Nutrition Knowledge and Dietary Practices among Athletes in Colleges of Education in the Volta Region of Ghana

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DOI: https://doi.org/10.47772/IJRISS.2025.91100578

Received: 11 December 2025; Accepted: 18 December 2025; Published: 25 December 2025

ABSTRACT

Nutrition knowledge and dietary practices are tools for improving athletic performance, fostering recovery, and promoting overall health. Although, it is prudent for athletes to make informed food choices before, during and after training or competition, nutrition knowledge and dietary practices of student athletes have been understudied. Therefore, the study assessed nutrition knowledge and dietary practices among athletes in Colleges of Education in the Volta Region of Ghana. The study employed a cross-sectional survey design. The population consisted of a total of 330 athletes where a census technique was used for the study. Data was collected using questionnaire. The study revealed high level of nutrition knowledge among participants (N=277, 100%). Majority of the participants always ate breakfast, drank water, and occasionally consumed fruits. Cost, time, and family feeding influenced dietary practices among majority of the participants. Additionally, there was no statistically significant difference (p =.359) in dietary practices among male and female participants. The study concluded that cost, time, and family feeding influences dietary practices among participants. Therefore, it has been recommended that management in Colleges of Education should put in measures to help athletes deal with these concerns throughout their nutritional practices.

Keywords: College Athletes, Nutrition Knowledge, Dietary Practices, Dietary Influences

INTRODUCTION

Nutrition is a field of study that has been around for many decades and focuses on enhancing people's health. It is important in an athlete's life in a variety of ways, including contributing to high levels of performance, recovery, and achieving and sustaining health [42]. There has been a greater emphasis placed on the importance of proper nutrition as one of the essential components of a healthy lifestyle, and there has been an increase in the movement toward healthier diets [7]. Because nutrition provides the energy needed for normal physiological functioning of the body and more importantly, it forms the bedrock of any exercise or athletic programme [37].

Nutrition knowledge is relevant to any sports player. It consolidates the rationales to improve dietary behavior and grant the necessary competencies to make nutrition-based food choices [4] and [14]. The goal of nutrition knowledge is to help athletes understand what they should eat, and how to select and prepare a wide variety of foods required for a healthy diet [57]. Daily food consumption should be in accordance with the daily energy requirement. To have athletes meet their daily energy needs, they need to have nutrition knowledge, as good nutrition knowledge leads to healthy eating behavior, but it does not affect nutritional status [53].

Good dietary practice is essential in sports as it improves the quality of training, maximises performance and aids in the speedy recovery of players from injuries [2]. Athletes and active individuals who participate in physical fitness require optimal energy [19] and consumption of foods comprising of proteins, complex carbohydrates, essential fats, vitamins, and minerals are crucial for good dietary practice [45]. Athletes' dietary practices have been discovered to be a crucial component of training and performance, and athletes who make knowledgeable dietary choices will have an advantage over those who choose to overlook the function of food in human performance [23]. Herewith, how an athlete eats is crucial to achieving his or her objectives because it enables the athlete to consume a diet that will maximize performance [30].

College athletes are a unique population for which nutrition and dietary intake play a pivotal role in growth, recovery, and performance. They are burdened with training, coursework, and scheduled game days which contributed to a disordered dietary regimen coupled with financial constraints and learning difficulties to cope with early adulthood add pressure to an already competitive life [46]. Athletes' dietary practices are impacted by factors such as time, attitudes, socio-demographic traits, behavior, and body composition/physical appearance [34].

Athletes need a high degree of nutritional knowledge to provide comprehension on a balanced diet, healthy body weight, superb development, and imposing look, as well as good physical performance and health [50]. Inadequate nutrition knowledge may result in athletes consuming inadequate diets that may not meet their nutritional needs leading to potential nutrient deficiencies, fatigue, decreased muscle mass, increased risk of injury, and impaired recovery time [32]. Accordingly, it is imperative to critically understand how to eat for the competition, that is, what to consume before and after the competition to aid recovery [61].

