

Diet Diversity Assessment Among Under Two Children in Srikamulyan Village Tirtajaya District Karawang

Arindah Nur Sartika, Guntari Prasetya, Nadia Puspita, Amelia Lityasusanti and Arrifah Nurrobiah
Nutrition Bachelor Study Program, Sekolah Tinggi Ilmu Kesehatan Mitra Keluarga, Bekasi, Indonesia

Keywords: Complementary Feeding, Dietary Diversity, Under Two Children.

Abstract: Breastmilk is the best food for babies. However, when babies reach 6 months of age, breastmilk alone is insufficient to meet their nutritional needs. To address these requirements, breastmilk feeding should be supplemented with appropriate complementary feeding. The more diverse the food provided, the better it can reduce the risk of undernutrition. Hence, this study aims to assess the dietary diversity of complementary feeding in an area designated as a priority for reducing stunting. The study is conducted in Srikamulyan Village, Tirtajaya Sub-district, Karawang, using a cross-sectional design. Dietary diversity is evaluated using 9 food groups based on repeated 24-hour food recalls. Approximately 100 children under the age of two, ranging from 6 to 23 months old, participated in the study. The study's findings reveal that 52% of the subjects consume diverse foods (≥ 4 food groups). All of the children include staple foods in their diet. The most commonly consumed foods after staple foods are meat and fish (71%) and green leafy vegetables (63%). The highest proportion of children achieved a dietary diversity score of 6. However, the study did not find a significant relationship between dietary diversity and nutritional status (weight for age and length for age), with a p-value >0.05 . Based on the study, it is clear that there are caregivers who do not provide varied meals to children. Although a significant relationship is not established, offering a variety of food groups can establish a strong foundation for the food habits of children in the future. The foods provided as complementary feeding can help children become familiar with different tastes and nutritious options.

1 INTRODUCTION

The first thousand days of life, starting from the womb until the child turns two years old, are a crucial phase. This period presents both potential benefits and vulnerabilities as it can significantly affect the growth and development of children. Providing good nutrition and care during this time can promote healthy growth and development, which can have a lasting impact on their future lives. (FHI Solutions, n.d.)

To achieve good nutrition and care, infants must be fed exclusively with breastmilk from birth until they reach six months of age, followed by the introduction of complementary feeding starting at six months. While breastfeeding can continue after six months, it is essential to provide high-quality meals to meet the baby's nutritional requirements, as breast milk alone is insufficient. According to UNICEF's complementary feeding guidance, a proper diet for young children should include breastmilk, animal-source foods, vegetables, fruits, and promote dietary diversity (United Nations Children's Fund, 2020).

A variety of foods can contribute to a variety of nutrients metabolized in the body. The body needs not only macronutrients, but also micronutrients. A variety of foods can contribute to a range of nutrients metabolized in the body. The body requires not only macronutrients but also micronutrients. Micronutrients, such as vitamins and minerals, play a crucial role in metabolism. The adequacy of nutrients can be achieved by consuming a wide variety of food groups (Alyssa L. Morris; Shamim S. Mohiuddin, 2023). In cases where a baby cannot obtain sufficient nutrients, the risk of inadequacy increases, which in turn raises the risk of undernutrition (Ermawati et al., 2020; Ernawati et al., 2021). Underweight reflects acute conditions, while stunting represents chronic nutrient deficiency. Stunting is the most common nutrition problem as it has both short-term and long-term implications (De Sanctis et al., 2021).

Short-term consequences of stunting become evident as affected children grow. They may be more likely to exhibit lower intelligence levels during their school years. Additionally, children with a history of stunting may experience reduced immunity compared

to their peers who have not faced stunting. This reduced immunity can result in higher rates of school absenteeism, often due to infections such as diarrhea and respiratory illnesses (Stewart et al., 2013).

