

Urban–Rural Differences in the Determinants of Depression Among Mothers of Children Under Five in Indonesia

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Abstract

Mothers of children under five are vulnerable to depression, which may adversely affect child growth and development. This study examined urban–rural differences in the biopsychosocial determinants of maternal depression in Indonesia. Data were obtained from the 2023 Indonesia Health Survey and included 70,851 mothers with children aged 0–59 months. Depressive symptoms were assessed using the Mini International Neuropsychiatric Interview, and determinants were analyzed using multiple logistic regression. In urban areas, maternal depression was associated with younger maternal age (15–19 years; adjusted odds ratio (AOR) = 4.14, 95% CI [2.15, 7.94]), current pregnancy (AOR = 2.30, 95% CI [1.54, 3.43]), and chronic disease (AOR = 2.87, 95% CI [2.08, 3.95]), unintended pregnancy (AOR = 3.50, 95% CI [2.76, 4.44]), divorced status (AOR = 2.61, 95% CI [1.59, 4.27]), unemployment (AOR = 1.80, 95% CI [1.43, 2.28]), and lower educational attainment. In rural areas, depression was associated with chronic disease (AOR = 2.24, 95% CI [1.37, 3.66]), unintended pregnancy (AOR = 2.66, 95% CI [1.79, 3.95]), unemployment (AOR = 1.51, 95% CI [1.15, 1.98]), and divorced status (AOR = 3.45, 95% CI [1.94, 6.14]). These findings demonstrate distinct urban–rural patterns in the determinants of maternal depression, highlighting the importance of context-specific maternal mental health interventions.

Keywords

Children under five; maternal depression; rural health; urban health

Introduction

In low- and middle-income countries (LMICs), where socioeconomic pressures are substantial and mental health services remain limited, depression among mothers of young children represents an important yet insufficiently addressed public health issue (Manzouri et al., 2025; Tembo et al., 2024). Previous studies have reported a high burden of maternal mental health problems in these settings. Among mothers of children under five, the prevalence of common mental disorders has been reported at 36.6% (Barsisa et al., 2021), while depressive symptom prevalence reached 19.91% in other LMIC populations (De Castro et al., 2015).

Maternal depression affects not only women's psychological well-being but also child health and development (Pitchik et al., 2020). Depression may impair mothers' ability to perform routine daily activities, including self-care and childcare responsibilities (Jamshaid et al., 2023). Maternal depression has also been associated with reduced responsiveness to children's needs, lower rates of exclusive breastfeeding, increased susceptibility to childhood illnesses, and poor nutritional outcomes (Dadi et al., 2020). In addition, children of mothers with depression are more likely to experience impaired cognitive and fine motor development (Koutra et al., 2013).

Maternal depression is a multifactorial condition shaped by interactions among biological, psychological, and social factors. This study adopts the biopsychosocial framework, which conceptualizes health outcomes as the product of dynamic interactions across these domains (Engel, 1977). In LMICs, persistent socioeconomic inequality and cultural heterogeneity may influence how maternal depression manifests across different residential settings, particularly between urban and rural populations (Ghahyazi et al., 2023). The biopsychosocial framework therefore provides a comprehensive approach for examining determinants of maternal depression among mothers of children under five.

Previous studies have identified multiple determinants of maternal depression, including maternal age, pregnancy-related conditions, chronic illness, unintended pregnancy, low educational attainment, unemployment, marital disruption, and limited access to healthcare services (Álvarez Mederos et al., 2024; Manuel et al., 2012). However, the distribution and impact of these factors may differ across urban and rural settings because of variations in social structure, healthcare access, environmental conditions, and community support systems.

In Indonesia, mental health services remain limited because of persistent stigma surrounding mental illness, restricted healthcare resources, economic barriers, and low levels of mental health literacy (Mamniah et al., 2025; Munira et al., 2023; Praherso et al., 2020). Rural areas often face additional challenges, including geographical barriers, limited transportation infrastructure, and uneven distribution of healthcare services, particularly mental health professionals (Bratanegara et al., 2025). Although rural communities may benefit from stronger social cohesion and extended family support, reliance on informal support systems may delay professional help-seeking and contribute to under-detection of maternal depression (Absor et al., 2024; Jackson et al., 2020).

