



FOOD SECURITY FROM THE PERSPECTIVE OF URBAN JUNIOR HIGH SCHOOL STUDENTS: A CROSS-SECTIONAL STUDY

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Abstract

This study aims to investigate food security from the perspective of junior high school students in an urban area in Bandung, West Java, Indonesia. The research is a cross-sectional study using a survey method to explore students' perceptions. The study involved 191 junior high school students from Grade 7, 8, and 9. The sample was chosen using purposive sampling. The research used four open-ended questions administered through Google Forms. However, students were supervised while completing the survey. The results found that most students attribute food security to sufficiency and availability aspects (72% of the essential words). Furthermore, nutrition, accessibility, safety, and health appear in a smaller percentage (28%). However, no students mention affordability, beliefs, sustainability, utilization, and stability (0%). There is a need to enhance students' awareness of the sustainability aspect of food security since Indonesia performs very poorly in ensuring the sustainability and adaptation aspect. It was found that, from the perspective of 53% of the students, Indonesia has good food security, while about 42% perceived it as poor. Students already have some understanding of factors that can negatively impact food security in Indonesia, as well as supporting factors. This finding reveals that urban student' perception towards food security is not comprehensive. This shows the need to implement learning activities that can help students gain comprehensive knowledge related to food security.

Keywords: Food Security, Perspective, Urban Students

INTRODUCTION

Food security is one of the global challenges. According to the Global Food Security Index (GFSI), Indonesia

was ranked 63rd out of 113 countries in 2022, indicating moderate performance in food security [1]. Although Indonesia performs

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relatively well in aspects such as availability, affordability, and food quality, sustainability and adaptation remain significant concerns. This aspect is crucial to ensure that future generations can access sufficient, safe, and affordable food. Sustainability and adaptation are very contextual challenges in the 21st century. Rapid population growth and increasing environmental pressures further challenge Indonesia's ability to maintain sustainable food security [2]. These changes place increasing pressure on food systems and highlight the need to ensure long-term food security for future generations.

Food security is commonly understood as the condition in which people have sufficient, safe, and nutritious food with adequate access to support a healthy and active life [3], [4]. This concept involves multiple dimensions, including availability, access, affordability, utilization, and stability of food. However, food security is increasingly challenged by factors such as population growth, land use change, climate change, and socio-economic conditions [5]. These challenges highlight the complexity of food security and the importance of understanding how students perceive this issue as part of sustainability education.

Addressing food security requires multidisciplinary efforts, including education, which plays an important role in helping students understand sustainability issues and prepare for future challenges [6], [7]. Through education, students develop their knowledge, awareness, and capacity to engage with real-world problems [8]–[10]. However, students do not enter the learning process

without prior ideas; their existing perceptions influence how they interpret new information and how meaningful the learning becomes. Therefore, exploring students' perceptions of food security is necessary to understand their current level of understanding and to provide a foundation for developing effective and relevant educational strategies [11].

The exploration of food security aspects in point of view of education has been done in the previous study. Senior high school students only reach sufficient criteria after given education about the role of young generation in agriculture development and food security [12]. The research took a sample of students in rural areas who are familiar with agricultural activities, and it suggests the need for long-term food security education to improve students' understanding of their role in food security. A good understanding towards food security positively affect agricultural actors to cooperate with government regulation about food security [13]. How people perceive food security is relevant to how they cope with the problem and build self-resilience.[14].

Urban society is more likely face the food insecurity due to high population which will improve demand for water and residence [15]. It indicates that water and land use for agriculture activities will be affected [16]. Bandung as one of urban cities in Indonesia show low food security where about 96% of its food comes from outside Bandung [17]. Therefore, exploring how the perspective of junior high school students in urban area in Bandung about food security is necessary to raise the awareness

toward this issue as early as possible. However, until today there is no study that investigate the perspective of urban junior high school students in regard of food security issue.

Based on *Kurikulum Merdeka*, in junior high school, food security is one the issues need to be learned specifically in environmental issues chapter in grade 9. This depict that there is a room in education in Indonesia to facilitate the development of awareness, knowledge and skill needed by students in facing food security issue. Hence, this study tries to uncover the perception of urban junior high school students in Bandung in order to see the start line before plan further intervention.

