



Literature Review



## Low Birth Weight with Stunting

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### A B S T R A K

**Introduction:** Stunting is a major public health problem in low- and middle-income countries because of its association with an increased risk of death during childhood. The prevalence of stunting in toddlers in Indonesia in 2015 was 36.4% of toddlers. One of the factors that influence stunting is LBW.

**Objective:** Check the stunting-low birth weight association.

**Methods:** This study used the literature review method using 2 databases, namely Pubmed and Google Scholar, from 4210 articles obtained up to 8 articles that matched the research criteria.

**Results:** Of the eight articles reviewed, four articles used cross-sectional and case-control methods. Of the eight articles analyzed, six articles had a relationship between LBW and stunting, and two articles had no relationship between LBW and stunting.

## INTRODUCTION

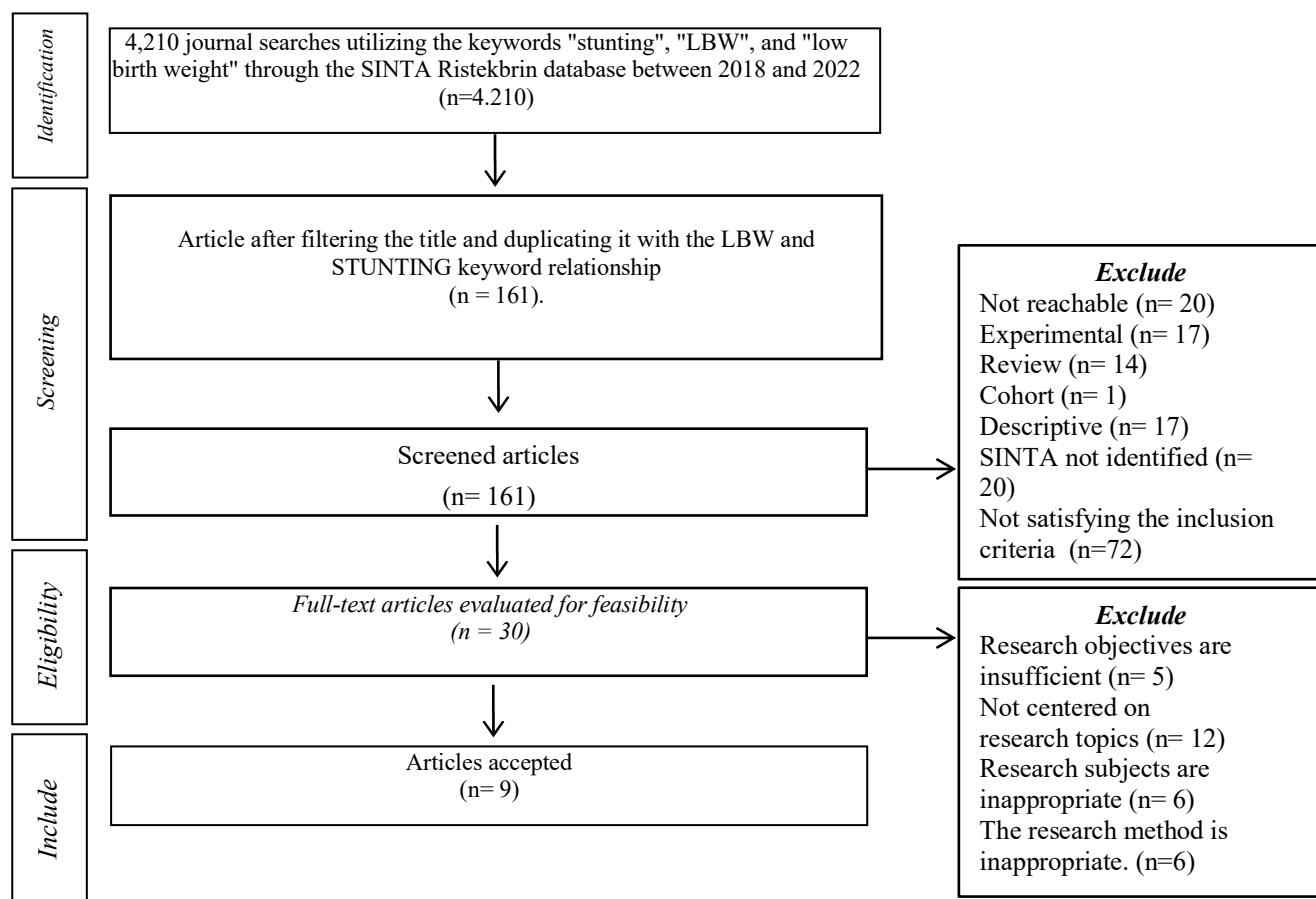
Nutritional problems, particularly stunting in children, is a state of malnutrition that is a global concern, particularly in developing nations, resulting in sluggish child growth, a weak immune system, a lack of intelligence, and low productivity [1]. The prevalence of stunting is 26.9% worldwide and 31.1% in developing countries in Asia [2]. Babies with Low Birth Weight (LBW) weigh less than 2500 grams at birth. One of the long-term effects of infant weight low birth weight, namely developmental disorders, of which stunting is one, is mentioned as the leading cause of increased mortality, morbidity, and infant disabilities, as well as having a long-term impact on future life [3].

