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Efforts to Improve Sustainable Development Goals (SDGs) Through Education on Diversification of Food Using Infographic: Animal and Vegetable Protein

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ABSTRACT

Food is one of the essential needs for humans which is the focus of the Sustainable Development Goals (SDGs) in Zero Hunger and Good Health and Well-being. Food diversification can be carried out by utilizing natural resources that are not maximally utilized, one example is replacing animal protein with vegetable protein. This study aims to provide visual education about diversifying animal protein into plant protein to improve SDGs to Instagram followers of the authors with an age range of 18- 25 years. The research method used is a quantitative method with survey data collection techniques using polls as an assessment instrument. The results of this study show that the authors' Instagram followers understand the content of the infographics distributed.

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1. INTRODUCTION

Food is a basic need that is very important for humans to maintain their survival and life. Because of this, food-related aspects have always been a sensitive issue. In terms of Indonesia's population growth, which is currently expected to increase at a growth rate of 1.08% (10 million people), this increase can affect various aspects of people's lives such as the population's assurance of the food needed, economic stability, education, and employment, which means that food and nutrition development in Indonesia is needed because it has a close relationship with achieving food security (Chaireni *et al*., 2020).

Law No. 18/2012 on Food affirms that Food Security is defined as a condition of fulfillment of food for the state to individuals, which is reflected in the availability of sufficient food, both in quantity and quality, safe, diverse, nutritious, equitable, and affordable and does not conflict with religion, beliefs, and community culture, to be able to live healthy, active, and productive lives sustainably. However, Indonesia, which is experiencing continuous population growth, has not yet achieved stable sustainable food security (Ita, 2022). The 2021 Food Security statistics book made by the National Food Agency shows that the tendency of food consumption of the Indonesian population is still high in the food groups of grains, vegetables and fruits, and animal food. This is not in line with the many diverse food sources in Indonesia, if not immediately improved in terms of the balance of food consumption, the population will experience a continuous decline in the level of food security which will have an impact on the lives of the population and even the country. Food diversification is one of the main ways to overcome food and nutrition problems and food security. From a physiological point of view, humans need more than 40 types of nutrients contained in various types of food to be able to live an active and healthy life. In addition, consuming various types of food is very important, because each food has different nutritional content both in type and amount (Rahmi, 2019). Diversification of food consumption can be an alternative for the community to obtain various sources of nutrients. (Pitaloka *et al*., 2022).

Government Regulation on Food Security No. 68 of 2002 article 9 paragraph 2 states that one way to increase food diversification is to increase public awareness of consuming a variety of foods based on the principle of balanced nutrition. A person's diet is influenced by cultural aspects, personal views, family dynamics, and social dynamics, so the first step in encouraging food diversification is to change perceptions. The contribution of formal and non-formal education, role models from elite groups, and mass media promotion is needed (Azhari *et al*., 2013). Until now, efforts to improve food diversification have not achieved the results that the government expected. One of the government's policy measures in the food consumption sector is to promote food diversification (Masniadi *et al*., 2020). The promotion of food diversification can be done through mass media such as educational campaigns. This educational campaign is an effective way to reach the public which aims to provide understanding and increase public awareness of the importance of maintaining food security through food diversification (Handayani & Nahrawi, 2018).

This study aims to provide visual education about diversifying animal protein into plant protein to improve Sustainable Development Goals (SDGs) to Instagram followers of the authors with an age range of 18- 25 years. The research method used is a quantitative method with survey data collection techniques using polls as an assessment and instrument.

2. METHODS

A quantitative-experimental approach was utilized in this study which investigated the growth differences between chickens fed with banana peelThis study uses quantitative

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research methods with data collection techniques through surveys regarding the use of infographics as a medium to provide education about the diversification of animal protein into vegetable protein through social media, namely Instagram. The survey was conducted using one of the features found on Instagram stories, namely polls as a means of collecting data regarding the understanding of each author's Instagram followers from infographics containing diversification of animal protein into vegetable protein.

The preparation of infographics is based on the results of a literature review conducted by the author. The purpose of making infographics is to provide visual education about the diversification of animal protein into vegetable protein to improve SDGs. The infographic contains information about the definition of food diversification, what foods contain vegetable protein that is equivalent to animal protein, and an invitation to implement animal protein diversification into vegetable protein in supporting the improvement of SDGs.