METHOD

This study employed a descriptive research design aimed at exploring the perceptions of urban

junior high school students in Bandung towards food security. The survey was conducted cross-sectionally, as the data were collected at a single point in time rather than over multiple periods [18]. The data collection was carried out over three days continuously.

This research involves 191 junior high school students from grade 7,8, and 9 as the sample. The participants were selected using purposive sampling. The school was selected based on its location in an urban area far from agricultural activity. The selected school is located in Antapani subdistrict, which has been identified as an urban cluster area [19]. The surrounding environment is characterized by highly developed areas, as indicated by land use patterns visible in Google Maps. The location of the school and its surrounding environment are shown in Figure 1.



Figure 1. The location of sample school

The detail information about number of students from each grade can be seen in Table 1. Data were collected using a survey administered through Google Forms. Students were asked to respond to open-ended questions related to food security to explore their perceptions. Students

were not provided with prior instruction about food security before completing the survey in order to capture their existing perceptions. The instrument consists of 4 essay questions. Before being distributed, the questions had passed expert validation

by two lecturers in science education. The questions are:

1. In your opinion, what is food security?
2. Do you think Indonesia has a good food security? Why do you think so?
3. Why do you think food security important to be maintain?
4. What do you think we can do to improve food security?

Table 1. Sample of the research

Grade	Number of Students
7	59
8	66
9	66
Total	191

Students' answer were then analyzed following inductive content analyses [20]. First, all responses were read repeatedly to obtain a comprehensive understanding. Then, essential words and key points were identified and extracted. For Question 1, essential words related to food security concepts were grouped into categories based on similarity of meaning. For example, words such as "enough" and "available" were grouped under the category "availability." The coding process was conducted by the researcher and reviewed by an expert in science education to ensure consistency and credibility. For Questions 2, 3, and 4, students' responses were analyzed by identifying key points representing students' reasoning, opinions, and suggested actions. Similar responses were grouped into themes. Finally, the frequency of each category and theme was calculated to describe the

distribution of students' perspectives on food security.

All analysis processes were conducted using Google Sheets. The identified categories and themes were then used to interpret students' perceptions of food security. The results of the analysis for each question are presented in the following section.

RESULT AND DISCUSSION

For the first question, students' answer was analyzed to be compared with the definition of food security from some sources including Indonesian constitution, Food and Agriculture Organization (FAO), U.S. Agency for International Development (USAID), and Global Food Security Index (GFSI). The selection of essential words was grounded in the original definitions to ensure conceptual validity. The main word from each definition is displayed in the Table 2.

Table 2. Essential words from food security definition

Source	Definition of food security	Essential words
FAO	“Food security exists when all people, at all times, have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preferences for a healthy and active life” [3].	Physical access (availability) Economic access (affordable) Access Sufficient Safe Nutrition Healthy
Indonesian Constitution	“Food security is the condition of fulfilling food for the country to individual level, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, evenly distributed and affordable and does not conflict with the religion, beliefs and culture of the community, to be able to live healthily, actively and productively in a sustainable manner” [4]	Availability Sufficient Safe Diverse Nutritious Evenly distributed (access) Affordable Religion/beliefs/ and culture Healthy Sustainable
USAID	“Food security and nutrition as access to—and availability, utilization and stability of—sufficient food to meet caloric and nutritional needs for an active and healthy life” [5].	Access Availability Utilization Stability Sufficient Nutrition Healthy
GFSI	“GFSI Index for food security covers the area of affordability, availability, quality and safety and sustainability and adaptation” [1].	Affordability Availability Quality and safety (nutrition and diverse) Sustainability and adaptation

