Original Article

The Turkish Adaptation of the COVID-19 Perinatal Perception Questionnaire: Validity and Reliability Study

COVID-19 Perinatal Algı Ölçeği'nin Türkçe'ye Uyarlanması: Gerçeklilik ve Güvenirlik Çalışması

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ABSTRACT

Objective: Women during the perinatal period are more vulnerable to environmental stressors. However, there is no Turkish scale that evaluates the perinatal perception of coronavirus disease 2019 (COVID-19) pandemic-related stressors. This methodological study aimed to adapt the COVID-19 Perinatal Perception Questionnaire (COVID-19-PPQ) to Turkish.

Methods: The sample consisted of 150 pregnant women and 150 postpartum women in Turkey. Data were collected using an individual information form, pregnancy scale and postpartum scale of the COVID-19-PPQ, the Fear of COVID-19 Scale (FCV-19S), and the Edinburgh Postpartum Depression Scale (EPDS). Validity was assessed with language, content, and construct validity. Cronbach's alpha, equivalent-form reliability, and item analysis were used for reliability.

Results: The pregnancy scale fits well with eight items, while the postpartum scale fits well with ten items. Each scale has a three-factor structure. Moreover, the scales have acceptable fit index values, confirming the model. The pregnancy scale has a Cronbach's alpha of 0.85, while the subscales "risk of infection," "contact," and "future" have Cronbach's alpha values of 0.74, 0.65, and 0.87, respectively. The postpartum scale has a Cronbach's alpha of 0.81, while the subscales "first postpartum week," "COVID-19 measures," and "fear for infection" have Cronbach's alpha values of 0.84, 0.84, and 0.90, respectively. Significant correlations between the pregnancy scale, the FCV-19S (r=0.459, p<0.001), the postpartum scale and the EPDS (r=0.166, p=0.042) scores indicate that the scale is reliable.

ÖZ

Amaç: Perinatal dönemde kadınlar çevresel stresörlere karşı daha savunmasızdır. Ancak koronavirüs hastalığı 2019 (COVID-19) pandemisine bağlı stresörlere ilişkin perinatal algıyı değerlendiren Türkçe bir ölçek bulunmamaktadır. Bu metodolojik çalışmada COVID-19 Perinatal Algı Ölçeği'nin (C-19PAÖ) Türkçe'ye uyarlanması amaçlanmıştır.

Yöntemler: Örneklemi Türkiye'de yaşayan 150 gebe ve 150 postpartum kadın oluşturmuştur. Veriler bireysel bilgi formu, C-19PAÖ'ye ait gebelik ölçeği ve postpartum ölçeği, COVID-19 Korku Ölçeği (C-19KÖ) ve Edinburgh Postpartum Depresyon Ölçeği (EPDÖ) kullanılarak toplanmıştır. Ölçek geçerliliği dil, içerik ve yapı geçerliliği ile değerlendirilmiştir. Ölçek güvenirliği için Cronbach alfa, eşdeğer form güvenirliği ve madde analizi kullanılmıştır.

Bulgular: Gebelik ölçeği sekiz madde ile, postpartum ölçeği ise on madde ile iyi uyum sağlamıştır. Her ölçek üç faktörlü bir yapıya sahiptir. Ayrıca, ölçekler modeli doğrulayan kabul edilebilir uyum indeksi değerlerine sahiptir. Gebelik ölçeğinin Cronbach alfa değeri 0,85 iken, "enfeksiyon riski", "temas" ve "gelecek" alt ölçeklerinin Cronbach alfa değerleri sırasıyla 0,74, 0,65 ve 0,87'dir. Postpartum ölçeğinin Cronbach alfa değeri 0,81 iken "doğum sonrası ilk hafta", "COVID-19 önlemleri" ve "enfeksiyon korkusu" alt ölçeklerinin Cronbach alfa değerleri sırasıyla 0,84, 0,84 ve 0,90'dır. Gebelik ölçeği ile C-19KÖ (r=0,459, p<0,001), postpartum ölçeği ile EPDÖ (r=0,166, p=0,042) puanları arasındaki anlamlı korelasyonlar ölçeğin güvenilir olduğunu göstermektedir.

ABSTRACT

Conclusion: The Turkish version of the COVID-19-PPQ is valid and reliable for Turkish pregnant and postpartum women.

Keywords: COVID-19 Perinatal Perception Questionnaire, factor analysis, validity, pandemic, reliability, scale

ÖZ

Sonuç: CV-19PAÖ Türkçe versiyonu, Türk gebeler ve postpartum dönemdeki kadınlar için geçerli ve güvenilirdir.

