



Questionnaire to Assess Knowledge, Attitude, and Prevention Behaviors of Taiwanese Postpartum Women Regarding Postpartum Depression

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Research Article

Volume 4 Issue 6

Received Date: December 02, 2021

Published Date: December 15, 2021

DOI: 10.23880/jqhe-16000252

Abstract

Aim: Postpartum depression is a highly prevalent disorder, and it has been recognized as a public health problem. In Chinese culture, after childbirth, women must stay at home for postpartum confinement. However, more than 50% of postpartum women tend to experience depression symptoms 3–4 days after delivery. Although the prevention and causes of postpartum depression have been extensively studied, the assessment tools used are usually based on Western cultures. A Chinese-version assessment scale was necessary. The objective of this study was to develop a culturally sensitive questionnaire for assessing the knowledge, attitude, and prevention behaviors toward postpartum depression of Taiwanese women, and examined the associations among postpartum depression knowledge, attitude, and prevention.

Methods: Two-phase study was conducted. First, a postpartum depression scale was developed and its reliability and validity were tested in 50 people. Second, 639 postpartum women from seven hospitals were asked to complete the questionnaire.

Results: The questionnaire, which contained four subscales and 16 questions (Cronbach's $\alpha = .82-.84$), was administered in the postpartum room and required 5–10 min for completion. This questionnaire showed face validity and high acceptance, the factor analysis showed that the questionnaire has acceptable structural reliability. High scores on the postpartum depression knowledge and attitude subscales were associated with higher prevention behavior subscale scores.

Conclusion: The finding of this questionnaire is an effective tool for determining postpartum women's understanding of postpartum depression. Understanding postpartum depression knowledge, attitude and prevention are essential to assess and promote the postnatal care.

Keywords: Postpartum; Depression; Questionnaire; Reliability; Validity

Introduction

Several studies have investigated the crucial factors that help relatives of postpartum women understand any mental illnesses they may have, including postpartum depression (PPD) [1-3]. However, cultural differences are generally not considered during investigations [4]. Particularly, in conservative societies, such as in Chinese background societies, the term “postpartum depression” is unwelcome and women may feel unable to seek help [5].

Pregnancy and having a child are usually joyful experiences for women and their families. However, PPD can hinder the fulfillment of a mother’s aspirations and their enjoyment of [6,7]. PPD can affect women’s lifestyle, habits, and relationships with spouses and family [8]. However, questionnaires for specifically assessing Chinese background women are lacking, which is crucial considering differences in culture, attitude, and behavior regarding PPD in China.

The Health Promotion Administration [4], Ministry of Health and Welfare of Taiwan, indicated that more than 50% of postpartum women in Taiwan have depression 3–4 days after delivery, and approximately 15% of postpartum women experience PPD. Although large-scale research data are lacking, a few studies have shown that the prevalence of postpartum depression in Taiwan is 18.8% – 42.6% [9-11]. The overall prevalence in Taiwanese women is significantly higher than that in women from Western countries; therefore, this problem is worthy of our attention.

The cause of PPD is, however, unclear. It was initially classified as depression [12,13]. Women with a family history of depression, primiparous mothers, and women with a history of emotional psychosis, PPD, or depression are prone to postpartum psychological disorders [12,13]. Generally, women with PPD exhibit emotional instability, such as crying, personality or behavioral changes, and delusions or hallucinations [4,14]. Additionally, the suicide rate among women with postpartum mental illness is approximately 5%, and 4% of women with PPD hurt their child [4].

Although various scholars have established questionnaires to assess knowledge, attitudes, and behaviors for postpartum women related questions [8], they have not taken into account the women’s view towards PPD during pregnancy and childbirth. However, PPD is undoubtedly an important concern. Therefore, development of a PPD scale suitable for use in the oriental region, including China, Taiwan and other Chinese societies, is crucial. As Francis, et al. [15] stated, effective research on mental health can enable detection of mental illness and appropriate treatment. Moreover, even though, the government in Taiwan had establish some programs in educating publics in the

prevention and evaluation in PPD, as well as the sign and symptoms. Majority of them were based on western culture and did not concern the viewpoint of publics. Therefore, this study aimed to develop a PPD questionnaire for assessing the PPD knowledge, attitude, and prevention behaviors of women and that is suitable to use in the Chinese background populations.

