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Dietary Habits and Nutrition Knowledge among Athletes and Non-Athletes in National University of Malaysia (UKM)

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Abstract: Nutrition knowledge is vital in determining the pattern of food intake of a particular individual in daily life. The main purpose of this study was to determine the dietary habits and nutrition knowledge among athletes and non-athletes in National University of Malaysia (UKM). This study was also aimed to determine the relationship between the body mass index (BMI), dietary habits and nutrition knowledge. The total number of respondents was 200 people with 100 athletes were selected from 7 types of sports and 100 non-athletes were selected at random from non-athletes in UKM. Anthropometric measurement included height and weight. Questionnaire was used to assess the socio demographic variables, nutrition knowledge and dietary habits. The results showed that the mean score of dietary habits for athletes (48.9±5:08) was significantly lower, compared to non-athletes (50.4±4.35) ($p<0.05$). The nutrition knowledge overall mean score was (83.6±6.5), corresponding to a good level of knowledge, while the athlete nutrition knowledge score (83.7±6.84) was not significantly different ($p>0.05$) than non-athletes (83.5±6:23). The main sources of nutrition information for athletes was from the internet (82%), newspapers or magazines (70%), families or friends or neighbours (65%), television (60%) and coaches (52%). This was quite similar to non-athletes but they did not choose coaches as a source of information. The BMI of athletes and non-athletes did not show a significant relationship with dietary habits and nutrition knowledge. However, it was found that there was a weak significant positive relationship between nutrition knowledge and dietary habits of athletes ($r = 0.328$, $p<0.01$) but had no significant relationship to non-athletes. In conclusion, non-athletes displayed healthier dietary habits than athletes but no significant difference in nutrition knowledge between both groups.

Key words: Athletes, dietary habit, nutrition knowledge

INTRODUCTION

Sports nutrition is defined as the application of nutrition knowledge to practical daily diet plan in order to provide energy for physical activity, repairing process in the body, optimizing sports performance in competitions and to ensure health and well-being (Contento, 2007). A high level of competitiveness in most sports causes athletes susceptible to latest trend of diet or supplements and they may be willing to manipulate their diet to improve their performances. Unhealthy dietary habits do not only affect the performance in the competition but also provides a negative impact on their overall health (Rosenbloom *et al*., 2002). According to Wardle *et al*. (2000), nutrition knowledge is associated with the consumption of healthy foods.

Athletes often refer to individuals who are active, including individuals who are interested in body fitness and competitive amateur or professional (Contento, 2007). Non-athletes are individuals who do not involve in physical activities and are more likely to practice a sedentary lifestyle, especially during weekdays (Purim *et al*., 2005). Level of nutrition knowledge, dietary habits and food intake of athletes are important in determining their performances in sports competitions.

According to Baric *et al*. (2003), entering university is an important time in the life of an individual as this increases the responsibility for the selection of food and a healthy lifestyle. University student athletes need balanced meals including snacks to meet high energy requirements for sports training, competitions and following academic programmes. Eating habits that meet energy demands and maintenance of body mass and body fat at the appropriate level are key goals for athletes (Maughan *et al*., 2004).

This study was conducted because no such study ever conducted that compared between athletes and non-athletes in UKM. Therefore, this study is important to assist UKM Sports Center to plan health programs or nutrition courses in future to improve nutrition knowledge, dietary habits and sports performances of athletes. The objective of this study was to determine the dietary habits and nutrition knowledge, as well as to

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establish the relationship between body mass index (BMI), dietary habits and nutrition knowledge among athletes and non-athletes in UKM.

MATERIALS AND METHODS

Sampling and study location: A cross sectional studies have been carried out on athletes and non-athletes in UKM. The number of respondents was 200 people comprised 100 athletes (50 male respondents and 50 female respondents) and 100 non-athletes (50 male respondents and 50 female respondents, respectively). Athletes were selected from 7 types of sports namely futsal, cricket, netball, *pencak silat*, volleyball, *Silat Cekap Malaysia* and taekwondo. Non-athletes were selected randomly among non-athletes in UKM. Respondents were selected from various races and within the age group of 19 to 29 years. This study was carried out at the training grounds in UKM Bangi campus.

