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ORIGINAL ARTICLE

Analysis of the Level of Knowledge About Balanced Nutrition for Pre-Teenagers at SDI Azzahra Kecamatan Beji Kabupaten Pasuruan

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Abstract:
Balanced nutrition is the daily arrangement of food in types and amounts that are appropriate to individual needs. Balanced nutrition is the right approach that can be practiced by teenagers to meet the increased demand for nutrients and to achieve optimal nutritional status and health. A common problem among teenager today is micronutrient deficiency, often referred to as anemia. A person's level of knowledge influences their attitudes and behaviors in food selection, which in turn affects their nutritional status. Teenager, as the nation's future generation, play an important role in the country's progress by becoming a healthy generation. The purpose of this study is to examine the level of knowledge about balanced nutrition and the principles that must be considered in order to maintain teenager health at SDI Azzahra, Kecamatan Beji. This research is a descriptive correlational study with a pre experimental approach, conducted by administering a pre-test, delivering educational material, and a post-test. In this study, the sampling process used total samples. The sample consisted of 40 participants, with a gender distribution of 55% male and 45% female, aged 10–12 years. The results showed that teenager knowledge of balanced nutrition for the body falls into the good category. This was evidenced by an improvement in responses between the pre-test and post-test. Knowledge levels increased from 78.5% to 98.5%.
Keywords: Pre-Teenagers; Balanced Nutrition; Anemia

1. Introduction

A teenager is someone who is in a transition period from childhood to adulthood. According to the World Health Organization (WHO), the age range for adolescents is 10–19 years. Based on the Regulation of the Minister of Health of the Republic of Indonesia No. 25 of 2014, Teenagers are residents in the age range of 10-18 years and according to the Population and Family Planning Agency (BKKBN) the age range of teenagers is 10-24 years and not yet married.

Balanced nutrition refers to a portion of food that contains nutrients in appropriate proportions, including proteins, carbohydrates, vitamins, minerals, and other essential nutrients, without excess or deficiency, according to daily physical activity needs. Food hygiene must also be taken into consideration. The body requires adequate intake of nutrients and balanced nutrition to maintain both physical and mental health. Issues related to balanced nutrition frequently occur among adolescents. Incomplete implementation of healthy eating patterns and lifestyles has become a contributing factor to various health problems. Many mistakes are made in fulfilling nutritional balance between nutrient consumption and the adequacy required by the body. Each individual has different nutritional needs, depending on age, gender, and daily activities.

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There are many teenagers who have a good level of knowledge about balanced nutrition. However, this knowledge is only limited to insight which is not fully applied in a relevant manner in everyday life. There are many teenagers who still eat carelessly without considering the nutritional quality. Teenagers have a great influence on the quality of human resources in Indonesia. Teenagers as the next generation of the nation play an important role in the progress of the country in the future. Therefore, knowledge about healthy behavior and lifestyle to fulfill balanced nutrition must begin early to avoid various health problems. To prevent nutritional problems, it is necessary to have knowledge about balanced nutrition guidelines which can be used as a guide for eating, physical activity, clean living and maintaining normal body weight (the four pillars of balanced nutrition).

2. Materials and Methods

The research design used was pre-experimental, involving a pre-test, delivery of educational material, and a post-test. In this study, the sampling process used total samples. The study was conducted on January 10, 2026, at SDI Azzahra Beji, located at Jalan Raya Bangil-Pandaan No. 01 Sidowayah, Kecamatan Beji, Pasuruan, East Java. The sample consisted of 40 respondents aged 10–12 years. The research implementation consisted of three stages: distribution of pre-test questions, delivery of educational material through a PowerPoint presentation and discussion, and finally, distribution of post-test questions to the respondents to determine whether there was an increase in adolescents' knowledge after the counseling session. The counseling media contained material on the definition of adolescence, the concept of balanced nutrition, factors influencing balanced nutrition, the three functions of balanced nutrition, the four pillars of balanced nutrition guidelines, the benefits of fulfilling balanced nutrition, and issues related to nutritional problems among adolescents.

