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Nutritional Status Profile of Toddlers in Cipicung Village, Jatigede District, Sumedang Regency, West Java, Indonesia

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Aims: This research aims to determine the nutritional status profile of toddlers in Cipicung Village, Sumedang Regency, West Java for the period November - December 2023
Study Design: The design of this research is a cross-sectional study
Place and Duration of Study: This research was conducted in Cipicung Village, Jatigede District, Sumedang Regency, West Java from 27th November to 9th December 2023.

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Methodology: the samples selected in this studywere all toddlers in Cipicung Village, Jatigede District, Sumedang Regency, West Java. The research sample was 177 toddlers taken using total sampling techniques (where the entire population was used as the research sample).
Results: The nutritional status of toddlers in Cipicung Village, Jatigede District, Sumedang Regency is good nutritional status, although there are still some toddlers who experience malnutrition, undernutrition, and overnutrition. We can see this according to the results of the data obtained as many as 22 toddlers or around 12.4% suffer from malnutrition, this condition of malnutrition is found in the age groups 12-23 months and 24-59 months. Apart from poor nutritional status, some toddlers experience overnutrition. We can see this by finding 9 toddlers experiencing overnutrition or around 5.0%. This condition of overnutrition is spread across several age groups such as the 6-11 month age group, the 12-23 month age group, and the 24-59 month age group. From the data obtained, the nutritional problem among toddlers in Cipicung village is not only malnutrition but also a condition of overnutrition which is often known as a double nutritional problem (double burden).
Conclusion: The prevalence of stunting obtained in this study in Jatigede District in the period November - December 2023 showed a figure as high as 26 people out of 177 people or 15%, this figure shows an increase in stunting rates compared to the August 2023 period which was only around 7.74% with 13 toddlers out of 181 toddlers diagnosed with stunting according to the Integrated Stunting Prevention Information System (SIMPATI).

Keywords: Stunting; status gizi; balita; prevalensi stunting.

1. INTRODUCTION

Indonesia as a developing country faces several problems, specifically nutritional problems. Nutritional problems in Indonesia are in a complex situation and need immediate attention. Undernutrition or malnutrition is a condition of nutritional deficiency due to inadequate amounts of micronutrient and macronutrient content [1] This condition can be caused by malabsorption, namely the inability to consume nutrients. Malnutrition problems also cause stunting. Nutritional status is a measure of a person's body condition which can be seen from the food consumed and the use of substances in the body. Nutritional status is an important thing that every parent must know. A person will have good nutritional status if their nutritional is at par with their body's needs. Insufficient nutritional intake in food can cause malnutrition, conversely, people who have overnutrition intake will suffer from overnutrition. Stunting is a condition where the growth of children under five (babies under five years) fails, related to nutrition [1,2]. Nutritional status is a measure of balance regarding the condition of the body which is the final result of the use of nutrients and is influenced by food consumption through the processes of digestion, absorption, transportation, storage, metabolism, and excretion of substances that are not used by the body to produce energy to maintain life. Nutritional status is divided into four categories: poor nutritional status, undernutrition, normal nutrition, and overnutrition [3,4]. Nutritional status is the body's condition as a result of the interaction between energy and protein intake. As well as other essential nutrients for body health. Nutritional status is the body's condition as a result of the absorption of essential nutrients. Nutritional status is an expression of the balance of nutrients with the body's needs, which is manifested in the form of certain variables [5].

