


Associations Between Spousal Relationship, Husband Involvement, and Postpartum Depression Among Postpartum Mothers in West Java, Indonesia

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Abstract

Introduction: Indonesia is actively promoting husband involvement in maternal health care, since it has been claimed to impact the wellbeing of mothers. This study aims to investigate the extent to which spousal relationship, husband involvement, and maternal health behavior affect postpartum depression among Indonesian mothers. **Method:** A survey was carried out among 336 postpartum mothers who received maternal care in 27 independent midwifery clinics in 7 regions of West Java Province, Indonesia. The measurement model of husband involvement comprising 4 dimensions, namely maternity care engagement, instrumental support, emotional support, and informational support were developed and validated using confirmatory factor analysis. The Quality of Marriage Index (QMI) and the Edinburgh Postnatal Depression Scale (EPDS) were also validated and used to measure spousal relationship and postpartum depressive symptoms. A structural equation model was specified to examine the association between spousal relationship, husband involvement, maternal healthy behavior, and postpartum depression. **Results:** The study confirms the assumption that the quality of the spousal relationship could determine husband's involvement during pregnancy, childbirth, and postpartum ($\gamma = .60, P < .001$), eventually leading to better maternal healthy behavior ($\gamma = .015, P < .001$) and a decrease in postpartum depressive symptoms among mothers ($\gamma = -.21, P < .001$). **Conclusions:** The study results suggest the needs to promote comprehensive husband involvement to enhance the wellbeing of mothers. This can be achieved through couple interventions at the community level and the inclusion of a supportive role for husbands in the maternal and childcare guidebook offered during ANC visits.

Keywords

husband involvement, spousal relationship, postpartum depression, Indonesia, SIAGA campaign

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Introduction

Transition to motherhood is considered to be a stressful experience since it requires vast adaptation to substantial physical and psychological changes, as well as social expectations regarding the roles and responsibilities of mothers.^{1,2} Thus, the post-delivery period is considered a time of risk for maternal postpartum depression (PPD) if the stress is not properly handled.^{3,4} It has been reported that 10% to 15% of pregnant and postpartum women experience depression.⁵ Not only does PPD adversely affect maternal quality of life,⁶ but also the mother-infant relationship,

children's health, cognitive and social-emotional development, and family relationships.^{7,8}

Several studies reveal that husband, as the closest partner, plays an important role in helping women during times

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of stress so that depression can be prevented.² Postpartum mothers with less marital satisfaction and limited support from their husbands were found to be at greater risk of PPD.⁹⁻¹¹ In addition, a woman experiencing a positive, stable, and secure relationship with her spouse may be better able to cope with stress, and adopt positive health practices to improve her wellbeing.¹²⁻¹⁵ As such, maternal health benefits from the co-occurrence of husband support and the relationship process within.¹⁶

In 1999, Indonesian Health Ministry launched the “SIAGA campaign” with the intention of alerting husbands to the importance of appropriate care and emergency readiness for mothers during pregnancy, childbirth, and postpartum periods. This campaign has resulted in a higher rate of husbands accompanying wives to ANC visits in Indonesia,¹⁷⁻¹⁹ compared to other middle- and low-income countries.²⁰⁻²⁴ SIAGA was formulated from the word “Siap” (ready), “Antar” (take, transport), and “Jaga” (standby or guard). “Siap” means that a husband with a pregnant wife should always be ready to help and prepare for any complications that might arise such as ensuring there is sufficient money for healthcare and preparing for blood donation. “Antar” means to always “take” the wife to visit a health professional whenever necessary or transport her to access healthcare. “Jaga” means to always guard and support the wife during these periods, make sure she has proper rest as well as proper nutrition, and help her to identify any danger signs.²⁵ These concepts imply how husbands could be actively and comprehensively supportive in the care of their wives during the critical time of transition.

