Adaptation and validity of the Quality of Life Index for Brazilian pregnant women

Adaptação e validação de Índice de Qualidade de Vida para gestantes brasileiras

Adaptación y validación del Índice de Calidad de Vida para mujeres embarazadas brasileñas

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Abstract

Objective: To adapt and validate the Ferrans and Powers Quality of Life Index for Brazilian pregnant women.

Methods: This is a methodological study. The Ferrans and Powers Quality of Life Index for pregnant women, Brazilian version, has 36 items and four domains. Content validity was performed by a committee of judges. In the validity stage, internal consistency, convergent and discriminant construct validity and dimensionality were tested. Significance level 5%.

Results: Five judges participated in a committee. The Content Validity Index was 0.94 and most items had a content validity coefficient per item above 0.80. A total of 280 pregnant women participated in the validity stage. Cronbach's alpha was 0.94 for the total score, ranging from 0.78 to 0.89 between the domains. Pearson's correlation between the Ferrans and Powers Quality of Life Index and the WHOQOL-Bref was positive and strong (0.79; $p<0.001$). Discriminant construct validity did not reveal statistically significant differences. Confirmatory factor analysis revealed that the four-domain model fits the model.

Conclusion: The Ferrans and Powers Quality of Life Index, adapted version, proved to be reliable and valid for use in pregnant women, proving to be a promising tool for health professionals and researchers to identify pregnant women's quality of life.

Resumo

Objetivo: Adaptar e validar o Índice de Qualidade de Vida de Ferrans & Powers para gestantes brasileiras.

Métodos: Estudo metodológico. A versão brasileira Índice de Qualidade de Vida de Ferrans & Powers para gestantes tem 36 itens e quatro domínios. A validação de conteúdo foi realizada por comitê de juízes. Na etapa de validação foi testada a consistência interna, a validade de constructo convergente e discriminante e a dimensionalidade. Nível de significância 5%.

Resultados: Cinco juízes participaram do comitê. O índice de validade de conteúdo foi de 0,94 e a maioria dos itens apresentou coeficiente de validade de conteúdo por item acima de 0,80. Participaram da etapa de validação 280 gestantes.O alfa de Cronbach foi de 0,94 para o escore total com variação de 0,78 a 0,89 entre os domínios A correlação de Pearson entre o Índice de Qualidade de Vida de Ferrans e o WHOQOL-Bref foi positiva e forte (0,79; $p<0,001$). A validade de constructo discriminante não revelou diferenças estatisticamente significante. A análise fatorial confirmatória revelou que o modelo de quatro domínios se ajusta ao modelo.

Conclusão: A versão adaptada do Índice de Qualidade de Vida de Ferrans mostrou-se confiável e válida para aplicação em gestantes, mostrando-se uma ferramenta promissora para profissionais de saúde e pesquisadores na identificação da Qualidade de vida de gestantes.

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Conflicts of interest: extracted from a master's thesis entitled "Adaptação e validade das propriedades psicométricas do índice de qualidade de vida de Ferrans & Powers para gestantes", 2020, Universidade Guarulhos.

Resumen

Objetivo: Adaptar y validar el Índice de Calidad de Vida de Ferrans & Powers para mujeres embarazadas brasileñas.

Métodos: Estudio metodológico. La versión brasileña del Índice de Calidad de Vida de Ferrans & Powers para mujeres embarazadas tiene 36 ítems y cuatro dominios. La validación de contenido fue realizada por un comité de jueces. En la etapa de validación se probó la consistencia interna, la validez de constructo convergente y discriminante y la dimensionalidad. Nivel de significación del 5 %.

