Psychometric properties of the Farsi translation of Maternal Postpartum Quality of Life Questionnaire(MAPP-QOL).

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Abstract

Background and Objective Many studies have been conducted in Iran on the postpartum quality of life, and the majority have used the general quality of life questionnaire. With a specific tool in this context, the dimensions of maternal postpartum quality of life can be more accurately determined. The present study was conducted to determine psychometric properties and validation of the Farsi version of Maternal Postpartum Quality of Life (MAPP-QOL).

Materials and Methods The present methodological study was conducted in 2018. The original version of MAPP-QOL was translated into Farsi by backward method. In a cross-sectional study, the Farsi version was completed by 407 eligible postpartum women with 1-3 weeks infant, aged 18 to 47 living in the city of Tehran. Reliability of the questionnaire was assessed using Cronbach's alpha coefficient and retest. For construct validity, exploratory and confirmatory factor analyses were used.

Results The MAPP-QOL showed good content validity; content validity ratio (CVR) ranged from 0.6 to 1.00 and content validity index (CVI) ranged from 0.7 to 1.00. Using exploratory factor analysis, five factors were extracted, including Socioeconomic; Relational/Family-Friends; Psychological/Baby; and Health & Functioning ; relational/spouse-partner. which together explained 78.84% of total variance. After modifications of CFA, all goodness of fit indices confirmed the model fit ($\chi^2 = 1677.57$; $N = 200$; $df = 644$, $P < 0.001$; PCFI = 0.831; PNFI = 0.786; CMIN/DF = 2.604; RMSEA = 0.051; IFI = 0.908, CFI = 0.907) . The Cronbach's alpha, McDonald's omega, Composite reliability and maximum reliability H of the five extracted factors were excellent ($0.9 <$). Also the AIC values of factors were good (between 0.721 to 0.859) . All of factors had an convergent and divergent validity.

Conclusion Appropriate psychometric properties and factor construct of the questionnaire were confirmed. Hence, MAPP-QOL can be used as a suitable tool in Iranian postpartum women.

Introduction

Quality Of Life (QOL) is the individuals' understanding of their situation in life according to their culture, value, attitude, goals, expectations and standards (Chinweuba et al., 2018), and is used in many studies in the field of health cares (Bonomi et al., 2000). The World Health Organization has defined QOL as "A person's feeling about his current situation according to his expectations and ideals, and the value and cultural system in which he lives" (Peterson & Bredow, 2009).

The postpartum period refers to a period from one hour after to six weeks after childbirth, during which time, the woman's body returns to the pre-pregnancy state (The WHOQOL Group, 1998), even though returning to pre-pregnancy state may take as long as two years in some women (C.-Y. and Q., 2008). In fact, no event like childbirth requires rapid changes in the mother's body to become compatible with the maternal role, and quality of life is also affected as one of the indicators following childbirth (Carlander et al., no date; Prick et al., 2015; Petrou et al., 2017).

Postpartum is a critical period for a woman that may emerge with increasing complications and impaired quality of life. A mother experiences changing physical and psychological conditions during postpartum. Additional responsibilities of providing neonatal cares as well as her role in the family, and inadequate sleep and fatigue

make her spend less time on herself, which leads to demoralization and reduced quality of life after childbirth (MacArthur et al., 2002; Zhou, Wang and Wang, 2009).

Measurement of QOL has developed in the last 30 years, and has now become a formal discipline with specific theoretical and methodological structural bases (MOT, 2002). QOL has been increasingly recognized as an important standard of outcome in studies on treatment and evaluation of services (Wong et al., 2005). Therefore, evaluation of postpartum QOL is essential to health promotion planning (Akbarzadeh et al., 2012).

Very few tools have been designed for the evaluation of postpartum QOL, one of which is Mother-Generated Index. This is almost an appropriate questionnaire for the evaluation of postpartum QOL, but does not include certain dimensions such as breastfeeding and maternal fatigue caused by the infant cares (Symon, McGreavey and Picken, 2003).

PQOL is a Chinese Postpartum QOL questionnaire that appears to be compatible with Chinese women's culture, and perhaps it needs to be further developed by assessing its psychometric properties in other countries (Zhou, Wang and Wang, 2009).

