ORIGINAL ARTICLE

Validation of Indonesian Version of the Pregnancy-related Empowerment Scale Questionnaire: A Cross-cultural Adaptation Study

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ABSTRACT

Introduction: Women's empowerment promotes better health decision-making ability and seeking health services during pregnancy and childbirth, including seeking skilled birth attendants and birthing facilities. Nonetheless, adequate instruments to evaluate women's empowerment related to pregnancy in the Indonesian version are currently lacking. Therefore, this study aimed to cross-culturally adapt the Pregnancy-Related Empowerment Scale (PRES) to the Indonesian version and test its validity and reliability. **Materials and methods:** The original English version of the PRES which consists of four domains with 16 items underwent a translation into the Indonesian language via a forward and backward translation process conducted by qualified and certified translators, with the outcomes reviewed by an expert committee. Ten experts conducted content validation. Content validity was achieved using the Davis technique. Furthermore, a pilot project for the scale reliability test was conducted on 30 pregnant women using Cronbach Alpha analysis. **Results:** The Indonesian version of the questionnaire showed satisfactory content evidence which overall validity index achieved acceptable value of more than 0.80. The scale-level content validity index with average method (S-CVI/Ave) and universal agreement index (S-CVI/UA) showed 0.99 and 0.88 respectively, indicating that the items of the Indonesian version of PRES are relevant and comprehensible. The questionnaire also showed high internal consistency with Cronbach's alpha value of 0.94, which indicates that all items are reliable. **Conclusion:** The Indonesian version of the PRES is a valid and reliable instrument to measure women's empowerment during pregnancy. This study recommends for future research on construct validity and test-retest reliability of the instrument.
Malaysian Journal of Medicine and Health Sciences (2025) 21(4): 195-204. doi:10.47836/mjmhs.21.4.25

Keywords: Empowerment, Validity, Reliability, Instrument translation, Pregnancy Care

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INTRODUCTION

Pregnancy-related women's empowerment has a very important role in the provision of health services and antenatal care. Pregnancy-related women's empowerment is a comprehensive and multidimensional concept, which has many variations in different cultural contexts, prevailing norms, attitudes and women's ability to access resources, have the right to make life choices and act on goals (1–3). Essentially, aspects such as household decision-making, mobility, and management of assets are key dimensions of women's empowerment that can influence a pregnant woman's ability to attend antenatal care visits, which are critical for birth preparation. Therefore, women's empowerment significantly influences antenatal care, making it possible for pregnant women receiving antenatal care visits to have good skills to prepare for childbirth (3).

On the other hand, an empowerment model approach where health professionals respect and value the opinions of patients, take shared responsibility and help pregnant women make decisions throughout the pregnancy and childbirth process (4). Additionally, women's empowerment is often associated with patient-centred care, which gives patients the power to take command of their health, and can improve health outcomes during pregnancy and childbirth, and the most critical period of maternal and infant health (5).

Hence, the empowerment of pregnant women and the importance of health worker involvement positively influenced the experience of a good childbirth and adapting to being a mother after childbirth (6,7).

Promoting intensive women empowerment programs can significantly improve the adequacy of antenatal care, pregnant women who have the ability to empower themselves will be motivated to seek good antenatal care (8). A study has identified the relationship between women's empowerment and antenatal service utilization (9), revealing that women's empowerment significantly influences the increase in frequency and timeliness of antenatal care (10). Another opinion states that high-quality antenatal care can save the lives of mothers and newborns by promoting health, preventing disease, and early diagnosing and treating pregnancy-related health problems. In addition, regular antenatal visits encourage mothers to undertake recommended interventions for a healthy pregnancy and baby and reduce poor pregnancy outcomes (11–14). Thus, women who have household decision-making skills in health service utilization during pregnancy, childbirth, and after the postpartum period have a higher chance of utilizing at least four antenatal visits during pregnancy and childbirth at health facilities and hospitals (15). Promoting health education and awareness among pregnant women is essential to increase women's empowerment during pregnancy and childbirth (16). Other studies have shown that women in Indonesia who have more children and working women are less likely to make antenatal care visits (17). Lack of education is a barrier to women's empowerment in pregnancy and newborn care (18). Antenatal classes are one example of women's empowerment related to pregnancy that can provide education to pregnant women to improve their knowledge and skills.

Pregnant women are supported to be strong in decision-making through education during antenatal care provided in labor preparation and newborn care. For that reason, to help determine the empowerment of pregnant women, a measurement tool is needed to provide professional and comprehensive prenatal care. Unfortunately, there is currently no pregnancy-related empowerment scale adopted in Indonesia. Although some countries have used pregnancy-related empowerment instruments (19). Some of the pregnancy-related empowerment instruments used in other countries are Empowerment score used in the United States and United Kingdom (20,21), Mother's autonomy in decision making (MADM) used in Canada and Dutch (22), ReproQ/Maternal Empowerment Questionnaire (MEQ) used in the Netherland and others (19).

