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# Risk factors for stunting in BADUTA in the working area of the Langga Umbung Health Center, South Labuhan Batu District

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**ABSTRACT**

This study aims to identify the risk factors for stunting among children under two years old (baduta) in the working area of Langga Payung Health Center, South Labuhan Batu Regency. Stunting is a chronic nutritional problem caused by insufficient nutritional intake over a prolonged period, leading to impaired physical and mental growth and development. This research employs a case-control study design with samples of mothers with stunted and non-stunted children. A total of 248 mothers were sampled using purposive sampling techniques. The results indicate that maternal education, maternal knowledge, and family income are significantly associated with stunting incidence. Appropriate interventions targeting these factors are expected to reduce the prevalence of stunting in the area.



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# INTRODUCTION

The high level of nutritional problems among toddlers is a reflection of the complexity of food and nutrition problems in Indonesia. Nutritional issues are still a major concern in Indonesia, especially regarding toddler nutrition. However, this problem does not only occur in Indonesia, but is also a global issue. The health condition and nutritional status of children under five are important indicators for assessing the nutritional and health conditions of the community. This is caused by cases of malnutrition or malnutrition, stunting, and other nutritional problems which are a burden on families, communities and the country (UNICEF, 2012). It is important for parents to understand their child's nutritional status, because nutritional imbalances can cause irreversible damage. Children who are malnourished under the age of two years (under two years) tend to grow short and experience impaired growth and physical, mental and brain development, which affects the level of intelligence. Research shows that providing proper nutrition during the first 1000 days of life can determine a child's quality of life now and in the future (Kemenkes RI, 2020). One nutritional problem in toddlers that is still a big issue is stunting. The President of the Republic of Indonesia is committed to accelerating the reduction in stunting rates to 14% by 2024. Stunting is caused by irreversible conditions due to inadequate nutritional intake and/or

recurrent/chronic infections over 1000 HPK (WHO, 2020). Stunting impacts children from the start of life and continues throughout the human life cycle. Stunting is detrimental to a child's brain development, causing a slowdown and reduction in the number and development of brain cells and other organs early in life. According to Stewart (2013), nutritional deficiencies or excesses at the age of 0-2 years usually cannot be corrected and have an impact on the quality of life now and in the future. Malnutrition causes stunting, which disrupts the growth and development of toddlers. At school age, stunting causes children to be cognitively weak and affects physical and mental intelligence. The impact of stunting can be seen from a decrease in IQ test scores of 10-13 points (Supariasa, et al, 2016). Research by Arfines and Puspitasari (2017) in Jakarta shows that children experiencing stunting have a relationship with learning achievement. The higher the Z-score, the higher the child's learning achievement. Apart from affecting intelligence, stunting also increases the risk of non-communicable diseases such as hypertension, coronary heart disease and diabetes in adulthood (Ministry of Health, 2013). Malnutrition problems such as stunting can reduce individual, family, community and national income. This significantly affects global productivity and healthcare, thereby hampering world economic growth by 5%, equating to trillions of dollars in wasted economic activity each year (Throw, 2016). Factors causing stunting include environmental cleanliness, access to health services, parenting patterns, and availability of household consumption. Basic causal factors at the societal level include education, politics, government, leadership, resources, finance, socio-economics, politics, and the environment (Martorell, 2017).