Urban environments present a different set of psychosocial and environmental stressors. Urban residents are more frequently exposed to noise, air pollution, overcrowding, poor housing conditions, reduced physical activity, economic pressure, and weaker social

networks, all of which have been associated with increased risk of depression (Hoare et al., 2019). These contextual differences suggest that urban and rural mothers may experience different patterns of vulnerability to maternal depression.

In Indonesia, most previous studies have focused primarily on postpartum depression during the first year after childbirth. Research examining depression among mothers of children beyond infancy remains limited. Furthermore, existing Indonesian studies have generally examined maternal depression as a homogeneous condition without systematically comparing determinants across urban and rural settings. To our knowledge, no nationally representative study has specifically investigated urban-rural differences in the biopsychosocial determinants of depression among mothers of children under five in Indonesia. This gap limits understanding of how spatial and structural contexts shape maternal mental health vulnerability beyond the postpartum period. Therefore, this study aims to examine urban-rural differences in the determinants of depression among mothers of children under five in Indonesia.

Methods

Study design

This study used data from the 2023 Indonesia Health Survey (Survei Kesehatan Indonesia [SKI]), a nationwide health survey conducted by the Indonesian Ministry of Health. The SKI is a cross-sectional survey conducted every five years to assess community health conditions at the district/city, provincial, and national levels. The 2023 SKI applied a probability-proportionate-to-size sampling approach across 38 provinces in Indonesia. Ten households were selected from each census block using a two-stage systematic sampling method. All household members who had lived in the household for at least one year and shared the same food expenditure source were eligible to participate in the survey (Health Policy Development Agency, 2023).

Study participants

The study population consisted of mothers aged 15–54 years who had biological children aged 0–59 months. Participants with complete data on all study variables were included in the analysis. Mothers who experienced severe pain during the interview or who did not fully respond to all questionnaire items were excluded. After applying these criteria, 70,851 mothers were included in the final analysis.

Outcome variable

The outcome variable in this study was depression, assessed using the Indonesian version of the Mini International Neuropsychiatric Interview (MINI), which was developed based on the International Classification of Diseases, 10th Revision (ICD-10). The MINI is a structured diagnostic interview developed collaboratively by psychiatrists and physicians in the United States and Europe to assess mental disorders according to the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), and ICD-10 criteria (Lecrubier et al., 1997).

The instrument assessed depressive symptoms experienced during the two weeks prior to the survey interview. Previous studies in Indonesia reported that the MINI had a sensitivity of 60% to 80%, positive predictive values of 30% to 60%, and negative predictive values of approximately 90% for identifying depression. Inter-enumerator agreement was moderate, with a kappa value of 0.62 (Idaiani, 2020).

The MINI consists of 10 questions. Each “no” response was scored as 0, whereas each “yes” response was scored as 1. Respondents were classified as depressed if they provided at least two “yes” responses to questions 1–3 and at least two “yes” responses to questions 4–10 (Wurisastuti et al., 2025).

Independent variables

The independent variables were selected based on the biopsychosocial framework, which conceptualizes mental health as the result of interactions among biological, psychological, and social factors (Engel, 1977). Biological factors included maternal age, current pregnancy, and chronic disease status. Unintended pregnancy was categorized as a psychological factor because it reflects maternal emotional preparedness and acceptance of pregnancy (Beumer et al., 2023). Social factors included educational attainment, employment status, marital status, wealth index, health insurance ownership, distance to health facilities, and healthcare cost affordability.

Maternal age was categorized into three groups: 35–54 years (0), 20–34 years (1), and 15–19 years (2). Educational attainment was classified as high school or more (0) and less than high school (1). Employment status was categorized as working (0) or not working (1). The household wealth index was based on household asset ownership and was classified into quintiles ranging from the poorest (1) to the richest (5). Higher category codes reflected greater vulnerability to depression. This study examined determinants of depression among urban and rural mothers of children under five.

Statistical analysis

Cases with missing data for any study variable were excluded prior to analysis. Logistic regression analysis was used because the outcome variable (maternal depression) was dichotomous (not depressed/depressed). Adjusted odds ratios (AORs) and 95% confidence intervals (CI) were calculated to estimate associations between independent variables and depression. Stratified analyses by residential setting (urban and rural) were conducted to identify context-specific determinants and to assess whether associations differed across residential environments.

First, univariate analyses were performed to describe the distribution of biological, psychological, and social factors by residential setting (Table 1). Second, bivariate associations between each independent variable and depression were examined using cross-tabulation and chi-square tests (Table 2). Finally, all independent variables were included in the multivariate logistic regression model based on theoretical considerations within the biopsychosocial framework, rather than solely on statistical significance in bivariate analysis (Table 3).