Based on Table 2, it can be seen there are 12 essential words connected to food security according to definition from FAO, Indonesian Constitution, USAID, and GFSI. Food security covers the aspect of accessibility, sufficient, safe, availability, affordability, health, diverse, nutrition, sustainability, religion/beliefs/culture, utilization, and stability. The identified essential words were reviewed and

discussed with an expert in science education to ensure their appropriateness and alignment with food security concepts. Availability and nutrition are two words mentioned the most in the definition of food security. Meanwhile religion/beliefs and culture, the utilization and stability are the least mentioned. However, in the term of religion, beliefs and culture which only mentioned in the definition

of food security stated in Indonesia constitution, is related to the social aspects in Indonesia. Indonesia is a religious and cultured country. Religion taught and culture not only include what is allowed to be eaten but also how to process the food in the appropriate manner. As an example, Muslim only eat halal food. Muslim is forbidden to eat pig and all animals have fangs and sharp hooves. As an addition, Islam also has criteria for animal slaughter according to Islamic

law which if not fulfilled can result in halal animals becoming non-halal. Islam is the majority in Indonesia. Therefore, the beliefs are a critical aspect of how Indonesian perceive food [21]. That is the philosophical aspect in the definition food security in Indonesian constitution.

Students' perspective toward food security was analyzed by identifying those words in students answer. The result can be seen in the Figure 2.

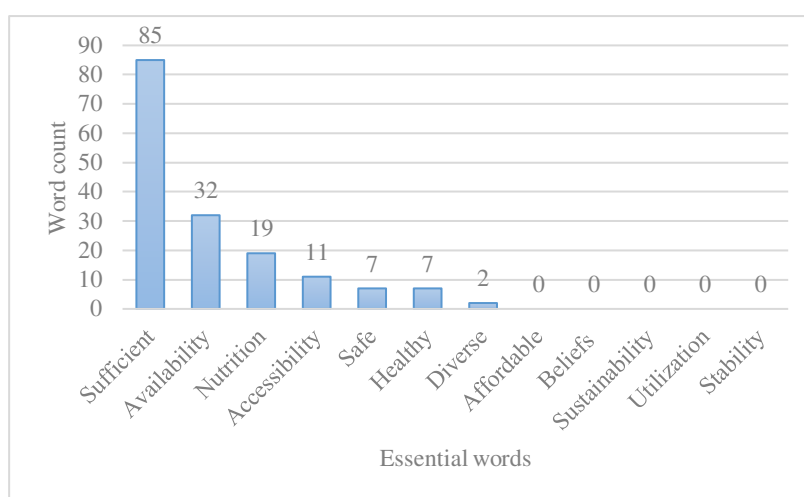


Figure 2 the number of essential words in students' perception of food security

Students mostly associate food security with the sufficiency of food stock but have little understanding of its other dimensions, such as affordability, cultural beliefs, utilization, and stability.

According to the GFSI, the sustainability aspect remains a major weakness in Indonesia's food security. Under the "Sustainability and Adaptation" category, Indonesia needs to enhance its political commitment to climate adaptation. Agriculture in Indonesia is particularly vulnerable to climate change, as much of it relies on traditional farming practices which are

heavily depend on natural stability (Azkia & Yasar, 2024). Crop failure could be caused by extreme temperature, rainfall patterns, soil health, and the presence of pests and plant diseases. Those phenomena closely related to climate change.

It is important to ensure that students have a good understanding of how climate factors could threaten food security. Corresponding adaptation should be done start from school age, at the very least, to develop the sense of appreciation to food and the nature. Further, students can implement mindful eating as a

In quality and safety, Indonesia must encourage dietary diversity. As for now, Indonesian still depend on rice as staple food. However the production of rice has degraded annually due to the lack of water

The words appear in students answer can be seen in Figure 3 with size represent the frequency.



Based on Question 2, the survey results showed that 90 students (53%) perceived that Indonesia has good food security, whereas 70 students (42%) perceived that Indonesia's food security is poor. In addition, 9 students (5%) answer that they did not know. A total of 22 responses were excluded from the analysis because they were

Students' perspectives on food security in Indonesia may be influenced by their daily experiences, particularly in urban contexts. At the junior high school age, students are not directly responsible for food provision, as this role is primarily managed by their parents. In urban areas such as Bandung, food appears to be consistently available through

traditional and modern markets, school canteens, and surrounding food stalls. This constant availability may lead

students to perceive food security as a condition that is already fulfilled.

