

EXPLORING FACTORS ASSOCIATED WITH COMMON MENTAL HEALTH DISORDERS AMONG MOTHERS OF CHILDREN AGED 6-23 MONTHS IN INDONESIA

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ABSTRACT

BACKGROUND: The prevalence of common mental disorders (CMDs) in Indonesia is approximately 20% of the population. However, few studies have examined CMDs among mothers of children aged 6–23 months. This study aimed to identify factors associated with CMD scores among mothers of children aged 6–23 months in Indonesia.

METHODS: This study analyzed data from 670 mothers included in the 2018 Basic Health Research (Riset Kesehatan Dasar, Riskesdas). CMD scores were assessed using the WHO Self-Reporting Questionnaire-20 (SRQ-20). Bivariate analyses were conducted to examine associations between CMD scores and child-related, maternal, and household characteristics. Multiple linear regression analysis was performed to identify factors associated with CMD scores. Unstandardized regression coefficients (B), standardized regression coefficients (β), and 95% confidence intervals (CIs) were calculated. Statistical significance was set at $p < 0.05$.

RESULTS: A history of childhood diarrhea ($B = 0.761$; $\beta = 0.090$; 95% CI: 0.135–1.386; $p = 0.017$), unintended pregnancy ($B = 2.867$; $\beta = 0.141$; 95% CI: 1.360–4.374; $p < 0.001$), and a history of pregnancy complications ($B = 1.328$; $\beta = 0.144$; 95% CI: 0.643–2.012; $p < 0.001$) were significantly associated with higher CMD scores. Having more than three adults in the household was significantly associated with lower CMD scores ($B = -0.724$; $\beta = -0.084$; 95% CI: -1.366 to -0.082 ; $p = 0.027$). The regression model explained 5.7% of the variance in CMD scores ($R^2 = 0.057$; $F = 10.046$; $p < 0.001$; Durbin-Watson = 1.827).

CONCLUSION: Unintended pregnancy, pregnancy complications, and a history of childhood diarrhea were associated with higher CMD scores among mothers of children aged 6–23 months, whereas having more than three adults in the household was associated with lower CMD scores. The low explanatory power of the regression model suggests that other factors may contribute to CMD scores.

KEYWORDS: SRQ-20; maternal mental health; unintended pregnancy; pregnancy complications.

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INTRODUCTION

CMDs are common mental health conditions characterized by symptoms of depression, anxiety, and medically unexplained physical complaints that can substantially impair an individual's health and daily functioning¹. CMDs are commonly assessed using the WHO Self-Reporting Questionnaire-20 (SRQ-20), a 20-item screening instrument designed to identify psychological symptoms, including depression, anxiety, and psychosomatic complaints. Each item has a "yes" or "no" response, and the total score is used to screen for the likelihood of a mental health disorder. Mental health disorders can have adverse economic, social, and psychological consequences for individuals, families, and communities². Mental disorders account for a substantial proportion of the global disease burden. Unipolar depression was identified as the third leading cause of disease burden at the time of the cited report and was projected to become the leading cause by 2030³.

In Indonesia, more than 19 million people aged 15 years and older experience mental and emotional disorders, including more than 12 million who experience depression⁴. In 2016, the National Institute of Health reported approximately 1,800 suicides annually, of which 47.7% involved individuals aged 10–39 years. The prevalence of mental health problems in Indonesia is estimated to be approximately 20% of the population, suggesting that around one in five Indonesians, or approximately 50 million people, may be affected⁵. One study reported that approximately 17.6% of adults had experienced CMDs in the preceding 12 months, while 29.2% had experienced them during their lifetime. Women tend to experience symptoms of mood and anxiety disorders more frequently than men⁶.

Studies conducted in various countries have reported a high prevalence of CMDs among mothers of children under five years of age, particularly among mothers of undernourished children. Globally, approximately 4.4% of mothers of undernourished children were reported to experience CMDs.⁷

Studies in Uganda and Kenya reported CMDs prevalence rates of 42% and 64.1%, respectively, among mothers of undernourished children; these rates were higher than those observed among mothers of adequately nourished children^{8–10}. Other studies have reported prevalence rates of 0.36% in Germany¹¹, 31% in Scotland¹², 56.2%, and 43.8% in rural and urban areas in Brazil¹³, and 28.8% among mothers of children under five years of age in Tanzania¹⁴.

