

# CONTRIBUTION OF ADOLESCENT BEHAVIOR IN GIVING BIRTH AT RISK OF STUNTING IN RURAL AREAS IN BALI (STUDY OF MOTHERS WITH STUNTING CHILDREN IN NUSA PENIDA)

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## Abstract

**Background:** Stunting is a cyclical situation, starting from before marriage (adolescents) who are malnourished, if not corrected, will become malnourished pregnant women. Malnourished pregnant women then give birth to malnourished babies. These malnourished babies will then become stunted children. The behavioral factors of a prospective mother before marriage play a massive role in giving birth to stunted children. **Objective:** This study aims to determine adolescent behavior that contributes to the risk of giving birth to stunted children. **Methods:** This research design uses a retrospective survey approach. The population in this study were mothers with stunted children in Nusa Penida, sampling with quota sampling technique with a sample size of 200 people. Analysis was carried out univariate. **Results:** Most respondents before marriage had sufficient behavior in stunting prevention efforts, namely 76%, and as many as 24% had poor behavior in preventing stunting. **Conclusion:** Some habits before marriage (adolescence) were found to be unfavorable and contributed to the risk of giving birth to stunted children. It is expected that the government, together with the community, make efforts to reduce and overcome unfavorable behaviors that contribute to the risk of giving birth to stunted children.

**Keywords:** Adolescents Behavior, Risk of Stunting.

## 1. INTRODUCTION

Stunting is a condition of failure to thrive in toddlers due to a long-term lack of nutritional intake, where the child is shorter than children his age (Givani, 2022; Sitompul et al., 2023). Stunting is a condition where toddlers have a condition of height that is less when compared to their peers (Wahono, B., et al., (2023). Stunting is determined by an anthropometric index using body length or height data based on age (PB/U or TB/U).

The negative impact that stunting problems can have on children, in the short term, can disrupt brain development and intelligence. Stunting also has long-term impacts, resulting in decreased cognitive abilities, learning achievement, and decreased immunity, so children get sick quickly. In old age, stunted children are at high risk of developing diabetes, obesity, heart and blood vessel disease, cancer, stroke, and disability. This will undoubtedly impact the quality of Indonesia's human resources, decreasing productivity and decreasing the nation's competitiveness.

Reducing the stunting rate by 40% by 2025 is the Sustainable Development Goals (SDGs) target. One of the goals of the SDGs is to eliminate hunger and all forms of malnutrition by 2030 and achieve food security. (Andriyani & Werdani, 2021)

According to the World Health Organization (WHO), in 2020, stunting globally reported 21.3% or as many as 144 million children under 5 years experiencing stunting in 2019. The prevalence of stunting worldwide has decreased since 2015, namely 155 million

children under 5 years. The number of stunting is the biggest problem after the incidence of wasting at 47 million children and obesity at 38.3 million children in the world. The incidence of stunting in the world is dominated by Asia at 54% and Africa at 40%. This data shows that stunting occurs mainly in several developing countries with middle to low income. Indonesia is one of the developing countries that has a high prevalence of stunting. (Wardana & Astuti, 2019)

In 2021, the prevalence of stunting in Indonesia is 24.4%, still better than Myanmar (35%) but still higher than Vietnam (23%), Malaysia (17%), Thailand (16%), and Singapore (4%). (Dr. Widyawati, 2021)

The national stunting incidence has decreased by 3.3% from 27.7% in 2019 to 24.4% in 2021. However, the 2021 Indonesian Nutrition Status Study (SSGI) survey results show that the prevalence of stunting in Indonesia is 24.4%, still far from the stunting prevalence target in the 2024 RPJMN, which is 14%. (RI, 2022).

The percentage of concise nutritional status among children under five in Bali Province tends to decrease; in 2018, it was 19.8%; in 2019, it was 14.4%; in 2020, it was 6.1%, but it increased in 2021 to 10.9%. Several districts in Bali also experienced a decrease in the percentage of concise nutritional status in toddlers in 2020 compared to 2020. However, Klungkung Regency is one of the areas where the percentage of concise nutritional status in toddlers increased by 1.7%, whereas in 2019, it was 5.6% to 7.3% in 2020. This must be a concern for families, society, and the government.