According to UNICEF in 2014, more than 162 million children under 5 years old worldwide experienced stunting. WHO data shows that the prevalence of stunting in Africa in 2010 was 37.2%, in 2015 it was 34.6%, and in 2017 it was 33.6%. The prevalence of stunting in Africa is not much different from Southeast Asia. In Southeast Asia, the prevalence of stunting in 2010 was 39.5%, in 2015 it was 34.8%, and in 2017 it was 33.0%. However, the prevalence of stunting in developed countries such as America is much lower, namely 7.9% in 2010 and 6.3% in 2017 (WHO, 2018). Basic Health Research data shows that the prevalence of stunting in Indonesia fluctuates, namely 36.8% in 2007, 35.6% in 2010, 37.2% in 2013, and 30.8% in 2018. The SSGI results show that the prevalence rate of stunting among children under five in Indonesia is 27.7% in 2019, 27.6% in 2020, 24.4% in 2021, and 21.8% in 2022. Based on the SSGI results, the prevalence of stunting in North Sumatra in 2018 it was 32.3%, in 2019 it was 30.11%, and in 2020 it was 28.7%. Even though there has been a decline, the stunting prevalence rate in North Sumatra is still above the national figure of 27.67%. In 2021, the stunting prevalence rate in North Sumatra will be 25.8% and 21.2% in 2022, reaching the target set in the 2022 Performance Agreement, namely 22.50% (Dikes Provsu, 2022). Factors causing stunting that are part of a specific program to prevent stunting in 1000 HPK include Early Breastfeeding Initiation (IMD), exclusive breastfeeding, MP-ASI, Ante Natal Care, Fe tablets/iron tablets/blood supplement tablets, vitamin A for babies, and growth monitoring (Maternal and Group, 2013). Research by Najahah (2013) in West Nusa Tenggara Province stated that mothers who did not attend ANC visits according to standards were at risk of having stunted toddlers 2.4 times higher than mothers who had ANC visits according to standards. ANC visits according to standards can be seen from the K6 achievements of pregnant women. In Batubara Regency in 2021, K6 achievement was 80.95%, still below the average achievement for North Sumatra of 83.74% (Dinkes Provsu, 2021). Based on research by Sumiaty (2017), it was found that the intake of iron tablets or blood supplement tablets in pregnant women was related to the incidence of stunting. In Batubara Regency, the coverage of giving blood supplement tablets to pregnant women is 75.71%, while in North Sumatra it reaches 77.93%, which is still below the average for North Sumatra province (Dinkes Provsu, 2021). Failure to initiate early breastfeeding, exclusive breastfeeding and early weaning can be factors causing stunting. Research shows a relationship between exclusive breastfeeding and the incidence of stunting in children under two years old (Paramashanti, et al, 2016). In line with this research, children who do not receive

exclusive breast milk have a 6.54 times greater risk of experiencing stunting than children who receive exclusive breast milk (Lestari, et al, 2014). In North Sumatra, coverage of early initiation of breastfeeding in 2021 is 66.14%, while coverage of exclusive breastfeeding is 44.4%. In Batubara Regency, exclusive breastfeeding coverage in 2021 is 33.85%, and IMD coverage is 48.7%, which shows that the achievement of IMD and exclusive breastfeeding in Batubara Regency is still below the average for North Sumatra province

The level of education and knowledge has an indirect effect on health, including nutritional status. Individuals with a higher level of education and knowledge tend to know more about healthy lifestyles and how to keep their bodies fit, such as by consuming nutritious food. Apart from that, economic status or family income also influences the ability to fulfill nutritional intake and health services for pregnant women and toddlers (Aobama, et al, 2020). Based on the 2022 e-PPGBM report from the Langga Payung Community Health Center in Batubara Regency in January-May 2023, it was recorded that 134 under-aged children were stunted. Initial research was conducted in March 2023 at the Langga Payung Community Health Center, with anthropometric height measurements of 40 under-aged children, it was found that 26 children (65%) experienced stunting and 14 children (35%) had normal nutritional status. Interviews with mothers of stunted children revealed that they had a high school education and were housewives, had ANC less than 6 times during pregnancy, consumed less than 90 blood supplement tablets, did not initiate early breastfeeding, did not provide exclusive breastfeeding, give MP-ASI to children under 6 months of age, and use instant or ready-to-eat MP-ASI. These children received vitamin A less than 3 times or not at all, and the mothers did not follow the child's growth monitoring program properly, namely by weighing the child's weight and measuring the child's height.

# RESEARCH METHOD

This research is an analytical study with a case control design in the Langga Payung Health Center Work Area, Labuhan Batu Selatan Regency. The research was conducted for 8 months from January to August 2023. The population was 154 mothers who had stunting. The sample consists of case samples and control samples. The case sample is mothers who have stunted children, while the control sample is mothers who have children who are not stunted. The sample size for each variable with a ratio of 1 case sample and 1 control sample is 112 people for the case sample and 112 people for the control. The total sample for this study was a minimum of 224 people. The sample was added by 10 percent so that the total sample used in this research was 248 samples. Sampling used a purposive sampling technique. To obtain a common perception in terms of sample selection, the researcher, village midwife and posyandu cadres held a meeting first to discuss measurements and filling out the questionnaire. Researchers together with village midwives and posyandu cadres who have been trained began sample selection activities by carrying out screening in 10 villages sequentially in the Puskesmas Work Area and taking measurements of toddler children based on body length according to age (PB/U) or height according to age, then the results compared with the 2005 WHO standard table. Sampling activities were stopped after the required number of samples was met, namely 248 mothers who had stunted toddlers and normal toddlers. After the data was successfully collected, data analysis was carried out using the SPSS version 22 application program. Data analysis was used to determine the relationship between the dependent variable and the independent variable using the Chi-square test.

