



**DETERMINANTS OF NUTRITIONAL STATUS, WEIGHT GAIN, AND
UTILIZATION OF HEALTH SERVICES IN
TODDLERS: A LITERATUR REVIEW**

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ABSTRACT

Nutritional problems in toddlers, such as stunting and underweight, as well as non-compliance in growth and development monitoring remain major public health challenges. Participation in health services such as Posyandu and other determinants that influence nutritional status need to be identified more deeply to determine appropriate interventions. This study aims to synthesize current research on the determinants of nutritional status, successful weight gain, and factors that influence the utilization of toddler health services. The method used is a literature review by searching for articles online through the Google Scholar database (13,430 articles), ScienceDirect (6,674 articles), and PubMed (499 articles). The article search used the keywords "weight gain in toddler," "toddler nutritional status," and "Health Service Utilization in Toddlers" articles published within the last five years (2020–2025). The data analysis process went through the process of organizing, synthesizing, identifying, and further analyzing until 10 selected research articles were obtained. The research design analyzed mostly used a cross-sectional and descriptive analytical approach, with study locations covering various regions in Indonesia and one international comparative study. The results of the study show that low maternal education is the dominant determinant factor in the incidence of underweight and stunting. Key biological risk factors include a history of low birth weight (LBW), incomplete immunization status, and a history of infectious diseases such as tuberculosis and diarrhea. In terms of services, the frequency of visits to integrated health posts (Posyandu) and nutritional counseling are significantly associated with normal nutritional status. Furthermore, the effectiveness of utilizing health data for prevention is crucial. Stunting is influenced by the level of education and time allocation of Posyandu cadres. The nutritional status of toddlers is influenced by a complex array of factors, including parental characteristics (especially maternal education), the child's health history (immunizations and infections), and active participation in Posyandu (Integrated Health Posts). Nutrition improvement interventions must integrate maternal education, infectious disease prevention, and capacity building for health workers.

Keywords: integrated health post; nutritional status; toddler; weight gain

How to cite (in APA style)

Pratiwi, B. I., Syahrial, S., & Elda, F. (2026). Determinants of Nutritional Status, Weight Gain, and Utilization of Health Services in Toddlers: A Literatur Review. *Indonesian Journal of Global Health Research*, 8(3), 787–794. <https://doi.org/10.37287/ijghr.v8i3.1033>.

INTRODUCTION

The first 1,000 days of life (HPK) is a critical and plastic phase that determines the long-term quality of human resources. Brain and physical growth during this phase is irreversible; growth failure (faltering) that occurs cannot be completely repaired at a later date. Globally, World Health Organization The World Health Organization (WHO) emphasizes that child health indicators should not only rely on final nutritional status (such as stunting or wasting), but should focus on monthly growth trends. Inadequate weight gain is the earliest danger signal before a child falls into a state of chronic malnutrition. Children who do not gain weight (T) during monthly monitoring have an accumulative risk of stunting, cognitive decline, and susceptibility to degenerative diseases in adulthood. (WHO, 2017). Nutritional problems in toddlers, including stunting, underweight, and wasting remains a major public health challenge. Although Indonesia has shown a trend of improving nutritional status, recent data indicate instability. The 2024 Indonesian Nutritional Status Survey (SSGI) recorded a decline in the number of stunting nationally to 19.8%, but this figure still requires high vigilance (Ministry of Health, 2024).

Failure to gain weight is influenced by complex determinants according to the UNICEF framework, including direct causes (nutritional intake and infectious diseases) and indirect causes (parenting patterns, parental roles, food security, and access to health services) (UNICEF, 2020). Growth monitoring through regular weighing and participation in Integrated Health Posts (Posyandu) is a key strategy for early detection of growth disorders. Various factors are known to influence the nutritional status of toddlers, ranging from parental demographics and the child's medical history to participation in health services.

Several recent studies have shown variations in risk factors across locations. For example, incomplete immunization was found to be a dominant factor in stunting in Jakarta, while in other areas, maternal education and low birth weight (BBLR) were the main determinants of the incidence. underweight. In addition to biological factors, service aspects such as the performance of Posyandu cadres and the frequency of visits also play a vital role. This literature review aims to analyze recent research on the determinants of nutritional status, successful weight gain, and utilization of toddler health services.

