A Conceptual Model of Family Assistance for Working Mothers in Preventing and Managing Postpartum Blues in Urban Areas

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Track Record Article

Revised: 10 April 2026
Accepted: 02 June 2026
Published: 20 June 2026

How to cite :
Sinaga, E. W., Fauza, R., Simamora, D. L., Rambe, N. L., & Sebayang, W. B. (2026). A Conceptual Model of Family Assistance for Working Mothers in Preventing and Managing Postpartum Blues in Urban Areas. *Contagion : Scientific Periodical of Public Health and Coastal Health*, 8(2), 133–143.

Abstract

Physical recovery after childbirth. This study aimed to analyze factors influencing prevention and management efforts for postpartum blues among working mothers in an urban setting and to formulate a conceptual family-assistance model based on the significant predictors. A quantitative analytic study with a cross-sectional design was conducted among 206 working postpartum mothers in urban areas of Medan City, Indonesia. Postpartum blues symptoms were screened using the Edinburgh Postnatal Depression Scale (EPDS), with a cut-off score of ≥10. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model was evaluated through outer loading, Cronbach's alpha, rho_A, composite reliability, and average variance extracted (AVE). In contrast, the structural model was assessed using R-square, path coefficients, t-statistics, and p-values. Results: The mean EPDS score was 12.45 ± 3.18, and 142 respondents (69.0%) were categorized as having postpartum blues symptoms. All indicators demonstrated adequate outer loadings (>0.70), and all constructs met reliability and convergent validity criteria. The model explained 95.1% of the variance in prevention and management efforts for postpartum blues (R^2 = 0.951; adjusted R^2 = 0.947). The Health Belief Model had the strongest effect (β=0.312; T=7.428; p=0.000), followed by family assistance (β=0.288; T=5.236; p=0.000), psychological factors (β=0.254; T=5.644; p=0.000), social factors (β=0.210; T=3.442; p=0.001), physical factors (β=0.198; T=3.413; p=0.001), and demographic factors (β=0.185; T=3.557; p=0.000). Prevention and management of postpartum blues among working mothers should emphasize health beliefs, family assistance, psychological readiness, social support, physical recovery, and demographic vulnerability. The proposed conceptual model highlights the family as a key support system for early detection, help-seeking, and adherence to postpartum care.

Keywords: Postpartum Blues, Family Assistance, Working Mothers, Health Belief Model

INTRODUCTION

The postpartum period is a critical transition in which mothers experience physical recovery, hormonal changes, breastfeeding demands, sleep disruption, and psychological adaptation to a new maternal role (Cibulka & Rosenberger, 2022; World Health Organization, 2022b). Although many mothers adapt well, some experience transient mood disturbances known as postpartum blues or maternity blues. Postpartum blues commonly appears within the first days after childbirth and may include sadness, irritability, crying episodes, anxiety, emotional lability, sleep disturbance, and fatigue (Purwarini & Armaya, 2021; Tosto et al., 2023). Although often self-limited, postpartum blues is clinically important because persistent

or severe symptoms may increase the risk of postpartum depression and interfere with maternal well-being, infant care, breastfeeding, and family functioning (Haerani & Bohari, 2022; Rezaie-Keikhaie et al., 2020; Tosto et al., 2023).

Maternity blues remains a global maternal health concern, with prevalence differing markedly across settings. The prevalence of maternity blues has been reported to vary from 13.7% to 76.0%, with a pooled prevalence of 39.0%, reflecting differences in cultural context, measurement tools, timing of assessment, and study design (Rezaie-Keikhaie et al., 2020). Maternity blues requires early identification because of its potential progression to more severe postpartum mood disorders (Tosto et al., 2023). Perinatal mental health should be integrated into maternal and child health services so that providers can identify symptoms early and respond using culturally appropriate support (World Health Organization, 2022a). Women and newborns also require comprehensive, person-centered care during the postnatal period (World Health Organization, 2022b).

