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Implementation of Balanced Nutrition Principles In Students of Physical Education And Health

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ABSTRACT

Students of the Sports and Health Education Study Program are expected to serve as role models in adopting a healthy lifestyle, including balanced nutrition practices. This study aims to determine the level of balanced nutrition implementation among Sports and Health Education students at the University of Jambi. The study was conducted using a descriptive quantitative approach with a cross-sectional design. The population consisted of students from the 2021–2024 cohorts, with a sample size of 151 individuals selected through stratified random sampling. The results showed that the overall level of balanced nutrition implementation was in the high category, with an average of 78.75%. This data indicates that students have sufficient awareness and commitment to applying the principles of balanced nutrition. However, there are still weaknesses in certain aspects, particularly in weight monitoring and food consumption variety. These weaknesses are an important note that balanced nutrition practices are not yet fully maximized, so more targeted interventions are needed to strengthen the implementation of these principles. Therefore, the recommendation proposed is the need for environment-based strategies, such as providing healthy canteens on campus and integrating applied nutrition material into the learning curriculum.

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C. Analysis and interpretation of data;
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E. Obtaining funding

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INTRODUCTION

Balanced Nutrition is a food consumption guideline that aims to meet the body's nutritional needs to maintain health, growth, and productivity. This concept was developed in response to the limitations of the "Four Healthy Five Perfect" paradigm, which did not take into account proportions, physical activity, and the influence of environmental hygiene. According to the 2014 Balanced Nutrition Guidelines (PGS) released by the Indonesian Ministry of Health, Balanced Nutrition emphasizes four main pillars that are interrelated (KEMENKES, 2014).

The four pillars of Balanced Nutrition include: (1) consuming a variety of foods to ensure the fulfillment of macro-nutrient (carbohydrates, protein, fat) and micro-nutrient (vitamins

and minerals) requirements; (2) routine physical activity for at least 30 minutes per day to maintain ideal body weight and heart function; (3) clean living behaviors to reduce the risk of infections that can interfere with nutritional status; and (4) regular weight monitoring to assess the balance between energy intake and output (KEMENKES, 2014).

In the last decade, the lifestyle of students in Indonesia and Southeast Asia has shown a worrying trend in terms of eating habits. A study conducted by (Sabta Aji et al. (2022) shows that during the COVID-19 pandemic, there was an increase in the consumption of fast food and sweet drinks among Indonesian students, along with a decrease in the consumption of vegetables and fruits. This pattern has continued after the pandemic, driven by high mobility, academic pressure, and easy access to instant foods (Sabta Aji et al., 2022).

Fast-paced lifestyles and busy class schedules make students prone to neglecting the principles of balanced nutrition. However, an unbalanced diet can lead to micronutrient deficiencies, weight gain, and an increased risk of metabolic syndrome (Andriyani et al., 2024). According to a study conducted at three state universities in Indonesia, more than 60% of students consume foods high in fat and sugar more than three times a week (Ekawati et al., 2025).

A balanced diet plays an important role in maintaining brain performance, endurance, and physical fitness. Students have high energy and nutritional needs due to their intense academic and social activities. According to the WHO, nutritional imbalances in students can reduce concentration and productivity, and increase the risk of stress and chronic fatigue (Peltzer & Pengpid, 2017).

Students in the Physical Education and Health program are supposed to be the main representatives of a healthy lifestyle. They are prepared to become educators who not only master theory but are also able to set an example of healthy living practices, including in terms of diet. Ironically, however, research shows that they are not immune to less-than-ideal consumption patterns (Habibah et al., 2025).

A study by Huong et al. (2022) in Malaysia found that although the majority of students had adequate knowledge of nutritional principles, only 27% consistently applied them in their daily lives. A similar phenomenon was also found in Indonesia, where even health science students tended to ignore the basic principles of balanced nutrition in their daily practices (Suryabrata et al., 2023).

Sports students who follow an unbalanced diet are at risk of decreased physical performance, low muscle mass, and metabolic disorders. Research shows that student athletes with high-calorie but nutrient-poor diets experience fatigue more quickly during physical training and an increased risk of injury (Bosli et al., 2021). The implementation of balanced nutrition principles among physical education students refers to the translation of nutritional theory into actual daily behavior.

This implementation includes how individuals apply diverse food consumption, maintain calorie balance, and monitor their nutritional status. In the context of higher education, implementation indicators can be observed through the frequency of vegetable and fruit consumption, the habit of reading nutrition labels on food, and compliance with national nutrition guidelines (Elliott et al., 2024).

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One important indicator of implementation is the consumption of at least five servings of fruits and vegetables per day. Research by Rhea et al. (2020) shows that students with high nutritional literacy tend to consume more fruits and vegetables and have healthier eating behaviors in general. Knowledge and understanding of nutritional value also contribute to changes in the consumption of fast food, which tends to be high in calories but low in nutrients.

