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NUTRITIONAL KNOWLEDGE AMONG HIGH SCHOOL ATHLETES TOWARDS REDUCING RISK OF SPORTS INJURY

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ABSTRACT

Nutrition knowledge will provide correct information on the nutritional values of food and lead to healthy eating habits among athletes. However, a lack of nutritional knowledge can lead to questionable dietary practices or behaviors, which can result in adverse effects on their health and performance Thus, this study aims to assess nutritional knowledge among high school athletes and its association with the occurrence of sports injury. Approximately 200 participants (50% were male) aged range from 13 years old to 21 years completed this study. They answered an online questionnaire that consisted of two parts, demographic background and nutrition knowledge. The result showed that most school athletes were lack in nutritional knowledge with mean scores of 32.5 ± 10.6%. There was no significant association between nutritional knowledge and occurrence of injury during sports involvement except for micronutrient components ($p<0.05$), where those who had previous injury scored higher than those who did not have previous injury with the mean score was 31.5 ± 16.4% and 13.4 ± 15.8%, respectively. In summary, athletes need to be educated about the role of nutrition in developing healthy eating habits among these young athletes to prevent sports injury occurrence.

Keywords: Nutritional knowledge, school athletes, sports injury

INTRODUCTION

The number of students participating in high school athletics has increased from 4 million to 702 million (Comstock et al., 2006). As a result, the number of sports-related injuries among high school athletes has increased, with an estimated 1.2 million in 2015-2016 (Welton et al., 2018). There were an estimated 2.6 million emergency visits for all types of sports-related injuries on an annual basis, accounting for more than one fifth of all visits by people aged 5 to 24, accounting for over 68 percent of the total 3.7 million sport injuries presented to emergency departments (Burt & Overpeck, 2001). Overdoing a sport can result in injuries that hinder growth and can lead to long-term health problems (Andrew et al., 2011). A previous study looked at the long-term health effects of youth sports injuries and found that 8% of young players stopped playing altogether (Maffulli et al., 2010).

Nutritional knowledge provides consumers with accurate information about food's nutritional properties, which is crucial in increasing sports performance as well as reducing the risk of injury (Labban, 2015). Lack of nutritional understanding, on the other hand, might lead to dubious eating practises or behaviours, which can have negative consequences for an athlete's health and performance (Seminara, 2007). According to a prior study conducted in Iran among 4700 primary and secondary school pupils, their mean value for nutritional knowledge score was less than half of the overall score (Naeeni et al., 2014).

Sports nutrition is the foundation of athletic success that well-designed nutrition plan that allows active adults and athletes to perform at their best. As the prevalence of injuries related to sports is increasing, determination of the contribution factors is important. Nutrition is one of the affect factors to counter the negative impact of an exercise-induced injury (Tipton, 2015). Thus, this study is about to assess nutritional knowledge and its association with occurrence of sport injury as well as to explore the differences of nutritional knowledge between genders among high school athletes.

METHODOLOGY

Study Design and Participants

This cross-sectional study was conducted among school-aged athletes in Malaysia from the different disciplines of sports. Participants were recruited through school administration which involved of secondary schools in Kuala Lumpur, Selangor, Melaka, Pahang and Perak. Approximately 200 participants completed the study with 50% of them were male. Their age range was 13 to 17 years old and they had experienced with sports injury. The aim, potential risk, benefits, and confidentiality were made known to the participants in an informed consent form. Additionally, participation was voluntary and we gave them full right to refuse or accept to participate. Anonymity and confidentiality of the respondents' data were assured. Once they agreed, informed written consent was taken from the participants' parents as they below 18 years old.