In Indonesia, postpartum blues has been reported with varying prevalence across regions. Previous Indonesian studies have linked postpartum blues with parity, planned pregnancy, family support, maternal fatigue, age, education, and employment status (Purwarini & Armaya, 2021; Vidayati & Zainiyah, 2021). Working mothers in urban areas require special attention because they face a dual role: responsibility for infant care and household functioning, as well as expectations related to employment and career continuity. Return-to-work and work-family balance have been recognized as important issues for maternal mental health because working mothers often experience competing demands, limited rest, and reduced time for self-care (Costa et al., 2021; Olivieri et al., 2024).

Previous studies have identified several determinants of postpartum mood problems, including physical fatigue, poor sleep quality, anxiety, stress, social support, partner support, and maternal health beliefs (Arnold & Kalibatseva, 2021; Jones et al., 2024; Shamsdanesh et al., 2023). Social support has been recognized as a protective factor in postpartum mental health, particularly in Asian contexts where family and community structures shape maternal adjustment (Ekpenyong & Munshitha, 2023). At the same time, the Health Belief Model explains how perceived severity, susceptibility, benefits, barriers, and cues to action may shape preventive and help-seeking behavior (Rosenstock, 1974). Family assistance is therefore relevant because family members can provide emotional, instrumental, and informational support to help mothers identify symptoms, seek care, follow professional advice, rest adequately, and adapt to maternal and employment roles (Arnold & Kalibatseva, 2021; Ekpenyong & Munshitha, 2023).

Despite extensive evidence on risk factors for postpartum mental health problems, research focusing on a structured conceptual family-assistance model for working mothers in urban Indonesian settings remains limited. Existing studies often address determinants or interventions separately, including family and social support, work-related maternal mental health, and non-pharmacological management based on EPDS scores; however, fewer studies integrate demographic, social, physical, psychological, health-belief, and family-assistance dimensions into a single explanatory model for working postpartum mothers (Costa et al., 2021; Ekpenyong & Munshitha, 2023; Haerani & Bohari, 2022; Olivieri et al., 2024; Vidayati & Zainiyah, 2021). This study, therefore, aimed to analyze the influence of demographic factors, social factors, physical factors, psychological factors, Health Belief Model components, and family support on prevention and management efforts for postpartum blues among working mothers in an urban area. The study further aimed to formulate a conceptual model of family assistance based on the significant predictors.

METHODS

Study Design and Setting. This study used a quantitative analytic design with a cross-sectional approach. The research was conducted in urban areas of Medan City, North Sumatra, Indonesia. A cross-sectional design was selected to analyze the relationships among demographic, social, physical, psychological, health-belief, and family-assistance factors with postpartum blues prevention and management at a single point in time.

Population and Sample. The target population consisted of working postpartum mothers living in selected urban areas of Medan City. The final sample included 206 respondents. Respondents were selected using cluster-based sampling from the selected districts in Medan City. Inclusion criteria were working postpartum mothers residing in the study area who were willing to participate and complete the questionnaire. Mothers who did not work outside or related to formal/informal employment activities, declined participation, or provided incomplete questionnaire data were excluded from the analysis.

Variables and Operational Definitions. The exogenous variables included demographic, social, physical, and psychological factors, the Health Belief Model, and family assistance. The endogenous variable was prevention and management efforts for postpartum blues. Demographic factors included age/parity, education, and employment status. Social factors included support from friends, the cultural environment, and social interaction. Physical factors included physical fatigue and rest patterns. Psychological factors included self-efficacy, emotional stability, and anxiety. The Health Belief Model consisted of perceived severity,

perceived susceptibility, perceived benefits, and cues to action. Family assistance consisted of emotional, instrumental, and informational support. Early detection, help-seeking, and adherence to therapy or professional advice represented prevention and management.

Instrument. Postpartum blues symptoms were screened using the Edinburgh Postnatal Depression Scale (EPDS), a 10-item self-report instrument with a total score range of 0–30 (Cox et al., 1987). In this study, respondents with EPDS scores ≥10 were categorized as experiencing postpartum blues symptoms, whereas respondents with EPDS scores <10 were categorized as not experiencing postpartum blues symptoms. The EPDS was used as a screening tool and did not replace clinical diagnosis. Other study variables were measured using structured questionnaire items developed according to the operational definitions of each construct and evaluated through the PLS-SEM measurement model.

