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The Effect of Parental Nutrition Education on the Knowledge of Eating Arrangements and Energy Intake of Adolescent Athletes: A Study at SSB Kancil Mas

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Abstract

Study purpose. Energy and nutrient requirements in adolescent athletes are higher than in children in general, along with the high intensity of physical activity. Parents' understanding of dietary management plays an important role in ensuring these needs are met, but often remains suboptimal. This study aimed to analyse the effect of nutrition education on improving parents' knowledge of dietary management and its impact on energy intake in adolescent athletes.

Materials and Methods. This study used a quasi-experiment design with a one-group pre-post test approach. The research subjects involved 30 parents/guardians of 11-year-old Football School athletes selected through purposive sampling method. The intervention was conducted through face-to-face nutrition education for 10 days using booklet media. Dietary knowledge was measured using a questionnaire that had been tested for validity and reliability, while energy intake data was collected through a 1x24 hour food recall form.

Results. The results of data analysis using paired t-test showed a significant increase in the average score of dietary knowledge after the intervention ($p = 0.000$). In addition, in the Wilcoxon test there was a significant increase in the average energy intake of athletes ($p = 0.013$).

Conclusion. This study shows that nutrition education has a significant effect on improving parents' knowledge of dietary management and energy intake of adolescent athletes. Future research could consider using more diverse educational media, conducting evaluations over a longer period of time to assess the sustainability of the results, as well as examining the relationship between dietary management and athletes' physical performance directly.

Keywords: Energy Intake, Adolescent Athletes, Dietary Management, Knowledge Improvement, Football.

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Introduction

Physical education plays a vital role in enhancing physical fitness and building motor skills, especially in sports like football that require optimal physical performance (Kuswoyo, Haskiya, & Wawuru, 2023). Football is a much-loved sport due to its simple rules and gets high ratings on television every year (Wijaya, Meiliana, & Lestari, 2021). This sport is in demand by various age groups and communities. Football is a sport that requires optimal physical performance, especially for adolescent athletes who are in a period of growth and development. Inadequate or inappropriate nutritional intake can cause the body to lack energy from food, which results in decreased performance. The selection of appropriate nutrients is based on an understanding of the quality and quantity of nutrients required by each athlete, according to the characteristics of the sport. Nutrition is a key element that supports the health and athletic performance of adolescent football players (Noronha et al., 2020). With proper nutrition, athlete performance will improve both in training and during competition (Sari, Afriani, Puspaningtyas, & Sari, 2020). A good understanding can influence attitudes and actions regarding diet and food selection, thereby supporting athlete performance and fitness (Soviana, 2021). Adequate nutrition is a major factor in supporting an athlete's optimal performance when competing (Sari, Puspaningtyas, Afriani, & Anwar, 2021). A balanced and adequate nutritional intake is essential for adolescent athletes to support their optimal health, physical performance and development during training and competition. Consumption of the right food plays a crucial role in maintaining a healthy body and preventing disease (Muthmainnah, AB, & Prabowo, 2019). The energy and nutrient requirements of adolescent athletes are higher than children in general due to the high intensity of physical activity (Kuswari, Gifari, Putra, & Himarwan, 2021). Fulfilment of adequate nutritional needs helps them maintain stamina, muscle strength, and endurance which play a role in supporting performance during training and competition (Sa'adah, Hardiansyah, & Darmuin, 2023).

Dietary management of adolescent athletes is influenced by family knowledge and eating habits, especially parents who have the responsibility of providing daily nutritional needs. Parental education significantly influences child nutrition, particularly through health literacy and dietary knowledge. Enhanced parental education is associated with better child health outcomes, including improved dietary practices and a reduction in stunting rates (Alderman & Headey, 2017). The urgency of this issue is all the more apparent given that previous research has shown that parents' understanding of the principles of appropriate nutrition for adolescent athletes is still limited, especially in relation to macro and micronutrients that are essential to support the health and performance of athletes (Kurnia, Kasmiyetti, & Dwiyanti, 2020). This lack of understanding can potentially lead to nutritional imbalances that negatively impact an athlete's physical fitness and performance (Afriani, Sari, & Puspaningtyas, 2019). Other studies have also shown that parental involvement in the dietary management of adolescent athletes is not only limited to the provision of food, but also includes an understanding of the specific nutritional needs of training and competition periods (Soviana, 2021). Parental participation is essential in supporting the dietary management of adolescent athletes. In addition to being responsible for providing appropriate food, parents also have a role in shaping their children's healthy eating habits through role modelling. Research shows that the diets of adolescent athletes are often influenced by family eating habits, especially the food preferences adopted by parents. Through consistent assistance in developing a balanced diet, parents can improve their understanding of their child's specific nutritional needs, which are important for athlete performance. Therefore, nutrition education interventions involving parents can be an important step to improve their knowledge of dietary management that supports the fulfilment of their children's energy needs as adolescent athletes, which in turn can improve their performance and health (Afriani, Sari, Puspaningtyas, & Mukarromah, 2021).

