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Translation and validation of the premenstrual change coping inventory in Indonesian version

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ABSTRACT

Introduction: Premenstrual syndrome (PMS) affects millions of women worldwide, characterized by physical and psychological symptoms that occur cyclically before menstruation. In Indonesia, understanding and managing PMS remains challenging due to social stigma and lack of awareness. The Premenstrual Change Coping Inventory (PMS-Cope) is a validated tool designed to measure mental strategies used to adapt to menstrual cycle changes. However, no validated Indonesian version exists, creating a significant gap in research and clinical practice for Indonesian womens. The research evaluated the translation and validation of the premenstrual change coping inventory (PMS-Cope) in Indonesia

Methods: 321 Indonesian women were included in this study. PMS-Cope used Cronbach's alpha and convenience sampling. Exploratory factor analysis (EFA) was used in this study to determine factor structure and evaluate the structural model fit. Confirmatory factor analysis was also used in this study.

Results: The Cronbach's alpha value for the study was .90 overall. The CFA results for this study showed goodness of fit. The comparative fit index was .91, the related fit index (RFI) was .80, and the normed fit index was .83. The value of the Kaiser–Meier–Olkin test was .873, and Bartlett's test value of sphericity was statistically significant and indicated adequate EFA

Conclusion: The result of this study showed that the PMS-Cope has satisfactory reliability and validity for evaluating PMS-cope in Indonesia.

Keywords: premenstrual syndrome; translation; validation; women

INTRODUCTION

Premenstrual syndrome (PMS) is a condition that affects millions of women all over the world. It is characterized by a pattern of physical and psychological manifestations recurring cyclically prior to menstruation (Gudipally & Sharma, 2025; Takeda, 2023). PMS symptoms include fatigue, tenderness in breasts, bloating, mood swings, and irritability, which affect day-to-day activities among women (Itriyeva, 2022; Mishra, Elliott, & Marwaha, 2025). At the same time, in Indonesia, understanding and managing PMS remain a significant challenge. Most of them are not offered medical or psychological interventions because of social stigma or lack of awareness about the condition. Social stigma surrounding PMS in Indonesia is entrenched, where complaints of women are considered fantasy or an excuse to avoid responsibilities. Taboos and ignorance surrounding PMS ensure that most women are not ready to talk about it or approach physicians for help. Good and trustworthy tools must be used so as to objectively determine evidence of PMS, especially in a society that is still tainted with taboo regarding the disease. Premenstrual Change Coping Inventory (PMS-Cope) is a scale used so as to measure and evaluate mental strategies used to adapt to menstrual cycle changes (Read, Perz, & Ussher, 2014). The self-report scale questionnaire tool was meant to enlighten researchers on how people may handle PMS symptoms and how well and effectively they manage symptoms (Read et al., 2014). The PMS-Cope scale has a number of subdomains, including cognitive, emotional, and behavioral ways of coping with PMS symptoms that arise.

There is limited research on coping styles in Indonesian women and PMS. Coping and therapeutic dimensions are also not studied well, whereas previous research was primarily symptom- and prevalence-based on PMS (Noviyanti, Gusriani, Ruqaiyah, Mappaware, & Ahmad, 2021), Indonesian women's coping with PMS and the ways in which they cope need to be studied, taking into account the diversity of Indonesian culture, i.e., many ethnic groups, religion, and socioeconomic status. Indonesian norms and cultural values have the ability to affect women's choice of coping mechanisms and responses to PMS. For instance, talking about reproductive health issues can be forbidden in some cultures, and therefore, women cannot obtain help or support. The problem of coping with PMS symptoms is also enhanced by the fact that access to mental health services remains low in most locations. The purpose of the PMS-Cope study in Indonesia is to fill the current gap in the literature and develop a better understanding of Indonesian women's coping

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with PMS. Researchers can determine the most prevalent coping behaviors and determinants of these behaviors' selection through the use of PMS-Cope. Moreover, this study can assist in the development of more culturally sensitive and impactful interventions for the Indonesian population.