According to previous literature, support from an ideal husband may come in different forms, including instrumental (eg, providing financial and physical assistance), emotional (eg, being a comforter), and informational (eg, giving advice).²⁶⁻³⁰ All of these align with the concept of the SIAGA campaign. However, studies investigating the impact of spousal involvement in maternal health outcomes mostly measure it through reported companionship,³¹ which might neglect the complexity of the spousal role in the process of maternal care. By considering the husband’s involvement and support during the whole period of pregnancy, childbirth, and postpartum, we have developed a tool to measure the multidimensional aspects of husband involvement for use in this study.

To the best of our knowledge, studies simultaneously analyzing the complex linkages between spousal relationship, practices of husbands and postpartum mothers, and maternal mental health have not been well-documented. This study aims to investigate the extent to which spousal relationship, husband involvement, and maternal health behavior are associated with PPD in the context of midwifery care in Indonesia, where the role of the husband is critical to the wellbeing of the mother. The study findings can be used to design appropriate interventions to encourage

husband involvement and inform the policy and practices of maternal care in Indonesia.

Methods

Study Setting, Participants, and Procedures

This cross-sectional study was conducted in West Java Province, which has the highest population density and the highest rate of maternal mortality in the country.¹⁸ Seven out of the 27 government areas with different spatial (rural/urban) characteristics, ethnic diversity, and maternal health-related campaigns were selected. Across these areas, 27 registered independent midwifery clinics reported to serve at least 5 deliveries per month and had collaboration with the Tasikmalaya Health Polytechnic, agreed to participate in the study.

All mothers approached in this study were at least 18 years old, living with a spouse, and had visited an independent midwifery clinic for postpartum care from November 2019 to January 2020. After providing informed consent, a total of 336 postpartum mothers completed the survey questionnaire, either by self-administration or a verbal interview conducted by a trained midwife in one of the participating clinics. This study was approved by the Mahidol University Social Sciences Institutional Research Board (MUSSIRB), certificate approval number 2019/211.1510.

Measures

Husband involvement. Based on the theory of social support, the measurement of husband involvement was developed to indicate pregnant women’s desires and needs. Suggestions were also obtained from healthcare professionals as to how husbands could contribute during pregnancy, childbirth, and the post-partum period.³²⁻³⁵ In addition, the normative concept of engagement in maternity care was adopted from the “SIAGA” campaign to encourage husbands to become involved in maternity care services and activities.²⁵

The latent variable of husband involvement had 4 domains: instrumental support, emotional support, informational support, and maternity care engagement. Each domain was validated and only the items with acceptable factor loadings were retained. *Instrumental support* consisted of 4 practical tasks the husband could assist his wife with throughout the pregnancy and postpartum period such as household chores, child care, financial support, and attending to her physical discomfort. *Emotional support* consisted of 8 items demonstrating the husband’s affection for his wife such as showing a caring, sympathetic attitude, and encouraging her during the pregnancy to postpartum period. *Informational support* consisted of 5 ways in which the husband could help his wife by providing facts, information, or advice to help to solve

problems during pregnancy to the postpartum period such as information on maternal care, advice on how to improve her health, and reminders about nutrition or medication intake. *Maternity care engagement* consisted of 7 ways in which husband's intensive participation could assist in the care of his wife's health. For instance, being present at counseling sessions, assistance with breastfeeding, involvement in discussions about her health status, and a delivery plan. All items were measured using a 5-point scale. The mean scores were then calculated as the domain scores. A higher score indicated more active involvement and support for each domain.

Spousal relationship. In this study, the spousal relationship refers to the quality of relations between husband and wife as perceived by postpartum mothers and reflects their positive feelings toward each other and stability in the marriage. The Quality of Marriage Index (QMI) developed by Norton³⁶ was used in this study and translated into the Indonesian language. Following the QMI questionnaire, the latent variable of spousal relationship involving 6 indicators, demonstrates how the respondents perceived their marital relationship in terms of its goodness, stability, strength, happiness, partnership, and overall degree of happiness. The first 5 items were measured using a 7-point scale while the final item was measured on a 10-point scale ranging from 1 (unhappy) to 10 (perfectly happy).³⁶

Healthy maternal behavior. Healthy maternal behavior in this study refers to the health-related practices of the mother. This manifest variable is measured by the number of health practices carried out by the respondent that may positively affect her maternal physical health during pregnancy, childbirth, and postpartum, such as the use of maternity care services, essential immunization, supplementation, tobacco consumption, alcohol consumption, exercise during pregnancy and the postpartum period, exclusive breastfeeding, and contraceptive use. The "yes" answers for positive health behaviors and "no" answers for negative health behaviors were coded as "1." The total score for each item was used as the measurement, with a higher score implying that the respondent exhibited more healthy behavior.