Nutrition education provided to parents has the potential to improve their understanding of dietary arrangements that support children's energy and nutrient needs as adolescent athletes. Research reveals that nutrition education can assist parents in developing a more balanced diet, so that children's energy needs are met during training and competition . Understanding this is important, as a diet that is tailored to the intensity of training plays a role in improving physical endurance, adaptation to training, and overall performance (Afriani, Sari, Puspaningtyas, & Anwar, 2023). However, implementing nutrition education for parents has its own challenges, such as limited time, resources and eating habits that are difficult to change. Therefore, education needs to be sustainable and practical so that parents can apply it in their daily lives (Afriani et al., 2023). Several studies have also emphasised that effective nutrition education requires not only an understanding of basic theory, but also hands-on guidance in setting up a diet that suits the athlete's needs (Kurnia et al., 2020) (Sa'adah et al., 2023).

This study aims to evaluate the effect of nutrition education on increasing parents' knowledge in developing a better diet and its impact on meeting the energy needs of adolescent athletes. The results of this study are expected to contribute to efforts to foster sports achievements from an early age through increased understanding of nutrition in the family environment.

Materials and Methods

Study participants

This study uses a quasi experiment design with a one group pre-post test model. The sample in this study consisted of 30 parents/guardians of 11-year-old Football School athletes. The sampling used purposive sampling technique with inclusion criteria including willingness to be a respondent, commitment to complete the programme, ability to cooperate, and skilled in communicating well. Exclusion criteria included illness and not participating in all stages of the study.

Study organization

The research instrument used a 1x24 hour food recall form and a knowledge questionnaire related to eating arrangements distributed to parents/guardians of athletes, with the results of the questionnaire reliability test showing a Cronbach's Alpha value of 0.85 which indicates good internal consistency, and the validity test results showed a value of 0.92 which indicated the instrument had very good validity. The research activities took place in October 2024 at Moksen Field, which is the training location of SSB Kancil Mas Karawang athletes. The research included a nutrition assistance programme through direct or face-to-face nutrition education provided once in one period with a period of 10 days. The educational media used is a booklet containing five recipes for athletes equipped with nutritional value information including energy, protein, fat, and carbohydrates. Energy intake variables were obtained through 1x24 hour food recall interview results, while the variable knowledge of eating arrangements used a questionnaire adapted from research (Kurnia et al., 2020). The questionnaire has 20 questions with a maximum score of 100. Categorisation on the variable of knowledge of eating arrangements is said to be good if the energy intake is ≥ 55% and in the less category is <55% (Kurnia et al., 2020). Meanwhile, the energy intake variable is said to be good if 80%-100% and less <80% (Penggalih et al., 2019).

Statistical analysis

The data obtained will be analysed and tested for distribution using Shapiro Wilk to see the normality of the data. Data analysis is carried out by parametric statistical methods in the form of paired sample t-test and non-parametric methods in the form of Wilcoxon test using SPSS software version 25. The results of data analysis will be used as a basis for compiling research

conclusions, namely no or no effect of parental nutrition education programmes on eating arrangements and energy intake of adolescent athletes.

Results

This study was conducted directly through face-to-face meetings, with 30 respondents who met the inclusion criteria. Descriptive results provided information regarding the characteristics of the respondents as shown in table 1 below.

Table 1. Characteristics of Respondents

Variables	n	%
Gender		
Female	20	66,7
Male	10	33,3
Total	30	100
Age		
Early Adulthood	11	36,7
Intermediate Adulthood	15	50,0
Late Adulthood	4	13,3
Total	30	100
Last Education		
High School	20	66,7
Diploma/Bachelor's degree	10	33,3
Total	30	100

Most of the respondents were female, namely 20 people (66.7%) of the total respondents. Based on age, the respondents were divided into three groups, most of the respondents were in the middle adult age category (50%) 36-45 years (Pieter, 2017). Judging from the latest education, most respondents have a high school educational background (66.7%), the rest are undergraduates (33.3%). Based on the results of the frequency test, the data is presented in two categories for each variable, namely good and less, which illustrates the effectiveness of the intervention provided.

Table 2. Frequency of Knowledge of Eating Arrangements and Energy Intake Before and After Providing Education to Parents of Adolescent Athletes

Variables	Pre-Intervention		Post-Intervention	
Eating Organisation Intake	n	%	n	%
Good	22	73,3	30	100
Less	8	26,7	0	0
Total	30	100	30	100
Energy Intake	n	%	n	%
Good	24	80	24	80
Less	6	20	6	20
Total	30	100	30	100

Based on Table 2, the results of the frequency test showed that the provision of education succeeded in improving the knowledge of meal management, all respondents were in the good category after education. However, for energy intake there was no change in frequency before and after the intervention.

Based on the analysis using the Shapiro-Wilk test, it was found that the data on knowledge of eating arrangements both pre-test and post-test were normally distributed, while the data on pre-intervention energy intake and post-intervention data were not normally distributed. Transformation of energy intake data was carried out with the results, pre-intervention energy intake data were normally distributed while post-intervention energy intake data were not normally distributed. Therefore, the tests used in this analysis are paired t-test and Wilcoxon test as shown in table 2 below.