Based on WHO data, in 2022 there will be 148.1 million (22.3%) children under the age of 5 who are stunted globally. Southeast Asia itself has a stunting prevalence rate of 30.1%. Meanwhile, in Indonesia, the prevalence was as high as 31.0% and is still included in the category of countries with high stunting rates because it exceeds the standard set by WHO, namely > 20% [6]. According to the Ministry of Health's Indonesian Nutrition Status Survey (SSGI), the prevalence of stunted toddlers in West Java will reach 20.2% in 2022. The province is ranked 22nd nationally. This figure also decreased by 4.3 points from the previous year. In 2021, the prevalence of stunted toddlers in West Java will be 24.5%. Sumedang Regency is recorded as the region with the highest prevalence of stunted toddlers in West Java, reaching 27.6% in the 2022 SSGI. The number of stunted toddlers in this district has jumped drastically from the previous year at 22%. There is also a prevalence of stunting in Jatigede District in 2023 based on data from the Integrated Stunting Prevention Information

System (SIMPATI) of 10.19% with a total of 122 toddlers growing short (stunting) out of 1175 toddlers. The proportion of stunted and severely stunted toddlers in Cipicung Village/Subdistrict in August 2023, data obtained was 7.74% with 13 toddlers out of 181 toddlers [7] Chronic malnutrition experienced since the baby is in the womb and during the early stages of birth, especially in the first 1000 days of life, can result in stunting in babies which will only appear after they are 2 years old. Toddlers will grow short (stunting) or very short (severe stunting) for their age as assessed by body length (PB/U) or body height (TB/U) according to their age compared to the 2006 WHO-MGRS (Multicentre Growth Reference Study) standard. According to the Ministry of Health (Kemenkes), toddlers with a Z score of less than -2SD (standard deviation) are included in the stunting group and scores less than -3SD (standard deviation) are included in the severely stunting group.

Stunting is still a serious problem and must be addressed immediately so that the stunting rate can decrease and follow WHO recommendations. Apart from that, stunting has an impact on children's cognitive, motor, and verbal development which is not optimal. Apart from that, children's learning capacity and performance as well as productivity and work capacity are also not optimal. Based on this background, it is necessary to conduct research on the nutritional status of toddlers in Cipicung Village, Sumedang Regency, West Java. The problem research is "What is the profile of the nutritional status of toddlers in Cipicung Village, Sumedang Regency, West Java for the period November - December 2023.

This research generally aims to determine the nutritional status of toddlers in Cipicung Village, Sumedang Regency, West Java for the period November - December 2023.

2. MATERIALS AND METHODS

2.1. Materials

2.1.1 Nutritional status

Nutritional status is an indicator that can describe a person's body condition based on the nutrition consumed and the use of nutrients in the body [8,9]. The period of infancy and toddlerhood is also called the window of opportunity, namely the golden period of growth to determine success in achieving optimal growth and development. Damage during this period is irreversible, which means it cannot be repaired in the next phase of life and will affect future health in childhood and adulthood. Babies and toddlers are a group that is quite vulnerable to nutritional problems [10]. Toddlers in Indonesia experience double nutritional problems (double burden), which means they experience obesity problems, but on the other hand they also experience problems regarding stunting, anemia, thinness, and even malnutrition. 2 factors influence a person's nutritional status, namely

1. **External factors:**
- Income
- Education
- Work
- Social and Cultural
2. **Internal factors:**
- Age
- A person's physical condition
- The presence of infection

2.1.2 Classification of nutritional status

1. **Malnutrition**

The WHO definition of malnutrition is a deficiency, excess or imbalance in a person's energy and nutritional intake. Malnutrition can occur when a person has too much or too little food and important nutrients in their body. Malnutrition will occur when the body's needs for calories, protein, or even both are not met. According to WHO, one of the problems of malnutrition occurs due to the consumption of food that does not contain enough energy and protein and because of health problems. Meanwhile, according to the Indonesian Ministry of Health, malnutrition is nutritional status according to body weight (BB) and height (TB) with a Z-score <-3 and/or with clinical signs. Children are said to be malnourished if their body weight is less than normal body weight [11]. The nutritional condition of toddlers is characterized by one or more of the following signs [12]:

i. Bilateral pitting edema, at least on both insteps
ii. BB/PB or BB/TB less than -3 standard deviations (< -3 SD)
iii. upper arm circumference (LiLA) < 11.5 cm in toddlers aged 6-59 months.

Bad nutrition (severe wasting) can increase morbidity and mortality rates and increase the risk of stunting.