Post-partum depression. Post-partum depression refers to the mother's experiences of symptoms relating to depression. The Indonesian version of the 10-question Edinburgh Postnatal Scale (EPDS) translated by Department of Health, Government of Western Australia was used.³⁷ Acceptable reliability and validity of the scale have been reported in different countries,^{38,39} including Indonesia.¹¹ The respondents were asked to rate their feelings over the previous week on a 4-point Likert scale. The instrument reliability and validity were then tested again in this study.

Statistical Analysis

To investigate the relationships among multiple constructs, the structural equation modeling (SEM) approach was employed. Confirmatory factor analysis (CFA) was performed to examine the validity of the measurement for each construct. After performing model specification, a model fit assessment was conducted to evaluate how well the specified model fitted with the empirical data. The thresholds for acceptable goodness of fit included a comparative fit index (CFI) > 0.95, root mean square error of approximation (RMSEA) < 0.08, and standardized root mean square residual (SRMR) < 0.08.^{40,41} In this study, all statistical analyses were performed using Predictive Statistics Software (PASW Statistics 18.0; SPSS Inc., Chicago, IL).

Results

Characteristics of the Study Sample

Across the sample of 336 postpartum mothers, the average age was 28.29 years (SD=5.74), 70.2% of the respondents completed secondary education while 83.3% were unemployed and thus had no direct income. The average length of marriage was 6.08 years (SD=5.32), while 36.9% of respondents reported having one child, 38.1% two children, and 25% three children or more. In terms of their latest pregnancy, the average gestational age was in the normal range, which was 38.40 weeks (SD=1.64). Most mothers delivered vaginally (84.5%) and 94.3% had a normal baby birth weight (between 2500 and 4000 g), while 29.5% of the mothers experienced at least one complication during pregnancy, delivery, or postpartum. Table 1 presents the descriptive statistics of the participating mothers.

Reliability and Validity of the Latent Variables

Table 2 presents descriptive statistics of the measurement indicators for the latent variables. The reliability of measurement for each latent variable was assessed by means of internal consistency (Cronbach's α). As presented in Table 3, the Cronbach's α values for the variables of spousal relationship, husband involvement, and postpartum depression were found to exceed 0.7 (α = .83; .89; and .78, respectively), indicating good internal consistency.⁴² Confirmatory factor analyses (CFA) were performed to investigate construct validity. The results reveal acceptable fit indices for the measurement models of spousal relationship and husband involvement. However, 3 indicators for the measurement model of postpartum depression had factor loadings (λ) smaller than .4, namely: ability to laugh and see the funny side (λ = .214); ability to enjoy things (λ = .106); and feeling anxious or worried (λ = .014) and these were subsequently removed to obtain an acceptable goodness of fit.⁴³

Table 1. Characteristics of the Study Sample (n = 336).