Stunting is a cyclical condition, starting before marriage (teenagers). Those who are malnourished, if not corrected, will become malnourished pregnant women. Malnourished pregnant women then give birth to malnourished babies. Malnourished babies will then become stunted children. The behavioral factors of a prospective mother before marriage play a massive role in giving birth to stunted children.

## 2. METHODS

This study aims to determine adolescent behavior that contributes to the risk of giving birth to stunted children. This study used a retrospective survey approach. The population in this study consisted of mothers with stunted children in Nusa Penida, who were sampled using quota sampling techniques with a sample size of 200 people. The analysis is carried out sequentially univariate. Variables with numerical data are analyzed using mean, median, standard deviation, and minimum-maximum values. All data were analyzed with a significance level of 95% ( $\alpha=0.05$ ). Variables in the form of categorical data are explained using frequency distributions and percentages or proportions.

## 3. RESULTS

The research was carried out in 3 community health center areas, namely Nusa Penida Community Health Center 1, Nusa Penida Community Health Center 3. The data obtained is as follows:

### 3.1 Respondent Characteristics

The characteristics of respondents in this study were identified based on age, education, employment, income, family status, source of drinking water, floor of the house and condition of the yard. Numerical data is analyzed to obtain average, median and standard deviation values. Categorical data was analyzed and results were

obtained in the form of percentages. The results of the analysis of each variable are shown in the following table.

**Table 1: Distribution of Respondent Characteristics According to Age**

Variable	Mean	SD	Minimum-maximum
Children	29,6	5,48	20-46

Based on table 1, the average age of respondents is 29.6 years, with a standard deviation of 5.48 years, the youngest age is 20 years and the youngest age is 46 years.

**Table 2: Distribution of Respondents According to Education, Employment, Income, Family Status, Source of Drinking Water, House Floor, Condition of House Yard and Income in 2023**

Variable	f	%
<b>Education</b>		
No in school	13	6,5
Elementary School	48	24
Junior High School	38	19
Senior High School	80	40
College	21	10,5
Total	200	100
<b>Occupation</b>		
Housewife	138	69
Farmer	2	1
Civil servants	3	1,5
Private Employee	46	23
Self-employed	11	5,5
Total	200	100
<b>Family Status</b>		
Main family	110	55
Extended family	90	45
Total	200	100
<b>Source of drinking water</b>		
Well ( <i>Sumur</i> )	31	15,5
Spring Water	6	3
PDAM	142	71
Other	21	10,5
Total	200	100
<b>House floor</b>		
Ceramics	174	87
Plaster	26	13
Total	200	100
<b>Condition of the yard</b>		
Clean / well maintained	164	88
Dirty/unkept	22	12
Total	200	100
<b>Family Income</b>		
Below UMK	122	61
Above UMK	78	39
Total	200	100
Average Income	IDR 2562,750	
Highest income	IDR 6,000,000	
Lowest income	IDR 600,000	

Based on table 2, it can be seen that the majority have a high school education (40%), the majority occupation as Housewife (69%), the majority are from nuclear families (55%), the majority of their drinking water source is from PDAM (71%), the majority the floor of the house is ceramic (87%), and most of the house is clean and well maintained (88%) and most of the income is below the UMK (61%).

### 3.2 Observation results on efforts to prevent stunting before marriage

**Table 4: Distribution of Respondents' Efforts to prevent stunting before marriage**

Sub variable	Always	Sometimes	Never
	f (%)	f (%)	f (%)
Consuming iron (Fe) tablets since adolescence	47 (23%)	24 (12%)	129 (64,5%)
Habit of eating ready-to-eat food	26 (13%)	143 (73%)	28 (14%)
Habits of eating food at home	199 (99,5%)	1 (5%)	
Regular eating habits	187(93,5%)	13 (6,5)%	
Habit of consuming milk	11 (5,5%)	66 (33%)	123 (61,5%)
Fish/meat eating habits	95 (47,5%)	104 (52%)	1 (5%)
The habit of eating vegetables	95 (47,5%)	104 (52%)	1 (5%)
The habit of eating fruit	186 (93%)	14 (7%)	
Habit of checking health	46 (23%)	153 (76,5%)	1 (5%)
Listen to information about edit	25 (12,5%)	83 (41,5%)	92 (46%)
Consultation regarding health before marriage	68 (34%)	32 (16%)	100 (50%)
Exercise habits	13 (6,5%)	11 (5,5%)	176 (88%)
At school we are reminded about healthy living behavior	22 (11%)	114 (57%)	64 (32%)
Habit of drinking soft drinks	131 (65,5%)	41 (20,5%)	28 (14%)
The habit of drinking 1.5 – 2 liters of water a day	26 (13 %)	139 (69,5%)	35 (17,5%)