Resultados: Cinco jueces participaron del comité. El índice de validez de contenido fue de 0,94 y la mayoría de los ítems presentó un coeficiente de validez de contenido por ítem superior a 0,80. En la etapa de validación participaron 280 mujeres embarazadas. El alfa de Cronbach fue de 0,94 para el puntaje total con variación de 0,78 a 0,89 entre los dominios. La correlación de Pearson entre el Índice de Calidad de Vida de Ferrans y el WHOQOL-Bref fue positiva y fuerte (0,79; $p<0,001$). La validez del constructo discriminante no reveló diferencias estadísticamente significativas. El análisis factorial confirmatorio reveló que el modelo de cuatro dominios se ajusta al modelo.

Conclusión: La versión adaptada del Índice de Calidad de Vida de Ferrans demostró ser confiable y válida para su uso en mujeres embarazadas y demostró ser una herramienta promisora para profesionales de la salud y para investigadores en la identificación de calidad de vida de mujeres embarazadas.

Introduction

Pregnancy is a phase of transformation, adaptation and transition that is part of the normal process of women's development. The transformations go beyond changes in the organism, and can affect well-being, alter the psychic/emotional, professional, socioeconomic and family/marital state.[1] These transformations, adaptations and the need to face the new reality that arises, with the arrival of a child, can interfere, positively or not, in women's life plans and consequently in their perception of their quality of life (QoL).[1-3] The World Health Organization (WHO) defines QoL as "an individual's perception of their place in life, in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns".[4]

QoL assessment has been of great relevance and has been growing in importance, not only as a measure for assessing the results of health treatments, but also for the qualification of health promotion interventions in primary care.[5] There are numerous instruments to measure QoL in different life situations of healthy and unhealthy people. However, in Brazil there is no instrument that addresses the specificities of women's lives during pregnancy. To this end, the Ferrans and Powers Quality of Life Index (FPQLI) was chosen to carry out the adaptation, a generic QoL instrument with psychometric properties proven by several international studies.[6] This index was prepared by nurses in the United States and has already been translated and validated in our country.[6,7]

The original version of the instrument was created in 1984 by professors at the College of Nursing at the University of Illinois, Chicago, to assess healthy people's QoL, but numerous versions have already been adapted for use in people with specific illnesses such as arthritis, cancer, diabetes, chronic fatigue, multiple sclerosis, among others, in many different languages.[6] In 2004, an adaptation of FPQLI was carried out for application in prenatal care.[8] However, this preliminary version was not validated at the time, but even so, it has been used to measure pregnant women's QoL, which imprinted urgency and motivated its validity.[3,8,9]

The objective of this study was to adapt the FPQLI developed for pregnant women and to validate the adapted version.

Methods

This is a methodological, adaptation and validity study of an instrument to measure the QoL of pregnant women that investigated content validity and construct validity considering the Trinitarian model.[10] The adaptation for pregnant women was authorized by the main author of the original scale.

The FPQLI's validity stage was performed in two Basic Health Units in the city of São Paulo.

The FPQLI considers satisfaction with life as the central core of the QoL construct as well as the importance that the subject attributes to different aspects of life. Thus, the same 36 items that make up the instrument are assessed in terms of satisfaction and importance and are grouped into four do-

mains: health/functioning, socioeconomic, psychological/spiritual and family.[6]

The FPQLI underwent an initial adaptation process for use with pregnant women.[8] The adapted version for pregnant women, called FPQLI for pregnant women (FPQLI-PWV), was based on the generic version III of FPQLI in Portuguese and followed the same premises as the original.[6-8] The generic version III, in Portuguese, underwent modification of some items and introduction of others, to achieve the specificities that characterize the gestational period.[7,8] The items introduced or modified were based on the main complaints, symptoms or alterations mentioned by women during the gestational period and identified, also in publications.[11-13] The higher the score, the greater the QoL. The FPQLI-PWV version consists of 36 items, divided into four domains shown in chart 1.