Data collection: Anthropometric measurements carried out included height and weight. Height was measured with a height measurement device, SECA bodymeter 208 (SECA, Hamburg, Germany) to the nearest 0.1 cm. Weight was measured by Tanita Digital scales HD-312 (Tanita Corp., Tokyo, Japan) to the nearest 0.1 kg. BMI was determined by dividing weight (kg) by height squared (m^2). BMI of respondents were categorized based on WHO (1998), included underweight (less than 18.5 kg/m^2), normal weight (18.5-24.9 kg/m^2), overweight (25.0-29.9 kg/m^2) and obese (greater than 30 kg/m^2).

A questionnaire was used to collect data on demographic information of respondents, included gender, age, race, academic year. Besides, the questionnaire was also used to assess the types of sports for athletes and the previous nutrition education. Dietary habits questionnaire was modified from Marino (2001) which comprised 18 questions, including the frequency of food intake from every sections of the food pyramid, snack, fast food, vitamin and mineral supplements, breakfast, beverages intake and meal skipping (Appendix A). The answers for this section were 'always' (4), 'often' (3), 'sometimes' (2) and 'never' (1). Marks for questions 2-4, 8-9, 14-15 and 17 were reversed so that if the respondent answered the question with 1, then the respondent was given 4 marks. On the other hand, all other questions were scored according to their respective values. The higher the scores, the better the dietary habits of the respondents. The range of scores was 18-72. Nutrition knowledge questionnaire was modified from Paugh (2005) which comprised 29 questions. The respondents were asked to choose an answer based on the level of agreement with each statement. The choices included 'strongly agree' (4), 'agree' (3), 'disagree' (2) and 'strongly disagree' (1). Questions 2, 6, 8, 20 and 29 were scored reversely, whereas all other questions were scored equally to their respective values. The range of scores was 29-116. Nutrition knowledge was classified as 'very good' (85-100), 'good' (70-84), moderate, (55-69) and weak, ($\leq$54). Another question that must be answered by respondents was the source of their nutrition information. The choices of nutrition information sources included coaches, television, internet, newspapers/magazines, doctors/nurses/neighbours and others.

Data analysis: All data collected were analyzed with Statistical Package for Social Sciences (SPSS) 19.0 (SPSS Inc., Chicago, IL). Descriptive test, independent t-test, chi square test and pearson correlation test were used in this study. Descriptive statistics were generated as frequencies, means, standard deviations and percentage for all variables. Independent t-test was used to determine the difference in mean of anthropometric measurements, dietary habits and nutrition knowledge between athletes and non-athletes, as well as between male and female for both athletes or non-athletes. Pearson correlation test was used to determine the relationship between BMI, dietary habits and nutrition knowledge. The significance level was set at $p<0.05$ for all analysis.

RESULTS AND DISCUSSION

Profile of subjects: Table 1 shows the demographic characteristics of the respondents. Respondents comprised Malays (77.0%), followed by Chinese (21.0%), Indian (0.5%) and others (1.5%). The age of respondents ranged from 19 to 25 years with a mean age of 20.8±1.8 years. Athletes participated in this study were involved in seven types of sports namely football (18%), cricket (14%), netball (7%), pencak silat (22%), volleyball (8%), Silat Cekak Malaysia (22%) and taekwondo (9%). These types of sports were chosen because of the athletes involvement in regular and consistent training from 2 to 7 times per week especially during pre-competitions.

Anthropometric characteristics and frequency of physical activity: Table 2 shows anthropometric characteristics and frequency of physical activity of athletes and non-athletes by gender and categories. Although body weight of male athletes (65.7±9.6) and female athletes (53.1±8.6) were higher than male non-athletes (64.3±11.1) and female non-athletes (51.8±9.0) respectively, there was no significant difference among the groups ($p>0.05$). Overall, there was no significant difference on the all physical characteristics between male athletes and male non-athletes and between female athletes and female non-athletes. These findings were differ from Ode *et al.* (2007) who reported that body weight, height and BMI of male and female

Table 1: Demographic characteristics of respondents

Demographic profile	No. of respondents (n = 200)	Percentage (%)
Gender		
Male	100	50.0
Female	100	50.0
Race		
Malay	154	77.0
Chinese	42	21.0
Indian	1	0.5
Others	3	1.5
Age (Years)		
19	72	36.0
20	36	18.0
21	25	12.5
22	17	8.5
23	39	19.5
24	6	3.0
25	5	2.5
Category		
Athletes	100	50.0
Non-athletes	100	50.0
Types of sports of Athletes (n = 100)		
Futsal	18	18.0
Cricket	14	14.0
Netball	7	7.0
Pencak silat	22	22.0
Volleyball	8	8.0
Silat cekak malaysia	22	22.0
Taekwondo	9	9.0

athletes were significantly higher than male and female non-athletes, respectively.

