Original Article

Psychometric validation of the general comfort questionnaire in chronic patients under kidney hemodialysis

Validação psicométrica do *general comfort questionnaire* em renais crônicos hemodialíticos

Validación psicométrica del *General Comfort Questionnaire* en pacientes renales crónicos en hemodiálisis

Geórgia Alcântara Alencar Melo[1] https://orcid.org/0000-0002-3886-5646
Renan Alves Silva[1] https://orcid.org/0000-0002-6354-2785
Francisco Gilberto Pereira[2,3] https://orcid.org/0000-0002-7744-6030
Letícia Aguiar Lima[1] https://orcid.org/0000-0003-0269-1346
Thereza Moreira Magalhães[2] https://orcid.org/0000-0003-1424-0649
Viviane Martins da Silva[1] https://orcid.org/0000-0002-8033-8831
Joselany Áfio Caetano[1] https://orcid.org/0000-0002-0807-056X

How to cite:
Melo GA, Silva RA, Pereira FG, Lima LA, Magalhães TM, Silva VM, et al. Psychometric validation of the general comfort questionnaire in chronic patients under kidney hemodialysis. Acta Paul Enferm. 2020;33:eAPE20190258.

DOI
http://dx.doi.org/10.37689/acta-ape/2020A002585

Keywords
Patient confort; Renal insufficiency, chronic; Nursing theory; Reproducibility of results; Factor analysis, statistical

Descritores
Conforto do paciente; Doença renal crônica; Teoria de enfermagem; Confiabilidade e validade; Análise fatorial

Descriptores
Comodidad del paciente; Insuficiencia renal crónica; Teoría de enfermeira; Reproducibilidad de los resultados; Análisis factorial

Submitted
September 18, 2019

Accepted
March 16, 2020

Corresponding author
Renan Alves Silva
E-mail: renan.dehon@gmail.com

Abstract

Objective: To assess the psychometric properties of the General Comfort Questionnaire, Brazilian version.

Methods: A methodological study. Participants were 260 chronic patients under kidney hemodialysis submitted to application of the General Comfort Questionnaire, and submitted to exploratory factor analysis and data reliability.

Results: the sample was considered adequate by the Kaiser-Meyer-Olkin test (0.815; p<0.001). In the exploratory analysis of factors by estimating the main components, 10 factors were obtained, which explained 60.14% of the measure variability. The scree plot test use resulted in four factors (psychospiritual, sociocultural, environmental, and physical) that explained 38.01% of the total variance. The overall Cronbach's Alpha value of the 48 items was 0.83. Excluding items with low commonality, Cronbach's Alpha of 0.80 was identified. Thus, it was observed that 33 items remained among the validated versions between the group of experts and the exploratory factor analysis, respecting the psychometric principles, with loss of 15 items.

Conclusion: GCQ is valid and reliable for measuring comfort in chronic patients under kidney hemodialysis.

Resumo

Objetivo: Avaliar as propriedades psicométricas do General Comfort Questionnaire, *versão Brasileira.*

Métodos: Estudo metodológico. Participaram 260 pacientes renais crônicos submetidos a aplicação do General Comfort Questionnaire, *versão Brasileira*, submetido a análise fatorial exploratória e confiabilidade de dados.

Resultados: a amostra foi considerada adequada pelo teste de Kaiser-Meyer-Olkin (0,815; p<0,001). Na análise exploratória de fatores pelo método de estimação dos componentes principais foram obtidos 10 fatores que explicaram 60,14% da variabilidade da medida. Decidiu-se utilizar o teste do scree plot resultou em quatro fatores (psicoespiritual; sociocultural; ambiental e físico) que explicaram 38,01% da variância total. O valor de alfa de Cronbach geral dos 48 itens foi de 0,83, com a exclusão dos itens com baixa comunalidade identificou-se alfa de Cronbach de 0,80. Com isso, constata-se que permaneceram 33 itens entre as versões validadas entre o grupo de especialistas e a análise fatorial exploratória respeitando os princípios psicométricos com perda de 15 itens.

Conclusão: o QCG é válido e confiável para medir o conforto em pacientes renais crônicos em tratamento hemodialítico.

