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Research Article

Assessment of Total Energy Intake and Nutrition Knowledge on *Eurycoma Longifolia* Among Young Athletes

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Abstract

Introduction: *Eurycoma Longifolia* is an herbal supplement commonly used in the Asean region to enhance athletic performance. Despite its widespread use, information on its consumption among Malaysian athletes remains limited. Athletes must have adequate knowledge regarding *Eurycoma longifolia* to ensure safe and effective use. Therefore, this study aimed to investigate the total energy intake and nutrition knowledge related to *Eurycoma longifolia* among young athletes.

Methodology: A total of 100 athletes, comprising 62 males (age: 20.59 ± 1.24 years; height: 168.55 ± 5.97 cm; weight: 66.96 ± 13.15 kg; body mass index: 23.54 ± 4.12 kg/m^2; waist-to-hip ratio: 0.83 ± 0.05) and 38 females (height: 156.39 ± 4.54 cm; weight: 51.24 ± 8.88 kg; body mass index: 20.90 ± 3.09 kg/m^2; waist-to-hip ratio: 0.81 ± 0.05) were recruited in this study. A nutritional knowledge questionnaire was used to assess athletes' knowledge of *Eurycoma Longifolia*. Energy intake was determined using a 24-hour dietary recall and analysed with nutritional analysis software. Descriptive statistics and frequency analyses were used to interpret the data. Independent t-test and Mann-Whitney U test were used to compare data between groups. Data were analysed using SPSS version 29.0.

Results and Discussion: The findings showed that 79.0% of athletes were aware that *Eurycoma longifolia* Jack is a commercially available supplement. However, overall nutrition knowledge scores were low among both males and females (3.08 ± 2.56 and 2.84 ± 2.43 scores, respectively), with no significant difference between groups. Total energy intake was below recommended levels in both males (energy: 1717.78 ± 645.08 kcal; carbohydrate: 213.15 ± 74.71 g; protein: 70.09 ± 29.80 g; fat: 65.31 ± 42.01 g) and females (energy: 1272.02 ± 463.46 kcal; carbohydrate: 187.51 ± 138.17 g; protein: 48.74 ± 20.40 g; fat: 44.61 ± 19.37 g).

Conclusion: Adequate and accurate nutrition knowledge is essential for athletes to ensure proper use of supplements such as *Eurycoma Longifolia* and to prevent misuse. Improving nutrition awareness may also support athletes in achieving recommended dietary intake levels and optimizing their athletic performance.

Keywords: Eurycoma Longifolia, Total energy intake, Knowledge, Supplements & athletic performance.

Introduction

Eurycoma longifolia Jack is a tall, slender, single-stemmed and slow-growing tree commonly found in sandy soils. it is an indigenous tropical herbal plant native to Southeast Asian countries such as Malaysia, Indonesia, and Vietnam [1]. Often referred to as the "Malaysian ginseng," it is considered an adaptogen and an anti-aging remedy believed to combat stress, improve physical strength and enhance overall well-being [2,3]. Its root extract has been reported to possess several medicinal properties, including aphrodisiac, antimalarial, cytotoxic, antipyretic, and anti-ulcer effects [4]. *Eurycoma longifolia* is also commercially marketed for improving athletic performance [5] and is available in tablet form for convenient consumption [6].

Eurycoma longifolia Jack is widely used as a traditional herbal remedy and contains bioactive compounds such as glycoproteins and eurycomanone, which are associated with anti-aging effects and increased androgen and testosterone levels [2,7] reported that *Eurycoma longifolia* Jack may support optimal cortisol and testosterone balance, reduce overtraining syndrome, and improve post-exercise recovery. Numerous studies have documented that supplementation with *Eurycoma longifolia* can increase energy levels and enhance sports performance [8-10]. Additionally, long jack extract exhibits significant antioxidant activity, which helps to scavenge free radicals generated during exercise [2].

Several studies have reported a high prevalence of supplement use among athletes, often accompanied by poor nutritional knowledge regarding these supplements [11-14] also found that many young athletes lack familiarity with World Anti-Doping Agency regulations, leading to potential misuse of sports supplements. These findings suggest that athletes who consume supplements may not always possess adequate knowledge concerning their proper use. In Malaysia, [15] reported that 59.7% of team sport athletes at the National Sports Institute used supplements as ergogenic aids to enhance performance. Despite the growing use of supplements, information regarding nutritional knowledge—particularly knowledge related to *Eurycoma longifolia* among Malaysian athletes remains limited. Therefore, the objective of this study was to investigate the level of nutrition supplement knowledge related to *Eurycoma longifolia* and to assess total energy intake among athletes.