The limited availability of valid and reliable tool to measure the pregnancy-related empowerment in Indonesian women is barrier to the delivery of health education and promotion services in this country. Therefore, this study aimed to adapt the Pregnancy-related Empowerment Scale (PRES) into Indonesian version and to perform a preliminary test on the validity and reliability of the Indonesian version of PRES. The validation process of a newly developed or translated questionnaire is necessary to ensure that the items in the questionnaire match the domain of interest and that all items in the questionnaire covering all concepts to be researched are correctly validated (23,24).

MATERIALS AND METHODS

Instrument

The Pregnancy-Related Empowerment Scale (PRES) questionnaire measures individuals' empowerment to take control of their health during pregnancy. Klima et al. (2015) have developed this method previously in English and Spanish versions (25), consisting of 16 items with positive statements and rated on four-point Likert scale ordered from strongly disagree (1) to strongly agree (4). The PRES consists of 4 subscales: Provider Connectedness 6 questions, Skillful Decision-Making 3 questions, Peer Connectedness 2 questions, and Getting Voice 5 questions. Reliability estimates were calculated based on Cronbach's alpha for the English version of this scale, which was 0.91, and the Spanish version (α = 0.93). On the other hand, the results of the confirmatory factor analysis model calculation showed a fair fit to the sample data. For the Spanish sample, the confirmatory factor analysis was determined through the comparative fit index (CFI) was 0.951, the root mean square error of approximation (RMSEA) was 0.06, the standardized Root Mean Square Residual (SRMR) was 0.064, and the Chi-Square statistic was 147.211 (DF=97) with a p-value of 0.001. For the English group, the CFI was 0.942, the RMSEA was 0.074, the SRMR was 0.058, and the Chi-Square was 179,328 (DF=97) with a p-value of not exceeding 0.001 (4). Meanwhile, the calculation results of the Turkish version of the confirmatory factor analysis model also showed a good structural fit according to the items in the original language. Confirmatory factor analysis (CFA) results of the Turkish version of the four-factor model obtained RMSEA (0.08) and NFI (0.93) showed an acceptable fit, while χ^2 (2.53), GFI (0.90), CFI (0.95), TLI (0.94), and IFI (0.95) showed a very good fit (25).

Setting and Procedure

There are three main stages involved in this study: (i) Phase 1: Translation of the PRES questionnaire, (ii) Phase 2: Content Validity of the Indonesian version of PRES , and (iii) Phase 3: Pilot Test of the Indonesian version of PRES. The stages of this study can be seen in Figure 1.

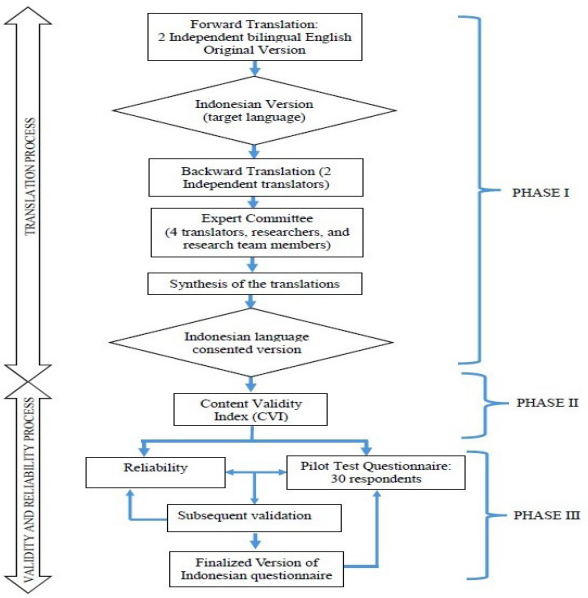

Fig.ure 1: Schematic diagram of the translation and validation of the Indonesian version of the PRES questionnaire (Phase I & II), and Pilot Test of the Indonesian version of PRES (Phase III)

Phase 1: Translation of the PRES Questionnaire

Permission to translate The PRES questionnaire into Indonesian language was obtained from the author (Klima, 2015), who developed the questionnaire (25). To ensure the quality of the translated version and consistency of meaning with the original English version, a back-and-forth translation protocol used for translation, cross-cultural adaptation, and validation procedures from the English version to the Indonesian version are required (26–29). Two bilingual translators have translated the original English questionnaire into Indonesian to help the target audience understand the questionnaire easily and accurately. One of the translators is a person who has the ability to understand the concepts and objectives of the research that the translated questionnaire is intended to measure Another translator is an expert in the field of health so as to provide a new translation that is more similar to the original instrument (30). However, the other translators (naive translators), who are not experienced in the healthcare field, needed to be made aware of the concept and research objectives of the questionnaire. The aim was to detect differences between the translated and original questionnaires. To avoid bias in the translation, any differences between the two translations were discussed and corrected through dialog between the original translator and the researcher (27,31).

At this stage, the initial questionnaire was back-translated by two independent experts in the field of English translation, who back-translated the questionnaire from Indonesian to English according to the original version to establish the correctness of the initial translation (32). Thus, the back-translation can uncover ambiguous words and misconceptions in the questionnaire in the initial translation (31). The Indonesian version was revised and modified, based on the two different versions of the questionnaire translated into English, after which it was discussed and matched again (33).

