**Artículo Original**

# Food security of farmer households in Central Lombok Regency

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## ABSTRACT

**Background:** Food security is a key issue in fulfilling community welfare because it will determine a country's economic, social, and political stability. Food security is a condition where food is met down to the individual level, reflected in the availability of sufficient quantity and quality and safe, diverse, and affordable food. This research analyzed the status and situation of food security of farming households and examined the determinants of food security of farming households in Central Lombok Regency.

**Methods:** The design of this research was a cross-sectional study; data collection was carried out in Central Lombok Regency, West Nusa Tenggara Province. This research involved two groups of subjects: toddlers and mothers. The total number of subjects was 359, consisting of mothers and children. Subjects were taken at each community health center using a simple random method without replacement. All primary data was collected through an interview process using a structured questionnaire and direct measurements. The analysis process for all types of data was carried out with the help of the SPSS for Windows program with the Pearson correlation test and One Way Anova test.

**Results:** The intake of micronutrients for toddlers, including Vitamin C, iron, iodine, and calcium in Central Lombok Regency, is generally still insufficient; only vitamin A intake is categorized as sufficient on average. Intake of macronutrients, namely energy, protein, and carbohydrates, is generally above adequate; only fat intake is in the severe deficiency category. The majority of toddlers in Central Lombok Regency have good weight, height, and nutritional status. Demographic conditions, including education and the number of family members in Central Lombok Regency, are related to the Food Insecurities Scale. In Central Lombok Regency, no significant relationship was found between HDDS and overcoming food insecurity.

**Conclusions:** Even though the intake of micronutrients in toddlers is low, the majority have good nutritional status. Food security is related to demographic conditions, and income plays an important role in overcoming food insecurity. However, nutritional status is not directly influenced by household resources.

## KEYWORDS

Micronutrient, Farmer households, Food security, Nutritional status, Toddlers.

## INTRODUCTION

Issues related to food security have become a challenge for all countries because they are directly related to improving the economy and achieving the quality of human life[1]. According to FAO (2009), understanding the concept of food security is the condition of providing food for everyone in terms of quantity and nutritional quality. Fulfilling the right to food is the primary key to overcoming hunger. Conditions of food insecurity will indirectly lead to malnutrition problems[2].

Achieving food and nutritional security, especially with various resources, is not easy because food and nutritional security is a complex problem. That the various metrics and indicators that have been proposed are not equivalent, convey different information for food security, and are difficult to ap-

ply will affect validity and reliability, thereby limiting potential empirical relevance. Food security and nutrition is a system consisting of 3 pillars: availability, access, and utilization[3,4].

These three pillars are fundamental determinants of food security and are related hierarchically. Food availability is necessary but not enough to guarantee access to sufficient food. Food availability refers to the physical availability of food in the environment where people live in sufficient quantities and which can be reached by all residents[5]. Food access refers to the ability to obtain readily available foodstuffs either through exchange media (markets) or through transfers (institutional)[6]. Food utilization refers to allocating and processing food that has been obtained (accessed) so that each individual obtains sufficient food intake as a dimension to be included and analyzed in the food security index.

Methods for measuring food security and nutrition exist both at the global level such as GFSI (Global Food Security Index), HANCI (Hunger And Undernutrition Index), and at the national level, which have been issued by the Ministry of Agriculture and World Food such as FSVA (Food Security and Vulnerability Atlas of Indonesia) indicators are still fragmented by sub-systems and not all indicators can be applied in different regions, so methods for measuring food and nutrition security that are appropriate to regional characteristics are needed. Several single indicators are strong predictors of food security at the household level, such as the proportion of food expenditure and diversity of household diet. The proportion of food expenditure is quite sensitive to important aspects of food security such as dietary diversity and income level[7]. In addition, the HDDS score or diet diversity is the best proxy for assessing food security conditions at the household level. These two single indicators can be used as a standard reference in developing a new instrument, such as a composite index. One of the age groups at greatest risk of undernutrition due to food insecure household situations is children under five years old/toddlers[8]. Then, referring to the UNICEF framework, food security at the household level is one of the indirect factors causing nutritional status through the intake of food nutrients.