Poor maternal mental health can adversely affect a child's nutrition, health, and psychological well-being⁸. It also increases the risk of growth failure in children under five^{15,16}. CMDs may impair a mother's ability to cope with the demands of childcare^{17–19}. Furthermore, children of mothers experiencing CMDs may face an increased risk of behavioral and emotional problems, cognitive delays, and psychiatric disorders later in life^{12,17,20,21}. Reducing the burden of maternal CMDs may contribute to a reduction in childhood growth retardation, potentially by as much as 30%, and may also support efforts to reduce maternal and under-five mortality²².

Several factors have been identified as potential risk factors for maternal CMDs, including low educational attainment, unintended pregnancy, younger maternal age, unmarried status, inadequate empathy and support from intimate partners, intimate partner violence, poor social support, and a history of mental health problems^{21,23}. Mothers of malnourished children may be particularly vulnerable to CMDs because of multiple, interrelated factors, including poverty, food insecurity, low educational attainment, stigma, inadequate social support, poor maternal nutritional status, quality of care, and limited access to health services. In addition, the emotional distress associated with witnessing a child experience malnutrition may contribute to the development of mental health problems among mothers^{24–27}. Although CMDs are common among mothers of young children, maternal mental health remains an underrecognized public health concern, particularly in low- and middle-income countries^{28,29}.

Despite the substantial burden of CMDs as a major public health concern in Indonesia, research focusing specifically on maternal mental health remains limited. This study therefore emphasizes the importance of identifying factors associated with CMDs among mothers of children aged 6–23 months, a population that may be particularly vulnerable to mental health problems. The focus on this age group is justified by both developmental vulnerability and existing research gaps. Children aged 6–23 months are in a critical stage of the first 1,000 days of life, during which they depend heavily on maternal care. Maternal CMDs may disrupt continued breastfeeding, complementary feeding practices, and child development^{30–32}. In Indonesia, few studies have specifically examined the mental health of mothers with children aged 6–23 months. Fewer than 10% of studies reportedly present findings stratified by the child's age group, while most focus on pregnancy or mothers of young children more broadly^{33–35}. This research gap limits our understanding of the potential effects of maternal CMDs during this critical developmental period and highlights the need for targeted research to inform appropriate interventions and policies. The findings of this study are expected to contribute to a better understanding of maternal CMDs and may indirectly inform efforts to prevent mental health problems among children that could be associated with maternal mental health difficulties.

METHODS

Study Setting and Design

This study used secondary data from the 2018 Indonesian Basic Health Survey (RISKESDAS), a cross-sectional survey conducted across Indonesia. Of approximately 300,000 survey participants, 93,620 were mothers with young children, and 2,513 had data on their children's hemoglobin levels. After excluding records with incomplete data on key study variables, including child's age, BMI, hemoglobin level, and history of pregnancy complications, 670 mothers of children aged 6–23 months were included in the final analysis

using a complete-case approach. Details of the sampling methodology, survey design, instruments, measurements, and quality control are provided in the official 2018 RISKESDAS report³⁶.

Data Management and Analysis

Data from 670 mothers of children aged 6–23 months who completed the questionnaire were included in this study. Maternal CMD symptoms were assessed using the World Health Organization SRQ-20, a screening instrument consisting of 20 items that assess somatic, cognitive, and emotional symptoms experienced during the previous 30 days. Each item is scored as 0 (“No”) or 1 (“Yes”), yielding a total score ranging from 0 to 20, with higher scores indicating a greater number of self-reported symptoms. Based on previous studies validating the SRQ-20 in the Indonesian population^{37–40}, the mean SRQ-20 score was used as the dependent variable to examine associations between maternal CMD symptoms and potential risk factors.

The independent variables included child-related, maternal, and household characteristics. Child-related variables included the child's age (months), body mass index (BMI), hemoglobin level (g/dL), sex, history of diarrhea, and early weaning. A history of diarrhea was defined as experiencing diarrhea within the 30 days preceding the interview and categorized as “Yes” if the child had experienced diarrhea during this period and “No” otherwise. Maternal variables included maternal age (years), gestational age at birth (weeks), educational attainment, employment status, unintended pregnancy, and history of pregnancy complications. Household and healthcare-related variables included residential area (urban or rural), health insurance ownership, number of adult household members, number of household members aged under five years, and access to health services. Residential area was classified according to the 2018 criteria of the National Team for the Acceleration of Poverty Reduction (Tim Nasional Percepatan Penanggulangan Kemiskinan; TNP2K)⁴¹, ownership of health insurance, number

of adult household members, number of household members <5 years old, access to health services categorized as difficult if there is no transportation to health services, unintended pregnancy, history of pregnancy disorders, and early weaning of children. Statistical Analysis