Given the importance of nutrition to health and performance, it is critical to address athletes' nutrition knowledge, as it might impede their potential ability and the performance of their respective teams [20]. Several studies have suggested the need to address nutrition knowledge gap among college athletes since they are still exhibiting inadequate knowledge about the roles of nutrient in performance [22], [51], and [25]. A personal encounter with athletes in Colleges of Education (CoE) during camping for intercollegiate games revealed that most of them ate whatever they felt like eating and also engaged in dieting and/or fasting to lose weight in an attempt to meet sport specific physique, oblivious to the fact that they must consume adequate calories in order to perform well. Due to this, they experienced injuries such as sore muscles.

Coupled with this, there is paucity of studies on nutrition knowledge and dietary practices among athletes in Colleges of Education (CoE). Considering this, the importance of nutrition in the lives of athletes in CoE has not been given the needed attention, though it is an important predictor of peak athletic performance and should be studied. This data is needed to provide empirical evidence on the importance of nutrition in the lives of athletes in CoE to structure and provide nutrition intervention strategies for them. Hence, the researchers found it essential to assess nutrition knowledge and dietary practices among athletes in CoE in the Volta Region of Ghana.

Research Questions

The following questions guided the study:

1. What is the nutrition knowledge of athletes in Colleges of Education?
2. What are the dietary practices of athletes in Colleges of Education?
3. What are the factors that influence dietary practices of athletes in Colleges of Education?

Research Hypothesis

H_0: There will be no significant difference in dietary practices among male and female athletes in Colleges of Education.

METHODOLOGY

Research Design

The study adopted a cross-sectional survey design. The cross-sectional survey design produces a good number of responses from numerous people at a time, provides a meaningful picture of events and seeks to explain people's perception and behaviour basis of information obtained at a time [40]. This design helps the researcher to achieve the purpose of the study as well as the drawing of meaningful conclusions from the study by obtaining varying views from the participants.

Population

The population consisted of all athletes in the five CoE in the Volta Region of Ghana that participated at least one sporting activities in the 2022 games at Dambai College of Education. The total population composed of 330.

Sample and Sampling Technique

The census technique was used to include all 330 athletes in the study. This technique ensured that comprehensive data was collected to be able to make a gneralising conclusion on the issue of study regarding the population [40], and to help eliminate sampling error and provide data on all the individuals in the population [56].

Instrumentation

The study was conducted using a questionnaire. An adapted questionnaire from [58] with a reliability coefficient of 0.88 was used to collect data on nutrition knowledge. A set of questions was also used to collect data on dietary practices as well as factors of dietary practices. The questionnaire had four sections: Demographics, Nutrition Knowledge, Dietary Practices, and Factors of Dietary Practices. The Demographic Section required the participants to respond to gender, age, level, type of sports played, height and weight, nutrition education, and sources of nutrition information. The Nutrition Knowledge section contained 10 close-ended statements which tested the knowledge level of participants about nutrition. Each statement required a response of either Strongly Agree, Agree, Undecided, Disagree, or Strongly Disagree. The Dietary Practices section contained 10 close-ended statements, which required participants to indicate how often they ate a particular food item including frequency of food intake from every section of the food pyramid, snacks, fast food, vitamin and mineral supplements, breakfast, beverages intake and meal skipping. Each statement required a response of either Always, Often, Sometimes, or Never. The Factors of Dietary Practices section contained 10 close-ended statements with the intent of finding out factors that influence dietary practices of participants including cost, time constraints, cultural background, lack of appetite, peer influence, family feeding, long periods of cooking, social media influence and sickness. Each statement required a response of either Strongly Agree, Agree, Undecided, Disagree, or Strongly Disagree.

Validity and Reliability

The questionnaire was face and content validated by the supervisors and experts in the department of health, physical education, recreation and sports. The reliability of the questionnaire was done through test-retest method where it was pilot-tested among participants at Ada CoE in the Greater Accra region of Ghana, and yielded a Cronbach Alpha value of 0.73.

Ethical Considerations

Participants were adequately informed about the objectives of the study and were required to sign an informed consent to participate in the study. Participants were given the freedom to withdraw from the study at any stage if they were not comfortable. They were assured of confidentiality, anonymity, and privacy.

