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Factors Affecting the Incidence of Stunting in Toddlers Aged 24-59 Months in the Working Area of the Sumbersari Health Center in 2023

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ABSTRACT

Stunting is a chronic malnutrition problem caused by a lack of nutritional intake over a long period of time, this causes problems in the future. Based on data on the prevalence of stunted toddlers collected by WHO, in 2020 as many as 22% or around 149.2 million toddlers in the world experienced stunting. This research aims to find out what factors can influence the incidence of stunting in the Sumbersari Community Health Center Work Area in 2023. This type of research is quantitative research with a cross sectional approach using primary and secondary data as a reference. The sampling technique was carried out using purposive sampling, each data was described using univariate and bivariate analysis using the SPSS program. Based on this research, it shows that 54 toddlers (59.3%) are stunted. There were 67 toddlers with a history of infectious diseases (73.6%). There were 71 toddlers with parents who had poor knowledge (78%). The most common gender was male with 50 toddlers (54.9%). There were 73 toddlers without exclusive breast milk (80.2%). There were 77 children with parents whose income did not match the minimum wage (84.6%). The relationship between stunting and infectious diseases using the chi-square test obtained a p value = 0.003 ($p < 0.05$). The relationship between stunting and maternal knowledge using the chi-square test obtained a p value = 0.033 ($p < 0.05$). The relationship between stunting and gender using the chi-square test obtained a p value = 0.016 ($p < 0.05$). The relationship between stunting and exclusive breastfeeding using the chi-square test obtained a p value = 0.002 ($p < 0.05$). The relationship between stunting and parental income using the chi-square test obtained a p value = 0.029 ($p < 0.05$). It can be concluded that there is a significant relationship between the incidence of stunting and infectious diseases, maternal knowledge, gender, exclusive breastfeeding, and parental income in the Sumbersari Community Health Center Work Area in 2023.

INTRODUCTION

Stunting is a chronic malnutrition problem caused by a lack of nutritional intake for a long time, this causes disturbances in the future, namely experiencing difficulties in achieving optimal physical and cognitive development. Stunted toddlers have a lower *Intelligence Quotient* (IQ) than the average IQ of normal toddlers.[1]

WHO recorded that there were 149.2 million stunting cases in the world in 2020.[2] The prevalence of stunting in Indonesia decreased from 24.4% in 2021 to 21.6% in 2022. [3] The incidence of stunting in Central Sulawesi Province is at 28.2%, which means that for every 100 toddlers, there are around 29 toddlers who are included in the stunting category.[4] Stunting cases in the Sumbersari Health Center Working Area in 2022 there are 76 toddlers and in 2023 there are 137 toddlers.

The reason why the researcher took the research location in the Sumbersari Health Center Working Area is that apart from the increasing cases, access and mobility to the research location are also easy, and similar research has never been conducted in this place.

Stunting has an impact on the cognitive, motor, and verbal development of toddlers to be suboptimal. In the future, stunted toddlers have a higher risk of experiencing various diseases. In addition, the learning capacity and performance of toddlers as well as productivity are also not optimal.[5]

MATERIAL AND METHOD

This type of research is a quantitative research with *a cross sectional* approach using primary and secondary data as a reference. The sampling technique was carried out using *Purposive Sampling*, each data was described by univariate and bivariate analysis using the SPSS program. This research was conducted in the Working Area of the Sumbersari Health Center, South Parigi District, Parigi Moutong Regency, Central Sulawesi Province, Indonesia. The population in this study is all mothers who have toddlers aged 24-59 months. The sample in this study is 91 respondents.

RESULTS

Table 1 Distribution of Infectious Diseases

Sum	91	100

Based on table 1 above, it shows that, of the 91 toddlers who are sick, 67 (73.6%) are toddlers and 24 are healthy (26.4%).

Table 2 Distribution of Mother's Knowledge

Knowledge	Frequency (F)	Percentage (%)
Good	20	22,0
Not Good	71	78,0
Sum	91	100

Based on table 2 above, it shows that, of the 91 toddlers who have parents with good knowledge, 20 toddlers (22.0%), while toddlers with parents with poor knowledge are 71 toddlers (78.0%).

Table 3 Distribution of Gender

Gender	Frequency (F)	Percentage (%)
Man	50	54,9
Woman	41	45,1
Sum	91	100

Based on table 3 above, it shows that, of the 91 toddlers who are male, 50 (54.9%) are toddlers and 41 are females (45.1%).

Table 4 Exclusive Breast Milk Distribution

Breast milk	Frequency (F)	Percentage (%)
Exclusive Breastfeeding	18	19,8
No Exclusive Breastfeeding	73	80,2
Sum	91	100

Based on table 4 above, it shows that, of the 91 toddlers who received exclusive breastfeeding, 18 toddlers (19.8%) and those who did not receive exclusive breastfeeding as many as 73 toddlers (80.2%).