Besides its short-term impact, stunting also has long-term consequences. Due to altered metabolism, individuals with a history of stunting are at a higher risk of obesity and may suffer from non-communicable diseases, including type 2 diabetes, stroke, and heart disease. These conditions can impact work performance and lead to increased absenteeism at the workplace. If this affects a significant portion of the workforce, it can reduce company profits and even have implications for a country's gross domestic product (GDP) (Stewart et al., 2013; Suryana & Azis, 2023).

In Indonesia, the prevalence of stunting among children under two years old was 21.6% in 2022. West Java, as one of the densely populated provinces, had a stunting prevalence of 20.2%. As part of the government's first program to address stunting, one of the regions in West Java was selected for intervention. In 2013, the stunting rate in Karawang was 34.87%, and it increased to 39.15% in 2018. However, as of 2022, Karawang has managed to reduce the prevalence to 20.6% (Kementerian Kesehatan Republik Indonesia, 2022).

Studies have found a relationship between diet diversity and undernutrition, including stunting and being underweight (Aboagye et al., 2021; Handriyanti & Fitriani, 2021; Wantina et al., 2017). Therefore, this study aims to assess diet diversity in a selected area designated as a priority for stunting eradication. Additionally, it aims to explore the association between stunting and nutritional status.

2 SUBJECTS AND METHODS

This study utilized a cross-sectional design. The total sample consisted of 100 children under the age of two (6 – 23 months), represented by their mothers, grandmothers, or caregivers. The study was conducted in Srikamulyan Village, Tirtajaya District, Karawang, West Java. The researchers obtained the necessary permissions from the local government and acquired ethical clearance from KPEK Universitas Muhammadiyah Prof. Dr. Hamka.

The variables in the study included characteristics of the respondents, diet diversity, and nutritional status. Data were recorded in written form and collected by enumerators with a background in nutrition studies. The dietary assessment method used was a 24-hour food recall. Food intake data was then

transformed into a dietary diversity scoring form (Food and Agriculture Organization (FAO), 2013). There were nine food groups: 1) Milk and dairy products, 2) Legumes, nuts, seeds, 3) Eggs, 4) Meat and fish, 5) Organ meats, 6) Other fruits and vegetables, 7) Fruit and vegetable–source of vitamin A, 8) Green leafy vegetable, and 9) Staple food. Classification of dietary diversity is classified into not diverse (<4) and diverse (≥4). The nutritional status of the children was evaluated through anthropometric assessments using a length board and weigh scale. Z-scores for weight-for-age and height-for-age were calculated, and children with z-scores less than -2SD were categorized as stunted and underweight (Kementerian Kesehatan Republik Indonesia, 2020).

The data were analyzed using both univariate and bivariate analyses. The characteristics of the respondents were presented in terms of frequency and percentage. The statistical test employed in the study was the chi-square test.

3 RESULTS

Table 1: Characteristics respondents.

Age group	n (%)
6-11 months	32 (32)
12-23 months	68 (68)
Sex	n (%)
Boy	47 (47)
Girl	57 (57)
Number of family	n (%)
≤4 person	48 (48)
>4 person	52 (52)
Mother's education	n (%)
No school	2 (2)
Elementary school	67 (67)
Junior high school	22 (22)
Senior high school	6 (6)
University	3 (3)
Mother's occupation	n (%)
No work	94 (94)
Private sectors	2 (2)
Entrepreneur	2 (2)
Farmers, labour	2 (2)

N = 100

Table 2: Dietary diversity score (DDS).

DDS	n (%)
1	9 (9)
2	4 (4)
3	13 (13)
4	15 (15)
5	20 (20)
6	24 (24)
7	10 (10)
8	5 (5)
9	0 (0)

N: 100

The results showed that the proportions of age groups and sexes were similar. Most of the mothers had an elementary school education, and they were primarily engaged as housewives. The percentage of family size was comparable between families with ≤ 4 and >4 individuals per family.