Data Collection Procedures

The researchers took an introductory letter from the Head of the Department of Health, Physical Education, Recreation and Sports of the University of Education, Winneba to sought permission from the head of the institutions. The data was collected both face-to-face and online (Google form). The researchers explained the nature, purpose, and procedure of the study and scheduled meetings were communicated to the participants' days ahead of time. The participants were assured that the data collected would be used purposely for research. The researchers on the scheduled date, administered the questionnaires for which participants responded within 15-20 minutes. The completed questionnaires were retrieved on the same day, placed in an envelope, and sealed. The online was also adapted due to the track system of the CoE where most of the participants were

home. The questionnaire was converted into a Google form and the link was sent to the participants individually by the researchers. The researchers had to remind participants occasionally through messages and calls to respond to the survey in order to increase the response rate. In some cases, the researchers had to buy data for some of the participants before they were convinced to respond to it. The researchers carried out these activities within nine weeks. A total of 330 participants were recruited for the study of which 277 participants responded to the questionnaire representing an 84% response rate. Nevertheless, this response rate was considered appropriate for the study based on the suggestion of [49] that a response rate of 60% or more is adequate.

Data Analysis

The Nutrition Knowledge section was analysed using frequency and percentage. The data was transformed and computed by summing up the responses to the 10 statements into a single variable nutrition knowledge score, which was then recoded into levels of nutrition knowledge as low and high. Thus, scores below or equal to 25.0 indicated as low knowledge and scores above or equal to 26.0 indicated high knowledge. The Dietary Practices section was analysed using frequency and percentage of the responses to the 10 statements. The Factors of Dietary Practices was analysed using frequency and percentage of the responses to the 10 statements. The scale was collapsed into a dichotomous scale of agree and disagree by transforming and recoding. Thus, strongly agree and agree indicated agree while undecided, strongly disagree and disagree indicated disagree. An independent samples t-test was conducted to ascertain if there will be no significant difference in dietary practices with respect to gender among participants. All statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) version 25.0. The level of significance was set at $p<0.05$.

RESULTS

Table 1: Demographic Information of Participants

Gender	**Frequency**	**Percentage (%)**
Male	155	56.0
Female	122	44.0
Total	**277**	**100.0**

Source: *Field Survey (2023)*

From Table 1 above, out of the 277 athletes that took part in the study, 56.0% were males and 44.0% were females.

Table 2: Age of Participants

Age Range	**Frequency**	**Percentage (%)**
15-20	2	0.7
21-25	195	70.4
26-30	70	25.3
Above 30	10	3.6
Total	**277**	**100.0**

Source: *Field Survey (2023)*

From Table 2 above, out of the 277 participants, 0.7% were aged 15-20 years, 70.4% were aged 21-25 years, 25.3% were aged 26-30 years with 3.6% aged above 30 years. This imply that most of the participants were aged 21-25 years while the least number of participants were aged 15-20 years.

Table 3: Level of Participants

Level	Frequency	Percentage (%)
200	111	40.1
300	94	33.9
400	72	26.0
Total	**277**	**100.0**

Source: *Field Survey (2023)*

From Table 3 above, majority of the participants 40.1% were in level 200, 33.9% were in level 300, and 26.0% were in level 400 respectively.

Table 4: Type of Sport(s) Played by Gender

Sport Played	Male		Female		Total	
	N	(%)	N	(%)	N	(%)
Soccer	93	76.2	29	23.8	**122**	**44.0**
Volleyball	23	48.9	24	51.1	**47**	**17.0**
Handball	12	44.4	15	55.6	**27**	**9.7**
Basketball	4	33.3	8	66.7	**12**	**4.3**
Netball	0	0	15	100	**15**	**5.4**
Table Tennis	3	60.0	2	40.0	**5**	**1.8**
Cross Country	2	100	0	0	**2**	**.7**
Track and Field	18	38.3	29	61.7	**47**	**17.0**

Source: *Field Survey (2023)*

From Table 4 above, majority of the participants 44.0% played soccer, 17.0% played volleyball, 9.7% played handball, 4.3% played basketball, 5.4% played netball, 1.8% played table tennis, 0.7% ran cross country, and 17.0% were involved in track and field events.