The majority of studies conducted in Iran on postpartum quality of life have used general quality of life tools after childbirth. In fact, the need is felt for a specific Farsi questionnaire with acceptable validity and reliability. The present study was conducted to translate MAPP-QOL and assess its psychometric properties in Iran.

Materials And Methods

The present methodological study was conducted in 2018 on women living in the city of Tehran, using convenient sampling method. Sample size was determined according to the rule of thumb, and 407 women aged 18 to 47 were recruited (207 and 200 participants separately for exploratory and confirmatory factor analysis respectively). According to the inclusion criteria, 18–47 year-old women with 1–3 weeks, their baby was alive, they were able to read and understand the Farsi language, they signed the written consent form, since their childbirth were included. Physically or mentally disabled women and those with severe chronic diseases were excluded.

Data were collected using a two-part questionnaire consisting of a demographic part (based on education, age, occupation, type of delivery) and MAPP-QOL part.

Psychometric properties of MAPP-QOL were assessed by Hill et al. (2006) in America on 184 women in their first and third postpartum weeks. In their study, tool-making was carried out using France's conceptual model of Quality of Life Index (QLI) and its dimensions (Hill et al., 2006). The questionnaire designer was contacted by email, and his permission to translate the questionnaire and determine its psychometric properties was obtained. In the second stage, the Farsi version of MAPP-QOL was prepared according to the protocol declared by WHO, which included the following (WHO, 2015).

Translation of questionnaire into Farsi

The English version of the questionnaire was translated separately and independently into Farsi by two English language experts, and all Farsi equivalents of English words and sentences were recorded. One of the translators selected was familiar with medical sciences and medical terminologies as well as the concepts of postpartum

quality of life, and the other had no knowledge of medical sciences or medical terminologies. At this stage, translators were asked to remain true to the English text while translating the questionnaire into Farsi, and avoid literal translation. Ultimately, two independent Farsi translations of MAPP-QOL were obtained.

Analysis and integration of Farsi translations

The Farsi translations and their recorded equivalents were reviewed by the research team and translators. After assessing both translations and resolving the differences between them through discussions, and the taking into account all equivalent options for words and terminologies, a single Farsi version of the questionnaire was prepared.

In the Five stage, validity of MAPP-QOL and its psychometric properties were assessed:

Content validity

Ten experts experienced in the field of quality of life, the postpartum period, and measures design were consulted to determine the content validity, Both qualitative and quantitative methods and after qualitatively evaluating in terms of grammar, use of the right words, placement of the items, and proper scoring, modifications were applied based on their feedback) Necessity(.

The MAPP-QOL showed good content validity; content validity ratio (CVR) ranged from 0.6 to 1.00 and content validity index (CVI) ranged from 0.7 to 1.00.

Face Validity

Face validity was evaluated (qualitatively and quantitatively) for relevancy. In the qualitative evaluation, the Farsi version of the questionnaire was given to 20 postpartum women of different socioeconomic standing for preliminary assessment in terms of understandability of items and concepts, and interpretation and understanding of the subjects, who were asked to comment on legibility, clarity, writing style, grammar, dictation, and ease of completion, and thus, ambiguous points in the Farsi version were rectified who had been referred to four selected centers for their newborns' postpartum women with 1–3 weeks infant. The levels of difficulty, ambiguity, and irrelevancy of each item were assessed, and proper modifications were applied. In the next part, the quantitative item impact method was used to determine the importance of each item.

Construct validity assessment

The construct validity of MAPP-QOL was assessed through Maximum-Likelihood Exploratory Factor Analysis (MLEFA) method and with Promax rotation. Sample adequacy was estimated through the Kaiser-Meyer-Olkin (KMO) and the Bartlett's tests. KMO values of 0.7–0.8 and 0.8–0.9 were interpreted as good and excellent, respectively. Sample size for factor analysis was estimated using the rule of thumb in which considers 200 participants adequate (MacCallum et al., 1999). Thus, 200 participants were recruited for Exploratory Factor Analysis (EFA) and 200 for Confirmatory Factor Analysis (CFA). A convenience sample of newly delivered mothers was approached to participate at 10 medical centers in the Tehran (Iran).