Based on the problems research's, this research aims to develop a household food security index concerning nutritional intake and nutritional status of children under five and analyze regional food security in Central Lombok Regency.

## MATERIAL AND METHOD

### Design, Location, and Time

The design of this research was a cross-sectional study; data collection was carried out in Central Lombok Regency, West Nusa Tenggara Province. The location selection was carried out purposively with the consideration that Central Lombok Regency was the district that has the highest prevalence of stunting nutritional problems by selecting seven health centers, including Teratak Batukliang Utara Health Center, Kopang Health Center, Pengadang Praya Tengah Health Center, East Mujur Praya Tengah Health Center, Batu Health Center Jangkih Praya Barat Daya, Kuta Pujut Community Health Center, Ubung Jonggat Community Health Center. Researchers chose these seven community health centers as research locations because of their representation in mountainous, lowland, and coastal areas, and they carried out their research purposively. The research was conducted for 5 months, from May to September 2023.

### Population and Sample

This research involved two groups of subjects: toddlers and mothers. The inclusion criteria considered in determining children as subjects were children aged 12 to 59 months, the condition of the child who was not seriously ill or undergoing routine treatment, and consent from the mother as proven by signing an informed consent sheet. Meanwhile, the inclusion criteria considered in determining the mother as a subject were: the subject is the child's biological mother, has a husband with the status of head of the household, the mother subject has full responsibility in arranging or preparing family food, has an age range from 17 to 50 years, and the subject agrees to interview as evidenced by signing an informed consent sheet. The minimum number of subjects based on the calculation formula was 359 toddlers. The number of subjects was calculated using proportional allocation by considering each health center's food vulnerability level/stratum. The total number of subjects was 359, consisting of mothers and children. Subjects were taken at each community health center using a simple random method without replacement, with the help of the Microsoft Excel 2013 program.

### Data Types and Collection Methods

All primary data was collected through an interview process using a structured questionnaire and direct measurements. The nutritional intake in children consists of the Level of nutritional adequacy and Dietary diversity (Individual Dietary Diversity Score/IDDS. Measured using a structured interview with 2 x 24-hour food recall. Then the measurement results are divided into adequacy levels of micronutrients (Deficient and Sufficient) and Adequacy levels of macronutrients (Above Adequacy; Good; Mild Deficiency; Moderate Deficiency; Severe Deficiency). The child's nutritional status consists of 3 indices, namely Body weight for age; Height/body length, and Body weight for height. Nutritional status was measured by direct measurement of body weight using a digital step scale, while body height used a length board. Then analyzed using WHO Anthro Survey Analyzer Software (Windows, Mac). Then the measurement results are divided into 3 nutritional status indices, namely[9]: 1) Body weight for age (Overweight (z-score >2); Normal (z-score > -2.0 to +2.0); Deficient (z-score -3.0 to -2.0); Very deficient (z-score < -3.0). 2) Height for age (Normal (z-score ≥ -2.0); Stunting (z-score -3.0 to -2.0); Very Stunting

(z-score < -3.0). 3) Body weight for height (Overweight (z-score > +2.0); Normal (z-score > -2.0 to +2.0); Malnutrition (z-score -3.0 to -2.0); Severe malnutrition (z-score < -3.0)). General household characteristics consisting of father's education, mother's education, gender, family number which were collected using the Structured interview method guided by a questionnaire. The Food Insecurity Experience Scale (FIES) is measured using the FIES Survey Module (FIES-SM) consisting of 8 questions on access to food and the measurement results are categorized into 3 categories, namely[10]: Moderate Food Insecurity, Light Food Insecurity, Food security. Household Dietary Diversity Score (HDDS) is measured using a structured interview with 1 x 24-hour recall and the measurement results are categorized into 2 categories, namely: Medium (4-5 Types of Food); High (>6 Types of Food). Individual Dietary Diversity Score (IDDS) is measured using a structured interview with 1 x 24-hour recall and the measurement results are categorized into 2 categories, namely: Good (>/ 4 types/food groups); Less (< 4 types of food groups).