Literature Review

PPD is one of the crucial diseases of the 21st century and a common mental illness, with a prevalence of 15%–20% [16-18]. It usually begins at 4–6 weeks after childbirth [16]. Considering the need to address the problem of PPD, numerous researchers have conducted research on this mental condition. However, most studies that have discussed the diagnostic criteria and symptoms of PPD as well as PPD-related screening, treatment, family concerns, ethnic groups, and social issues have not considered various ethnic groups [3,6,19]. According to the 2019 Revision of World Population Prospects [20], 61% of the global population (4.7 billion) lives in Asia, and China (1.44 billion) is the most populous country in the world, accounting for 19% of the world’s total population. The total population of Hong Kong, Taiwan, and overseas Chinese is more than 1.5 billion. Therefore, cultural differences should be investigated.

A review of 58 studies by Shorey, et al. [21] and enrolling 37,294 women in the postpartum period revealed that the PPD prevalence ranged from almost 1% to 42.7%, an average of about 17%, and the author partially attributed this variance to cultural factors, including variability in the definition and expression. For example, in Chinese society, after delivery, postpartum women are generally discharged within 1 week [22] but stay in confinement for at least 30 days [23]. PPD usually develops within the first few weeks after childbirth but may begin earlier or later, even up to a year after birth [16,23]. During this period, family members generally spend their emotional energy on caring for the newborn baby instead of the postpartum woman, which is not the case during pregnancy, and this difference may cause a psychological gap. Furthermore, postpartum women must focus on the needs of their baby, such as by breastfeeding, and this focus may cause considerable stress [23].

As mentioned earlier, in some cultures, such as the Chinese culture, PPD is generally not accepted or spoken about [5]. A systematic review by Hadfield, et al. [24] revealed that many women believe PPD to indicate that they are not a “good mother” and cannot care for their baby.

Sword, et al. [25] reported that relatives’ and spouses’ limited knowledge regarding PPD affects how women frame their experiences. PPD can cause many severe problems for

family members and even affect children's education and family life [7,22]. Consequently, having understanding and knowledge of PPD is crucial for postpartum women and their family. Women with PPD experience not only a lack of understanding by their family and society but also stressful life events, such as poor social support and relationship problems [26].

Moreover, Demirel, et al. [12] and Marín-Morales, et al. [13] reported that some women are used to hiding their symptoms and feelings of depression during the postpartum period because they think they should be happy; hence, guilt and PPD may go unnoticed easily. These factors are related to PPD. Furthermore, PPD is related to women's education, the child's sex and health, and family relationships [26]. However, Verpe, et al. [8] argued that PPD is not limited to such symptoms and that some symptoms may not be mentioned in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition. These symptoms include fear of hurting children with no suicidal ideation, anxiety, and poor postnatal social adjustment.

In this study, the authors established a tool that can help determine the public's understanding of PPD. The authors established a PPD-related questionnaire that comprised four dimensions, namely PPD causes, prevention, viewpoint and Self-evaluation. Studies were gathered to aid the questionnaire development. The purpose of this study was to develop and test a new questionnaire for assessing the PPD knowledge, attitude, and prevention behaviors of postnatal women. The specific aims were as follows:

- To generate data regarding knowledge, attitude, and prevention behaviors related to PPD.
- To conduct content and face validity assessments and exploratory factor analysis of the questionnaire to determine final items.
- To conduct psychometric tests by using the final version of the questionnaire.

