

## The Association Between Maternal Depression and Stunting on Children Under Five Years Old in Developing Countries: A Systematic Review

Annisa Lidra Maribet<sup>1\*</sup>, Melya Susanti<sup>2</sup>, Naima Lassie<sup>3</sup>, Insil Pendri Hariyani<sup>4</sup>,  
Yuni Handayani Gusmira<sup>5</sup>, Sri Nani Jelmila<sup>6</sup>

<sup>1,2,3,4,5,6</sup> Faculty of Medicine Baiturrahmah University, Padang, West Sumatera,  
Indonesia

Email: \*[annisalidramaribeth@fk.unbrah.ac.id](mailto:annisalidramaribeth@fk.unbrah.ac.id)

### Abstrak

13% ibu baru dan 10% ibu hamil memiliki masalah mental seperti depresi. Gangguan mental ibu yang tersebar luas lebih banyak terjadi di negara-negara berkembang dibandingkan di negara-negara belum berkembang. Penelitian sebelumnya menunjukkan bahwa kesedihan ibu berdampak negatif terhadap tumbuh kembang anak sehingga berujung pada stunting. Meneliti hubungan antara depresi ibu dan stunting pada anak di bawah usia lima tahun di negara-negara berkembang adalah tujuan dari penelitian ini. PRISMA-P digunakan pada tahun 2009 untuk investigasi tinjauan sistematis ini. Dari 2016 hingga 2018, penelitian dikumpulkan melalui penelusuran di sumber PubMed. Lima penelitian dipilih untuk tinjauan ini dari 1.276 penelitian yang kami temukan dengan menggunakan kriteria inklusi dan eksklusi. Lima penelitian yang kami teliti mengungkapkan tiga publikasi yang menyatakan depresi pada ibu dapat meningkatkan risiko stunting sebesar 1,2 hingga 2,48 kali dibandingkan ibu yang tidak mengalami depresi. Depresi ibu dan stunting berkorelasi signifikan dengan komponen sosioekologis. Faktor-faktor lain, seperti usia ibu, status perkawinan, riwayat psikologis sebelumnya, berat badan lahir rendah, pendidikan ibu, jenis kelamin anak, dan usia, juga diketahui menjadi variabel pengendali depresi ibu dan stunting.

**Kata kunci:** *Kerdil, Depresi Ibu, Depresi Pascapersalinan, Anak di Bawah Lima Tahun, Negara Berkembang, Tinjauan Sistematis*

### Abstract

13% of new mothers and 10% of expecting mothers have mental problems like depression. widespread maternal mental disorders are more widespread in developing countries than in undeveloped ones. Previous studies have shown that maternal sadness negatively affects a child's growth and development, leading to stunting. Examining the connection between maternal depression and stunting in young children under the age of five in undeveloped countries is the aim of this study. PRISMA-P was employed in 2009 for this systematic review investigation. From 2016 to 2018, studies were gathered through searches in the source PubMed. Five studies were chosen for this review out of the 1.276 we found utilizing inclusion and exclusion criteria. The five research we looked at revealed three publications that claimed maternal depression can increase the risk of stunting by 1.2 to 2.48 times compared to mothers who are not depressed. Maternal depression and stunting are significantly correlated with the socioecological component. Other factors, such as maternal age, marital status, prior psychological history, low birth weight, maternal education, children's sex, and age, are also revealed to be controlling variables in mother depression and stunting.

**Keywords:** *Stunting, Maternal Depression, Postpartum Depression, Children Under Five Years Old, Developing Countries, Systematic Review*

## INTRODUCTION

Stunting is a chronic condition of malnutrition in children that causes them to become shorter than their age [1]. According to the WHO, stunting is defined as a result of height divided by age smaller than 2 SD (standard deviation) [2, 3]. Stunted children frequently struggle with learning and brain development, which makes it difficult for them as adults to find employment and to participate in society [1].

There are 155 million stunted children worldwide, 87 million of whom are Asian (more than half of cases are in Asia), 59 million of whom are African, and 6 million of whom are from Latin America and the Caribbean [2]. Stunting may be caused by a variety of causes, including maternal traits, infections, inadequate nutrition, insufficient breastfeeding and complementary feeding, the home environment, and socioeconomic conditions. Intrauterine growth restriction (IUGR), maternal comorbidities, maternal weight during pregnancy, poor nutrition before conception, maternal genetic variables, and mother mental health are a few examples of maternal factors [1].