Based on the data in table 3, further analysis was carried out to assess respondents' knowledge regarding stunting prevention behavior before marriage, shown in the following table:

**Table 4: Distribution of Respondents' Behavior Regarding Efforts to Prevent Stunting Before Marriage in 2023**

Variable	f	%
<b>Behavior</b>		
Enough	152	76
Less	48	24
Total	200	100

Based on table 4, it can be seen that the majority of respondents before marriage had adequate behavior in preventing stunting, namely 76%, and as many as 24% had inadequate behavior in preventing stunting.

## 4. DISCUSSION

The results of research on the characteristics of respondents found that most of them had a high school education (40%), most of them worked as Housewife (69%), most of them belonged to a nuclear family (55%), most of their drinking water came from PDAM (71%), most of them the floor of the house is ceramic (87%), and most of the yard is clean and well maintained (88%).

Based on the description of the characteristics of the respondents, in general, they are mothers who are old enough to get married and have children. The average age of

mothers is almost the same as the average of mothers whose children suffer from stunting in Makassar City. Maternal age is considered more capable in managing babies, including mothers of babies born and currently experiencing stunting. Mature mothers are better prepared to care for sick children (Rahmayana et al., 2014).

Based on education, most mothers whose children suffer from stunting have a high school education (40%), and the least have no school education (6.5%). According to Ayyida et al. (2020), a mother's knowledge will determine attitudes toward maintaining and meeting the nutritional needs of toddlers, thereby reducing the potential for stunting in toddlers. Factors that influence knowledge are education and information. Education instills reading, numeracy, and critical thinking skills and provides direct information about health to women. Mothers with a good level of education can influence the preparation, procurement, and selection of nutritious food for children, especially toddlers. A high level of education in mothers will also increase their knowledge and attitudes toward information related to nutrition and health (Berhe et al., 2019). Mothers who have a high level of education have higher knowledge about stunting. The conditions found in Klungkung show that the average education level of respondents is primarily high school. With the education they have, there is an opportunity to prepare mothers to manage stunting in babies that are found. A different opinion from Resnick (2017) states that high education among parents, especially mothers, does not significantly affect mothers' knowledge in preventing stunting except for parents or mothers with a minimum education level of post-primary school.

Therefore, education is not a determining factor in stunting treatment. Various factors such as economic conditions, care culture, and environment can influence mothers' behavior in caring for children suffering from stunting. A poor economy hinders mothers' ability to meet their needs for caring for toddlers.

Most of the jobs of mothers of babies suffering from stunting are Housewife (69%). In general, being a housewife will provide more opportunities to care for children who suffer from stunting. Having sufficient time allows mothers to carry out better treatment. However, in reality, babies who suffer from stunting are born to mothers who work as Housewife. Housewife most likely do not have sufficient additional income to meet their living needs, mainly to provide healthy food. Preventing and treating stunting requires a lot of money. The limited assistance for handling stunting means providing additional food only once a year is insufficient to meet the needs of a decent life (Village Head Ped, 2023). For this reason, efforts to deal with stunting in mothers who are only Housewife are a priority in fulfilling adequate food needs so that the risk of malnutrition as a cause of stunting can be prevented (Sakti Village Head, 2023). Providing education, training, and assistance to Housewife regarding early stimulation of stunting babies and providing food with local ingredients, often found in Klungkung, especially Nusa Penida, such as processed fish and nuts, can support improved nutrition for breastfeeding mothers and toddlers.