Data Analysis. Descriptive analysis was used to summarize respondent characteristics, EPDS scores, and the distribution of postpartum blues categories. The structural model was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The measurement model was evaluated using outer loading, Cronbach's alpha, rho_A, composite reliability, and average variance extracted (AVE). Measurement thresholds followed common PLS-SEM guidance: indicators were considered valid when their outer loadings were ≥0.70, constructs were considered reliable when Cronbach's alpha and composite reliability values were ≥0.70, and convergent validity was considered adequate when AVE was ≥0.50 (Hair et al., 2021). The structural model was evaluated using R-square, adjusted R-square, path coefficient, t-statistics, and p-values. A path was considered statistically significant when the T-statistic was >1.96, and the p-value was <0.05.

Ethical Consideration. This study received ethical approval from the Research Ethics Committee of Universitas Imelda Medan with approval number 701/LPPM-UIM/XI/2025/e, issued on 3 November 2025. The ethics committee stated that the research protocol complied with the ethical principles outlined in the Declaration of Helsinki (1975). Before data collection, all respondents were informed about the study objectives and procedures, and informed consent was obtained. Respondents' identities and data confidentiality were maintained throughout the research process.

RESULT

Table 1. Characteristics of Respondents (n=206)

Characteristic	Category	n	%
Age	17–25 years	73	35.4
	26–35 years	84	40.8
	≥36 years	49	23.8
Education	Elementary school	2	0.97
	Junior high school	12	5.82
	Senior high school	74	35.93
	Diploma/Bachelor	118	57.28
Parity	Primipara	138	67.0
	Multipara	68	33.0
Income	Low	81	39.3
	Moderate	87	42.2
	High	38	18.5
Family support	Low	103	50.0
	Moderate	69	33.5
	High	34	16.5
Postpartum blues based on EPDS	Yes	142	69.0
	No	64	31.0

Most respondents were aged 26–35 years (40.8%) and had a diploma/bachelor's education level (57.28%). Most respondents were primiparous (67.0%). Half of the respondents reported low family support (50.0%). Based on the EPDS cut-off score of ≥10, 142 respondents (69.0%) were categorized as having postpartum blues symptoms.

Table 2. Distribution of EPDS Scores Among Respondents

Variable	Mean	SD	Min–Max
EPDS score	12.45	3.18	4–19

The mean EPDS score was 12.45 with a standard deviation of 3.18. The minimum score was 4, and the maximum score was 19.

Table 3. Distribution of Postpartum Blues Categories Based on EPDS cut-off ≥10

EPDS category	Score criterion	n	%
Not postpartum blues	<10	64	31.0
Postpartum blues	≥10	142	69.0
Total		206	100

Based on the EPDS cut-off score of ≥10, most respondents were categorized as experiencing postpartum blues symptoms (69.0%).

Table 4. Outer Loading Values of Study Indicators

Construct	Indicator	Outer loading	Interpretation
Demographic factors (X1)	X1.1 Age/Parity	0.782	Valid
	X1.2 Education	0.815	Valid
	X1.3 Employment status	0.764	Valid
Social factors (X2)	X2.1 Friend support	0.840	Valid
	X2.2 Cultural environment	0.822	Valid
	X2.3 Social interaction	0.795	Valid
Physical factors (X3)	X3.1 Physical fatigue	0.801	Valid
	X3.2 Rest pattern	0.834	Valid
Psychological factors (X4)	X4.1 Self-efficacy	0.855	Valid

Construct	Indicator	Outer loading	Interpretation
	X4.2 Emotional stability	0.882	Valid
	X4.3 Anxiety	0.841	Valid
Health Belief Model (X5)	X5.1 Perceived severity	0.890	Valid
	X5.2 Perceived susceptibility	0.876	Valid
	X5.3 Perceived benefits	0.865	Valid
	X5.4 Cues to action	0.820	Valid
Family assistance (X6)	X6.1 Emotional support	0.912	Valid
	X6.2 Instrumental support	0.895	Valid
	X6.3 Informational support	0.878	Valid
Prevention and management (Y)	Y1.1 Early detection	0.845	Valid
	Y1.2 Help-seeking	0.860	Valid
	Y1.3 Adherence to therapy	0.832	Valid

All indicators had outer loadings above 0.70, indicating that they met the commonly recommended indicator reliability threshold for PLS-SEM and were appropriate for inclusion in the structural model (Hair et al., 2021).