Table 5 Income Distribution

Income	Frequency (F)	Percentage (%)
According to UMR	14	15,4
Not in accordance with UMR	77	84,6
Sum	91	100

Based on table 5 above, it shows that, of the 91 toddlers who have parents with income

according to the UMR, 14 toddlers (15.4%) and 77 toddlers (84.6%) who do not meet the UMR.

Table 6 Distribution of Stunting Incidents

Stunting Incidence	Frequency (F)	Percentage (%)
Stunting	54	59,3
No Stunting	37	40,7
Sum	91	100

Based on table 6 above, it shows that, of the 91 toddlers who are stunted, 54 (59.3%) are toddlers and 37 (40.7%) are not stunted.

Table 7 Relationship between infectious diseases and stunting incidence

Test Chi Square	N	Sig
Infectious diseases	91	0,003

Based on statistical tests using *the Chi Square method* , the results were obtained that infectious diseases have a significant relationship with the incidence of stunting with a p value of 0.003 ($p < 0.05$).

DISCUSSION

The results of this study show that toddlers who have a history of infectious diseases will be at high risk of stunting. This result is in accordance with a study conducted by [6], which stated that the risk of toddlers with a history of infectious diseases is 7 times greater than those without a history of infectious diseases.

Infectious diseases are diseases caused by pathogenic microorganisms, namely bacteria, viruses, parasites and fungi. This disease can be transmitted directly or indirectly from one individual to another.[7]

Several studies explain the magnitude of the risk faced by toddlers with a history of infectious diseases experiencing stunting. Toddlers will be at 3 times greater risk of stunting than those who do not have a history of infectious diseases.[8,9 reviews]

The research conducted by [10.11], explained that there is a relationship between the history of infectious diseases and the incidence of stunting. Stunted toddlers have a history of illness as much as 90%, while in non-stunted toddlers as much as 45%. Stunted toddlers have a history of illness more often than non-stunted toddlers.

However, it is different from the study conducted by [12], which stated that the history of infectious diseases in toddlers was not statistically significant in influencing the incidence of stunting. This is possible because the history of infectious diseases studied is only in the last 6 months, while it is possible that there are toddlers who experience infectious diseases in the previous period and affect growth and development.

Table 8 Relationship between maternal knowledge and stunting incidence

Test Chi Square	N	Sig
Knowledge	91	0,033

Based on statistical tests using *the Chi Square method* , the results were obtained that maternal knowledge had a meaningful relationship with stunting incidence with a p value of 0.033 ($p < 0.05$).

Maternal knowledge plays a crucial role in stunting prevention, a problem that affects the growth of toddlers at the global level. Factors such as nutrition, reproductive health, and toddler care require a deep understanding to prevent the risk of stunting [13].

Research conducted by [14 15 16], stated that there is a meaningful relationship between maternal knowledge and stunting incidence. Mothers who have low knowledge about nutrition are 2.7 times more likely to experience stunting than mothers who have high knowledge about nutrition.

This is inversely proportional to the research conducted by [17 18], which states that there is no relationship between maternal knowledge and the incidence of stunting. This is because the Puskesmas where the research was conducted has several programs that have been undertaken, namely the first 1,000 days of life program, pregnant women are examined at least four times during pregnancy, community-based total sanitation activities, posyandu activities are carried out every month, and nutrition consultation programs so that some of the programs implemented can affect women's knowledge about nutrition.

Table 9 Gender relationship with stunting incidence

Test Chi Square	N	Sig
Gender	91	0,016

Based on statistical tests using *the Chi Square* method , the results were obtained that gender had a meaningful relationship with the incidence of stunting with a p value of 0.016 ($p < 0.05$).

According to research conducted by [19], it is stated that there is a relationship between gender and the incidence of stunting. It is said that more men experience stunting than women.

Men need more energy and protein than women. Female toddlers are less likely than male toddlers to experience stunting. Male toddlers are more likely to be stunted or *underweight* than female toddlers [19].

The causes of stunting can be influenced by various factors, including the gender of the toddler. There are several scientific reasons that can explain the relationship between sex and the incidence of stunting [20] :

1. Metabolic differences. Some studies show differences in metabolism between male toddlers and female toddlers. This variability can affect growth and development, which in turn can affect the risk of stunting.
2. Genetic factors. Genetic factors can contribute to the growth and development of toddlers. Sex can play a role in the inheritance of certain genes that can affect the growth potential of toddlers.
3. Diet and nutrition. Eating habits and nutrient intake can vary between boys and girls. These factors can affect the availability of nutrients necessary for optimal growth.