Table 3 shows distribution of respondents based on the classification of BMI by gender and category. According to WHO (2000), majority of respondents (77.5%) had normal weight, 11.5% of respondents were overweight, 1.5% obese and 9.5% underweight. Percentage of male non-athletes and female non-athletes who were underweight was the same (14%) but were higher than male athletes (4%) and female athletes (6%), respectively. The result also showed that the percentage of male athletes (86%) and female athletes (84%) who had normal weight were higher than male non-athletes (66%) and female non-athletes (74%). In addition, the percentage of male athletes (10%) and male non-athletes (20%) who were overweight were higher than female athletes (8%) and female non-athletes (8%). Percentage of female athletes and female non-athletes who were classified as obese were 2 and 4%, respectively but there was no obese male athletes and male non-athletes.

Table 4 also shows the frequency of respondents who did training in a week. The highest frequency of physical activity in a week for athletes and non-athletes were 4 to 6 times a week (45.7%) and 1 time a week (36%) respectively. The sedentary lifestyle of non-athletes was influenced by the absence of respondents who exercised every day, in addition to 28% non-athletes who did not exercise during the week. This may be due to a busy university life with tight academic and co-curricular activities. In total, there was 36.6% of respondents who did physical activity 2 to 3 times a week.

Dietary habits: Table 5 shows the mean score of dietary habits of respondents. Dietary habits mean score of female (49.8±4.4) had no significant difference with male (49.5±5.2) ($p>0.05$). Dietary habits mean score of non-athletes (50.4±4.4) was significantly higher than athletes (48.9±5.1) ($p<0.05$). The findings from the present study were different from the study by Cavadini *et al.* (2000) which showed that athletic adolescents displayed healthier dietary habits than non-athletic adolescents. The results of this study showed that the dietary habits mean scores of female athletes (49.0±4.6) and male non-athletes (50.2±4.7) was slightly higher than male athletes (48.8±5.5). However, there was no significant difference in the mean scores of dietary habits among groups ($p>0.05$). These findings differ from Paugh (2005) which recorded a dietary habits score of female athletes to be significantly higher than male athletes.

Nutrition knowledge: Table 6 shows the respondents' nutrition knowledge mean scores. The overall mean score was 83.6±6.5 and was considered a good level. There were no significant differences in nutrition knowledge mean scores between groups of respondents either by gender or category as well as for specific groups. The findings of the present study was not consistent with Paugh (2005) who reported that the nutrition knowledge mean score of female runners to be significantly higher than male basketball players. Compared to the study by Sowell *et al.* (2006), it was noted that female non-athletes (23.90±5.73) attained significantly higher in nutrition knowledge score than male non-athletes (19:10±7.79).

A total of 46 out of 200 respondents attended nutrition courses or seminars previously. This group of respondents had a mean score of 84.7±7.7 and did not show a significant difference to respondents who did not attend nutrition courses or seminars previously (83.2±6.1). Among respondents who attended nutrition courses or seminars, the mean score of athletes (85.0±8.1) had no significant difference to non-athletes (84.1±6.8). On the other hand, for respondents who did not attend nutrition courses or seminars, the mean scores of athletes was 83.0±6.1, which had no significant difference to non-athletes (83.4±6.2). However, these findings differ from Zawila *et al.* (2003) who reported that runners attended nutrition education in college scored significantly higher than runners who did not follow nutrition education courses. In addition,findings of Rastmanesh *et al.* (2007) also differ from this study, whereby Iranian athletes with physical disabilities in the intervention group scored significantly

Table 2: Physical characteristics of athletes and non-athletes according to gender

