

**Research Article**

# Is The Topic of Food and Its Sustainable Use Important In Science Learning?: Description of Staple Food Variation Consumption in Junior High School Students

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**Abstract.**

This study aims to provide an overview of the consumption of local products in variations of staple foods, responses to learning about food topics in science learning, and responses to the habit-forming environment of 117 junior high school students. Data were collected using a Google form questionnaire and the results of data collection were analyzed using descriptive analysis techniques with a percentage. The results showed the use of variations of staple foods other than rice (cassava, corn, bananas and others) as staple foods by 58.1%, while as a snack it was 69.2%. A number of 94.9% of students consider it important to learn material about food, especially its function, role, benefits, and its relation to the environment in science learning. As much as 69.2% said that the family and community environment can build habits to take advantage of other variations in the consumption of staple foods while the school environment is 64.1%. These results provide an illustration of the use of variations in other staple foods used by students as snacks and rice is the main staple food in daily consumption.

**Keywords:** sustainable, food, science, consumption, students

## 1. INTRODUCTION

Education for Sustainable Development (ESD) illustrates the urgency of inculcating the principles of quality education where the social, economic and environmental are taken into account for considerations. The issue of food is one of the central aspects that have received attention in today's world development since being set as one goal in achieving the *Sustainable Development Goals* (SDGs) of the United Nations. The food issue as outlined in SDG 2 (*zero hunger*) leads to efforts of preventing people around the worlds from hunger and malnutrition by 2030, both in developed and developing


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countries, including Indonesia. According to data from the *Global Hunger Index* or the global hunger index in 2019, Indonesia is at a serious level of hunger with a percentage of 20.1% [1]. The data indicates that there is still much need to be done for Indonesia so that SDG 2 (zero hunger) can be achieved by ensuring that everyone, especially children, can have adequate and nutritious food throughout the year.

Population growth in Indonesia will be increasing. Meanwhile, pressure on the global food system, especially in terms of food accessibility will also escalate. Accessibility is related to diversity in food consumption [2] that all people have possibility to access nutritious, safe and affordable food. This pressure is a critical challenge and will create even greater risks for society and the environment. The availability of food, especially rice, is in the highest risk in the future due to the imbalance proportion between people's need and the availability which eventually causes food insecurity. Henceforth, it is important for the community to also take part in effort of maintaining food security. One of the ways that can be used to avoid a food crisis is instilling awareness and dietary habits of using a variety of staple foods to children from an early age. Promoting the use of staple food variations can be established in family, community environment and schools through integrated education which provides a deeper understanding of the usefulness of food as a form of initial foundation for community independence. Variation in staple foods is very important compared to other types of food because staple foods provide human's daily basic nutrition needs. So, people are highly depend on staple foods.

Eating patterns are defined as characteristic activities that are carried out repeatedly in the form of individual or each person eating activities in meeting their food needs [3]. The habit of eating patterns using variations of staple foods from an early age will become a preference for the next stage of development. The choice of diet and variety of staple foods in children at the early development stage is fully managed by parents. When children are in the early development stage, adolescents (12-15 years), they enter the stage of formal operational thinking that enabled them to think logically and produce free thoughts about various possibilities that occur [4]. Eating habits acquired in adolescence will have an impact on physical, mental and health in the next life phases of adulthood and elderly. Some studies have focused more on food quality and nutritional intake [5][6] at the level of students and adolescent. However, dietary patterns and variations in staple foods in adolescent development, in this case junior high school students, which are associated with the urgency of this topic in science learning has not been studied much. This study aims to provide description of the staple foods variations consumed by junior high school students and to find out their responses

related to the importance of understanding food in science learning. The description will give a comprehension portray of dietary habits and variations in staple foods in families, communities and schools.