Statistical significance was defined as $p < .05$. The analysis was performed using SPSS version 22.0 (IBM Corp., Armonk, NY, USA), accounting for survey weights, strata, and primary sampling units of the SKI dataset. Assumptions underlying logistic regression were assessed prior to model estimation. Because all independent variables were categorical, the linearity assumption in the logit was not applicable. Multicollinearity diagnostics indicated no substantial correlations among predictors.

Ethical statement

This study used publicly available secondary data from the 2023 SKI. Respondent identities were anonymized and were not identifiable in the analysis. Ethical approval for the 2023 SKI was obtained from the Ethics Committee of the Indonesian Ministry of Health (No. LB.02.01/I/KE/L/287/2023).

Results

Table 1 presents the characteristics of 70,851 mothers of children under five, including 36,639 mothers from urban areas and 34,212 from rural areas. Overall, 0.9% of mothers were classified as depressed, with a higher prevalence observed in urban areas (1.1%) than in rural areas (0.7%).

Among the biological factors, most respondents were aged 20–34 years (62.0%), with a slightly higher proportion in rural areas than in urban areas (63.2% vs. 60.8%). Mothers aged 15–19 years represented a relatively small proportion of the sample (0.8%) but were more common in rural areas (1.1%) than in urban areas (0.6%). Current pregnancy and chronic disease were reported by 3.0% and 4.0% of respondents, respectively, and both conditions were slightly more common among urban mothers (Table 1).

Regarding psychological factors, unintended pregnancy was reported by 6.6% of respondents and was more prevalent in urban areas (8.4%) than in rural areas (4.6%). In terms of social characteristics, mothers living in urban areas were more likely to have attained at least a high school education (67.6%) compared with those in rural areas (46.9%). Employment patterns differed modestly across residential settings, with a slightly higher proportion of employed mothers in rural areas. Most respondents were married in both settings (Table 1).

Substantial differences were also observed in household wealth distribution. A significantly higher proportion of urban mothers belonged to the upper-middle wealth category (79.4%), whereas more than half of rural mothers were classified in the lower wealth group. Access-related indicators were generally high across both settings. Health insurance coverage was reported by 80.8% of respondents, although coverage was lower in rural areas (77.6%) than in urban areas (83.8%). Nearly all respondents reported adequate proximity to health facilities and affordability of healthcare costs (Table 1).

Table 1: Distribution of Mothers of Children Under Five by Urban and Rural Residence

Variable	Urban (N = 36,639)	Rural (N = 34,212)	Full sample (N = 70,851)
Biological Factor			
Maternal age (years)			
35–54	14,122 (38.5)	12,218 (35.7)	26,340 (37.2)
20–34	22,291 (60.8)	21,617 (63.2)	43,908 (62.0)
15–19	226 (0.6)	377 (1.1)	603 (0.8)
Current pregnancy ^a	1,236 (3.4)	920 (2.7)	2,156 (3.0)
Chronic disease status ^a	1,656 (4.5)	1,168 (3.4)	2,824 (4.0)
Psychological Factor			
Unintended pregnancy ^a	3,093 (8.4)	1,563 (4.6)	4,656 (6.6)
Depression ^a	395 (1.1)	241 (0.7)	636 (0.9)
Social Factor			
Educational attainment			
High school or more	24,756 (67.6)	16,050 (46.9)	40,806 (57.6)
Less than high school	11,883 (32.4)	18,162 (53.1)	30,045 (42.4)
Employment status			
Working	14,894 (40.7)	15,240 (44.5)	30,134 (42.5)
Not working	21,745 (59.3)	18,972 (55.5)	40,717 (57.5)
Marital status			
Marriage	35,893 (98.0)	33,629 (98.3)	69,522 (98.1)
Divorced	746 (2.0)	583 (1.7)	1,329 (1.9)
Wealth Index			
Upper-middle	29,096 (79.4)	16,701 (48.8)	45,797 (64.6)
Lower	7,543 (20.6)	17,511 (51.2)	25,054 (35.4)
Health insurance ownership ^a	30,694 (83.8)	26,544 (77.6)	57,238 (80.8)
Distance to health facilities ^a	36,001 (98.3)	32,997 (96.4)	68,998 (97.4)
Healthcare cost affordability ^a	36,613 (99.9)	33,961 (99.3)	70,574 (99.6)

The bivariate analysis presented in Table 2 showed that, in urban areas, maternal depression was significantly associated with maternal age, current pregnancy, chronic disease status, unintended pregnancy, educational attainment, employment status, marital status, wealth index, and health insurance ownership. In rural areas, significant associations were observed for chronic disease status, unintended pregnancy, educational attainment, employment status, marital status, and healthcare affordability.

