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## Analysis of the Relationship between Nutritional Knowledge and Nutritional Status

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### Abstract

**Objective.** Nutrition is a crucial factor that significantly affects a person's overall health. A person's nutritional status is influenced by various factors, and one of them is their understanding of nutrition. In the wake of the COVID-19 pandemic, nutrition has become a hot research topic, especially for researchers who are also teachers. In this research, the independent variable would be the students' nutrition knowledge, whereas the dependent variable would be their nutritional status. The primary aim of this research is to establish the relationship between nutritional knowledge and nutritional status. The findings of this study could help in encouraging students to share their knowledge about nutrition with their family members and become advocates of good health practices.

**Materials and Methods.** For this particular research study, a sample group of 50 students from class X of SMA Negeri 2 Merauke was selected using a purposive sampling technique to obtain accurate findings, the research employed quantitative research methods, specifically the Spearman Test, which aimed to test correlation.

**Result.** The findings of the study indicate a Spearman rank correlation coefficient of 0.804, suggesting a strong correlation between the two variables under consideration. Moreover, the coefficient of determination analysis reveals that nutritional knowledge factors account for 38% of the variation in nutritional status, with the remaining 62% being influenced by other factors. These results underscore the importance of enhancing nutritional knowledge to improve nutritional status.

**Conclusion.** Maintaining a healthy diet and lifestyle is crucial, especially during these times of the COVID-19 pandemic. While teachers at school play a significant role in imparting nutrition knowledge, it is the collective responsibility of everyone to prioritize healthy living. By doing so, we not only increase our fitness levels but also contribute to the overall quality of our family's economy. It is essential to recognize that nutrition knowledge is just one of the many factors that influence our well-being, but it is undoubtedly a crucial one.

**Keywords:** Relationships, Nutritional Knowledge, Nutritional Status

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## Introduction

Proper nutrition plays a crucial role in determining an individual's overall health status. It significantly impacts growth, development, and bodily functions, thereby enhancing the quality of life (Prasetyaningrum et al., 2021). In other words, nutrition is an important part of human life which greatly influences the quality of a person's growth and development, both physical and knowledge. Meanwhile, nutritional needs are defined as the amount of nutrients needed for a person to achieve and maintain good nutritional status (Merryana Adriani, 2015).

As we all know, the COVID-19 pandemic has caused a significant disruption to human activities, not just in Indonesia but across the globe. It has adversely affected the economy, healthcare, and education. In response, the government has implemented a work and study from home policy to curb the spread of the virus in the country (Porajow et al., 2021). As a result, it is feared that reducing physical activity at home will have an impact on health. New living habits with the new normal order limit individuals' ability to carry out routine activities, whether it is working to earn a living or carrying out a social life. The internet is a facility offered as a solution for communicating in social life.

It is possible that staying at home for a long time can lead to increased sitting, lying, playing games, watching television, and using mobile devices, resulting in less energy expenditure and consequently leading to an increased risk of disease (Nurmidin et al., 2020). Adopting a healthy lifestyle can prevent health issues during a pandemic. Sufficient rest, physical activity, and balanced nutrition are key. One of the factors that determines a person's nutritional status is the person's understanding of nutrition (Alfyan, 2016). In this case, the researcher is a biology teacher who is responsible for imparting knowledge related to nutrition. It is believed that students' comprehension of nutrition plays a crucial role in influencing the nutritional habits of their families at home. Female students, in particular, are expected to become facilitators for those around them in maintaining nutritional needs that have a significant impact on public health.

Observations at SMA Negeri 2 Merauke, a school in Merauke Regency, South Papua Province, indicate that nutrition is a crucial factor that requires attention. Students often believe that good nutrition can be achieved solely through consuming healthy food and engaging in physical activities. However, having a good understanding of nutrition is essential to maintain a healthy lifestyle and diet. Unfortunately, teachers have not paid much attention to nutrition education as they believe that students learn enough about it in class. This situation

highlights the need to investigate the link between nutritional knowledge and students' nutritional status, which can serve as a foundation for nutrition education in schools in the future. Therefore, this research is of great importance.