Anahtar Sözcükler: COVID-19 Perinatal Algı Ölçeği, faktör analizi, geçerlilik, pandemik, güvenilirlik, ölçek

Introduction

The coronavirus outbreak was declared as a pandemic in March 2020 (1). The pandemic caused health problems and negatively affected societies biopsychosocially (2,3). The pandemic may affect perinatal women more because they are more vulnerable to environmental stressors (4-6). In addition, pregnant women are more affected by the adverse consequences of coronavirus disease 2019 (COVID-19) concerning decreased pulmonary capacity in pregnancy, altered immunity, and response to viral infections (7). According to the Centers for Disease Control and Prevention, pregnant women are more likely to be hospitalized, be admitted to intensive care units, receive mechanical ventilation support, and die from COVID-19 than women of reproductive age with COVID-19 (8). COVID-19 obstetric complications in pregnant women result in an increased need for emergency cesarean section and potential neonatal infection (5,7).

In addition to all these adverse conditions, women in the perinatal period are particularly disadvantaged during the COVID-19 pandemic due to more frequent emotional fluctuations and psychological changes (8). Pregnant women experience more mental health problems because they are afraid of contracting the coronavirus and are concerned about the potential effects of the virus on the fetus and newborn. Research has shown that stress, depression, and anxiety are more common among pregnant and postpartum women during the COVID-19 pandemic than before (6,9-13). During this period, almost seven in ten pregnant women experienced anxiety and depression (14,15). The prevalences of anxiety and depression among Turkish pregnant women during the pandemic were 63.9-64.5% and 27.7-56.3%, respectively (3,16).

In the context of perinatal health care during the pandemic, healthcare professionals should physiologically assess women and understand COVID-19-related stressors that affect their mental health. However, there is no Turkish scale to measure the perinatal perception of COVID-19 stressors. The COVID-19 Perinatal Perception Questionnaire (COVID-19-PPQ) was developed by Hulsbosch et al. (6) to determine COVID-19-related stressors affecting prenatal and postnatal Dutch women. This study was evaluated the Turkish validity and reliability of the questionnaire.

Methods

This methodological study was conducted between October 1, 2021, and June 30, 2022, in the antenatal and newborn clinics of a Health Services Practice and Research Hospital in Turkey.

Participants

It is recommended to take a sample of 5 to 10 times the number of items on a scale for adaptation (17). Therefore, the sample consisted of 150 pregnant women and 150 postpartum women admitted to the antenatal and newborn clinics of the hospital.

Inclusion and Exclusion Criteria: The inclusion criteria were; speaking Turkish, living in Turkey, being over 18 years of age, being in the 12th gestational week to 8-10 weeks postpartum (18), having no mental problems (anxiety disorder, depression, severe psychosocial problems, etc.). The exclusion criteria were; failing to fill out the data collection tools and wanting to withdraw from the study.

Data Collection Tools

The Individual Information Form (IIF) was based on a literature review (4-6,11-13,15). The form consisted of two parts, each with 11 items on individual and obstetrical characteristics. Pregnant women filled out the first part, while postpartum women filled out the second part. A pilot study was conducted, and the items were revised based on the results.

The COVID-19 Perinatal Perception Questionnaire (COVID-19-PPQ): The scale was developed by Hulsbosch et al. (6) to measure COVID-19 perinatal perception during pregnancy and postpartum period. The questionnaire allows researchers to determine COVID-19-related stressors. The four-point Likert-type scale consists of 19 items. It has two scales: pregnancy (nine items; min score =0, max score =27) and postpartum (ten items; min score= 0, max score =30). The pregnancy scale has three subscales: risk of infection, contact, and future. The postpartum scale also has three subscales: first postpartum week, COVID-19 measures, and fear of infection. Seven postpartum scale items (3-9) are reverse scored. Higher scores indicate higher rates of negative COVID-19-related stress perceptions during pregnancy and postpartum. The pregnancy and postpartum scales have Cronbach's alpha (α) values of 0.71 and 0.64, respectively (6).

The Fear of COVID-19 Scale (FCV-19S): It was developed by Ahorsu et al. (19). It was adapted to Turkish by Bakioğlu et al. (20). The five-point Likert-type scale consists of seven items. Higher scores indicate greater fear of COVID-19 (min score= 7, max score= 35). The Turkish version's Cronbach's alpha value is 0.84 (20). Cronbach's alpha values were 0.87 (pregnancy) and 0.90 (postpartum period) in the present study.