In general, two levels of social organization were analyzed in this research: households and individuals/children. At the household level, the analyzed variables were all selected indicators of social, economic, and physical access. All these variables were combined into a composite index to measure the level of food security at the household level. At the household level, the variables collected were diet diversity and the proportion of household food expenditure.

### Data processing

The analysis process for all data types was carried out with the help of the SPSS for the Windows program. This research also applies a composite index score validation test through the Spearman correlation test against two standard benchmark indicators: the HDDS score and the proportion of food expenditure. Another relationship test was to examine the relationship between the index score and nutritional status, level of nutritional adequacy, and dietary diversity (IDDS) in children. The correlation test was applied using Spearman or Pearson, depending on the normality of the data. Another bivariate analysis in this research used the One Way Anova difference test followed by the Tukey test to examine differences in index scores based on the regional food insecurity vulnerability level.

This research has received approval from the Poltekkes Kemenkes Mataram Ethical Commission with number: LB.01.03/6/115/2023.

## RESULTS

Based on the results of this study, data regarding food security in the Central Lombok Regency area involving toddlers and mothers was obtained. The distribution of toddler subjects based on the level of micronutrient adequacy consisting of vitamin A, vitamin C, iron, iodine, and calcium is presented in Table 1. The level of micronutrient adequacy for toddlers is identified as insufficient and sufficient. Regarding vitamin A adequacy, more than 50% of subjects were classified as sufficient (57.3%), while for vitamin C, most were deficient (70.6%). Then, regarding iron, iodine, and calcium adequacy, more than 50% of subjects were categorized as deficient (59.9%, 76.1%, and 76.7%, respectively).

Table 2 presents data on the distribution of toddler subjects based on the adequacy of macronutrients consisting of energy, protein, fat, and carbohydrates. At the energy, protein, and carbohydrate adequacy level, more than 50% of subjects fell into the category above adequacy (52.4%, 89.0%, and 52.4%, respectively). However, regarding the fat adequacy level, most subjects were categorized as severely deficient (34.0%).

The distribution of toddler subjects based on nutritional status classification can be seen in Table 3. Based on this data, the majority of male toddlers have normal body weight (based on body weight for age), about 73.9%; have normal height (based on height for age), about 56.5%; good nutritional status (based on body weight/height), about 82.6%. In female subjects, the majority had normal weight (based on body weight for age), about 70.1%; normal height (based on height for age), about 55.5%; good nutritional status (based on body weight for height), about 91.5%.

In this research, the demographic relationship (father's education, mother's education, gender, and family size) with the Food Insecurities Scale (moderate food insecurity, mild food insecurity, not food insecurity) is studied, which can be seen in Table 4. It is known that the father's education, mother's education level, and family size have a significant relationship to FIES, with p-value = 0.000. However, there was no signif-

**Table 1.** Distribution of toddler subjects based on adequacy level of micronutrients

| Category | Vit A | | Vit C | | Fe | | Iodine | | Ca | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| Deficient | 148 | 42.7 | 245 | 70.6 | 208 | 59.9 | 264 | 76.1 | 266 | 76.7 |
| Sufficient | 199 | 57.3 | 102 | 29.4 | 139 | 40.1 | 83 | 23.9 | 81 | 23.3 |
| Average ± SD | 206 ± 376 | | 92 ± 146 | | 152 ± 344 | | 68 ± 110 | | 60 ± 68 | |

**Table 2.** Distribution of toddler subjects based on adequacy levels of macronutrients

| Category | Energy | | Protein | | Fat | | Carbohydrate | |
|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % |
| Above Adequacy | 182 | 52.4 | 309 | 89.0 | 98 | 28.2 | 182 | 52.4 |
| Good | 100 | 28.8 | 23 | 6.6 | 69 | 19.9 | 105 | 30.3 |
| Mild Deficiency | 20 | 5.8 | 4 | 1.2 | 23 | 6.6 | 12 | 3.5 |
| Moderate Deficiency | 13 | 3.8 | 3 | 0.9 | 39 | 11.3 | 17 | 4.9 |
| Severe Deficiency | 32 | 9.2 | 8 | 2.3 | 118 | 34.0 | 31 | 8.9 |
| Average ± SD | 130 ± 78 | | 241 ± 144 | | 101 ± 66 | | 146 ± 42 | |