Materials and Methods

Questionnaire Development

Because literature related to the perception of people regarding PPD is limited, the researchers conducted interviews with open-ended questions to obtain relevant information and then developed the questionnaire. The purpose of the questionnaire was to assess postpartum women's awareness of PPD and to examine the associations among knowledge, attitude, and prevention of PPD. The self-administered questionnaire consisting of four parts (16 questions) was developed after reviewing the literature and after conducting a qualitative study by using flexible semi-structured interviews of 10 postpartum mothers

and their family members (five husbands, five mothers-in-law, and five mothers of the postpartum woman) [3,5,7,8,17,19,22,24,25,27-30]. The study obtained four main themes: (1) causes of PPD (family relationships, disease history, and the condition of the baby), (2) PPD prevention practices (self-confidence of the postpartum woman, health services, and activities), (3) viewpoints regarding to PPD (problems in daily life and while having a baby), and (4) self-evaluation (knowledge of PPD).

On the basis of qualitative data and relevant literature data, the researchers developed a questionnaire consisting of 29 questions. Six experts (two majoring in psychiatric nursing, two involved in obstetrics nursing, and two Chinese professors) presented the content. After a series of processes for questionnaire establishment, 50 people were invited to complete the questionnaire. Assessment was then performed to determine whether the participants had understood the content of the questionnaire. This study population was composed of 32 women and 18 men. After this test, two elementary school students, two junior high school students, two junior college students, and two immigrant women completed the questionnaire. The authors discovered that the questionnaire can be administered to people with low educational levels, including immigrant brides. After the second test, the authors modified the wording in accordance with the participants' feedback and then confirmed the final version.

Participants

Convenience sampling was employed. The participants recruited were postpartum women admitted to the postpartum units of the selected hospital between December 2016 and December 2017. Before recruitment, permission was obtained from the hospital's institutional review board because the research topic is sensitive for the Chinese population. The inclusion criteria of the study were age > 20 years and ability to speak Mandarin and Taiwanese. Furthermore, the participants were expected to be able to read and respond to the questionnaire. Moreover, the participants had not to be receiving any psychiatric treatment at the time. Before the study, signed informed consent was obtained from the participants after the research process had been sufficiently explained. In total, 639 participants from seven health care centers joined the questionnaire testing. These centers were two obstetric clinics, two medical centers, one maternity ward in a general hospital, and two maternity hospitals.

Questionnaire Validation

Questionnaire development was mainly based on the literature from Taiwan and also Taiwanese culture. The

questionnaire has four dimensions, namely, PPD causes, PPD prevention practices, self-evaluation, and PPD viewpoint. The first version of the questionnaire was evaluated by experts—two mental health nursing scholars, two obstetricians, and two senior obstetric nurses. The experts examined the four dimensions of the questionnaire for concept, conformity, and wording of each question. After completing the revision of the first version, merge or delete the items with duplicate meanings and then finalize the draft, and conduct an expert validity analysis. The scores for the questions ranged from 1 point for the least applicable to 4 points for the most applicable. The results showed that the content validity index of the items ranged from .80 to 1.00, and the average content validity index of the total items was .96, and Cronbach's α of the items ranged from .79 to .82.

The questionnaire had two main parts, the demographic part, and the survey part. The survey part includes self-evaluation, knowledge, attitude, and prevention behaviors of PPD. The questionnaire used a self-report scale, and the scoring of the survey part was based on a 5-point Likert scale. The questionnaire used a self-report scale, and the scoring was based on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Each subscale consisted of three to four questions; therefore, the subscale scores ranged from 4 to 20. The questionnaire had two main

parts, namely, demographic information and knowledge, attitude and prevention behaviors of PPD. Furthermore, the questionnaire and its subscales were assessed using construct validity was tested through confirmatory factor analysis (CFA).

Data Analysis

This study sought to develop a suitable measurement tool for the Taiwanese population to understand women's PPD knowledge, attitude, and prevention behaviors. In accordance with the pretest analysis of the questionnaire data, the content of the questionnaire was modified, and a rigorous test development process made the questionnaire more representative. Data were analyzed using IBM SPSS.

