

Case Report

The Impact of Free Nutritional Meal Program on Students' Physical Fitness and Mental Health: A Descriptive Study

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Abstract

This study examines the impact of the free lunch program on students' physical fitness and mental health using a descriptive qualitative approach. The analysis focuses on how nutritional interventions contribute to students' physical and psychological well-being. Findings reveal that the program significantly improves students' health, which in turn enhances academic achievement, learning performance, emotional stability, and participation in school activities. Beyond addressing nutritional needs, the program functions as a strategic initiative for sustainable human resource development by fostering a healthier and more productive generation. To maximize its impact, each component of the program must be carefully designed and implemented. Strengthening access to adequate nutrition through free lunch programs is therefore a vital step, requiring government support as part of integrated health and education policies aimed at student welfare and long-term national development.

Keywords

Education, Nutrition, Physical Fitness, Mental Health, Students, Achievement

1. Introduction

The state has an obligation to guarantee the welfare of all its citizens [22]. This responsibility includes various aspects, including health, education, economy, and social security. Welfare is not only limited to the provision of basic services, but also includes the creation of an environment that supports the development of individuals and communities [12]. The government needs to formulate fair and sustainable policies, which guarantee equal access for citizens to resources and opportunities, and protect their rights. In addition, the state

must be sensitive to the needs of vulnerable groups and strive to reduce social disparities [70]. Thus, the state's responsibility is to build a solid foundation for a prosperous and just life for the entire community.

In Indonesia, there are a number of laws and regulations that support public welfare. The 1945 Constitution is a constitutional basis that guarantees public welfare. Article 31 of the 1945 Constitution states that every citizen has the right to receive an education. In addition, Article 28C paragraph (1)

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emphasizes the right of every individual to develop themselves. This includes fulfilling basic needs and access to education, science, art, and culture which are very important for improving the quality of life and public welfare. Therefore, the government has a responsibility to provide quality education, including adequate facilities and infrastructure such as classrooms, laboratories, and libraries [4]. Good infrastructure greatly supports the learning atmosphere and the curriculum also needs to be adjusted to the needs of the times, and teachers must be trained to have adequate competence [3]. In addition, nutrition is also an important aspect, so free lunch programs or the provision of healthy food in schools are very necessary [38]. In addition to academic aspects, students' emotional well-being must also be considered through psychological support programs. Education must be accessible to all children without exception [11].

The well-being of society is greatly influenced by the health and fitness of individuals, especially students. Good health is an important foundation for productivity and self-development [33]. When students are in good physical and mental condition, they are more motivated to learn, have better concentration, and can absorb information effectively. Good fitness also helps reduce stress, improve mood, and enhance social skills [17]. In this way, the educational environment becomes more positive and productive. This prepares the younger generation to make a good contribution to society. Thus, improving the health and fitness of students is not only beneficial for themselves, but also improves overall social welfare [74].

The Indonesian government runs various social welfare programs to improve the quality of life of the community, including students. These programs include educational assistance, scholarships, and other initiatives that ensure access to good education for all students [5]. Currently, one of the main focuses is the free lunch program. School lunches are very important for student health, where this program not only meets daily nutritional needs but also supports children's physical and mental development [63]. All of these initiatives are part of the implementation of the 1945 Constitution which emphasizes the importance of educating the nation. The government's initiative with a program to provide nutritious food in schools helps ensure that students have enough energy and do not feel hungry while studying [48]. In addition, this program also teaches the importance of a healthy diet from an early age, which is expected to be applied throughout life. Thus, students' physical health improves, as does their academic achievement and motivation to go to school [50]. Then the results of the study said that the healthy lunch program can also help reduce the educational gap, especially for students from families with limited access to nutritious food at home [19].

Consuming good and balanced nutrition is very important for physical health and cognitive, emotional, and motor development of students [84]. Research shows that nutritional intake significantly affects all three aspects [13, 1, 61]. Re-

search examining nutrition states that good nutritional intake, especially those rich in iron, vitamins, and minerals, can improve cognitive function. Malnutrition, such as anemia, iron deficiency, can interfere with concentration and learning ability [44]. Students who eat nutritious breakfasts tend to have better academic achievement than those who do not [77]. This opinion is supported by research results showing that nutritional intake affects mood and behavior. Such as complex carbohydrates can increase serotonin production in the brain, which helps regulate mood [52]. Research also shows that students who eat nutritious breakfasts have lower anxiety levels and are more enthusiastic about learning [58] and good nutrition, especially that rich in protein and omega-3 fatty acids, can improve students' motor skills [72]. Although fulfilling nutrition for students has a number of benefits, malnutrition is a problem that has a major impact on student growth and development [71]. Malnutrition can inhibit physical growth and brain development, as well as reduce endurance [23]. In addition, malnutrition also affects behavior, interaction, and academic achievement [43]. Healthy adolescents are very important for the future of a country. The younger generation has an important role in the development and progress of the nation. Student health plays a major role in the progress of the country. This opinion is supported by research results that suggest that healthy students tend to have better concentration, more optimal learning abilities, and higher resistance to stress, and all of this helps them achieve better academic achievement and prepare themselves for future challenges [31].