Chart 1. Items and domains of the Ferrans and Powers Quality of Life Index, adapted version for pregnant women (FPQLI-PWV)

Health and Functioning (15 items)	Socioeconomic (8 items)	Psychological/ Spiritual (7 items)	Family (6 items)
1. Health	16. Friends	30. Peace of spirit	11. Family's health
2. Pregnancy*	18. Support from people	31. Faith in God	12. Children
3. Prenatal care**	22. Neighborhood	32. Personal goals	13. Family's happinness
4. Discomfort intensity (pain, nausea, difficulty sleeping)**	23. One's house 24/25 Work/ not having work	33. Happiness 34. Satisfaction with life 35. Personal appearance	15. Companion 17. Family support 29. This* child
5. Mood swings (sadness and joy* 6. Irritation intensity*	26. Education 27. Financial needs	36. With oneself	
7. Energy			
8. Physical independence			
9. Control over one's life			
10. Long life			
14. Sexual life			
19. Family responsibility			
20. Being useful to people			
21. Concerns			
28. Leisure activities			

*introduced item; ** modified item.

The FPQLI-PWV, adapted version, was submitted for content validity by a committee of judges.[8] To compose the committee, the following selection criteria were used: professionals in the area of women's health, with at least five (5) years of experience in direct assistance to pregnant women in prenatal care or in teaching in the maternal area who had a title of doctor. Thus, the committee of judges was composed of five elements: two (2) obstetrician/ midwife nurses who worked in prenatal care for women and three (3) professors in the maternal area with a doctoral degree.

The judges assessed whether the modified or introduced items were relevant and important in measuring pregnant women's QOL, whether they should remain or be removed. Judges completed a form containing the FPQLI's translated versions. A Likert-type scale was used to assess the adapted version with scores from 1 to 4, where 1 = non-relevant or non-representative item; 2 = item needs major revision to be representative; 3 = item needs minor revision to be representative; 4 = relevant or representative item.[14,15]

The FPQLI-PWV version was submitted to a pre-test and answered by 10 pregnant women at usual risk. Pregnant women assessed the version of FPQLI-PWV regarding item understanding.

The final version of the FPQLI-PWV was answered by 280 pregnant women at usual risk from two Basic Health Units in the city of São Paulo. The sample size was defined considering five interviews for each of the 36 items that make up the instrument (n=180), however the final sample exceeded this calculation (n=280).[16] For the sociodemographic characterization and collection of obstetric data from the final sample, a questionnaire was created by the researchers. In addition to the sociodemographic characterization questionnaire, pregnant women answered the FPQLI-PWV, adapted version, and the WHOQOL-Bref.

For the psychometric analysis of FPQLI-PWV, adapted version, internal consistency, dimensionality, convergent construct validity and discriminant construct validity were assessed. Internal consistency was assessed using Cronbach's alpha for the total score and domains of FPQLI, adapted version, considering that values above 0.70 reflect a high degree of item internal consistency.[17]

The FPQLI-PWV dimensionality was assessed using confirmatory factor analysis (CFA) in order

to test or confirm whether the data fit the suggested four-domain model.

To assess the convergent construct validity, a correlation was performed between the domains of FPQLI-PWV, adapted version, and the WHOQOL-Bref. Discriminant construct validity was assessed by comparing the FPQLI-PWV scores, adapted version, for pregnant women with the variables: planned pregnancy (yes vs no), desired pregnancy (yes vs no), physical discomfort (yes vs no), emotional discomfort (yes vs no), gestational trimester (first, second and third) and parity (none, one or two or more). Data obtained through the application of the instruments were organized and typed in Microsoft Windows® Excel, 2018. Data processing was performed using the R® statistical package, version 22.0.0.0, to calculate the descriptive, dispersion (standard deviation) and psychometric analyses. For the statistical tests, a significance level of 5% was considered.