This study also has deep implications. Physicians can develop more effective education interventions and programs to aid women in controlling PMS symptoms through understanding effective coping strategies. For example, coping education and emotional support for PMS, counseling or group support programs may be designed (Read et al., 2014). Findings of this study can also be utilized to raise awareness among the public about PMS and the necessity of coping with mental illness issues prior to menstruation. Moreover, Indonesia's PMS-Cope study finds its niche in international knowledge regarding PMS and coping. Researchers are able to explain more fully how cultural influences form experience of PMS and selection of coping mechanism by incorporating voice from developing nations like Indonesia. Creating a more specific and full plan for knowing and treating PMS across cultures is significant.

Different nations have piloted and validated the PMS-Cope tool, including Turkey (Çetin & Erbil, 2024), German (Kaiser et al., 2018), and Australia (Read et al., 2014). PMS-Cope is a valid and effective method for assessing coping mechanisms employed by women in dealing with PMS symptoms, as tests conducted in these nations have indicated. To make this instrument valid and useful, the instrument has to be adapted and validated in the Indonesian setting. There are numerous challenges that need to be overcome in order to achieve this study. No articles have been written and published and sent out in overseas journals, yet the validity and accuracy of the instrument need to be guaranteed in Indonesia. One of the primary problems is the fact that Indonesian lacks sound and viable measuring tools. Therefore, before using the PMS-Cope widely to clinical practice and research, it is crucial that it must be validated and translated into Indonesian. The activity of ensuring that the PMS-Cope can be used to measure coping among the Indonesian people consists of translation, validation testing, and reliability testing.

METHODS

Instrument of the PMS-Cope

Kaiser et al. (2018) developed the PMS-Cope to gauge how people handle the changes that come with PMS. There are three components and seventeen items on the scale. The subscales include seeking positive outcomes behaviors (items 1, 2, 3, 4, 5, 6, 7), seeking support (items 8, 9, 10, 11, 12), and seeking health services (items 13, 14, 15, 16, 17). A four-point Likert scale is used to rate the scale's items ranging from strongly disagree (1 point), not sure (2 points), agree (3 points), to strongly agree (4 points); 17 is the lowest number, and 68 is the highest.

Statistical Analysis

This study utilized SPSS version 26 and AMOS version 18. Minimum, maximum, mean, standard deviation, skewness, and kurtosis values were used to analyze the quantitative data. The degree of data asymmetry toward the mean is measured using skewness. If the skewness value is less than 3 and the kurtosis value is less than 7, then none of these metrics significantly deviates from normalcy and, consequently, from psychometric sensitivity (Martins, Silva, Marôco, & Campos, 2024).

Reliability

Internal consistency reliability was assessed using Cronbach's alpha, and a value higher than .7 indicated appropriate internal consistency (Aday, 1998; Rau, 2023). The intra-class correlation coefficient was used to assess the PMS-Cope instruments' test-retest reliability; a score of .75 indicates stability or sufficient test-retest reliability (Shrout & Fleiss, 1979).

Factor Structure of PMS-Cope

Principal axis factoring with varimax rotation was employed in exploratory factor analysis to determine construct validity. To assess sampling acceptability, the Kaiser–Meyer–Olkin measurement and Bartlett's test of sphericity were used to test the factor analysis (Coakes & Steed, 1997). To indicate capacity, the Bartlett's test value of sphericity must be significant (P-value < .001) and the Kaiser–Meyer–Olkin measure of sampling must be larger than .60.

Construct Validity

CFA was used to evaluate the structural model fit for the DRSP. The study employed AMOS software version 21.0 to analyze the goodness of fit. The following fit indices were computed: the goodness of fit index (GFI), normed fit index, comparative fit index, adjusted goodness-of-fit index (AGFI), and x2/df (the ratio of Chi-square to the degree of freedom). The majority of the fit indices satisfy the criteria for SEM analysis (Doll, Xia, and Torkzadeh, 1994).

