

NUTRITION EDUCATION FOR PARENTS OF ATHLETES THROUGH SMARTWEBCALC TECHNOLOGY APPLICATION

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ABSTRACT

Background: As many as 50% of adolescent athletes still have insufficient nutritional intake. It can hinder the optimal performance of athletes. Food intake in adolescent athletes still depends on the family diet prepared by parents. Many parents of athletes still don't know and practice good menus. Information technology is very possible to use for educational media. Smartwebcalc is one of the academic media that facilitates parents of athletes in calculating nutritional needs and the application of the right menu according to the age category, gender, and activity of athletes.

Methods: Education was conducted on 27 parents of Maguwoharjo Football Academy athletes. Education was held in June 2024 at Maguwoharjo Football Park. The educational material provided is education on the urgency of fulfilling balanced nutrition for youth soccer athletes, estimating the nutritional and fluid needs of youth soccer athletes, setting a balanced menu based on training periodization, and using smartwebcalc in setting a balanced menu. Data were analyzed using statistical software with the Wilcoxon sign rank test.

Results: The pretest score was 95 (80-100) with a maximum score of 100 as many as two people (7.4%). The posttest score is 95 (80-100) with the number of respondents who have a score of 100 being as many as ten people (37%). There was an effect of education through the smartwebcalc technology application on increasing knowledge in parents of athletes ($p=0.026$).

Conclusion: Education using smartwebcalc technology can effectively increase knowledge in parents of Maguwoharjo Football Academy athletes.

Keywords: Nutrition education; Parents of athletes; Soccer; Smartwebcalc

INTRODUCTION

Soccer is a stop-and-go sport that requires high enough intensity for good physical performance, technique, and tactics (Bhagascara et al., 2022). The level of ability of most soccer athletes is still in the low category, whereas soccer needs a good VO₂ max score (Hardinata et al., 2023). To optimal performance, a synergistic and continuous construction of the entire supporting element is required. Athlete's physical and physiological factors have a strong influence on performance. To achieve optimal performance, an athlete needs proper intake support based on the amount, type, and time (Kementerian Kesehatan RI, 2013).

About half of the athletes have less energy intake than they need. Besides, the fat and carbohydrate intake is still less than 80% of the total requirement. The highest number of cases of anemia in adolescent athletes was demonstrated by an athlete's low hemoglobin of 16.67%, which was shown by iron and vitamin C intake of about 20% and 37% of the requirements (Afriani & Puspaningtyas, 2019; Puspaningtyas et al., 2019).

In addition, according to an athlete's fluid intake survey at one of the soccer clubs in Yogyakarta, 96% of athletes consume less fluid than they need daily. The total amount of fluid is about $2,797,61 \pm 1,100,64$ ml (Afriani et al., 2022). During the competition phase, the fluid intake to be consumed is

2,400 \pm 3,400 ml. On the contrary, if the Athlete consumes as much fluid as 5,700 to 6,700 ml in one day, there will be a fluid balance in the body (Ozolina et al., 2013).

Not all athletes realize the importance of balanced nutrition and the fulfillment of fluid requirements to improve their performance. One of the efforts that can enhance the knowledge of athletes is nutrition education (Puspaningtyas et al., 2019). Proper nutritional intake can boost performance. Accurate nutritional information will support athlete performance achievement, unfortunately, adolescent athletes have been unable to regulate proper dietary choices independently. Parents play an important role in the dietary setting of athletes. Inadequate nutritional intake will hinder athletes from reaching their best levels of performance. The role of parents is enormous in providing support for the best nutritional intake. It will have an impact on the growth of the baby optimally. Athlete parents have not yet been able to implement a suitable menu before, when, and after the game. Many parents are unfamiliar with the nutritional content of foods, eating habits in their neighborhood, and limited time in preparing foods (Sari et al., 2020).