Content validity was assessed using the Content Validity Index (CVI) and the Content Validity Coefficient per item (CVCi). The CVI score was calculated through the sum of agreement of items marked with the score by "3" or "4" by judges.[18] Items that received a score of "1" or "2" were revised or eliminated. The CVCi value should be greater than 0.78.[16,19] The CVI value for the total score was 0.80 and, preferably, greater than 0.90, thus having a minimum agreement rate of 80% among judges.[18,20]

For the CFA, the following indices of fit to the model were assessed: Goodness of Fit Index (GFI) ≥ 0.80; Root Mean Square Error Approximation (RMSEA) ≤ 0.08; Adjusted Goodness of Fit Index (AGFI) ≥ 0.90; and chi-square < 0.05.[21]

According to the Shapiro-Wilk test, the variables did not show parametric distribution. Therefore, to assess the convergent construct validity, Spearman's correlation test was applied, considering the following correlation values: below 0.30, weak correlation; between 0.30 and 0.50, moderate correlation; above 0.50, strong correlation.[22] Considering the hypothesis of positive correlation and moderate to strong intensity.

To assess discriminant construct validity, the non-parametric Mann-Whitney test was used for comparing the distribution of the QoL score between two independent groups. The Kruskal-Wallis non-parametric test was used to compare the distribution of the QoL score between more than two independent groups.

The study observed all ethical aspects determined in Resolution 466/12.[23] The project was approved by the *Universidade Guarulhos*' Research Ethics Committee, under Opinion 3,153,436 and CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) 00894818.8.30010086. All participants signed the Informed Consent Form (judges and pregnant women).

Results

In content validity analysis of FPQLI-PWV by a committee of judges, a CVI of 0.94 and a CVCi ranging from 0.73 to 1.00 were identified. The agreement rate among judges was 84.2%. Only one item obtained a low agreement value from the judges (0.73), (item 10 "*Sua possibilidade de viver tanto quanto você gostaria*"). Five (5) items had a value of 0.80 and eight (8) a value of 0.87. The other values were ≥ 0.90. Although item 10 presented a CVI value below the adopted normality parameter, it was decided to keep it unchanged, as the CVI value was close to the adopted reference value. Therefore, the item was kept for assessment in the pre-test stage. In the pre-test stage, the FPQLI-PWV was answered by 10 pregnant women who did not report difficulty in understanding the items. Therefore, the final version of FPQLI-PWV, consisting of 36 items, was applied to 280 pregnant women at usual risk. The sociodemographic profile of the sample can be outlined as follows: mean age of 25.90 ± 6.00, ranging from 18 to 45 years; 130 (46.4%) self-reported being brown; 224 (80.6%) with secondary education; 249 (88.9%) with a partner; 132 (48.5%) Evangelical; and 177 (63.2%) without paid activity. Obstetric characteristics define that 101 (36.1%) were primiparous, 238 (85%) never

had an abortion and 102 (36.4%) had one child or more. At the time of data collection, 130 (46.4%) of pregnant women were in the third trimester of pregnancy: 77 (27.5%) in the first and 73 (26.1%) in the second. Half of them, 140 (50.0%), planned the pregnancy, however the majority 235 (83.9%) accepted the children, as well as their partners, who accepted more than their partners, 273 (97.5%). With regard to physical and emotional discomfort resulting from pregnancy, 164 (58.6%) of pregnant women complained of some physical discomfort and 132 (47.1%) had some emotional complaint. Table 1 presents the descriptive statistics of FPQLI-PWV. The mean total QoLI was 22.9 (SD = 4.4). The highest mean in the QoLI Family domain was 27.3 (SD = 4.6) and the lowest mean in the QoLI Socioeconomical domain was 19.70 (SD = 5.7).

Table 1. Descriptive statistics of the Ferrans and Powers Quality of Life Index adapted for pregnant women (FPQLI-PWV) by domain and overall (n=280)

	Mean	Standard deviation	Median	Minimum	Maximum
Health/Functioning QoLI*	21.9	4.9	22.7	6.4	30.0
Socioeconomical QoLI	19.7	5.7	19.8	1.3	30.0
Psychological/Spiritual QoLI	25.1	5.3	27.4	5.0	30.0
Family QoLI	27.3	4.6	29.0	0.0	30.0
Total QoLI	22.9	4.4	23.9	7.7	30.0

*Quality of Life Index.