# RESULTS AND DISCUSSIONS

**Relationship between family income and incidence of stunting**

**Table 1.** Relationship between family income and incidence of stunting

| Family income | Incidence of stunting | | | | | | P value |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | Total | | |
| | n | % | n | % | n | % | |
| Low family income | 82 | 66,1 | 0 | 0,0 | 82 | 33,1 | 0,000 |
| High family income | 42 | 33,9 | 124 | 100 | 166 | 66,9 | |
| Amount | 124 | 100 | 124 | 100 | 248 | 100 | |

Table 1 shows that the proportion of stunting is higher (66.1%) in children under two years old from low-income families compared to high-income families. Statistically, this relationship is significant ($p < 0.05$).

Research findings show that there is a statistically significant correlation between family income level and the incidence of stunting in Baduta ($p < 0.05$). The cause may be insufficient income to meet basic needs, especially if the family income is below the Minimum Wage for Work in Labusel Regency. This finding is in line with a study by Puspasari (2021), which shows a similar relationship between family income and stunting, where the risk of stunting in children from families with low income is 3.4 times higher than those from families with high income. Pibriyanti's research results (2020) also confirm that there is a correlation between economic status and the incidence of stunting among toddlers in the Slogohimo Community Health Center working area, Wonogiri Regency. The low economic conditions in Slogohimo District are mostly caused by working as farm laborers with low incomes, which results in families' purchasing power being limited and being unable to meet adequate nutritional needs for toddlers. If this condition persists for a long period of time, the toddler in the family is at risk of experiencing stunting.

**Relationship between maternal antenatal care visits during pregnancy and incidence of stunting**

**Table 2.** Relationship between maternal antenatal care visits during pregnancy and incidence of stunting

| Maternal antenatal care visits | Incidence of stunting | | | | | | P value |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | Total | | |
| | n | % | n | % | n | % | |
| Noot good | 77 | 62,1 | 55 | 44,3 | | 53,2 | 0,000 |
| Good | 47 | 37,9 | 69 | 55,7 | | 46,8 | |
| Amount | 124 | 100 | 124 | 100 | | 100 | |

Table 2 shows that the proportion of stunting is higher (62.1%) in children under two years old whose mothers had poor ANC visits compared to mothers who had good ANC visits during pregnancy. Statistically, this relationship is significant ($p < 0.05$).

The results of the analysis show that there is a significant relationship between Antenatal Care (ANC) visits and the incidence of stunting. Mothers who take part in the ANC service program in accordance with Ministry of Health guidelines during pregnancy, whether from doctors or midwives at health service centers such as health centers and hospitals, enable the condition of the pregnancy and fetal development to be monitored properly. Apart from that, mothers can also get information about steps to prevent stunting. This finding is consistent with research conducted by Najahah (2018) in West Nusa Tenggara Province, which found that ANC visits for pregnant women were the dominant factor related to stunting incidents. The risk of stunting increases by up to 40% in pregnant women who do not comply with ANC visit standards.

**Relationship between giving iron tablets to mothers during pregnancy and the incidence of stunting**

**Table 3.** Relationship between giving iron tablets to mothers during pregnancy and the incidence of stunting

| Giving iron tablets | Incidence of stunting | | | | | | P value |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | Total | | |
| | n | % | n | % | n | % | |
| Not good | 76 | 61,2 | 54 | 43,5 | 130 | 52,5 | 0,000 |
| Good | 48 | 38,8 | 70 | 56,5 | 118 | 47,5 | |
| Amount | 124 | 100 | 124 | 100 | 248 | 100 | |

Table 3 shows that the incidence of stunting is higher in mothers who were given poor iron supplements during pregnancy, compared to mothers who received good iron doses during pregnancy. Statistically, this relationship is significant ($p < 0.05$). According to the research results, there is a significant correlation between giving iron tablet supplements to pregnant women and the incidence of stunting in babies and toddlers. The risk of stunting in Baduta is 3 times higher in mothers who receive an insufficient dose of iron tablets during pregnancy compared to mothers who receive an adequate dose of iron tablets. A factor that may influence this is that blood supplement tablets given to pregnant women, which are taken one tablet per day for 90 days, help prevent anemia. This has an indirect impact on the fetus, because anemia can cause various complications such as bleeding and low birth weight (LBW). Anemia that commonly occurs in pregnant women is iron deficiency anemia, which results in a decrease in the number of healthy red blood cells due to a lack of nutrients that are important for the formation of hemoglobin. Every pregnant woman needs a larger supply of blood cells than adults under normal conditions. A study conducted by Sumiaty (2017) showed that intake of blood supplement tablets of less than 90 tablets in pregnant women was related to the incidence of stunting in Baduta, because these mothers experienced anemia during pregnancy. Anemia in pregnant women can inhibit fetal growth and cause complications such as prolonged labor, disrupted contractions, miscarriage, LBW, premature birth, bleeding, and nutritional problems such as stunting.