3. Results

The research results present a univariate analysis covering gender, age, and level of knowledge. The characteristics of the respondents in this study are adolescents. The age range of the respondents in this study is 10–12 years.

Table 1. Respondents' Gender and Age Data

Variabel	**N**	**%**
Jenis Kelamin		
Laki-laki	22	55%
Perempuan	18	45%
Jumlah	40	100%
Usia		
10 tahun	15	37,5%
11 tahun	10	25%
12 tahun	15	37,5%
Jumlah	**40**	**100%**

Based on Table 1, the distribution of respondents by gender shows that the majority are male (55%), while female respondents account for 45%. The age distribution indicates that respondents aged 10 years make up 37.5%, those aged 11 years account for 25%, and those aged 12 years represent 37.5%.

Table 2. Adolescents' Knowledge Level on Balanced Nutrition

Variabel	Pretest		Posttest	
	Benar	Salah	Benar	Salah
Nasi merupakan makanan bergizi seimbang	35	5	39	1
Air yang harus dikonsumsi dalam 1 hari minimal 8 gelas	30	10	40	0
Makanan yang sehat adalah makanan dengan gizi seimbang	32	8	40	0
Zat yang diperlukan tubuh berasal dari makanan disebut gizi	20	20	38	2
Racun tidak termasuk gizi yang diperlukan tubuh	40	0	40	0
Jumlah	**78,5%**	**21,5%**	**98,5%**	**1,5%**

Based on Table 2, the results show that during the pre-test, 78.5% of adolescents answered correctly while 21.5% answered incorrectly. In the post-test, 98.5% of adolescents answered correctly and only 1.5% answered incorrectly.

Table 3. Adolescents' Attitudes and Understanding of Balanced Nutrition

Variabel	*Pre-test*			*Post-test*		
	Ya	Tidak	Tidak Tahu	Ya	Tidak	Tidak Tahu
Apakah Anda mengetahui tentang gizi seimbang?	20	15	5	40	0	0
Apakah Anda mengetahui faktor yang mempengaruhi gizi seimbang?	15	18	7	40	0	0
Apakah Anda mengetahui manfaat pemenuhan gizi seimbang?	25	10	5	39	0	1
Benarkah bahwa ekonomi mempengaruhi faktor penyusunan gizi seimbang?	24	13	3	40	0	0
Salah satu fungsi utama makanan bergizi seimbang adalah sebagai sumber tenaga, apakah pernyataan tersebut benar?	34	6	0	40	0	0
Sudahkah Anda menerapkan makanan bergizi seimbang?	25	15	0	35	5	0

Agar tubuh tetap sehat, makanlah aneka ragam makanan yang bergizi seimbang	37	2	1	40	0	0
Tablet tambah darah atau sirup FE dapat memaksimalkan zat besi yang diserap oleh tubuh	20	10	10	37	2	1
Jumlah	**62,5%**	**27,8%**	**9,7%**	**97,1%**	**2,2%**	**0,6%**

Based on Table 3, the results show that during the pre-test, 62.5% of adolescents answered "Yes," 27.8% answered "No," and 9.7% answered "Do Not Know." In the post-test, 97.1% of adolescents answered "Yes," 2.2% answered "No," and 0.6% answered "Do Not Know."

4. Discussion

Overview of Adolescents' Knowledge Level on Balanced Nutrition

The overview of adolescents' knowledge level on balanced nutrition among students at SDI Azzahra Beji falls into the good category. Moreover, after being provided with material on balanced nutrition, their knowledge further increased. The students' knowledge level related to balanced nutrition during the pre-test was 83%. After receiving the material and participating in a question-and-answer session, they were given a post-test. Knowledge levels increased from 78.5% to 98.5%. Attitudes and understanding, as shown in Table 3, also indicate improvement in answering questions. During the pre-test, some adolescents still misunderstood the recommended daily water intake. The provision of educational material proved to have a significant effect on improving adolescents' knowledge of balanced nutrition.