According to the data, the lowest score of dietary diversity was 1, and the highest score was 8. Half of the respondents had achieved more than 4 food groups. However, there were some mothers/caregivers who provided their babies with non-diverse complementary feeding. All of the children consumed staple food. The most commonly consumed foods after staple food were meat and fish, as well as green leafy vegetables.

From the results, it is evident that the proportion of children who consume a less varied diet was lower in the stunting and underweight groups compared to the normal group. Additionally, the statistical analysis using the chi-square test showed no significant relationship between dietary diversity and nutritional status.

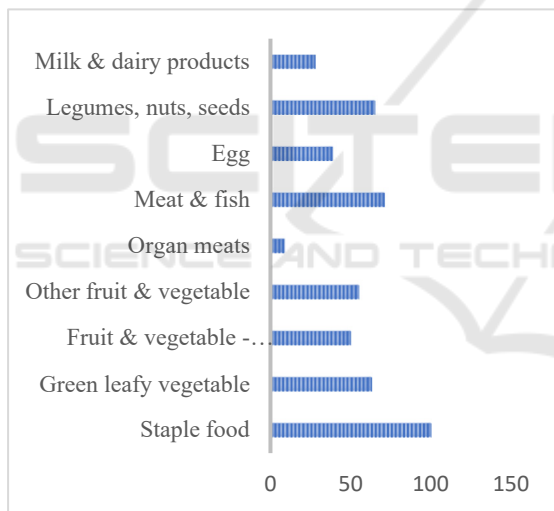


Figure 1: Proportion of food groups (N= 100).

Table 3: Association of dietary diversity and nutritional status.

Dietary diversity	Underweight	Normal	p-value
Not diverse	3 (10.7)	25 (89.3)	0.297
Diverse	14 (19.4)	58 (80.6)	

Dietary diversity	Stunting	Not stunting	p-value
Not diverse	1 (3.6)	27 (96.4)	0.309
Diverse	7 (9.7)	65 (90.3)	

N = 100, chi-square test

4 DISCUSSIONS

This study revealed that not all mothers or caregivers provided a diverse range of foods to their children. Some caregivers offered fewer than four food groups, and in some cases, only one group, such as rice porridge. Such dietary habits led to inadequate nutrient intake. Despite this, it's noteworthy that more than half of the children consumed meat, fish, as well as legumes, nuts, and seeds, which are excellent sources of protein (Gonçalves et al., 2023; Semba et al., 2021).

Protein has benefits for children's linear growth. One of the explanations is that amino acids play an important role in relation to growth hormones (Uauy et al., 2015). Another study explains that protein, particularly from animal-source foods, provides essential amino acids that support neurocognition via the mTORC1 pathway (Parikh et al., 2022). However, to realize these benefits, the protein portion should meet the daily requirements of the children.

No relationship between dietary diversity and nutritional status was identified in this study. This result aligns with findings from previous studies (Gassara et al., 2023; Kamila et al., 2022). Undernutrition is likely influenced by other factors. According to UNICEF, factors such as infection and childcare practices can also have an impact on a child's nutritional status (United Nations Children's Fund, 2021).

Although dietary diversity did not reveal an association with undernutrition, this study demonstrated that not all children under the age of two consumed a varied diet. Introducing a variety of food groups can help infants become accustomed to different tastes, laying a strong foundation for their future food habits. This can reduce the risk of them becoming picky eaters or refusing certain foods. During complementary feeding, children acquire knowledge about different foods, which they can apply after the age of 2. The foods provided during complementary feeding help them become familiar with various tastes and nutritious options (De Cosmi et al., 2017; Maier-Nöth, 2019).

5 CONCLUSIONS

Based on the study, it is evident that some caregivers do not provide diverse meals to children. Although this lack of dietary diversity may not exhibit a significant relationship with stunting and underweight, offering a range of food groups can lay

a robust foundation for the future food habits of children.

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