In helping athletes understand the proper distribution of food, previous studies have developed educational media such as the Athlete's Food and Fluid Intake Chakra (CAMCA). One of the CAMCAs that have been developed is a medium that calculates the nutritional needs of the athlete based on age and level of activity, as well as the portions of food (Afriani et al., 2022). An application that can be installed on the athlete's mobile will make it easier for athletes to access information. A web-based application is one type of application that can be created and easily accessed. According to some studies, web-based applications have a significant influence on students' knowledge, attitudes, and practices about nutrition. Web-based nutritional intake can be given

gradually and continuously to cultivate positive eating behavior and prevent a decrease in eating behavior in students, so it can be sustainably applied in everyday life (Lathifa & Mahmudiono, 2020). Technological advances have made a shift in lifestyle, especially among teenagers. The ease of access to online information in the teenage years makes it one of the things that can be used in today's era (Budiati et al., 2018).

Previous studies showed that the use of smartphones affects adolescent health behavior, especially diet and exercise (Hoogstins, 2017). "Teen Athlete Nutrition Calculator" Smartwebcalc, CAMCA's educational media innovation, is a web application that has been developed. The app is on the smartphone, so it's easy to access and very attractive to the user. These media provide easier-to-understand information on how to calculate the nutritional needs and nutritional satisfaction of athletes based on their age, gender, and activity status. Athlete parents also need to know what athletes need to maintain their health (Lestari, 2017).

One of the soccer academies in Yogyakarta is the Maguwoharjo Football Academy. This soccer school is located in Maguwoharjo Football Park and has 30 to 50 students. Currently, the Maguwoharjo Football Academy seeks to become a professional soccer school to produce skilled soccer athletes who can compete nationally and internationally. Many athletes are not in ideal nutritional condition and do not know the importance of proper nutritional intake to the best levels of performance. At this age, menus are still prepared by parents. Parents play a role in providing adequate food intake in supporting the growth and development of children. In addition, the role of parents can also affect the child's nutritional status (Lestari, 2017; Qomariah et al., 2021). Information media constraints have become one of the major problems in the non-optimal dietary settings of athletes. Therefore, efforts

are needed to improve the knowledge and understanding of the parents of soccer athletes at the Maguwoharjo Football Academy. The smartwebcalc technology application can help athletes' parents accompany their eating settings.

METHODS

This study is quasi-experimental. The study was conducted in June 2024 at the Kartini Building, Maguwoharjo Football Park. The respondents were the parents of soccer athletes at the Maguwoharjo Football Academy of 27 people. The research was started with the filling of pretests by the athlete's parents. The education is divided into four educational materials: the urgency of achieving balanced nutrition for juvenile soccer athletes, the estimation of nutritional and fluid needs of juveniles, the setting of balanced menus based on the periodization of exercises, and the use of smartwebcalc in balanced menu settings. Smartwebcalc media can be accessed through the link <https://smartwebcalc.com/>. The "SmartwebCalc" medium is an accessible and easy-to-use youth athlete educational media, without having to be installed on a mobile phone. This teenage athlete nutrition calculator media contains nutritional requirements calculations, nutritional descriptions, as well as examples of daily menus for athletes aged 12-20 years. After the education was provided, it was continued with the filling out of the posttest and discussion session by the parents of the athletes which took place very enthusiastically.

The instruments used in the study are laptops, LCDs, microphones, speakers, and a knowledge questionnaire that contains 20 questions about the urgency of balanced nutrition, nutritional requirements estimate, menu settings, and the use of smartwebcalc for menu setting. The data measured is the knowledge score before and after giving education. The data was analyzed with

statistical software using the Wilcoxon signed rank test because the data was not normally distributed.

RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents

Characteristics of Parents	n	%
Age		
Adults (19-44 years)	20	74,07
Pre-Elderly (45-59 years)	7	25,93
Gender		
Men	9	33,33
Women	18	66,67

Based on Table 1, it was found that the majority of the elderly were 19-44 years of age, while those present in this study were mostly female at 66.67%.