This research is of utmost importance, particularly because no previous studies have been conducted in Merauke on the relationship between female students' knowledge about nutrition and their nutritional status. The students are expected to apply their newfound knowledge on nutrition to improve their own health status and share the information with others. Therefore, this study is crucial to address this issue. It is the first time this research is being carried out, mainly due to the fact that before the COVID-19 pandemic, nutritional status was often linked to physical activity and social status. The results of this research will be valuable for educators in Merauke, as they will be able to place greater emphasis on educating students about nutrition, considering the significant role it plays in maintaining good health.

This research aims to present a new perspective on the connection between nutritional knowledge and nutritional status. What makes this study different is that it was conducted at SMA Negeri 2 Merauke, which is located near the river/stream line and has abundant and nutritious natural resources, such as sea animals and vegetables. The potential of this region is very significant, considering that nutrition is closely related to food sources. Weaknesses such as forgetting the importance of nutritional knowledge are certainly problems that need to be addressed immediately, as supported by the evidence presented in this research.

## **Materials and Methods**

### ***Study participants.***

Data collection was conducted at Merauke State High School in 2021, with the primary research subjects consisting of 62 male and female students from classes X MIPA 1 and X MIPA 2. However, for the purposes of this study, a sample size of 50 students was selected through purposive sampling techniques. These students were selected based on their willingness to participate fully in nutrition-focused learning activities.

### ***Study organization.***

This study employs quantitative research methods to test the correlation between two variables: understanding nutrition and nutritional status. Correlation testing will display data in numerical form and reveal the significance of the relationship between the two variables. Nutritional knowledge data was obtained through student written exams with a score range of 0-100, as stated in the RPS for nutrition and nutrition learning. Nutritional status was determined through measurements of body weight and height, which were then used to

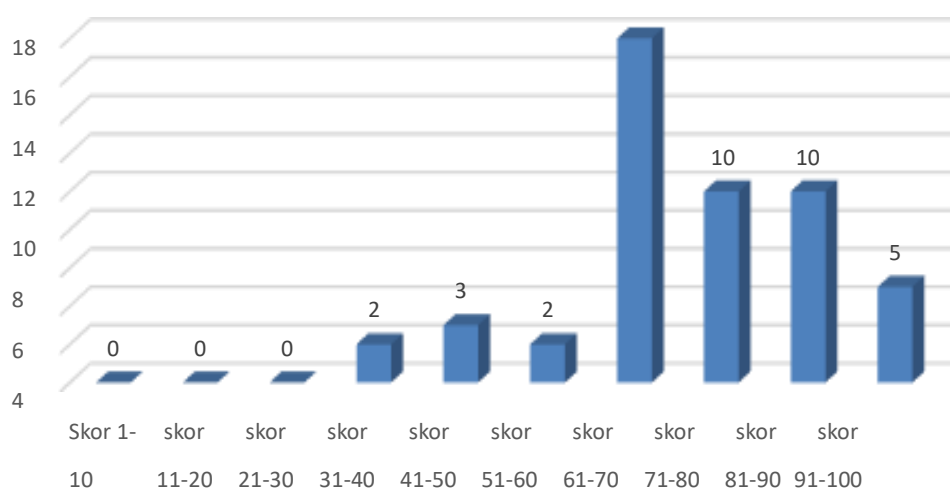
calculate Body Mass Index (BMI) based on the 2003 Indonesian Ministry of Health Practical Guidelines for Medical Nutrition Therapy.

### ***Statistical analysis.***

Univariate analysis is used to analyze each variable studied. Bivariate analysis used the Spearman Test to determine the relationship between nutritional knowledge and nutritional status (Kurniasari et al., 2022). In order to gather information on the students' nutritional knowledge, we will conduct a learning assessment that includes a score component ranging from 1 to 100. To determine their nutritional status, we will collect data on their height and weight, which will be measured by the students themselves and then verified through documentation. Body Mass Index (BMI) is recommended as a reliable indicator for assessing the nutritional status of adolescents (Rismayanthi, 2012).

### **Results**

The research findings on nutrition education were analyzed using a score range of 1 to 100. To simplify the calculations, the scores were categorized into 10 groups with a 10-point difference, such as 1-10, 11-20, and so on.