| Variables | Frequency (%) | Mean | SD |
|--|---------------|--------------|--------------|
| Age (years) | | 28.29 | 5.74 |
| Education level | | | |
| No education | 0 | | |
| Primary education | 50 (14.9) | | |
| Secondary education | 236 (70.2) | | |
| Diploma or higher education | 50 (14.9) | | |
| Employment status | | | |
| Employed | 56 (16.7) | | |
| Unemployed | 280 (83.3) | | |
| Family income (IDR) | | 2 724 464.29 | 2 020 828.78 |
| Length of marriage (years) | | 6.08 | 5.32 |
| Number of children | | 1.97 | 0.95 |
| Number of children (group) | | | |
| 1 child | 124 (36.9) | | |
| 2 children | 128 (38.1) | | |
| ≥3 children | 84 (25) | | |
| History of previous miscarriage/stillbirth | | | |
| None | 287 (85.4) | | |
| One or more | 49 (14.6) | | |
| Age of gestation (weeks) | | 38.4 | 1.68 |
| Type of delivery | | | |
| Normal (vaginal spontaneous delivery) | 284 (84.5) | | |
| Abnormal (assisted delivery or cesarean section) | 52 (15.5) | | |
| Baby birth weight (g) | | 3096.8 | 434.04 |
| Baby birth weight (groups) | | | |
| Normal (2500-4000 g) | 237 (94.3) | | |
| Abnormal (<2500 or >4000 g) | 19 (5.7) | | |
| Maternal healthy behavior | | 9.91 | 1.37 |
| Complications experienced | | | |
| Yes | 237 (70.5) | | |
| No | 99 (29.5) | | |

Structural Equation Modeling

Structural Equation Modeling (SEM) was performed to examine the simultaneous relationships between spousal relationship, husband involvement, maternal healthy behavior, and postpartum depression. Spousal relationship was hypothesized to have a direct influence on the husband involvement and maternal healthy behavior, while husband involvement was hypothesized to have a direct influence on maternal healthy behavior and postpartum depression. The control variables of the model were the socio-demographic characteristics of mothers. The model fit statistics for the hypothesized model were poor ($\chi^2/df=4.322$, GFI=0.790, AGFI=0.740, CFI=0.779, RMSEA=0.100, and SRMR=0.102). Figure 1 presents the analytical framework of the hypothesized relationships among the study variables.

The model was revised by removing insignificant paths and allowing correlations between manifested variables

and measurement errors (Figure 2). The results indicate that the spousal relationship was significantly and positively associated with husband involvement ($\gamma=.60$, $P<.001$). Husband involvement was significantly and positively associated with maternal healthy behavior ($\gamma=.015$, $P<.001$) and negatively associated with postpartum depression ($\gamma=-.21$, $P<.001$). Husband involvement was also found to have an indirect influence on postpartum depression through maternal healthy behavior. In addition, family income was positively associated with the spousal relationship ($\beta=.15$, $P<.001$) while number of children was negatively associated with the spousal relationship and postpartum depression ($\beta=-.14$, $P<.001$ and $\beta=-.17$, $P<.001$, respectively). Spousal relationship, husband involvement, maternal healthy behavior, family income, and number of children, together predicted 13% of the variance in postpartum depression ($R^2=.13$). The model fit statistics show that the model fits well with the data ($\chi^2/df=1.777$, GFI=0.920, AGFI=0.896, CFI=0.960,

Table 2. Descriptive Statistics of the Measurement Indicators.

| Code | Domain | Mean | SD | Skewness | Kurtosis |
|-------|---|------|------|----------|----------|
| SPR1 | Goodness in relationship | 4.40 | 0.62 | -0.83 | 1.66 |
| SPR2 | Feeling stable in relationship | 4.23 | 0.63 | -0.29 | -0.26 |
| SPR3 | Relationship strength | 4.24 | 0.68 | -0.39 | -0.59 |
| SPR4 | Happiness in relationship | 4.35 | 0.63 | -0.42 | -0.67 |
| SPR5 | Part of a team | 4.31 | 0.63 | -0.42 | -0.30 |
| SPR6 | Overall degree of happiness | 8.21 | 1.55 | -0.46 | -0.83 |
| EMC | Engagement in maternity care | 3.81 | 0.77 | -0.57 | 0.38 |
| Ins S | Instrumental support | 3.81 | 0.75 | -0.66 | 0.71 |
| Emo S | Emotional support | 4.09 | 0.62 | -1.04 | 2.14 |
| Inf S | Informational support | 3.99 | 0.70 | -0.96 | 1.80 |
| PPD1 | Ability to laugh and see the funny side | 0.34 | 0.66 | 2.32 | 5.76 |
| PPD2 | Ability to enjoy things | 0.37 | 0.54 | 1.23 | 0.71 |
| PPD3 | Feeling of blame | 0.93 | 0.91 | 0.44 | -1.02 |
| PPD4 | Feeling anxious or worried | 0.98 | 0.84 | 0.71 | 0.08 |
| PPD5 | Feeling scared or panicked | 1.26 | 0.92 | 0.04 | -0.99 |
| PPD6 | Feeling overwhelmed | 1.20 | 0.93 | 0.03 | -1.15 |
| PPD7 | Feeling unhappy | 0.96 | 0.91 | 0.42 | -0.99 |
| PPD8 | Feeling sad/miserable | 0.99 | 0.89 | 0.29 | -1.14 |
| PPD9 | Crying | 0.75 | 0.84 | 0.80 | -0.31 |
| PPD10 | Thinking of causing harm | 0.63 | 0.83 | 1.02 | -0.03 |