In addition, the behavior of reading food labels has become an increasingly relevant indicator of implementation. Students who regularly read nutrition labels tend to choose foods with better nutritional composition, such as those low in added sugar and high in fiber (Sousa et al., 2023). Food labels serve as an educational tool that helps students make more informed consumption decisions.

The use of technology, such as calorie and food intake monitoring applications, also supports balanced nutrition implementation. Mobile-based interventions (mHealth) have been shown to increase calorie awareness, vegetable consumption, and nutrition literacy (Schaafsma et al., 2025). This shows that the success of

Implementation is influenced by the ease of access to nutritional information and behavioral support tools.

Eating habits in peer groups or sports communities are also sociocultural factors that cannot be ignored. If peers tend to choose instant or high-fat foods, this tendency can spread through group social norms. Therefore, group-based interventions are an effective strategy for changing eating behaviors (Kubik et al., 2005).

Most studies on student nutrition focus on the general population, with very few studies highlighting groups of students with special physiological needs, such as sports students. In fact, the energy, protein, and micronutrient requirements of sports students tend to be higher than those of non-sports students (Hossain et al., 2022). This gap is what makes this study important to conduct.

METHODS

This study uses a descriptive quantitative method, which aims to present information systematically, factually, and accurately regarding the application of balanced nutrition principles by students in the Sports and Health Education Study Program. This approach was chosen because it was deemed appropriate for describing the characteristics, behaviors, and habits of students in implementing nutritional principles without intervening or manipulating the variables under study (Creswell & Creswell, 2017).

The research design applied was a cross-sectional survey design, which allowed data collection to be carried out within a certain period of time from a group of respondents who were sampled. In its implementation, this study involved distributing structured questionnaires to students to measure their knowledge, attitudes, and behaviors related to balanced nutrition simultaneously, without the need for continuous observation or experimentation. The population in this study was all students of Physical Education and Health at the University of Jambi from the 2021-2024 cohorts.

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Table 1.
Total Population

Num.	Angkatan	Number of active students
1	2021	226
2	2022	205
3	2023	160
4	2024	167
Total		**758**

This study used stratified random sampling, divided into sub-populations or strata based on specific characteristics, and then randomly sampling from those strata. Based on this technique, the sample size in this study was determined to be 20% of the total population.

Table 2.
Total Sample Population

No	Class	Population	Sample
1.	2021	226X20%	45
2.	2022	205X20%	41
3.	2023	160X20%	32
4.	2024	167X20%	33
	Total Sample		**151**

In its implementation, this study involved distributing structured questionnaires to students to measure their knowledge, attitudes, and behaviors related to balanced nutrition simultaneously, without requiring continuous observation or experimentation.

Although this design does not allow researchers to draw causal conclusions, the data obtained remains valuable in a descriptive context and can be used as a basis for developing policy recommendations and educational interventions for academic and health communities.

RESULTS AND DISCUSSION

The results of the study involving students of the Sports and Health Education Study Program Class of 2021-2024 as respondents, with a total of 151 respondents, namely students of the Sports and Health Education Study Program, so that the total data analyzed in this indicator is 151 x 10 = 1,510 answers.

Implementation of Balanced Nutrition Principles in Physical Education and Health Education Students Based on Indicators of Diverse Food Consumption.

Each student provided answers in the form of a 5-point Likert scale, with each box divided into the following categories: Strongly Agree, Agree, Undecided, Disagree, Strongly Disagree. The data processing results showed that the highest score came from the "agree" option. To determine the actual score, it was necessary to convert the frequency of answers for each option or category to its weight, then add them up. To obtain the maximum score, a calculation was made by multiplying the total responses by 5 (the highest score).

After calculations and analysis, the actual score was found to be 5,713. The maximum score was also found to be 7,550. By finding these two scores, we can calculate

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the final result of the percentage analysis in the research method. The formula is (actual score/maximum score) * 100%. When the obtained numbers are substituted (5.713/7.550)*100%= 75.6%, which, according to the percentage analysis

used in the research method, falls into the "High" category. This means that Physical Education and Health students still have a high level of awareness regarding the food they consume.

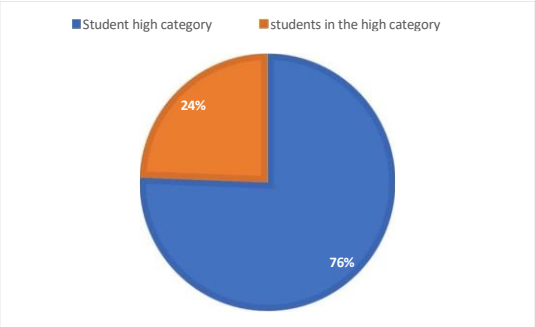

Figure 1.
Average Diagram of Diverse Eating Indicators

Implementation of Balanced Nutrition Principles among Physical Education and Health Education Students Based on Clean Living Behavior Indicators

With a total of 151 respondents, the total data obtained for this indicator is 151 x 10 = 1510. Through an analysis of respondent frequency, it was found that students of the Physical Education and Health Education Study Program in the highest frequency category chose "Agree" and "Strongly Agree." This indicates that students in the Physical Education and Health Program predominantly engage in cleaner living behaviors. The actual total score obtained is 6,307. The maximum possible score is 7,550. Therefore, the calculation is (6,307/7,550) x 100%. This resulted in a percentage of 83.5%, which falls into the "Very High" category.