Having good health enables young people to innovate and work more productively. It will also help them make positive contributions to society [63]. By investing in students' health and wellness, we can reduce future economic burdens, reduce health care costs, and increase productivity [9]. Therefore, prioritizing students' health and wellness through free lunch programs is an important step. This study highlights the impact of free nutritious meal programs on students' physical fitness and mental health [73]. As we know, these programs not only help address malnutrition in children but also improve their concentration and academic performance. By ensuring that all students receive adequate nutrition while attending school, we support their physical and mental development. In addition, these programs can reduce socioeconomic disadvantage by ensuring that all students, regardless of their background, have equal access to healthy food. Thus, investing in free lunch programs is a long-term investment in the health and future of the nation.

2. Methods

This study uses a qualitative descriptive approach and analysis method. This study is a research procedure that produces descriptive data in the form of written or spoken words from people and observable behavior [75]. This qualitative study focuses on the natural background holistically,

treats humans as research tools, conducts data analysis inductively, and emphasizes the process rather than the results of the research agreed upon by the researcher and the research subject. The research subjects used must reflect the relevance to the research phenomenon. The phenomena analyzed in this study utilize research that is relevant or related to the topic discussed, namely the impact of the free nutritious meal program on students' physical fitness and mental health.

3. Results and Discussion

Free lunch programs are an important social initiative in many countries that aim to help disadvantaged communities

and improve the well-being of children in schools. These programs are usually supported by governments, non-profit organizations, or partnerships between the public and private sectors [76]. Several studies have revealed the main benefits of these programs, including reducing hunger and malnutrition in children, so that they can focus and perform better in school [41, 78]. In addition, these programs also help reduce the burden of family expenses, so that they can use the money for other more pressing needs [79]. Although they have been around for many years, free lunch programs continue to evolve and adapt to current societal needs, including a focus on health and the desirability of the food provided [59].

Table 1. Legal Framework and Coverage of Free Lunch Programs in Various Countries.

Nation	Legal Framework	Coverage
Brazil	Programa Nacional de Alimentação Escolar (1997)	Decentralization, local procurement, family farming, national nutritional guidelines.
Finland	Kansallinen Kouluruokailulaki (1945)	Universal access, free food, nutritional guidelines, Nordic nutritional recommendations.
South Korea	Hakgyo Geupsikbeop (1995)	Eligibility based on income, nutritional quality, portion size, nutritional adequacy figures for Koreans.
USA	Nation School Lunch Act (1946)	Federal funding, healthy eating education, nutritional guidelines for Americans
India	Mid-Day Meal Scheme (Constitutional Court Decision 2002)	Central/state funding, grades 1-8, standard menu with minimum nutritional requirements, decentralized implementation with community involvement.
Japan	Gakkou Kyuushoku-hou (1954)	Universal access, free food, local procurement, traditional Japanese cuisine, decentralization with national nutrition guidelines.
Germany	School Lunch Program (based on state law, one of which Berliner Qualitätskriterien in Berlin, 2003)	Universal access, free/subsidized food, healthy food, balanced nutrition, recommendations of the German Nutrition Society, decentralization with state regulations.
France	School Canteen Services (based on regional regulations, namely Charte de Qualité de l'alimentation collective pour la restauration scolaire) (2022)	Universal access, high quality food, national quality charter, focus on sustainability.
Philippines	Masustansyang Pagkain para sa Batang Pilipino Act (2017)	National level coordination, compliance with national standards and guidelines, and program monitoring.
Sao Tome & Principe	Law 4/2012 establishing the School Food and Health Programme (2012)	Budget procurement, program implementation, national level coordination, and program monitoring and evaluation.