**Table 3.** Distribution of toddler subjects based on nutritional status classification

| Category | Gender | | | | Total | |
|---|---|---|---|---|---|---|
| | Male | | Female | | | |
| | n | % | n | % | n | % |
| Body weight for age | | | | | | |
| Very deficient | 6 | 3.3 | 4 | 2.4 | 10 | 2.9 |
| Deficient | 42 | 22.8 | 45 | 27.4 | 87 | 25.0 |
| Normal | 136 | 73.9 | 115 | 70.1 | 251 | 72.1 |
| Average ± SD | -1.4 ± 1.0 | | -1.6 ± 2.2 | | -1.5 ± 1.7 | |
| Height for age | | | | | | |
| Very short | 15 | 8.2 | 17 | 10.4 | 32 | 9.2 |
| Short | 62 | 33.7 | 54 | 32.9 | 116 | 33.3 |
| Normal | 104 | 56.5 | 91 | 55.5 | 195 | 56.0 |
| Tall | 3 | 1.6 | 2 | 1.2 | 5 | 1.4 |
| Average ± SD | -1.5 ± 1.5 | | -1.7 ± 1.3 | | -1.6 ± 1.4 | |
| Body weight for height | | | | | | |
| Severe malnutrition | 2 | 1.1 | 1 | 0.6 | 3 | 0.9 |
| Malnutrition | 8 | 4.3 | 6 | 3.7 | 14 | 4.0 |
| Normal | 152 | 82.6 | 150 | 91.5 | 302 | 86.8 |
| Risk of Over-Nutrition | 4 | 2.2 | 0 | 0.0 | 4 | 1.1 |
| Overweight | 17 | 9.2 | 7 | 4.3 | 24 | 6.9 |
| Obese | 1 | 0.5 | 0 | 0 | 1 | 0.3 |
| Average ± SD | -0.3 ± 1.3 | | -0.5 ± 0.9 | | -0.4 ± 1.1 | |

**Table 4.** Demographic relationship with the food insecurity experience scale (FIES)

| Category | Food Insecurity Experience Scale (FIES) | | | | | | | | p-value |
| | Moderate Food Insecurity | | Light Food Insecurity | | Food security | | Total | | |
| | n | % | n | % | n | % | n | % | |
| **Father's Education** | | | | | | | | | |
| No/never been to school | 0 | 0 | 22 | 6.6 | 0 | 0.0 | 22 | 6.3 | 0.000 |
| Not completed in primary school | 1 | 100.0 | 35 | 10.5 | 1 | 8.3 | 37 | 10.7 | |
| Finished elementary school | 0 | 0 | 83 | 24.9 | 2 | 16.7 | 85 | 24.5 | |
| Finished junior high school | 0 | 0 | 74 | 22.2 | 1 | 8.3 | 75 | 21.6 | |
| Finished senior high school | 0 | 0 | 97 | 29.0 | 2 | 16.7 | 99 | 28.5 | |
| Completed Diploma | 0 | 0 | 10 | 3.0 | 3 | 25.0 | 13 | 3.7 | |
| Completed bachelor degree | 0 | 0 | 13 | 3.9 | 3 | 25.0 | 16 | 4.6 | |
| Total | 1 | 100.0 | 334 | 100.0 | 12 | 100.0 | 347 | 100.0 | |
| **Mother's Education** | | | | | | | | | |
| No/never been to school | 0 | 0 | 17 | 5.1 | 0 | 0.0 | 17 | 4.9 | 0.000 |
| Not completed in primary school | 1 | 100.0 | 30 | 9.0 | 0 | 0.0 | 31 | 8.9 | |
| Finished elementary school | 0 | 0 | 49 | 14.7 | 0 | 0.0 | 49 | 14.1 | |
| Finished junior high school | 0 | 0 | 121 | 36.2 | 5 | 41.7 | 126 | 36.3 | |
| Finished senior high school | 0 | 0 | 105 | 31.4 | 4 | 33.3 | 109 | 31.4 | |
| Completed Diploma | 0 | 0 | 6 | 1.8 | 3 | 25.0 | 9 | 2.6 | |
| Completed bachelor degree | 0 | 0 | 6 | 1.8 | 0 | 0 | 6 | 1.7 | |
| Total | 1 | 100.0 | 334 | 100.0 | 12 | 100.0 | 347 | 100.0 | |
| **Gender** | | | | | | | | | |
| Male | 0 | 0 | 178 | 53.3 | 6 | 50.0 | 184 | 53.0 | 0.554 |
| Female | 1 | 100.0 | 158 | 46.7 | 6 | 50.0 | 163 | 47.0 | |
| Total | 1 | 100.0 | 334 | 100.0 | 12 | 100.0 | 347 | 100.0 | |
| **Family Number** | | | | | | | | | |
| 2 | 0 | 0 | 3 | 0.9 | 0 | 0.0 | 3 | 0.9 | 0.000 |
| 3 | 0 | 0 | 97 | 29.0 | 4 | 33.3 | 101 | 29.1 | |
| 4 | 0 | 0 | 153 | 45.8 | 6 | 50.0 | 159 | 45.8 | |
| 5 | 0 | 0 | 65 | 19.5 | 2 | 16.7 | 67 | 19.3 | |
| 6 | 1 | 100.0 | 9 | 2.7 | 0 | 0 | 10 | 2.9 | |
| 7 | 0 | 0 | 7 | 2.1 | 0 | 0 | 7 | 2.0 | |
| Total | 1 | 100.0 | 334 | 100.0 | 12 | 100.0 | 347 | 100.0 | |