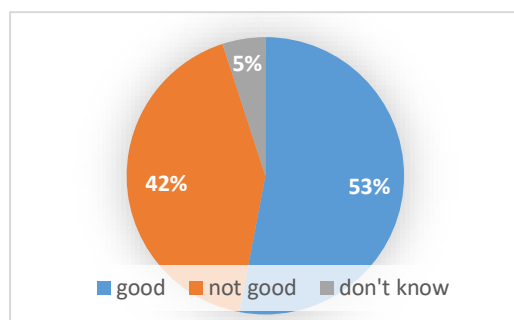


Figure 4. Food security in Indonesia in the perspective of urban junior high school students.

Students who view Indonesia's food security positively argue that the country's abundant fertile lands, particularly in its numerous mountains, create favorable conditions for agricultural growth.

Example of students answer:

"good, because Indonesia has many high mountains for planting"

"Good, because in Indonesia the weather and fertile soil cause food security to improve."

However, students who perceive Indonesia's food security as inadequate highlight a range of challenges, including the impacts of climate change and unpredictable weather patterns. They also point to issues such as hunger, child malnutrition, unequal access to food, imbalanced distribution, rising food prices, dependence on imports, increasing population and the land-use changes.

Example of students answer:

"Not good, because everything is expensive"

"Some people can't eat and some can eat."

The correlation of food security to those issues appear in students'

answer is concrete, yet complicated. As the three pillar of sustainability, we can divide the issue into three aspects which are environment, social and economic. Environment related issue has been explained before how climate change could drive crop failure. Additionally, land conversation happens, the area of agricultural land, both rice fields and non-rice fields, continues to decrease. in 2014 the area of rice field decrease from 8.1 million hectare become 8 million hectare in 2015 [28].

In social aspect, for instance, previous study has found that hunger is significantly depended on education level [29]. In 2022, stunting rate in Indonesia is 21.6% [30]. Stunting is significantly affected by mother's maternal nutrition status and maternal education [31].

Further, in the economic aspect, affordability, distance to the market, diversity of food available are the aspect influence food sales [32]. Low to middle income country highly vulnerable to food insecurity [23]. Most of developed country has suffice system and procedure to ensure the

production of secure and nutritious food [33]. However, it is impossible for a country to develop the economy before fulfilling its food security demand [34].

From students answer for question number 3, about why we should strive for food security, students mention reason such as to not starve, to survive, avoid food crisis, ensure health, and economy stability. The most frequent answer are in the aspects of health, economic stability and survival as food is the basic need for human. This finding suggests that students understand food security mainly from a consumption perspective, focusing on its immediate function in sustaining life. While this reflects an essential aspect of food security, it also indicates that students may have limited awareness of its broader dimensions, such as sustainability, food systems, and long-term resource management.

Example of students answer:

"So that food prices do not rise"

"So that our nutrition is sufficient"

"So that we don't run out of food supplies."

Students' responses to Question 4 demonstrate that some students were able to identify actions that could contribute to improving food security, such as planting, increasing food production, and protecting the environment. This finding indicates that students have begun to connect food security with human actions, particularly those related to food production and environmental sustainability.

Example of students' answer:

"Preserving and not dismantling existing rice fields to build buildings"

"Preserving natural resources"

"Distributing food to the less fortunate"

"don't waste food"

"Planting and caring for it"

These responses indicate that students tend to associate food security improvement primarily with actions related to food production and resource preservation. This suggests that students already recognize the importance of human responsibility in maintaining food availability. Their responses, such as planting, preserving agricultural land, and protecting natural resources, reflect an emerging awareness of the environmental dimension of food security.

This finding is consistent with previous studies showing that students often develop an initial understanding of sustainability through observable and tangible actions, particularly those directly related to food production and environmental conservation (Njura et al., 2020).

CONCLUSION

This study reveals that urban junior high school students tend to perceive food security primarily in terms of food sufficiency, indicating a limited and partial understanding of the multidimensional nature of food security. Although some students demonstrate awareness of food security challenges and potential solutions, critical aspects such as sustainability, accessibility, and long-term adaptation remain insufficiently recognized. These findings suggest that students' perspectives are influenced by their immediate experiences and assumptions, particularly their perception of Indonesia's natural abundance.

The results highlight the need for food security education that supports students in developing a more comprehensive and future-oriented understanding of food security, especially in relation to sustainability and adaptation. Understanding students' existing perspectives provides important baseline information for designing meaningful learning experiences that can enhance students' awareness and capacity to engage with food security issues.

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