[1]Universidade Federal do Ceará, Fortaleza, CE, Brazil.
[2]Universidade Federal do Ceará, Fortaleza, CE, Brazil.
[3]Universidade Federal do Amapá, Macapá, AP, Brazil.
Conflicts to interest: nothing to declare.

Resumen

Objetivo: Evaluar las propiedades psicométricas del General Comfort Questionnaire, *versión brasileña.*

Métodos: Estudio metodológico. Participaron 260 pacientes renales crónicos, a quienes se les aplicó el General Comfort Questionnaire, *versión brasileña*, sometido al análisis factorial exploratorio y confiabilidad de datos.

Resultados: La nuestra fue considerada adecuada a través de la prueba Kaiser-Meyer-Olkin (0,815; p<0,001). En el análisis exploratorio de factores mediante el método de estimación de los componentes principales, se obtuvieron 10 factores que evidenciaron el 60,14 % de la variabilidad de la medida. Se decidió utilizar el test scree plot que tuvo como resultado cuatro factores (piscoespiritual, sociocultural, ambiental y físico), que evidenciaron el 38,01 % de la varianza total. El valor del alfa de Cronbach general de los 48 ítems fue de 0,83, excepto los ítems de baja comunalidad en los que se identificó alfa de Cronbach de 0,80. De esta forma, se verifica que permanecieron 33 ítems entre las versiones validadas por el grupo de especialistas y el análisis factorial exploratorio, respetando los principios psicométricos con una pérdida de 15 ítems.

Conclusión: el GCQ es válido y confiable para medir el confort de pacientes renales crónicos bajo tratamiento hemodialítico.

Introduction

Comfort has an individual and subjective aspect construct that permeates physical, environmental, sociocultural, and psychospiritual aspects. It is a dimension of nursing care given its holistic nature, and may occur to a greater or lesser extent depending on different factors, involving individuals and their personal perceptions.[1] It is directed to all people at any stage of their life cycle. However, this concept is interesting in situations of health compromise or social vulnerability, given its scope and applicability.

The theoretician Katherine Kolcaba defines comfort as the state in which the needs of relief, tranquility and transcendence are strengthened in the four contexts of human experience: physical, psychospiritual, sociocultural and environmental. Comfort means the result of the help as a subjective experience of the momentary state in which people perceive themselves calm, relieved and able to overcome discomfort.[2] Based on this definition, Kolcaba built the General Comfort Questionnaire (GCQ), an instrument with 48 items that cover the four contexts of comfort. This instrument is generic, self-applicable and capable of identifying positive aspects and involved in providing care to patients regardless of their health condition.[2]

GCQ has been used in many contexts and countries.[3-5] In Brazil, this instrument was translated and adapted following Beaton's steps,[6] and its content was validated by experts.[7] However, for the questionnaire to be valid and reliable, it is essential to assess the factorial structure and measurement invariance. The study is of decisive importance given the high potential of GCQ to measure the comfort level of patients. Accepting the instrument as a reference to measure this construct, it is necessary that its psychometric properties be assessed.

Corroborating with recent studies, it is emphasized that chronic patients under hemodialysis experience lack of relief, tranquility and transcendence in the physical, psychospiritual, environmental, cultural and/or social dimensions through several manifestations. Among them are change in sleep pattern, anxiety, crying, discomfort and discontent with the situation, inability to relax, restlessness, irritability, regret, fear, itching, feeling hot, feeling hungry, feeling cold, symptoms of suffering, and sighing.[8,9]

Furthermore, the study aimed to assess the psychometric properties of the General Comfort Questionnaire, Brazilian Version.

Methods

This is a methodological and cross-sectional study, with a quantitative approach. The research was carried out in three hemodialysis clinics, which treat the largest number of chronic patients under kidney hemodialysis in the metropolitan region of the city of Fortaleza.

This study included 260 patients from the clinics, with hemodialysis time of at least 12 months, who agreed to participate in the study. They signed the informed consent term, were over 18 years old, with a Glasgow Coma score of 15, and preserved hearing and visual acuity. The minimum temporal criterion was defined due to the process of adap-

tation or adjustment of therapeutic clinical conditions, which could skew the observations found. Patients who were under the effect of anxiolytics or antidepressants within 24 hours prior to application of the instrument were excluded.

