Research Articles

Evaluation of the Psychometric Properties of Self-Efficacy in Performing Maternal Role for First Time Pregnant Adolescents in Indonesia

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Abstract

The aim of this study was to evaluate the psychometric properties of self-efficacy in performing the maternal role scale for first time pregnant adolescents in Indonesia (SEPMRS-Indonesia). The conceptual framework of this study was based on Bandura's self-efficacy theory, Rubin's concept of the maternal role, and a review of the relevant literature. Interviewing were conducted among twelve Indonesian adolescents who were experiencing their first pregnancy. The first draft of seventy-eight items was validated by five experts, sixty-three items remained and were examined for clairty by five of the Indonesian interviewees.

Exploratory factor analysis (EFA) and known group techniques were conducted to assess the construct validity. EFA yielded two factors of 60 items which explained 58.85% of the total variance, namely: (1) being able to perform essential activities during pregnancy, and (2) maintaining health and happiness during their pregnancy. The result of known group technique showed a significant mean difference in the scores of SEPMRS-Indonesia between pregnant adults and pregnant adolescents with a first-time pregnancy ($p < .01$). Reliability analysis was performed including internal consistency and test-retest. The range of overall Cronbach's alpha coefficients were .97 to .98. The test-retest reliability of the sixty items SEPMRS-Indonesia was at an acceptable level ($r = .99$), meaning this scale is a reliable tool for measuring the performing the maternal role of first time pregnant adolescents. In conclusion, nurses can apply this scale for screening the maternal confidence performance level of pregnant women and identifying appropriate strategies for empowering them to effectively perform their maternal role.

Introduction

Adolescent pregnancy between 15–19 years of age, remains a serious health and social problem in the world.[1,2] Indeed, it poses a risk to their health, family, peer group, school, and community.[3,4] The transitional phase of an adolescent mother-to-be has many problems including physiological, social, and emotional problems that can threaten maternal or fetal health.[3,5] A high-risk pregnancy, along with the associated psychosocial stress results in an increasingly complex situation.[6,7] With any high-risk condition, alterations in the perception of, and in this case the lack of preparedness to be a mother, are more likely to result in pregnant adolescents experiencing difficulty in performing maternal tasks.[2,4,6] Adolescence is a transitional phase, and at this time individuals are still have a great deal of anxiety relating to their social lives and their career prospects. In Indonesia, pregnancy in adolescence is highly context–specific in terms of culture, in addition to the physical problems it poses.[7] These issues often result in a lack of preparedness and inability of pregnant adolescents to optimally perform their maternal role.[4,8]

This study developed a new scale to measure the self-efficacy of pregnant adolescents with a first-time pregnancy in Indonesia, in performing their maternal role, particularly to detect efficacy expectations and outcome expectations in performing maternal roles during pregnancy. During the last ten years (1996-2016), Some studies have reported and measured efficacy expectations and outcome expectations in performing the maternal role during pregnancy. For instance, a study from Mirghafourfand measured the validity of maternal self–efficacy in Iranian mothers.[9] A study from Weglicki measured maternal confidence in African-American pregnant teens aged 13-20 years in the first and second semester using Pender's Health Promotion Model integrated with Erickson's developmental theory.[10]

Another study from Dennis et al., measured only the aspect of self–efficacy in terms of the ability to breastfeed among adolescents in Canada,[11] and a study from Guimond et al., measured parenting efficacy on children within the context of an early intervention on children's development.[12] In addition, a study from Secco measured perceived maternal competence and assessed mothering behavior and infant developmental outcomes also prenatally during the first to fourth month post-partum.[13] Also a study from Kaiser developed a questionnaire about the transition to motherhood for adolescents.[14] Some studies were found that measured the efficacy expectations and outcome expectations in performing the maternal role during pregnancy. Therefore, there is a great need to focus on the development of a scale to reflect the four dimensions of the maternal role from Rubin, along with an examination of Indonesian cultural practice that influences pregnant adolescents in their first-time pregnancy.[6] Performing maternal roles are complex for first time pregnancy among pregnant adolescents because they need the deal with more intense both physically, emotionally which may lead to low self-efficacy of motherhood. The development of this new scale is an effort to supply a way for health providers and educators, including nurses, nurse practitioners, and midwives to assess self-efficacy in performing the maternal role in pregnant adolescents to improve their responsibility during pregnancy.