Reliability was assessed using Cronbach's alpha, values above 0.70 were identified for all domains and a total score ranging from 0.78 to 0.87 between domains and 0.95 for the total score (Table 2).

Table 2. Reliability result of FPQLI, adapted for pregnant women (n=280)

Domains	Cronbach's alpha coefficient	Number of items
Health and Functioning	0.87	15
Socioeconomical	0.78	8
Psychological/Spiritual	0.90	7
Family	0.86	6
Overall QoLI	0.95	36

The CFA identified in the four-factor model the following indices of fit to the model: GFI = 0.95, RMSEA = 0.15, AGFI = 0.98, $\chi 2$ value < 0.001. The results of the factor loadings of the four-factor model can be found in table 3.

Table 3. Results of the factor loadings of FPQLI-PWV confirmatory factor analysis (n=280)

Item	Factors			
	Health	Socioeconomical	Psychological	Family
QS1	0.65			
QS2	0.66			
QS3	0.55			
QS4	0.48			
QS5	0.82			
QS6	0.83			
QS7	0.65			
QS8	0.72			
QS9	0.78			
QS10	0.69			
QS14	0.77			
QS19	0.77			
QS20	0.58			
QS21	0.60			
QS28	0.71			
QS16		0.84		
QS18		0.72		
QS22		0.68		
QS23		0.77		
QS24		1.00		
QS25		0.99		
QS26		0.60		
QS27		0.74		
QS30			0.83	
QS31			0.90	
QS32			0.84	
QS33			0.96	
QS34			0.91	
QS35			0.82	
QS36			0.86	
QS11				0.71
QS12				0.81
QS13				0.91
QS15				0.93
QS17				0.69
QS29				0.84

In the convergent construct validity analysis, a positive correlation of moderate to strong intensity was identified between the total score and domains of FPQLI for pregnant women with WHOQOL-Bref (p<0.001) (Table 4).

Discriminant construct validity analysis did not reveal statistically significant differences between the scores of FPQLI-PWV, adapted version, and the variables planned pregnancy (overall QoLI = 23.8; p = 0.705), desired pregnancy (overall QoLI = 23.9; p = 0.135), physical discomfort (overall QoLI

Table 4. Result of the convergent construct validity of FPQLI adapted for pregnant women (n=280)

FPQLI domains adapted for pregnant women	WHOQOL-Bref domains				
	Physical p (*p-value*)	Psychological p (*p-value*)	Social p (*p-value*)	Environment p (*p-value*)	Overall QoL p (*p-value*)
Health/Functioning	0.65 (p<0.001)*	0.73 (p<0.001)*	0.66 (p<0.001)*	0.68 (p<0.001)*	0.80 (p<0.001)*
Socioeconomical	0.40 (p<0.001)*	0.49 (p<0.001)*	0.51 (p<0.001)*	0.55 (p<0.001)*	0.57 (p<0.001)*
Psychological/Spiritual	0.42 (p<0.001)*	0.68 (p<0.001)*	0.63 (p<0.001)*	0.57 (p<0.001)*	0.68 (p<0.001)*
Family	0.40 (p<0.001)*	0.50 (p<0.001)*	0.65 (p<0.001)*	0.53 (p<0.001)*	0.62 (p<0.001)*
Overall QoLI	0.58 (p<0.001)*	0.72 (p<0.001)*	0.71 (p<0.001)*	0.70 (p<0.001)*	0.80 (p<0.001)*

*Spearman's correlation test (p<0.05)

= 23.7; p = 0.544), emotional discomfort (overall QoLI = 23.7; p = 0.725), gestational trimester (overall QoLI = 23.9; p = 0.566) and parity (overall QoLI = 23.9; p = 0.640).