	Mean±SD				
Anthropometric measurement	Male (n = 100)		Female (n = 100)		
	Athletes (n = 50)	Non-athletes (n = 50)	Athletes (n = 50)	Non-athletes (n = 50)	Total (n = 200)
Weight (kg)	65.7±9.6[a]	64.3±11.1[a]	53.1±8.6[a]	51.8±9.0[a]	58.7±11.4
Height (m)	1.7±0.1[a]	1.7±0.1[a]	1.6±0.1[a]	1.6±0.1[a]	1.6±0.1
Body mass index (kg/m²)	22.7±2.5[a]	22.0±3.4[a]	21.3±3.0[a]	21.3±3.7[a]	21.8±3.2

[a,b]Different letters on the same row indicates that there were significant difference ($p<0.05$)

Table 3: Classification of BMI according to gender and category of respondents

	Male (n = 100)				Female (n = 100)					
Classification of BMI (kg/m²)	Athletes (n = 50)		Non-athletes (n = 50)		Athletes (n = 50)		Non-athletes (n = 50)		Total (n = 200)	
	n	%	n	%	n	%	n	%	n	%
Underweight (<18.5)	2	4.0	7	14.0	3	6.0	7	14.0	19	9.5
Normal (18.5-24.9)	43	86.0	33	66.0	42	84.0	37	74.0	155	77.5
Overweight (25.0-29.9)	5	10.0	10	20.0	4	8.0	4	8.0	23	11.5
Obese (≥30.0)	0	0.0	0	0.0	1	2.0	2	4.0	3	1.5

Table 4: Frequency training of respondents in a week

	Athletes (n = 100)		Non-Athletes (n = 100)		Total (n = 200)	
Training frequency/week	n	%	n	%	n	%
Never	0	0	28	28.0	28	14.4
1 time a week	5	5.3	36	36.0	41	21.1
2-3 times a week	39	41.5	32	32.0	71	36.6
4-6 times a week	43	45.7	4	4.0	47	24.2
Every day	7	7.4	0	0	7	3.6

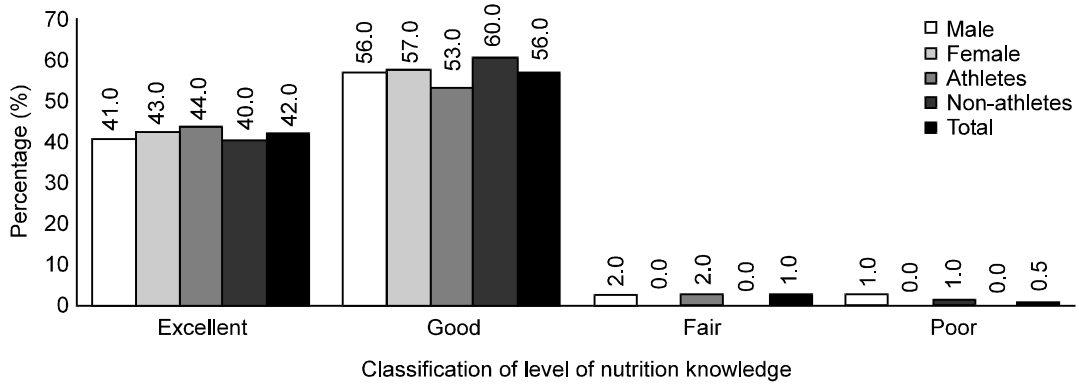

Fig. 1: Classification of nutrition knowledge level according to groups of respondents (n = 200)

higher after nutrition education than the control group which did not receive nutrition education.

Figure 1 shows the percentages of male and female, athletes and non-athletes based on their nutrition knowledge category. Overall, the majority of respondents had a good level of nutrition knowledge (56%), followed by the excellent level of nutrition knowledge (42%). Only a small percentage of respondents who had a moderate level of nutrition knowledge (1%) and poor nutrition knowledge level (0.5%). From the figure, it was observed that male, female, athletes and non-athletes showed a similar trend for their nutrition knowledge. In excellent category, although the percentage of female (43%) was higher than in male (41%) and the percentage of athletes (44%) was higher than non-athletes (40%), the differences were minute. It was also found that none of the female and non-athletes groups falls into the moderate and poor categories.