According to Depkes tentang Gizi dan Nutrisi dengan mengutip dari Sandjaja (2009), balanced nutrition is defined as a daily diet that contains nutrients in types and amounts appropriate to the body's needs, while considering the principles of food diversity, physical activity, clean living behavior, and maintaining normal body weight to prevent nutritional problems. The level of knowledge about balanced nutrition among adolescents is very important, because by understanding balanced nutrition, adolescents will be able to maintain their health by paying attention to healthy daily lifestyles. The Balanced Nutrition Guidelines (Dietary Guidelines) used in developed countries serve as a reference for healthy eating and physical activity for the community. In Indonesia, the development of balanced nutrition messages is recommended in the form of the Balanced Nutrition Pyramid (Tumpeng Gizi Seimbang). A person's level of knowledge without a proper foundation of nutritional understanding will always be reflected in the quality of food consumed daily.

Benefits of Fulfilling Balanced Nutrition

Fulfilling balanced nutrition is highly beneficial for adolescents' health. Balanced nutrition helps maximize physical growth because the essential nutrients required by the body are adequately met. During preschool and school age, nutritional needs are crucial for concentration in learning, engaging in activities, socializing, and physical development. In adolescence, boys naturally tend to eat more, which unconsciously allows them to meet their nutritional needs. Meanwhile, adolescent girls tend to focus more on maintaining a "well-

balanced diet" to preserve body proportions, making them more vulnerable to nutritional deficiencies.

Furthermore, the benefits of fulfilling balanced nutrition also include achieving maturity of reproductive or sexual functions. Several principles must be met, consisting of five components:

1. **Carbohydrates** – the main source of human energy. Other benefits include regulating calorie intake, maintaining muscle mass, supporting digestive health, and providing longer satiety. Food sources of carbohydrates include rice, corn, potatoes, and wheat.
2. **Protein** – processed into amino acids, which are essential for building muscles, organs, skin, and hair. Proteins also regulate hormonal functions. Food sources of protein include eggs.
3. **Fat** – serves as a reserve source of energy when primary energy is depleted. Consuming foods rich in fat provides longer satiety. Fat is commonly found in palatable foods such as animal meat, avocados, nuts, and butter.
4. **Vitamins** – play various roles in regulating metabolism. Each vitamin has specific functions: maintaining eye health (Vitamin A), supporting metabolic processes (Vitamin B), strengthening immunity (Vitamin C), promoting bone health (Vitamin D), acting as antioxidants (Vitamin E), and contributing to blood clotting (Vitamin K). Vitamins are generally found in vegetables and fruits.
5. **Minerals** – are essential elements in healthy and nutritious food. In fact, 60% of the human body consists of water, thus daily water intake must be fulfilled with a minimum of 8 glasses or approximately 2 liters. Adolescents also require calcium, particularly adolescent girls, as calcium absorption is highest around the time of menarche and decreases thereafter (Brown, 2011).

Adolescents' Knowledge of Problems Related to Balanced Nutrition

According to Pratami (2016), The direct causal factors of nutritional problems, whether overnutrition or undernutrition, are the imbalance between food intake and the body's needs, as well as the presence of disease and infection. One of the most common nutrition-related problems among adolescents is anemia. Anemia is defined as a low concentration of hemoglobin (Hb) in the blood (WHO, 2015). The National Institute of Health (NIH) in the United States (2011) states that anemia occurs when the body does not have a sufficient number of red blood cells (Fikawati, Syafiq, & Veretamala, 2017). Nutritional anemia is a condition in which blood hemoglobin levels are lower than normal due to the inability of tissues that form red blood cells to produce them adequately to maintain normal hemoglobin levels. Iron-deficiency anemia arises from a lack of iron, which disrupts the formation of red blood cells and other bodily functions (Adriani & Wijatmadi, 2012). Anemia frequently occurs among adolescent girls because of menstruation. During menstruation, blood loss occurs, especially if it is prolonged and heavy. As blood is lost, the iron contained in the blood is also depleted. If this condition persists for a long time, iron-deficiency anemia is highly likely to occur. However, although girls are at higher risk of anemia, it does not mean that anemia cannot occur in boys. Prevention of anemia can be carried out through the provision of iron supplementation (TTD).