Table 5. Construct Reliability and Convergent Validity

Construct	Cronbach's alpha	rho_A	Composite reliability	AVE	Interpretation
Demographic factors	0.752	0.760	0.821	0.540	Reliable and valid
Social factors	0.810	0.815	0.865	0.580	Reliable and valid
Physical factors	0.785	0.792	0.840	0.565	Reliable and valid
Psychological factors	0.842	0.850	0.888	0.620	Reliable and valid
Health Belief Model	0.890	0.895	0.915	0.650	Reliable and valid
Family assistance	0.825	0.830	0.872	0.595	Reliable and valid
Prevention and management	0.860	0.868	0.898	0.615	Reliable and valid

All constructs had Cronbach's alpha values above 0.70, composite reliabilities above 0.70, and AVEs above 0.50. These findings indicate that all constructs met the commonly accepted PLS-SEM reliability and convergent validity criteria (Hair et al., 2021).

Table 6. R-Square and Adjusted R-Square Values

Endogenous variable	R-square	Adjusted R-square	Interpretation
Prevention and management of postpartum blues	0.951	0.947	Very strong

The R-square value for prevention and management of postpartum blues was 0.951, and the adjusted R-square was 0.947. This indicates that demographic, social, physical, and psychological factors, the Health Belief Model, and family assistance jointly explained 95.1% of the variance in postpartum blues prevention and management efforts.

Table 7. Path Coefficients and Bootstrapping Results

Path	β	STDEV	T-statistics	P-value	Decision
Demographic factors → Prevention and management	0.185	0.052	3.557	0.000	Significant
Social factors → Prevention and management	0.210	0.061	3.442	0.001	Significant
Physical factors → Prevention and management	0.198	0.058	3.413	0.001	Significant

Path	β	STDEV	T-statistics	P-value	Decision
Psychological factors → Prevention and management	0.254	0.045	5.644	0.000	Significant
Health Belief Model → Prevention and management	0.312	0.042	7.428	0.000	Significant
Family assistance → Prevention and management	0.288	0.055	5.236	0.000	Significant

Bootstrapping results showed that all exogenous variables had positive and statistically significant effects on prevention and management efforts for postpartum blues. The strongest effect was observed for the Health Belief Model (β=0.312), followed by family assistance (β=0.288), psychological factors (β=0.254), social factors (β=0.210), physical factors (β=0.198), and demographic factors (β=0.185).