Each country has clear objectives and legal frameworks to ensure the smooth implementation of student lunch programs [82]. These programs are designed to improve students' health and well-being [16]. By providing proper nutrition, students can be more focused and enthusiastic throughout the day, which in turn supports their academic achievement [37]. Although free lunch programs offer many benefits in supporting student development and growth, their implementa-

tion requires attention to several important aspects so that the desired objectives can be achieved optimally [19]. The quality and nutritional value of the food served must be a primary concern [28]. Balanced and nutritious food will help students to be more concentrated and active in the learning process [42]. The sustainability of the program must also be guaranteed, both in terms of funding and logistics of providing food, so that the program does not stop midway [60]. In addition,

aspects of food hygiene and safety must be considered to avoid health risks for students [66]. The involvement of the local community, including parents and schools, in the planning and implementation of the program is also very important to increase effectiveness and ensure that the program is in accordance with students' needs [29]. With these factors in mind, free lunch programs can be an important pillar in creating a better learning environment, so that all students in need can benefit. Therefore, ensuring their access to adequate nutrition is the most important factor in public health, as it directly shapes the vitality and potential of future generations [62].

3.1. Physical Fitness

Physical fitness is the body's ability to perform daily activities well without feeling too tired, and still have the energy to do additional activities [53]. In the context of school, physical fitness for students is very important because it directly affects their learning methods and academic achievement. One of the most influential factors is nutritional status. Good nutrition provides the energy and nutrients needed by the body to function properly [40]. Conversely, poor nutrition can interfere with physical performance and overall health [35]. Therefore, good nutritional intake is a key factor in supporting students' physical fitness. Research shows a strong relationship between nutritional quality and fitness levels [8, 57, 68, 21].

Optimal physical fitness not only plays an important role in health, but also contributes to students' academic achievement and mental well-being [33]. A balanced diet that includes carbohydrates, proteins, fats, vitamins, and minerals, greatly supports optimal body function [67]. This confirms that students who consume nutritious foods have a better level of physical fitness compared to those who are malnourished [24]. Optimal nutritional status has an impact on the availability of sufficient energy, supports bone and muscle growth, and strengthens the immune system. Conversely, inadequate nutritional status can inhibit children's physical and mental development, cause fatigue, and reduce the body's resistance to disease [20]. During growth and development and dense activities, students need adequate intake of nutrients and fluids. Lack of fluids can have a negative impact on concentration, alertness, and attention span [6]. Hydration is a very important element to support physical performance, where fluids play a role in maintaining body temperature and optimal organ function [32]. Overall, balanced and sufficient nutritional intake is very important to support good physical performance for students during their growth and development [84].

The results of the study stated that physical fitness has a direct influence in influencing students' ability to concentrate while studying [15]. Students with good physical condition can follow intensive learning programs and can follow lessons more effectively [81]. Therefore, they need sufficient and

balanced energy intake to support learning activities. Thus, maintaining a healthy and balanced diet is a fundamental aspect that must be met in an effort to support students' learning success [10]. Various studies have shown that students with good nutritional status have higher aerobic capacity and endurance. Conversely, students with poor nutrition tend to tire quickly and are more susceptible to health problems that ultimately affect their ability to concentrate and perform well in school [64, 14, 55].

Adequate nutritional intake is very important to achieve optimal physical fitness for students, as it has been stated that students need to get the right balance of macro and micro nutrients, as well as enough fluids to support their health and physical performance [25]. Therefore, it is very important to pay attention to their diet in order to meet all the nutritional needs needed for school activities and extracurricular activities [80]. As explained earlier, physical fitness is closely related to the quality of learning. By maintaining fitness, students can improve concentration, endurance, and stamina, all of which contribute to academic and non-academic success. This discussion highlights the importance of nutrition education, both in the school environment and at home. Parents and educators must ensure that students receive nutritious and balanced food intake to support their physical health. Initiatives such as the provision of free nutritious food in schools which are currently being implemented by the government can be an effective solution to improve the nutritional status and fitness of students, thereby optimizing the learning process.

3.2. Mental Health

Mental health is essential to a person's well-being. Mental health affects how a person thinks, feels, and acts [83]. In schools, students' mental health is a major concern because it affects their ability to learn and interact with friends [49]. Mental health is a state in which a person can cope with daily stress, work well, and contribute to society [47]. This shows that the greater the demands in learning, the greater the impact on students' mental health. Therefore, it is important to pay attention to students' mental health so that they can reach their full potential, cope with stress, and contribute well to society [30].

In the book entitled *Mental Health and Wellbeing*, defines mental health as the ability to manage emotions, deal with stress, and adapt to changes in life. In addition, mental health also includes the formation of healthy relationships with others [45]. In the context of school, this relates to how students interact daily with their peers, teachers, and the school environment. When students face mental health challenges, it can hinder their potential. Mental health instability can make it difficult for them to achieve good performance, both academically and socially [36]. Good mental health includes self-awareness and the ability to cope with life's difficulties [65]. Mental health is related to the balance

between thoughts, feelings, and behavior, where individuals with good mental health generally have a stable mood, maintain positive relationships, and are able to solve problems effectively [51].