Materials and Methods

One hundred athletes participated in this cross-sectional study. All participants completed a research questionnaire comprising four sections: a participant information sheet, medical and lifestyle history, nutritional knowledge of *Eurycoma Longifolia* and a 24-hour dietary recall. The participant information sheet was used to collect demographic and biodata information. The medical history and lifestyle questionnaire gathered information on health status, medical history, smoking habits and alcohol consumption. The 24-hour dietary recall was a structured dietary assessment method used to obtain a detailed record of all foods and beverages consumed by participants within the previous 24 hours.

The nutritional knowledge questionnaire on *Eurycoma Longifolia* was used to assess participants' knowledge of this supplement. The questionnaire was developed with modifications based on a previous questionnaire [16]. Athletes were asked about their knowledge regarding the function, dosage, nutrient interactions, effects on athletic performance, doping concerns and potential side effects of *Eurycoma Longifolia* supplements. Participants received one point for each correct response. They were then categorised according to their total score: those scoring 0–5 points were classified as having low knowledge, while those scoring 6–10 points were classified as having high knowledge.

The researcher explained the entire study design and protocol to participants before data collection. Participants who fulfilled the inclusion criteria, specifically athletes aged 18–24 years, were recruited for the study. Exclusion criteria included inability to read English, having acute or chronic diseases and being vegetarian. The collected data were analysed using SPSS version 29.0. Descriptive statistics and frequency analyses were used to interpret the data. Independent t-test and Mann-Whitney U test were used to compare data between groups. Data were analysed using SPSS version 29.0

Results and Discussion

The mean age of the respondents was 20.59 ± 1.24 years, with ages ranging from 18 to 24 years. Both male and female participants were within the normal categories for body mass index and waist-to-hip ratio (Table 1).

Table 1: Physical characteristic of participants (n=100).

Physical Characteristic of Participants	Male (n=62)	Female (n=38)
Height (cm)	168.55 ± 5.97	156.39 ± 4.54
Weight (kg)	66.96 ± 13.15	51.24 ± 8.88
BMI (kg/m^2)	23.54 ± 4.12	20.90 ± 3.09
Waist-to-hip ratio (WHR)	0.83 ± 0.05	0.81 ± 0.05

This study found that 79% of participants were aware of the *Eurycoma Longifolia* supplement, whereas 16% had never heard of it and 5% were unsure. This indicates that *Eurycoma Longifolia* supplementation is relatively common among athletes. An interesting finding of this study was that the nutritional knowledge scores related to this supplement were low in both male and female respondents (3.08 ± 2.56 and 2.84 ± 2.43, respectively). There was no significant difference in knowledge scores between male and female respondents (p>0.05) (Figure 1).

Figure 1: Mean score of Nutrition Knowledge in male and female participant. Data presented in mean ± standard deviation.

This result is consistent with a previous study by [12], which found that young athletes had low levels of knowledge regarding sports supplementation, leading to difficulties in understanding the roles and intended benefits of different supplements. Similarly, [17] reported that most athletes possessed limited supplement knowledge, as many were unaware of the active ingredients (61.9%), side effects (57.1%), mechanisms of action (54.0%) and almost half did not know the recommended dosages (47.6%) [18-22] also reported that more than 60% of Singaporean athletes had little or limited knowledge about supplements. These findings collectively indicate that athletes generally have low levels of nutritional supplement knowledge, even when they are familiar with the supplements' existence. This situation is concerning because athletes are expected to have adequate knowledge of supplements to use them safely and effectively to enhance their health and athletic performance [23].

The mean total energy and macronutrient intakes among the respondents are shown in Figure 2, and the comparison of total calorie intake between low and high achievers *Eurycoma Longifolia* supplement knowledge is presented in Table 2. This study found that the total energy intake of both male and female participants did not meet the recommended nutrient intake requirements. For male participants, the mean total energy intake was 1717.78 ± 645.08 kcal, with carbohydrate (213.15 ± 74.71 g), protein (70.09 ± 29.80 g), and fat (65.31 ± 42.01 g). For female participants, the mean total energy intake was 1272.02 ± 463.46 kcal, with carbohydrate (187.51 ± 138.17 g), protein (48.74 ± 20.40 g), and fat (44.61 ± 19.37 g). There were no significant differences in calorie, carbohydrate, protein and fat intake between participants with low and high knowledge scores in both gender [24] (Figure 2) (Table 2).