Conceptual Framework

The study was based on Bandura's theory of self efficacy,[15] Rubin's concept of the maternal role,[6] and individual interviews. The self-efficacy theory was used to assess the ability of pregnant adolescents to perform the maternal role during pregnancy. This theory is often used in various studies as it predicts health behavior changes or a person's confidence to participate in a particular

behavior in every situation.[15] According to Bandura, self-efficacy is divided into two components; 1) efficacy expectations and 2) outcome expectations. Bandura explains that efficacy expectations are the personal trust that one can confidently perform those behaviors to produce the purposed outcome, and outcome expectations are the belief that a certain behavior will produce a particular outcome. The concept of the maternal role in this study was explained as taking the role of a mother for herself and her baby, and her relationship with her family and social system which included four parts; safe passage, acceptance by others, binding-in to the child, and giving of oneself.[6] Individual interviews were conducted to get a sense of the maternal role of pregnant adolescent mothers with a first-time pregnancy in Indonesia which could also reveal the influence of cultural and context-bound phenomena and their ability in performing their role as mothers

Study Aim

The aim of this study was to develop the self-efficacy scale in performing the maternal role for pregnant adolescents with a first time pregnancy in Indonesia and to evaluate its validity and reliability.

Methods

Design: The scale development guidelines of DeVellis[16] and Waltz, Strickland, and Lenz[17] were used to develop the SEPMRS-Indonesia scale. This study employed both qualitative and quantitative methods which consisted of two phases. The first phase was scale development that had three steps: 1) determining the content domains, 2) generating an item pool and 3) determining the format of the scale. The second phase was the psychometric testing of the newly developed SEPMRS-Indonesia that consisted of five steps including 1) evaluating the content validity of the initial item pool, 2) pre- testing the items, 3) administering field-testing, 4) evaluating the items, and 5) optimizing scale length.

Ethical Considerations: Prior to data collection, a request form seeking approval to conduct the study and informed consent was submitted to and received approval from the Ethical Committee, Faculty of Nursing, the Prince of Songkla University (MOE 0521.1.05/605). In addition, permission was sought and reviewed from the ethics committee of each community health center in Indonesia (UN.19.5.1.1.8/UEPKK/2017). All subjects were informed about the purpose, the procedure of data collection, the time they would be given to answer the questionnaire and also that they were all able to withdraw from the study at any time. Finally, the participants were asked to sign the consent form as a agreement to participate in this study.

Samples and Setting: To generate an item pool, 12 pregnant adolescents aged 18 to 19 years old with a first time pregnancy participated in this study. In pre-testing, 30 pregnant adolescents with a first time pregnancy were recruited to test item-analysis and the internal consistency of the SEPMRS-Indonesia scale. In field testing, this study used purposive sampling to recruit 630 pregnant adolescents aged 15-19 years old in the second or third trimester of pregnancy, with no complications (i.e., preeclampsia symptoms, diabetes mellitus, hypertension, etc) from four provinces including Riau, West Java, Central Java and West Nusa Tenggara who speak Bahasa Indonesia.[18]

In order to further evaluate the validity and reliability of this instrument, this study applied known group technique by comparing 30 pregnant adolescents with a first time pregnancy and 30 multiparous pregnant adults, and test-retest for stability by testing the two groups two times.

Instruments: The scale evaluated the self-efficacy in performing the maternal role of Indonesian pregnant adolescents with a first-time pregnancy. The questionnaire was originally formulated with 63 items that integrated the efficacy exprotation and outcome expectations. The score of each item was 1 (not at all confident) to 5 (very confident). A high score indicated high self-efficacy of pregnant adolescents in performing the maternal role during pregnancy. Respondents were asked to complete the questionnaires, including demoghrapic data and SEPMRS-Indonesia. Instructions to answer the questionnaires were introduced by the researcher. All questionnaires were reviewed to make sure they were fully completed.

Procedure and Data Analysis: The two phases of developing the SEPMRS-Indonesia scale were captured in figure 1.

Phase I: Scale Development consisted of three steps: 1) determination of the content domains, 2) generation of the item pool, and 3) determination of the scale format.

Step 1, the determination of the content domains was a process of constructing SEPMRS-Indonesia domains, which was started with a review of the literature related to the theory of self-efficacy, the concept of the maternal role, and existing instruments related to the self-efficacy in performing the maternal role in pregnant adolescents. In addition, interviews with 12 pregnant adolescents were conducted. The interviewees were 18 to 19 years old, and all of them had a first-time pregnancy and were in their third trimester. Seven pre-determined domains emerged from this interview.

