	103	61.3
	45-59	64	19.0	27	16.1	37	22.0
	60-	49	14.6	21	12.5	28	16.7
Hospital	A	138	41.1	69	41.1	69	41.1
	B	91	27.1	46	27.4	45	26.8
	C	107	31.8	53	31.5	54	32.1
Education	Less than high school	10	3.0	6	3.6	4	2.4
	High school	94	28.0	45	26.8	49	29.2
	University and college	201	59.8	104	61.9	97	57.7
	Postgraduate or above	31	9.2	13	7.7	18	10.7
Surgery	Cardiothoracic	42	12.5	25	14.9	17	10.1
	General	55	16.4	23	13.7	32	19.0
	Maxillofacial	91	27.1	46	27.4	45	26.8
	Orthopedics	48	14.3	19	11.3	29	17.3
	Urology	42	12.5	27	16.1	15	8.9
	Others	58	17.3	28	16.7	30	17.9
History of general anesthesia	Yes	126	37.5	69	41.1	57	33.9
	No	210	62.5	99	58.9	111	66.1

Table 2
The Scores and Internal Consistency Reliability of SFQ-C (N = 336)

	Mean	SD	Cronbach's Alpha	Cronbach's Alpha if Item Deleted	McDonald's Omega	McDonald's Omega if Item Deleted
Item 1	4.36	2.841		0.901		0.902
Item 2	3.87	2.845		0.907		0.909
Item 3	4.91	3.215		0.902		0.903
Item 4	5.02	3.194		0.900		0.901
Item 5	5.30	3.444		0.904		0.907
Item 6	5.63	3.709		0.906		0.908
Item 7	5.61	3.434		0.898		0.902
Item 8	5.06	3.168		0.908		0.911
Total	**39.77**	**20.221**	**0.914**		**0.916**	

Table 3
Inter-Item Correlation Matrix and Items to Total Correlation (N = 336)

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
Item 1	1.000							
Item 2	0.779**	1.000						
Item 3	0.783**	0.640**	1.000					
Item 4	0.719**	0.657**	0.734**	1.000				
Item 5	0.467**	0.451**	0.501**	0.558**	1.000			
Item 6	0.456**	0.412**	0.461**	0.525**	0.717**	1.000		
Item 7	0.523**	0.451**	0.517**	0.597**	0.714**	0.752**	1.000	
Item 8	0.526**	0.407**	0.517**	0.463**	0.527**	0.547**	0.705**	1.000
Total	0.777**	0.706**	0.778**	0.806**	0.815**	0.800**	0.832**	0.724**

** Correlation is significant at the 0.01 level (2-tailed).

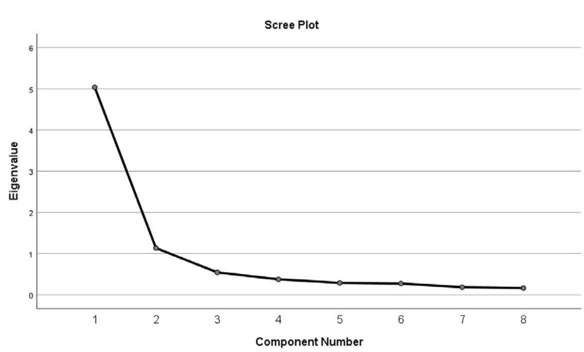

Figure 2. Scree plot of the Surgical Fear Questionnaire-Chinese version.

Confirmatory Factor Analysis

Group B data used for the CFA have formed a two-factor model which was identical to the original SFQ structure (Figure 3). All the fit indices of the model showed a satisfactory goodness of fit (χ^2/df = 37.83/19 = 1.991, RMSEA = 0.043, SRMR = 0.041, CFI = 0.980, TLI = 0.933, AGFI = 0.945, NFI = 0.972).

Convergent Validity

The mean scores of the two dimensions of the HADS, the anxiety and depression subscales, were 5.248 and 3.844, respectively. Table 5 demonstrates Pearson correlation coefficients between the SFQ-C and two dimensions of the HADS to estimate the convergent validity of SFQ-C. The correlation coefficient between SFQ-C and HADS-A/-D were 0.498 and 0.337, respectively. The correlation coefficients between SFQ-C-S/-L and HADS-A were 0.460 and 0.444, respectively. This indicates that there is a moderate degree of correlation between SFQ-C and HADS-A.

Discussion

The SFQ has been already available in Dutch, (Brazilian) Portuguese, English, Turkish, and Hungarian. This paper attempts to translate it into simplified Chinese, create and evaluate the Chinese version of the Surgical Fear Questionnaire, in terms of validity and reliability, for use among the adult population who was waiting for surgery under general anesthesia. Translation and cultural adaptation process of this study followed the recommendations of the relevant guidelines strictly. The findings suggest that the SFQ-C is reliable and valid to detect fear of surgery in the preoperative population.

The SFQ-C is reflective of patients' fear of surgery under general anesthesia. In the present study, the content of the SFQ-C was reviewed by seven experts in the relevant fields of theoretical and practical work. The CVI index was 1, indicating that all experts agreed that the psychological characteristics of the SFQ-C were clear, namely, fear of surgery under general anesthesia. The content of SFQ-C was both reasonable and could detect various aspects of patients' fear of surgery under general anesthesia. The results of the interviews with 20 participants showed that the Chinese expressions of the SFQ-C were positive and unambiguous. The SFQ-C was easy to understand and fill out.