Most families with stunted children are nuclear families (55%). In the context of family effectiveness, the nuclear family is a good supporter of family growth and development. This family has more opportunities to manage the family so that it is more optimal in managing all its resources, with greater decision-making freedom and less risk of conflict. The weakness of the nuclear family is that the family has limited resources, whereas they should need support from the family sub-system around them. Extended families in the context of Asian kinship systems have the opportunity

to be able to provide resource support to problematic nuclear families. In overcoming this condition, developing an extended family-based cooperation concept mediated by health workers can be a solution in the long-term care of babies with stunting.

Helplessness due to limited resources in nuclear families in caring for babies with stunting can be overcome by providing a more comprehensive program from official villages or traditional villages by optimizing the active role of community/religious social institutions to overcome this problem.

This is supported by data regarding the average income of families with stunted children, which is IDR 2,562,750, which in general is still lower than the 2023 Klungkung Regency UMK of IDR 2,714,642. Families with stunting in Klungkung Regency have incomes below the minimum wage by 61%, with the lowest income for families with stunted babies being IDR 600,000. This data shows that family income can be a trigger for low purchasing power to provide support for the health of mothers and babies both in the womb and after birth. Therefore, the solution of providing food and health assistance for teenagers, pregnant and giving birth mothers to families whose income is still below the minimum wage is a serious concern in reducing the occurrence of stunting.

Data related to environmental conditions, in general, are excellent because almost all families use clean water sources, especially PDAM, as much as 71%, 87% use ceramics, and the yard's condition is clean as much as 88%. Excellent and healthy environmental conditions can be a factor that can prevent the risk of stunting. A healthy environment can prevent the risk of worms and infection, which can trigger anemia and other risk factors for malnutrition.

The research results showed that most respondents before marriage had adequate behavior in preventing stunting, namely 76%, and as many as 24% had inadequate behavior in preventing stunting. This stunting prevention behavior is essential before marriage, meaning when you are a teenager. Adolescent girls are an important target in preventing stunting through good family planning, maintaining health so they do not experience anemia and chronic energy deficiency, and understanding efforts to prevent stunting from an early age. One strategic step to create motivation towards improving good behavior in accordance with the concept of health is with the strategy of community empowerment and community participation (Fujiana et al., 2023)

The research data shows that the factors or efforts related to stunting prevention need attention, including most respondents (64.5%) who have never consumed iron tablets. This is supported by research (Fujiana et al., 2023), which found that the screening results showed that 19 participants (38%) had Hb levels below 12 mg/dl, with the lowest level being 7.1 mg/dl. One specific intervention to prevent stunting is giving blood supplement tablets to teenagers, women of childbearing age, and pregnant women. One of the women of childbearing age is a final-year student. Final-year female students are a target that needs special attention to prevent stunting. This is because female students menstruate every month, so they are at risk of developing anemia.

Based on the results of the analysis related to behavioral patterns at risk of stunting, it was found that as many as 64.5% of them never consumed Fe when they were teenagers. Fe is a very vital component in baby growth. Iron is one of the essential micronutrients for the human body, and it is the most abundant micromineral, 3-5 grams. Experts have several opinions regarding the role of iron (Fe) as an enzyme

component and a cytochrome component that influences growth. One of them is as a component of the ribonucleotide reductase enzyme, which can participate in DNA synthesis and work indirectly on tissue growth, influencing growth (Harmatz, Butensky, & Lubin, 2003). Apart from that, iron as a cytochrome component can participate in producing Adenosine Triphosphate (ATP) and protein synthesis, which can affect tissue growth (Andrew, 1999).

The program for giving iron tablets to teenagers has been promoted, but it needs to be more than optimal. Different strategies for administering iron tablets in each school mean the targets achieved could be more optimal. Several schools and junior high schools in Nusa Penida have implemented Fe consumption weeks. Every Friday, iron tablets will be distributed and ensured to be consumed immediately at school. Other schools apply a different pattern, namely that iron tablets are distributed and recommended for consumption at home. In the second case, it was found that many students said that if the Fe tablets they were given were not consumed because they forgot, they would taste bad and cause difficulty defecating. By comparing the two models of giving iron tablets, it is recommended that teenagers be given iron tablets at school on certain days with supervision to ensure that the students have consumed them.