Around 10% of expectant mothers and 13% of postpartum women develop mental illnesses, including depression. Because mother mental illnesses are linked to family food security and maternal undernutrition, the frequency of common maternal mental disorders is comparatively higher in poor nations. Maternal depression was more prevalent among women in underdeveloped nations throughout pregnancy (15.6%) and after delivery (19.8%) [4].

Maternal sadness has been linked to malnutrition in children because it makes mothers less attentive to the needs of the child. It has been demonstrated that early treatment of maternal depression improves child growth and development and lowers the incidence of diarrhea and malnutrition [4]. Global stunting and concerns with maternal mental health are examples of public health problems. The author became interested in the connection between maternal sadness and stunting. This research aims to thoroughly investigate the connection between maternal depression and stunting in early children in developing countries.

## METHOD

In 2009, the PRISMA-P protocol (Preferred Reporting Items for Systemic study and Meta-Analysis Protocols) was utilized for this systematic study.

### Search Technique and Study Choice

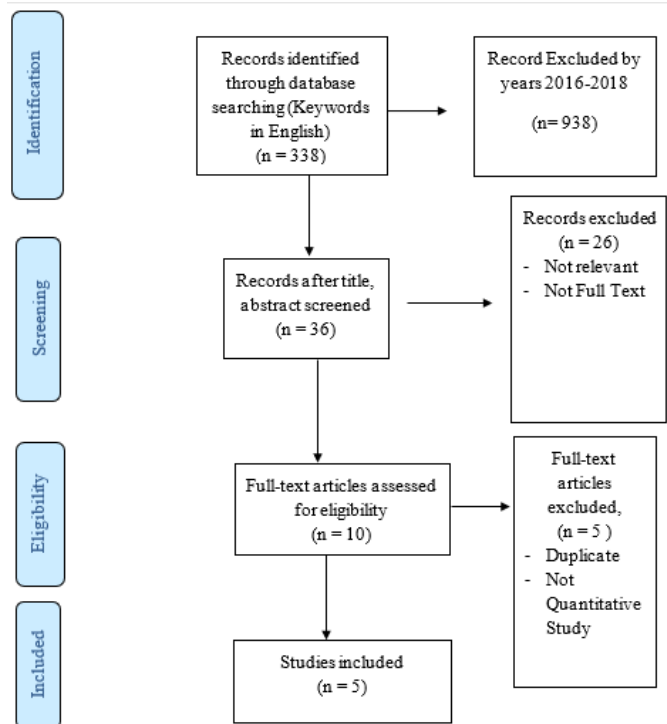
Studies were gathered via searches in the electronic source database PubMed. There were keyword searches using PICO-S (Population Intervention Compare Outcome Study Design). Utilizing the following keywords in a keyword search Maternal Mental Disorder OR Postpartum Depression OR Postnatal Depression OR Perinatal Depression; (2) Stunting OR Hunger; (3) Children OR Children; (4) Children Under Five; (5) Developing Country OR Developing Countries; (6) Quantitative Study; AND (7) From 2016 to 2018.

### Criteria for Study Inclusion and Exclusion

The following inclusion criteria were used for documents that we deemed suitable for systematic review: (1) Maternal depression as the target group; (2) Stunting in young children under five as a result; (3) Use of quantitative methodologies in the research process; and (4) English-language research publications. Exclusion criteria are applied by scrutinizing the title and abstract of incomplete or irrelevant studies or articles. Additionally, restrictions were implemented from 2016 to 2018, and duplicate documents were also not accepted.

### Extraction of Data

2018 saw the use of an electronic database search from August to September. A screening was conducted using the applicable title and abstract from the entire paper. The document selection process is shown in Figure 1.



**Figure 1. Preferred Reporting Items for Systematic Review and Meta-Analysis**

**RESULT**

From the keyword search results, we found 1,276 journals; 938 journals were excluded by year, so the remaining 338 journals were screened for titles and abstracts. After the exclusion process, five journals were chosen, which will be presented in the table below:

**Table 1. Result of Systematic Review**

No	Title	Author	Year of Publish	Method and Data Collection	Result
1	Association between maternal depression and child stunting in Northern Ghana: a cross-sectional study	Anthony Wemakor and Kofi Akohene Mensah	2016	Cross-sectional analytical study Information from Tamale, Ghana's Bilpeila Health Center Sample: 384 mothers 15–45 years old and their children under five years old Data were acquired using a semi-structured questionnaire. Maternal depression was evaluated using the Center for Epidemiological Studies	The study found that the prevalence of stunting in children was 16.1% and maternal depression was 27.8%. Depressed moms are more likely to be younger, unmarried right now, to be in the lowest tertile of household wealth, to have underweight kids, and to have maternal