The presence of an item in a latent factor was determined based on a factor loading of almost 0.3, which was estimated using the following formula: $CV = 5.152 \div \sqrt{(n - 2)}$, where CV was the number of extractable factors and n was the sample size (Fok, 2011). The number of latent factors was estimated using Horn's parallel analysis (Çokluk and Koçak, 2016). Next, items with communalities less than .2 were excluded from EFA (Hahs-Vaughn, 2016). For assessment of the structural factors CFA was conducted using the maximum-likelihood

method and the most common goodness of fit indices. The model fitness was assessed according to Root Mean Square of Error of Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI), Normed Fit Index (NFI), Goodness of Fit Index (GFI), and Adjusted Goodness of Fit Index (AGFI).

Convergent and divergent validity assessment

The convergent and divergent validity of MAPP-QOL were estimated using Fornell and Larcker's approach and through the Average Variance Extracted (AVE), the Maximum Shared Squared Variance (MSV) and Composite reliability (CR). An AVE of more than 0.5 reflects suitable convergent validity and an AVE greater than MSV confirm discriminant validity (Hair et al., 2016)

Reliability assessment

The internal consistency of MAPP-QOL was assessed via calculating Cronbach's alpha, McDonald's omega and average inter-item correlation (AIC) (Ebadi et al., 2017). Cronbach's alpha and McDonald's omega value of more than 0.7 (25) and AIC value of 0.2–0.4 (37) were considered acceptable. CR is a substitute for Cronbach's alpha in structural equation modeling. CR of more than 0.7 is acceptable. Finally, Maximum reliability H was calculated. The H value of greater than 0.8 was also exceed for items (GR Hancock, 2001).

Normal distribution of the data, outliers, and missing data

In first univariate distribution of the data was estimated using the skewness and the kurtosis, while multivariate distribution of the data was assessed using the Mardia coefficient. Moreover, the existence of multivariate outliers was assessed through Mahalanobis distance. The missing values were assessed through multiple imputations and then, missing values were replaced with the mean of participants' responses. All data analyses were performed using the SPSS-AMOS₂₄, JASP_{0.11.1} and the SPSS R-Menu_{2.0}.

Ethical Considerations

Permission was first obtained from the questionnaire designer for its translation and psychometric assessment. After introducing the study, postpartum women voluntarily completed MAPP-QOL. The study objectives were explained, and participants were assured of confidentiality of all data.

Results

Participants were aged between 18 and 47 years, with mean age of 29.21 ± 5.68 years, end of pregnancy 38.34 ± 2.08 weeks, and parity 1.56 ± 0.89 . Of the infants born, 47.4% were girls and 52.6 were boys. 58.5% of childbirths were vaginal and 41.5% by cesarean. Of the infants born, 85% were breastfed, 13% were fed on powdered milk, and 4% on both. 69% of women were housewives and 31% working, 57.2% had university education and the rest diploma or lower.

In MLEFA, KMO test value was 0.918 and Bartlett's test value was 21350.080 ($P < 0.001$). MLEFA revealed a five-factor structure for MAPP-QOL with the five factors of Socioeconomic; Relational/Family-Friends; Psychological/Baby; and Health & Functioning ; relational/ spouse-partner. The eigenvalues of these five factors were 7.752, 6.868, 6.506, 5.148, and 3.453, respectively. These five factors explained 78.84% of the total variance of the MAPP-QOL (Table 1).

Table 1
Exploratory factors extracted from items of MAPP-QOL

Factor	Q _n . Item	Factor loading	h ²	%Variance	Eigenvalue	Internal consistency
	How satisfied are you with:					
Socioeconomic	36. Your economic or financial capacity?	.965	.931	20.40	7.752	α (CI95%): .973 (.968 to .976) Ω : .973 AIC: .785
	35. Your materialistic possessions?	.961	.924			
	32. Your ability to meet financial?	.960	.925			
	31. Your financial independence?	.919	.828			
	38. Your husband's employment?	.907	.812			
	29. Your home/apartment/place where you live?	.861	.749			
	33. Your access to medical care?	.816	.647			
	34. Your access to transportation?	.810	.644			
	30. Your neighborhood?	.809	.666			
	39. Your own employment?	.769	.654			
Relational/Family-Friends	22. Time for maintaining the household?	.974	.932	18.07	6.868	α (CI95%): .960 (.954 to .965) Ω : .966 AIC: .741
	24. Time for husband/partner?	.973	.933			
	18. Your ability to meet family responsibilities?	.957	.912			
	15. The emotional support you get from: your extended family?	.936	.865			
	23. Time for friends/relatives?	.926	.884			
	25. Time for yourself?	.865	.813			
	16. your friends or other people?	.858	.751			