Discussion

The FPQLI is recognized for its solid fundamental base and has been used in several countries and presents psychometric characteristics that enable it as a reliable instrument to measure QoL, both in healthy people and in those with a specific health problem.[7,24]

The findings of this study were discussed in the light of results of the works of the two versions in Portuguese already published, due to similarity of cultural characteristics of the population where they were developed.[6,24]

The analysis of the means of overall FPQLI-PWV scores and by domains, identified in this study, are similar to those found in another study, developed with the same instrument, but adapted for wounds.[24] The overall QoL index was close in both studies (22.60 and 22.90) as well as the Family domain means.[23] The domain with the most discrepant results, when comparing these studies, was Socioeconomical, which obtained means of 23.20 and 19.70, respectively, demonstrating that pregnant women assess their QoL as worse in this domain. On the other hand, the result of the Psychological/spiritual domain was higher in the current study (23.30; 27.30).[24]

Content validity showed that the agreement rate of judges was 84.20%, so no item was excluded since a level of 80% was considered adequate. A similar result was identified in the construction and validity study of FPQLI for wounds.[24]

FPQLI-PWV internal consistency was assessed using Cronbach's alpha coefficient and the results found attest to the instrument's reliability. Compared to the results of this study, in the FPQLI, wound version, lower values were identified with Cronbach's alpha for the total score of 0.90 with variation between domains from 0.55 to 0.88.[24] The CFA identified a satisfactory fit to the four-domain model. In the FPQLI, wound version, the fit indices to the model showed a better fit (GFI of 0.77; RMSEA = 0.08; $\chi^2 < 0.05$).[25]

The Cronbach's alpha results of the current study are close to those found in the study of the original version.[5] The Health/Functioning domain obtained equal values (0.87) as well as the Psychological/Spiritual domain (0.90). The overall QoLI alpha was slightly higher in FPQLI-PWV (0.95;0.93). In the Socioeconomic domain there was a difference for less (0.78;0.82) and in the Family it was greater (0.86; 0.77).[6] Comparing the alpha values of this study with the FPQLI version for wounds, the results showed higher values in the pregnant version in all domains, except for Health/Functioning, where it was slightly lower (0.87;0.88).[24] The most discrepant result was in the Family domain (0.86;0.55), much lower in the wounded version.[24]

Convergent construct validity was assessed by analyzing the correlation between the FPQLI-PWV domains and the WHOQOL-Bref domains. In this study, a positive correlation of moderate to strong

intensity was identified between the total score and domains of FPQLI for pregnant women with WHOQOL-Bef ($p<0.001$). This result indicates that the higher the FPQLI score, the higher the WHOQOL-Bref score, indicating that the FPQLI measures pregnant women's QoL. Convergent construct validity was assessed in the FPQLI, wound version, as well in comparison with the WHOQOL-Bref. A weak and strong correlation was identified between the instruments' domains, except between the Family and Physical domains of FPQLI with the WHOQOL-Bref.[24]

In discriminant validity analysis, the hypotheses were tested that the QoL of pregnant women who planned pregnancy would be higher than those who did not, as well as pregnant women who did not complain of discomfort would have a higher QoL than those who did not, which did not was evidenced by the statistical results.

In QoL assessment in the gestational trimesters, no statistically significant difference was observed, a result that differs from the results found in a study with pregnant women that identified a statistically significant difference in the comparison between gestational trimesters.[3]

This study presents as a limitation the cross-sectional design, which did not allow assessing scale responsiveness (sensitivity to change).

Conclusion

The FPQLI, adapted version, proved to be reliable and valid for use in pregnant women, proving to be a promising tool for health professionals and researchers to identify QoL in pregnant women. Other studies with pregnant women should be developed, allowing the comparison of results and attesting their validity for application in this population.

Collaborations

Fernandes RA, Oliveira PM and Freitas NO contributed to the project design, data analysis and interpretation, article writing, relevant critical review of intellectual content and approval of the final version to be published.

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