One of the nutritional issues toddlers face in the world today is stunting. Stunting is a condition in which toddlers have less length or height than expected for their age. According to World Health Organization (WHO) data on the prevalence of stunting in children under the age of five, Indonesia is the third country with the highest prevalence in the Southeast Asia/Southeast Asia Regional (SEAR) region. According to data from the Basic Health Research, the national stunting rate fell from 37.2% in 2013 to 30.8% in 2018 [4].

Stunting causes cognitive and motor decline, retarded physical growth, mental development, and health status in children. Stunted children have an average Intelligence Quotient (IQ) score that is eleven points lower than normal children. In addition, stunting affects susceptibility to diseases such as Noncommunicable Diseases and the likelihood of being overweight or obese [5]. If the problem of under-five stunting is not addressed, it will result in the negative effects that nutritional problems during this period can cause. It disrupts brain development, intelligence, physical growth disorders, and metabolic disorders in the body over the short term. Long-term negative effects include decreased cognitive ability and learning achievement, decreased immunity so that you get sick more often, and a high risk of developing diabetes, obesity, heart and blood vessel disease, cancer, stroke, and disability in old age, as well as uncompetitive work quality that results in low economic productivity [6]. [7] Babies with low birth weight have an increased risk of death, developmental delay, and stunted growth compared to those born at a normal weight. Those with a low birth weight are also more susceptible to disease, particularly infections and cognitive development disorders [8]. LBW is a significant risk factor for stunting [9]. Children born with LBW have a greater risk of stunting than children born with a normal weight [10]. Babies with LBW have experienced fetal growth retardation or intrauterine growth restriction since they were in the womb, and this will continue after birth. This can result in slower growth and development, and failure to meet required growth rates at the age after birth [11].

## METHOD

Using Sinta 1–3 and the keywords "nutrition," "stunted," and "low birth weight," a literature review was conducted using nine articles of national renown. The article was chosen using PRISMA and critical evaluation. The 11-question JBI (Joanna Briggs Institute) evaluation is utilized to determine whether an article can be accepted or rejected. The article inclusion criteria included full text, research subjects aged 6–60 months with LBW and stunting issues, articles published in Indonesian in the last five years (2018–2022), and observational analytic research design. In the meantime, the research subjects were excluded if they had congenital abnormalities (a history of congenital disabilities) or severe illnesses.