The Edinburgh Postpartum Depression Scale (EPDS): It was developed by Cox et al. (21), and adapted to Turkish by

Aydin et al. (22). The American College of Obstetricians and Gynecologists (2015) recommends using the EPDS to screen for perinatal depression during pregnancy and postpartum period (23). The instrument consists of ten items, with higher scores indicating a higher risk for depression (min score =0, max score =30) (22). The Turkish version's Cronbach's alpha value is 0.72 (22). The Cronbach's alpha values were 0.84 (during pregnancy) and 0.87 (postpartum period) in the present study.

Ethical Approval

This study was approved by the National Ministry of Health, the Health Services Practice and Research Hospital (approval number: E-93596471-010.01-116695) and Ethics Board (ethics approval number: 2022/02/11). Electronic written consent for this study's use of the scales were taken for the COVID-19-PPQ and the FCV-19S. Informed consent was obtained from all participants included in this study.

Procedure

This study had three stages: language and content validity, implementation, and analysis (Figure 1).

Language and Content Validity: Two translators translated the scale from English into Turkish. A third translator reviewed the original scale and the two translated versions and translated the scale from English into Turkish again. A fourth translator (a native English speaker) translated the document from Turkish back into English (24). Finally, a draft was created.

Lawshe's (25) method was used to assess content validity. Thirteen experts were consulted and asked to rate each item on a scale of 1 to 3 for items clarity/essentiality (1= not clear/essential, 2 =item needs some revision/useful, but not essential, and 3 =very clear/essential) (25). The items were revised based on expert feedback and were evaluated by experts in terms of conformity to Turkish.

Implementation: A pilot study was conducted with 15 pregnant and 15 postpartum women randomly selected based on the inclusion criteria. The sample of the pilot study was not included in the main study. The purpose of the pilot test was to evaluate the intelligibility and relevance of the IIF and the COVID-19-PPQ. After the pilot study, the researchers finalized the scale.

The researchers briefed all women in the antenatal (n=330) and newborn clinics (n=355) about the research purpose and procedure. They explained the inclusion criteria after they were invited to the study. The pregnant women filled out the IIF, the pregnancy scale of the COVID-19-PPQ, the FCV-19S, and the EPDS (n=150). The postpartum women filled out the IIF, the postpartum scale of the COVID-19-PPQ, the FCV-19S, and the EPDS (n=150).

Analysis: The data were analyzed using the Statistical Package for Social Sciences (SPSS, IBM version 26, Chicago, IL, USA) and Analysis of Moment Structures at a significance level of 0.05. Number (n), percentage (%), mean, and standard deviation were used for descriptive statistics. Content and construct validity

were assessed. Cronbach's alpha, equivalent-form reliability, and item analysis methods were used to assess the scale's reliability.

Content validity ratios (CVRs) allow researchers to keep or remove items from a scale. The minimum values of the CVRs and the content validity index (CVI) should be 0.54 because the number of experts was 13. After determining which items to include in the scale, the CVI was computed for the total scale. The CVI is the CVR's average value of the retained items (25).

A confirmatory factor analysis (CFA) was conducted to construct validity. The CFA revealed factor loadings and path coefficients, which should be greater than 0.50 to obtain an acceptable scale structure (26). The ratio of chi-square to the degree of freedom
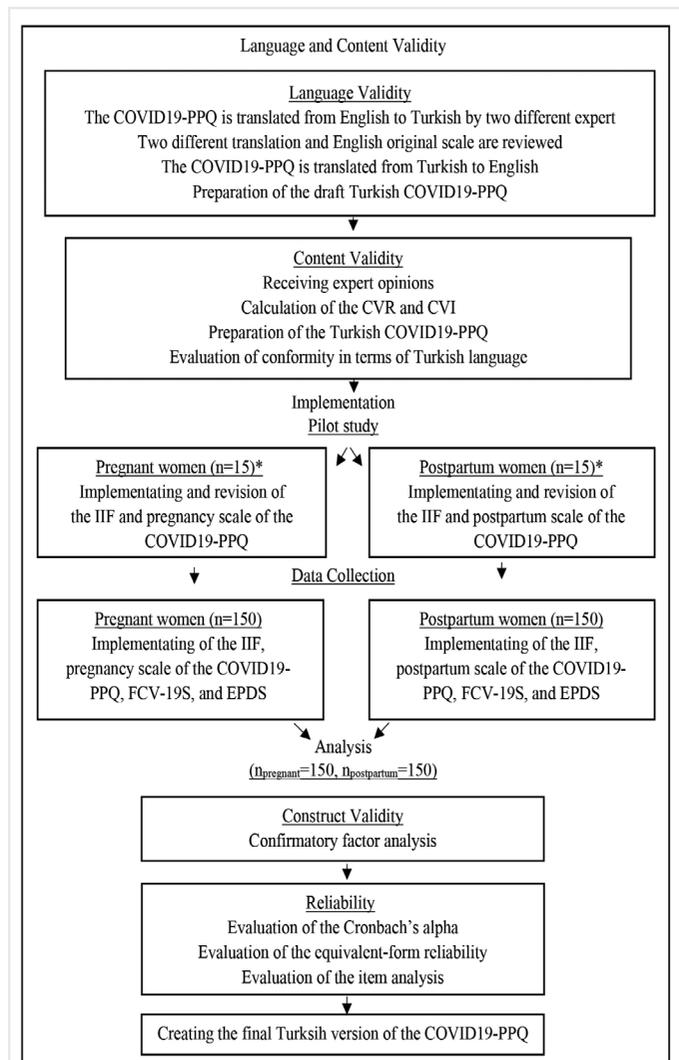
Figure 1. Flow diagram