Table 3. Reliability and Validity of the Spousal Relationship, Husband Involvement, and Postpartum Depression.

| Latent variables | Internal consistency Cronbach's α | Corrected item- total correlation | Cronbach's α of domain if item deleted | CFA factor loading |
|---|---|--------------------------------------|--|-----------------------|
| Spousal relationship | .827 | | | |
| Goodness in relationship | | .689 | .792 | 0.763 |
| Relationship strength | | .750 | .782 | 0.882 |
| Strongness in relationship | | .717 | .783 | 0.827 |
| Happiness in relationship | | .771 | .779 | 0.881 |
| Part of a team | | .747 | .782 | 0.808 |
| Overall degree of happiness | | .508 | .914 | 0.527 |
| Husband involvement | .892 | | | |
| Engagement in maternity care | | .749 | .867 | 0.753 |
| Instrumental support | | .720 | .877 | 0.722 |
| Emotional support | | .810 | .848 | 0.905 |
| Informational support | | .788 | .851 | 0.884 |
| Post-partum depression | .780 | | | |
| Ability to laugh and see the funny side | | .226 | .784 | 0.214* |
| Ability to enjoy things | | .150 | .789 | 0.106* |
| Feeling of blame | | .471 | .842 | 0.499 |
| Feeling anxious or worried | | .033 | .811 | 0.014* |
| Feeling scared or panicked | | .543 | .832 | 0.524 |
| Feeling overwhelmed | | .508 | .837 | 0.495 |
| Feeling unhappy | | .649 | .815 | 0.721 |
| Feeling sad/miserable | | .689 | .809 | 0.795 |
| Crying | | .710 | .807 | 0.829 |
| Think of causing harm | | .654 | .815 | 0.726 |

Model Fit Index for spousal relationship: $\chi^2/df=2.149$ ($p=.028$), GFI=0.927, AGFI=0.953, CFI=0.993, RMSEA=0.059.

Model Fit Index for husband involvement: $\chi^2/df=1.521$ ($p=.217$), GFI=0.966, AGFI=0.977, CFI=0.999, RMSEA=0.039.

Model Fit index for postpartum depression: $\chi^2/df=3.127$ ($p=.000$), GFI=0.966, AGFI=0.927, CFI=0.968, RMSEA=0.080.

*Removed items due to small factor loading ($\lambda < .04$).