Step 2, the generation of an item pool, initially consisted of seven pre-determined domains with 78 items. Then, after receiving suggestions from five experts, 15 items were deleted, leaving the second draft of the SEPMRS–Indonesia with 63 items. The domains were: 1) safe passage for herself and unborn baby during pregnancy (16 items), 2) establishing relationship with husband and unborn baby (7 items), 3) seeking support for maternal and unborn baby (5 items), 4) seeking companionship and strategies to deal with problems during pregnancy (9 items), 5) empowering husband to earn money for maternal and unborn baby's health (4 items), 6) being a healthy mom with a healthy unborn baby (9 items), and 7) having good feelings and happiness during her pregnancy (13 items).

Step 3, the determining the format of the scale, was determined by using a 5 point Liket-scale rating from 1 to 5 (1 = not at all confident, 2 = slightly confident, 3 = fairly confident, 4 = mostly confident, and 5 = very confident).[19,20] The values of the Likert scale ranged 1-5, 1 was the lowest value and 5 was the highest value. Then the scores of all the components were summed together to give a total value.

Phase II: Psychometric Evaluation. This phase consisted of five steps: 1) have initial item pool reviewed by experts 2) pre-testing the items, 3) field-testing, 4) evaluate the items, and 5) optimize scale length

Step 1, the initial item pool reviewed by experts that another five experts determined the relevance of each item to the intended scale domains or constructs, clarity, conciseness and also the level of representation of the domains.

Step 2, the pre-testing was conducted in Riau Province to evaluate the usefulness of the developed instrument in real-life situations and to reveal potential problems with the second draft-SEPMRS-Indonesia scale, including language appropriateness, clarity, and item comprehensiveness, as well as how much time was needed to fill in the questionnaire.

Step 3, the field-testing was performed in four provinces among 602 Indonesians including

West Java, Central Java, West Nusa Tenggara, and Riau.

Step 4, the evaluation the items by using EFA. This step included the encoding and processing of data using a computer program for statistical test of assumptions. All the assumptions were tested as requirements of factor analysis to examine the nature and appropriateness of the data. The assumptions of EFA consisted of test of normality, test of outliers, test of linearity, multi-collinearity, test for sample adequacy, and Bartlett's test of

Sphericity, construct validity and reliability of the newly developed tool, included initial examination of item's performance by determining the inter-item correlation,[17,21] evaluating the construct validity by conducting exploratory factor analysis (EFA),[16,22]

Step 5, the optimizing the length of the SEPMRS-Indonesia final version. This step was a determination of the scale reliability by performing internal consistency. The Cronbach's alpha coefficient were at least 0.70 is acceptable for new instrument[21].
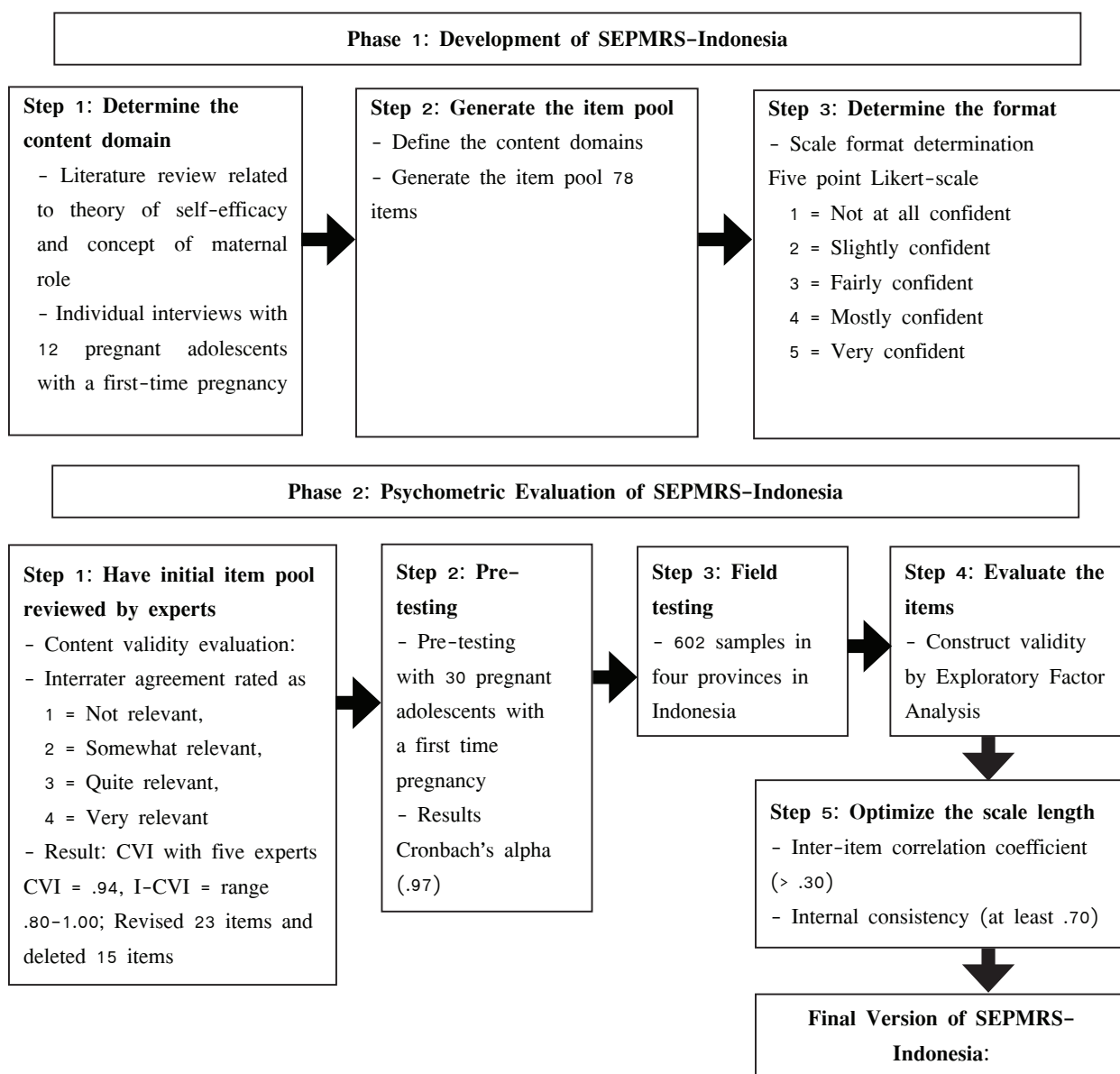