The collection period was held from August 2017 to March 2018. The instruments were applied through interviews during hemodialysis therapy in 3 shifts, morning, afternoon and night, according to hemodialysis unit functioning. The average time of application of the two instruments in each participant was 20 to 30 minutes.

For data collection, two data collection instruments were used, one to characterize the sample with questions about socio-demographic and clinical data, and the GCQ, translated version, adapted for use in chronic patients under kidney hemodialysis.

The GCQ is structured in four domains: physical, sociocultural, environmental, and spiritual. It was validated regarding pertinence, clarity and relationship with comfort. Cronbach's Alpha was 0.80 in the pre-test section, indicating good adequacy of the questionnaire and an excellent internal consistency of the items. This instrument has a cutoff point greater than or equal to 152 points for the establishment of comfort, with minimum and maximum values of 48 and 192.[6]

The GCQ's construct validity was initially assessed by exploratory factor analysis (EFA) to identify a new structural model, by the method of the main components with Varimax rotation (orthogonal rotation uncorrelated factors) and eigenvalue greater than 1. Eigenvalue assesses contribution of the factor to the model constructed by factor analysis. Value lower than 1 suggests a small contribution of the factor in explaining the variations of the original variables.[10] Factor loading (saturation) was produced for each item in the factor, which indicates the correlation between the item and the factor, so that the closer to 100% covariance, the better the item is considered, since it strongly represents the latent trait measured by factor. Therefore, factor description in terms of the items that constitute it is based on the magnitude of correlations.[10]

An alternative method recommended by experts in factor analysis is the scree plot, which consists of positioning an eigenvalues chart against a number of items present.[11]

The number of factors is selected by observing a break or discontinuity between the highest and lowest values of eigenvalues. The points above the discontinuity correspond to the number of factors in the measure. To determine where rupture occurs, a straight line is drawn through the lower values of the eigenvalue trace.[11]

It was considered minimum factor loading equal to 0.40, so that the item could be considered a useful representative of the factor.[12.13] For commonality assessment, i.e., how much of the variance of each item is explained by each factor generated in the factor analysis, a satisfactory commonality value was considered > 0.40.[12] Lower commonality values in the factors suggest a small contribution of the item to the constructed model[13.14], and the items of the instrument should be excluded.

Cronbach's Alpha coefficient was used to assess the GCQ reliability (total score and domains), according to the criterion of homogeneity of the items, with value > 0.80.[11-14]

The study was approved by the Ethics Committee of the *Universidade Federal do Ceará*.

Results

It was identified that most participants were between 40 and 59 years old (41.7%), with a mean of 53.9 years, male (54.4%), mixed-race 132 (73.3%), Catholic (68.7%), married (52.8%), with eight or less years of education (61.4%). Regarding clinical data, the majority were hypertensive (38.4%) or associated with diabetes mellitus (17%), which dialed through arteriovenous fistula (AVF) (68%), and were on hemodialysis treatment for up to three years (57%). The mean time of hemodialysis treatment was 4.85 years, with minimum and maximum time of ten months and 21 years, respectively.

In exploratory factor analysis, Bartlett's sphericity test rejected the null hypothesis that the data correlation matrix was an identity matrix ($p < 0.001$, $X2 = 2473.826$, $gl=528$), and the Kaiser-Meyer index -Olkin (KMO) was 0.81. These results showed

good adequacy of the data matrix to factor analysis, indicating that the analysis of the main components could be performed.

Subsequently, the exploratory analysis of factors was used to identify a new structural model for the GCQ. Ten factors were obtained by estimating the main components of analysis with Varimax rotation and eigenvalues above 1 for factor extraction and factor loading greater than 0.40 for item selection. These factors, together, explained 60.14% of the variability of the measure.

However, e-value use may overestimate the number of factors[11], which tends to represent a problem in large data sets, since it produces trivial factors with few variables.[14]

Therefore, in the present study, by observing the scree plot, the straight line begins to form from number 4, with only four factors that explained the greatest variance (38.01%) of the GCQ measurement being found above this point, as shown in Figure 1.