2. Malnutrition

Age 0 - 59 months with Body Weight for Age (WW/U) -3 to <-2 SD.

3. Good Nutrition

Age 0 - 59 months with Body Weight for Age (WW/U) -2 to +1 SD.

4. Overnutrition

Age 0 - 59 months with Body Weight for Age (WW/U) > +1 SD.

2.2 Methods

2.2.1 Research design

This type of research is descriptive research with a cross-sectional research design with a total sampling technique. This study aims to describe the nutritional profile of toddlers in Cipicung Village.

2.2.2 Location and time of research

2.2.2.1 Research location

This research was conducted in Cipicung Village, Jatigede District, Sumedang Regency, West Java.

2.2.2.2 Research time

Data collection for this research was carried out on November 27 - December 9, 2023.

2.2.3 Population and sample

The population studied in this study were all toddlers in Cipicung Village, Jatigede District, Sumedang Regency, West Java. The sample size was 177 toddlers taken using the saturated sampling method or total sampling is a sampling technique when all members of the population are used as samples.

2.2.4 Research Criteria

2.2.4.1 Inclusion criteria

Inclusion criteria are characteristics that need to be met by each sample, which are described as follows:

1. Children under five years of age (toddlers) whether male or female
2. Children under five who lived and settled in Cipicung village, Jatigede District, Sumedang Regency at the time the research was underway

2.2.4.2 Exclusion criteria

Exclusion criteria are criteria where research subjects cannot represent the sample because they do not meet the requirements of a research sample. The exclusion criteria in this study are explained as follows: Not willing to be a research sample.

2.2.5 Data processing and analysis

2.2.5.1 Data processing

Enter the primary data and secondary data obtained and all data is processed using the SPSS version 16.0 application. Tabulating data groups into tables for analysis using the SPSS version 16.0 application program in the form of a frequency distribution.

2.2.5.2 Data analysis

The primary data and secondary data obtained were analyzed univariately. Univariate analysis is a series of the most basic forms of calculations from statistical data analysis techniques. Univariate analysis aims to explain and interpret the variables studied by entering data separately in a frequency distribution table which includes demographic data, a description of the nutritional profile of toddlers in Cipicung Village, Sumedang Regency, West Java.

3. RESULTS AND DISCUSSION

3.1 Results

3.3.1 Research results

Based on the results of data obtained from direct measurements on toddlers for the period 27 November - 09 December 2023 in Cipicung village. The research sample obtained following the inclusion criteria was 177 people. The data presentation is displayed in the form of a frequency table and will be described in narrative form.

3.3.2 Respondent characteristics

Respondents in this study totaled 177 toddlers. The characteristics seen in toddlers are age and gender.

Table 1. Classification of samples of toddlers based on age and gender

Age	Number of Men	Number of Women	TOTAL
0 – 5 months	6	3	9
6 – 11 months	9	5	14
12 – 23 months	13	10	22
24 – 59 months	59	58	117
> 59 months	10	5	15
Total	**97**	**81**	**177**

Table 2. Average data on nutritional indicators for ages 0-5 months

Nutritional Indicators	Average	
	Male	Female
Body Length (cm)	61.6	60.24
Weight (kg)	6.16	5.77
Upper arm circumference (cm)	13.5	12.8
Head Circumference (cm)	40.65	39.9
Body mass index (z-score)	-0.8	-0.67
Weight/Age	-0.58	-0.22
Body Length/Age	-0.15	0.12
Weight/Body Length	-0.55	-0.7

Table 3. Average data on nutritional indicators for ages 0-5 months

Nutritional Indicators	Average	
	Male	Female
Body Length (cm)	70.5	69.66
Weight (kg)	8.23	7.43
Upper arm circumference (cm)	14.4	9.25
Head Circumference (cm)	45.5	44.71
Body mass index (z-score)	-0.4	-0.5
Weight/Age	-0.3	-0.67
Body Length/Age	0.1	-0.5
Weight/Body Length	-0.58	-0.84

Based on data from Table 1, it shows that the proportion of children under five in Cipicung village who were sampled in this study were mostly aged 24 - 59 months, most of them were boys.