Factor	Q _n . Item	Factor loading	h ²	%Variance	Eigenvalue	Internal consistency
	20. The assistance with baby care and other children?	.741	.552			
	21. Time for children?	.539	.283			
Psychological/Baby	12. Your life in general?	.969	.932	17.12	6.506	α (CI95%): .969 (.964 to .973) Ω : .971 AIC: .805
	11. Your happiness in general?	.950	.931			
	19. Your baby's health?	.938	.768			
	10. Your peace of mind?	.933	.905			
	28. Your day-to-day life's routine?	.924	.808			
	4. Amount of control you have over your life?	.894	.842			
	13. The amount of worries in your life?	.825	.754			
	26. Your ability to feed your new baby?	.762	.567			
Health & Functioning	3. Amount of energy for everyday activities?	.915	.834	13.54	5.148	α (CI95%): .947 (.939 to .955) Ω : .950 AIC: .721
	8. Your surgical incision or episiotomy?	.902	.791			
	5. Your ability to take care of yourself without help?	.893	.825			
	7. Your breasts?	.884	.758			
	2. The amount of pain that you have?	.876	.765			
	9. Your sex life?	.845	.807			
	1. Your health?	.665	.397			
relational/spouse-partner	14. The emotional support you get from: your husband/partner?	.978	.947	9.08	3.453	α (CI95%): .960 (.953 to .966) Ω : .961 AIC: .859
	17. Your relationship with your husband/partner?	.966	.935			

Factor	Q _n . Item	Factor loading	h ²	%Variance	Eigenvalue	Internal consistency
	27. Your husband/partner's health?	.919	.832			
	37. Your overall environment /surroundings? (no yelling, fights, squabbles)	.848	.754			

Table 1: Exploratory factors extracted from items of MAPP-QOL

After modifications of CFA, all goodness of fit indices confirmed the model fit ($\chi^2 = 1677.57$; $N = 200$; $df = 644$, $P < 0.001$; PCFI = 0.831; PNFI = 0.786; CMIN/DF = 2.604; RMSEA = 0.051; IFI = 0.908, CFI = 0.907) (Table 2 and Fig. 1).

Table 2
The fit model indices of CFA of MAPP.QOL

Indices* Model	χ^2	df	P value	CMIN/DF	RMSEA	PCFI	PNFI	IFI	CFI
First-order	1677.57	644	< .001	2.604	.051	.831	.786	.908	.907
*Acceptable values are as follows: > 0.5 for PNFI, PCFI, AGFI; > 0.9 for CFI and IFI; > 0.08 for RMSEA; and > 0.5 for CMIN/DF									

Table 2. The fit model indices of CFA of MAPP.QOL

Figure 1: The final structural model of MAPP-QOL

For evaluating of convergent and divergent validity, As Table 3 shows, the AVE of factors were more than 0.5 that it showed all of factors have a good convergent validity. Also values of MSV in the other factors were less than AVE that divergent validity was confirmed (Table 3 and Fig. 1).

Table 3
Convergent, divergent validity and composite reliability indices of the Persian MAPP-QOL

Factor	CR	AVE	MSV	MaxR(H)
Socioeconomic	0.970	0.766	0.034	0.982
Relational/Family-Friends	0.964	0.756	0.033	0.984
Psychological/Baby	0.970	0.802	0.223	0.982
Health & Functioning	0.949	0.731	0.223	0.959
relational/spouse-partner	0.961	0.860	0.015	0.975

The Cronbach's alpha, McDonald's omega, CR and maximum reliability H of the five extracted factors were excellent (0.9<). Also the AIC values of factors were good (between 0.721 to 0.859) (Tables 1 and 3).