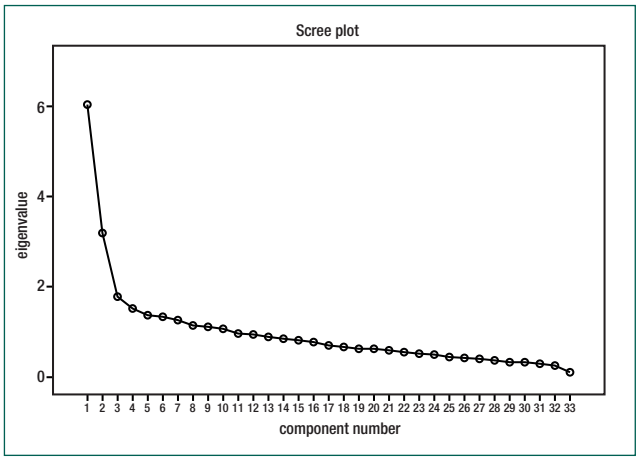

Figure 1. Scree plot of eigenvalues for the 14 items of the General Comfort Questionnaire Instrument, using the main component of analysis

The analysis of the main components by the scree plot test resulted in four factors that explained 38.01% of the total variance. Each showed eigenvalues greater than 1 (6.04, 3.19, 1.77 and 1.52) and explained 18.30%, 9.68%, 5.38%, and 4.63% of the scale variance, respectively. Chart 1 shows the factorial loadings in order of the item in the factor and the percentage of variance of the measure explained by each factor, considering the number of factors identified in the scree plot test.

Chart 1. Factor loadings and commonality values obtained by exploratory factor analysis of the General Comfort Questionnaire Instrument, using the main component of analysis

Rotary component matrix[a]					
	Component				
	1	2	3	4	H^2
Item 9	0.689				0.511
Item 10	0.673				0.538
Item 23	0.540				0.381
Item 15	0.531				0.333
Item 44	0.530				0.364
Item 17	0.511				0.279
Item 29	0.505				0.278
Item 37	0.500				0.331
Item 46	0.496				0.364
Item 7	0.425				0.266
Item 31	0.413				0.339
Item 38	0.398				0.166
Item 33	0.397				0.187
Item 47	0.339				0.193
Item 4	0.328				0.169
Item 20	0.271				0.143
Item 41	0.086				0.017
Item 24		0.604			0.380
Item 22		0.566			0.349
Item 6		0.562			0.386
Item 39		0.532			0.319
Item 16		0.531			0.350
Item 45		0.515			0.446
Item 21		0.458			0.390
Item 13		0.447			0.327
Item 26		0.425			0.272
Item 14		0.413			0.255
Item 19		0.238			0.121
Item 48		-0.475			0.250
Item 11			0.641		0.476
Item 18			0.629		0.426
Item 28			0.539		0.395
Item 32	.		0.522		0.353
Item 30			0.510		0.317
Item 35			0.482		0.325
Item 1			0.426		0.214
Item 40			0.413		0.324
Item 42			0.374		0.225
Item 27			0.325		0.165
Item 3			0.305		0.170
Item 25			0.244		0.068
Item 12			-0.529		0.306
Item 8				0.505	0.484
Item 34				0.461	0.258
Item 2				0.416	0.199
Item 43				0.408	0.266
Item 36				0.399	0.317
Item 5				0.159	0.062

Factor loading was found to be lower than desired in the following items in factor 1: Item 38,

Item 33, Item 47, Item 4, Item 20, Item 41; factor 2: Item 19; factor 3: Item 42, Item 27, Item 3 and Item 25; factor 4: item 36 and item 5. It is noteworthy that the analysis of comfort grouped in the factors enabled the following denomination: Factor 1 - psychospiritual; Factor 2 - sociocultural; Factor 3 - environmental and Factor 4 – physical.

The commonality value for each of the GCQ items, which can be interpreted as the percentage of the variance of an original variable explained by the number of factors, is shown in the table. Communality lower than desired was found in items 28, 21, 6, 23, 24, 44, 46, 32, 16, 22, 31, 15, 37, 13, 35, 40, 39, 30, 36, 12, 17 , 29, 26, 7, 43, 34, 14, 48, 1, 2, 47, 33, 3, 4, 38, 27, 20, 19, 25, 5, 41. However, it was decided to exclude the items that presented inferior commonality in the rotational matrix factors.