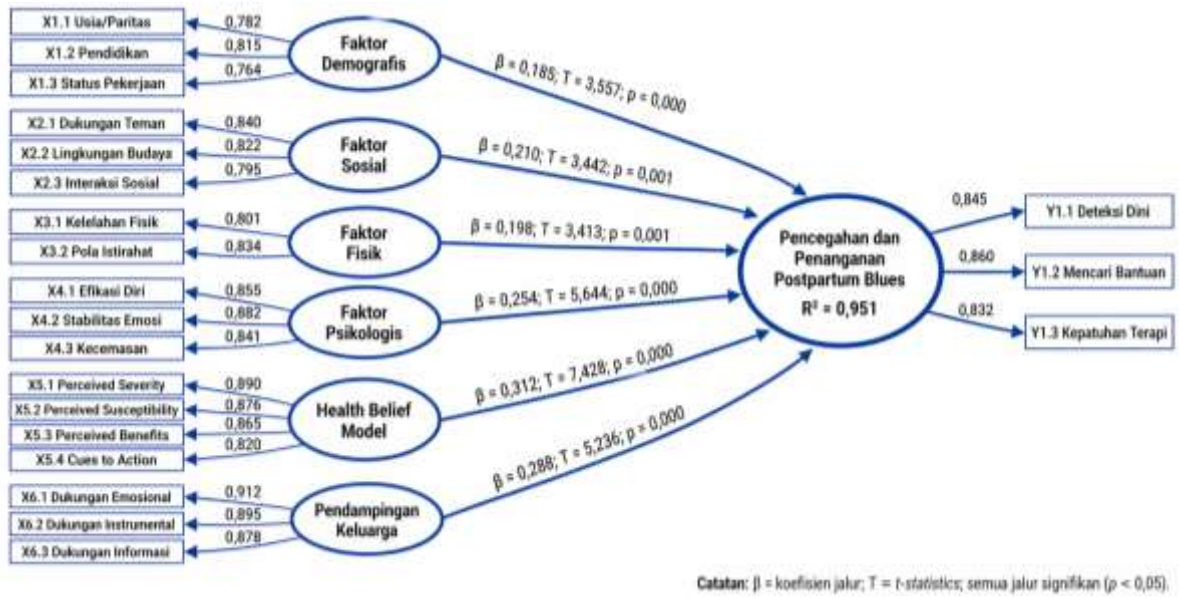

Figure 1. Presents The Final SEM-PLS Structural Model. All Paths Were Significant At P<0.05, And The Endogenous Construct Had An R-Square Value Of 0.951

DISCUSSION

This study found that 69.0% of working postpartum mothers were categorized as experiencing postpartum blues symptoms based on an EPDS cut-off score of ≥10. This proportion indicates that postpartum blues is a prominent maternal health problem among working mothers in urban areas. The mean EPDS score of 12.45 suggests that many respondents had symptoms requiring early attention, although EPDS is a screening instrument that does not replace clinical diagnosis (Cox et al., 1987). The finding is consistent with previous evidence that postpartum mood symptoms remain common across settings and may be influenced by measurement timing, cut-off score, cultural context, sleep quality, and maternal role demands (Jones et al., 2024; Tosto et al., 2023).

The high prevalence of postpartum blues symptoms may be interpreted in relation to respondents' characteristics. Most mothers were primiparous, and first-time mothers may require greater support in adapting to infant care, breastfeeding, body changes, and new household routines (Purwarini & Armaya, 2021; World Health Organization, 2022b). In addition, half of the respondents reported low family support. For working mothers, limited support may intensify the burden of combining infant-care responsibilities with employment-related expectations (Costa et al., 2021; Olivieri et al., 2024). These findings emphasize the necessity of family-centered, context-sensitive postpartum care (World Health Organization, 2022a, 2022b).

The measurement model showed that all indicators had acceptable outer loadings and all constructs met reliability and convergent validity criteria. This indicates that the final model had adequate measurement quality according to common PLS-SEM standards (Hair et al., 2021). Unlike the earlier version of the manuscript, which reported low reliability values for several constructs, the final analysis based on 206 respondents demonstrates that the indicators are statistically suitable for representing their respective constructs. This strengthens the validity of the subsequent structural model interpretation.

The structural model demonstrated strong explanatory capacity, with an R-square value of 0.951. This means that the combined demographic, social, physical, psychological, health-belief, and family-assistance factors explained most of the variance in prevention and management efforts for postpartum blues. However, the study's cross-sectional design necessitates a balanced interpretation of this high R-square. The model explains associations among variables but does not establish causal effects. Longitudinal or experimental studies are needed to test whether improving these factors leads to better prevention and management outcomes.

The Health Belief Model emerged as the strongest predictor of prevention and management efforts. This suggests that maternal perceptions of the seriousness of postpartum blues, perceived vulnerability, perceived benefits of preventive behavior, perceived barriers, and cues to action are central to whether mothers engage in early detection, seek help, and adhere to advice or therapy (Rosenstock, 1974). In practice, this finding implies that postpartum education should provide information and strengthen mothers' beliefs that symptoms are important, manageable, and warrant timely help-seeking (Rosenstock, 1974; World Health Organization, 2022a). Health workers and family members can use simple counseling to reinforce symptom recognition, reduce stigma, and clarify when professional help is needed (World Health Organization, 2022a).

Family assistance was the second strongest predictor. This finding confirms the relevance of family involvement in supporting working mothers during the postpartum period. Emotional support can reduce feelings of loneliness and anxiety; instrumental support can help mothers rest and recover by sharing household and infant-care tasks; and informational support can guide mothers in recognizing symptoms, accessing health services, and following professional recommendations. This is consistent with evidence that social support is closely linked to postpartum mental health, particularly in Asian contexts where family structures and cultural expectations strongly influence maternal adjustment (Ekpenyong & Munshitha, 2023).