*The data obtained here were not included in the analysis.

COVID-19-PPQ: The COVID-19 Perinatal Perception Questionnaire, CVR: Content validity ratio, CVI: Content validity index, IIF: Individual Information Form, FCV-19S: The Fear of COVID-19 Scale, EPDS: The Edinburgh Postpartum Depression Scale, COVID-19: Coronavirus disease 2019

(x^2/df) is used to identify the conformity of the model to the data. x^2/df should range from 2 to 5. The Root Mean Square Error of Approximation (RMSEA) should range from 0 to 0.08. The Goodness of Fit Index (GFI) has a cut-off point of 0.90. A Standardized Root Mean Square Residual (SRMR) as high as 0.08 is deemed acceptable. A Comparative Fit Index (CFI) ≥0.95 indicates a good fit (27). The Tucker Lewis Index (TLI)/Not-Normed Fit Index (NNFI) close to 1 indicates a good fit, while values below 0.90 indicate a need to respecify the model. The Incremental Fit Index (IFI) should be ≥0.90 for an acceptable model (28).

Cronbach's alpha indicates internal consistency. Methodologists recommend a minimum Cronbach's alpha value of 0.65 and regard a Cronbach's alpha of less than 0.50 as unacceptable. A maximum value of 0.90 is recommended (29).

Equivalent forms have identically functioning items. The FCV-19S and the EPDS were equivalent forms in this study. Each participant's score should be correlated to achieve a stable tool. A Pearson's correlation coefficient (r) of less than 0.3 indicates a weak correlation, and $0.3 < r < 0.5$ indicates a moderate correlation. An r greater than 0.5 indicates a strong correlation (30).

An item analysis allows researchers to determine which items to keep, revise, or remove (31). This study evaluated the relationship between the items and the total score in item analysis (especially corrected item-total correlation). The item discrimination index (>0.30= good, 0.10-0.30= fair, and <0.10= poor) is the correlation between an item and a test (32).

Results

Participants

All participants were Turkish. Pregnant women had a mean age of 29.33±6.94 years. More than half of the pregnant women had high school degrees (70%). Most pregnant women did not work in a paid job (82.7%). Eleven pregnant women experienced COVID-19. When the characteristics of postpartum women were analyzed, postpartum women had a mean age of 29.91±6.04 years. More than half of the postpartum women had high school degrees (63.9%). Most pregnant women did not work in a paid job (84.7%). Four postpartum women experienced COVID-19 (2.6%) (Table 1).

Pregnant women had a mean pregnancy scale score of 12.22±5.68 (range 0-24). Postpartum women also had a mean postpartum scale score of 19.63±5.42 (range 0-30) (Table 2). Table 3 shows all participants' FCV-19S and EPDS scores.

Validity

Content validity: On the pregnancy scale, all items but 9 had CVRs of 0.54 to 1.00. Item 9 had a CVR of 0.23. The acceptable minimum value of CVR and CVI was 0.54. Therefore, item 9 was removed from the scale, and CVI was recalculated. The scale had a CVI of 0.77. Of the postpartum scale, all items had CVR and CVI values greater than 0.54 (Table 4).