Results

The average score of the PPD total subscale was 26.5 ± 5.3 , Cronbach's α was 0.84. and the subscale scores were 18.3, 16.1, 18.3, and 8.0 for causes prevention behaviors, attitude, prevention, and view point knowledge, respectively (Table 1). The PPD self-evaluation score was 14.2 ± 2.5 . In addition, Cronbach's α was 0.84 for the PPD total subscale and 0.82 for the PPD self-evaluation subscale.

Scale	Item	Mean (SD)	Cronbach's α	Split-half reliability	Factor loading
PPD attitude	Poor family relationship is a risk factor of PPD.	16.1	0.79	0.75	0.76
	Women with history of depression are at a risk of PPD.				0.77
	Babies' health problems may cause the mother at a risk of PPD.	2.2	0.79		0.7
	Women with unexpected pregnancy are at a risk of PPD.				0.57
	Increasing postpartum women's confidence in nurturing babies can prevent PPD.	18.3			0.74
PPD prevention behaviors	Postpartum women with complaints or worries should receive consultation services from healthcare workers.	18.3	0.89	0.91	0.83
	Postpartum women should participate in outdoor activities with their husband or other family members to prevent PPD.	1.9			0.94
	Sharing experience with others is helpful for postpartum women to prevent PPD.				0.78
	Those who suffer from PPD cannot become a good mother.				0.76
	Women with PPD have a weaker and more annoying personality.				0.63
PPD knowledge (reverse count)	It is best for mothers with PPD to stay away from their babies.	8	0.81	0.78	0.75
	Women with a history of PPD should not give birth to more babies.	-2.9			0.73

Total subscale	I know the causes of PPD. I can identify the symptoms of PPD.	26.5	0.84	0.61	0.68
	I can identify the symptoms of PPD.	-5.3			0.78
PPD Self-evaluation	I know how to prevent postpartum woman from depression.	14.2	0.82	0.81	0.8
	I have enough knowledge about mental issues.	-2.5			0.68

Note: PPD, postpartum depression; SD, standard deviation.

Table 1: Mean values, standard deviations, Cronbach's α coefficients, and factor loading with convergent analysis of the PPD total subscale items (n=639).

For construct validity, CFA showed that the PPD total subscale had a three-factor structure; the full model fit indexes for construct consistency were as follows: $\chi^2/df = 1.784$, the goodness-of-fit index (GFI) = .942, the goodness-of-fit index adjusted for degrees of freedom (AGFI) = .912, incremental fit index (IFI) = .970, the Tucker-Lewis index (TLI) = .960, and comparative fit index (CFI) = .969. The Cronbach's α of the PPD causes attitude and PPD prevention behaviors subscales was .79 ($\chi^2/df = 3.384$, GFI = .986, AGFI = .929, IFI = .983, TLI = .949, and CFI = .983) and .89 ($\chi^2/df = 1.773$, GFI = .993, AGFI = .964, IFI = .997, TLI = .992, and CFI = .997), respectively. The score of the PPD knowledge view point subscale was 8.0 ± 2.9 , and its Cronbach's α was .81. CFA showed that the PPD knowledge view point subscale had acceptable construct reliability (model fit indexes: $\chi^2/df = 1.784$, GFI = .992, AGFI = .960, IFI = .992, TLI = .980, and CFI = .993). Convergent validity was determined through calculation of factor loadings, which were considered acceptable if higher than .50 [29]. The split-half reliability values for the PPD cause attitude, prevention behaviors, knowledge view point, and total subscales were .75, .91, .78, and .61, respectively. Furthermore, the PPD self-evaluation CFA showed the model fit indexes were as follows: $\chi^2/df = 1.343$, GFI = .995, AGFI = .973, IFI = .998, TLI = .994, and CFI = .998, confirmed that had acceptable construct consistency.

Additionally, the factor loading of the questions ranged from .57 to .94. Discriminant validity was confirmed using the bias-corrected percentile method and the percentile method with bootstrapping. The associations among the three factors of the total subscale were weak. Furthermore, the coefficients of correlation between these factors were between .15 and .47, and the confidence intervals (CIs) did not include 1. These results confirmed the discriminant validity between the constructs of the three factors.