Phase 1: Development of SEPMRS-Indonesia

Step 1: Determine the content domain

- Literature review related to theory of self-efficacy and concept of maternal role
- Individual interviews with 12 pregnant adolescents with a first-time pregnancy

Step 2: Generate the item pool

- Define the content domains
- Generate the item pool 78 items

Step 3: Determine the format

- Scale format determination
Five point Likert-scale
  1 = Not at all confident
  2 = Slightly confident
  3 = Fairly confident
  4 = Mostly confident
  5 = Very confident

Phase 2: Psychometric Evaluation of SEPMRS-Indonesia

Step 1: Have initial item pool reviewed by experts

- Content validity evaluation:
- Interrater agreement rated as
  1 = Not relevant,
  2 = Somewhat relevant,
  3 = Quite relevant,
  4 = Very relevant
- Result: CVI with five experts CVI = .94, I-CVI = range .80-1.00; Revised 23 items and deleted 15 items

Step 2: Pre-testing

- Pre-testing with 30 pregnant adolescents with a first time pregnancy
- Results Cronbach's alpha (.97)

Step 3: Field testing

- 602 samples in four provinces in Indonesia

Step 4: Evaluate the items

- Construct validity by Exploratory Factor Analysis

Step 5: Optimize the scale length

- Inter-item correlation coefficient (> .30)
- Internal consistency (at least .70)

Final Version of SEPMRS-Indonesia:

Figure 1 Process of developing the SEPMRS-Indonesia

Results

Assumption test was carried out to ensure the suitability of the data for factor analysis. The assumption results show that there are no deviations for the data set that will be used for factor analysis. Furthermore, from 630 questionnaires returned, 28 outliers were found and deleted from the data set. Finally, 602 complete questionnaires are suitable for factor analysis. All subscales and total scales had Cronbach's alpha coefficients more than .80. The alpha coefficient of the entire scale of the SEPMRS second version was .97. The alpha coefficients of the subscales were from .77 to .89.

Validity

Content validity: The SEPMRS-Indonesia was reviewed and revised based on an expert's rating. Content Validity Index (CVI) demosntrated a high overall result of .94.