Reliability analysis

The data show satisfactory alpha values for the total GCQ and for all items. Also, it appears that if item 12 of the GCQ is excluded, Cronbach's Alpha value increases to 0.834 (Chart 2).

When excluding the items from the factor analysis with commonality values below 0.40 in the factors, satisfactory alpha values were found for the total GCQ (0.805) and factors, except for the factor 3 (environmental) items, with 0.576 and 4 (physical), with 0.327. They did not show a high item-total correlation, generating a lower alpha value than desired. Regarding the item-total correlations of factor 3, it was noted that there was a variation between -0.366 and 0.456, and in factor 4 there was a variation between 0.132 and 0.196. Factor 1 showed a Cronbach's Alpha of 0.764, followed by factor 2, with 0.707.

Thus, it was decided not to exclude the items contained in the factor, since a satisfactory value of the overall Cronbach's Alpha was found. It was found that the values estimated by Cronbach's Alpha coefficient for the factors did not change if the items were excluded, except for factor 1, in which a reduction in the alpha (from 0.764 to 0.702) was found if item 31 was excluded.

Therefore, it appears that 33 items remained between the versions validated between the group of specialists and the exploratory factor analysis, respecting the psychometric principles with loss of 15 items (3, 4, 5, 6, 7, 18, 19, 20, 22, 24, 25, 27, 33, 35, 36, 39, 41, 42, 47).

Chart 2. Item-total correlation, Cronbach's Alpha if the item is deleted from the factors and the total score of the General Comfort Questionnaire Instrument, using the main component of analysis

	Average scale if the item is excluded	Scale variance if the item is excluded	Corrected total item correlation	Multiple squared correlation	Cronbach's Alpha if the item is excluded
Item 1	144.0750	266.070	0.251	0.333	0.818
Item 2	145.5042	269.615	0.147	0.306	0.821
Item 3	143.9792	267.702	0.220	0.265	0.819
Item 4	143.5750	272.798	0.121	0.267	0.820
Item 5	145.3792	273.165	0.051	0.200	0.824
Item 6	144.9875	255.862	0.465	0.385	0.811
Item 7	143.8792	263.287	0.393	0.361	0.814
Item 8	145.1250	259.089	0.372	0.454	0.814
Item 9	143.5167	267.180	0.429	0.555	0.815
Item 10	143.5542	269.436	0.279	0.518	0.817
Item 11	143.9375	263.214	0.397	0.494	0.814
Item 12	145.3708	286.912	-0.283	0.411	0.834
Item 13	144.0417	261.237	0.417	0.448	0.813
Item 14	144.4167	259.809	0.392	0.343	0.814
Item 15	143.7292	266.993	0.353	0.362	0.816
Item 16	144.8667	257.212	0.389	0.353	0.813
Item 17	143.4417	272.925	0.180	0.286	0.819
Item 18	144.2458	261.651	0.354	0.485	0.815
Item 19	143.6417	268.984	0.228	0.234	0.818
Item 20	145.0042	263.736	0.285	0.316	0.817
Item 21	143.9792	257.954	0.501	0.456	0.811
Item 22	144.6083	257.553	0.407	0.454	0.813
Item 23	143.4542	270.935	0.276	0.402	0.818
Item 24	145.2958	260.803	0.365	0.420	0.814
Item 25	144.2708	268.466	0.144	0.169	0.822
Item 26	144.7125	261.712	0.285	0.347	0.817
Item 27	143.8583	270.741	0.153	0.187	0.820
Item 28	144.2250	256.493	0.471	0.400	0.811
Item 29	143.8375	264.840	0.371	0.368	0.815
Item 30	144.0375	267.534	0.236	0.335	0.818
Item 31	143.9250	260.061	0.492	0.426	0.812
Item 32	144.6333	265.062	0.242	0.366	0.818
Item 33	144.8083	266.951	0.246	0.305	0.818
Item 34	144.2833	270.798	0.128	0.291	0.821
Item 35	144.5375	257.589	0.419	0.375	0.813
Item 36	144.0792	260.374	0.390	0.443	0.814
Item 37	144.1250	262.235	0.365	0.391	0.815
Item 38	143.4417	271.988	0.231	0.331	0.819
Item 39	145.3250	267.727	0.181	0.294	0.820
Item 40	143.8750	261.340	0.459	0.401	0.813
Item 41	143.3833	275.635	0.088	0.142	0.820
Item 42	143.9500	269.219	0.174	0.305	0.820
Item 43	144.7750	279.020	-0.094	0.247	0.829
Item 44	143.5083	266.954	0.452	0.445	0.815
Item 45	143.8583	258.365	0.551	0.512	0.810
Item 46	143.8750	268.210	0.258	0.358	0.818
Item 47	143.8125	265.927	0.318	0.351	0.816
Item 48	143.7667	285.811	-0.339	0.366	0.830