Furthermore, the PPD self-evaluation subscale score was 14.2 ± 2.5 . The Cronbach's α of the PPD viewpoint subscale was .82. CFA showed that PPD self-evaluation had acceptable construct consistency, and the model fit indexes were as follows: $\chi^2/df = 1.343$, GFI = .995, AGFI = .973, IFI = .998, TLI = .994, and CFI = .998.

Most of the study participants (n = 639) were 31 years or older (59.9%), and 299 (46.8%) of them received a university education. Most of the fetuses were female (329 [51.5%]), and 335 (52.4%) of the participants were multiparous (Table 2).

	Mean/n	SD/%
Age (years)		
20-30	256	40.10%
31 and above	383	59.90%
Educational level		
High school and below	287	44.90%
University	299	46.80%
Masters and above	53	8.30%
Fetal sex		
Male	310	48.50%
Female	329	51.50%
Fetal number		
First	304	47.60%
Second/above	335	52.40%
Occupational category		
Nonmedical professional	560	87.60%
Medical professional	79	12.40%
PPD self-evaluation (range: 4-20)	14.6	2.5
PPD total subscale (range: 12-60)	49.02	5.28
PPD knowledge (range: 4-20)	8	3
PPD attitude (range: 4-20)	16.2	2.4
PPD prevention behaviors (range: 4-20)	18.3	2

Note: PPD, postpartum depression; SD, standard deviation.

Table 2: Demographic characteristics of study participants (n=639).

Table 3 presents a correlation matrix displaying the correlations between the subscales. Moderate correlation

between the subscales was discovered for all variables.

	1	2	3	4
PPD knowledge	1			
PPD attitude	-0.142**	1		
PPD prevention behaviors	-0.311**	0.458**	1	
PPD self-evaluation	-0.158**	0.437**	0.259**	1

Note: * $p < 0.05$; ** $p < 0.01$.

Table 3: Correlation of the total subscale and PPD self-evaluation subscales (n=639).

In Table 4, model 1 presents the results of the multivariate logistic regression. After adjustment for age, educational level, and delivery experience, high scores on the PPD total subscale had a protective effect against poor self-evaluation regarding PPD (odds ratio [OR] = 0.357, 95% CI [0.235, 0.542]) compared with low scores on the PPD total subscale. Model 2 indicates that high scores on the

PPD causes subscale (OR = 0.331, 95% CI [0.207, 0.528]) had a protective effect against poor PPD self-evaluation, but this was not the case for those with high scores on the PPD prevention subscale. Low PPD viewpoint score (OR = 1.850, 95% CI [1.190, 2.876]) was strongly associated with poor PPD self-evaluation. In the logistic regression model, older postpartum women had poor PPD self-evaluation.

Variable	Model 1			Model 2		
	OR	95% CI		OR	95% CI	
Age						
20-30	1			1		
31 and above	1.942**	1.221,	3.089	1.838*	1.139,	2.968
Education						
High school and below	1			1		
University and above	1.079	0.705,	1.651	0.995	0.641,	1.545
Fetal number						
First	1			1		
Second/above	0.842	0.544,	1.304	0.874	0.557,	1.371
PPD total subscale						
Low PPD total subscale	1			--	--	--
High PPD total subscale	0.357***	0.235,	0.542			
Low PPD knowledge (ref. high)	--	--	--	1.850**	1.190,	2.876
High PPD attitude (ref. low)	--	--	--	0.331***	0.207,	0.528
High PPD prevention behaviors(ref. low)	--	--	--	0.727	0.457	1.156

Note: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

CI, confidence interval; PPD, postpartum depression; OR, odds ratio.

Table 4: Odds ratio (OR) for poor PPD self-evaluation in postpartum women (n = 639).