Doll, Xia, and Torkzadeh (1994), Baumgartner and Homburg (1996) and Torkzadeh, Koufteros, and Pflughoeft (2003) also recommended that a value be acceptable if it is above .8, even though the values for GFI and AGFI are not above .9. While the root mean square error of approximation (RMSEA) values for both models are less than .08, the SRMR is likewise near the threshold value (Hair, Black, Babin, Anderson, & Tatham, 1998).

Ethical Clearance

This research was approved by the Ethics Research Committee of the Faculty of Health, University of Muhammadiyah Malang, Indonesia, on July 18, 2024 (approval number: E.4.d/007/KEPK/FIKES-UMM/VII/2024).

RESULTS

Participants' Characteristics

Table 1 shows that the respondents in this study were mostly young women, with an average age of 2.87 with a standard deviation of .33. As many as 97.5% of respondents were Muslim and most were unmarried (97.5%). The majority were unemployed (79.4%), had low education (90.7%), and lived in rural areas (71.3%). More than half had low incomes (56.7%) and were inactive in social activities (68.8%). Most of the skewness and kurtosis values are in the range of -1 to +1 (Table 2).

Reliability

The internal reliability of the Indonesian version of the PMS-Cope instrument is very good, with a Cronbach's alpha of .90, which is above the general threshold of .70 (Nunnally & Bernstein, 1994). This indicates that the items in the instrument are consistent in measuring the same construct, namely coping strategies for PMS (Table 3).

Table 1. Demographics of Characteristics

Characteristics	n	%
Age Mean ± SD	2.87 ± .334	
Religion		
Muslim	313	97.5
Non-muslim	8	2.5
Ethnic		
Java	137	42.7
Non-Java	184	57.3
Marital Status		
Married	8	2.5
Unmarried	313	97.5
Education		
Low	291	90.7
High	30	9.3
Employment		
Unemployed	255	29.5
Employed	66	70.5
Income		
Low	182	56.7
High	139	43.3
Social Activity		
No	221	68.8
Yes	100	31.2
Menstrual Period		
Normal	318	98.8
Unnormal	4	1.2
Cycle of Regularity		
Regular	238	74.1
Irregular	83	25.9
History of Disease		
Yes	55	17.1
No	266	82.9
Age of Menarche		
Normal	247	76.9
Unnormal	74	23.1
Residence		
Rural	229	71.3
Urban	92	28.7
Sports Activity		
No	99	30.8
Yes	222	69.2
Dysmenorrhea		
No	87	27.1
Yes	234	72.9
Smoking History		
No	313	97.5
Yes	8	2.5
Family at Home		
Nuclear Family	261	81.3
Not Nuclear Family	60	18.7
Social Support Mean ± SD	2.53 ± .536	
Low	6	1.9
Medium	139	43.3
High	176	54.8
Psychological Changes Mean ± SD	2.53 ± .536	
Coping Mechanism Mean ± SD	1.78 ± .416	
Adaptive	250	22.1
Maladaptive	71	77.9

Factor Structure of PMS-Cope

Exploratory factor analysis on the Indonesian version of PMS-Cope resulted in four main factors reflecting various coping strategies used by Indonesian women in dealing with PMS. The Kaiser-Meyer-Olkin value of .873 and a significant Bartlett test indicate that the data are suitable for analysis using exploratory factor analysis (EFA). Promax rotation was used because it was assumed that the factors were correlated with each other. Based on the results of the Promax rotation of the EFA, the items in the Indonesian version of the PMS-Cope instrument are consistently distributed into four main dimensions, with factor loading values indicating adequate strength of association.

The first factor, interpreted as social support, consists of six items, namely items 8 to 12 and item 13. The loading values for this factor range from .503 to .746. The second factor, reflecting physical and medical strategies, includes six items, namely item 6 and items 13 to 17. The factor loadings for this dimension range from .550 to .774. The third factor, classified as positive engagement and distraction, consists of four items, namely items 1 to 4. The loading values for this factor range from .533 to .712. The fourth factor includes two items, namely item 5 and item 7 which are interpreted as physical activity and sociability. The loading value ranges from .647 to .691 (Table 4).