Construct validity: The pregnancy and postpartum scales of the COVID-19-PPQ consist of three factors. Therefore, a CFA was performed for the three-factor structure. The measurement model established to confirm the scale structures was analyzed (Figure 2). The pregnancy scale had factor loadings of 0.52 to 0.90. The postpartum scale had factor loadings of 0.69 to 0.93 (Table 4). There was no item factor loading lower than 0.5. Therefore, model fit indexes were examined. χ^2/sd >2.0, RMSEA and SRMR ≤0.08, GFI, TLI/NNFI, and IFI >0.90, CFI ≥0.95 for the pregnancy and postpartum scales. These results confirmed the model (Table 5).

Table 1. Distribution of women by characteristics				
Characteristics	Pregnant women (n=150)		Postpartum women (n=150)	
	Mean (SD)		Mean (SD)	
Age, years	29.33 (6.94)		29.91 (6.04)	
Gestational age, weeks	29.13 (7.91)		37.27 (3.43)	
Total pregnancy number	2.21 (1.51)		2.24 (1.41)	
	n	%	n	%
Education				
High school ↓	105	70.0	96	63.9
High school and ↑	45	30.0	54	36.0
Paid job				
Yes	26	17.3	23	15.3
No	124	82.7	127	84.7
Economical status				
Low income	25	16.7	26	17.3
Middle income	99	66.0	107	71.3
High income	26	17.3	17	11.3
Experience of COVID-19				
Yes	11	7.3	4	2.6
No	139	92.7	146	97.4
Planned pregnancy				
Yes	91	60.7	98	65.3
No	59	39.3	52	34.7
Abortion in previous pregnancy[a]				
Yes	36	46.8	31	35.6
No	41	53.2	56	64.4
Chronic disease in previous pregnancy[a]				
Yes	13	16.9	14	16.1
No	64	83.1	73	83.9
Medical problem in previous birth[a]				
Yes	0	0.0	6	6.9
No	77	100.0	81	93.1

SD: Standard deviation, N: number, %: Percentage
[a]$n_{pregnant}$=77, $n_{postpartum}$=87

Table 2. Distribution of women's the pregnancy scale & postpartum scale of the COVID19-PPQ, subscales' scores and Cronbach's alpha values

COVID19-PPQ	Items	Min-max	Score		Cronbach's alpha
			Mean	SD	
Pregnancy scale	1-8	0-24[b]	12.22	5.68	0.85
Risk of infection	3,4,5	0-9	4.95	2.36	0.74
Contact	1,2,6	0-9	4.11	2.39	0.65
Future	7,8	0-6	3.15	1.97	0.87
Postpartum scale	1-10	0-30[b]	19.63	5.42	0.81
First postpartum week	(6,7,8,9)[a]	0-12	7.93	2.83	0.85
COVID-19 measures	(3,4,5)[a]	0-9	6.92	2.02	0.84
Fear for infection	1,2,10	0-9	4.77	2.84	0.90

COVID-19-PPQ: The COVID-19 Perinatal Perception Questionnaire, min: minimum, max: maximum, SD: Standard deviation
[a]It is reverse scored, [b]Higher scores indicating a more negative COVID-19-related stress perception

Table 3. Distribution of women's the FCV-19S & EPDS scores and Cronbach's alpha

Equivalent form	Items	Min-max	Period	Score		Cronbach's alpha
				Mean	SD	
FCV-19S	1-7	7-35	Pregnancy	17.50	6.24	0.87
			Postpartum	16.93	6.95	0.90
EPDS	1-10	0-30	Pregnancy	8.36	5.49	0.84
			Postpartum	5.64	5.22	0.87