Table 3. The Effect of Parental Nutrition Education on the Knowledge of Dietary Management and Energy Intake of Adolescent Athletes

Variables	Pre-intervention	Post-intervention	*p*-value
Eating Organisation Knowledge			
Mean ± SD	63,67 ± 13.89	85,50 ± 11.54	0,000
Energy Intake			
Mean ± SD	1442,10 ± 345.22	1693,20 ± 669.79	0,013

Based on Table 3, the results of the paired t-test show that there is an effect of nutrition education on the knowledge of meal management and energy intake of adolescent athletes. There was a significant difference between pre-intervention and post-intervention, with a p value of 0.000 ($p < 0.05$). The average knowledge of dietary management increased from 63.67 ± 13.89 to 85.50 ± 11.54, indicating an increased understanding of dietary management after the nutrition education intervention. In the energy intake variable, the Wilcoxon test results showed that there was an increase in the average of 1442.10 ± 345.22 to 1693.20 ± 669.79, this difference was statistically significant with a p value of 0.013 ($p < 0.05$). This suggests that nutrition education resulted in significant changes in the energy intake of the adolescent athletes in this study. Overall, the nutrition education provided had a significant effect on increasing parental knowledge related to meal management and energy intake in athletes.

Discussion

This study evaluated the effect of nutrition education for parents on knowledge of dietary regulation and energy intake of adolescent athletes at SSB Kancil Mas. Results showed that there was a significant increase in parents‘ knowledge of athletes’ dietary regulation and energy intake after the nutrition education intervention, with a p value <0.005. This study is in line with the findings of (Wijaya et al., 2021) which shows that nutrition education can improve parents' understanding of their children's nutritional needs. This study is also in accordance with the statement delivered by (Kurnia et al., 2020), In his research, he also explains the importance of parental involvement, as their knowledge influences the eating habits adopted by children, which in turn supports athlete performance. Additionally, the importance of parental supervision and guidance in children's dietary habits has also been emphasised in previous studies. A survey of futsal athletes in Indonesia revealed that uncontrolled consumption patterns, particularly in protein and carbohydrate intake, could hinder athletic performance. Therefore, educational interventions involving parents are key to raising awareness about the importance of balanced nutrition for adolescent athletes (Sasmarianto, Harisca, & Meera, 2023).

Although the results of this study show a positive effect of nutrition education on parental knowledge and energy intake of athletes, there are results that contradict previous research. This contradicts the findings presented by (Afriani et al., 2023), In her research, she explained that although nutrition education can improve parents' knowledge, the application of this knowledge in daily eating habits is often influenced by other factors, such as established eating habits and limited resources.

This research supports the findings presented by (Fajrin, 2019) and (Wardaningrum, 2018), which explains that families, especially parents, have a central role in fulfilling the nutritional needs of adolescent athletes. In line with research conducted by (Lestari, 2017), She also explained that parents, as those responsible for the daily provision of food, play an important role in ensuring the availability of nutritionally balanced food and supporting healthy eating habits. This research also reinforces the opinion of (Afriani et al., 2019), which states that parental support includes not only providing food, but also providing education on the importance of nutrition in supporting the performance of adolescent athletes. Ongoing nutrition education is needed to ensure parents not only understand the theory but are also able to apply it in their daily dietary arrangements.

The results of this study contribute to the importance of nutrition education for parents in the context of children's sports nutrition. The study showed that nutrition education not only positively influenced the parents‘ improved dietary knowledge, but also had an impact on improving the athletes’ energy intake. This study emphasises the need for effective educational interventions to improve the eating habits of adolescent athletes to support their performance and overall health.

Conclusion

This study states that nutrition education has a significant effect on increasing parental knowledge in regulating diet and energy intake of adolescent athletes. Based on the results of the analysis, the average knowledge of eating arrangements increased with a significance level of $p = 0.000$ ($p < 0.05$). Meanwhile, the average energy intake increased from 1442.10 ± 345.22 at pre-intervention to 1693.20 ± 669.79 at post-intervention, with a significance level of $p = 0.013$ ($p < 0.05$).

These results indicate that the nutrition education programme provided to parents significantly improved their understanding of dietary management, as well as increased energy intake to meet the energy needs of adolescent athletes. This study confirms the importance of ongoing education programmes to support athletes' performance, health and achievement from an early age. However, there are drawbacks to this study in that it only included a specific group of adolescent athletes, so generalisation of the results may be limited to similar groups. In addition, measurements were only taken in the short term (before and after the intervention), so the long-term impact of the nutrition education programme on changes in eating habits and athlete performance is unknown.

Future research is recommended to consider the use of various innovative and practical educational media, evaluate the results of interventions in the long term, and examine the impact of nutrition education on athletes' physical performance directly. In addition, sustainable and technology-based interventions can be a strategic step in improving parents' understanding of the nutritional needs of athletes as a whole.

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Conflict of interest

The authors declare that they have no conflicts of interest that could influence the outcome of this study.

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