Construct Validity

The model structure's goodness-of-fit is shown in Figure 1. Chi-square/df has a value of 1.99, comparative fit index of .91, Tucker-Lewis index of .90, and RMSEA of .05. In addition, the goodness of fit index (GFI) has a value of .92 and AGFI of .90.

DISCUSSION

Most of the respondents in this study were young women, who can be assumed to be of productive age and vulnerable to emotional and physical changes due to PMS. The distribution of respondent characteristics reflects the general characteristics of students or young women in areas with limited access to health services or information about PMS. Unmarried and unemployed status also reflects the potential limitations of social support and psychological resources that can affect how they manage PMS symptoms. These results are in line with the study by Direkvand-Moghadam, Sayehmiri, Delpisheh, and Kaikhavandi (2014), which found that the prevalence of PMS was higher in young women, especially students, who had academic stress and a lack of emotional

Table 2. Average Scores of the PMS-Cope

PMS-Cope	Min	Max	Mean	SD	Skewness	Kurtosis
I occupy myself with things I enjoy	1	4	3.12	.64	-1.04	3.05
I distract myself.	1	4	2.51	.84	-.47	-.54
I purposefully induce positive feelings.	1	4	3.03	.69	-.85	1.65
I make time for my hobbies.	1	4	3.06	.68	-.60	.92
I get in motion.	1	4	2.98	.61	-.48	1.26
I have my personal strategies to deal with symptoms (e.g.,hot-water bottle, hot bath, etc.).	1	4	2.72	.84	.56	-.13
I meet friends.	1	4	3.15	.69	-.77	1.18
I talk with friends about my symptoms.	1	4	2.41	.89	-.11	-.83
I purposely look for advice and support from other people.	1	4	2.75	.84	-.56	-.12
I talk to my partner or a close friend about my complaints.	1	4	2.75	.88	-.54	-.31
I seek comfort and understanding from others.	1	4	2.56	.93	-.22	-.82
I exchange views with other women concerned.	1	4	2.73	.86	-.68	-.11
I increasingly look for information about my physical complaints.	1	4	2.80	.78	-.76	.48
I look for new treatment options.	1	4	2.36	.84	-.22	-.78
I try different alternative treatment options (e.g., evening primrose oil, light therapy, homeopathy, etc.)	1	4	1.99	.92	.39	-1.02
I take medication form by physical complaints.	1	4	2.34	.97	-.09	-1.13
I avoid certain foods.	1	4	2.50	.91	-.31	-.79

Table 3. Reliability Analysis and Convergent Validity

PMS-Cope	Scale item	Mean	Standard Deviation	Item-total correlation	Cronbach's alpha if the item is deleted
I occupy myself with things I enjoy	1	3.12	.64	.30	.83
I distract myself.	2	2.51	.84	.30	.83
I purposefully induce positive feelings.	3	3.03	.69	.35	.82
I make time for my hobbies.	4	3.06	.68	.37	.82
I get in motion.	5	2.98	.61	.28	.83
I have my personal strategies to deal with symptoms (e.g.,hot-water bottle, hot bath, etc.).	6	2.72	.84	.39	.82
I meet friends.	7	3.15	.69	.39	.83
I talk with friends about my symptoms.	8	2.41	.89	.44	.82
I purposely look for advice and support from other people.	9	2.75	.84	.54	.81
I talk to my partner or a close friend about my complaints.	10	2.75	.88	.46	.82
I seek comfort and understanding from others.	11	2.56	.93	.57	.81
I exchange views with other women concerned.	12	2.73	.86	.49	.82
I increasingly look for information about my physical complaints.	13	2.80	.78	.57	.81
I look for new treatment options.	14	2.36	.84	.62	.81
I try different alternative treatment options (e.g., evening primrose oil, light therapy, homeopathy, etc.)	15	1.99	.92	.46	.82
I take medication form by physical complaints.	16	2.34	.97	.47	.82
I avoid certain foods.	17	2.50	.91	.42	.82