However, this is different from the research conducted by [21] [22], which states that there is no meaningful relationship between sex and the incidence of stunting. The possible cause is that in toddlers there is no difference in growth speed and achievement between boys and girls. The difference will begin to appear when entering adolescence, namely women will experience an increase in growth rate first.

Table 10 Relationship between Exclusive Breastfeeding and Stunting Incidence

Test Chi Square	N	Sig
Exclusive Breastfeeding	91	0,002

Based on statistical tests using *the Chi Square method* , the results were obtained that exclusive breastfeeding had a significant relationship with stunting incidence with a p value of 0.002 ($p < 0.05$).

Based on research conducted by [23] [24], there is indeed a relationship between exclusive breastfeeding and stunting incidence. Toddlers who are not given exclusive breastfeeding are 61 times more likely to experience stunting than toddlers who are given exclusive breastfeeding. Exclusive breastfeeding is a protective factor against the incidence of stunting in toddlers so that exclusive breastfeeding can reduce the incidence of stunting in toddlers.

Exclusive breastfeeding for the first 6 months can produce optimal height growth because breast milk contains *growth factors.*[25]

The benefits of Exclusive Breast Milk for toddlers include being a complete nutrition, increasing immunity, increasing stable mental and emotional intelligence and mature spirituality followed by good social development, easily digestible and absorbed, having a composition of fats, carbohydrates, calories, proteins and vitamins, protection against infectious diseases, allergy protection because breast milk contains antibodies, provides intelligence and nerve stimulation, Improving health and intelligence optimally.[23]

The number of toddlers who are not given exclusive breastfeeding in this study is because there is still an assumption that people try to give food/drinks other than breast milk as soon as the baby cries/fussy even though it is still 0-6 months old with the hope that the baby will feel full and will calm down afterwards. Another reason why some respondents do not give exclusive breastfeeding to their toddlers is because the breast milk has not come out and the nipples are injured.

Table 11 Relationship between income and stunting incidence

Test Chi Square	N	Sig
Income	91	0,029

Based on statistical tests using *the Chi Square method* , the results were obtained that income had a meaningful relationship with the incidence of stunting with a p value of 0.029 ($p < 0.05$).

According to 26 studies, it was stated that there was a relationship between parental income and the incidence of stunting. Parents' income can affect the nutritional status of toddlers, there are differences in the spending patterns of underprivileged families and underprivileged families. Underprivileged families will usually spend most of their income to buy basic foods. Meanwhile, in well-off families, the higher the income, the greater the percentage increase in expenditure on fruits, vegetables, and other types of food.

Likewise with a study conducted by [27], which said that there was a significant relationship between family income and stunting incidence. Families with high economic status if they have health problems will take advantage of better health services such as hospitals without thinking about cost constraints, while families with low economic status if they experience health problems do not immediately use health facilities because of cost constraints. Thus, the exposure time to the disease is longer and can lead to nutritional problems.

However, the research conducted by [28] people obtained results that contradicted the results of the previously described research. That family income is not significantly related to the incidence of stunting. This can be because the income received is not fully spent on basic food needs, but for other needs.

CONCLUSION AND RECOMMENDATION

The biggest factor that causes stunting in toddlers in the Sumbersari Health Center Working Area is the provision of exclusive breastfeeding. Of the 91 toddlers studied, there were 49 stunted toddlers because they did not get exclusive breastfeeding. The second highest factor is a history of infectious diseases. Of the 91 toddlers studied, there were 46 toddlers stunted because they had a history of infectious diseases. And the third highest is the income factor of parents. Of the 91 toddlers studied, there were 42 toddlers stunted because they had parents with incomes that did not meet the UMR.

For educational institutions, it is expected to further improve health promotion in the form of counseling related to the causes and prevention of stunting in reducing morbidity rates that can have an impact on stunting.

For the Sumbersari Health Center, it is hoped that it can provide more education and counseling to pregnant women, mothers who have clowns and toddlers about stunting as a whole. As well as fostering posyandu cadres to provide education or counseling about stunting.

This research is expected to be a reference for other researchers and to future researchers it is hoped that they can develop this research by extending the research time.

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AUTHOR CONTRIBUTIONS

Conceptualization, A. K. K., R. Y., N. D.; methodology, A. K. K.; validation, R. Y. and N. D.; formal analysis, A. K. K.; investigation, A. K. K.; resources, A. K. K.; data curation, A. K. K.; writing-original draft preparation, A. K. K., and R. Y., N. D.; writing-review and editing, R. Y., N. D.: visualization, A. K. K. All authors have read and agreed to the published version of the manuscript.

CONFLICTS OF INTEREST

The author declares that there is no conflict of interest.

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