METHOD

This study uses a literature review design to examine various research findings related to the Determinants of Nutritional Status, Weight Gain, and Utilization of Health Services in Toddlers. The data analysis process was carried out through four main stages: organize, synthesize, identify, and further analysis. The literature sources used included national and international publications obtained through three main databases: Google Scholar (13,430 articles), ScienceDirect (6,674 articles), and PubMed (499 articles). Article searches were conducted using the keywords "weight gain in toddler," "toddler nutritional status," and "Health Service Utilization in Toddlers". The publication year range was 2020 to 2025, with the goal of obtaining the most recent scientific evidence relevant to developments in health education technology. Articles were then downloaded using Mendeley Desktop version 1.19.8, and duplicates were manually removed before further screening. The selection process was carried out systematically based on the relevance of the title and abstract, and the availability of full text, as well as suitability with research objectives. The inclusion criteria used include: 1) The research subjects were toddlers aged 0-59 months; 2) Articles published in the period 2020–2025, using Indonesian or English; 3) The article is free full text that can be accessed online and has a clear methodology. Meanwhile, the exclusion criteria in this study include: 1) Research that focuses on topics other than improving the nutritional status of toddlers and the use of health services for toddlers; 2) Non-scientific publications such as narrative reviews, conference proceedings, editorials, or descriptive reports without data analysis.

Articles that met the inclusion criteria were then included in the final analysis. Each article was classified based on research information, including author name, year of publication, study design, study location, sample characteristics, and key findings related to the topic of determinants of nutritional status and Posyandu services, resulting in 10 relevant articles. The majority of the studies analyzed were cross-sectional, with several studies using a descriptive-analytic approach. Variables analyzed included parental characteristics (education, occupation), child health history (LBW, infection, immunization), parenting patterns (breastfeeding, complementary feeding), and health service factors (Posyandu visits, cadre performance).

RESULT

Table 1.
Description of Determinants of Nutritional Status, Weight Gain, and Health Service Utilization in Toddlers

Title	Writer	Title	Research Design	Population and Sample	Results
The Determinants of Stunting in the Under-five in Three Municipalities in the Special Capital Region of Jakarta	Permatasari TA, Chairunnisa C, Djarir H, et al.	The Determinants of Stunting in the Under-five in Three Municipalities in the Special Capital Region of Jakarta	Cross-sectional	Population: Mothers and toddlers in three administrative cities (Central Jakarta, North Jakarta, and East Jakarta) in DKI Jakarta . Sample: 460 randomly selected mother and child pairs simple random sampling .	The dominant factor of stunting is immunization history ($p=0.011$; AOR=2.360); children with incomplete immunization have a 2.4 times higher risk of experiencing stunting . The dominant factor of underweight is father's education, while wasting is mother's occupation.
The Relationship Between Local Food- Based Recovery and Other Factors on Weight Gain in Children 12-59 Months of Age at Cimpaeun Health Center , Depok City, Indonesia	Sahara GA, Rahmawati ND, Triyanti, et al.	The Relationship Between Local Food- Based Recovery Feeding and Other Factors on Weight Gain in Children 12-59 Months of Age at Cimpaeun Health Center , Depok City, Indonesia	Cross-sectional	Population: Children aged 12-59 months who are registered as PMT beneficiaries at the Cimpaeun Community Health Center , Depok City Sample: 71 toddlers aged 12-59 months were randomly selected purposive sampling	There is a significant relationship between the accuracy of local PMT consumption ($p=0.027$) and history of infection ($p=0.015$) with weight gain. Other variables such as maternal education, knowledge, and parenting patterns did not show a significant relationship.
Determinants of Underweight Among Children Aged 6-23 Months in Central Sulawesi Province (SSGI Analysis 2022)	Azahra NZ, Arini FA, Sufyan DL.	Determinants of Underweight Among Children Aged 6-23 Months in Central Sulawesi Province (SSGI Analysis 2022)	Cross-sectional	Population: All boys and girls aged 6-23 months in Central Sulawesi Province . Sample: 1,991 children who met the inclusion and exclusion criteria from the 2022 SSGI secondary data	The most dominant risk factor is LBW ($p=0.000$; OR=2.304) Other significant factors include not exclusive breastfeeding (OR=1.507), inappropriate frequency of complementary feeding (OR=0.775), and a history of ARI and diarrhea.
Toddler Weight Gain at the Kantil Sleman Yogyakarta Integrated Health Post	Ningsih SR, et al.	Toddler Weight Gain at the Kantil Sleman Yogyakarta Integrated Health Post	Descriptive with cross sectional time	Population: There are 40 mothers with toddlers at the Kantil Yogyakarta Posyandu Sample: 40 people (using purposive sampling / the entire population	Most toddlers (57.5%) experienced weight gain, while 42.5% did not gain weight. The study concluded the importance of education and changes in parental behavior in monitoring growth.