support. In addition, most respondents reported experiencing dysmenorrhea and experiencing menarche at a normal age. Dysmenorrhea accompanying PMS can worsen the physical and psychological discomfort experienced by women (Alfizah, Rahmawati, & Sriyatun, 2024; Saputra, Kurnia, & Aini, 2021). The presence of these symptoms is relevant because it can influence the choice of coping strategies. Sports are a fairly common activity in these adolescents and, as reported in various studies, sports can reduce the intensity of PMS symptoms (Daley, 2009).

The results of the analysis showed that the most frequently used coping strategies by respondents were social and recreational activities such as meeting friends, keeping themselves busy with things they like, and setting aside time for hobbies. This shows a tendency to use adaptive coping strategies in dealing with PMS symptoms. These strategies support the mechanism of emotional regulation and diversion from discomfort. This approach is according to the coping theory of Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen (1986), which divides coping into problem-focused coping and emotion-focused coping. Fun activities and socialization are forms of emotion-focused coping that are effective in reducing psychological distress. On the other hand, strategies such as trying alternative treatments and using drugs scored low. This indicates limited knowledge or access to medical or alternative treatments for PMS.

Table 4. Correlation Coefficients of The Items of The PMS-Cope Conforming to The Extracted Factors After Promax Rotation

Item	Factor Loading			
	F1	F2	F3	F4
1	.034	.156	.690	.385
2	.138	.344	.602	-.285
3	.302	.177	.712	.131
4	.109	.388	.533	.464
5	.064	.289	.245	.647
6	.243	.550	.181	.210
7	.376	.075	.072	.691
8	.735	.230	.196	.032
9	.746	.343	.139	.279
10	.725	.251	.162	.153
11	.727	.422	.193	.217
12	.685	.360	.264	.012
13	.503	.589	.467	.077
14	.448	.774	.399	.062
15	.262	.761	.266	-.089
16	.317	.656	.150	.233
17	.197	.658	.203	.171

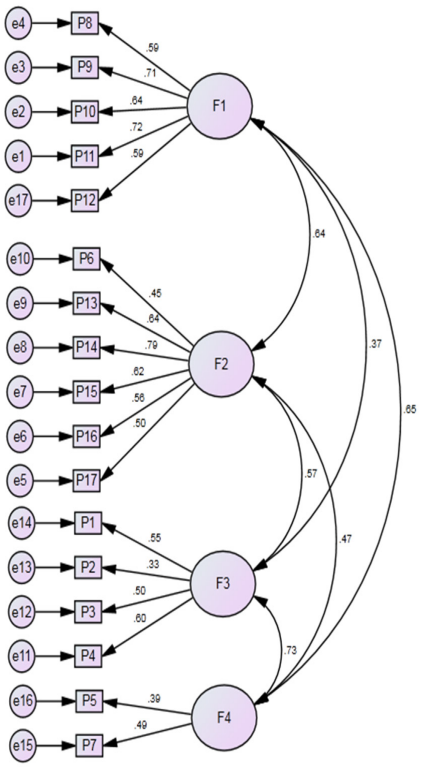

Figure 1. Factor Structure of PMS

According to Freeman (2003), many women are unaware that PMS symptoms can be controlled with non-pharmacological medications or therapies, so they prefer to rely on informal coping strategies.