Discussion

Thus, it is reported that it is desirable that this instrument be applied to samples with different cultures and beliefs to advance its development and bring more evidence to strengthen analyzes of internal consistency and dimensionality of the factor structure. Therefore, the limitation in comparing the results of this analysis with research with the same purpose in other cultures and countries is noteworthy, since no validations of the instrument were found through exploratory and confirmatory factor analysis.

The results achieved in the reliability study of the GCQ, Brazilian version, showed some divergences regarding the parameters published for the original version,[2] referring, in this case, to the relocation of items within the domains, or their exclusion. This possibility is predictable, considering that the construct under analysis is permeated by subjectivities specific to the subject and the social and cultural context in which he lives. Therefore, in addition to considering aspects related to the objective and concrete data of the disease, it is essential to attribute relevance to the health-disease process and the interaction dynamics of the person with the moment and the environment in which they live.[11]

The instrument's internal consistency and validity were evidenced by measuring the overall Cronbach's Alpha of 0.805. This allows it to be aligned with other validation studies and psychometric analysis of questionnaires aimed at analyzing the same construct with different populations, such as 0.98 and 0.97, with end-of-life patients and their direct caregivers in Ohio;[15] 0.795 in caregivers of people with advanced chronic disease in Portugal;[16] 0.923 in the context of illness in critical situations in Brazil;[17] and 0.769 in a short version validated in Indonesia for patients on hemodialysis.[18]

It is observed, however, that there are considerable differences between these results and those presented in the cross-cultural adaptation to the Brazilian reality carried out by judges, in which the overall equivalence of the instrument was 0.943 with Cronbach's Alpha equal to 0.8, without losses or item relocations.[6] The exploratory factor structure confirmed the presence of four factors (psychospiritual, sociocultural, environmental, and physical), as presented by the original instrument as domains.[2] However, it is worth mentioning that the analysis of the commonality of the items revealed the possibility that some of them are not explained by the factors now attributed, thus suggesting a small contribution of the item to the model built.[19]

The fact that Bartlett's sphericity test was statistically significant and that the KMO value was above 0.50 indicated that the sample size was statistically significant for factor analysis.

As a result of exploratory factor analysis, the questionnaire items were grouped into 10 subdimensions. The fact that the 33-item GCQ consists of 10 dimensions shows that some dimensions do not contain enough items. The eigenvalue graph analysis showed that low acceleration of the fall after the fourth factor suggests that the four-factor model would be appropriate for the 33-item questionnaire. The four-factor model accounts for 38.01% of the total variance of the total variation.

In the literature, it is stated that the explained variance must be between 40.0 and 60.0%.[20] However, in sociology and psychological studies it is stated that, if the explained variance is greater than 35%, it would be.[18] Thus, since the GCQ measures comfort, an abstract concept and the explained variation is less than 40.0%, it is a tangible situation.[21.22]

It appears that in the analysis of the psychometric properties of the Nurse Comfort Questionnaire, built in Turkey, the scree plot showed results only for 3 factors with the 39 items with variability of 37.87%.[20] Therefore, a more robust statistical treatment allows to extract from a more accurate assessment of the comfort construct without losing the essence of its main attributes. In this study, it was found that the Cronbach's Alpha values of the sub-dimensions were 0.859 for the first factor, 0.846 for the second factor and 0.818 for the third factor. In this study, there was wide variability between the four factors, from 0.327 to 0.764.