FCV-19S: Fear of COVID-19 Scale, COVID-19-PPQ: COVID-19 Perinatal Perception Questionnare, min: Minimum, max: Maximum, SD: Standard deviation, EPDS: Edinburgh Postpartum Depression Scale
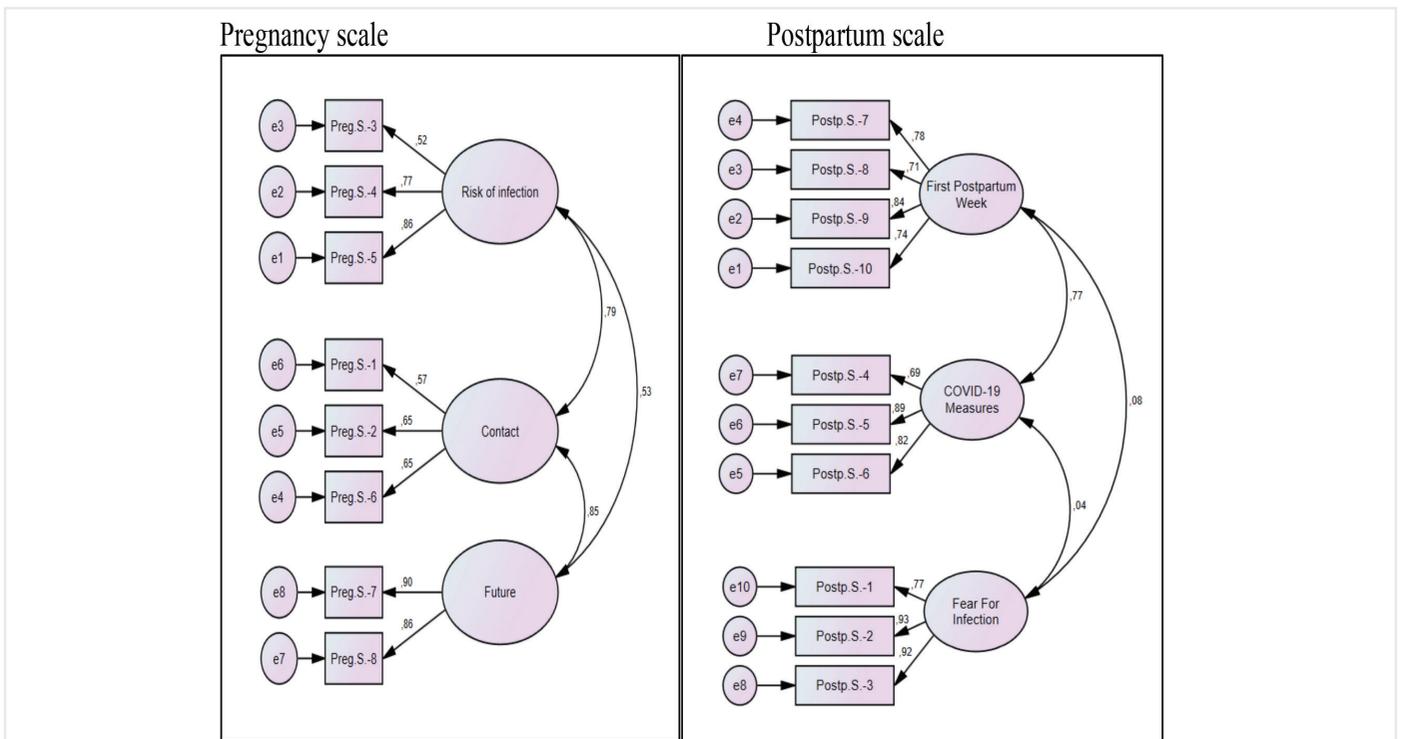
Figure 2. Path diagram of the COVID19-PPQ

Preg.S.: Pregnancy scale, Postp.S.: Postpartum scale,

COVID-19: Coronavirus disease 2019

Table 4. The pregnancy scale & postpartum scale of the COVID19-PPQ CVR values, and item analysis values

COVID19-PPQ	CVRs	Factor loads	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Cronbach's alpha if item deleted
Pregnancy scale						
Item 1	0.69	0.57	10.97	25.96	0.53	0.84
Item 2	0.54	0.65	10.57	24.36	0.60	0.83
Item 3	1.00	0.52	11.00	26.95	0.48	0.85
Item 4	0.69	0.77	10.25	26.20	0.55	0.84
Item 5	0.69	0.86	10.46	24.26	0.65	0.83
Item 6	0.69	0.65	11.01	25.23	0.60	0.83
Item 7	0.54	0.90	10.69	24.16	0.68	0.82
Item 8	0.54	0.86	10.59	24.55	0.63	0.83
CVI	0.77					
Postpartum scale						
Item 1	1.00	0.77	18.16	24.62	0.34	0.87
Item 2	1.00	0.93	17.88	24.19	0.40	0.81
Item 3	0.85	0.92	18.07	24.63	0.37	0.81
Item 4	0.85	0.69	17.33	24.83	0.49	0.80
Item 5	1.00	0.89	17.32	24.45	0.57	0.79
Item 6	0.85	0.82	17.31	24.24	0.61	0.79
Item 7	0.85	0.78	17.70	23.54	0.57	0.79
Item 8	0.85	0.71	17.60	24.15	0.58	0.79
Item 9	1.00	0.84	17.63	24.08	0.59	0.79
Item 10	0.69	0.74	17.65	23.88	0.53	0.79
CVI	0.89					

COVID19-PPQ: COVID-19 Perinatal Perception Questionnare, CVRs: Content validity ratios, CVI: Content validity index