Pearson Correlation analysis was performed to determine the factors associated with CMD scores in mothers of children aged 6-23 months for numerical data, while the Eta test was performed to determine the association of CMD scores in mothers of children aged 6-23 months on categorical data. In the multivariate analysis, variables with $p < 0.025$ in the bivariate stage were included in the Multiple Linear Regression model. This more stringent threshold was chosen instead of the conventional $p < 0.05$ to account for multiple comparisons and to minimize the risk of type 1 error, while still maintaining sufficient statistical power. Additionally, the use of SRQ-20 as a continuous variable rather than a categorical cutoff-based outcome is acknowledged

as a limitation, as it may overlook clinically relevant thresholds of common mental disorders. However, the continuous approach was adopted to capture the full variability in CMD symptoms scores.

Ethical Considerations

The survey protocol, study design, data collection procedures, and questionnaire were reviewed and approved by the Research Ethics Committee of the Agency for Health Research and Development (Badan Penelitian dan Pengembangan Kesehatan; Balitbangkes), Ministry of Health of the Republic of Indonesia (Approval No. LB.02.01/2/KE.024/2018). No additional ethical approval was required for the present study because it involved a secondary analysis of existing data. The researchers obtained authorization to access and use the data by completing and signing the required data-use agreement.

RESULTS

Table 1. Descriptive Statistics and Correlations with Maternal CMD Scores (n: 670)

Variable	Mean	Median	SD	Min	Max	Variance	r	p-value
Mother's Age (years)	30.328	31	6.623	14	59	43.8	-0.086	0.026
Gestational Age at Birth (weeks)	37.959	38	2.295	25	43	5.2	-0.034	0.385
Child's Age (months)	15.016	15	5.182	6	23	26.8	0.047	0.223
BMI	16.375	16.1	2.592	8.1	33.3	6.7	-0.012	0.755
Toddler's Hemoglobin (g/dl)	10.606	10.7	1.592	5.1	16.6	2.5	0.006	0.883
Total CMDs Score	2.364	1	3.196	0	19	10.2	-	-

Table 1 presents the descriptive statistics and correlations between continuous variables and maternal CMD scores. The normality test indicated that the data were not normally distributed ($p < 0.05$). The mean maternal age was 30.33 years (median: 31; range: 14–59 years) and showed a weak negative correlation with CMD scores ($r = -0.086$, $p = 0.026$). Gestational age at birth (mean: 37.96), child age (mean: 15.02 months), child BMI (mean:

16.38; range: 8.1–33.3), and child hemoglobin level (mean: 10.61 g/dL) were not significantly associated with maternal CMD scores (all $p > 0.05$). The mean maternal CMDs score was 2.36, with a variance of 10.22, indicating variability in reported CMD symptoms among mothers of children aged 6–23 months.

Table 2. Associations Between Categorical Variables and Maternal CMD scores (n: 670)

Variable	N (%)	Mean	SD	Eta	Eta Squared	p-value
Child's Gender						
Male	369 (55.1)	2.4959	3.33226	0.046	0.002	0.238
Female	301 (44.9)	2.2027	3.02029			
Child's Diarrhea History						
Yes	116 (17.3)	3.0603	3.57355	0.100	0.010	0.010
No	554 (82.7)	2.2184	3.09598			
Mother's Education Level						
≤ High School	641 (95.7)	2.4072	3.23572	0.063	0.004	0.102
> High School	29 (4.3)	1.4138	1.97334			
Mother's Employment Status						
Employed	192 (28.7)	2.1979	3.30831	0.033	0.001	0.394
Unemployed	478 (71.3)	2.431	3.15206			
Residential Area Status						
Rural	359 (53.6)	2.5125	3.24412	0.050	0.002	0.197
Urban	311 (46.4)	2.1929	3.13792			
Health Insurance Ownership						
None	370 (55.2)	2.4216	3.20324	0.020	0.000	0.606
Yes	300 (44.8)	2.2933	3.1929			
Number of Household Members						
> 3 adults	560 (83.6)	2.2393	3.01989	0.088	0.008	0.022
≤ 3 adults	110 (16.4)	3	3.93292			
Number of Children Under 5 Years						
≥ 2 children	144 (21.5)	2.0139	2.87742	0.057	0.003	0.138
< 2 children	526 (78.5)	2.4601	3.27492			
Access to Healthcare Services						
Difficult	94 (14)	2.6596	3.50592	0.037	0.001	0.334
Easy	576 (86)	2.316	3.14421			
Unintended pregnancy						
Yes	17 (2.5)	5.0588	4.00735	0.136	0.019	0.000
No	653 (97.5)	2.294	3.14612			
History of Pregnancy Complications						
Yes	94 (14)	3.5319	3.85406	0.148	0.022	0.000
No	576 (86)	2.1736	3.03792			
Early Weaning						
Yes	140 (20.9)	2.7071	3.39593	0.055	0.003	0.154
No	530 (79.1)	2.2736	3.13928			