Table 3 presents the multivariate logistic regression results examining determinants of maternal depression among mothers of children under five in urban and rural areas. Younger maternal age was independently associated with higher odds of depression, with the strongest association observed among mothers aged 15–19 years. This age gradient was evident in urban areas but not statistically significant in rural settings.

The current pregnancy was associated with higher odds of depression in urban areas and in the pooled sample, whereas the association was not statistically significant in rural areas. Chronic disease status showed a strong and consistent association across all models, with mothers reporting chronic disease having nearly three times higher odds of depression than those without chronic disease. Unintended pregnancy emerged as one of the strongest predictors of maternal depression in both urban and rural settings. Women with unintended pregnancies had more than twice the odds of depression, and this association remained stable after adjustment for other variables (Table 3).

Among social factors, educational attainment, employment status, and marital status were significantly associated with maternal depression. Lower educational attainment was associated with depression primarily in urban areas and in the pooled sample. Mothers who were not working and those who were divorced had substantially higher odds of depression in both urban and rural settings. In contrast, structural access-related factors, including household wealth, health insurance ownership, proximity to health facilities, and healthcare affordability, were not independently associated with maternal depression after adjustment (Table 3).

Table 2: Distribution of Maternal Depression by Urban and Rural Residence

Variables	Urban			Rural			Full sample		
	Not Depressed (N = 36,244)	Depressed (N = 395)	<i>p</i> value	Not Depressed (N = 33,971)	Depressed (N = 241)	<i>p</i> value	Not Depressed (N = 70,251)	Depressed (N = 636)	<i>p</i> value
<i>Biological Factors</i>									
Maternal age (years)									
35–54	13,996 (99.1)	126 (0.9)	.007	12,133 (99.3)	85 (0.7)	.939	26,129 (99.2)	211 (0.8)	< .001
20–34	22,033 (98.8)	258 (1.2)		21,467 (99.3)	150 (0.7)		43,500 (99.1)	408 (0.9)	
15–19	215 (95.1)	11 (4.9)		371 (98.4)	6 (1.6)		586 (97.2)	17 (2.8)	
Current pregnancy									
No	35,035 (99.0)	368 (1.0)	< .001	33,061 (99.3)	231 (0.7)	.228	68,096 (99.1)	599 (0.9)	< .001
Yes	1,209 (97.8)	27 (2.2)		910 (98.9)	10 (1.1)		2,119 (98.3)	37 (1.7)	
Chronic disease status									
No	34,635 (99.0)	348 (1.0)	< .001	32,821 (99.3)	223 (0.7)	.001	67,456 (99.2)	571 (0.8)	< .001
Yes	1,609 (97.2)	47 (2.8)		1,150 (98.5)	18 (1.5)		2,759 (97.7)	65 (2.3)	
<i>Psychological Factors</i>									
Unintended pregnancy									
No	33,247 (99.1)	299 (0.9)	< .001	32,437 (99.4)	212 (0.6)	< .001	65,684 (99.2)	511 (0.8)	< .001
Yes	2,997 (96.9)	96 (3.1)		1,534 (98.1)	29 (1.9)		4,531 (97.3)	125 (2.7)	
<i>Social Factors</i>									
Educational attainment									
High school or more	24,531 (99.1)	225 (0.9)	< .001	19,954 (99.4)	96 (0.6)	.032	40,485 (99.2)	321 (0.8)	< .001
Less than high school	11,713 (98.6)	170 (1.4)		18,017 (99.2)	145 (0.8)		29,730 (99.0)	315 (1.0)	
Employment status									
Working	14,792 (99.3)	102 (0.7)	< .001	15,156 (99.4)	84 (0.6)	.003	29,948 (99.4)	186 (0.6)	< .001
Not working	21,452 (98.7)	293 (1.3)		18,815 (99.2)	157 (0.8)		40,267 (98.9)	450 (1.1)	
Marital status									
Marriage	35,516 (98.9)	377 (1.1)	.001	33,401 (99.3)	228 (0.7)	< .001	68,917 (99.1)	605 (0.9)	< .001