Table 5. Fit indexes of the pregnancy scale & postpartum scale of the COVID19-PPQ for construct validity

Fit index	COVID-19-PPQ	Value	Acceptable threshold levels
χ^2/sd	Pregnancy scale	2.48	2.0-5.0
	Postpartum scale	2.33	
RMSEA	Pregnancy scale	0.08	≤0.08
	Postpartum scale	0.08	
GFI	Pregnancy scale	0.94	≥0.90
	Postpartum scale	0.92	
SRMR	Pregnancy scale	0.05	≤0.08
	Postpartum scale	0.04	
CFI	Pregnancy scale	0.95	≥0.95
	Postpartum scale	0.95	
TLI/NNFI	Pregnancy scale	0.91	≥0.90
	Postpartum scale	0.93	
IFI	Pregnancy scale	0.95	≥0.90
	Postpartum scale	0.95	

COVID19-PPQ: COVID-19 Perinatal Perception Questionnare, χ^2/sd: Ratio of chi square to the degree of freedom, RMSEA: Root meansquare error of approximation, GFI: Goodness of fit index, SRMR: Standardised root mean square residual, CFI: Comparative fit index, TLI/NNFI: Tucker lewis index/Not-normed fit index, IFI: Incremental fit index

Table 6. Pearson's correlation between the pregnancy scale & postpartum scale of the COVID-19-PPQ and the FCV-19S & the EPDS scores

COVID-19-PPQ	FCV-19S	EPDS
Pregnancy scale	r=0.459[b], p<0.001	r=0.141, p=0.084
Risk of infection	r=0.489[b], p<0.001	r=0.169[a], p=0.038
Contact	r=0.348[b], p<0.001	r=0.083, p=0.312
Future	r=0.315[b], p<0.001	r=0.103, p=0.209
Postpartum scale	r=0.002, p=0.981	r=0.166[a], p=0.042
First postpartum week	r=-0.253[b], p=0.002	r=0.031, p=0.709
COVID-19 measures	r=-0.260[b], p=0.001	r=0.020, p=0.812
Fear for infection	r=0.439[b], p<0.001	r=0.272[b], p<0.001

COVID19-PPQ: The COVID-19 Perinatal Perception Questionnare, FCV-19S: Fear of COVID-19 Scale, EPDS: Edinburgh Postpartum Depression Scale, r: Pearson's correlation
[a]p<0.05, [b]p<0.01

Reliability

Cronbach's alpha coefficient: The total pregnancy scale and subscales had Cronbach's alpha values of 0.65 to 0.87. The total postpartum scale and its subscales had Cronbach's alpha values of 0.81 to 0.90 (Table 2). The Cronbach's alpha was acceptable as it was greater than 0.65 and less than 0.90.

Equivalent-form reliability: There was a positive correlation between the scores of the pregnancy scale and the FCV-19S (r=0.459, p<0.001). Moreover, there was a positive correlation between the scores of the postpartum scale and the EPDS (r=0.459, p<0.001). Table 6 shows the correlations between the subscale scores and FCV-19S or EPDS scores.

Item analysis: The corrected item-total correlation values ranged from 0.33 to 0.68, indicating that all items had "good" discrimination. Table 4 shows the scale means if the item is deleted, the scale variance if the item is deleted, and the squared multiple correlation values of the pregnancy and postpartum scales.

Discussion

The COVID-19 pandemic significantly impacted the mental well-being of vulnerable women during the perinatal period (2,33). This study adapted the COVID-19-PPQ to Turkish to measure COVID-19-related stressors during pregnancy and postpartum period.

Some experts assessed item 9 of the pregnancy scale as "not essential or item needs some revision." They thought that item 7 and item 9 measured the same construct, and that item 7 was not about pregnancy. Item 9 was removed from the scale because it had a CVR of 0.23. Content validity was achieved because the total scale had a CVI of 0.77 (CVI >0.54) (25).

The CFA results showed that the models for the pregnancy scale (eight items; three subscales) and postpartum scale (ten items; three subscales) had acceptable fit indices. Therefore, the models seemed fit (27,28). The original pregnancy and postpartum scales also have adequate, and excellent model fits, respectively (6).

Item 3 (factor loading: 0.52), and item 1 (factor loading: 0.57) had factor loadings close to the lower limit. The items were acceptable because they had factor loadings of greater than 0.50 (26). Hulsbosch et al. (6) reported that items 1 and 3 had factor loadings of 0.64 and 0.51, respectively. These items are about antenatal visits. Pregnant women are hesitant to attend antenatal visits because they are worried about the "risk of infection" and "contact" (item 3 in factor 1. Risk of infection, and item 1 in factor 2. contact). Turan et al. (34) also found that half of the pregnant women made fewer antenatal visits during the COVID-19 pandemic, which might affect women's responses to these items.