			Depression (CES-D) Screening Scale. Conventional anthropometry techniques Logistic regression with potential confounders correction	depression than mothers who do not. Children from mothers who experienced maternal depression had a threefold higher risk of stunting than children from moms without maternal depression (adjusted OR = 2.48, 95% CI 1.29-4.77, p = 0.0011).
2	Effect of Pregnancy Intention, postnatal depressive symptoms and social support on early childhood stunting: finding from India	Upadhyay, et al 2016	Cohort analysis. Information from the first wave of the Young Lives Study in India Sample mother with her 5 to 21-month-old offspring. 1833 kids between the ages of 5 and 21 months were examined. Models of logistic regression and bivariate analysis	In comparison to women who were not sad, the odds of their children being stunted were 1.53 times higher for those who had postnatal depression symptoms (AOR- 1.53; 95% CI: 1.21-1.92).
3	Maternal mental health and child growth and development in four low and middle income countries	Ian Bennett, et al 2016	Long-term cohort study conducted in the community Information from four LMICs: Vietnam, Peru, India, and Ethiopia Sample 7,222 mothers and their children in four LMICs Maternal risk of common mental disorders (rCMD), child nutritional status, cognitive development, and psychosocial consequences are	Children aged 1 year in India (RR: 1.37), Peru (RR: 1.24), and children aged 5 years in India (RR: 1.22), Vietnam (RR: 1.20), however, there was no correlation between maternal disorder and stunting in Ethiopia.

4	Maternal depression and child development: Evidence from São Paulo's Western Region Cohort Study	Alexandra Brentani, Gunther Fink	2016	the factors examined. In Butanta-Jaguare, So Paulo, a cross-sectional study of 798 women and their kids was carried out. Observations made while visiting people's homes	The two depression-related characteristics did not correlate with any aspects of physical development, including obesity and stunting. No links between depression and developmental outcomes were discovered.
5	Maternal depression does not affect complementary feeding indicators or stunting status of young children (6–23 months) in Northern Ghana	Anthony Wemakor and Habib Iddrisu	2018	Based on a population-based cross-sectional study Between January and March 2016, information from Northern Ghana Example: The math performance of 239 children between the ages of six and twenty-three Questionnaires are used to collect data on sociodemographic characteristics, the severity of mothers' depression, and the nutritional health of children.	About 40% of children had stunting (41.0%). 3.5% screened positive for depression. Children from mothers with maternal depression have the same chance of being stunted as children from mothers without maternal depression. (Odd Ratio: 1)

Following the exclusion process, five journals were chosen based on inclusion criteria, with a focus on the link between maternal depression and child stunting in developing countries. These studies are located in Northern Ghana, India, Ethiopia, Peru, Vietnam, and São Paulo's Western. The research methods used in these studies were cross-sectional in 3 studies and cohorts in 2 studies, as shown in Table 1 above. The variables used in these five studies were maternal depression (an independent variable) and child outcomes, on which we focused on stunting (a dependent variable). The outcomes of the five research that were examined varied. Three studies discovered a connection between maternal depression and the disease, while two other studies showed no connection between mother sadness and stunting.

The 2016 study in Northern Ghana discovered a connection between maternal depression and stunting (Odd Ratio: 2.48). In this study, mothers who experienced maternal depression had children who were 2.48 times more likely to be stunted than mothers who did not. In this

study, maternal depression was more prevalent in mothers who were younger, alone at the time, from low-income families, and who had premature babies. Children from the poorest households also have stunting cases more frequently, with a 3.40 odds ratio. This demonstrates that among the poorest households, there was a connection between maternal depression and stunting.

According to an Upayday study conducted in India in 2016, children born to moms who experienced postpartum depression had a 1.53 times higher risk of stunting than children born to mothers who did not experience this condition. Stunting was linked to postnatal depression after social support, socioeconomic level, and place of residence were taken into account. According to Ian Bennett et al.'s study, there is no correlation between maternal psychopathology and stunting in Ethiopia, but there is in Peru, India, and Vietnam in children under the age of five (RR: 1.22, 1.20, and 1.37, respectively).

According to the findings of two research, there is no connection between maternal sadness and stunting. 2016 research by Anthony Wemakor and Habib showed that there is no link between maternal depression and stunting. According to the study, the EDPS (Edinburgh Postnatal Depression Scale), which was used in this investigation, is not sensitive enough to identify between women who have or do not have maternal depression, so there is a possibility of unrelated variables between these two variables. Stunting was only evaluated in this study in infants under the age of one year. The findings that there was no association between maternal depression and the prevalence of stunting in infants aged 6-23 months (OR: 1) were further supported in 2018 by Anthony and Habib. Both investigations demonstrated that there was no connection between maternal depression and stunting, and socioeconomic factors had no influence on the outcomes.