A previous study reported that nutrition knowledge was positively correlated with total energy intake [25,26] found that nutrition education in a national extracurricular athletics program significantly improved the nutrition knowledge of the intervention group compared with the control group. Therefore, awareness and accurate nutrition knowledge are important for athletes to ensure they have reliable information about supplements, prevent misuse and follow a healthy diet to meet recommended nutrient intakes. Future studies are warranted to investigate the effects of nutrition education on nutrition knowledge and total calorie intake among

athletes. Such research will help ensure that athletes acquire accurate knowledge and apply it in their daily routines to meet nutrient requirements, maintain good health and optimize athletic performance [27-41].

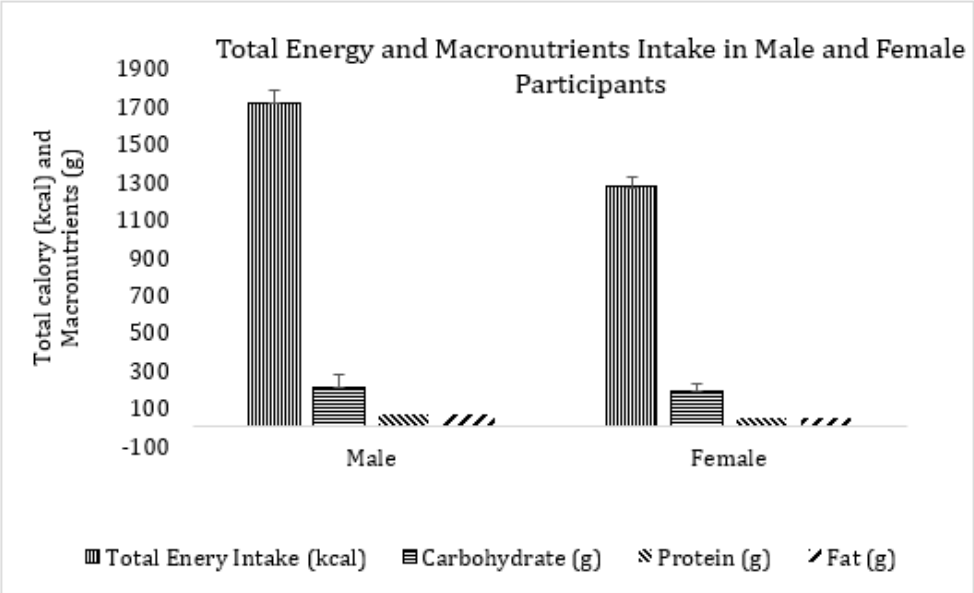

Figure 2: Total energy and macronutrient intake in male and female participants. Data presented in mean ± standard deviation.

Table 2: Comparison of total calory intake between low and high nutrition knowledge score of respondents (n=100).

Gender	Male (N=62)		Female (N=38)	
Nutrition Knowledge Scores	**Low (n=48)**	**High (n=14)**	**Low (n=31)**	**High (n=7)**
Dietary Intake				
Energy (kcal)	1755.60 ± 695.8[8]1	1588.08 ± 422.46[1]	1266.32 ± 407.63[1]	1297.29 ± 702.02[1]
Carbohydrate (g)	216.08 ± 81.14[1]	203.11 ± 47.44	196.40 (118.67)[2]	151.63 (193.09)[2]
Protein (g)	69.70 ± 30.84[1]	71.41 ± 26.92[1]	47.48 ± 17.23[1]	54.33 ± 32.19[1]
Fat (g)	60.58 (52.33)[2]	45.06 (25.90)[2]	45.21 ± 17.92[1]	41.96 ± 26.43[1]

Note*: Data presented in mean ± standard deviation[1]; Data presented in median (interquartile range)[2].

Conclusions

In conclusion, although *Eurycoma longifolia* supplements are widely known, the athletes in this study demonstrated low nutrition knowledge scores. Their total energy intake was also below the recommended nutrient intake. Therefore, nutrition education is essential to increase awareness and understanding among young athletes, prevent the misuse of such supplements, and help them achieve appropriate energy intake in accordance with established recommendations.

Acknowledgment

None.

Conflict of Interest

The authors declare no conflict of interest.

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