Variables	Urban			Rural			Full sample		
	Not Depressed (N = 36,244)	Depressed (N = 395)	<i>p value</i>	Not Depressed (N = 33,971)	Depressed (N = 241)	<i>p value</i>	Not Depressed (N = 70,251)	Depressed (N = 636)	<i>p value</i>
Divorced	728 (97.6)	18 (2.4)		570 (97.8)	13 (2.2)		1,298 (97.7)	31 (2.3)	
Wealth Index									
Upper middle	28,804 (99.0)	292 (1.0)	.008	16,592 (99.3)	109 (0.7)	.293	45,396 (99.1)	401 (0.9)	.400
Lower	7,440 (98.6)	103 (1.4)		17,379 (99.2)	132 (0.8)		24,819 (99.1)	235 (0.9)	
Health insurance ownership									
Yes	30,381 (99.0)	313 (1.0)	.017	26,357 (99.3)	187 (0.7)	1.000	56,738 (99.1)	500 (0.9)	.163
No	5,863 (98.6)	82 (1.4)		7,614 (99.3)	54 (0.7)		13,477 (99.0)	136 (1.0)	
Distance to health facilities									
Yes	35,614 (98.9)	387 (1.1)	.810	32,767 (99.3)	230 (0.7)	.498	68,381 (99.1)	617 (0.9)	.555
No	630 (98.7)	8 (1.3)		1,204 (99.1)	11 (0.9)		1,834 (99.0)	19 (1.0)	
Healthcare cost affordability									
Yes	36,219 (98.9)	394 (1.1)	.676	33,725 (99.3)	236 (0.7)	.039	69,944 (99.1)	630 (0.9)	.030
No	25 (96.2)	1 (3.8)		246 (98.0)	5 (2.0)		271 (97.8)	6 (2.2)	

Table 3: Factors Associated with Maternal Depression among Mothers of Children Under Five in Urban and Rural Areas

Variable	Urban			Rural			Full sample		
	β	AOR [95% CI]	<i>p</i> value	β	AOR [95% CI]	<i>p</i> value	β	AOR [95% CI]	<i>p</i> value
Biological Factors									
Maternal age (years)									
35–54		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
20–34	.417	1.52 [1.22, 1.89]	< .001	.075	1.08 [0.82, 1.42]	.592	.274	1.32 [1.11, 1.56]	.002
15–19	1.420	4.14 [2.15, 7.94]	< .001	.601	1.82 [0.78, 4.25]	.164	.297	2.81 [1.68, 4.70]	< .001
Current pregnancy									
No		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
Yes	.832	2.30 [1.54, 3.43]	< .001	.545	1.72 [0.91, 3.27]	.098	.770	2.16 [1.54, 3.03]	< .001
Chronic disease status									
No		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
Yes	1.054	2.87 [2.08, 3.95]	< .001	.807	2.24 [1.37, 3.66]	.001	.995	2.71 [2.07, 3.53]	< .001
Psychological Factors									
Unintended pregnancy									
No		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
Yes	1.252	3.50 [2.76, 4.44]	< .001	.979	2.66 [1.79, 3.95]	< .001	1.215	3.37 [2.76, 4.13]	< .001
Social Factors									
Educational attainment									
High school or more		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
Less than high school	.274	1.32 [1.06, 1.63]	.012	.195	1.22 [0.93, 1.60]	.160	.199	1.22 [1.03, 1.44]	.020
Employment status									
Working		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
Not working	.590	1.80 [1.43, 2.28]	< .001	.413	1.51 [1.15, 1.98]	.003	.549	1.73 [1.45, 2.07]	< .001
Marital status									
Marriage		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
Divorced	.958	2.61 [1.59, 4.27]	< .001	1.238	3.45 [1.94, 6.14]	< .001	1.092	2.98 [2.05, 4.33]	< .001