Title	Writer	Title	Research Design	Population and Sample	Results
				that meets the criteria) .	
Contributing factors to underweight among children under five : A cross-sectional study at Belawan Primary Health Center	Sihaloho E & Sitanggan g AE.	Contributing factors to underweight among children under five : A cross-sectional study at Belawan Primary Health Center	Descriptive Analytical with Cross-sectional approach	Population: All children aged 0-59 months who are registered at the Integrated Health Post (Posyandu) and recorded in the nutrition register of the Belawan Health Center, Medan City, North Sumatra Sample: 41 toddlers who experienced underweight , selected using the method total sampling .	Low maternal education is the most dominant factor (OR=7.26; p=0.018) Exclusive breastfeeding and inappropriate provision of complementary feeding were also significantly related, but history of infection was not significantly related in this study.
Determinants of Health Data Utilization by Posyandu Cadres for Toddlers as a Stunting Prevention Effort in Geneng Subdistrict , Ngawi Regency	Wicaksono KE, Purwanza SW, et al.	Determinants of Health Data Utilization by Posyandu Cadres for Toddlers as a Stunting Prevention Effort in Geneng Subdistrict , Ngawi Regency	Quantitative Analysis with Cross-sectional Design	Population: All active toddler Posyandu cadres spread across all villages in Geneng District, Ngawi Regency Sample: 80 Posyandu cadres were selected using the technique purposive sampling	Significant determinants of health data utilization are cadre age (p=0.017), education level (p=0.005), and time allocation (p=0.026). Occupation and income have no significant effect.
Relationship between frequency of integrated health post visits and nutritional status of toddlers in Bug-bug Village	Aryani NP, Afrida BR, et al.	Relationship between frequency of integrated health post visits and nutritional status of toddlers in Bug-bug Village	Descriptive Analytical with Cross-sectional approach	Population: All mothers who have toddlers in Bug-Bug Village with a total of 554 respondents Sample: 126 toddlers aged 1-3 years were selected using the technique purposive sampling	There is a significant relationship between the frequency of visits to the integrated health post and the nutritional status of toddlers (p=0.01) As many as 96% of toddlers visit regularly, and the majority (66.9%) have normal nutritional status.
Risk Factors for Underweight Among Children Aged 6-59 Months in Indonesia	Irawan IR, Sudikno , Aditianti .	Risk Factors for Underweight Among Children Aged 6-59 Months in Indonesia	Cross-sectional	Population: All toddlers aged 6-59 months in Indonesia whose data was recorded in the 2018 Riskesdas Sample: 47,579 toddlers who have complete data	The risk of underweight increases in children aged 24-59 months (aOR = 1.84), male (aOR = 1.16), history of TB (aOR = 1.90), history of diarrhea (aOR = 1.13), and birth at home (aOR = 1.56). Significant parental

Title	Writer	Title	Research Design	Population and Sample	Results
					factors include low maternal education, father not working, and history of underweight in both father and mother.
Factors Related to Stunting in Children Aged 12 to 59 Months in DIY Province during the COVID-19 Pandemic Era	Suratri MAL, Raharni , Putro G, et al.	Factors Related to Stunting in Children Aged 12 to 59 Months in DIY Province during the COVID-19 Pandemic Era	Cross-sectional	Population: Toddlers in the Special Region of Yogyakarta (DIY) Province Sample: 2,391 households with toddlers aged 12-59 months who were successfully interviewed and met the inclusion criteria (using stratified two-stage sampling)	Significant factors associated with stunting were maternal education (OR=1.39), participation in growth monitoring at Posyandu (OR=1.65), and maternal nutritional counseling (OR=0.37). This study emphasizes the importance of maternal education and regular monitoring during the pandemic.
Utilization of growth monitoring and promotion services and associated factors among children aged 0-23 months in Banja District , Northwest Ethiopia 2020	Yeshaneh A, Fentahun T, Belachew T, et al.	Utilization of growth monitoring and promotion services and associated factors among children aged 0-23 months in Banja District , Northwest Ethiopia 2020	Community-based Cross-sectional	Population: all mother-child pairs aged 0-23 months Sample: 572 children were selected using the technique simple random sampling	Utilization of GMP services was only 38.9%5. Significantly related factors were the child's age 0-11 months (AOR=4.98), mother's ability to read/write (AOR=2.04), knowledge of the benefits of weighing (AOR=2.9), and availability of services near home (AOR=3.2).

Parental and Household Characteristic Factors

Maternal education consistently emerges as a significant protective factor against nutritional problems. Sihalohe & Sitanggang (2025) found that low maternal education was the most dominant factor causing malnutrition. underweight with OR=7.26. This is supported by Suratri et al. (2025) who found a significant relationship between maternal education and the incidence of stunting , as well as Irawan et (2021) highlighted the role of maternal education and paternal occupation. In addition to education, maternal literacy is also associated with the use of growth monitoring services. However, they found that maternal occupation was the dominant factor in the incidence of stunting. wasting , while the father's education has more influence on the incidence underweight in the Jakarta area.

Child's Health and Biological History Factors

A child's health history has a direct impact on nutritional status.