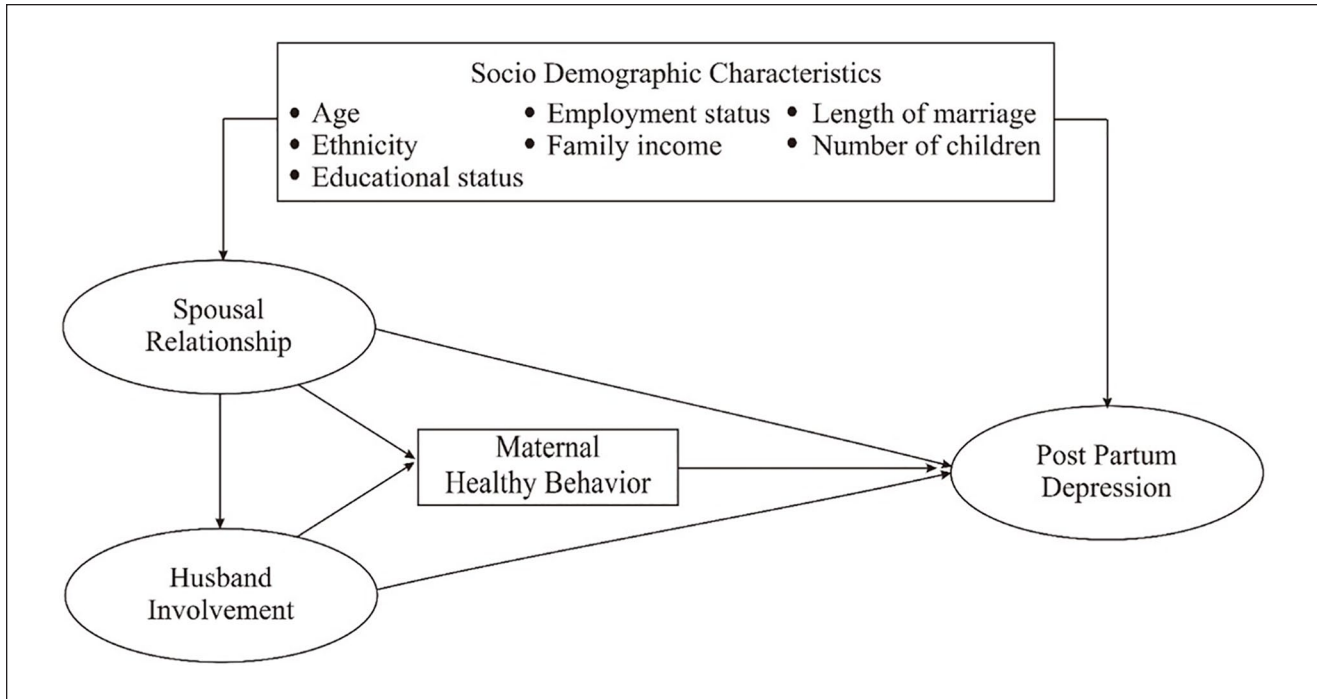


Figure 1. Analytical framework of the hypothesized relationships among the study variables.

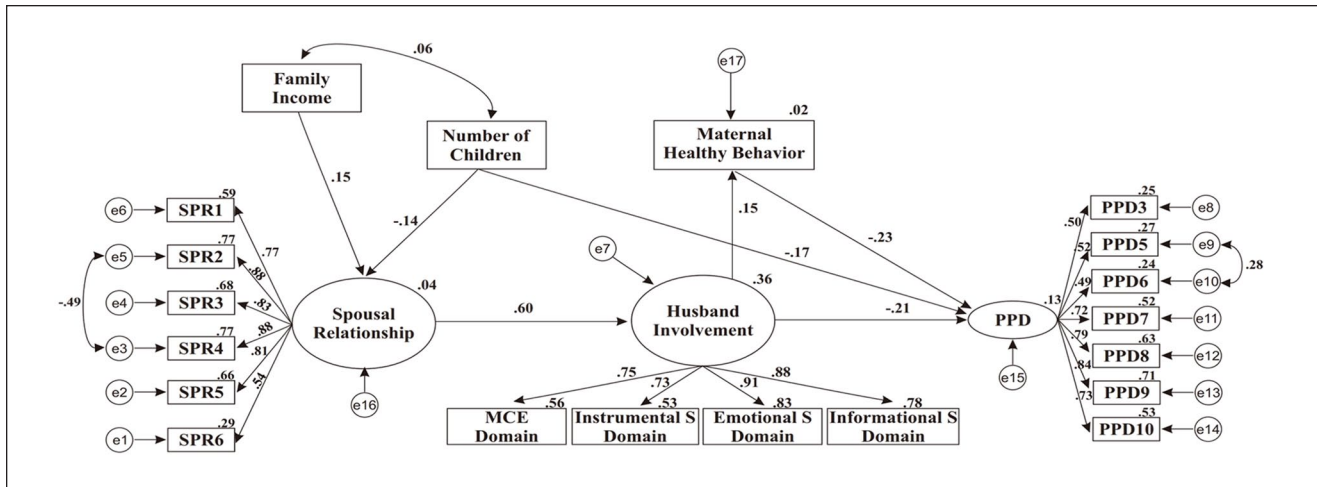


Figure 2. Revised SEM model for the associations between spousal relationship, husband involvement, and postpartum depression.