Construct validity: To assess the construct validity, exploratory factor analysis (EFA) and known group technique. EFA were performed to identify latent constructs or factors which can be reduced to a smaller set, to reveal an underlying concept, to simplify interpretations, and also to save time.[23,24] The Kaiser-Meyer-Olkin (KMO) of sampling adequacy and Bartlett's Test of Sphericity were calculated prior to performing EFA which was conducted to confirm the appropriateness of applying factor analysis (p < .005). The scree plot indicated 2 factors were extracted (figure 2), which accounted for 58.85% of the total variance explained. The result showed significantly high inter-item correlation for Bartlet's sphericity for the 63 items of SEPMRS (χ^2 = 41897.314, p < .000). The KMO showed the estimated sampling adequacy at 0.96 of self-efficacy which is considered excellent for applying factor analysis.
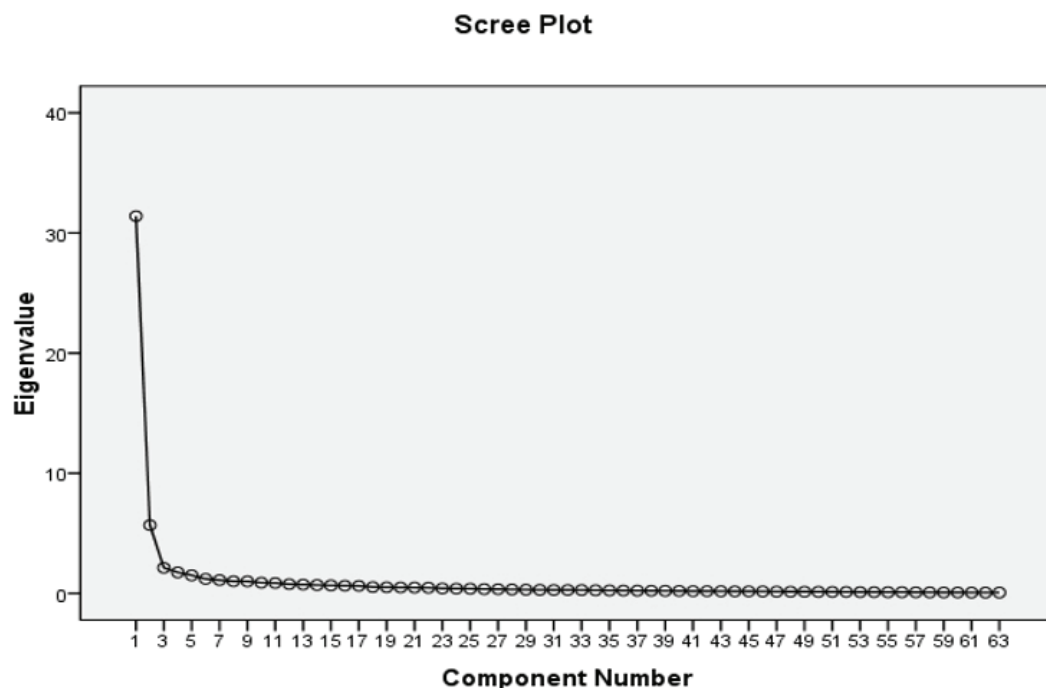

Figure 2 A scree plot illustrating the factor loading of the SEPMRS-Indonesia

For the varimax, the factor loading cutoff point used at first was .30. However, to make a more reliable and parsimonious measure, the cutoff point was adjusted to .45. Two factors were decided to be the most compatible and theoretically explainable. The two factors have a total variance explained of 58.85% which consisted of 60 items. The results of the two factors consisted of the self-efficacy of pregnant adolescents to perform their roles during pregnancy which is explained in Tables 1 and 2.

Table 1 explains the ability to perform essential activities during pregnancy, which describes the efficacy expectations of a pregnant adolescents, and included access to healthy food and vitamins, maintaining a good relationship with her husband and her unborn baby, solving any pregnancy problems, staying strong during pregnancy, (the last two items listed are too vague) and encouraging her husband to earn money and find support for her.

Table 2 explained about maintaining health and happiness during their pregnancy. The items in factor 2 correlated with the ability of a pregnant adolescent to be healthy and happy by doing some activities during pregnancy.