Nutrition for Sport Knowledge Questionnaire (NSKQ)

Nutritional knowledge was assessed using modified Nutrition for Sport Knowledge Questionnaire (NSKQ) (Trakman et al., 2019). The questionnaire has 89 questions and six sub-sections (weight management, macronutrients, micronutrients, sports nutrition, supplements, and alcohol). However, only five sub-sections were included in this study as alcohol section is not relevant to the participants of this study. For nutritional knowledge part, the questionnaire consists of five components which were weight management, macronutrients, micronutrients, sports nutrition, and supplementation. The questionnaire was distributed via online through a JotForm website.

Statistical Analysis

Descriptive statistic was used to analyse the demographic data and nutritional knowledge scores. Score was converted to percentage to facilitate comparisons between each of the subscales. An independent T-test was used to assess the association between nutritional knowledge scores and status of nutritional education and status of sport injury. Statistical analysis was performed using Statistical Package for the Social Software version 26 (SPSS 26.0) and the significance level was at $p < 0.05$.

RESULT

Table 1 showed the demographic characteristic of the participants. Majority of participants (63%) received nutritional education and majority of participants (96%) experienced injury related to sports.

Table 1. Demographic characteristics of the participants

Characteristics	**% (N)**
Gender	
Male	50% (100)
Female	50% (100)
Age	
13 - 5 years old	63% (126)
16 - 17 years old	37% (74)
Nutritional Education	
Yes	37% (74)
No	63% (126)
Occurrence of Injury	
Yes	96% (192)
No	4% (8)

Table 2 showed the nutrition knowledge score of the participants. The mean score for weight management component was 44.3 ± 13.8%. The mean score for the macronutrients component and the micronutrients component were 38.4 ± 14.1% and 30.8 ± 16.7% score, respectively. Meanwhile, the mean score for the sports nutrition component was 25.0 ± 14.8% and the lowest score was for the supplementation component which was16.9 ± 15.0%. The mean score for all components was 32.5 ± 10.6%.

Table 2. Nutritional knowledge scores of participants (n=200)

Component of knowledge items	**Mean ± SD**
Total Nutritional Knowledge Scores (100%)	32.5 ± 10.6
Weight Management (%)	44.3 ± 13.8
Macronutrients (%)	38.4 ± 14.1
Micronutrients (%)	30.8 ± 16.7
Sports Nutrition (%)	25.0 ± 14.8
Supplementation (%)	16.9 ± 15.0

Only supplementation component showed significant differences between gender (p<0.05) whereby female participants score higher than male participants, with their mean score were 20.0 ± 14.8% and 13.8 ± 14.7%, respectively (Table 3). Although there is no significant difference between gender for total nutritional knowledge score, but the mean score for female participants was slightly higher than their male counterparts, with mean score were 33.5 ± 10.3% and 31.5 ± 10.9%, respectively.

Table 3. Nutritional knowledge scores between genders

Component of knowledge items	**Mean ± SD**		***p*- value**
	Male (n=100)	**Female (n=100)**	
Total Nutritional Knowledge Scores (%)	31.5 ± 10.9	33.5 ± 10.3	0.3
Weight Management (%)	43.8 ± 12.9	44.8 ± 14.8	0.7
Macronutrients (%)	37.7 ± 14.4	39.1 ± 13.9	0.6
Micronutrients (%)	30.0 ± 17.6	31.7 ± 15.9	0.6
Sports Nutrition (%)	23.7 ± 15.4	26.3 ± 14.3	0.3
Supplementation (%)	13.8 ± 14.7	20.0 ± 14.8	**0.03**

The result showed no significant differences of nutritional knowledge score between those who received and not received nutritional education (Table 4). There was no significant difference nutritional knowledge score for the occurrence of injury during sports involvement except for micronutrients components ($p<0.05$), where those who had previous injury scored higher than those who not have previous injury with the mean score were 31.5 ± 16.4% and 13.4 ± 15.8%, respectively (Table 5).