RMSEA=.048, and SRMR=0.509). Table 4 shows the standardized and unstandardized estimates of the associations between variables in the SEM model.

Discussion

The study confirms the assumption that relationship quality could determine husband’s engagement and support during pregnancy, childbirth, and postpartum, eventually leading to better health behavior and a decrease in postpartum

depressive symptoms among mothers. A good spousal relationship was more likely to be found in couples with a higher family income and fewer children. The findings are consistent with previous research reporting a greater level of paternal involvement during antenatal visits and child-birth among spouses with a satisfying marital relationship.⁴⁴⁻⁴⁶ This could be explained by the sense of satisfaction in a marriage having an effect on husbands’ psychological wellbeing and consequently the way they behave toward their wife.^{47,48}

Table 4. Estimated Parameters for the Revised SEM Model.

| Variables | Standardized regression coefficient | Unstandardized regression coefficient | S.E. | C.R. |
|--|-------------------------------------|---------------------------------------|------|--------|
| Spousal relationship <— Family income | .15 | .00 | 0.00 | 2.67* |
| Spousal relationship <— Number of children (mother) | -.14 | -.13 | 0.05 | -2.53* |
| Husband involvement <— Spousal relationship | .60 | .41 | 0.05 | 7.73* |
| Maternal healthy behavior <— Husband involvement | .15 | .36 | 0.14 | 2.64* |
| Postpartum depression <— Number of children (mother) | -.17 | -.08 | 0.03 | -2.89* |
| Postpartum depression <— Husband involvement | -.21 | -.16 | 0.05 | -3.29* |
| Postpartum depression <— Maternal healthy behavior | -.23 | -.08 | 0.02 | -3.89* |

* $P < .001$.

The mediating effect of husband involvement on the association between spousal relationship and postpartum depressive symptoms found in this study highlights the importance of the significant other to the wellbeing of a mother. With satisfactory support for various aspects of everyday life and deeper engagement of the husband in maternal health, postpartum mothers tend to improve their self-esteem, ability to cope with stress, and participation in healthy practices which can protect them from experiencing depressive symptoms.¹² Conversely, an increased risk of depression has been reported in mothers who perceived unsatisfactory support or none at all during pregnancy.^{31,47,49-51} The study findings, therefore, confirm that the social aspect of care (ie, social support) is vital to the health outcomes of mothers.

As mentioned earlier, Indonesia's Suami SIAGA or "alert husband" campaign has encouraged the involvement of the spouse in maternal wellbeing and childcare. However, the effects of the campaign were mostly reported in terms of the husband's acquisition of knowledge on birth preparedness, participation in community activities regarding the campaign, and his presence during ANC visits and childbirth at a health facility.^{25,52} This study offers an insight into how the involvement of husbands can be operationalized in a more comprehensive manner to meet the principles of the SIAGA campaign (ie, "Siap"; "Antar"; and "Jaga"). We have developed and validated a measurement for husband involvement in the Indonesian setting thus it is readily applicable for assessing the needs of postpartum mothers for spousal support.