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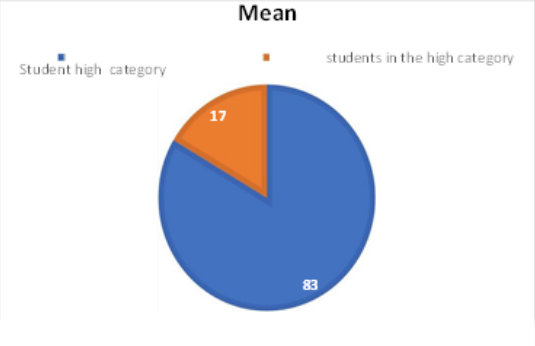

Figure 2.
Average Diagram of Clean Living Behavior Indicators

Implementation of Balanced Nutrition Principles in Physical Education and Health Education Students Based on Physical Activity Indicators

The data processing results show that students mostly "agree" and "strongly agree" with the physical activity indicator, meaning that physical education and health can carry out physical activities such as sports between their lecture activities. The actual total score obtained is 6,056, while the maximum score is 7,550. The percentage achievement analysis for this indicator is (6.056/7.550)x100% = 80.2%, which falls into the "high" category. These results mean that students majoring in physical education and health can carry out their physical activities despite their busy class schedules.

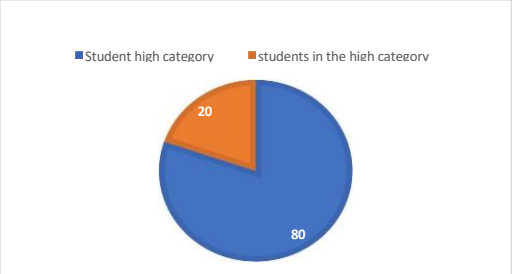

Figure 3.
Average Diagram of Physical Activity Indicators

Implementation of Balanced Nutrition Principles in Physical Education and Health Education Students Based on Weight Monitoring Indicators

The data processing results show that physical education and health students tend to understand this, as evidenced by the large number of students who chose "agree," meaning that physical education and health students have shown that they can pay attention to and monitor their own weight. The total actual score obtained was 5,707, and the maximum score obtained was 7,550. After analyzing the percentage, the achievement of this indicator was (5,707/7,550) x 100% = 75.5%, meaning that the percentage of achievement of this indicator was in the "high" category.

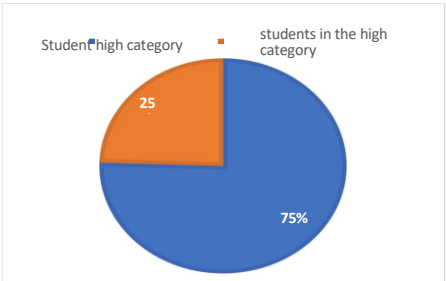

Figure 4.
Weight Monitoring Indicator Chart

The total score from the data collection / maximum score x 100%. Thus, the result is 23,783/30,200 x 100% = 78.75%. Based on the calculation of the questionnaire percentage of 78.75%, it can be said that the implementation of the principle of balanced nutrition among physical education and health students is in the "high" category.

The results of this study indicate that the implementation of balanced nutrition principles among Physical Education and Health students at the University of Jambi is in

the high category, with a cumulative percentage of 78.75%. These findings indicate that, in general, students have good awareness and commitment to implementing a healthy lifestyle, particularly in terms of consuming a variety of foods, practicing clean living, engaging in physical activity, and monitoring their weight. The high percentage of indicators of clean living behaviors (83.5%) and physical activity (80.2%) is understandable given their educational background, which emphasizes the importance of cleanliness and physical fitness as an integral part of health.

As future educators and sports coaches, students in the Sports and Health Education Study Program are expected not only to understand nutritional theory but also to be role models in applying a healthy lifestyle. The high percentage of implementation found in this study is a positive indicator that they have a strong foundation to become agents of change in society. However, a more holistic and sustainable approach from the institution is needed to ensure that this knowledge is truly applied in daily practice.

CONCLUSION

The implementation of balanced nutrition principles among students was in the high category, with a cumulative percentage of 78.75%. This shows that students have good awareness and commitment to applying a healthy lifestyle in accordance with balanced nutrition principles, which include consuming a variety of foods, practicing good hygiene, engaging in physical activity, and monitoring weight.

Therefore, it is recommended that study programs and universities develop environment-based interventions, such as providing healthy canteens, practical nutrition workshops, and integrating applied nutrition material into the curriculum. Thus, students will not only be able to implement balanced nutrition principles for themselves, but also transfer this knowledge and behavior to the wider community in the future.

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