## 2. RESEARCH METHOD

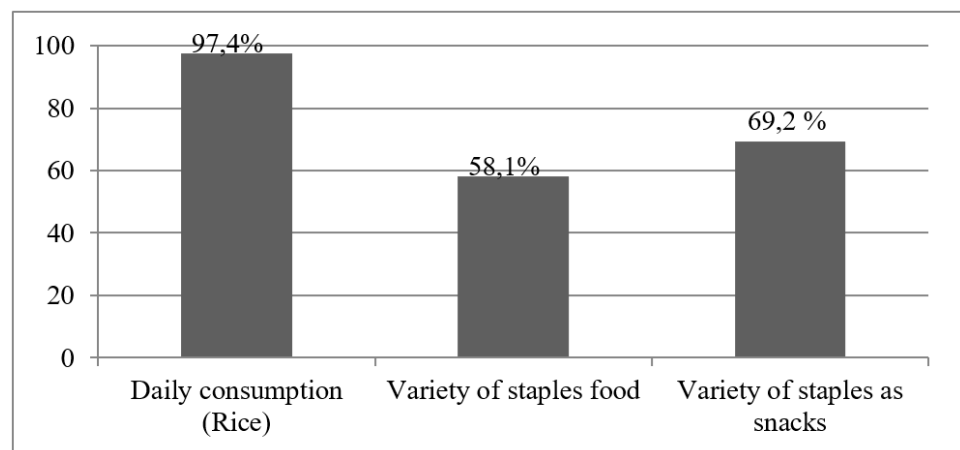
This research describes the normal conditions in the real context without giving specific treatment to the variables. The research subjects were 117 students of 2 districts in West Java, namely West Bandung and Purwakarta Regencies. The data were collected through *online* questionnaires using *google form* which are distributed through social media. Interviews were also conducted in order to verify some points rise from questionnaire responses. Data was analyzed with descriptive analysis techniques and the result is presented in the form of percentages. The trend direction patterns was then figured out by analyzing the results of questionnaires based on the theme and pattern of answers obtained from the participants (score 1 for each **yes**, 0 for **no**). The scores were sum up to get the percentage of answers on the basis of the indicator. Each questionnaire given to students is divided into 3 indicator aspects of diet and food variations, namely in 1) family, 2) community/home environment, and 3) school.

## 3. RESULTS AND DISCUSSION

Diet basicly is the result of consumption food habit that has been carried out in a particular family or group. This study will present the results of junior high school students' responses about rice consumption patterns, their responses regarding rice consumption, variations in staple foods other than rice and its use as snacks. Based on the results of data analysis, the results are as shown in Figure 1. Figure 1 shows that 97,4 % of students have rice for their daily staple food with a consumption pattern of 2-3 times. 58.1% of the students have a tendency of consuming staple foods other than rice and 69.2% of students admit that they eat those variations as daily snack.

These results show that rice is still the main food used by students as a staple food with a regular consumption pattern. This is in line with the research that has been conducted regarding food intake in Bolaang Mongondow Regency which said that the frequency of consumption of adolescents in general is more than once per day and tends to be less varied, especially in terms of consumption patterns of staple foods [7]. The high percentage of this rice consumption pattern can be influenced by 2 factors. (1) students' understanding that rice is a filling staple food for Indonesians. Rice is the

main food consumed by the people of Indonesia [8] and remains a food commodity that has a very important influence on the welfare of Indonesian society [9]. This fact is also seen in some areas where people consume staple foods such as sago or corn switching to rice [10]. (2) there is an understanding that using rice as a staple food is considered very beneficial for most students who admitted that in addition to being filling it is also useful for health, cholesterol free and rich in vitamins and as a source of energy [11]. This shows that students have awareness, perception and understanding of the benefits of staple foods for their bodies. The survey results conducted by the Nusantara Movement also showed a significant increase in the knowledge, attitudes and behavior of students and teachers regarding awareness of nutritious and useful food.



**Figure 1:** Percentage of student consumption staple food variation.

The tendency of consuming various staple foods by students shows that even though the number is not very significant but the data tells that more than 50% of the 117 participants tend to consume staple foods variations other than rice in their daily diet. Diet and the choice of food variations can be influenced by the interaction of various factors, both internal and external factors [12]. Internally, it relates to the awareness, perception and understanding of students about the advantages of staple foods as previously disclosed. Another research shows that knowledge and a sustainable mindset about the benefits of food (health and nutrition) may have an impact on food consumption [13]. The staple foods other than rice that were chosen by the students include cassava, banana and a small portion of corn. A higher percentage is shown in the utilization of this variety of staple foods used as snacks or treats.