3.3.3 Average data on nutrition indicators age 0 – 5 months

Based on Table 2, it can be seen that the average nutritional indicators such as body length (61.6 cm), body weight (6.16 kg), upper arm circumference (13.5 cm), and head circumference (40.65 cm) in men are higher. larger than women. The average nutritional status aged 0 - 5 months in Cipicung village for both boys and girls falls into the categories of normal Weight/Age, Body Length/Age, and the interpretation of good nutritional Weight/Body Length.

3.3.4 Average data on nutrition indicators age 6 – 11 months

Based on Table 3, it can be seen that the average nutritional indicators such as body length (70.5 cm), body weight (8.23 kg), upper arm circumference (14.4 cm), and head circumference (45.5 cm) in men are bigger than women. The average nutritional status of 6 - 11-month-olds in Cipicung village, both boys and girls, falls into the categories of normal Weight/Age, normal Body Length/Age, and the interpretation of good nutritional Weight/Body Length.

3.3.5 Average data on nutrition indicators age 12 – 23 months

Based on Table 4, it can be seen that the average nutritional indicators such as body

length (81.89 cm), body weight (10.35 kg) in men are greater than women, while upper arm circumference (15.8 cm) and the head (45.24 cm) in women is larger than in men. The average nutritional status aged 12 - 23 months in Cipicung village, both boys and girls, falls into the categories of normal Weight/Age, normal Body Length/Age and the interpretation of Weight/Body Length as good nutrition.

3.3.6 Average data on nutrition indicators age 24 – 59 months

Based on Table 5, it can be seen that the average nutritional indicators such as height (94.07 cm), body weight (13.32 kg) and upper arm circumference (15.8 cm) for men are greater than for women. The average nutritional status aged 24 - 59 months in Cipicung village, both men and women, falls into the categories of normal Weight/Age, normal Body Length/Age and the interpretation of good nutritional Weight/Body Length.

3.3.7 Average data on nutrition indicators age >59 months

Based on Table 6, it can be seen that the average nutritional indicators for children aged > 59 months such as height (109.3 cm), body weight (18.5 kg), upper arm circumference (16.5 cm) for women are greater than for men. - man. The average nutritional status aged >59 months in Cipicung village for men and women falls into the categories of normal Weight/Age, normal Body Length/Age and the interpretation of Weight/Body Length as good nutrition.

Table 4. Average data on nutritional indicators for ages 12-23 months

Nutritional Indicators	Average	
	Male	Female
Body Length (cm)	81.89	78.85
Weight (kg)	10.35	9.75
Upper arm circumference (cm)	15.18	15.82
Head Circumference (cm)	45.24	46.68
Body mass index (z-score)	-1	-0.7
Weight/Age	-0.76	-0,6
Body Length/Age	-0.88	-0.65
Weight/Body Length	-1.04	-1.31

Table 5. Average data on nutritional indicators for ages 24-59 months

Nutritional Indicators	Average	
	Male	Female
Body Length (cm)	94.07	92.95
Weight 9kg)	13.32	13.27
Upper arm circumference (cm)	15.26	14.57
Head Circumference (cm)	-0.4	-0.05
Body mass index (z-score)	0.2	0.1
Weight/Age	0.4	-0.54
Body Length/Age	-1.07	-1.06
Weight/Body Length	94.07	92.95

Table 6. Average data on nutritional indicators for ages >59 months

Nutritional Indicators	Average	
	Male	Female
Body Length (cm)	107	109.3
Weight (kg)	15.4	18.5
Upper arm circumference (cm)	15.5	16.5
Head Circumference (cm)	13.45	15.57
Body mass index (z-score)	-1.2	0.2
Weight/Age	-0.3	-0.1
Body Length/Age	-1.7	-1.04
Weight/Body Length	107	109.3

Table 7. Average data on nutritional status based on weight/body length age 0 – 5 months