In the next step, an expert group has been established to facilitate the production of the initial translation version. The committee consisted of an expert panel with seven participants (n = 7): two midwives with expertise in the field, one methodologist, and four forward and backward translators. Assurance of conceptual, experiential, semantic and idiomatic similarity between the Indonesian and original (English) versions of the questionnaire was achieved through the expert committee having checked and assessed all items of the translated version of the questionnaire (31). All discrepancies in the items were resolved, resulting in a preliminary version of the questionnaire translated into Indonesian, the language of the study participants. Experts discussed modifying and correcting the different translations if language inaccuracies or incompatible cultural differences were found in the question items. Therefore, all revisions and modifications were made through discussions among the translators, research team members, and researchers. Any discrepancies were discussed and all revisions made were documented (4,34–36). As a result of the translation, a new Indonesian version is created to ensure that the translation has been verified and follows the concept of the original version (32).

Phase 2: Content Validity of the Indonesian version of PRES

Content validation has been conducted using the following steps: preparing the content validation form, selecting a panel of expert reviewers, conducting content validation, reviewing and scoring all items from all domains, scoring each item, and calculating the content validity index (CVI) at the end (33,37). There were ten content validation experts were selected to review the relevancy and clarity of the items and constructs of the questionnaire. The expert panel consisted of seven midwives and three nurses with knowledge of pregnancy-related empowerment, four with doctoral, and six with master's academic qualifications. The researcher facilitated the expert panel meeting face-to-face to make corrections and discussions during the content validation process (38). The content validity form has been given to the experts to rate each item for its relevancy to each subscale and its clarity on a 4-point scale (ranging from 1 = item is not relevant/clear to 4 = item is very relevant/clear). In addition, each expert was also requested to give comments and recommendations about the content and relevancy of each item. Davis technique has been used to ascertain the content validity of the scales on the questionnaires that have been translated into Indonesian (4,34–36).

Phase 3: Pilot Test of the Indonesian version of PRES

Reliability trial was conducted among targeted

respondents who fit the criteria after the newly translated questionnaire items passed content validity and further revisions. The inclusion criteria for pregnant women were having an age of 20 - 40 years and not having complications and emergencies in pregnancy. The final version of the questionnaire was completed online via a URL link and was administered to a sample of 30 pregnant women during antenatal visits.

Data Analysis

The content validity index (CVI) is obtained by calculating the CVI for items (I-CVI) and the CVI for scales (S-CVI). There are two methods for calculating the S-CVI, the first being to calculate the average I-CVI score for all items in the scale (S-CVI/Ave), and the second is to calculate the proportion of items in the scale that achieved a relevance scale of 3 or 4 from all experts (S-CVI/UA). Prior to calculating the CVI, the relevance and clarity ratings were converted using a code of 1 (relevance/clarity scale of 3 or 4) or 0 (relevance/clarity scale of 1 or 2) (36,40). If the calculated value of I-CVI is greater than 0.79, it indicates the item is relevance and valid; if I-CVI value is between 0.70 and 0.79, it indicates the need for revision; and conversely, a value below 0.70 indicates irrelevance and the need for removal from the questionnaire (41). The reliability analysis was done using IBM Statistical Package for the Social Sciences (SPSS) version 29.0 software. Cronbach alpha has been used to assess the internal consistency of the scale items. The accepted value for the Cronbach alpha coefficient is at least 0.70 (4,39). Descriptive statistics were also used to describe the demographic characteristics of the respondents in the pilot test.

Ethical Clearance

This study has been approved by the Health Research Ethics Committee, Poltekkes Kemenkes Malang, Indonesia (Reference No: DP/04.03/F.XXXI.31/0625/2024) and the Research Ethics Committee of Universiti Teknologi MARA, Reference No: REC/08/2024 (PG/MR/382). This study is part of a larger study.

RESULTS

Translation of the PRES Questionnaire

The Pregnancy-Related Empowerment Scale (PRES) questionnaire was translated from English into Indonesian with no significant difficulties. The forward translation of the Pregnancy-Related Empowerment Scale (PRES) required minor modifications and significant changes during the translation process (from English to Indonesian). Three items in the Provider Connectedness subscale (*bersedia mendengarkan* changed *bersedia mendengarkan keluhan, menghormati* changed *menghormati dan menghargai, meskipun berbeda dari rekomendasi* changed *bahkan jika keputusan tersebut berbeda dari rekomendasi*) and two items in the Getting Voice subscale (*memiliki hak untuk bertanya di saat ada hal yang tidak saya pahami* changed *memiliki hak untuk mengajukan pertanyaan jika saya tidak memahami, agar bayi saya sehat* changed *untuk memiliki bayi yang sehat*) required minor wording modifications in the forward-translated questionnaire. Furthermore, in the backward translation questionnaire (Indonesian to English), no significant adjustments were needed from the original English version.