Table 3. Convergent, divergent validity and composite reliability indices of the Persian MAPP-QOL

Discussion

Results confirmed validity and reliability of the Iranian version of the MAPP-QOL. It appears that this questionnaire can facilitate the postpartum care and help evaluate women's quality of life and identify potential problems in this important period. It also can be used to determine the factors associated with women's quality of life. "postpartum quality of life assessment" addresses reproductive rights, to which other specific measures do not give as much attention (Symon, McGreavey and Picken, 2003; Hill et al., 2006; Huang et al., 2012).

Psychometric assessment of this questionnaire was carried out in 407 Iranian women aged 18 to 47 from different socioeconomic and educational backgrounds from one to three postpartum weeks. The overall purpose of this study was to Psychometric assessment that could be used to assess a mother's quality of life during the early postpartum period.

Inter-cultural compatibility is an essential process in translation and validation of a questionnaire (Guillemin, Bombardier and Beaton, 1993). The face validity of the Farsi version of the MAPP-QOL questionnaire appeared to be satisfactory. The majority of the comments raised by the participants were clearly related to the experience of childbirth and motherhood (e.g., comments relevant to 'Infant Care', breast feeding, "Sleep and fatigue" and relationship with family and husband). The present study results showed that MAPP-QOL has an excellent validity and reliability for use in postpartum women, and a large sample size increases credibility of the study and generalizability to a larger population. The factor analysis, for the bulk of items, supported the original five conceptual domains. Internal consistency of the translated questionnaire in five subscales of MAPP-QOL with Cronbach's alpha of 0.907 and appropriate reliability indicate its measurement stability and compatibility of items with each other (Parsian and AM, 2009). In the present study, the five extracted factors together explained 78.84% of the total test variance. In a study by (Hill et al., 2006) who designed the original version of this questionnaire, (given that this construct had acceptable validity), internal consistency reliability in five subscales of MAPP-QOL had Cronbach's alpha of 0.96, and the five extracted factors together explained 59.7% of total test variance. In the above questionnaire, exploratory and confirmatory factor analyses were used, and in the original version, exploratory and Spearman correlation coefficient, and both translated and original versions had favorable validity and reliability.

The designer of MAPP-QOL suggested that this study should be conducted in larger populations with diverse subjects (Hill et al., 2006). In the present study, attempt was made to have a diverse population from all age, educational and cultural backgrounds.

MAPP-QOL was translated into Farsi, with confirmed validity and reliability for use in epidemiological and clinical postpartum studies. It is recommended to be used by those involved in postpartum care, such as midwives in health centers. Problem cases of women can be found using the results from studies and assessments of postpartum quality of life, and thus provide necessary counseling and intervention to solve problems that may occur as a result of reduced postpartum quality of life of women.

Conclusion

In the present study, psychometric features and factor structure of the questionnaire were confirmed. Therefore, MAPP-QOL can be used as an appropriate tool for assessing quality of life of postpartum women, and to identify reduction in the quality of life in this period, so that women can benefit from healthcare services.

Abbreviations

MAPP-QOL

Maternal Postpartum Quality of Life

QOL

Quality of Life

EFA

Exploratory Factor Analysis

KMO

Kaiser-Meyer-Olkin Index

ICC

intra-class correlation coefficient

R²

square of multiple correlations

SEM

Structural Equation Modeling

SRMR

Standardized Root Mean Square Residual

CFI

Comparative Fit Index

NFI

Normed Fit Index

GFI

Goodness of Fit Index

AGFI

Adjusted Goodness of Fit Index

Declarations

Ethics approval and consent to participate:

Permission was first obtained from the questionnaire designer (Email is available for permission). After introducing the study, postpartum women voluntarily completed MAPP-QOL. The study objectives were explained, and participants were assured of confidentiality of all data. All participants signed the consent forms. Code of Ethics received from Shahid Beheshti University of Medical Sciences: IR.SBMU.RETECH.REC.1397.1343

Participate:

Women read the written consent form before filling in the questionnaire .After introducing the study, postpartum women voluntarily completed MAPP-QOL. The study objectives were explained, and participants were assured of confidentiality of all data.

Consent for publication:

Not applicable.

Availability of data and materials:

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

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Authors' contributions

MT , GO , NK , MA and NM all made substantial contributions to conception and design of the paper, were involved in drafting the manuscript and revising it critically for intellectual content and have given final approval of the version to be published.

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Figures

Figure 1

The final structural model of MAPP-QOL