Variable	Urban			Rural			Full sample		
	β	AOR [95% CI]	<i>p</i> value	β	AOR [95% CI]	<i>p</i> value	β	AOR [95% CI]	<i>p</i> value
Wealth Index									
Upper middle		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
Lower	.123	1.13 [0.89, 1.43]	.310	.074	1.08 [0.83, 1.40]	.582	-.011	.99 [0.83, 1.17]	.904
Health insurance ownership									
Yes		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
No	.206	1.23 [0.96, 1.58]	.106	-.037	0.96 [0.71, 1.31]	.814	.092	1.10 [0.90, 1.33]	.354
Distance to health facilities									
Yes		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
No	.144	1.16 [0.54, 2.46]	.708	-.084	0.92 [0.41, 2.07]	.840	-.005	.99 [0.57, 1.73]	.985
Healthcare cost affordability									
Yes		<i>ref.</i>			<i>ref.</i>			<i>ref.</i>	
No	.975	2.65 [0.88, 9.70]	.383	1.087	2.94 [0.89, 9.78]	.078	.859	2.36 [0.88, 6.32]	.087

Discussion

Urban–rural differences in maternal depression

This study identified distinct urban–rural differences in the determinants of depression among mothers of children under five in Indonesia. Overall, 0.9% of mothers were classified as depressed. This prevalence is considerably lower than estimates reported in other low- and middle-income countries, which generally range from 12% to 36%. Studies conducted in Uganda, Ghana, and Ethiopia reported maternal depression prevalence of 12%, 16.8%, and 36.4%, respectively (Ashaba et al., 2015; Saeed & Wemakor, 2019; Yenealem et al., 2024). These differences may be explained by variations in study populations, measurement instruments, and study designs. The Ugandan study used the MINI psychiatric interview in a case-control design (Ashaba et al., 2015), whereas studies in Ghana and Ethiopia used the Edinburgh Postnatal Depression Scale and the Patient Health Questionnaire-9 (PHQ-9), respectively. In contrast, the present study used self-reported survey data collected through a nationally representative population-based survey. Population-based surveys generally produce lower prevalence estimates than facility-based studies because they include broader community populations rather than individuals actively seeking healthcare services.

The present study found a higher prevalence of depression among mothers living in urban areas (1.1%) than among those living in rural areas (0.7%). This finding is consistent with studies from Rwanda and Ecuador showing that urban women are more vulnerable to depressive symptoms than rural women (Ghahyazi et al., 2023; Mutuyimana et al., 2021). Urban environments are often characterized by greater economic pressure, social competition, environmental stressors, and weaker social cohesion, all of which may increase psychological vulnerability. In this study, unemployment, divorce, chronic disease, and unintended pregnancy were associated with maternal depression in both urban and rural settings. However, younger maternal age, lower educational attainment, and current pregnancy were significant only in urban areas, suggesting that contextual and structural conditions may shape maternal mental health risks differently across residential settings.

Biological determinants of maternal depression

The findings support the biopsychosocial framework, which conceptualizes maternal depression as the result of interactions among biological, psychological, and social factors. Younger maternal age was associated with depression only in urban areas. Younger mothers in urban settings may face multiple stressors, including poverty, limited educational attainment, unstable employment, and inadequate social support, all of which may increase vulnerability to depression (Syamantha Putri et al., 2023). In contrast, rural communities often maintain stronger interpersonal relationships and extended family support systems that may protect mothers from psychological distress (Huang et al., 2021). Early motherhood may also be more socially accepted in rural settings, thereby reducing the psychological burden associated with early childbearing (Tewahido et al., 2022).

The current pregnancy was also associated with depression only among urban mothers. Urban mothers who experience closely spaced pregnancies may face greater role strain, financial pressure, and caregiving burden, particularly in settings with limited informal social support (Lanjewar et al., 2021; Zhang et al., 2021). In contrast, rural communities often

maintain stronger intergenerational caregiving systems and communal support structures that may reduce the psychological burden associated with pregnancy and childcare responsibilities (Valencia-Gálvez et al., 2025).

Chronic disease was consistently associated with maternal depression in both urban and rural settings (Nidey et al., 2020). Women with chronic illnesses may experience physical limitations, emotional distress, and difficulties adhering to long-term treatment regimens, all of which may contribute to depressive symptoms (Sharp et al., 2021). Previous Indonesian studies have similarly reported higher levels of psychological stress among women with chronic conditions such as cardiovascular disease (Suryaputri et al., 2024). These findings indicate that maternal mental health is closely interconnected with women's physical health conditions.