Content Validity (Indonesian Version)

Content validation of the Indonesian version of the PRES questionnaire resulted in validity indices for the relevance and clarity of each questionnaire. The overall validity index for relevancy was 0.99 (exceeded 0.8), with a universal agreement index (S-CVI/UA) of 0.88, while the average index (S-CVI/Ave) was 0.91 (Table I). Similarly, the overall validity index for clarity was 0.99 (exceeded 0.8), with a universal agreement index (S-CVI/UA) of 0.88, while the average Index (S-CVI/Ave) is 0.99 (Table II). The Indonesian version of PRES questionnaire has reached a satisfactory level of content validity.

Table I: The relevancy ratings on the Indonesian version of Pregnancy-related Empowerment Scale (PRES) by ten experts

Subscale/ Item		Experts										Experts in Agreement	I-CVI	Universal Agreement (UA)
		E1	E2	E3	E4	E5	E6	E7	E8	E9	E10			
I[1]	Q1	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q2	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q3	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q4	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q5	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q6	1	1	1	1	1	1	1	1	1	1	10	1	1
II[2]	Q7	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q8	1	1	1	1	1	0	1	1	1	1	9	0.9	0
	Q9	1	1	1	1	1	1	1	1	1	1	10	1	1
III[3]	Q10	1	1	1	1	1	1	1	1	1	1	10	1	1

CONTINUE

Table I: The relevancy ratings on the Indonesian version of Pregnancy-related Empowerment Scale (PRES) by ten experts (CONT.)

Subscale/ Item		Experts										Experts in Agreement	I-CVI	Universal Agreement (UA)
		E1	E2	E3	E4	E5	E6	E7	E8	E9	E10			
III[3]	Q11	1	1	1	1	1	1	1	1	1	1	10	1	1
IV[4]	Q12	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q13	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q14	1	1	1	1	1	0	1	1	1	1	9	0.9	0
	Q15	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q16	1	1	1	1	1	1	1	1	1	1	10	1	1
	Proportion Relevancy	**1**	**1**	**1**	**1**	**1**	**0.9**	**1**	**1**	**1**	**1**	**S-CVI/Ave**	**0.99**	
	Average proportion of items judged as relevance across the ten experts = 0.99											**S-CVI/UA**		**0.88**

I-CVI (item-level content validity index); S-CVI/Ave (scale-level content validity index, averaging calculation method); S-CVI/ UA (scale-level content validity index, universal agreement calculation method).
[1]Provider Connectedness
[2]Skillful Decision-Making
[3]Peer Connectedness
[4]Getting Voice

Table II: The clarity ratings on the Indonesian version of Pregnancy-related Empowerment Scale (PRES) by ten experts

Subscale/ Item		Experts										Experts in Agreement	I-CVI	Universal Agreement (UA)
		E1	E2	E3	E4	E5	E6	E7	E8	E9	E10			
I[1]	Q1	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q2	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q3	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q4	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q5	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q6	1	1	1	1	1	1	1	1	1	1	10	1	1
II[2]	Q7	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q8	1	1	1	1	1	0	1	1	1	1	9	0.9	0
	Q9	1	1	1	1	1	1	1	1	1	1	10	1	1
III[3]	Q10	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q11	1	1	1	1	1	1	1	1	1	1	10	1	1
IV[4]	Q12	1	1	1	1	1	0	1	1	1	1	9	0.9	0
	Q13	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q14	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q15	1	1	1	1	1	1	1	1	1	1	10	1	1
	Q16	1	1	1	1	1	1	1	1	1	1	10	1	1
	Proportion Clarity	**1**	**1**	**1**	**1**	**1**	**0.9**	**1**	**1**	**1**	**1**	**S-CVI/Ave**	**0.99**	
	Average proportion of items judged as clear across the ten experts = 0.99											**S-CVI/UA**		**0.88**

I-CVI (item-level content validity index); S-CVI/Ave (scale-level content validity index, averaging calculation method); S-CVI/ UA (scale-level content validity index, universal agreement calculation method).
[1]Provider Connectedness
[2]Skillful Decision-Making
[3]Peer Connectedness
[4]Getting Voice

Reliability Test

The age of respondents ranged from 20 to 40 years old, with a mean (SD) age of 27.07 (5.84). The respondents were mostly primiparous (50%) with gestational age mostly in the third trimester (50%). More than half of the respondents (53.3%) had secondary school education. A detailed summary of the respondents' characteristics can be seen in Table III.

The Cronbach's alpha coefficient of the questionnaire was 0.944 (95% CI 0.79-0.91) for the overall scale. Meanwhile, The Cronbach's alpha of the subscales were Provider Connectedness = 0.871, Skillful Decision-Making = 0.899, Peer Connectedness = 0.933, and Getting Voice = 0.865 (Table IV). Cronbach's alpha value higher than 0.70 indicated that all subscales and overall scale of the Indonesian version of PRES had

achieved acceptable level of internal consistency and the questionnaire was reliable.