Table 5: Weight and Height of Participants

	Mean	Std. Deviation
Weight (kg)	63.53	12.92
Height (m)	2.80	1.73
Source: *Field Survey (2023)*		

From Table 5, the mean weight of the participants was 63.53 and the mean height was 2.80.

Table 6: Previous Nutrition Education

Previous Nutrition Education	Frequency	Percentage (%)
Yes	187	67.5
No	90	32.5
Total	**277**	**100.0**

Source: *Field Survey (2023)*

From Table 6 above, 67.5% of the participants had previous nutrition education while 32.5% did not.

Table 7: Where Do Athletes Receive Nutrition Information?

Source of Nutrition Info.	Frequency	Percentage (%)
Coach	68	24.5
Magazine	22	7.9
Television	68	24.5
Athletic Trainer	16	5.8
Nutritionist	40	14.4
Parents	40	14.4
Peers	23	8.3
Total	**277**	**100.0**

Source: *Field Survey (2023)*

From Table 7 above, 24.5% of the participants received nutrition information from coaches and television, 7.9% from magazine, 5.8% from athletic trainer, 14.4% from nutritionist and parents, and 8.3% from peers.

Table 8: Nutrition Knowledge among Athletes in CoE

Nutrition Knowledge	Frequency	Percentage (%)
Low	0	0.0
High	277	100.0
Total	**277**	**100.0**

Source: *Field Survey (2023)*

From Table 8 above, 100% of the participants had high levels of nutrition knowledge whiles 0.0% of the participants had low levels of nutrition knowledge.

Table 9: Dietary Practices among Athletes in CoE

Statement	Always n (%)	Often n (%)	Sometimes n (%)	Never n (%)
How often do you eat breakfast in the morning?	126 (45.5%)	64 (23.1%)	84 (30.3%)	3 (1.1%)
How often do you skip at least one meal per day?	27 (9.7%)	73 (26.4%)	165 (59.6%)	12 (4.3%)
How often do you take vitamin supplements?	27 (9.7%)	57 (20.6%)	154 (55.6%)	39 (14.1%)
How often do you take mineral supplements?	46 (16.6%)	49 (17.7%)	129 (46.6%)	53 (19.1%)
How often do you drink water during training and after training/competition?	164 (59.2%)	69 (24.9%)	40 (14.4%)	4 (1.4%)
How often do you drink carbonated beverages?	32 (11.6%)	69 (24.9%)	152 (54.9%)	24 (8.7%)

How often do you consume an adequate diet daily?	54 (19.5%)	87 (31.4%)	125 (45.1%)	11 (4.0)
How often do you eat fruits such as apples, bananas, or oranges?	56 (20.2%)	78 (28.2%)	139 (50.2%)	4 (1.4%)
How often do you eat fast food?	37 (13.4%)	64 (23.1%)	154 (55.6%)	22 (7.9%)
How often do you seek out nutrition information?	38 (13.7%)	49 (27.7%)	144 (52.0%)	46 (16.6%)

Source: *Field Survey (2023)*

From Table 9 above, majority of the participants 45.5% always eat breakfast, 23.1% often do, 30.3% sometimes eat breakfast while only 1.1% never do. 9.7% of the participants skipped at least one meal per day, 26.4% often do, whereas majority 59.6% sometimes do and 4.3% never do. 9.7% reported always taking vitamin supplement, 20.6% often do, majority 55.6% sometimes do, and 14.1% never do. For mineral supplement, 16.6% of the participants always take them, 17.7% often do, majority 46.6% sometimes do, and 19.1% never do. Majority of the participants 59.2% always drink water during and after training training/competition, 24.9% often do, 14.4% sometimes do, and 1.4% never do. 11.6% of the participants always drink carbonated beverages, 24.9% often do, majority 54.9% sometimes do, and 8.7% never do. 19.5% of the participants always consumed adequate diet, 31.4% often do, majority 45.1% do so sometimes, and 4.0% never do. 20.2% of the participants always ate fruits such as apples, bananas, and orange, 28.2% often do, majority 50.2% sometimes do, and never by 1.4%. 13.4% of the participants always ate fast food, often by 23.1%, sometimes by majority 55.6%, and never by 7.9%. 13.7% of the participants always sought nutrition information, 17.7% often do, majority 52.0% sometimes do, and 16.6% never do.