Source of nutrition information: Figure 2 shows the source of nutrition information of respondents. The common sources of nutrition information of athletes were the internet (82%), newspapers or magazines (70%), families or friends or neighbours (65%), television (60%) and coaches (52%). It was found that a lower percentage of respondents chose doctors or nurses (36%) and dietitians or nutritionists (13%) as the source of nutrition information. The common sources of nutrition information of non-athletes were almost similar to athletes except that non-athletes did not choose coaches as their source of nutrition information as they did not have a coach. These findings were similar

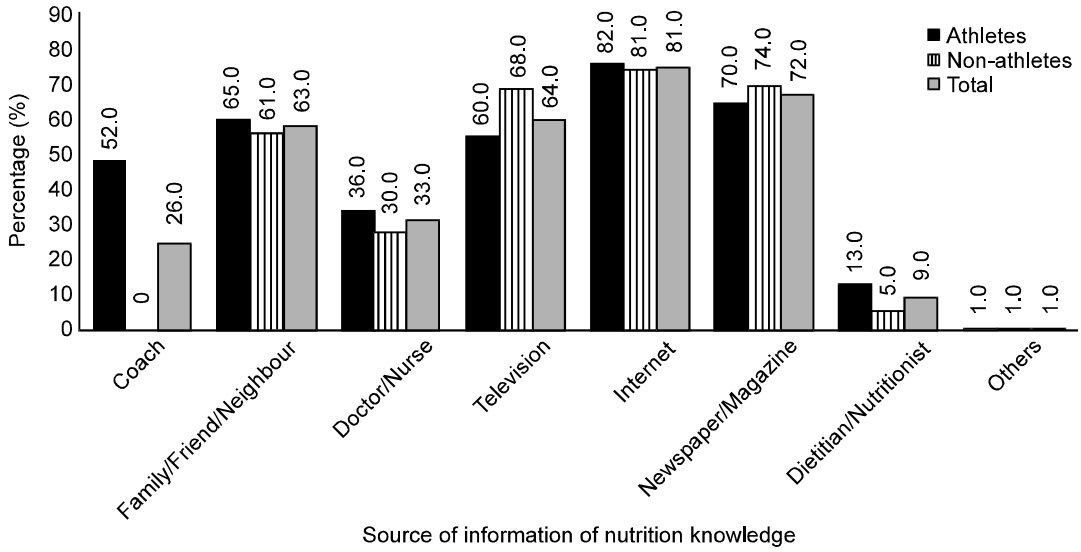

Fig. 2: Source of information of nutrition knowledge (n = 200)

Table 5: Dietary habits of respondents

Groups	No. of respondents (n)	Mean±SD
Total	200	49.7±4.8
Gender		
Male	100	49.5±5.2[a]
Female	100	49.8±4.4[a]
Category		
Athletes	100	48.9±5.1[a]
Non-athletes	100	50.4±4.4[b]
Specific groups		
Male athletes	50	48.8±5.5[a]
Female athletes	50	49.0±4.6[a]
Male non-athletes	50	50.2±4.7[a]
Female non-athletes	50	50.6±4.0[a]

[a,b]Different letters on the same row indicates that there were significant difference ($p<0.05$)

Table 6: Nutrition knowledge mean score of respondents

Groups	No. of respondents (n)	Mean±SD
Total	200	83.6±6.5
Gender		
Male	100	83.3±6.9[a]
Female	100	83.9±6.2[a]
Category		
Athletes	100	83.7±6.8[a]
Non-athletes	100	83.5±6.2[a]
Specific groups		
Male Athletes	50	82.6±7.0[a]
Female Athletes	50	84.7±6.6[a]
Male Non-athletes	50	83.9±6.7[a]
Female Non-athletes	50	83.1±5.7[a]
Previous nutrition education		
Yes (Athletes)	32	85.0±8.1[a]
Yes (Non-athletes)	14	84.1±6.8[a]
No (Athletes)	68	83.0±6.1[a]
No (Non-athletes)	86	83.4±6.2[a]

[a,b]Different letters on the same row indicates that there were significant difference ($p<0.05$)

to Jacobson *et al*. (2001) who found that main sources of nutrition information of athletes were parents, nutrition courses, trainers, magazines, television, friends but only small percentage (10%) of them chose dietitians as a source of nutrition information. According to Wardle *et al*. (2000), runners obtained nutritional information mainly from four sources, that were magazines, parents, coaches and teammates but only 17% chose athletic trainers and just fewer than half chose physicians as a source of nutrition information. Study by Razalee *et al*. (2013) on the Royal Malaysian Navy (RMN) found that their main source of nutrition information were television/radio followed by courses/seminars, doctors/nurses and magazines/newspapers. However, families, neighbours or friends were not popular sources as only 5% were reported to have used it as their source of nutrition information.