Table III: Socio-demographic characteristics of the respondents (n=30)

Characteristics	n	%
Age (years) , mean (SD)		27.03 (± 6.24)
Highest education		
Primary School	5	16.7
High School	8	26.7
Secondary School	16	53.3
University	1	3.3
Gestational Age		
First trimester	7	23.3
Second trimester	8	26.7
Third trimester	15	50.0
Paritas		
Primiparity	15	50.0
Multiparity	14	46.7
Grandemultiparity	1	3.3

Table IV: Item statistics and reliability analysis by domain on the Indonesian version of The Pregnancy-related Empowerment Scale (PRES)

Subscale	Item	Mean	SD	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha for Each Scale	Cronbach's Alpha of the Overall Scale
Provider Connectedness	Q1	3.77	.430	.653	.852	0.871	
	Q2	3.50	.509	.471	.883		
	Q3	3.60	.498	.884	.809		
	Q4	3.60	.498	.884	.809		
	Q5	3.53	.507	.745	.835		
	Q6	3.23	.504	.437	.888		0.944
Skilful Decision-Making	Q7	3.60	.498	.850	.812	0.899	
	Q8	3.47	.507	.763	.887		
	Q9	3.57	.504	.787	.866		
Peer Connectedness	Q10	3.57	.504	.874	.765	0.933	
	Q11	3.50	.509	.874	.765		
Getting Voice	Q12	3.43	.504	.571	.864	0.865	
	Q13	3.67	.547	.704	.833		
	Q14	3.50	.572	.789	.810		
	Q15	3.60	.498	.569	.865		
	Q16	3.47	.507	.812	.806		

DISCUSSION

The Indonesian version of the PRES has been tested for validity and reliability. The purpose of this test was to evaluate whether the questionnaire was suitable for use after being translated into Indonesian from its original English language. In case there were invalid items that could not be included in the validity test, the items were included in the reliability test (42). Instead, a valid and appropriate questionnaire or instrument that can be applied to a culturally and linguistically diverse target population can be adapted from an existing questionnaire or instrument or developed from scratch and requires literal translation and validation (33).

This study not only translates the scale into Indonesian, but also ensures that the resulting instrument is relevant and appropriate to the context of cultural values, social norms, and experiences of pregnant women in Indonesia, by developing a holistic approach, which may differ from the context in the country of origin of the instrument or other countries that have adopted pregnancy-related women's empowerment scales. The instruments from this study can be used to measure and improve the level of empowerment of pregnant women, which can have a positive impact on health decisions and the well-being of pregnant women.

In this study, the Pregnancy-Related Empowerment

Scale (PRES) questionnaire, both relevance and clarity, showed an overall CVI of more than 0.80, indicating that the content is highly relevant and can be used as a measurement tool for pregnancy-related women's empowerment in Indonesia. Additionally, the forward-translated version (English to Indonesian) requires only minor changes, which shows clarity and no noticeable differences. Thus, the new translated version is acceptable to the target audience and has the same communicative function as the source language. The calculated content validity index of 0.8 or higher for the new tool is considered acceptable and suitable for use (4,36). Therefore, the high CVI results of the Indonesian version of the PRES indicate that the questionnaire can be adopted and used well in the local context and translated with easy-to-understand and clear sentences.

Our results showed that the I-CVI index results exceed 0.99 on all items. This indicates that the experts had perfect agreement in rating the items. In other literature, it is stated that if there are less than five experts, the I-CVI index should be 1.00, and the I-CVI should be at least 0.78, and the result is considered adequate if there are six or more experts on the panel. It is essential to consider this I-CVI value when revising or changing items in the questionnaire (24). The calculated S-CVI/Ave of 0.99 is higher than 0.90, which indicates an excellent average proportion of relevance levels (3 and 4) evaluated by the experts (23,24). A study stated that two methods can be used in the calculation of content validity, which include S-CVI/Ave or S-CVI/UA. The use of S-CVI/Ave calculation can also provide better values. The obtaining of a low S-CVI value can be caused by an expert having a biased view or needing to understand the content. However, the CVI can be improved if the number of experts is at least ten (43). In this study, the panel consisted of ten experts. Furthermore, the question items in the questionnaire were revised and corrected as suggested by the expert panel through a content validation process. This content validation step is crucial to evaluate and ensure that the tool is valid for use by local residents in their mother language (24). In the original questionnaire, the experts evaluated each item for relevance and clarity, and only the items endorsed by five of the seven experts were retained to obtain a content validity index of 0.71. Thus, revisions were made to improve the clarity and conciseness of the items, which originally contained 54 items provided to the experts, to 16 valid items (25).

All questions were included in the reliability test because, based on the validity test results, all questions were declared valid. The purpose of this reliability test is to evaluate whether this questionnaire can be used as an instrument that gets the same or stable and consistent results when used at different times (28). This study showed that Cronbach's alpha coefficient had high reliability across the scales of all pregnancy-related empowerment scales, with the Cronbach's alpha value of the overall scale was 0.944. Consistent item statistics indicate that all items measure the same domain. High-reliability values for the original scale and adapted scale is stated with a Cronbach alpha value above 0.70 (39). Our study reported higher coefficient of the Indonesian version of PRES compared than the original version of PRES in the previous studies which reported Cronbach's alpha values of 0.91 (19) and 0.92 (4,25). Hence, the high Cronbach's alpha value in this study indicates that the Indonesian version of the PRES is a highly reliable tool to assess the empowerment of pregnant women in the Indonesian population. As for the original questionnaire, the estimated reliability values calculated based on Cronbach's alpha for the combined sample ($\alpha = 0.94$), and for the English ($\alpha = 0.91$) and Spanish ($\alpha = 0.93$) versions, also supported the high internal consistency of each item on this questionnaire (25).