Table 10: Factors That Influence Dietary Practices of Athletes in CoE

Statement	**Agree n (%)**	**Disagree n (%)**
I am unable to follow the recommended diet due to a lack of knowledge about sport nutrition. I am unable to afford the cost of recommended diet.	179 (64.6) 213 (76.9)	98 (35.4) 64 (23.1)
I am unable to follow the recommended diet due to time constraints.	147 (53.1)	130 (46.9)
I am unable to follow the recommended diet due to my cultural background.	103 (37.2)	174 (62.8)
I am unable to follow the recommended diet due to lack of appetite.	104 (37.5)	173 (62.5)
I am unable to follow the recommended diet due to peer influence.	85 (30.7)	192 (69.3)
I am unable to follow the recommended diet due to family feeding.	149 (53.8)	128 (46.2)
I am unable to follow the recommended diet due to long periods of cooking.	107 (38.6)	170 (61.4)
I am unable to follow the recommended diet due to social media influence.	86 (31.0)	191 (69.0)
I am unable to follow the recommended diet due to sickness.	96 (34.7)	181 (65.3)

Source: *Field Survey (2023)*

From Table 10 above, majority of the participants 64.6% agreed that they were unable to follow the recommended diet due to a lack of knowledge about sport nutrition while 35.4% disagreed. On whether participants were unable to afford the cost of recommended diet, majority of the participants 76.9% agreed while 23.1% disagreed. Majority of the participants 53.1% agreed that they were unable to follow the recommended diet due to time and 46.9% disagreed. However, majority of the participants 62.8% disagreed

that they were unable to follow the recommended diet due to their cultural background while 37.2% agreed. Also, majority of the participants 62.5% disagreed that they were unable to follow the recommended diet due to lack of appetite whereas 37.5% agreed. Again, majority of the participants 69.3% disagreed that they were unable to follow the recommended diet due to peer influence and 30.7% agreed. Majority of the participants 53.8% agreed that they were unable to follow the recommended diet due to family feeding but 46.2% disagreed. Majority of the participants 61.4% disagreed that they were unable to follow the recommended diet due to long periods of cooking and 38.6% agreed. Majority of the participants 69.0% disagreed that they were unable to follow the recommended diet due to social media influence while 31.0% agreed. Majority of the participants 65.3% disagreed that they were unable to follow the recommended diet due to sickness while 34.7% agreed.

Table 11: Difference in Dietary Practices With Respect To Gender

Gender	N	Mean	SD	T	Df	P
				-.919	275	.359
Male	155	25.77	3.93			
Female	122	26.22	4.26			

Source: *Field Survey (2023)*

From Table 11 above, there was no statistically significant difference t (275) = -.919, p = .359 between the gender of the participants and their dietary practices. Therefore, the null hypothesis failed to be rejected. The result showed that there was no statistically significant difference in the scores of males (M = 25.77, SD = 3.93) and females (M = 26.22, SD = 4.26) regarding their dietary practices.

DISCUSSIONS

The study revealed that athletes in CoE had high level of nutrition knowledge which is in line with the study by [29], that majority of the athletes had adequate knowledge on nutrition. Similarly, previous studies [16], [18], and [53] reported good level of nutrition knowledge among athletes. The present study also discovered that majority of the participants demonstrated that skipping breakfast can negatively affect athletic performance. This was confirmed in the study of [26] that many of the participants knew that skipping breakfast has a negative effect on cognitive and sports performance. Additionally, the study of [6] indicated vast majority of participants strongly agreed or agreed that it is important to have breakfast every day. Besides, the present study found that participants have an understanding of the importance of macronutrients which was demonstrated in a study by [11] where participants performed best in the macronutrient subsection, and [5] who discovered that athletes had better understanding of macronutrients. Furthermore, the present study showed that majority of the participants demonstrated better knowledge about hydration which was evident in previous reports [35], [62], and [15]. Again, this study showed that majority of the participants were found to be knowledgeable about pre-competition, competition, and post-competition meals which agrees with previous findings [1], [42], and [36]. However, these findings are in contrast with other studies [26], [63], and [59] that athletes demonstrated low or inadequate levels of nutrition knowledge.