icant relationship between gender category and FIES (P-value = 0.554). Specifically, in the father's education category, in the moderate food insecurity group, 100% of subjects had not completed elementary school; in the mild food insecurity group, the majority of subjects (29.0%) only completed high school. In the non-food insecure group, 50% of subjects had >high school education. In the maternal education category, in the moderate food insecurity group, 100% of subjects had not completed elementary school; in the mild food insecurity group, the majority of subjects (36.2%) had only completed junior high school; in the non-food insecure group, 41.7% of subjects had secondary school education. Then, in the family size category, in the moderate food insecurity group, 100% of subjects had 6 household members; in the mild food insecurity group, the majority of subjects (45.8%) had 4 family members; in the food insecure group, as many as 50% of subjects also had family members of 4 people.

The relationship between overcoming food insecurity (low, medium, and high categories) on the Household Dietary Diversity Score (medium (4-5 types of food) and high (>6 types of food)) and Individual Dietary Diversity Score (low (<4 food groups) and good (>=4 food groups), can be seen in Table 5. No significant relationship was found between HDDS and overcoming food insecurity, p-value = 0.615. However, IDDS and overcoming food insecurity had a significant relationship, with a p-value of 0.001. Specifically, the majority of the IDDS group is good (>=4 types of food groups), reaching 98.4% in the low category of food insecurity, 86.7% in the medium category of food insecurity, and 100% in the high category of food insecurity.

Table 6 presents data on the relationship between the Household Dietary Diversity Score (HDDS), which consists of medium (4-5 types of food) and high (>= 6 types of food) categories with nutritional status. In all HDDS categories, there was no statistically significant relationship with each category of nutritional status, with P-values of 0.615, 0.982, and 0.891, respectively.

The relationship between the Individual Dietary Diversity Score (poor (<4 types of food groups) and good (>=4 types of food groups) on nutritional status (body weight for age, height for age, and body weight for height) is presented in Table 7. IDDS for each category of nutritional status did not identify a statistically significant relationship, with P-values of 0.880, 0.759, and 0.578, respectively.

## DISCUSSION

Food security is a fundamental right of every individual and household. Food security can at least show nutritional intake[11]. By achieving food security, it is considered that food needs are met so that nutritional intake is sufficient. Various complex factors, including economics and education, influence food security, reflecting the knowledge level and family size[12–14].

