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UTILIZING MONOPOLY GAME MEDIA TO ENHANCE STUDENTS' MOTIVATION ACQUISITION ABOUT THE FULFILLMENT OF BALANCED NUTRITION

Firnaliza Rizona*, Fuji Rahmawati, Sigit Purwanto, Rijal Akbar Difa Padiana
Study Program of Nursing, Faculty of Medicine, Universitas Sriwijaya, Jl. Masjid Al Gazali, Bukit Lama,Palembang, Sumatera Selatan 30128, Indonesia
*firnaliza.rizona@fk.unsri.ac.id

ABSTRACT
The limited knowledge and motivation of balanced nutrition among school children poses a significant challenge to their health and overall development. Inadequate motivation in fulfillmnet of balanced nutrition among school children contributes significantly to the triple burden of malnutrition, encompassing undernutrition, micronutrient deficiencies, and overnutrition. One such approach is the use of interactive educational tools, such as monopoly-based games, which combine learning with play to effectively enhance motivation retention. This study examines the potential of a monopoly game as a health education tool to improve students' understanding and motivation the fulfillment of balanced nutrition. This study was quantitative research which used pre-experimental with one group pre posttest design. A total of 30 students participated in the study, selected through purposive sampling. A pre-test and post-test design was employed to measure the motivation level before and after the intervention. Statistical analysis using the Wilcoxon test revealed a significant improvement in students' motivation, with a p-value of 0.000 ($p < 0.05$), indicating the effectiveness of the intervention by using monopoly games about balanced nutrition. Implementing educational media through games, such as the monopoly game, significantly enhances students' motivation in fulfillment of balanced nutrition.

Keywords: children; education; games; monopoly; motivation

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INTRODUCTION

Unbalanced nutrition among school-aged children remains a significant issue, stemming from poor dietary habits and insufficient intake of essential nutrients. Many children skip meals, particularly breakfast, and their diets are often deficient in fruits, vegetables, and dairy products, while high in sugar, salt, and processed fats. This imbalance contributes to a range of health problems, including micronutrient deficiencies, such as iron deficiency, and dual burdens like stunting and obesity (Unicef, 2020).

Contributing factors include peer influence, aggressive marketing of unhealthy foods, and easy accessibility to fast food, especially in urban school environments. These poor dietary patterns not only affect physical health but also impair cognitive function, learning abilities, and long-term growth. Interventions such as improving the nutritional quality of school meals, introducing fortified foods, and fostering health-positive behaviors are vital in addressing these challenges. Programs that focus on education, policy support, and creating healthier food environments can play a key role in reversing these trends and promoting optimal nutrition during critical growth periods. (WHO,2022).

One of the educational media that can be utilized along with current games development is through the monopoly games. The modification of the monopoly game is expected to serve as

an educational tool that enhances students' motivation and interest while receiving health-related information, specifically about balanced nutrition. This game-based educational media incorporates information on balanced nutrition obtained through a literature review, referencing credible sources such as the Ministry of Health, particularly the nutrition department, and other scientific references. Building on this background, the researchers aim to develop educational media using monopoly games to enhance students' motivation in fulfillment of balanced nutrition in Palembang.

According to the most recent Palembang City Health Profile, the incidence of obesity has shown an upward trend, and efforts to reduce obesity remain below the targeted goals (Dinas Kesehatan Kota Palembang, 2021). In contrast, data on stunting reveals that the highest prevalence of stunted toddlers in Palembang City was recorded at the Taman Bacaan Health Center in Tangga Takat village, with 148 children identified as stunted based on the 2020 PPGBM (Community-Based Nutrition Recording and Reporting) recap.

Preliminary study findings indicate that students often consume snacks such as fried foods and instant cold beverages (in sachets) at school, while only 1 in 10 students brings homemade meals to consume during school hours. Although some students are aware of the health benefits of vegetables, they remain reluctant to consume them, even when prepared by their parents at home. In light of this phenomenon, this study aims to investigate the effectiveness of monopoly-based educational media in enhancing students' motivation to adopt balanced nutritional practices. This study examines the potential of a monopoly game as a health education tool to improve students' understanding and motivation the fulfillment of balanced nutrition

METHOD

This study employed a quantitative approach using a pre-experimental design with a one-group pre-test and post-test framework. The participants consisted of 30 elementary school students selected through purposive sampling from schools in the Ilir Barat District of Palembang City. Data collection was conducted using questionnaires administered before and after an educational intervention incorporating a monopoly game designed to teach concepts of balanced nutrition. The primary variable examined was the students' motivation to adopt balanced nutritional practices. The educational monopoly game, developed by the researcher, served as the intervention tool to enhance students' motivation regarding balanced nutrition.