Table 2 presents the associations between categorical variables and maternal CMD scores among mothers of children aged 6–23 months ($n = 670$). Child sex was not significantly associated with CMD scores, although mothers of boys had a slightly higher mean score than mothers of girls (2.50 vs. 2.20; $\eta^2 = 0.002$, $p = 0.238$). A history of child diarrhea was significantly associated with higher maternal CMD scores (3.06 vs. 2.22, $p = 0.010$). Although mothers with higher educational attainment had a lower mean CMDs score than those with a high school education or less (1.41 vs. 2.41), the association was not statistically significant ($p = 0.102$).

Maternal employment status, residential area, health insurance ownership, number of adult household members, and number of children under five years of age were not significantly associated with maternal CMD scores. In contrast, unintended pregnancy was significantly associated with higher CMD scores; mothers reporting an unintended pregnancy had a mean score of 5.06 ($p < 0.001$). A history of pregnancy complications was also associated with higher maternal CMD scores (mean = 3.53, $p < 0.001$). Mothers who had weaned their children early had a higher mean CMDs score than those who had not (2.71), but this association was not statistically significant ($p = 0.154$).

Table 3. Multiple Linear Regression Coefficients for Factors Affecting CMDs Score

Variabel	Coeff.	Std. Error	Beta (β)	t	p-value	95% CI Lower Upper		Tolerance	VIF
Child's Diarrhea History (Yes)	0.761	0.319	0.090	2.388	0.017	0.135	1.386	0.996	1.004
Number of Household Members (> 3) adults	-0.724	0.327	-0.084	-2.216	0.027	-1.366	-0.082	0.988	1.013
Unintended Pregnancy (Yes)	2.867	0.767	0.141	3.737	0.000	1.360	4.374	0.994	1.006
History of Pregnancy Complications (Yes)	1.328	0.349	0.144	3.807	0.000	0.643	2.012	0.995	1.005
(Constant)	2.581	0.312	-	8.271	0.000	1.968	3.193	-	-

$p < 0.001$; $F = 10.046$; $R^2 = 5.7\%$; Durbin-Watson = 1.827

Table 3 presents the results of the multiple linear regression analysis. The overall model was statistically significant ($F = 10.046$, $p < 0.001$) and explained 5.7% of the variance in maternal CMD scores ($R^2 = 0.057$). Unintended pregnancy ($B = 2.867$, $p < 0.001$), a history

of pregnancy complications ($B = 1.328$, $p < 0.001$), and child diarrhea ($B = 0.761$, $p = 0.017$) were independently associated with higher maternal CMD scores. In contrast, the number of adult household members was negatively associated with CMD scores ($B = -0.724$, $p = 0.027$),

indicating that a higher number of adult household members was associated with lower CMD scores, after adjusting for the other variables included in the model. Multicollinearity did not appear to be a concern, as all variance inflation factor (VIF) values were close to 1 and well below the commonly used threshold of 10. The Durbin-Watson statistic was 1.827, suggesting no substantial residual autocorrelation.

The figure 1 illustrates the distribution of self-reported CMD symptoms among mothers of children aged 6–23 months. Frequent headaches were the most commonly reported symptom (43.0%), followed by difficulty

appetite was reported by 17.2% of mothers, while 18.4% reported feeling tense, anxious, or worried. Other symptoms included feeling unhappy (7.2%), difficulty enjoying daily activities (6.9%), and crying more often (6.0%). Although only 1.0% of mothers reported thoughts of ending their lives, this symptom warrants particular attention. Most mothers did not report shaking hands (92.5%), indigestion (89.3%), or feelings of worthlessness (95.8%). Overall, the findings indicate variation in the frequency of reported symptoms, with somatic complaints more commonly reported than several emotional symptoms.