It is argued that the analysis of the psychometric characteristics of this instrument should be carried

out to the extent that its translation/cross-cultural adaptation takes place.[23] This procedure guarantees researchers and health professionals a technical and scientifically validated instrument to qualify care and effectiveness in adequate measure of the construct for decision-making purposes, given its limitations regarding reproducibility and interpretation in different cultures and conditions of illness.

Conclusion

The statistical analyzes carried out allowed us to conclude that the GCQ, Brazilian version, has evidence of psychometric validity based on the internal structure, demonstrating that it is considered reliable and valid for measuring comfort in chronic patients under kidney hemodialysis. Thus, this material promotes a more thorough comfort assessment in the target audience, permeating the domains of comfort to be used safely by nurses to guide the implantation of active interventions in order to ensure better comfort.

Collaborations

Melo GAA, Silva RA, Pereira FG, Lima LA, Magalhães TM, Silva VM and Caetano ALREADY contributed to the study design, data analysis and interpretation, writing of the article, relevant critical review of the intellectual content and approval of the final version to be published.

References

1. Ponte KM, Silva LF. Comfort as a result of nursing care: an integrative review. J Res Fundam Care. 2015;7(2):2603–14.
2. thecomfortline.com [Internet] San Diego: Comfort Line; c2019 [cited 2019 Aug 30]. Available from: http://thecomfortline.com/
3. Tosun B, Aslan Ö, Tunay S, Akyüz A, Özkan H, Bek D, et al. Turkish Version of Kolcaba's Immobilization Comfort Questionnaire: A Validity and Reliability Study. Asian Nurs Res (Korean Soc Nurs Sci). 2015;9(4):278–84.
4. Pinto SM, Berenguer SM, Martins JC, Kolcaba K. Cultural adaptation and validation of the Portuguese End of Life Spiritual Comfort Questionnaire in Palliative Care patients. Porto Biomed J. 2016;1(4):147-52.
5. Góis JÁ, Freitas KS, Kolcaba K, Mussi FC. Cross-cultural adaptation of the General Comfort Questionnaire to Brazilian patients with myocardial infarction. Rev Bras Enferm. 2018;71(6):2998–3005.
6. Melo GA, Silva RA, Pereira FG, Caetano JA. Cultural adaptation and reliability of the General Comfort Questionnaire for chronic renal patients in Brazil. Rev Lat Am Enfermagem. 2017;25(0):e2963.
7. Melo GA, Silva RA, Aguiar LL, Pereira FG, Galindo Neto NM, Caetano JÁ. Content validation of the Brazilian version General Comfort Questionnaire. Rev Rene. 2019;20:e41788.
8. Estridge KM, Morris DL, Kolcaba K, Winkelman C. Comfort and fluid retention in adult patients receiving hemodialysis. Nephrol Nurs J. 2018;45(1):25–60.
9. Melo GA, Aguiar LL, Silva RA, Quirino GD, Pinheiro AK, Caetano JA. Factors related to impaired comfort in chronic kidney disease patients on hemodialysis. Rev Bras Enferm. 2019;72(4):889–95.
10. Beser A, Bahar Z, Kissal A, Cal A, Cavusoglu F, Mert H, et al. Psychometric properties of the Turkish version of the Tuberculosis-Related Stigma scale. Acta Paul Enferm. 2018;31(4):374–81.
11. Souza DJ, Oliveira LR, Lemos RCA, Felix MMS, D'Innocenzo M. Validade de construto do Índice de Humanização dos Serviços de Saúde. Cogitare Enferm. 2016; 21(4):1-9.
12. Stacciarini TS, Pace AE. Confirmatory factor analysis of the Appraisal of Self-Care Agency Scale - Revised. Rev Lat Am Enfermagem. 2017;25(0):e2856.
13. Umann J, Silva RM, Kimura CA, Lautert L. Aplicações da modelagem de equações estruturais na enfermagem: revisão integrativa. Rev Eletr Enferm. 2017;19:a51.
14. Silva TO, Alves LB, Balieiro MM, Mandetta MA, Tanner A, Shields L. Cross-cultural adaptation of an instrument to measure the family-centered care. Acta Paul Enferm. 2015;28(2):107–12.
15. Novak B, Kolcaba K, Steiner R, Dowd T. Measuring comfort in caregivers and patients during late end-of-life care. Am J Hosp Palliat Care. 2001;18(3):170–80.
16. Marques RM, Dixe MA, Querido AI, Sousa PP. Revalidation of the Holistic Comfort Questionnaire – Family for caregivers of people with advanced chronic disease. Rev Ref. 2016;4(11):91–100.
17. Freitas KS, Menezes IG, Mussi FC. Validation of the Comfort scale for relatives of people in critical states of health. Rev Lat Am Enfermagem. 2015;23(4):660–8.
18. Artanti ER, Nurjannah I, Subroto S. Subroto. Validity and reliability of shortened General Comfort Questionnaire in Indonesian Version. Belitung Nurs J. 2018;4(4):366–72.
19. Pedrosa RB, Rodrigues RC, Padilha KM, Gallani MC, Alexandre NM. Factor analysis of an instrument to measure the impact of disease on daily life. Rev Bras Enferm. 2016;69(4):697–704.
20. Cinar Yucel Ş, Goke Arslan G, Ergin E, Kuguoglu S. Psychometric Characteristics of the Turkish Version of the Nurse Comfort Questionnaire. J Relig Health. 2019;58(5):1803–16.
21. Yaşlıoğlu MM. Sosyal bilimlerde faktör analizi ve geçerlilik: keşfedici ve doğrulayıcı faktör analizlerinin kullanılması. Istanbul Bus Res 2017;46:74–85.
22. Ferrandiz EF, Martín-Baena D. Translation and validation of a Spanish version of the Kolcaba's general comfort questionnaire in hospital nurses. Int J Nurs (N Y). 2015;2(1):113–9.
23. Bektas M, Bektas I, Selekoğlu Y, Kudubes AA, Altan SS, Ayar D. Psychometric properties of the Turkish version of the Emotional Eating Scale for children and adolescents. Eat Behav. 2016;22:217–21.