## DISCUSSION

In this investigation, distinct relationships between maternal depression and stunting were discovered. The hypothesis that depression can reduce mother-child bonding and poor parenting behaviors for their children was used to support the study that found a link between depression and stunting [5, 11]. Work, husband's education, husband's occupation, and total family income become very significant influences on maternal depression. Other causes could be in the form of maternal age, marital status, first-time pregnancy, unplanned pregnancy, maternal education, previous history of psychological conditions, history of violence or stress, anemia, high blood pressure, and dissatisfaction with living conditions [6, 7, 9, 12, 13].

Infant and young child growth is impacted negatively by maternal depression, leading to undesirable outcomes like low birth weight from insufficient nutrition during pregnancy. Inadequate growth, poor nutrition, and subpar brain development can also be results of maternal depression in babies and young children. Incomplete immunization regimens, diarrhea, somatic complaints, interrupted sleep patterns, and child abuse are other detrimental effects of maternal depression, in addition to psychiatric and neurobehavioral issues. Therefore, there is a larger chance of stunting in children of moms who are depressed [14]. According to Saeed's research, maternal melancholy may result in poor food intake, a higher likelihood of having a poor healthy eating index, and a lower APGAR score as well as fetal growth retardation and preterm birth. A significant link between maternal depression and malnutrition (stunting, underweight, and wasted food) was also found in case-control studies carried out in Southwest Uganda by Ashaba S. et al. [16].

According to other studies [12, 17, 18, 19], low socioeconomic status or poverty had an effect on the relationship between maternal depression and inadequate child growth and development. One of the aforementioned issues affects research that suggested a link between maternal sadness and stunting. Maternal sadness and stunting were significantly influenced by socioeconomic factors. Studies that claimed there was no link between maternal depression and stunting omitted socioeconomic factors from their list of control variables.

Because diverse standards were employed in these trials to determine whether or not there was maternal depression, the results could vary, and screening could not definitively diagnose maternal depression. Thus, variations in the methods used to establish the diagnosis

criteria have an impact on the study's findings. To see the connection between mother depression and stunting, the diagnosis of maternal depression must be made using the same criteria everywhere.

## CONCLUSION

The relationship between maternal depression and stunting is significantly influenced by socioeconomic factors. There were also other factors found that became controlling variables between maternal depression and stunting, such as maternal age, maternal marital status, previous psychological history, low birth weight, maternal education, children's sex, and age. Standardization is needed in determining the best diagnosis of maternal depression so that it can be identified earlier and treated earlier, making it easier to treat and prevent.

In a previous study, it was stated that exclusive breastfeeding and regular prenatal vitamins during pregnancy can reduce maternal depression cases, especially postnatal depression. It needs an improvement in maternal and child health programs and early detection standards for mothers who begin to experience depression, which can have a negative impact on child development. It needs social support in the form of self-help groups, counseling, and family support, as well as national health insurance for all mothers and children.

We recommend economic empowerment skills for women since they are teenagers or before marriage, so when they are married, they already have the ability to empower themselves in preventing poverty. There needs to be collaboration and cross-program coordination with the government so that all mothers and children get the first 1000 days of life's nutrition; guidance for mothers so that good parenting and good relations between mothers and children can be formed; strategies for food and sanitation equality for mothers and children; making regulations to prevent early marriage; and proper education for mothers to create quality nationals.