Nutrition Categories based on Body Weight/Body Length	Number of toddlers	Percentage
Very Poor Nutrition	0	0%
Malnutrition	0	0%
Good Nutrition	9	100%
Overnutrition	0	0%
Total	9	100%

Table 8. Average data on nutritional status based on weight/body length age 6 – 11 months

Nutrition Categories based on Body Weight/Body Length	Number of toddlers	Percentage
Very Poor Nutrition	0	0%
Malnutrition	0	0%
Good Nutrition	12	86%
Overnutrition	2	14%
Total	14	100%

Table 9. Average data on nutritional status based on weight/body length age 12 – 23 months

Nutrition Categories based on Body Weight/Body Length	Number of toddlers	Percentage
Very Poor Nutrition	0	0%
Malnutrition	6	27%
Good Nutrition	15	68%
Overnutrition	1	5%
Total	22	100%

Table 10. Average data on nutritional status based on weight/body length age 24 – 59 months

Nutrition Categories based on Body Weight/Body Length	Number of toddlers	Percentage
Very Poor Nutrition	1	0,85
Malnutrition	16	13,68
Good Nutrition	94	80,34
Overnutrition	6	5,13
Total	117	100

Table 11. Average data on nutritional status based on weight/body length age >59 months

Nutrition Categories based on Body Weight/Body Length	Number of toddlers	Percentage
Very Poor Nutrition	0	0
Malnutrition	0	0
Good Nutrition	15	100
Overnutrition	0	0
Total	15	100

3.3.8 Nutritional status based on weight/body length age 0 – 5 months

Based on Table 7, shows that all toddlers aged 0 - 5 months in Cipicung Village have good nutritional status, namely 9 toddlers (100%).

3.3.9 Nutritional status based on body weight/length age 6 – 11 months

Based on Table 8, it shows that almost all toddlers aged 6 - 11 months in Cipicung Village have good nutritional status, namely 12 toddlers (86%) and 2 toddlers (14%) are overnourished.

Table 12. Distribution of Stunting Age 0 - >59 months in Cipicung Village, Sumedang Regency, West Java

Age	Stunting	Normal	Total
0-5 months	0	9	9
6-11 months	0	14	14
12-23 months	0	22	22
24-59 months	26	91	117
>59 months	0	15	15
Total	26	151	177

3.3.10 Nutritional status based on body weight/length age 12 – 23 months

Based on Table 9, it shows that almost all toddlers aged 12 - 23 months in Cipicung Village have good nutritional status, namely 15 toddlers (86%), while 6 toddlers (27%) are undernourished, and 1 toddler (5%) is overnourished.

3.3.11 Nutritional status based on body weight/length age 24 – 59 months

Based on Table 10, it shows that almost all toddlers aged 12 - 23 months in Cipicung Village have good nutritional status, namely 94 toddlers (80.34%), 6 toddlers (5.13%) are overnourished, 16 toddlers (13.68%) are undernourished 1 toddler (0.85%) %) malnutrition.

3.3.12 Nutritional status based on body weight/length age >59 months

Based on Table 11, it shows that all toddlers aged >59 months in Cipicung Village have good nutritional status, namely 15 toddlers (100%)

3.3.13 Distribution of stunting in cipicung village

Based on Table 12, it shows that all 26 toddlers who fall into the stunting category in Cipicung village are aged 24 - 59 months

4. DISCUSSION

The nutritional status of toddlers in Cipicung Village, Jatigede District, Sumedang Regency is good nutritional status, although there are still some toddlers who experience malnutrition, poor nutrition, and overnutrition. We can see this according to the data obtained as many as 22 toddlers or around 12.4% suffer from malnutrition. This condition of malnutrition is found in the age groups 12-23 months and 24-59 months. Apart from poor nutritional status, some toddlers experience overnutrition [13]. We can see this by finding 9 toddlers experiencing overnutrition or around 5.0%. This condition of overnutrition is spread across several age groups such as the 6-11 month age group, the 12-23 month age group and the 24-59 month age group. From the data obtained, the nutritional problem among toddlers in Cipicung village is not only malnutrition but also a condition of overnutrition which is often known as a double nutritional problem (double burden). Based on the results, it can be seen that the average nutritional indicators such as height, weight and upper arm circumference for men are greater than for women. [14]. This can be found in all age groups 0 months - 59 months. However, in the age group >59 months, nutritional indicators such as height, weight and upper arm circumference in women are greater than in men.