- Immunization:** Children with incomplete immunizations have a 2.4 times higher risk of experiencing stunting .
- Infectious Diseases:** A history of infectious diseases such as tuberculosis, diarrhea, and ARI significantly increases the risk. underweight and inhibit weight gain. However, one study in Belawan found no significant association between a history of infection and underweight .
- Low birth weight:** Low Birth Weight (LBW) was identified as the most dominant risk factor for the incidence of underweight in Central Sulawesi (OR=2.304).

Parenting and Feeding Patterns

Exclusive breastfeeding and timely and frequent complementary feeding (MP-ASI) have been shown to prevent malnutrition. Regarding nutritional interventions, adherence to locally-based supplementary feeding (PMT) is significantly associated with toddler weight gain.

Utilization of Health Services and Integrated Health Posts

Active participation in growth monitoring is crucial. The frequency of visits to the Integrated Health Post (Posyandu) is significantly associated with the nutritional status of toddlers, with toddlers who regularly visit tending to have normal nutritional status. Participation in growth monitoring and nutritional counseling has also been shown to be associated with a reduction in stunting. From the service provider perspective, Posyandu cadres' utilization of health data is significantly influenced by their education level and time allocation. On the other hand, a study in Ethiopia showed that utilization of growth monitoring services remains low (38.9%), influenced by distance from the service and maternal knowledge.

DISCUSSION

Parental Modality Dominance: Education and the Dual Role of Fathers and Mothers

The findings from various studies in this review consistently place parental education as a fundamental determinant. However, a deeper analysis shows that this influence operates through different mechanisms for mothers and fathers. A study by Sihaloho & Sitanggang (2025) showed an odds ratio of A very large ratio ($OR=7.26$) for maternal education on the risk of underweight. This indicates that maternal literacy levels are directly proportional to decision-making abilities regarding daily nutritional intake and parenting patterns.

Interestingly, the study of Permatasari et al. (2023) in Jakarta provided a new nuance by differentiating the impact of parental roles: father's education was more dominant in influencing the incidence of underweight, while mother's employment status was more influential on wasting. This implies that underweight (a chronic/long-term nutritional problem) is strongly influenced by the family's economic stability, which is often supported by the head of the family (father), while wasting (an acute/short-term problem) is more sensitive to the availability of maternal care time, which may be reduced when the mother is working. Therefore, educational interventions should not only target mothers but should also involve fathers as determinants of family resource allocation priorities.

Synergy of Infection and Growth Failure

The significant relationship between the history of infectious diseases (TB, diarrhea, ISPA) and immunization status with stunting and underweight confirms the existence of a vicious cycle between malnutrition and infection. The finding that children with incomplete immunizations are at 2.4 times higher risk of stunting indicates that specific protection against disease is an absolute prerequisite for optimal growth. Furthermore, the study of Sahara et al. (2025) showed that the success of the Pemberian Makanan Tambahan (PMT) program is highly dependent on infection control. This means that nutritional interventions (feeding) will not be effective in increasing weight if children continue to suffer from recurrent infections that drain energy and inhibit nutrient absorption. This underscores the need for service integration: PMT provision must always be accompanied by health screening and immunization status completion.

Quality of Posyandu Services: Quantity of Visits vs. Quality of Cadres

Although the frequency of visits to Posyandu has been shown to be positively associated with normal nutritional status, physical participation alone is not sufficient. The quality of growth monitoring depends heavily on the competence of the cadres. Wicaksono et al. (2025) is crucial, where the use of health data for stunting prevention is significantly influenced by the cadres' education level, not their income. This indicates a literatur gap: Integrated health posts (Posyandu),

the frontline for early detection, are often run by volunteers with varying data analysis skills. If cadres lack adequate data literacy, toddler growth charts remain merely administrative records without appropriate follow-up interventions. A study from Ethiopia also supports this, where maternal literacy and proximity to service access were key determinants of growth utilization. Monitoring and Promotion (GMP).

Birth Weight (LBW) and Long-Term Impacts

The fact that Low Birth Weight (LBW) is the dominant risk (OR=2.304) in Central Sulawesi shows that toddler nutritional problems are often an accumulation of maternal nutritional problems during pregnancy (intergenerational) . cycle of malnutrition. Children born with a weight deficit require "catch-up" efforts. "extra growth". Failure to provide exclusive breastfeeding and adequate complementary feeding during this critical phase will worsen the condition, as confirmed by the high risk findings in children who do not receive exclusive breastfeeding.

CONCLUSION

Determinants of nutritional status and increase toddler weight nature multifactorial, including education mother, history of LBW, completeness immunization, history disease infection, practice giving eat, and compliance visit to Integrated Health Post (Posyandu). Management strategies problem nutrition must integrate approach specific (PMT, monitoring growth and sensitive (education) mother, immunization, strengthening capacity cadre Integrated Health Post (Posyandu).

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