Postpartum depressive symptoms as the outcome variable were measured using the EPDS scale. The results from the study could serve as evidence that the spousal relationship, husband involvement, and maternal health behaviors impact the emotional wellbeing of postpartum mothers. It should be noted that this study was not aimed at directly evaluating the prevalence of postpartum depression among Indonesian mothers because the cut-off scores differ across contexts. Rather, we assessed whether the depressive symptoms presented in the tool could be a valid outcome

measure in the study setting. In general, midwives in Indonesia have been using this tool to monitor each of the 10 depressive symptoms for early detection of PPD.⁵³

Although the validity of the EPDS scale has been reported in Indonesia,¹¹ the findings of this study reveal a lower factor loading for the ability to laugh and see the funny side, the ability to enjoy things, and feeling anxious or worried. This could be due to the respondents' understanding and experiences of depression within their own socio-cultural background. The expression of their emotional and mental states could be different from PPD symptoms as indicated in the tool, which has been developed in the Western setting.⁵⁴ For example, the philosophy of Javanese and Sundanese people is to take for granted whatever happens as God's will or destiny.⁵⁵ It is possible that the respondents are likely to express their ability to be happy even in a bad situation. Therefore, an assessment of reliability and validity for the EPDS tool, as well as other options for maternal depression evaluation in the Indonesian culture on a larger scale, is encouraged.

The study findings suggest that the promotion of husband involvement should be carried out in a more comprehensive and understanding way. Presently, professionally trained midwives are considered the central element of maternal and childcare at community level in Indonesia. With such capital, midwifery clinics could provide a platform for the inclusion of the husband as a client of maternity care to encourage them to be attentive and supportive, not only the wellbeing of their wife but also the entire family. Parental-related programs proven to be effective are those that require the attendance of the couple, such as birth and breastfeeding preparation, prenatal, and postnatal yoga classes,⁵⁶ which could be offered in the community. The formalization of husband involvement in maternal health care may also start by adding content on the desirable role husbands play in the health of mothers to the maternal and child health book, generally provided at the first ANC visit. This book has been used as the main guidance for mothers and babies to maintain and improve the health of mother and child in Indonesia.⁵⁷

Limitations

There are some limitations to this study that should be addressed. Firstly, the study was performed in West Java Province, where most respondents were of Sundanese and Javanese ethnicity, while more than a thousand ethnic groups exist in Indonesia. In addition, the data collection was conducted only in the easier to access villages, and thus, did not cover some isolated hamlets. As such, the study sample was not very diverse and may hamper the generalizability of the findings for the whole Indonesian context. To observe the uniqueness of different cultures across Indonesia, a future study should be conducted on a larger scale. Secondly, husband involvement was measured based on the postpartum mother's perception. Although the results can indicate how much the respondents were satisfied with the engagement and support from their husbands, the responses may be affected by the emotional state of the mothers at the time of the interview. It would be interesting to investigate whether there is a difference in the perceptions of husbands regarding their involvement in maternal care, in comparison to those of their wives. Thirdly, EPDS is used in this study to express maternal emotional wellbeing, which, in fact, is far more complex than the manifested postpartum depressive symptoms. The validation and application of other alternative measurements for maternal emotional wellbeing would help to extend the understanding of the mothers' needs.

Conclusions

To the researcher's knowledge, no instruments have been developed to comprehensively measure the husband's involvement in their wife's wellbeing. The measurement of husband involvement developed in this study demonstrates how husbands can comprehensively support their wives during pregnancy and childbirth and how the multidimensional aspects of involvement can be observed. In addition, using the structural equation modeling approach, this is the first study to simultaneously examine the complex relationship between spousal relations, degree of the husband's involvement in pregnancy and childbirth, healthy maternal behavior, and postpartum depression. In conclusion, the husband's involvement has been proven to enhance maternal wellbeing by reducing distress. This evidence can be used to guide further initiatives to improve maternal wellbeing, since every woman deserves to have a positive experience of becoming a "mother."

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Author Contributions

EP conducted literature review, designed research instrument, collected data, and performed statistical analysis. NM developed the study protocol and interpreted the data. SCP and PS interpreted the data. EP and NM were major contributors in writing the manuscript. EP, NM, SCP, and PS read and approved the final manuscript.

Availability of Data and Materials

The dataset used in the current study are not publicly available given the conditions stated in the informed consent form to protect the identity of the participants. However, the dataset is available from the corresponding author on reasonable request.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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