Data were collected using questionnaires. For univariate analysis, descriptive statistics were used to summarize participants' characteristics, including gender and age. Bivariate analysis was conducted for the pre-experimental one-group pre-test and post-test design, with statistical testing performed using the wilcoxon Test to evaluate changes in the data. The study's research protocol received ethical approval from the Regional Ethics Committee for Human Research under the Health Research Review Committee, Faculty of Medicine, Sriwijaya University, Indonesia. The protocol was registered with the approval number 411-2024.

RESULT

The respondent characteristics are detailed in Table 1. The findings indicate that the majority of participants in this study (53.3%) were boy. Additionally, a significant proportion of respondents (85%) were within the age 10 years.

Table 1.

Characteristic of respondent

Characteristic	f	%
Gender		
boys	16	53.3
girls	14	46.7
Age (Years)		
9	6	20
10	22	73.3
11	2	6.7

Table 2.
Respondent's motivation pre post test after conducting intervention

	Mean	*Min*	*Max*	*Ties*	*Positive ranks*	*p*
Pre Test	11.4	6	17	0	30	0.000
Post Test	18.8	16	20			

According to Table 2, data obtained from 20 questions assessing students' motivation regarding the fulfillment of balanced nutrition showed that the mean score before the intervention was 11.4, which increased to 18.8 after the intervention. All respondents (30 students) experienced an improvement in motivation scores between the pre- and post-intervention assessments, with a statistically significant p-value of 0.000.

DISCUSSION

Based on the analysis, most respondents were male, with the majority being 10 years old. The findings revealed an increase in students' motivation scores, as well as an improvement in both the minimum and maximum values following the intervention on balanced nutrition intake. The data, analyzed using the Wilcoxon test, yielded a p-value of 0.000, indicating a significant effect of the educational intervention utilizing monopoly games. This study demonstrates a clear difference between pre- and post-intervention scores, highlighting a notable enhancement in students' motivation toward balanced nutrition intake as a result of the game-based educational approach.

Motivation is defined as the internal process that initiates, guides, and sustains goal-directed behaviors. It represents the driving force behind actions and decisions, influenced by a combination of biological, psychological, and social factors. This concept is central to understanding behavior change, particularly in health, where motivation determines the likelihood of adopting and maintaining healthier lifestyles (Deci & Ryan, 1985; Schunk et al., 2014). Educational games have been demonstrated to enhance children's motivation by transforming the learning process into a more engaging and enjoyable experience. By incorporating play-based elements, these games make educational activities more appealing, thereby fostering increased enthusiasm and active participation among children (HLT Magazine, 2020).

A meta-analysis highlights that educational games, particularly those incorporating gamified strategies, effectively enhance both intrinsic and extrinsic motivation among learners. The findings indicate that gamification primarily boosts extrinsic motivation, while serious games have a more pronounced impact on fostering intrinsic motivation. These methods create an interactive and stimulating learning environment, which not only supports knowledge retention but also encourages active student participation (Ren et.al, 2024). This approach is particularly valuable for engaging learners in topics that may initially seem less appealing, such as nutrition education. The other study explain that examined the evolution of game-based learning and emphasized its significant potential to enhance student engagement and

motivation. Their analysis of game-based learning studies demonstrates that such approaches promote interactive and active learning, which is essential for grasping complex or abstract topics, including the concept of balanced nutrition. This methodology bridges theoretical understanding with practical applications in an engaging and enjoyable way, fostering a deeper and more meaningful learning experience (Fu & Hwang, 2021).

The motivation gained by children through interventions such as educational games is closely linked to the behaviors they will exhibit, particularly in terms of fulfilling their balanced nutrition needs. However, it is important to note that other factors may also influence children's actions in meeting their nutritional requirements.The study published by PLOS Global Public Health (2022) emphasizes the critical role of motivation in behavior change interventions designed to improve maternal and child nutrition. It suggests that for such interventions to be effective, they must not only ensure access to nutritious foods but also address the motivational factors that drive both children and parents to incorporate these foods into their daily routines. By applying behavioral change theories focused on motivation, these interventions can enhance both nutritional knowledge and actual behavior, leading to improved long-term health outcomes. This underscores the importance of integrating motivational elements in nutrition education to achieve lasting behavioral changes.