Table 1 Factor loadings for factor I: Being able to perform essential activities during pregnancy (N = 602)

No	Item statements	Factor loading	h²
1	I am able to take multivitamins every day during pregnancy.	.66	.49
2	I believe that I can take calcium every day as a requirement.	.46	.24
3	I am able to protect myself and my unborn baby from conditions that pose a health-risk, such as anemia and hypertension.	.69	.57
4	I am able to have leisure time every day during pregnancy (i.e. relaxing, watching TV etc.).	.61	.44
5	I have enough sleep and can rest as needed	.65	.45
6	I can perform exercise during pregnancy.	.46	.21
7	I can visit the doctor/midwife/nurse at every scheduled appointment.	.59	.39
8	I can attend maternal classes at the community health center.	.46	.22
9	I can see the doctor if I have problems relating to my health during my pregnancy.	.72	.56
10	I am able to follow the health care provider's suggestions	.75	.67
11	I can get information from magazines, books, etc. that are of benefit to my and my baby's health.	.77	.67
12	I can clean my body every day.	.71	.63
13	I am sure that I can keep my home clean every day.	.75	.73
15	My husband and I are able to communicate well and discuss issues relating to my pregnancy.	.77	.68
16	I feel confident communicating with my unborn baby.	.71	.59
17	I can encourage my husband to communicate with my unborn baby.	.73	.67
18	I am able to communicate with my unborn baby when she/he moves in my womb.	.73	.60
19	I can listen to Al-Qur'an/Bible/music with my unborn baby.	.68	.55
20	I have the ability to read Al-Qur'an/ Bible/story book to my unborn baby before sleep.	.68	.54
21	I am able to discuss with my husband and my mother about an anxiety I may have during pregnancy.	.80	.72

Table 1 (Continued)

No	Item statements	Factor loading	h²
22	I believe I can tolerate the problem of social deprivation to get through delivery.	.76	.67
23	I am sure I am able to think positively during pregnancy.	.77	.75
24	I am able to discuss with my husband and my mother if I have an issue relating to my pregnancy.	.78	.73
25	I believe that I am able to consult with a health care provider when I feel anxious about childbirth.	.72	.65
26	I am able to discuss with my husband when I feel stressed during pregnancy.	.73	.63
27	I can watch television or listen to music to reduce my boredom during pregnancy.	.73	.66
28	I have access to information to reduce my fear of childbirth.	.71	.62
29	I can express my feelings to my close friends when I feel anxiety.	.74	.66
30	I believe that I am able to handle my family without my parents.	.64	.49
31	I am confident that my husband and I can find a job to support our family budget.	.71	.66
32	I feel confident to manage money for our daily life.	.68	.58
33	I am able to have enough money for childbearing.	.71	.62
34	I can get support from my husband during pregnancy.	.69	.69
35	I can get support from my relatives (mother, father, mother and father in-law, brother, sister) during pregnancy.	.71	.66
36	I can get support from close friends during pregnancy.	.68	.68
37	I can get support from my health care provider during pregnancy.	.72	.71
38	I can get support from people in the community.	.71	.65

Table 2 Factor loadings for factor II: Maintaining health and happiness during their pregnancy (N = 602)

No	Item statements	Factor loading	h²
1	I will have a healthy baby if I am able to follow the health care provider's suggestions.	.77	.67
2	I will have no complication during pregnancy if I can take a good care of myself.	.73	.60
3	I and my unborn baby will be healthy if I am able to have good nutrition during pregnancy.	.78	.67
4	I and my unborn baby will be healthy if I can visit the health care provider at every appointment.	.79	.68
5	I will be healthy if I am able to perform exercise regularly	.67	.50
6	I and my unborn baby will be healthy if I can avoid environmental hazards.	.69	.52
7	I will be able to deal with psychosocial problems if I can practice relaxation.	.69	.55
8	I can get a healthy baby if I can keep myself healthy.	.78	.66
9	I and my baby will be safe if I can give birth in hospital or clinic.	.73	.61
10	I will have a healthy pregnancy if I am able to take an iron tablet every day.	.73	.61
11	I will stay healthy during pregnancy if I can clean my body every day.	.79	.71
12	I can manage my low back pain during pregnancy If I can perform exercise regularly.	.68	.52
13	My baby can have breast milk after birth if I am able to prepare my breasts during pregnancy.	.77	.66

Table 2 (Continued)

No	Item statements	Factor loading	h²
14	I will be happy if I can get enough support from my husband.	.79	.68
15	I feel happy if I can get support from my mother and my mother-in-law.	.79	.68
16	I will feel happy if I can communicate with my family and my close friends.	.75	.64
17	I am able to arrange meals for my husband to make him feel happy.	.69	.55
18	I will feel blessed if I am able to eat good food for my health and baby's health.	.76	.67
19	I will feel close and happy if I am able to talk to my unborn baby.	.78	.72
20	I feel happy when my husband communicates with my unborn baby.	.79	.72
21	I am happy when I feel my unborn baby move inside my womb.	.79	.71
22	I will feel happy when I can get through my pregnancy.	.78	.70

Reliability

Internal consistency: The consistency of the SEPMRS-Indonesia with 60 items was estimated by computing Cronbach's alpha coefficient. The alpha value for the overall scale was .98. Alpha values ranging from .48-.80 are considered to be an appropriate measure of good internal consistency. Cronbach's alpha was processed by each factor, the internal consistency had results ranging from .97 to .98 (Table 3). The items with high internal consistency (.80 or greater) were selected for the final evaluation of the instruments.[25] The alpha of each subscale was evaluated and the results demonstrated that the alpha coefficients confirmed the good reliability of this scale.