General Comfort Questionnaire, Brazilian version

Items from General Comfort Questionnaire Instrument that remained after exploratory factor analysis.

1. *Sinto meu corpo relaxado agora*	4	3	2	1
2. *Eu me sinto útil porque estou trabalhando muito*	4	3	2	1
8. *Eu me sinto dependente dos outros*	4	3	2	1
9. *Eu sinto que minha vida vale a pena*	4	3	2	1
10. *Eu me sinto satisfeito(a) por saber que eu sou amado(a)*	4	3	2	1
11. *Estes ambientes são agradáveis*	4	3	2	1
12. *O barulho não me deixa descansar*	4	3	2	1
13. *Ninguém me entende*	4	3	2	1
14. *Minha dor é difícil de ser suportada*	4	3	2	1
15. *Eu estou motivado(a) em fazer o meu melhor*	4	3	2	1
16. *Eu fico triste quando estou sozinho(a)*	4	3	2	1
17. *Minha fé me ajuda a não ter medo*	4	3	2	1
21. *Este ambiente me faz sentir medo*	4	3	2	1
23. *Eu tenho uma pessoa(s) que me faz (em) sentir cuidado (a)*	4	3	2	1
26. *Eu gostaria de ver meu médico com mais frequência*	4	3	2	1
28. *Eu estou muito cansado (a)*	4	3	2	1
29. *Eu posso superar minha dor*	4	3	2	1
30. *O humor daqui me faz sentir melhor*	4	3	2	1
31. *Eu estou contente*	4	3	2	1
32. *Esta cadeira (cama) me machuca*	4	3	2	1
34. *Meus pertences não estão aqui*	4	3	2	1
37. *Meus amigos lembram-se de mim com mensagens e telefonemas*	4	3	2	1
38. *Minhas crenças me dão paz de espírito*	4	3	2	1
40. *Eu me sinto fora de controle*	4	3	2	1
43. *Eu estou sozinho (a), mas não solitário (a)*	4	3	2	1
44. *Eu me sinto em paz*	4	3	2	1
45. *Eu estou deprimido (a)*	4	3	2	1
46. *Eu tenho encontrado sentido na minha vida*	4	3	2	1
48. *Eu preciso me sentir bem novamente*	4	3	2	1

4: I strongly agree; 3: I agree; 2: I disagree: 1: I strongly disagree