Another nutritional problem is undernutrition, or stunting. Stunting is a chronic nutritional deficiency caused by inadequate nutrient intake over a prolonged period, resulting in growth disorders in children, namely height that is lower or shorter than the standard for their age. Research conducted in Brazil by Hoffman et al. (2000) found that childhood stunting is associated with developmental challenges. For Indonesian children, overcoming stunting is crucial so they can grow and develop optimally, with emotional, social, and physical readiness to learn, innovate, and compete at the global level. Stunting is influenced by limited access to food in terms of both quantity and nutritional quality, lack of dietary diversity, and poor access to health services, including sanitation and clean water.

Obesity or overnutrition is a condition caused by energy intake exceeding the body's needs. The excess energy is stored as a reserve in the form of fat, leading to overweight or obesity. The adverse effects of overnutrition include an increased risk of degenerative diseases such as heart disease, diabetes, and hypertension. Preventing nutritional problems requires the dissemination of balanced nutrition guidelines, which can serve as a reference for healthy eating patterns, regular physical activity, clean living habits, and routine monitoring of body weight to maintain normal weight.

Thus, inadequate nutritional intake in an individual will lead to undernutrition, making the body more susceptible to disease and reducing productivity. In contrast, excessive nutritional intake results in overnutrition, characterized by a high-calorie/energy diet, which increases the risk of various diseases such as hypertension, heart disease, and diabetes. Based on these issues, the formulation of balanced nutrition guidelines has been developed to meet the needs of different age groups, levels of physical activity, and health status.

Adolescents' Knowledge and Attitudes Toward Healthy Behavior

Healthy behavior is an individual's action or activity, whether directly or indirectly, aimed at maintaining and improving health as well as preventing disease risks (Kementerian Pendidikan, 2011). Healthy behavior includes both overt and covert actions to prevent or avoid diseases and their causes, as well as efforts to enhance health. In addition to fulfilling balanced nutrition for achieving a healthy life, it must also be accompanied by healthy lifestyle practices. Healthy living behavior should begin with personal awareness and small steps. This can be initiated by instilling the habit of living clean and healthy within oneself. Furthermore, it can be practiced by maintaining environmental cleanliness, avoiding harmful factors to health, and engaging in physical exercise.

Research Limitations

This study only focuses on the level of knowledge about balanced nutrition, without examining eating behavior, exercise habits, and environmental factors that also influence the nutritional status of adolescents.

Directions for Future Research

Future research should examine the long-term impact of implementing a balanced diet on students' physical health, learning concentration, and academic performance.

5. Conclusions

1. The level of adolescents' knowledge regarding balanced nutrition among SDI Azzahra Beji students is categorized as good and shows improvement after receiving educational material and interactive discussions.
2. Nutrition education has proven effective in enhancing adolescents' knowledge, attitudes, and understanding of healthy eating patterns, fluid intake, and the importance of physical activity.
3. Common nutritional problems among adolescents include anemia, stunting, and obesity, which are generally caused by imbalances between nutritional intake and bodily needs, as well as environmental and behavioral factors.
4. Fulfilling balanced nutrition provides significant benefits for adolescents, such as supporting physical growth, reproductive maturity, concentration in learning, immunity, and prevention of degenerative diseases.
5. Adolescents' knowledge and attitudes toward healthy behavior still require reinforcement to ensure consistent application in daily life.

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Conflict of Interest

The authors declare no conflict of interest.

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