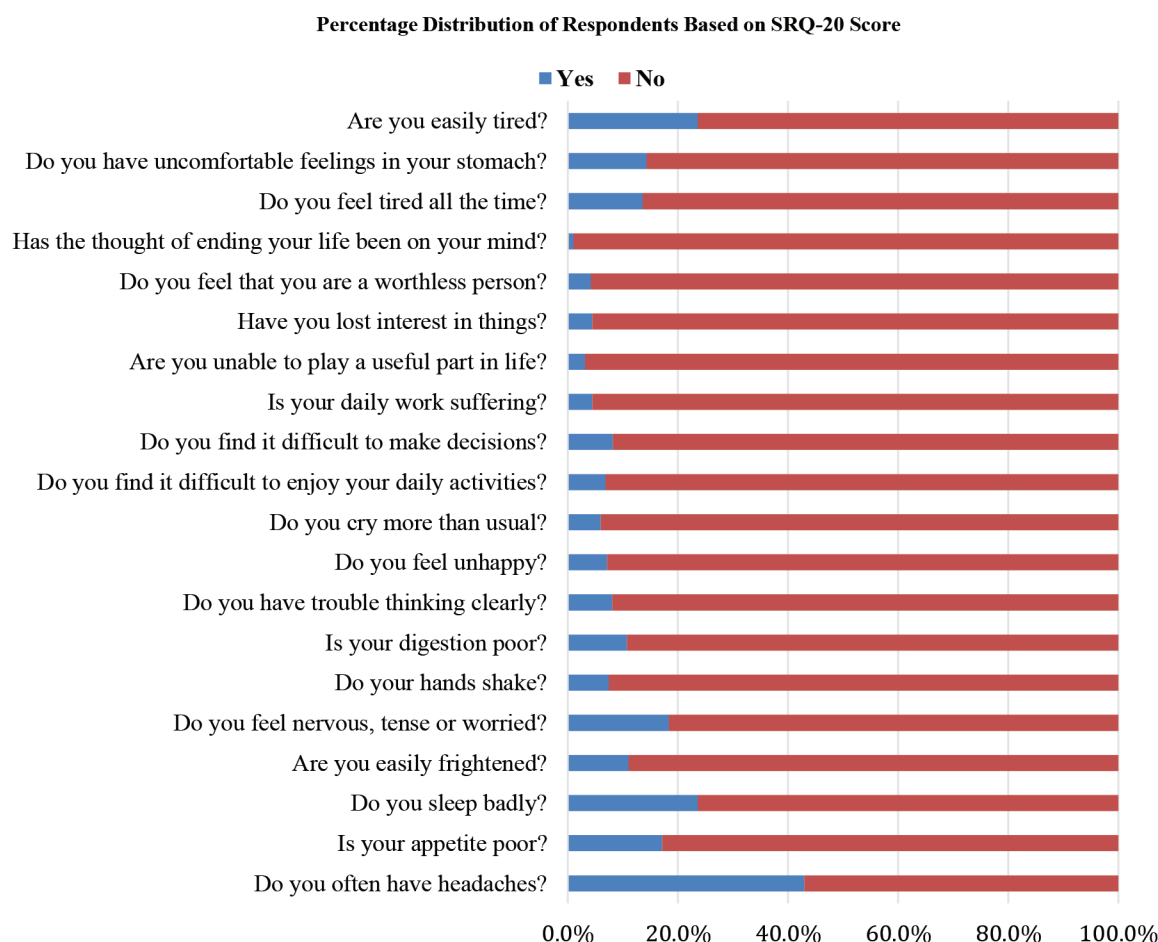


Figure 1. Percentage Distribution of Respondents Based on The Self-Reporting Questionnaire (SRQ-20) Score

DISCUSSION

Maternal mental health, particularly CMDs, is an important public health concern because of its potential implications for both maternal well-being and child development. The period when children are aged 6–23 months is particularly important, as mothers may face multiple caregiving demands while supporting their children's growth and development. Maternal mental health during this period may be influenced by several interconnected factors, including child health problems, pregnancy-related complications, and household and social circumstances.