A significant limitation of this study that is unavoidable and may lead to biased opinions about women's empowering experiences related to pregnancy is that participants were not classified based on the number of parities and experiences with pregnancy complications. In addition, another unavoidable limitation is the presence of psychological factors such as anxiety or depression, which can describe a pregnant woman's experience and may affect the measurement of empowerment.

CONCLUSION

The Indonesian version of the PRES is a valid and reliable tool to measure women's empowerment during pregnancy in the Indonesian population. Additionally, the scale has undergone forward translation and back translation and has undergone content validity by ten experts. The questionnaire was also reliable after reliability testing on a pilot study group of 30 participants. Consequently, it is confirmed that the items in the Indonesian version of the questionnaire have clear instructions and can be understood by pregnant women which can be used to measure the empowerment of pregnant women. The questionnaire is recommended for evaluating the extent to which pregnant women feel empowered, both physically, mentally, and socially, during pregnancy at antenatal visits. Therefore, an empowered pregnant woman will be able to prepare properly for her birth.

ACKNOWLEDGEMENT

We gratefully appreciate the translators for their assistance in translation process of this study. We would

also be grateful to the Expert Panel members and the pregnant women who participated and contributed for this study.

REFERENCES

1. Sen KK, Jamee AR, Bari W. Women's multidimensional empowerment index and essential newborn care practice in Bangladesh: The mediating role of skilled antenatal care follow-ups. PLoS One. 2023 Feb 1;18(2 February). doi: 10.1371/journal.pone.0281369
2. Onah MN, Onah RC, Onah FE. Linkages between women's empowerment, religion, marriage type, and uptake of antenatal care visits in 13 West African countries. PLOS Global Public Health. 2023 Jun 1;3(6). doi: 10.1371/journal.pgph.0000406
3. Winters S, Pitchik HO, Akter F, Yeasmin F, Jahir T, Huda TMN, et al. How does women's empowerment relate to antenatal care attendance? A cross-sectional analysis among rural women in Bangladesh. BMC Pregnancy Childbirth. 2023 Dec 1;23(1). doi: 10.1186/s12884-023-05737-9
4. Dorukoğlu AS, Bozkurt Ll D, Demirel Bozkurt Ll. Validity and reliability study of the Turkish version of PRES Progress in Health Sciences [Internet]. Vol. 11, Poland Prog Health Sci 2021. 2021. Available from: https://khgm.saglik.gov.tr/TR,65461/uzak
5. King A, Piccinini-Vallis H. Patient-Perceived Patient-Centeredness During Pregnancy. Journal of Obstetrics and Gynaecology Canada. 2023 Nov;45(11):102194. doi: 10.4235/agmr.20.0074
6. Tavananezhad N, Bolbanabad AM, Ghelichkhani F, Effati-Daryani F, Mirghafourvand M. The relationship between health literacy and empowerment in pregnant women: a cross-sectional study. BMC Pregnancy Childbirth. 2022 Dec 1;22(1). doi: 10.1186/s12884-022-04686-z
7. Khatiwada J, Muzembo BA, Wada K, Ikeda S. Dimensions of women's empowerment on access to skilled delivery services in Nepal. BMC Pregnancy Childbirth. 2020 Dec 1;20(1). doi: 10.1186/s12884-020-03309-9
8. Aboagye RG, Okyere J, Seidu AA, Ahinkorah BO, Budu E, Yaya S. Does women's empowerment and socio-economic status predict adequacy of antenatal care in sub-Saharan Africa? Int Health. 2024 Mar 1;16(2):165–73. doi: 10.1093/inthealth/ihad016
9. Sebayang SK, Efendi F, Astutik E. Women's empowerment and the use of antenatal care services: analysis of demographic health surveys in five Southeast Asian countries. Women Health. 2019 Nov 26;59(10):1155–71. doi: 10.1080/03630242.2019.1593282
10. Kareem YO, Morhason-Bello IO, OlaOlorun FM, Yaya S. Temporal relationship between Women's empowerment and utilization of antenatal care services: lessons from four National Surveys in sub-Saharan Africa. BMC Pregnancy Childbirth. 2021 Dec 1;21(1). doi: 10.1186/s12884-021-03679-8
11. Khatri RB, Mengistu TS, Assefa Y. Input, process, and output factors contributing to quality of antenatal care services: a scoping review of evidence. BMC Pregnancy Childbirth. 2022 Dec 28;22(1):977. doi: 10.1186/s12884-022-05331-5
12. Khatri RB, Karkee R, Durham J, Assefa Y. Universal coverage of the first antenatal care visit but poor continuity of care across the maternal and newborn health continuum among Nepalese women: analysis of levels and correlates. Global Health. 2021 Dec 11;17(1):141. doi: 10.1186/s12992-021-00791-4
13. Mwebesa E, Kagaayi J, Ssebagereka A, Nakafeero M, Ssenkusu JM, Guwatudde D, et al. Effect of four or more antenatal care visits on facility delivery and early postnatal care services utilization in Uganda: a propensity score matched analysis. BMC Pregnancy Childbirth. 2022 Dec 3;22(1):7. doi: 10.1186/s12884-021-04354-8
14. Gamberini C, Angeli F, Ambrosino E. Exploring solutions to improve antenatal care in resource-limited settings: an expert consultation. BMC Pregnancy Childbirth. 2022 Dec 30;22(1):449. doi: 10.1186/s12884-022-04778-w
15. Mokam B, Zamo Akono C. The association between women's empowerment and reproductive health care utilization in Cameroon. International Journal for Quality in Health Care. 2022 May 7;34(2). doi: 10.1093/intqhc/mzac032
16. Ameyaw EK, Dickson KS, Adde KS, Ezezika O. Do women empowerment indicators predict receipt of quality antenatal care in Cameroon? Evidence from a nationwide survey. BMC Womens Health. 2021 Dec 1;21(1). doi: 10.1186/s12905-021-01487-y
17. Denny HM, Laksono AD, Matahari R, Kurniawan B. The Determinants of Four or More Antenatal Care Visits Among Working Women in Indonesia. Asia Pac J Public Health. 2022 Jan 1;34(1):51–6. doi: 10.1177/10105395211051237
18. Hadisuyatmana S, Has EMM, Sebayang SK, Efendi F, Astutik E, Kuswanto H, et al. Women's Empowerment and Determinants of Early Initiation of Breastfeeding: A Scoping Review. J Pediatr Nurs. 2021 Jan;56:e77–92. DOI: 10.1016/j.pedn.2020.08.004
19. Leahy-Warren P, Nieuwenhuijze M. Measuring women's empowerment during the perinatal period in high income countries: A scoping review of instruments used. Heliyon. 2023 Apr 1;9(4). DOI: 10.1016/j.heliyon.2023.e14591
20. Raj A, Dey A, Rao N, Yore J, McDougal L, Bhan N, et al. The EMERGE framework to measure empowerment for health and development. Soc Sci Med. 2024 Jun 1;351.
21. Vedam S, Stoll K, Taiwo TK, Rubashkin N, Cheyney M, Strauss N, et al. The Giving Voice to Mothers study: Inequity and mistreatment during pregnancy