The SFQ-C shows favorable internal consistency. The results of the present study showed that the correlations among the items and between the items and the sum score were good. The Cronbach's alpha value of the SFQ-C was 0.914, and deleting any one of the items would decrease the alpha value; the alpha values of the two subscales were 0.909 and 0.886, both of which were lower than the total scale value, indicating excellent internal consistency. Findings are similar to the higher alpha values in several studies of the Dutch scale (0.920 for the scale, 0.877 and 0.899 for the two subscales) and the Hungarian version (alpha value of the scale was not reported, 0.877 and 0.899 for the two subscales).[27,28] It is slightly lower than the Turkish version (0.96 for the scale, 0.90 and 0.93 for the two subscales).[29] Since alpha values may underestimate internal consistency, this

Table 4
Summary of Principal Component Analysis With Varimax Rotation (N = 168)

	Component		Communalities
	1	2	
Item 1	0.887	0.284	0.873
Item 2	0.851	0.214	0.786
Item 3	0.824	0.327	0.801
Item 4	0.766	0.379	0.759
Item 5	0.290	0.811	0.744
Item 6	0.229	0.857	0.799
Item 7	0.306	0.870	0.851
Item 8	0.332	0.709	0.626
Variance % (total)	39.602	38.421	(78.023)
Initial Eigenvalues	5.036	1.135	

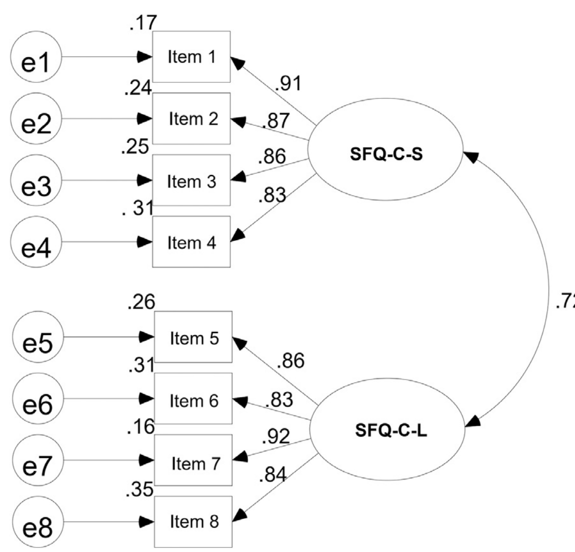

Figure 3. Confirmatory factor analysis of the Surgical Fear Questionnaire-Chinese version.

paper also presents McDonald's omega value, which is considered to be better in assessing internal reliability by providing an estimate of the reliability of the total scale.[38] McDonald's omega value is 0.916, slightly higher compared to the alpha value.

The SFQ-C is not appropriate for reporting the test-retest reliability. Unlike other psychometric characteristics, the SFQ-C measures fear of surgery under general anesthesia, which generally intensifies gradually and is greater closer to surgery. The fear decreases substantially after surgery, in particular for short-term effects, as confirmed by previous studies.[4] Therefore, we do not declare the test-retest reliability of the SFQ-C.

SFQ-C retains the identical two-factor structure as the English version. The results from the EFA showed that the factor loadings of the items belonging to the two dimensions did not overlap and clearly reflected the dimension in which they were located, with the former four items reflecting patients' fears about surgery in the short term and the latter four items reflecting fears in the long term after surgery. The data results of the CFA showed a satisfactory fit. From the results of CFA and EFA, the SFQ-C was structurally divided into two dimensions, and the two dimensions contained the same items as the original SFQ, indicating that the SFQ-C had the same two-factor structure as the original instrument.

Table 5
Pearson Correlation Coefficients Between the SFQ-C and Two Dimensions of the HADS (N = 336)

	HAD-D	HAD-A
SFQ-C-S	.265**	.460**
SFQ-C-L	.341**	.444**
SFQ-C	.337**	.498**

** Correlation is significant at the 0.01 level (2-tailed).

Research Limitations

The developer of the original SFQ, Dr. Theunissen explained that the development of the SFQ was an interactive process using English and Dutch texts. The data for publications on the validation of the SFQ were based on the Dutch version, although the two versions have the same semantic meaning. Therefore, Dr. Theunissen suggested that it was better to use the Dutch version as the source text for translation. However, due to the authors' foreign language proficiency limitations and available translators, we still chose to translate the English version, which is in line with the choice of the translators of the other two language versions.[28,29] The web-based survey used throughout this study may have lost some potential participants, such as those with weaker vision or the aged. Patients from different departments of three hospitals in Beijing, China were selected as the sample in this study to avoid sampling limitations and maximize the representativeness of the sample. However, there is always a need for further testing in regions with different levels of economic development in China.

Conclusion

In this study, the SFQ was translated into Chinese and tested for reliability and validity, indicating that the Chinese version of the SFQ possesses good psychological properties. Researchers can use of the SFQ-C to assess the surgical fear of patients in a Chinese linguistic and cultural context. The results of studies using the Chinese version can be compared with the results of other language versions of the SFQ.

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