In this study, child health was associated with maternal CMD symptom scores. Mothers whose children had experienced diarrhea within the 30 days preceding the interview had higher mean CMD symptoms scores than mothers whose children had not experienced diarrhea during the same period (3.06 vs. 2.22, $p = 0.010$). This finding is consistent with the possibility that child illness contributes to maternal psychological distress. Caring for a child with diarrhea may increase caregiving demands, disrupt daily routines, and raise concerns about the child's recovery and health. These demands may place additional emotional and physical strain on mothers and may be reflected in higher CMD symptoms scores. However, because of the cross-sectional design of this study, the observed association should not be interpreted as evidence of a causal relationship^{42–44}. Unintended pregnancy was also found to contribute to elevated CMD scores (mean = 5.06 vs 2.29, $p = 0.000$). This association is consistent with prior evidence showing that unintended pregnancies often increase maternal stress, reduce social support, and raise risks of depression and anxiety^{45,46}. The stress related to such pregnancies may continue after delivery and influence maternal well-being during the early childcare period. Pregnancy complications were another determinant of CMDs, with higher scores reported among women

who experienced complications (mean = 3.53 vs 2.17, $p = 0.000$). This pattern reflects findings in the literature that complications can lead to long-term psychological distress, contributing to anxiety and depression^{47,48}. In contrast, several variables—including child gender, maternal education, early weaning, employment status, residential area, health insurance ownership, number of adult household members, and number of children under five—were not significantly associated with CMDs. This suggests that CMDs in mothers of young children may be more strongly influenced by direct stressors related to child health and pregnancy experiences rather than demographic or socio-economic characteristics²³. The absence of significant associations between maternal CMD symptoms scores and education or employment status is noteworthy, as education and employment are often considered important social determinants of mental health. One possible explanation is that stressors related to child health and pregnancy complications may contribute to maternal psychological distress across different educational and employment groups. However, this interpretation requires further investigation. These findings suggest that maternal psychological distress may occur across diverse socioeconomic circumstances and are consistent with previous studies examining the mental health burden among caregivers of children and individuals with mental disorders^{49,50}.

The regression model explained 5.7% of the variance in maternal CMD symptoms scores ($R^2 = 0.057$), indicating that the variables included in the analysis accounted for only a small proportion of the observed variation. Other factors, such as maternal personality traits, social support, cultural expectations, and experiences of intimate partner violence, may also be relevant but were not assessed in this study. These findings highlight the multifactorial nature of maternal mental health and the need to consider broader psychosocial and contextual factors in future research.

From a public health perspective, maternal and child health services could consider integrating mental health screening and appropriate follow-up care into routine care, particularly for mothers experiencing child health problems, unintended pregnancies, or pregnancy complications. The SRQ-20 may serve as a screening tool to identify mothers who require further assessment, rather than as a diagnostic instrument. Strengthening referral pathways and access to psychosocial support may help address maternal mental health needs and potentially benefit both mothers and their children.⁵¹

This study has several limitations. First, its cross-sectional design prevents the establishment of temporal relationships and causal inferences between the variables examined and maternal CMD symptoms scores. Second, the study did not capture all potentially relevant determinants of maternal mental health, including social support, personality traits, cultural expectations, and intimate partner violence. The relatively low proportion of variance explained by the regression model further suggests that important aspects of maternal CMD symptoms may not have been captured by the variables included in the analysis.

Longitudinal studies are needed to examine changes in maternal CMD symptoms over time and clarify the temporal relationships between maternal mental health, child health, and pregnancy-related factors. Future research should also incorporate broader psychosocial, interpersonal, and socioeconomic variables to provide a more comprehensive understanding of factors associated with maternal CMD symptoms. Although this study used data from the 2018 RISKESDAS, the findings are based on a subset of mothers with complete data on the study variables. Therefore, the findings provide useful insights into maternal CMD symptoms within the study sample, while further research involving more diverse samples and accounting for the survey design may help assess the broader applicability of these findings and investigate potential causal pathways.

CONCLUSIONS

Maternal CMD symptoms among mothers of children aged 6–23 months were significantly associated with the child's history of diarrhea, unintended pregnancy, and pregnancy complications. These findings highlight the potential importance of considering child health and pregnancy-related factors when developing maternal mental health support and interventions. Although maternal education and employment status were not significantly associated with CMD symptoms in this study, this does not rule out their relevance in other contexts. Further research is needed to examine the relationships among maternal mental health, child health, and pregnancy-related factors over time and to assess the applicability of these findings in broader populations. Such evidence may help inform more comprehensive approaches to supporting maternal mental health during this important period.

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CONFLICT OF INTEREST

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION

MZS and TA prepared the study protocol, interpreted and analyzed the data, and drafted the manuscript. APR contributed to the study and manuscript preparation. DND was involved in data acquisition and manuscript review. All authors read and approved the final manuscript and agreed to be accountable for all aspects of the work.

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