**Figure 1.** Results of Learning Values Understanding Nutrition

The evaluation results revealed that no students (0%) scored in the 1-10, 11-20, and 21-30 groups. In the 31-40 group, 2 students (4%) achieved the required learning score, while 3 students (6%) made the cut in the 41-50 group. Similarly, 2 students (4%) scored in the 51-

60 group, while 18 students (36%) achieved the required learning outcome in the 61-70 group. In the 71-80 group, 10 students (20%) scored in the required range, and the same number of students (20%) achieved it in the 81-90 group. Lastly, the highest score range of 91-100 included 5 students (10%) who met the learning outcome requirements. The diagram above describes the results of the scores obtained by the 50 research subjects.

The results of nutritional status are obtained based on measurements of body weight and height which are then entered into th

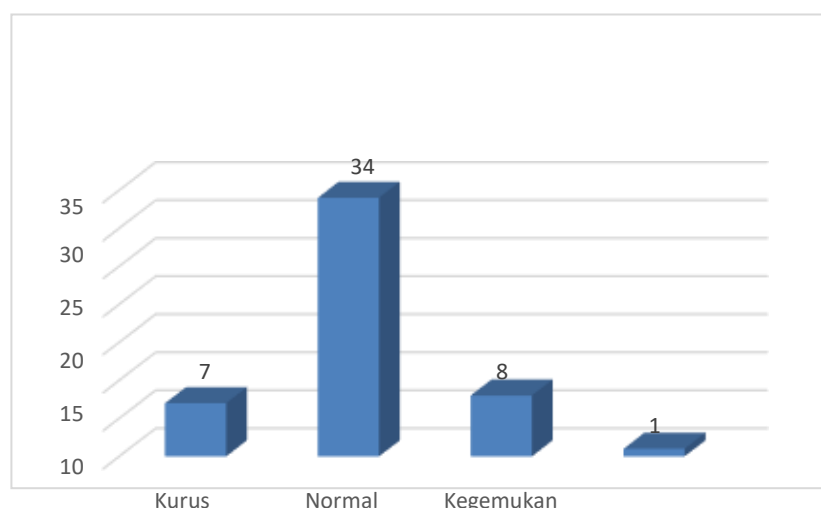
e equation for measuring Body Mass Index (BMI). As stated in the 2003 Indonesian Ministry of Health practical guidelines for medical nutritional therapy (Depkes, 2013) Ministry of Health of the Republic of Indonesia, one way to determine nutritional status is by comparing body weight and height with the equation  $BMI = BB \text{ (kg)}/TB^2 \text{ (meters)}$ . As a result of the classification, categories are divided into 4, namely thin, normal, overweight and obese. The following is a Body Mass Index classification table based on the Ministry of Health of the Republic of Indonesia.

**Table 1.** Classification of Body Mass Index Categories

No.	Categories	Male	Female
1	Thin	$< 18 \text{ Kg/m}^2$	$< 17 \text{ Kg/m}^2$
2	Normal	$18 - 25 \text{ Kg/m}^2$	$17 - 23 \text{ Kg/m}^2$
3	Overweight	$25 - 27 \text{ Kg/m}^2$	$23 - 27 \text{ Kg/m}^2$
4	Obesity	$> 27 \text{ Kg/m}^2$	$> 27 \text{ Kg/m}^2$

\*) Sumber: Pedoman praktis terapi gizi medis Departemen Kesehatan RI 2003

Out of the 50 students whose nutritional status was evaluated, 14% fell under the thin category, with a total of 7 students. The normal category had the highest number of students, with 68% or 34 individuals. The overweight category had 16% or 8 students, while only one student (2%) was categorized as obese. A score was assigned to each category based on the conversion results, with a score of 5 given to the normal category, a score of 3 to both thin and overweight categories, and a score of 1 to the obesity category. The nutritional status of the 50 students can be better visualized through the following diagram.



**Figure 2.** Nutritional Status Results

Table 2 will provide an overview of the statistical test outcomes acquired from the Spearman test results.

**Table 2.** Relationship between Nutritional Knowledge and Nutritional Status

Variable	Koefisien Korelasi	$\alpha$	p- Value	Information
Relationship between Nutritional Knowledge and Nutritional Status	0,804	0,05	0,000	Meaningful

The statistical tests conducted on students at SMA Negeri 2 Merauke show a strong correlation between nutritional knowledge and nutritional status. The Spearman rank correlation data indicates a strong relationship between the two variables with a rho value of 0.804. Further analysis based on the coefficient of determination reveals that nutritional knowledge factors are responsible for 38% of the nutritional status, while the remaining 62% is influenced by other factors. The results from Table 2 above provide valuable insights into the relationship between nutritional knowledge and nutritional status among students at SMA Negeri 2 Merauke.