In addition, these factors had Cronbach's alpha values close to the cut-off value (Factor 1. Risk of infection α=0.74, Factor 2. Contact α=0.65). In this study, all subscales had Cronbach's alpha values of 0.65 to 0.90, indicating high internal consistency for the pregnancy and postpartum scales (29,35). Hulsbosch et al. (6) reported similar Cronbach's alpha values, suggesting that the COVID-19-PPQ was reliable.

The pregnancy scale has three subscales. The subscale "the risk of infection" concerns testing positive for COVID-19 during pregnancy. The subscale "contact" concerns cancellations of ultrasounds, having ultrasounds alone, and family and friends not visiting. The subscale "future" is about financial and work-related concerns. All three subscales focus on fear or worry (6). Our results showed that the pregnancy scale and its subscales significantly correlated with the FCV-19S. Hulsbosch et al. (6) also reported that the pregnancy scale and its subscales significantly correlated with pregnancy-specific distress symptoms. Research also showed that pregnant women were more worried and afraid of COVID-19 (10,11). However, the present study has no significantly correlated total pregnancy scale and the EPDS.

Similarly, Boekhorst et al. (36) did not document any findings regarding the increased prevalence of depression among pregnant women during the pandemic. There was a significant correlation between the "infection" subscale and the EPDS. However, the other two subscales (contact and future) were not correlated with the EPDS. This suggests that pregnant women are more negatively affected by the possibility of having COVID-19 than by the indirect effects of COVID-19, such as lack of visits from friends and financial problems.

The postpartum scale has three subscales. The subscale "first postpartum week" refers to the perception of COVID-19-related changes due to fewer visits. The subscale "COVID-19 measures" concerns the perception of measures and guidelines during delivery. The subscale "fear for infection" is about concerns regarding getting infected (self, baby, or partner) with COVID-19 during delivery or in the first postpartum week (6). These subscales were correlated with the FCV-19S. The subscale "fear for infection" was significantly correlated with the EPDS, suggesting that the first postpartum week and COVID-19 measures were about visits and the birth period. In the postpartum period, labor is over, and the woman focuses on her baby and breastfeeding. Therefore, she might move away from the stressors of COVID-19. Hulsbosch et al. (6) stated that the "first postpartum week" subscale was not correlated with symptoms of postpartum depression and anxiety.

Strengths and Limitations of the Study

The study had three strengths. First, this is the first study to adapt the COVID-19-PPQ to Turkish. Thus, this scale can be used in clinical practices in perinatal health services during the COVID-19 pandemic. Second, the COVID-19-PPQ is a user-friendly scale that includes both pregnancy and postpartum scales. Therefore, it can be used as a screening tool in all areas where antenatal and postnatal healthcare is offered in Turkey during the COVID-19 pandemic. Thus, this study contributes to develop a national perinatal care policy and strategy for this vulnerable group. Third, validity and reliability were established face-to-face in the hospital during the COVID-19 pandemic.

Study Limitations

The study had three limitations. First, the results were sample-specific and could not be generalized. Second, the study was conducted in a city in Turkey. Third, women with healthy pregnancies and healthy babies were included in the study. Perception might change in high-risk pregnancies, and this was also true in the postpartum period. It was also suggested to validate the COVID-19-PPQ in other regions of Turkey.

Conclusion

The COVID-19-PPQ is a valid and reliable scale used to assess perinatal COVID-19-related stress perception. Future research should examine the use of the scale in clinical practice during the COVID-19 pandemic. It is recommended to adapt the COVID-19-PPQ to other countries.

Ethics

Ethics Committee Approval: This study was approved by the National Ministry of Health, the health Services Practice and Research Hospital (approval number: E-93596471-010.01-116695) and Ethics Board (ethics approval number: 2022/02/11). Electronic written consent for this study's use of the scales were taken for the COVID-19-PPQ and the FCV-19S.

Informed Consent: Informed consent was obtained from all participants included in this study.

Peer-review: Externally peer reviewed.

Authorship Contributions

Concept: H.A., S.K., Design: H.A., S.K., Data Collection or Processing: B.Ö.G., Analysis or Interpretation: H.A., B.Ö.G., S.K., Literature Search: H.A., Writing: H.A., S.K.

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