**Relationship between exclusive breastfeeding and the incidence of stunting**

**Table 4.** Relationship between exclusive breastfeeding and the incidence of stunting

| Exclusive breastfeeding | Incidence of stunting | | | | | | P value |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | Total | | |
| | n | % | n | % | n | % | |
| No | 111 | 89,5 | 100 | 80,6 | 211 | 85,2 | 0.000 |
| Yes | 13 | 10,5 | 24 | 19,4 | 37 | 14,8 | |
| Amount | 124 | 100 | 124 | 100 | 248 | 100 | |

Table 4 shows that the incidence of stunting is higher in those who do not receive exclusive breastfeeding compared to those who receive exclusive breastfeeding. Statistically, this relationship is significant ($p < 0.05$).

According to the findings of this study, there is a significant correlation between exclusive breastfeeding and the incidence of stunting. The risk of stunting in Baduta is 2.5 times higher in those who do not receive exclusive breastfeeding compared to those who are given exclusive breastfeeding. Exclusive breast milk is the main source of nutrition for children aged 0-6 months,

containing various nutrients such as carbohydrates, proteins, vitamins and minerals which are essential for children's development. This condition is important because proper nutritional intake during this period supports the growth and function of the child's body organs. When children aged 6-24 months do not receive exclusive breast milk, the risk of nutritional deficiencies for the child's growth increases, which can lead to stunting. The study of Noorhasanah et al. (2020) stated that a history of exclusive breastfeeding is related to the incidence of stunting. Exclusive breastfeeding until 6 months of age is important to ensure optimal growth and development of the baby. Apart from that, by providing exclusive breastfeeding for 6 months, the baby's health is more guaranteed and his nutritional needs are met, thereby preventing stunting. Research by Nugraheni et al. (2019) confirmed that exclusive breastfeeding is a factor related to the incidence of stunting in children aged 6-24 months in Central Java Province. The study also showed that children aged 6-24 months who were not exclusively breastfed had a 1.3 times higher risk of stunting compared to those who were exclusively breastfed.

**Relationship between giving MP-ASI and the incidence of stunting**

**Table 5.** Relationship between giving MP-ASI and the incidence of stunting

| Giving MP-ASI | Incidence of stunting | | | | | | P value |
|---|---|---|---|---|---|---|---|
| | Yes | | No | | Total | | |
| | n | % | n | % | n | % | |
| Not good | 111 | 89,5 | 99 | 79,8 | 210 | 84,7 | 0.000 |
| Good | 13 | 10,5 | 25 | 20,2 | 38 | 15,3 | |
| Amount | 124 | 100 | 124 | 100 | 248 | 100 | |

Tabel 5 menunjukkan kejadian stunting lebih tinggi pada mereka yang tidak diberikan Makanan Pendamping Air Susu Ibu (MP-ASI) dibandingkan dengan yang diberikan MP-ASI. Statistically, this relationship is significant ($p < 0.05$).

This research confirms the existence of a significant correlation between the provision of Complementary Food with Breast Milk (MP-ASI) and the incidence of stunting. The risk of stunting in Baduta is 10 times higher in those who do not receive MP-ASI compared to those who receive MP-ASI. Giving MP-ASI aims to introduce babies to foods that contain the nutrients their bodies need along with their growth and development. This is in line with research conducted by Al-Rahmad et al. (2013) in Banda Aceh, where MP-ASI was correlated with the incidence of stunting. Children who do not receive MP-ASI appropriately or are given MP-ASI that is not appropriate for their age have a 3.4 times higher risk of stunting than children who receive MP-ASI that is appropriate for their age.

# CONCLUSION

Variables that show a significant relationship ($p < 0.05$) with the incidence of stunting in infants and toddlers in the working area of the Langga Payung Community Health Center, Labusel Regency: Antenatal Care (ANC) visits by the mother during pregnancy; Providing iron tablets to Baduta's mother during pregnancy; Providing exclusive breastfeeding to Baduta; and Providing Complementary Food for Mother's Milk (MP-ASI) to Baduta. Community Health Center officers need to collaborate with the local Office of Religious Affairs to provide counseling regarding risk factors for stunting and to promote breastfeeding for children up to 24 months of age.

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