Mental health is an important part of student development. Mental health does not only mean the absence of disorders, but also the ability to function well in everyday life [27]. Therefore, students need to maintain mental health in order to reach their potential and live a meaningful life. Students' mental health affects their learning ability, social interactions, and overall well-being [34]. One important factor that affects mental health is the interaction between nutrition and brain neurotransmitters. Nutrients such as vitamins, minerals, and omega-3 fatty acids play a major role in brain health. These nutrients support the formation and maintenance of brain cells and help produce neurotransmitters, chemical compounds that allow communication between brain cells [18].

Happiness and emotional well-being are essential foundations for healthy physical and mental development [46]. When students feel happy and supported, they are more likely to be motivated to learn, better able to cope with challenges, and develop important social skills [54]. Proper nutrition helps improve concentration, memory, and energy, all of which are critical for academic success. In addition, nutrition influences the production of neurotransmitters such as serotonin and dopamine, which are important for mood and emotions [52]. Good nutrition can increase the production of these neurotransmitters. Conversely, oxidative stress can damage brain cells and contribute to mental health problems such as depression and anxiety [39]. To overcome these mental problems, compounds are needed that can fight free radicals and protect body cells from damage. The antioxidants needed can be obtained from vitamins C and E contained in fruits and vegetables, which play a role in fighting oxidative stress and maintaining brain health [26].

Based on research that examines preventive efforts to overcome mental health problems through nutritional improvement. The results of the study indicate that individuals with poor mental health are often deficient in essential nutrients such as vitamins, minerals, amino acids, and omega-3 fatty acids. The study also identified strategies in efforts to improve mental well-being to optimize the consumption of nutritious foods such as fish, green vegetables, nuts, and whole grains [56]. In another study that discussed mental health and nutrition. The results showed that unhealthy eating patterns were associated with higher levels of anxiety and depression in students. Then this study put forward a method to reduce mental health problems through healthy eating habits [69]. The strategies and methods in efforts to prevent mental health that have been explained previously, that good eating habits and normal nutrition are associated with better mental health. Students who routinely consume nutritious foods tend to have better mental well-being [7]. Then, research that investigates the development of the relationship between mental health and academic achievement during

various developmental periods in childhood and adolescence by investigating the relationship between mental health and academic achievement. Research results show that mental health problems in early childhood and adolescence increase the risk of poor academic achievement, indicating the need for awareness and treatment to provide fair opportunities for education [2].

Mental health is greatly influenced by nutrition. A healthy diet can support stable mood and brain function. A healthy diet increases neurotransmitter synthesis, protects the brain from oxidative stress, and supports brain function. Several studies have shown a positive relationship between students' mental health and proper nutrition. To improve mental health and fulfill their potential in learning activities and in daily life, students must consume healthy foods. Healthy and nutritious foods are a source of energy, support the growth and repair of brain tissue, and maintain a stable mood. These are important components that are very important for student development and growth. Thus, a healthy diet can contribute to improving the quality of mental health which ultimately has an impact on academic achievement and other areas.

4. Conclusions

The free nutritious meal program has a significant impact on students' health and well-being by ensuring that they receive adequate nutrition every day. This initiative supports students' cognitive, emotional, and physical development, which in turn improves their learning ability and academic achievement. In addition, the program plays a role in reducing social disparities by providing equal access to all students, including those from low-income families. Improving students' health is in line with national goals, as healthy students can make positive contributions to the country's economic and social progress. Therefore, it is imperative for the government and educational institutions to continue to support and expand this program. The results of the study indicate that prioritizing the free nutritious meal program is a strategic step by the government to ensure students' well-being and sustainable national development.

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Author Contributions

Tri Prasetyo: Conceptualization, Analyze, Writing – original draft, Resource.

Raffiandy Alsyifa Putra: Data curation, Surveillance, Methodology, Investigation

Randi Kurniawan: Validation, Visualization, Writing – review and editing, Project administration

Reza Febrianto Nurdin: Evaluation, Health Review, Clinical Interpretation, Relevance of Nutrition to Cognitive Development

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Data Availability Statement

Data are available from the corresponding author on reasonable request. All references used in this study follow normal procedures with due regard to the principles of citation that are permissible in the world of research in general.

Conflicts of Interest

The authors declare no conflicts of interest.

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