## Discussion

According to the recent research findings, there exists a robust correlation between individuals' nutritional knowledge and their nutritional status. These results align with Natalia M Roring's study conducted in 2019. The research also suggests that there is a connection between nutritional knowledge, physical activity, and nutritional status (Natalia Megawati

Roring, Jimmy Posangi, 2019). Having good knowledge about nutrition helps students to regulate healthy eating habits and maintain a regular lifestyle leading to good nutritional status. Students with limited knowledge about nutrition tend to fall in the thin or overweight categories.

During the COVID-19 pandemic, when most activities must be done at home, it's crucial to understand the importance of good nutrition and even make it a social activity with family members. Maintaining a healthy diet can help improve overall physical fitness, which refers to a person's ability to carry out activities without experiencing excessive fatigue. Therefore, having a good nutritional status is vital for supporting an ideal body, and ultimately, enabling individuals to perform daily tasks with ease (Syamsudin & Ohoilulin, 2018). The ideal body mass index of a person significantly impacts their agility in performing daily and sports activities. A better quality body mass index enhances the body's ability to carry out physical tasks with ease and efficiency (Zulman et al., 2018).

Based on the coefficient of determination analysis, the study reveals that knowledge has an impact of 38% on the nutritional status of the subjects. On the other hand, the remaining 62% of the influence on nutritional status is attributed to other factors. As explained in (Seprianty et al., 2015) nutritional problems can be supported by several factors such as age, gender, parental education, parental employment, and family income. Anthropometric nutritional status assessment is carried out to determine the child's nutritional status, so that nutritional problems can be managed as soon as possible.

Apart from the factors above, various possibilities related to factors that influence nutritional status also emerge, one of which is how the quality of the food eaten is related to nutritional status. The four healthy and five perfect foods are the best recommendations. However, in everyday life, quite a few snacks at school and at home are fast food or what is usually called fast food. Several studies show that there is no relationship between consuming fast food and children's nutritional status. Like research conducted by Nanik Kristianti, et al (Nanik Kristianti, Dwi Sarbini, 2009).

An important factor to support nutritional status is food security. Family food security is related to the amount of family expenditure to meet food needs (Septikasari, 2018). During the pandemic, finances are a factor that is very important to pay attention to. Except for families who have permanent jobs such as civil servants or state-owned employees. Of course, family income is one of the factors that must be considered in efforts to maintain good nutrition

which leads to health in the family environment. In addition, a good economy will provide an indication of the availability of multivitamins at home. As explained, multivitamins are an effort to provide nutrition for individuals who are not used to consuming healthy foods (Riana Kurnia Dewi, 2012).

Ensuring sufficient intake of protein and energy is a crucial factor in enhancing the nutritional status of adolescents and promoting overall health. Like the results of research published in the Journal of Public Health Research Indexed by Scopus Q2. The research results show that there are many determining factors in improving nutritional status in adolescents, but protein and energy intake have the closest relationship (Veronika et al., 2021). There are numerous factors that can contribute to improved nutritional status. It is important that further research be conducted in Merauke and at the school level to validate various aspects related to nutrition. This research will serve as a reliable reference for scientific fields related to nutrition, supporting ongoing advancements in the field.

### **Conclusions**

Research has found that there is a strong correlation between nutritional knowledge and nutritional status. However, it's important to keep in mind that factors such as age, gender, parental education, parental occupation, family income, family food security, and others also play a role. Although this research discusses only the relationship between nutritional knowledge and nutritional status, it's important to conduct further in-depth studies to understand the impact of other factors as well. This will provide students, teachers, and parents with a better understanding of what factors are strongly related to nutritional status.

### **Acknowledgment**

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### **Conflict of interest**

South Papua boasts an abundance of natural resources, including agricultural products, plantations, and marine life, that are not only rich in nutrients but also have great potential for



consumption. It is essential to create awareness about the importance of nutrition, and this can start by educating people on the fundamentals of nutrition.

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