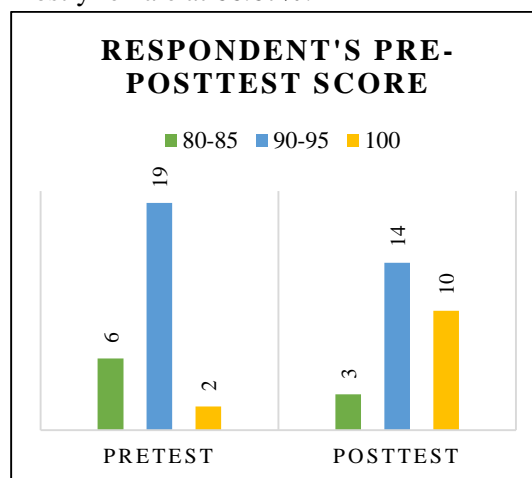


Figure 1. Pre-Post Test Respondent's Score

Table 2. The Effect of Nutrition Education with Smartwebcalc on Knowledge Scores

Variable	Mean	Median (Min-Max)	P value
Pretest Score	91,48	95 (80-100)	0,026*
Posttest Score	94,63	95 (80-100)	

Description: *significant ($p < 0,05$)

Education using smartwebcalc media has been shown to significantly improve the knowledge score of parents of soccer athletes at the Maguwoharjo Football Academy by 3.15 points ($p = 0,026$).

An athlete needs a balanced nutritional intake to maintain stamina during training and competition (Kementerian Kesehatan RI, 2013). Athlete's lack of understanding of food and drink consumption will affect athlete performance decline (Merawati et al., 2019).

Athletes can improve their knowledge of balanced nutrition through nutritional education (Waryana dan Wijanarka, 2013). There is evidence that health education about eating and physical activity can significantly improve one's knowledge (Oliveira et al., 2022). The educational media also influenced increased knowledge and understanding of nutrition (Lazzeri et al., 2013; Fitriani, 2011).

Nutrition education through smartwebcalc media performed on parents of athletes can significantly improve knowledge scores. The results of the study show that some information is not much known by athlete parents, among other things, on the statement item **"Carbohydrates are stored in the body in the form of glycogen"** As much as 30% of athletes' parents have not known before giving education. After the education was given, there was an increase in knowledge, only 5% of the athletes' parents did not understand.

In addition to the statement **"2-3 hours before the match, athletes are obliged to have a simple carbohydrate-rich snack like syrup water, candy, and chocolate"** 60% of the athlete's parents answered "right" while the answer should be "wrong".

Then on the statement **"Smartwebcalc can only be used for adult athletes and not suitable for adolescent athletes"** as many as 20% of the parents answered "wrong" while the Smartwebcalc application can be applied for teen sportsmen.

"Smartwebcalc can only be used on computers and can't be accessed via mobile phones," 20% of respondents said, "Right". However, there is an increasing knowledge among parents so that only 10% of parents still don't understand.

Parents are one of the keys to the success of setting up menus for children and adolescents. To support the growth and development of children, parents are responsible for providing healthy food intake. The role of parents can also affect the child's nutritional level (Lestari, 2017; Qomariah et

al., 2021). The dietary settings of parents influence how children grow up optimally. The results of the study show that most athlete parents are unable to prepare proper meals before, when, and after a game. Many parents do not realize the importance of nutrients in food, eating habits outside, and limited time to prepare food (Sari et al., 2020).

Smartwebcalc medium is a very decent and interactive medium to be applied as an educational medium to teenage athletes because of its easy access, usability, and practicality. This medium can easily calculate athlete's dietary and fluid intake based on an estimate of athletes' nutritional needs (Afriani et al., 2023). Other studies also show that web-based educational medium is easy to develop because it is accessible through computers, laptops, smartphones, or other devices. Web media makes learning time more efficient. The web has many benefits as it helps learning, especially distance learning, such as comment columns and discussion forums (Faradayanti, 2020). Previous research has shown that internet-based learning can increase interest as a motivation-supporting situation factor (Priyambodo, 2012). The use of web-based learning media also has an impact on learning outcomes. Therefore, the use of these media can be applied in an effective learning process and is better than conventional learning because it is more fun and interactive (Rahman, 2014; Firmansyah, 2023; Meduri, 2022).

CONCLUSION

Educational media for parents of soccer athletes at Maguwoharjo Football Academy using smartwebcalc medium has been shown to significantly improve knowledge scores. Smartwebcalc educational media can be developed and applied as an educational medium for athletes aged 12-20 in various sports to support a balanced menu setting and optimum performance. It is necessary to provide support to the athlete's parents in

applying a proper and balanced diet to improve performance.

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CONFLICT OF INTEREST

All authors declared no conflict of interest with those involved in this study.

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