Table 7: Relationship between BMI, dietary habits and nutrition knowledge of athletes

Parameters	BMI (kg/m^2)	Food habits	Nutrition knowledge
BMI (kg/m^2)	1.000	0.085	-0.042
Dietary habits		1.000	0.328**
Nutrition knowledge			1.000

*There was a significant correlation between groups of respondents ($p<0.05$)

**There was a significant correlation between groups of respondents ($p<0.01$)

Table 8: Relationship between BMI, dietary habits and nutrition knowledge of non-athletes

Parameters	BMI (kg/m^2)	Food habits	Nutrition knowledge
BMI (kg/m^2)	1.000	-0.148	0.003
Dietary habits		1.000	0.147
Nutrition knowledge			1.000

*There was a significant correlation between groups of respondents ($p<0.05$)

**There was a significant correlation between groups of respondents ($p<0.01$)

Appendix A

Questionnaire:

Section A: Social-demography

Please fill in the blanks and place (/) on the selected answer.

1. Name: ----------
2. Gender: Male/Female
3. Race: Malay/Chinese/Others: ----------
4. Programme/Faculty: ----------
5. Year: ----------
6. Email address: ----------
7. Telephone number: ----------
8. Weight: ---------- kg Height: ---------- cm
9. Are you an athlete? ☐ Yes ☐ No
10. Did you been to any nutrition course or seminar? ☐ Yes ☐ No
11. Source of nutrition information: ☐ Coach ☐ Family/Friend/Neighbour ☐ Doctor/Nurse ☐ Television ☐ Internet ☐ Newspaper/Magazine ☐ Dietetitian/Nutritionist ☐ Others: ----------
12. Training frequency in a week: ---------- times/week
13. Period involved in sports: ---------- months/years
14. Types of sport involved: ☐ Futsal ☐ Cricket ☐ Netball ☐ *Silat* ☐ Bola tampar ☐ Others: ----------

Section B: Food Habits

Please circle the corresponding number based on the references below:

4 = Always: 5-7 days a week
3 = Often: 3-4 days a week
2 = Sometimes: 1-2 days a week
1 = Never: Does not occur at all

1.	How often do you eat breakfast in the morning?	4	3	2	1
2.	Based on three meals per day, how often do you skip at least one meal per day?	4	3	2	1
3.	How often do you take vitamin supplements?	4	3	2	1
4.	How often do you take mineral supplements?	4	3	2	1
5.	How often do you eat three base meals per day?	4	3	2	1
6.	How often do you record what you eat?	4	3	2	1
7.	How often do you drink water?	4	3	2	1
8.	How often do you drink carbonated beverages?	4	3	2	1
9.	How often are you on a “diet”?	4	3	2	1
10.	How often do you eat breads, cereals, pasta, potatoes, or rice?	4	3	2	1
11.	How often do you eat fruits, such as apples, bananas, or oranges?	4	3	2	1
12.	How often do you eat vegetables, such as broccoli, tomatoes, carrots, or salad?	4	3	2	1
13.	How often do you eat dairy products such as milk, yogurt, or cheese?	4	3	2	1
14.	How often do you eat berry jams, cookies, candies, or other sweets?	4	3	2	1
15.	How often do you snack on foods like potato chips, cakes, candies, donuts, or soda?	4	3	2	1
16.	How often do you snack on foods like yogurt, popcorn or fruits?	4	3	2	1
17.	How often do you eat fast food?	4	3	2	1
18.	How often do you seek out nutrition information?	4	3	2	1

Section C: Nutrition Knowledge

Please circle the corresponding number based on the references below spontaneously without discussion with friends:

4 = Strongly agree
3 = Agree
2 = Disagree
1 = Strongly disagree

Appendix A: Continued

1.	Skipping breakfast can negatively affect athletic performance.	4	3	2	1
2.	Proteins are the best and most efficient source of energy.	4	3	2	1
3.	Nutrition affects mental performance.	4	3	2	1
4.	The pre-event meal should be eaten 3-4 hours prior to competition.	4	3	2	1
5.	Calcium excretion from the body increases with alcohol consumption.	4	3	2	1
6.	According to the Food Pyramid Malaysia, one should consume 6-11 servings from the bread, cereal, rice and pasta group.	4	3	2	1
7.	According to the Food Pyramid Malaysia, one should consume 2	4	3	2	1

	servings of fruits and 3 servings of vegetables.				
8.	According to the Food Pyramid Malaysia, onebshould consume 2-3 servings from the dairy group.	4	3	2	1
9.	According to the Food Pyramid Malaysia, one should consume 1/2-2 servings from the meat group.	4	3	2	1
10.	Eating breakfast can improve concentration.	4	3	2	1
11.	Carbohydrates are less fattening than fatty foods.	4	3	2	1
12.	60% of total calories should come from carbohydrates.	4	3	2	1
13.	Carbohydrates are easier to digest than fats or proteins.	4	3	2	1
14.	Excess vitamin consumption can be toxic.	4	3	2	1
15.	Excess vitamin consumption can be toxic.	4	3	2	1
16.	Average percentage of body fat in females is 20-25%	4	3	2	1
17.	Cereal, bread, bagels, and pasta are good sources of carbohydrates.	4	3	2	1
18.	Tofu, nuts and beans are good sources of proteins.	4	3	2	1
19.	Athletes tend to consume twice as much protein as recommended.	4	3	2	1
20.	Over consumption of protein is beneficial for athletes.	4	3	2	1
21.	The best sources of iron come from animal products and fish.	4	3	2	1
22.	Eating cereals or breads enriched with iron should be eaten with a source of vitamin C to enhance absorption of iron.	4	3	2	1
23.	Proteins act to repair and build muscle tissue and make hormones to boost the immune system.	4	3	2	1
24.	Fats are essential in all diets.	4	3	2	1
25.	If a diet is lacking in carbohydrates, proteins are then used for energy.	4	3	2	1
26.	Oatmeal, legumes, and fruits are sources of soluble fiber.	4	3	2	1
27.	The recommended amount of fiber is 25 grams per day.	4	3	2	1
28.	Vitamin C is also known as ascorbic acid.	4	3	2	1
29.	If you are not thirsty, then you must not be dehydrated.	4	3	2	1

Relationship between body mass index (BMI), dietary habits and nutrition knowledge: Table 7 shows the relationship between BMI, dietary habits and nutrition knowledge of athletes. The findings showed that BMI of athletes did not have a significant relationship with dietary habits and nutrition knowledge. In comparison with Paugh (2005) who reported that BMI of subjects had a significant weak negative correlation with dietary habits. According to the study, athletes with excessive weight were more prone to poor dietary habits and poor health status. However, the dietary habits of athletes in this study had a significant positive correlation with the nutrition knowledge ($r = 0.328$, $p<0.01$). Paugh (2005) also found that there was a significant positive relationship between dietary habits and nutrition knowledge. This showed that athletes with good knowledge of nutrition were more likely to practice good dietary habits. In other study, Browning (2010) found that there was no correlation between the college cross-country runners? nutritional knowledge and their actual dietary intake. Although they might have correct nutritional views, they often would not consider these factors when making food choices.

Table 8 shows the relationship between BMI, dietary habits and nutrition knowledge of non-athletes. The findings showed that there was no significant relationship between BMI, dietary habits and nutrition knowledge of non-athletes. However, Wardle *et al.* (2000) reported that there was a positive relationship between nutrition knowledge and consumption of fruits, vegetables and healthy foods in adults. The results of this study also differ from Pirouznia (2001) who reported that there was a significant positive relationship between nutrition knowledge and dietary habits of adolescence in the United States.

Conclusion: In conclusion, the dietary habits mean score of athletes was significantly lower than non-athletes. The nutrition knowledge mean score of respondents was 83.6±6.5 and was considered a good level. Nevertheless, there was no significant difference in nutrition knowledge mean score between athletes and non-athletes. It was discovered that there was a positive significant relationship between nutrition knowledge and dietary habits among athletes but not for non- athletes. However, the BMI of athletes and non-athletes proved no significant relationship with dietary habits and nutrition knowledge. Perhaps, findings of this study could be used as a reference and guideline by UKM sports center to plan its nutrition course in pursuit of enhancing dietary habits, athletes' health status and their sports' performances.

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