**RESULT DAN DISCUSSION****Table 1: data extraction**

No	Authors	Research Methodology	Result
1	Chyka Febria, Mega Ade Nugrahmi, Liza Andriani, Rilly Yane Putri	Case Control Study	The results showed that 19 (54.2%) toddlers had a history of LBW, and 35 (100%) toddlers who experienced stunting. The results of the Chi Square test showed a p value <0.001 and an OR value of 0.047. The results showed that there was a relationship between low birth weight and the incidence of stunting in toddlers in Nagari Tanjung Bungo. Low birth weight is a factor for stunting.
2	Fitri, Lidia	Cross Sectional Study	22 toddlers with LBW (29.3%) and There is a significant relationship between low birth weight (LBW) and the incidence of stunting where the p value is 0.000
3	Dewi Purnama Windasari, Ilham Syam, Lilis Sarifa Kamal	Cross Sectional Study	there is no relationship between LBW (p = 0.172) and the incidence of stunting in the Working Area of the Tamalate Health Center in Makassar City
4	Fatimah Chandra Murti, Suryati , Eka Oktavianto	Case Control Study	The results of the study showed that 27 (42.2%) toddlers had a history of LBW, and 32 (100%) toddlers who experienced stunting. The results of the Chi Square test showed a p value <0.000 and an OR value of 0.056. There is a significant relationship between LBW and the incidence of stunting in toddlers aged 2-5 years in Umbulrejo Village.
5	Afif D Alba, Ditte Ayu Suntara, Dedy Siska	Cross Sectional Study	The results of the research conducted by the Chi Square test for history of LBW and Stunting events obtained p value = 0.000 <0.05
6	Komalasari1, Esti Supriati, Riona Sanjaya, Hikmah Ifayanti	Case Control Study	The frequency distribution of LBW incidents in Tulungkakan Village in 2019 was 3 toddlers (3.57%). There was no relationship between LBW incidents and stunting in toddlers in Tulung Kakan Village, Bumiratu Nuban District, Central Lampung Regency in 2019 with a p value: 0.743 with an OR value : 1,000.
7	Erna Eka Wijayanti	Case Control Study	All LBW toddlers experience stunting in toddlers aged 2-5 years in Jadi village, Semanding District, Tuban Regency. There is a relationship between LBW, Exclusive breastfeeding and the incidence of stunting in toddlers aged 2-5 years in Jadi village, Semanding District, Tuban Regency.
8	Beauty Grace Nainggolan, Monalisa Sitompul	Cross Sectional Study	The results of the Chi square statistical test obtained a Pvalue of 0.005, meaning Pvalue > 0.05, so it was concluded that there was a significant relationship between Low Birth Weight Babies (LBW) and the incidence of stunting in children. The Prevalance Ratio (PR) value obtained was 25.5, which means that babies with LBW have a 25 times the risk of experiencing stunting compared to babies with normal BBL.

## LBW Related to Stunting

Several factors influence the incidence of stunting, including parental characteristics such as education, occupation, income, parenting style, diet, genetic factors, infectious diseases, low birth weight, lack of energy and protein, frequent chronic illnesses, and feeding practices—inappropriate eating. The high rate of LBW is thought to be the cause of the high incidence of stunting in Indonesia. Research in Malawi with a cohort design shows that low birth weight is the strongest predictor of stunting in toddlers aged 12 months (20). LBW is associated with fetal and neonatal mortality and morbidity, growth retardation, impaired cognitive development and chronic disease in later life. Babies with LBW in developing countries tend to experience intrauterine growth retardation due to poor maternal nutrition and increased infection rates when compared to developed countries (21).

Low birth weight, often referred to as LBW, is babies weighing less than 2500 grams (Saraswati, 2008). Low birth weight can be caused by the mother's poor nutritional state during pregnancy, causing intrauterine growth retardation, and at birth, it is manifested by low birth weight. Long-term problems caused by LBW are stunted growth and development. So that LBW is believed to be one of the causes of malnutrition in the form of stunting in children (22). Low birth weight is generally strongly associated with long-term growth and development. From the study results, it was found that the possible causes of LBW were the mother's poor nutritional status during pregnancy and an inadequate surrounding environment, such as a lack of clean water sources and a place far from health facilities.

The negative impact that can be caused by chronic nutritional problems in the short term is the disruption of brain development, intelligence, physical growth, and metabolic disorders in the body. Meanwhile, in the long term, there is a decline in cognitive ability and learning achievement, decreased immunity, and a high risk of developing diabetes, obesity, heart and blood vessel disease, cancer, stroke, and disability in old age, as well as uncompetitive work quality which results in low economic productivity (23).

The impact of LBW in the long term, namely disorders that can arise include growth and development disorders, vision (retinopathy), hearing, chronic lung disease, increased morbidity and frequency of congenital abnormalities and frequent hospital admissions. Immediate complications experienced can occur in hypothermia, fluid and electrolyte disturbances, hyperbilirubinemia, respiratory distress syndrome, patent ductus arteriosus, intraventricular bleeding infection, apnea of prematurity and anaemia (24).

## CONCLUSION

Born weight history affects growth and development of children to maturity because it describes how the fetus gets nourishment in the womb. In impoverished nations, birth weight history causes malnutrition. Low birth weight history is <2500 grams, regardless of gestational age. Low birth weight might result from the mother's inadequate nutrition during pregnancy, which retards intrauterine growth. Stunted growth and development are long-term LBW issues. Low birth weight may cause stunting in children.

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