Table 4. Association of scores and status of nutritional education

Component of knowledge items	**Mean ± SD**		***p*- value**
	Nutritional Education (n=74)	**No Nutritional Education (n=126)**	
Total Nutritional Knowledge Scores (%)	32.7 ± 11.3	32.3 ± 10.2	0.8
Weight Management (%)	42.5 ± 15.4	45.3 ± 12.7	0.3
Macronutrients (%)	37.7 ± 15.0	38.8 ± 13.6	0.7
Micronutrients (%)	33.2 ± 18.3	29.4 ± 15.6	0.2
Sports Nutrition (%)	25.4 ± 15.7	24.7 ± 14.4	0.8
Supplementation (%)	19.3 ± 15.4	15.4 ± 14.6	0.2

Table 5. Association of scores and status of sport injury

Component of knowledge items	**Mean ± SD**		***p*- value**
	Injury Occurred (n=192)	**No Injury Occurred (n=8)**	
Total Nutritional Knowledge Scores (%)	32.8 ± 10.4	24.1 ± 12.6	0.1
Weight Management (%)	44.6 ± 13.9	37.5 ± 8.3	0.3
Macronutrients (%)	38.8 ± 13.9	27.5 ± 16.4	0.1
Micronutrients (%)	31.5 ± 16.4	13.4 ± 15.8	**0.03**
Sports Nutrition (%)	25.2 ± 14.8	18.7 ± 14.2	0.3
Supplementation (%)	16.6 ± 14.5	22.9 ± 25.7	0.4

DISCUSSION

Athletes' knowledge on sport nutrition has recently gotten a lot of attention (Siti Soraya et al., 2018). However, there is a limitation of information on nutritional knowledge among Malaysian high school athletes. The goal of this study was to look into high school players' nutritional knowledge in order to reduce the risk of sport injury. According to the findings of this research, the result found that most of school athletes were lack in nutritional knowledge. Most of the schools' coaches acknowledge that athletes would benefit from additional nutrition education because nutritional knowledge has led to an increased appreciation of the role of nutrition in athletic performance (Seminara, 2007). Similarly, the results of this study showed that the knowledge scores were relatively low in the school-age athletes in Malaysia.

Interestingly, the result showed that total nutritional knowledge score was slightly higher in those who received nutritional education than those who did not received nutritional education even though it was not statistically significant. Indeed, previous study showed a significant increment in the mean scores for KAP among young university athletes following sports nutrition education (Zaman et al., 2021).

This study revealed that there was no significant difference between those who has occurred pervious injury with those who not have previous injury, except for micronutrients components. Athletes' knowledge on the use of ergogenic aids intake of macronutrients, micronutrients and fluids are of particular importance that has been shown to be lacking among athletes (Cotugna et al., 2005). Given the high prevalence of injury, it is not surprising that there has been a great deal of interest in factors that may reduce the risk of injury or decreased the recovery time if an injury should occur. One of the main variables explored is micronutrients (Close et al., 2019).

If their knowledge is low, this will serve as evidence that further nutrition education should be provided to high school athletes on a regular basis, not just in formal health classes but also by athletic trainers, coaches, and parents for clarity.

CONCLUSION

In conclusion, the results reveal that the majority nutritional knowledge score of high school athletes was in the lowest rank. There was no significance difference between genders for nutritional knowledge except for supplementation component, in which female score higher than male. The results also show that there is no significant difference between those who has occurred previous injury with those who do not have previous injury, although those who had previous injury scored higher. Only micronutrients component showed significant difference between those who has occurred previous injury with those who do not previous injury. These findings suggest the need for strategies to improve the important education standard for this is nutrition education, especially information related to sports nutritional knowledge among high school athletes towards reducing risk of sport injury. Understanding where nutrition knowledge is lacking from this study, may provide insight into how to better educate and inform the athletes, parents and coaches about addressing proper nutrition for all involved. Athletes need to be educated about the role of nutrition so they may be better informed about the importance of proper nutrition for participation in athletics. This study will allow for more accurate evaluation of nutrition knowledge and education programs.

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