Table 3 Cronbach's alpha coefficients of each factor and overall of the 60-Item SEPMRS-Indonesia (N = 602)

	Component of SEPMRS, Indonesia	Number of items	Cronbach's Alpha
I	Being able to perform essential activities during pregnancy	38	.98
II	Maintaining health and happiness during their pregnancy.	22	.97
	Overall total	60	.98

The finding expressed that the overall internal reliability was still good (.98) with 60 items. When Cronbach's alpha was processed by each factor, the internal consistency had results ranging from from .97 to .98 (Table 3).

Additional testing

Known group technique was conducted to examine the construct validity of the 60-item SEPMRS-Indonesia final draft with a sample of 60 respondents (30 for each group). The first group were multiparous pregnant adults with pregnancy experience and the second group were adolescents with a first time pregnancy.

The comparison of mean difference between self-efficacy in performing maternal roles of two groups indicated that the first group had a higher score of self-efficacy in performing their maternal role compared to the second group. An independent sample t-test was performed to analyze the difference in the total mean scores of SEPMRS-Indonesia for the two groups. The t-test analysis indicated that the mean scores of SEPMRS-Indonesia scale of multiparaous pregnant adults had a higher self-efficacy in performing maternal role (M = 267.97,

SD = 23.31) compared to the pregnant adolescents at first time pregnancy group (M = 250.47, SD = 36.86) with statistically significant difference at the 0.03 level (t = 2.19). These findings supported the construct validity of the SEPMRS-Indonesia scale.

   Test-retest reliability: The test-retest reliability evaluation of the SEPMRS-Indonesia used test-retest reliability. A Pearson product-moment correlation coefficient was calculated to assess the consistency of the self-efficacy of pregnant adolescents to perform the maternal role and it was evaluated using total SEPMRS-Indonesia scores at test I with the total scores of test II. The results showed a strong positive correlation between the total scores of the SEPMRS-Indonesia (r = .99, p < .01) (Table 4).

Table 4 The first and second tests of the SEPMRS-Indonesia for test-retest reliability (N = 30)

Factor	Test (Test 1)		Retest (Test 2)		r
	M	SD	M	SD	
− Being able to perform essential activities during pregnancy	128.10	28.20	129.80	25.74	.99**
− Maintaining health and happiness during their pregnancy	74.23	16.94	74.40	15.52	.97**
− Overall result	202.33	43.17	204.20	39.37	.99**

**p < .001

Discussion

   This newly developed instrument is a first attempt for measuring the self-efficacy of pregnant adolescents in Indonesia to assess the confidence of pregnant adolescents to perform their maternal role with a first time pregnancy. A statistical procedure suggested two domains, including being able to perform essential activities during pregnancy and maintaining health and happiness during their pregnancy. The finding expressed that overall internal reliability was good and alpha coefficients confirmed the reliability of the final draft of the SEPMRS-Indonesia scale. The results provide support for the adequacy of the psychometric properties of the SEPMRS as a research and clinical tool for assessing the self-efficacy of pregnant adolescents in performing maternal role. When considering the cultural context of Indonesia, some evidence supported the components of the SEPMRS-Indonesia, such as the adolescent pregnant women still lived with their own family in rural areas and had a low level of education, therefore, most of them still depended on their traditional way of taking care of their pregnancy. Most of the adolescents did not go to a clinic as guided by the Ministry of Public Health or maternal child healthcare program. In addition, from the characteristics of the sample, most of them were in the younger age group between 15-19 years old, a housewife (89.7%), were in Junior high school grade 9 (80.4%), and (94.7%) experienced light to severe anemia. These sample characteristics above reflected that they were not ready to take their responsibility as a new mother. In addition, Rubin explained that the maternal role as a task must be performed by prospective mothers until the baby is born. The responsibility is in the form of readiness to become a mother during and after birth.