Adolescent habits that are also at risk for stunting are low milk consumption habits. Stunting is caused by unbalanced food intake, including calcium intake. Calcium deficiency will result in growth disorders in children. This case is related to low calcium levels and growth disorders (Yulinda et al., 2016). Adolescents with low calcium intake have little calcium reserves, which play a role during pregnancy. Adolescents who are deficient in calcium are at risk of developing infections and the risk of growth disorders.

During the growth process of babies and children, it is for processing and ossification. Calcium deficiency causes low calcium absorption, as evidenced by lower serum calcium levels in stunted babies compared to normal babies (Almatsier, 2010). Calcium is generally stored in bones and absorbed as long as needed, especially during pregnancy, to form fetal bone structure. Low calcium levels result from the low habit of teenagers consuming milk during adolescence and during pregnancy and breastfeeding. The low habit of drinking milk can occur due to people not liking to drink milk since they were children and teenagers, or it could also be due to economic limitations, meaning they cannot afford to buy milk. For this reason, efforts to get used to the pattern of drinking milk and giving milk or calcium formula are necessary in addition to giving Fe. This habit should be started from adolescence because consuming enough calcium can increase calcium reserves in the bones, which will be very beneficial during pregnancy.

Adolescents' ability to obtain stunting information still needs to improve. The habit of listening to stunting information only occurs in 12.5% of teenagers. Junior and senior high school students in Nusa Penida mentioned insufficient exposure to adolescent stunting. Even if there is, what is conveyed is only terms, so they do not fully know what stunting is. Middle school and high school teachers and some village heads regret that information about stunting is only provided in passing. They are not interested in participating in overcoming stunting because they do not know clearly what, how, and the impact of stunting on babies and their subsequent growth.

Currently, what the community needs regarding the program is not only understanding the terms but also being given all the information related to the program so that they understand better and can be actively involved because they understand everything in detail.

Consultations related to health during adolescence, especially before marriage, are still very low. As many as 50% of teenagers must consult about health before marriage. According to Rus'an and Hamzah (2019), premarital education is critical for teenagers to be ready to face status changes. Premarital education is critical to prepare teenagers physically and mentally, including regarding reproductive health and preparing a healthier next generation.

The low level of premarital education activities results in low knowledge of teenagers in preparing for pregnancy and maintaining the health of their babies to avoid stunting. To overcome this condition, it is necessary to pursue health education programs for teenagers, especially regarding pre-marriage, either through youth *posyandu*, peer groups, or other traditional institutions. Various groups will strengthen and increase the places where teenagers can conduct health consultations.

Teenagers' exercise habits are also very low. Only 6.5% of teenagers play sports. Exercise is an activity that is very important in maintaining the function of various body systems. According to WHO (2023), exercise is essential in activating the body's systems. People who exercise frequently have the opportunity to help maximize bone growth and strengthen the immune system so they can avoid various infectious and non-infectious diseases. For this reason, to prepare teenagers to be healthier, it is necessary to optimize physical exercise through routine activities, such as school and community activities.

Efforts for healthy living behavior still need to be optimally taught in schools. Only 32% were reminded about healthy living behavior at school. School is the most strategic place for building character and healthy living behavior apart from the family; for this reason, strengthening the role of schools through the UKS program and other programs is very important in shaping the behavior of teenagers in carrying out healthy living behavior.

## CONCLUSIONS AND SUGGESTIONS

Most of them have a high school education, most of them work as housewife, most of them are nuclear families, most of their drinking water comes from PDAM, most of their house floors are ceramic, and most of their yards are clean and well maintained, most of their income is below the UMK. Several characteristics of these families can contribute to the incidence of stunting in Nusa Penida. Most respondents before marriage had adequate behavior in preventing stunting, namely 76%, and as many as 24% had inadequate behavior.

Some habits before marriage (adolescence) that were found to be poor and contributed to the risk of giving birth to stunted children include not consuming fe, lack of habit of drinking milk, lack of information about stunting, low exercise habits, lack of awareness of health consultations and PHBS which has not yet been implemented optimally. It is hoped that the government, together with the community, will make efforts to reduce and overcome lousy behavior, which contributes to the risk of giving birth to stunted children.



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