The prevalence of stunting obtained in this study in Jatigede District in the period November - December 2023 showed a figure as high as 26 people out of 177 people or 15%, this figure shows an increase in stunting rates compared to the August 2023 period which was only around 7.74% with 13 toddlers out of 181 toddlers diagnosed with stunting according to the Integrated Stunting Prevention Information System (SIMPATI).

This shows that prevention and control of stunting must continue to be carried out sustainably and comprehensively, such as increasing access to nutrition, improving sanitation and hygiene, as well as increasing family knowledge and understanding regarding the health and nutrition of children under five. Thus, the prevalence rate of stunting in the city of Sumedang is generally decreasing and there is an increase in the quality of children's health and growth [15,16]. Things that can cause high stunting rates include the condition of nutritional status which is related to the amount of nutritional intake and its needs. If nutritional intake is balanced with the body's needs, it will

result in good nutritional status. However, on the other hand, if nutritional intake and body needs are not balanced, it will cause problems with nutritional status.

Meanwhile, factors that influence nutritional intake are related to income, food and the availability of food ingredients. Poverty as a cause of malnutrition occupies the first position in general conditions. Low income will have an impact on the family's purchasing power. Vice versa, families with high incomes will tend to spend the money they have to improve the quality of their food consumption so that it has a positive impact on nutritional status. So it can be said that the relationship between family income and children's nutritional status is directly proportional. The greater the family income, the better the child's nutritional status, but the lower the family income, the lower the child's nutritional status. Based on research, the incidence of stunting in Indonesia is caused by low consumption of animal foods such as fish, meat, eggs and milk which are sources of protein and calcium for the body [17,18].

Stunting is not only caused by one factor but many interrelated factors, one of which is the mother's knowledge. Parents, especially mothers, are very important in fulfilling children's nutrition during their growth and development. To get good nutrition for children, mothers also need good knowledge in setting food menus, processing food ingredients and also food hygiene. Likewise, if the mother has insufficient knowledge in this matter, the child will fall into a condition of malnutrition which will have an impact on his growth and development. So if left for a long time, children will fall into a state of stunting [19,20] Another example is the mother's knowledge about the benefits of giving breast milk to children which is protective against stunting. Breast milk has many benefits for children, including being useful for children's growth and development, increasing stable mental and emotional intelligence and mature spirituality followed by good social development, containing antibodies that can protect children from bacterial, viral, fungal, and infectious diseases. allergies that are commonly found in children who consume formula milk [21,22].

In several studies, it is also stated that other risk factors mean that children with LBW will be at risk of stunting. According to WHO, Low Birth Weight (LBW) is a condition in newborn babies who weigh less than 2,500 grams. Babies with LBW are more common in developing countries, especially in remote areas which have low knowledge of the importance of nutrition during pregnancy [23]. So this causes LBW to become a significant public health problem globally. Children with LBW will be vulnerable to experiencing chronic diseases in the future which can result in increased morbidity and mortality in children. Children with LBW also experience problems with the digestive tract because the digestive tract is not functioning properly, such as not being able to absorb nutrients from outside the body optimally [24,25].

5. CONCLUSION

The prevalence of stunting obtained in this study in Jatigede District in the period November - December 2023 showed a figure as high as 26 people out of 177 people or 15%, this figure shows an increase in stunting rates compared to the August 2023 period which was only around 7.74% with 13 toddlers out of 181 toddlers diagnosed with stunting according to the Integrated Stunting Prevention Information System (SIMPATI).

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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