Psychological factors also had a significant effect, indicating that self-efficacy, emotional stability, and anxiety are important for prevention and management behaviors. Mothers with stronger self-efficacy may be more confident in recognizing symptoms, communicating needs, and seeking support. Conversely, anxiety and emotional instability may reduce coping capacity and delay help-seeking. This finding supports the need to include stress management, emotional regulation, and self-efficacy strengthening in postpartum counseling, especially for working mothers who must manage multiple roles (Shamsdanesh et al., 2023).

Social and physical factors were also significant. Social interaction, friend support, and cultural environment can shape mothers' willingness to disclose symptoms and seek help. Physical fatigue and poor rest patterns can intensify mood symptoms and reduce mothers' ability to engage in prevention activities. These findings indicate that postpartum assistance should include practical strategies such as shared caregiving, rest planning, sleep support, and workload adjustment. Recent research on maternal mental health in the workplace and work-family balance also highlights that workplace conditions, competing role demands, and sleep-wake problems may influence maternal well-being after childbirth (Costa et al., 2021; Olivieri et al., 2024).

Demographic factors had the smallest but still significant effect. This indicates that age/parity, education, and employment status remain relevant in understanding prevention and management efforts. Younger mothers or primiparous mothers may need more intensive education and mentoring, while mothers with lower education may require simpler, more accessible communication strategies. Therefore, the conceptual model should be applied flexibly according to maternal characteristics rather than implemented as a uniform intervention for all mothers (Purwarini & Armaya, 2021; Vidayati & Zainiyah, 2021).

Based on these findings, the conceptual family-assistance model proposed in this study places the Health Belief Model, family assistance, and psychological factors as the central components, supported by social, physical, and demographic considerations. The model

emphasizes early EPDS screening, family education, emotional and instrumental support, strengthening of health beliefs, stress and anxiety management, rest planning, and referral when symptoms persist or are severe. This model is intended as a conceptual framework and should be tested further through intervention studies.

Conceptual Model Implications. For midwifery and maternal health services, the model suggests that postpartum care for working mothers should include structured screening with the EPDS, brief counseling on postpartum mood changes, and family-based education (Cox et al., 1987; World Health Organization, 2022a). Husbands and close family members should be invited to understand their roles in providing emotional support, sharing household tasks, assisting with infant care, monitoring symptoms, and facilitating professional help-seeking (Ekpenyong & Munshitha, 2023; World Health Organization, 2022a). For workplaces, the findings imply that working mothers may benefit from policies that support gradual return to work, flexible scheduling, lactation support, and communication channels that allow mothers to access health information during the postpartum period (Costa et al., 2021; Olivieri et al., 2024). Collaboration among health workers, families, and workplaces may reduce the burden of dual roles and support maternal mental health (World Health Organization, 2022a, 2022b).

Limitations. This study has several limitations. First, the cross-sectional design limits causal interpretation. Second, postpartum blues were identified using the EPDS as a screening tool rather than through clinical diagnosis. Third, the study focused on working mothers in urban areas of Medan City, so generalization to rural areas or non-working mothers should be made cautiously. Fourth, all questionnaire data were self-reported and may be affected by recall or social desirability bias. Future studies should test the conceptual family-assistance model using longitudinal or quasi-experimental designs and include qualitative exploration of mothers' and family members' experiences.

CONCLUSION

This quantitative cross-sectional study found that 69.0% of working postpartum mothers in urban areas were categorized as experiencing postpartum blues symptoms based on an EPDS cut-off of ≥10. The SEM-PLS model demonstrated strong explanatory power, with demographic factors, social factors, physical factors, psychological factors, the Health Belief Model, and family assistance all having significant positive effects on prevention and management efforts for postpartum blues. The Health Belief Model was the strongest predictor, followed by family assistance and psychological factors. The proposed conceptual model emphasizes strengthening maternal health beliefs, structured family assistance, psychological

support, physical recovery, social support, and early detection as integrated components for preventing and managing postpartum blues among working mothers in urban settings.

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