## REFERENCES

- UNICEF. (2013). Conceptual framework of the determinants of child undernutrition.
- UNICEF, WHO, World Bank Group. Levels and trends in child malnutrition. UNICEF/WHO/World Bank Group joint child malnutrition estimates. Key findings of the 2017 edition. Geneva: United Nations Children's Fund, World Health Organization, WorldBankGroup;2017([http://www.who.int/nutgrowthdb/jme\\_brochure2017.pdf?ua=1](http://www.who.int/nutgrowthdb/jme_brochure2017.pdf?ua=1), accessed 24 March 2018).
- World Health Organization. (2010). The WHO Child Growth Standards (<http://www.who.int/child-growth/en/>, accessed 24 March 2018).
- World Health Organization. (2017). Maternal Mental Health. ([http://www.who.int/mental\\_health/maternal-child/maternal\\_mental\\_health/en/](http://www.who.int/mental_health/maternal-child/maternal_mental_health/en/), accessed September 2th 2018)
- Khan A. (2017). Maternal common mental disorder and associated factors: a cross-sectional study in an urban slum area of Dhaka, Bangladesh. *International Journal of Mental Health Systems*.
- Nuryana, H. T. A. W. A., & Ryan, R. S. I. A. (2022). Analisis peran service quality dan brand awareness dalam meningkatkan consumer satisfaction pada industri ritel food & beverage (studi kasus foodpedia). *Jurnal Kewarganegaraan*, 6(3).
- Arief, I., & Kartikasari, N. (2021). Evaluasi pengelolaan persediaan farmasi dan bahan medis habis pakai di suatu instalasi farmasi rumah sakit gigi dan mulut swasta kota Jakarta. *Phrase*, 1(1), 9-18.
- Sari, A. L. (2022). Exclusive breastfeeding as an effort to prevent stunting in toddlers. *NeuroQuantology*, 20(5), 3668-3675.
- Hasni, D., Siregar, K. B., & Lim, H. (2016). The influence of glutathion S-transferase P-1 polymorphism A313G rs1695 on the susceptibility to cyclophosphamide hematologic toxicity in Indonesian patients. *Medical Journal of Indonesia*, 25(2), 118-26.

- Anggraini, D., & Hasni, D. (2021). Early Detection of Hypercholesterolemia in the Elderly. *Jurnal Abdimas Saintika*, 3(2), 7-12.
- Hasni, D., Ridho, M., & Anissa, M. (2019). Gambaran sindrom ekstrapiramidal pada pasien skizofrenia yang mendapat terapi antipsikotik. *Jurnal Kedokteran YARSI*, 27(3), 090-094.
- Wemakor A, and Mensah K. (2016). Association between maternal depression and child stunting in Northern Ghana: a cross-sectional study. *BMC Public Health*
- Arief, I., Sumarny, R., Sumiyati, Y., & Kusuma, I. (2021). Hubungan Karakteristik Klinik Dan Profil Pengobatan Dengan Parameter Hematologi Dan Lama Rawat Pasien Covid-19 Di Rumah Sakit YARSI Jakarta. *Journal Ilmiah Indonesia*, 6(11), 1-14.
- Upadhyay, AK and Srivastava S. (2016). Effect of pregnancy intention, postnatal depressive symptoms and social support on early childhood stunting: finding from India. *BMC Pregnancy and Childbirth*.
- Ian Bennett, et al. (2016). Maternal mental health and child growth and development in four low- and middle-income countries. *Epidemiol Community Health. HHS Public Access*.
- Brentani A, and Fink G. (2016). Maternal depression and child development: Evidence from São Paulo's Western Region Cohort Study.
- Wemakor A, and Iddrisu H. (2018). Maternal depression does not affect complementary feeding indicators or stunting status of young children (6–23 months) in Northern Ghana. *BMC research notes*.
- Cooper PJ, et al. (1999). Postpartum depression and the mother-infant relationship in a South African peri-urban settlement. *British Journal of Psychiatry*.
- Babu, G et al. (2018). Sociodemographic and medical Risk Factors Associated with antepartum depression. *Frontiers in public health*.
- Khalifa D, et al. (2015). Determinants of postnatal depression in Sundanese woman at 3 months postpartum: a cross-sectional study. *BMJ Open*.
- Madlalaa and SM Kassior. (2018). Antenatal and postpartum depression: effects on infant and young child health and feeding practices. *South African journal of clinical nutrition*.
- Saeed A, et al. (2016). Effect of antenatal depression on maternal dietary intake and neonatal outcome: A prospective Cohor. *Nutritional journal*.
- Ashaba S, et al. (2015). Maternal depression and malnutrition in children in southwest Uganda: a case control study. *BMC Public Health*
- Surkan P, et al. (2011). Maternal Depression and Early Child Growth in Developing Countries: systematic review and meta-analysis. *World Health Organization*
- Stewart RC. (2007). Maternal depression and infant growth—a review of recent evidence. *Maternal & Child Nutrition*.
- Haithar S. (2018). Maternal depression and child severe acute malnutrition: a case-control study from Kenya. *BMC Pediatric*.
- Surkan PJ, et al. (2011). Maternal depression and early childhood growth in developing countries: systematic review and metanalysis. *Bulletin of The World Health Organization*.
- Khalifa D, et al. (2015). Determinants of postnatal depression in Sundanese woman at 3 month postpartum: a cross-sectional study. *BMJ Open*