The internal reliability of the Indonesian version of the PMS-Cope instrument is very good, with a Cronbach's alpha of .90, which is above the general threshold of .70 (Nunnally & Bernstein, 1994). This indicates that the items in the instrument are consistent in measuring the same construct, namely coping strategies for PMS. The item-total correlation values ranged from .28 to .62, indicating that there are different contributions of items to the total score, but still within acceptable limits. The items in the Indonesian version of the PMS-Cope instrument are uniformly distributed into four major dimensions, according to the findings of the EFA. Promax rotation and factor loading values show a sufficient degree of connection. Six factors make up the first factor, which is understood as social support. These behaviors include talking to friends about symptoms (item 8), asking for assistance from others (item 9), and sharing opinions with other women (item 12). They also include sharing experiences and seeking emotional support, where a moderate to strong contribution strength to the construct under measurement is indicated by the loading value range. This pattern is in line with other research that highlights the value of interpersonal interactions as a coping mechanism for PMS (Read et al., 2014). Six components make up the second factor, which represents medical and physical strategies. These items, which include utilizing a hot water bottle (item 6), looking for novel treatments (item 14), and using pharmaceuticals (item 16), represent an individual's attempts to manage PMS symptoms by pharmacological or physical interventions. Factor loadings for this dimension ranged, indicating good factor stability. The third factor, classified as positive engagement and distraction, consisted of four items. This dimension describes strategies to improve mood and distract attention from PMS symptoms, such as engaging in pleasurable activities (item 1) and generating positive feelings (item 3). The loadings for this factor indicated adequate factor strength in explaining variance in emotional coping strategies. The fourth factor included two items, item 5 (I move around/ do physical activity) and item 7 (I meet friends), which were interpreted as physical activity and sociability. These items indicate an active approach to managing premenstrual stress through body movement and direct social engagement. This reflects conceptual coherence within the dimension, although the smaller number of items may be a concern in further validation.

Overall, the former factor structure shows good psychometric stability and interpretability. The loading values obtained in each factor indicate that the items in the Indonesian version of the PMS-Cope contribute significantly to each construct. This finding supports the results of cross-cultural validation of the original version and adaptations in other countries such as China and Turkey, which also showed similar grouping patterns, although with some contextual differences (Çetin & Erbil, 2024; Li, 2017). The confirmatory factor analysis (CFA) model presented in Figure 1 shows the factor structure of the Indonesian version of the PMS-Cope consisting of four latent constructs, each represented by a set of observed items (indicators) that have been previously identified through EFA. This model was used to test the suitability of the obtained factor structure with empirical data on the Indonesian female population. The CFA results indicate that all items have statistically significant standardized factor loadings on their respective factors, indicating the substantial contribution of each item to the composite measure. The indicators have high correspondence with the latent factors because the values of item loading are primarily larger than .40, the minimum figure used most often in confirmatory

analysis (Brown, 2015), and the majority of them even larger than .60. Several indices indicated excellent fit of the model.

The four-factor model for the Indonesian version of the PMS-Cope is a valid measurement of psychological dimensions under investigation, as per this CFA model in general. These results are consistent with earlier cross-cultural translations and conceptual model developed on the original PMS-Cope version, i.e., the Chinese version by Li (2017), which also showed so well how well the model fit the four major dimensions of premenstrual syndrome coping strategies. Although there were some minor variations brought about by the social and cultural conditions of their respective societies, Indonesian PMS-Cope had a structure similar to what was reported in Germany, China, and Turkey in cross-cultural comparison. These results provide further testimony to the observation that the PMS-Cope is a culture-adaptive and flexible instrument with excellent psychometrics.

CONCLUSION

The PMS-Cope scale was successfully culturally translated and tested psychometrically into Indonesian in this present study. The Indonesian adaptation of the PMS-Cope was validated and proven to be a valid measure to measure coping mechanisms for women against PMS symptoms within the context of Indonesian culture using various strict statistical tests, i.e., construct validity, reliability testing, and model fit. Thus, it is reasonable to suggest the Indonesian version of the PMS-Cope as a proper and sensitive measurement instrument to be applied in clinical practice and in research, particularly in the areas of nursing and women's health. The tool can help health workers understand the kind of coping approaches taken by women and make interventions that are nearer to local psychological as well as cultural demands.

Declaration of Interest

None.

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Data Availability

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

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