Farming communities in Indonesia are synonymous with low socio-economic conditions. This group tends to have a high probability of being food insecure, affecting their intake of macro and micronutrients[15]. Based on this research, the intake of micronutrients for toddlers, including Vitamin C, iron, iodine, and calcium in Central Lombok Regency, is generally still insufficient; only vitamin A intake is categorized as sufficient on average. Intake of macronutrients, namely energy, protein,

**Table 5.** Relationship between reducing food insecurity and the Household Dietary Diversity Score (HDDS) and the Individual Dietary Diversity Score (IDDS)

| Category | Food Insecurity Management | | | | | | | | p-value |
|---|---|---|---|---|---|---|---|---|---|
| | Low | | Middle | | High | | Total | | |
| | n | % | n | % | n | % | n | % | |
| HDDS | | | | | | | | | |
| Medium (4-5 Types of Food) | 9 | 2.9 | 0 | 0 | 0 | 0 | 9 | 2.6 | |
| High (>6 Types of Food) | 305 | 97.1 | 30 | 100.0 | 3 | 100.0 | 338 | 97.4 | 0.615 |
| Total | 314 | 100.0 | 30 | 100.0 | 3 | 100.0 | 347 | 100.0 | |
| IDDS | | | | | | | | | |
| Less (<4 Types of Food Groups) | 5 | 1.6 | 4 | 13.3 | 0 | 0 | 9 | 2.6 | |
| Good (>=4 Types of Food Groups) | 309 | 98.4 | 26 | 86.7 | 3 | 100.0 | 338 | 97.4 | 0.001 |
| Total | 314 | 100.0 | 30 | 100.0 | 3 | 100.0 | 347 | 100.0 | |

**Table 6.** Relationship between the household dietary diversity score (HDDS) and nutritional status

| Category | HDDS | | | | | | p-value |
|---|---|---|---|---|---|---|---|
| | Medium (4-5 types of food) | | High (>=6 types of food) | | Total | | |
| | n | % | n | % | n | % | |
| **Body weight for age** | | | | | | | |
| Very deficient | 0 | 0 | 10 | 3.0 | 10 | 2.9 | |
| Deficient | 3 | 33.3 | 84 | 24.9 | 87 | 25.1 | |
| Normal | 6 | 66.7 | 239 | 70.7 | 245 | 70.6 | 0,615 |
| Over | 0 | 0 | 5 | 1.5 | 5 | 1.4 | |
| Total | 9 | 100.0 | 338 | 100.0 | 347 | 100.0 | |
| **Height for age** | | | | | | | |
| Very short | 1 | 11.1 | 31 | 9.2 | 32 | 9.2 | |
| Short | 3 | 33.3 | 113 | 33.4 | 116 | 33.4 | |
| Normal | 5 | 55.6 | 189 | 55.9 | 194 | 55.9 | 0.982 |
| Tall | 0 | 0 | 5 | 1.5 | 5 | 1.4 | |
| Total | 9 | 100.0 | 338 | 100.0 | 347 | 100.0 | |
| **Body weight for height** | | | | | | | |
| Severe malnutrition | 0 | 0 | 3 | 0.9 | 3 | 0.9 | |
| Malnutrition | 1 | 11.1 | 13 | 3.8 | 14 | 4.0 | |
| normal | 7 | 77.8 | 294 | 87.0 | 301 | 86.7 | |
| Risk of Over-Nutrition | 1 | 11.1 | 23 | 6.8 | 24 | 6.9 | 0.891 |
| Overweight | 0 | 0 | 4 | 1.2 | 4 | 1.2 | |
| Obese | 0 | 0 | 1 | 0.3 | 1 | 0.3 | |
| Total | 9 | 100.0 | 338 | 100.0 | 347 | 100.0 | |

and carbohydrates, is generally above adequate; only fat intake is in the severe deficiency category. Nutrient intake based on food security conditions impacts a person's nutritional status. A study shows that the risk of delays in children's neurodevelopment is 4.4 times higher in children who live in families with mild and moderate food insecurity[16]. Severe food insecurity which can affect the anthropometric nutritional status of newborns such as premature birth[17]. Based on our data, most toddlers, both boys and girls in Central Lombok Regency, have good weight, height, and nutritional status.

Demographic conditions, including education and the number of family members in Central Lombok Regency, are related to the Food Insecurities Scale. The lower a person's education, the more severe the food insecurity they face. Education level reflects a person's knowledge level and influences income. The level of education plays an important role in increasing household income sources and food security[18]. Then, the more family members there are, the more a household's need for food will increase. Likewise, in Central Lombok Regency, a large number of family members are in the food insecure group.