Culture is one one of external factors that influence the selection of food. This influence is most obvious in the selection of staple foods or other most popular dishes. The disparity on students answer regarding the choice of staple food variation was

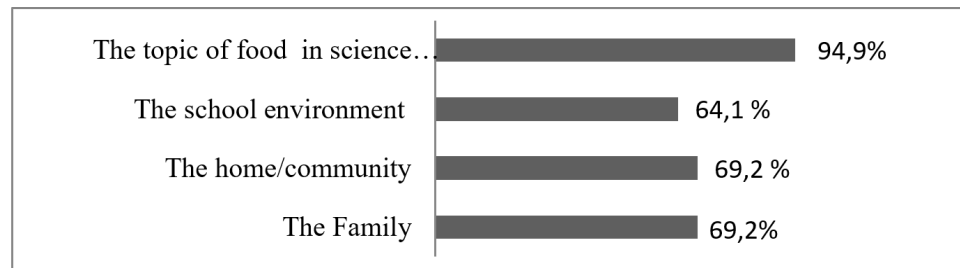
affected by the existence of local wisdom on the pattern of food consumption that applies from generation to generation in the local traditional community as well as by the cultural background of students. Local wisdom on food selection in this study are focused on junior high school students in West Java who have been taking the advantage of other staple foods like cassava and banana as a snack in the morning or evening. The same study which was conducted on students in an international class in Hungary also showed that food habits in Hungary have an impact on the consumption patterns of other students who come from different ethnicities and countries in that class who prefer local food [14].

### 3.1. Food in Science Learning (family, environment and school)

The results of data of data for this variable is shown in Fig.2. The figure illustrates the percentage of student answers regarding the topic of food importance in science learning as well as how the family, home/community and school environment play a role in building a habit of using food other than rice as staple food.

Figure 2 explains that 94.9% of the students have positive responses on the importance of learning food in science learning. The students believe that they can expand their knowledge about food that is beneficial for body health and the environment. The statement and the high percentage of positive response tell that junior high school students require food-related materials keep exist as one topic learnt in science class. Learning food in science subject is an intensive action of educating adolescence students regarding advantage of foods, dietary patterns and variations of staple foods and its consequences on health, food security and the environment. Access on learning food in education context is a prerequisite for long-term food security [15]. One example of actions which enables food security improvement through education is by interfering to integrate topic of food in lessons. It can also be embedded through school programs that promote the consumption of various foods both as staple food and healthy snack. The program should enable student to have easy access to various food either through planting, buying, or by bringing their own 'lunch'.

Figure.2 also shows that family and home/community environment give the highest percentage as 69.2% as the best place that develop the habit of consuming staple food other than rice. It means that family and neighborhood environment is important places to start establishing the students' eating habit. Students were asked why they chose to eat rice as the main food. Most of the students have similar answer which is because



**Figure 2:** The percentage of students responses on the importance of learning food in science learning.

the food is always served at home and they have been familiar with it since at early age.

The result also explains that parents' habits of food consumption are followed and taken as consumption pattern by students from their very early age. This pattern becomes stronger when they are adolescence since they get more influences both from the surrounding environment and school that force them to adjust food consumption patterns that they prefer. The adjustment later tends to be more stable as they become older. Related studies that explain that the cultivation patterns of parental characteristics and habits have a profound impact on children's food habits [16]. It is also said that eating habits will have an effect on healthy food habits and physical activity [17]. There is a strong influence that the surrounding environment, especially family and home environment will have an impact on children's food habits [18].

Another illustration provided by Figure 2 is that there are 64.1% of students think that schools can build habits and help them to have meals other than rice as staple food. Even though the percentage of school role in student consumption pattern is slightly lower than family and home environment, school is still worth to be taken into consideration as an important external environmental factor that can provide and build eating habits. Questionnaire regarding the school role is questioning existence and function of the school canteen in providing various staple foods.

This finding can be of concern because schools have a very strategic role in building eating patterns and consumption behavior in students. A qualitative study conducted on the factors that influence food choices in students explains that it is important for school community to design a program that promote ways of increasing habit on consuming healthy foods and drinks in schools [19]. This program can be building a healthy school canteen and other related innovative programs. In short, developing school programs that promotes healthy and various staple foods can affect student eating behavior. For instance, School Garden or Green School programs which is school gardening can affect children's vegetable consumption, including increased recognition, attitudes,

preferences, and willingness to taste vegetables. The Gardening Program also increases the variety of vegetables eaten [20, 21].

## 4. CONCLUSION

Rice is still the main food consumed by students as a staple food with a routine consumption pattern other variation of staple food like bananas, cassavas, and corns are likely taken regularly as daily foods. Parents' habit in food consumption is adopted by students as their eating pattern of staple food from the beginning of their development ages (children) until they are adolescence (teenagers).

Integrating the lesson to understand more about food into science learning is very crucial and should be done continuously as it is a pedagogical tool for students to know and be aware of the consequences of food consumption on the ecological environment and global society. Family, home/community and school environment can be a very good support system to establish habituation and access to various staple foods while focusing on healthy food in shaping junior high school students' diet.

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