and childbirth in the United States. Reprod Health. 2019 Jun 11;16(1). DOI: 10.1186/s12978-019-0729-2
22. Vedam S, Stoll K, Martin K, Rubashkin N, Partridge S, Thordarson D, et al. The Mother's autonomy in decision making (MADM) scale: Patient-led development and psychometric testing of a new instrument to evaluate experience of maternity care. PLoS One. 2017 Feb 1;12(2). doi: 10.1371/journal.pone.0171804
23. Idriss KN, Mohamad N, Ilias MI, Taib F. Validation of Attitude and Practice Questionnaire on Pandemic Ethical Decision-Making among Paediatric Healthcare Workers in Malaysia using Exploratory Factor Analysis. Malaysian Journal of Medicine and Health Sciences. 2024;20(SUPP3):85–91. Doi: 10.21315/eimj2024.16.1.5
24. Cocchieri A, Magon G, Cavalletti M, Cristofori E, Zega M. Exploring hospital compliance with the primary nursing care model: validating an inventory using the Delphi method. BMC Nurs. 2021 Dec 1;20(1). DOI: 10.1186/s12912-021-00712-1
25. Klima CS, Vonderheid SC, Norr KF, Park CG. Development of the Pregnancy-related Empowerment Scale. Nursing and Health. 2015 Oct;3(5):120–7. Doi: 10.13189/nh.2015.030503
26. Navarro-Flores E, Losa-Iglesias ME, Becerro-De-Bengoa-Vallejo R, Rodríguez-Sanz D, Palomo-López P, Calvo-Lobo C, et al. Translation and test–Retest of the Spanish podiatry health questionnaire (PHQ-S). Int J Environ Res Public Health. 2018 Oct 10;15(10). doi: 10.3390/ijerph15102205
27. López-López D, Navarro-Flores E, Becerro-De-Bengoa-Vallejo R, Losa-Iglesias ME, Palomo-López P, Sánchez-Gómez R, et al. Cross-Sectional Study Cross-Cultural Adaptation and Test-Retest Reliability of the Spanish ROWAN Foot Pain Assessment Questionnaire (ROFPAQ-S). Pain Physician. 2020. Vol 23(1). doi: 10.36076/ppj.2020/23/E1
28. Mohamad Marzuki MF, Yaacob NA, Yaacob NM. Translation, cross-cultural adaptation, and validation of the Malay version of the system usability scale questionnaire for the assessment of mobile apps. JMIR Hum Factors. 2018 Apr 1;5(2). DOI: 10.2196/10308
29. Ahmadnezhad L, Lypez-Lypez D, Becerro-de-Bengoa-Vallejo R, Jimйnez-Cebriбn AM, Gymez-Salgado J, Losa-Iglesias ME, et al. "Translated and adaptation into Persian of the podiatric health questionnaire (PHQ)." J Tissue Viability. 2023 May 1;32(2):255–61. Doi: 10.1016/j.jtv.2023.02.009
30. Gaudet JG, Kull C, Eskenazi ML, Diaper J, Maillard J, Mollard F, et al. Three-Minute Diagnostic Assessment for Delirium using the Confusion Assessment Method (3D-CAM): French translation and cultural adaptation. Canadian Journal of Anesthesia. 2022 Jun 1;69(6):726–35. DOI: 10.1007/s12630-022-02232-1
31. Tsang S, Royse CF, Terkawi AS. Guidelines for developing, translating, and validating a questionnaire in perioperative and pain medicine. Vol. 11, Saudi Journal of Anaesthesia. Medknow Publications; 2017. p. S80–9. doi: 10.4103/sja.SJA_203_17
32. Locquet M, Willems T, Specque C, Beaudart C, Bruyиre O, Van Beveren J, et al. Cross-cultural adaptation, translation, and validation of the functional assessment scale for acute hamstring injuries (FASH) questionnaire for French-speaking patients. Disabil Rehabil. 2020 Jul 2;42(14):2076–82. DOI: 10.1080/09638288.2018.1544669