Social determinants of maternal depression

Lower educational attainment was associated with maternal depression in urban areas but not in rural settings (Zarghami et al., 2019). This difference may reflect variations in socioeconomic demands and social structures across residential settings (Qian et al., 2025). In urban areas, education is closely associated with employment opportunities, financial stability, and access to health information (Schudde & Bernell, 2019; Zhang et al., 2023). Mothers with lower educational attainment may therefore experience greater economic insecurity, lower mental health literacy, and increased psychosocial stress, which may contribute to depression (Szurek-Cabanas et al., 2024; Wellington, 2023). In contrast, educational attainment in rural areas may be relatively homogeneous because of limited educational opportunities and persistent socioeconomic constraints (Al-Mohammadi & Al-Sharifi, 2024; Bokan et al., 2024; Kekeç et al., 2024). Rural communities may also provide stronger communal and family support, which can buffer the psychological effects of socioeconomic disadvantage during motherhood (Moss et al., 2023).

Employment status was significantly associated with depression in both residential settings. Mothers who were employed were less likely to experience depressive symptoms than unemployed mothers (Lewis et al., 2017). Employment may provide financial security, social engagement, and greater self-esteem, all of which may protect against depression (Baranov et al., 2020). Financial independence may also help women cope with social and economic stressors while improving their ability to manage household needs and personal well-being (Bano et al., 2020).

Divorce emerged as one of the strongest predictors of maternal depression in both urban and rural areas. Mothers who did not live with their husbands may experience emotional distress, financial strain, and reduced social support during childrearing (Syamantha Putri et al., 2023). Support from partners is particularly important for childcare, household decision-making, and financial stability (Abidin et al., 2024). These findings emphasize the important role of family support and marital stability in maternal mental health.

Psychological determinants of maternal depression

Unintended pregnancy was strongly associated with maternal depression in both urban and rural populations. Women with unintended pregnancies often experience greater socioeconomic disadvantage, lower educational attainment, and higher psychological stress

(Kınık & Özcan, 2024; Muskens et al., 2022). Unintended pregnancy may disrupt educational and career plans, increase financial insecurity, and intensify emotional burden during motherhood, thereby increasing vulnerability to depression.

Overall, the findings demonstrate that maternal depression among mothers of children under five is shaped by complex interactions among biological, psychological, and social determinants. However, the influence of these factors differs across urban and rural settings, highlighting the importance of context-specific approaches in maternal mental health interventions and policies.

Limitations

This study included a comprehensive range of factors associated with depression among mothers of children under five. However, several potentially important variables were not available in the dataset, including maternal physical illness, experiences of violence, ongoing depression treatment, and substance use, all of which may influence maternal mental health outcomes.

The data were derived from community-based surveys using stratified sampling rather than from health facility records, which are typically obtained from individuals already aware of their symptoms or seeking treatment. Although this approach improves population representativeness, underreporting of depressive symptoms remains possible because of mental health stigma, particularly in LMIC settings. Such stigma may contribute to social desirability bias and reduced disclosure of psychological symptoms. Nevertheless, this risk was minimized through standardized data collection procedures and systematic enumerator training.

In addition, depressive symptoms were assessed using self-reported measures rather than clinical diagnostic interviews, which may introduce reporting bias and reduce diagnostic precision. Finally, the cross-sectional design does not permit causal inference; therefore, the observed associations should be interpreted as correlational rather than causal relationships.

Conclusion

This study identified distinct urban–rural differences in the determinants of maternal depression among mothers of children under five in Indonesia. In urban areas, maternal depression was associated with a broader range of biological, psychological, and social factors, including younger maternal age, lower educational attainment, unemployment, divorced status, current pregnancy, chronic disease, and unintended pregnancy. In rural areas, maternal depression was primarily associated with unemployment, divorced status, chronic disease, and unintended pregnancy. These findings indicate that maternal mental health in urban settings may be shaped by more complex biopsychosocial vulnerabilities than in rural settings, highlighting the importance of context-specific approaches to maternal mental health interventions and policies.

Recommendations

Mental health interventions should adopt context-specific approaches that reflect the differing determinants of maternal depression across urban and rural settings. In urban settings, integrated depression screening should be strengthened within maternal and child health services, particularly for younger mothers, women with lower educational attainment, and those experiencing economic hardship or marital instability. Policies aimed at expanding employment opportunities, strengthening reproductive health counseling, and improving chronic disease management can help reduce cumulative psychosocial stressors among urban mothers.

In rural areas, interventions should prioritize economic empowerment, targeted support for single or divorced mothers, and improved access to chronic disease care. Strengthening community-based support systems and utilizing existing social cohesion within rural communities may further reinforce protective factors and enhance maternal resilience.

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