Both directly and indirectly, household access to food is an important element in food security[19]. Overall, all these single indicators describe the dimension of household food access, both directly and indirectly, which is an important element in food security[19]. Food insecurity occurs when people or individuals do not have adequate access to food at the household

**Table 7.** Relationship between the individual dietary diversity score (IDDS) and nutritional status

| Category | IDDS | | | | | | p-value |
|---|---|---|---|---|---|---|---|
| | Less (<4 types of food group) | | Good (>=4 types of food group) | | Total | | |
| | n | % | n | % | n | % | |
| **Body weight for age** | | | | | | | |
| Very deficient | 0 | 0 | 10 | 3.0 | 10 | 2.9 | |
| Deficient | 3 | 33.3 | 84 | 24.9 | 87 | 25.1 | |
| Normal | 6 | 66.7 | 239 | 70.7 | 245 | 70.6 | 0.880 |
| Over | 0 | 0 | 5 | 1.5 | 5 | 1.4 | |
| Total | 9 | 100.0 | 338 | 100.0 | 347 | 100.0 | |
| **Height for age** | | | | | | | |
| Very short | 0 | 0 | 32 | 9.5 | 32 | 9.2 | |
| Short | 3 | 33.3 | 113 | 33.4 | 116 | 33.4 | |
| Normal | 6 | 66.7 | 188 | 55.6 | 194 | 55.9 | 0.759 |
| Tall | 0 | 0 | 5 | 1.5 | 5 | 1.4 | |
| Total | 9 | 100.0 | 338 | 100.0 | 347 | 100.0 | |
| **Body weight for height** | | | | | | | |
| Severe malnutrition | 0 | 0 | 3 | 0.9 | 3 | 0.9 | |
| Malnutrition | 0 | 0 | 14 | 4.1 | 14 | 4.0 | |
| normal | 7 | 77.8 | 294 | 87.0 | 301 | 86.7 | |
| Risk of Over-Nutrition | 2 | 22.2 | 22 | 6.5 | 24 | 6.9 | 0.578 |
| Overweight | 0 | 0 | 4 | 1.2 | 4 | 1.2 | |
| Obese | 0 | 0 | 1 | 0.3 | 1 | 0.3 | |
| Total | 9 | 100.0 | 338 | 100.0 | 347 | 100.0 | |

level[20]. Food access in households acts as a link between regional food availability and individual food consumption. In addition, household affordability of various types of food (food access) can reflect food consumption at the household level. Several single indicators have been developed to assess household food security, including the Household Food Security Scale Module (HFSSM), The Household Dietary Diversity Score (HDDS), The Food Consumption Score (FCS), The Coping Strategy Index (CSI), The Household Food Insecurity Access Scale (HFIAS) and Household Hunger Scale (HHS) can represent the food security status of a household[21–23]. Our data shows that there was no significant relationship between HDDS and overcoming food insecurity in Central Lombok Regency.

However, IDDS and overcoming food insecurity have a significant relationship. Based on the nutritional status category, all nutritional status categories, including weight for age, height for age, and weight for height, did not show a statistically significant relationship with each HDDS or IDDS category.

## CONCLUSION AND RECOMMENDATIONS

Based on this research, the intake of micronutrients for toddlers, including Vitamin C, iron, iodine, and calcium in Central Lombok Regency, is generally still insufficient; only vitamin A intake is categorized as sufficient on average. Intake of macronutrients, namely energy, protein, and carbohydrates, is generally above adequate; only fat intake is in the severe

deficiency category. The majority of toddlers in Central Lombok Regency have good weight, height, and nutritional status. Demographic conditions, including education and the number of family members in Central Lombok Regency, are related to the Food Insecurities Scale. In Central Lombok Regency, no significant relationship was found between HDDS and overcoming food insecurity. However, IDDS and overcoming food insecurity have a significant relationship. Based on the nutritional status category, no relationship was found between nutritional status and each HDDS or IDDS category.

## ACKNOWLEDGEMENTS

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