Studies indicate that adapting the classic Monopoly game can significantly improve student motivation and educational outcomes. Research by Kuang et al. (2021) demonstrated that a customized version of Monopoly, specifically designed for accounting education, yielded better improvements in knowledge retention compared to methods such as computer-assisted instruction. This tailored approach not only increased active student participation but also provided more lasting educational benefits. These findings highlight the potential of game-based learning tools like Monopoly to enhance both motivation and learning in diverse educational contexts.

During the game, students were actively engaged and enthusiastic about participating in the educational activity through the Monopoly game. They attentively followed the researchers' instructions on gameplay mechanics and maintained focus throughout the process. Activities such as rolling dice, selecting cards, answering questions, and discussing scenarios presented on the cards encouraged active participation. Repeating correct answers and understanding required actions fostered an increase in students' motivation to adopt better behaviors in fulfilling balanced nutrition needs, demonstrating the game's effectiveness in promoting educational outcomes.

A child's motivation is closely linked to the understanding and support provided by their parents, which plays a critical role in transforming the child’s motivation into concrete actions for meeting daily balanced nutritional needs. Research indicates that parents lack adequate knowledge about the indicators used to assess their children's nutritional status, particularly regarding undernutrition, obesity, or stunting. They are also unaware of the appropriate nutritional intake required for their children's age, often leading to either insufficient or excessive nutrition. Parents expressed a strong need for easily accessible information to address these gaps (Rizona et al., 2024).

Recent studies underscore the critical role of parental and environmental support in shaping children's behavior, particularly concerning nutrition. A systematic review published in *Nutrients* highlights that family knowledge, attitudes, and practices (KAP) significantly impact adolescents' dietary behaviors. Factors such as parental education, parenting styles,

and food availability at home are key determinants in cultivating healthy eating habits. Adolescents with consistent family support are more likely to adopt and sustain good dietary practices, including balanced nutrition intake (Chen et al, 2021).

Another studty show in their analysis published in *Nutrition Reviews*, highlight the pivotal role of parents and environmental factors in shaping children's dietary habits. Their findings suggest that initiatives incorporating parental involvement and promoting a nurturing home environment are crucial in translating nutritional knowledge into practice. Moreover, these strategies foster long-term positive changes in children's eating behaviors, underscoring the necessity of active parental engagement to ensure effective and sustained dietary improvements. This emphasizes the interplay between guidance from caregivers and environmental support in achieving meaningful behavior change (Tarro et al. 2021).

Ensuring optimal nutritional status among school-aged children is essential for their physical growth, cognitive development, and long-term health outcomes. Recent research highlights the persistent dual burden of malnutrition in this population, encompassing both undernutrition and the increasing prevalence of overweight and obesity. For instance, a systematic review conducted in Pakistan revealed that among children aged 5–15 years, 25.1% were underweight, 23% were stunted, 24% were wasted, while 11.4% were categorized as overweight, and 6.9% as obese (Frontiers in Nutrition., 2021). Similarly, studies from South Asia have documented a triple burden of malnutrition, characterized by the coexistence of undernutrition, overweight/obesity, and micronutrient deficiencies in individuals aged 5–19 years. These findings emphasize the urgent need for comprehensive and targeted nutritional interventions to address the full spectrum of malnutrition in this vulnerable demographic and promote better health trajectories (Choedon, T et al, 2024).

Student motivation plays a critical role in improving nutritional status among school-aged children by influencing their engagement in healthier eating habits and physical activities. Evidence suggests that students with higher levels of self-determined motivation are more likely to make nutritious dietary choices and participate in regular physical activity, both of which are essential for maintaining optimal health. For instance, research on vocational students indicated a positive association between self-motivation and adherence to healthy lifestyle behaviors (Deci, E L et al, 2021). Similarly, interventions designed to enhance motivation for dietary changes have demonstrated success in increasing fruit and vegetable consumption among university students. These findings underscore the importance of fostering intrinsic motivation and creating supportive environments to empower students to adopt and sustain healthier lifestyles. Educational initiatives that integrate motivational strategies may offer significant benefits in addressing abnormal nutritional statuses such as malnutrition, overweight, and obesity, thereby contributing to improved health outcomes in this population (Appleton et al, 2020).

CONCLUSION

There was an increasing motivation score of students about balance nutrition intake after conducting intervention using monopoly education games. The educational game, adapted from the Monopoly board game, is expected to serve as an alternative learning tool that enhances students' comprehension and motivation to actively improve their balanced nutrition intake. This approach also highlights the importance of support from both families and the surrounding environment to ensure the successful implementation and long-term sustainability of healthy eating behaviors.

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