To disseminate infographics about the diversification of animal protein into vegetable protein in supporting the improvement of SDGs, we use Instagram social media. The use of Instagram as one of the communication media that takes place effectively, especially among 18-25-year-olds (Prihatiningsih, 2017). The target of this infographic distribution is the followers of the accounts @awalusilmi, @kessarf, @nurainiss, and @n.zarrp with a total of 5,067 followers.

3. RESULTS AND DISCUSSION

The survey was conducted by sharing infographics on Instagram stories. The infographic contains information about the definition of food diversification, what foods contain vegetable protein that is equivalent to animal protein, and an invitation to implement diversification of animal protein into vegetable protein in supporting the improvement of SDGs as can be seen in **Figure 1.**

The results of the survey through infographics regarding the understanding of the diversification of animal protein into vegetable protein can be seen based on the results of the number of polls uploaded on the accounts @awalusilmi, @kessaarf, @nurainiss, and @n.zarrp. The detailed number of accumulated results is as follows:

(i) The number of polls from the @awalusilmi account is 16 people chose to understand and 2 people chose not to understand the infographic on food diversification from animal protein to vegetable protein.
(ii) The number of polls from the @kessaarf account is 34 people chose to understand and 3 people chose not to understand the infographic of food diversification of animal protein into vegetable protein.
(iii) The number of polls from the @nurainiss account is 19 people chose to understand and 5 people chose not to understand the infographic of food diversification of animal protein into vegetable protein.

The number of polls from the @n.zarrp account is 36 people chose to understand and 2 people chose not to understand the infographic of food diversification of animal protein into vegetable protein.

Food diversification is an effort to increase the consumption of various kinds of food with the principles of variety, variety, nutrition, and balance. Diverse here means that the menu consists of a variety of foodstuffs so that it is not dominated by only one or a few types of food. Varied means that the types of food served from time to time are not the same, alternating and varying to avoid boredom for those who consume it (Ikhram & Chotimah, 2022).

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Figure 1. Infographic Diversifying Animal Protein into Vegetable Protein

Food diversification is also an effort to achieve independent and sovereign food security, given that Indonesia is rich in a diversity of food sources. In terms of availability, food diversification will reduce the risk of a country being trapped and dependent on only one type of food. In terms of consumption, the nutritional needs of each individual basically cannot be fulfilled properly if the food menu is not diverse. So in terms of nutritional needs, food diversification has the potential to improve the nutritional status of the community (Simbolon *et al*., 2023).

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Protein as a macronutrient plays an important role as a source of energy, building material, and regulatory substance in the human body (Mayar & Astuti, 2021). In general, proteins can be divided into two main categories, namely animal and vegetable proteins. Animal proteins are proteins that come from animals, such as milk, meat, and eggs. In the animal protein category, meat, milk, and eggs are considered high-quality protein sources. Meanwhile, fish, shellfish, shrimp, and chicken are also good sources of protein with relatively low-fat content (Nursamsi *et al*., 2019).

One of the animal protein sources discussed in this study is beef, which contains 26 grams of protein from 100 grams of ingredients. While animal protein is considered a complete and high-quality source of protein as it provides the essential amino acids that the body needs, the production of meat and animal products tends to require more resources, such as water and land. It contributes more carbon. In addition, animal protein sources tend to have higher prices, making them less affordable for people with limited purchasing power. This is the case with the price of beef in the current market (Maulana and Safarida, 2021).

In overcoming some of the obstacles to fulfilling protein needs from animal foods above, the choice to switch to plant-based foods can be an alternative that can contribute to environmental sustainability. Plant-based protein from sources such as nuts and seeds is a more economical option, and its use can help maintain environmental balance (Amania et al., 2022). By being aware of the impacts of meat and animal product production, we can actively participate in efforts to improve SDGs that ensure sustainable living.