   In addition, the newly developed scale included the second component, being able to maintain health and happiness during their pregnancy, which was congruent with outcome expectations that explain the ability of a pregnant adolescent to achieve the prospective outcome to be healthy and happy during pregnancy.[26] This

finding could be explained as follows, some of the pregnant women in this study had experienced unusual health problems such as insomnia (3%), sluggishness, dizziness (2%), headache (1.3%), stomach pain (4.7%), anemia (94.7%), dizziness (10%), weakness (4.7%), flu and feverish (6.7%), anxiety (1.3%), migraine (1.3%), diarrhea (1.3%) and arthritis (1.3%). Another reason that influenced the second component would be inadequate economic conditions, as the average income was 1 to 2 million rupiah (69-138 US dollars) per month. This limited income meant adolescent pregnant women were unable to afford healthy foods during pregnancy. The other reason provided by pregnant adolescents was related to spending all day at home and not receiving permission from their mother to do anything due to fear of abortions and accidents.[27] This led to excessive boredom and stress during pregnancy. Therefore, in order to stay healthy and happy, there is a great need to have a very powerful tool to assess these problems and provide an appropriate solution.

In addition, the pregnant adolescents may experience risks, including: preterm birth, low birth weight, low Apgar score, congenital abnormalities and infant deaths.[28] Many studies have showed that there is a positive relationship between low birth weight of the infant and adolescent pregnancy.[29] In some countries, infant death rate is significantly high among mothers younger than 20.[30] All these risks effect on infant's health and could make the pregnant adolescent unhappy and cause anxiety and stress. The SEPMRS scale could assess the level of confidence to perform maternal roles. Besides, because of their young age, the pregnant adolescents tend to be underdeveloped physically, psychologically and emotionally. Assessment of self-efficacy in performing the maternal role for pregnant adolescents is one way to help pregnant adolescents to achieve their ability to fulfil their role

as a new mother to improve their health and their baby's health. For that reason, it is necessary to develop an instrument to measure the self-efficacy of adolescents to perform their maternal roles as a mother during pregnancy.

The psychometric properties of the SEPMRS-Indonesia verified a valid and reliable measurement to evaluate an Indonesian pregnant adolescent's self-efficacy in performing the maternal role. For validity, the results of exploratory factor analysis with 602 total sample scores supported the construct validity of the SEPMRS-Indonesia. Hence, the results of the contrast group technique used Pearson Product-Moment correlations between pregnant adolescents in their first-time pregnancy and multipara pregnant adults. Cronbach's alpha coefficient results and the test-retest result supported the internal consistency and stability of the SEPMRS-Indonesia for reliability.

The first component supported the theory of self-efficacy from Bandura related to efficacy expectations which described the ability of a pregnant adolescent to perform some activities related to her roles in performing the maternal role during pregnancy. The second component also substantiated the theory of this study and reflected outcome expectations which explained expectations after they performed some roles. Finally, the result showed that this instrument had a high level of reliability and validity.

Psychometric properties included two factors which proved to be the self-efficacy scale and existence within the Indonesian context. The validity of results described that the scale was conceptually constructed. The results of reliability testing also showed that this scale was reliable and can be utilized. Furthermore, the psychometric properties of the newly constructed scale were distinguished and were competent to differentiate in measuring the self-efficacy of pregnant adolescents in performing

the maternal role during pregnancy.

Conclusions

The self-efficacy in performing maternal role scale was developed to create an instrument to measure the self-efficacy of pregnant adolescents in performing maternal role based on two guidelines of DeVellis, 2017 and Waltz, Strickland and Lenz.[16,17] The first phase was the development of SEPMRS-Indonesia. The second phase was the psychometric properties testing of the SEPMRS-Indonesia. This psychometric tool has two components which proved to be the self-efficacy scale and congruency within Indonesian context. The validity of the scale reflected that the scale was conceptually constructed. The reliability also showed that this scale was reliable and can be generalized. Furthermore, the psychometric properties of the newly constructed scale can be used to measure self-efficacy of pregnant adolescent in performing maternal roles, thus allowing healthcare providers be able to tailor health education appropriately for each pregnant adolescent.

Participation in article writing

The first author is a doctoral nursing student. She wrote this article under the supervision of two co-authors who were her academic advisors. The primary adviser helped closely with all processes of conducting research such as: proposal development, data analysis, writing results, discussion, drafting of the manuscript, and revision of the final version. The third author was a co-advisor who assisted with supervision of the student in the research and writing of this article.

Conflict of interest

No conflict of interest

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