Discussion

This study aimed to establish a tool for measuring PPD knowledge, attitude, and prevention behaviors among postnatal women. Measurement of PPD attitude is an essential step in completely evaluating its effect on postnatal

care. We developed a novel questionnaire through rigorous item generation and testing. The final 16-item version of the questionnaire demonstrates construct validity; furthermore, it has acceptable internal consistency and split-half reliability. The questionnaire can be administered to women during their postpartum hospital stay to assess their opinion

toward PPD, and this finding can be used to provide guidance regarding postpartum care.

The literature review and interviews revealed that this questionnaire had favorable reliability and validity for assessing PPD knowledge, attitude, and prevention behaviors. In addition, high scores on the PPD self-evaluation and PPD prevention subscales indicated a significant negative association with poor PPD viewpoint. This is the first study to confirm the psychometric properties of the PPD questionnaire and meet the essential psychometric criteria, including satisfactory internal consistency and validity. Although the scale has high reliability and validity, PPD is a relatively new concept in Taiwan, and the participants' responses may have varied based on their knowledge, background, perception, and experience. In the future, this scale must be cautiously used in international research because the participant's experience, family environment, and social culture may affect the results. The questionnaire may be interpreted differently by people speaking different languages or belonging to different cultures.

Our study indicated that a high score on the PPD causes subscale (OR = 0.331, 95% CI [0.207, 0.528]) was negatively associated with the PPD self-evaluation subscale score. Jiang, et al. [30] reported that self-evaluation is significantly positively correlated with life satisfaction, which suggests that self-evaluation may help predict cognitive experience of life events. A study conducted in Canada revealed that the general population has poor knowledge regarding PPD [31]. A Portuguese study discovered gaps of people in PPD knowledge (e.g., causes and treatment of PPD). These results reveal the importance of PPD awareness campaigns directed at postnatal women.

In this study, a high PPD prevention subscale score (OR = 0.727, 95% CI [0.457, 1.156]) was significantly negatively associated with a low PPD viewpoint subscale. When a woman accepts PPD easily, she can learn to manage her depression and adapt better to the PPD [32]. Second, certain customs in China related to childbirth, such as negative reactions of family members to the birth of a female child and the postpartum confinement of the mother, may affect the effectiveness of PPD prevention [33,34].

The main strength of this questionnaire is that, unlike the Western questionnaire, this questionnaire considers the Chinese culture and is fit for assessing the PPD view of Chinese as well as Taiwanese women. This questionnaire is needed for assessments of the opinion of Chinese and Taiwanese mothers toward PPD. Therefore, this questionnaire supports the establishment of a postnatal education program for postpartum women and their families. In addition, this questionnaire can be quickly used to evaluate a person's

cognition and status of PPD and can be used in the researched population as well as for the benefit of public health [35,36].

Limitations

This study has several limitations that must be addressed. First, the participants were recruited through convenience sampling, and only hospitalized postpartum women were included. Hence, the results may not be generalizable to pregnant women in communities or in other health care systems. Second, the questionnaire had to be completed through self-report. Thus, common method bias was likely, and this could have led to exaggerated associations; the interpretation of the text included in the scale may be limited by the individual's educational level, language ability, and cultural background. Therefore, careful decision making is necessary. The validity of the results of the questionnaire can be strengthened through either field observations or assessment by external experts. Third, this study had a cross-sectional design; causal inferences regarding PPD knowledge, attitude, and viewpoint could not be obtained.

Conclusions

The questionnaire developed in this study for assessing knowledge, attitude, and prevention behaviors regarding PPD is a valid and reliable tool for determining the view of postpartum women and is applicable to Chinese-speaking individuals, including those from Taiwan.

In practice, evaluations of PPD knowledge, attitude, and prevention behaviors should be incorporated into health promotion programs for pregnant women in hospitals. This questionnaire would help hospital health care professionals and pregnant women gain awareness regarding PPD. In addition to PPD evaluation, the promotion of knowledge regarding PPD is urgently required, particularly in Asian countries. Educational programs should be designed to improve awareness of PPD among pregnant women and their families. Moreover, routine perinatal assessments for PPD should be included in health promotion policies to prevent poor perceptions of PPD among women.

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