Vegetable protein can be called an imperfect type of protein due to its low essential amino acid content, so it is considered unable to ensure various growth needs and maintain the life of various tissues in the body. However, consuming vegetable protein can boost the immune system, maintain healthy bones and teeth, help reduce the risk of chronic diseases such as heart disease and stroke, and contain vitamins and minerals that are important for the body such as B vitamins, iron, magnesium, and copper. From these benefits, it can be concluded that vegetable protein can be used as a good alternative for the community with vegetable protein sources which include peanuts, tempeh, tofu, seitan, edamame, and quinoa. What needs to be considered in consuming vegetable protein by the community by ensuring that the vegetable protein consumed contains sufficient essential amino acids. Amino acids are indispensable in the growth process, as catalysts of biochemical processes in the body, carriers, activators, regulators, structural strengtheners, and immunity boosters.

As for efforts to diversify animal protein from beef to vegetable protein, here are some foods both fresh and processed that can be used as alternatives to beef, namely:

(i) Tempeh is processed from soya beans which are rich in various nutrients important for health, especially protein with complete essential amino acids (Triandita and Putri., 2019). In 100 grams of tempeh there are 24.5 grams of protein contained, almost equivalent to the protein content in beef.

(ii) Peanuts are a non-processed food that can help in endurance. Peanuts have the highest protein from other vegetable protein sources. In 100 grams of peanuts, there are 27.9 grams of protein contained, higher than the protein content in beef. Consuming peanuts can prevent heart disease (Abidin & Rahmawati, 2023).

(iii) Seitan is a processed food made from wheat that resembles meat and has a high protein content (Yuliantoro *et al*., 2022). In 100 grams of seitan, there are 21 grams of protein contained, almost equivalent to the protein content in beef.

(iv) Tofu is a processed food derived from soya beans with a high protein content and has a quality equivalent to the quality of animal protein (Indriana & Sitepu, 2018). In 100 grams

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of tofu, there are 10.9 grams of protein contained, almost equivalent to the protein content in beef.

Diversifying the consumption of animal protein into plant protein can help achieve several sustainable development goals (SDGs). In this case, diversification of animal protein consumption into plant-based protein can help achieve SDG number 2 (Zero Hunger), which is to increase food availability and reduce hunger by increasing protein sources from plants or plant-based proteins that can help create more sustainable food systems and achieve better food security (Aminah, 2025). Diversification can support food security by increasing the variety of sources of nutrients needed by the body which will help ensure that people are getting quality food and also help reduce the need for intensive agriculture that can damage the environment, thus encouraging more sustainable agriculture and more efficient use of resources (Pangestika *et al*., 2021).

Diversifying the consumption of animal protein into plant protein can also help achieve SDGs number 3 (Good Health and Well-being), which is to improve human health and well-being by reducing excessive consumption of animal protein, especially those associated with foods high in saturated fat, which can help reduce the risk of disease and switch to plant protein which will have a positive impact on public health and contain more balanced nutrition (Nirmala and Octavia., 2022). In addition, it can help expand the understanding of nutrition, especially for people who have limitations in obtaining quality food so that they can reach better nutrition with economical vegetable protein (Hidayatulloh *et al*., 2022).

Efforts to improve SDGs through the distribution of infographics on food diversification of animal protein into vegetable protein received a positive response as shown by 105 people understanding and 12 people did not understand infographics on food diversification of animal protein into vegetable protein.

4. CONCLUSION

Food diversification can change people's consumption patterns so that they are not dependent on one type of nutrient source, but can consume other nutrients such as the consumption of protein from animal origin to vegetable protein. However, the processing of animal protein tends to require more resources, such as water and land. It sometimes has an adverse impact on the environment that does not support a sustainable lifestyle. In addressing the fulfillment of protein needs from animal foods, the choice to switch to plant-based foods (diversification of animal protein into vegetable protein) can be one of the alternatives that can contribute to environmental sustainability. The diversification of animal protein consumption into vegetable protein can help achieve several sustainable development goals (SDGs), namely number 2 (Zero Hunger) and number 3 (Good Health and Well-being), which in its application can help increase food availability to reduce hunger and improve health by reducing excess consumption of animal protein. The dissemination of education using infographic media on Instagram stories is one of the effective efforts that can be made to improve the SDGs, the results of the dissemination found that 105 people understood and 12 people did not understand the infographic about food diversification from animal protein to vegetable protein.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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