The present study indicated that majority of the participants always eat breakfast. This result supports the finding of [3], to investigate the sports nutritional knowledge, attitude, and practice of adolescent athletes in Tehran, Iran which revealed that 131 out of 174 participants had breakfast every day. Likewise, the study of [39], revealed that majority of the respondents reported to have eaten their breakfast 5-7 days/week. Moreover, the present study discovered that majority of the participants did not skip at least one meal per day. This finding agrees with previous findings [26] [31] that majority of athletes reported not frequently skipping meals. Additionally, majority of the participants consistently take water during training and after training/competition which is in line with previous studies [31], [62], and [28]. Nevertheless, other studies were in contrast with the findings of the present study that athletes' diet were not meeting the recommended dietary allowance (RDA) for macronutrients [5], [12], [18], and [55].

The present study discovered that majority of the participants were unable to afford cost of recommended diet. This is in agreement with previous reports [47], [33], [9], and [24]. The present study also illustrated that majority of the participants were unable to follow the recommended diet due to time constraints which is evident in previous findings [21], [43], and [52] that time is a major barrier for student-athletes. Furthermore, the present study shown that majority of the participants demonstrated that they were unable to follow the recommended diet due to family feeding which is consistent with the works of [54] and [41]. However, majority of the participants in the present study disagreed that they were unable to follow the recommended diet due to peer influence. This finding departs from the finding of [10], which discovered that most of the participants acknowledged that they were influenced by their peers in making certain food decisions. Also, the study of [8] found that some athletes reported using advice from other athletes to inform their dietary practice.

The result of the present study revealed that there was no significant difference in dietary practices of athletes with respect to gender. This result conformed with the study of [39], which indicated no differences in the dietary habits scores of both male and female athletes. Additionally, the result supports the finding of [17], which confirmed that there was no significant difference between male and female athletes with respect to nutrition behavior. Notwithstanding, the result disagreed with the finding of [44] study which found that female collegiate athletes had better dietary habits than their male counterparts.

CONCLUSION

Participants had high level of nutrition knowledge including skipping breakfast, macronutrients, hydration, pre-competition, competition, and post-competition meals. Also, participants consistently eat breakfast, take water during training and after training/competition, and occasionally take fruits. Furthermore, cost, time, and family feeding were the major factors that influenced dietary practices of participants. Moreover, there was no statistically significant difference in the dietary practices among participants with respect to gender. Therefore, there is the need for continuous education and counselling to help athletes deal with the issues that comes with dietary practices. Further studies should be carried out to examine the impact of nutrition knowledge and dietary practices among male and female athletes in CoE.

RECOMMENDATIONS

Based on the findings and conclusions of the study, the following recommendations were made;

i. Management in CoE should provide special meal plans for athletes since they are unique population.

ii. Management in CoE in collaboration with the physical education department, should provide a counselling unit to educate athletes on healthy dietary practices which would go a long to improve athletic performance and overall health.

iii. Management in CoE should put in measures to help athletes manage cost and time constraints that influences their dietary practices.

iv. Coaches should educate and assist athletes by emphasising time management, meal planning, and balancing family feeding with their dietary needs.

v. Athletes in CoE should maintain healthy dietary practices, particularly consuming fruits regularly.

Authors' contributions

Manche E.K conceived and designed the study, collected data and drafted the manuscript.

Sarpong O. E. contributed to the concept and design, analyses the data and drafted the manuscript.

Sorkpor S. R contributed to the interpretation of the results and drafted the manuscript.

All authors read and approved the final manuscript.

Conflicts of Interest

The authors declare no conflicts of interest.

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