33. Lau ASY, Yusoff MSB, Lee YY, Choi SB, Xiao JZ, Liong MT. Development and validation of a Chinese translated questionnaire: A single simultaneous tool for assessing gastrointestinal and upper respiratory tract related illnesses in pre-school children. J Taibah Univ Med Sci. 2018 Apr 1;13(2):135–41. doi: 10.1016/j.jtumed.2017.11.003
34. Nia H, Salimi SS, Charati F, Azimi-Lolaty H, Shafipour V. Validation of the persian version of health professionals communication skills scale. Iran J Nurs Midwifery Res. 2022 Jan 1;27(1):47–53. DOI: 10.4103/ijnmr.IJNMR_205_19
35. Carvalho ACL, Gomes F de A, Bernardo Silva AV, Araújo MS, Barbosa GM, Avila MA, et al. Self-care during the COVID-19 pandemic: Development of a virtual educational booklet for postmenopausal women with osteoporosis. J Bodyw Mov Ther. 2023 Apr 1;34:74–80. DOI: 10.1016/j.jbmt.2023.04.002
36. Yusoff MSB. ABC of Content Validation and Content Validity Index Calculation. Education in Medicine Journal. 2019 Jun 1;11(2):49–54. Doi: 10.21315/eimj2019.11.2.6
37. Pantuzza LLN, do Nascimento E, Botelho SF, da Rocha ALP, Martins MAP, do Nascimento MMG, et al. Development and content validation of the medication literacy test for older adults (TELUMI). Arch Gerontol Geriatr. 2023 Sep 1;112. doi: 10.1016/j.archger.2023.105027
38. Zaçe D, Hoxhaj I, Pasciuto T, Diakanthos M, Beccia F, Di Pietro ML, et al. The Development and Validation of a Questionnaire to Investigate the Association Between Maternal Food Insecurity and Fetal Structural Anomalies: Delphi Procedure and Pilot Study. Matern Child Health J. 2023 Sep 1;27(9):1518–28. DOI: 10.1007/s10995-023-03675-8
39. Bhattacherjee A. SOCIAL SCIENCE RESEARCH-PRINCIPLES, METHODS, AND PRACTICES [Internet]. 3rd ed. Florida: University of South Florida; 2023. Available from: https://LibreTexts.org
40. Ozair MM, Baharuddin KA, Mohamed SA, Esa W, Yusoff MSB. Development and Validation of the Knowledge and Clinical Reasoning of Acute Asthma Management in Emergency Department

(K-CRAMED). Education in Medicine Journal. 2017;9(2):1–17. Doi: 10.21315/eimj2017.9.2.1

41. Perme CS, Damasceno MS, Chandrashekar R, Xu J, Ratnani I, Masud F, et al. Perme ICU Physical Therapy Competency: Development of an ICU Knowledge and Skills Assessment Tool. Intensive Crit Care Nurs. 2024 Dec 1;85:103750. doi: 10.1016/j.iccn.2024.103750
42. Suharti A, Putranto FM, Roselina E, Alif WL, Siregar ES. Validity and Reliability Test of Adaptation Auditory Skills Checklist Indonesian Version on Patients with Hearing Problems at Universitas Indonesia Hospital. Malaysian Journal of Medicine and Health Sciences. 2024 May 1;20(3):225–8. doi: https://doi.org/10.47836/mjmhs.20.3.30
43. Ruslan NH, Ruzlin ANM, Yasin SM. Validating the Antismoking AIDA Model-Based Questionnaire for Malaysian Population. Asian Pacific Journal of Cancer Prevention. 2024;25(5):1745–51. DOI: 10.31557/APJCP.2024.25.5.1745