

Dietary habits and associated factors among athletes in athletic clubs in Addis Ababa, Ethiopia

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Abstract

Background: Athletics encompasses a variety of events, each with distinct demands and chances of success. Optimal nutrition is essential for enhancing training performance and reducing the risk of injury and illness. However, there is limited research on dietary habits and their associated factors among athletes in Ethiopia.

Objective: This study aimed to assess the dietary habits and associated factors among athletes at first-division athletic clubs in Addis Ababa, Ethiopia.

Methods: An institution-based cross-sectional study was conducted at athletic clubs in Addis Ababa. A total of 422 athletes participated in the study. Stratified random sampling was used to allocate the sample size across various athletic disciplines, and participants were selected through simple random sampling from lists of athletes. Data were collected using a self-administered questionnaire. Binary logistic regression was employed to identify factors associated with dietary habits. Variables with a p-value less than 0.2 in the bivariate analysis were entered into multivariate logistic regression. The adjusted odds ratio (AOR) with a 95% confidence interval (CI) and p-value less than 0.05 were used to determine the strength and statistical significance of the associations.

Results: Over half of the participants (53.7%; 95% CI: 48.7-58.6) exhibited good dietary habits. Factors significantly associated with good dietary habits included age 30-35 years (AOR, 2.6; 95% CI: 1.1-5.9), a throwing discipline (AOR, 4.1; 95% CI: 1.3-13.2), monthly income greater than 8,000 ETB (AOR, 3.4; 95% CI: 1.1-11.1), good nutritional knowledge (AOR, 1.78; 95% CI: 1.11-2.8), and receiving nutritional counseling (AOR, 2.87; 95% CI: 1.4-5.5).

Conclusion: More than half of the athletes in Addis Ababa's athletic clubs exhibited good dietary habits. Age, income, type of discipline, nutritional knowledge, and nutritional counseling were found to be significant factors associated with these habits. To support athletes' nutritional needs, it is crucial for government bodies and relevant organizations to develop nutritional counseling programs and policies, raise awareness about nutrition tailored to specific athletic disciplines, and enhance athletes' access to nutritional education.

Keywords: dietary habits, athletes, athletic clubs, Addis Ababa, nutrition, nutritional counseling

Introduction

Athletics, governed by the International Association of Athletics Federations (IAAF), encompasses a wide array of events, including running, walking, jumping, and throwing. Despite the diversity in event types and chances of success, there are common goals in athletics, particularly in terms of optimizing training performance and reducing the risk of injury and illness. Proper nutrition is crucial to achieving these goals, as it directly influences athletes' physical capabilities such as strength, speed, and power. A balanced diet is vital before, during, and after physical activity to ensure peak performance (Burke et al. 2019; Rodriguez and Langley 2009).

A well-rounded diet that meets the athlete's energy needs is foundational to good health. Such a diet should prioritize nutrient-rich foods, including vegetables, fruits, legumes, cereals, lean meats, and dairy, to ensure the intake of essential vitamins and minerals. Nutritional requirements vary according to factors such as body size, activity levels, and training

loads; however, every athlete requires an optimal balance of carbohydrates, proteins, fats, and micronutrients to sustain performance and recovery. Specifically, maintaining adequate glycogen levels and preventing glycogen depletion are essential to ensuring optimal energy levels and muscle function (Thomas et al. 2016).

Nutrition plays a key role in athletes' health and performance, especially when training for competition. Athletes who prioritize proper diet and hydration gain more from their training, perform better during competitions, recover more quickly, and suffer fewer illnesses and injuries. The International Society of Sports Nutrition (ISSN) and the American College of Sports Medicine (ACSM) emphasize that athletes should consume a variety of meals that meet their energy needs and provide adequate macro- and micronutrients. When energy is sourced from a diverse range of foods, supplementation with vitamins and minerals is typically unnecessary (Thomas et al. 2016; Kerksick et al. 2017).

On the other hand, poor dietary habits can significantly impair athletic performance, leading to reduced muscle strength, depleted glycogen stores, and decreased concentration and coordination. Such poor dietary habits may arise from reduced appetite, inadequate food intake, or disordered eating behaviors (Mountjoy et al. 2018; Melin et al. 2019). In Ethiopia, studies have shown that athletes exhibit poor dietary habits, with 74.1% classified as underweight and 8.6% suffering from chronic energy deficiency, based on their body mass index (BMI). Furthermore, their dietary intake falls below the Recommended Dietary Allowances (RDA) for energy, carbohydrates, fats, fiber, and calcium. Cereal, a staple food, is commonly consumed but provides poor bioavailability of essential minerals and vitamins, leading to nutritional deficiencies that hinder performance (Mekeds and Paramvir 2018; Melkamu 2020; Beis et al. 2011; Elema 2019). Several factors influence athletes' dietary habits, including nutrition knowledge, information sources, appetite, body image perceptions, and weight management practices (Merawati et al. 2019; Klein et al. 2021; Kibata 2011; Noll et al. 2020). Studies have indicated that both athletes and coaches often have limited nutritional knowledge, suggesting the need for targeted nutrition education. Proper nutritional education is essential to improving dietary habits, supporting lean muscle mass development, and achieving optimal weight management, all of which contribute to enhanced athletic performance (Klein et al. 2021; Ashley et al. 2021; Deguchi et al. 2021; Folasire et al. 2015). Additionally, athletes benefit from personalized nutrition support provided by experts or dietitians to ensure they are meeting their dietary needs (Thomas et al. 2016; Burke et al. 2019; Lis et al. 2019).

In Ethiopia, however, there is a notable absence of evidence-based nutrition guidelines or policies tailored to the needs of athletes. Furthermore, the athletic clubs, federations, and stakeholders focus primarily on technical and conditioning aspects of training, with insufficient attention given to athletes' dietary habits. This gap in nutrition support may negatively impact both athletic performance and general health. Despite the importance of nutrition for athletes' success, no adequate studies have been conducted in Ethiopia to explore dietary habits and the factors influencing them. This study, therefore, aims to assess the dietary habits of athletes and identify factors associated with those habits among athletes at athletic clubs in Addis Ababa, Ethiopia. The findings of this study will provide valuable insights for both governmental and non-governmental organizations to promote better dietary practices and support the overall health and performance of athletes.

Materials and Methods

Study Area and Period: This study was conducted from February to September 2022 at the Addis Ababa City Administration Athletic Federation's athletic clubs. Addis Ababa, the capital city of Ethiopia, serves as the diplomatic center of Africa. The city has an estimated population of 5,228,000 and is situated at a latitude of 9°2'N and a longitude of 38°42'E, with an average altitude of 3,000 meters above sea level. It covers a land area of 540 square kilometers. The city is home to a total of 1,439 athletes across 7 first-division athletic clubs and 13 second-division clubs. This study focused exclusively on the athletes from the seven first-division clubs located in five sub-cities: Arada, (Defense Athletics Club), prison Administration (Ethiopia Federal Marema Athletics Club), Yeka (Ethiopia Construction Worker Corporation Athletic Club), Lideta (Federal Police Athletic Club), Kirkose (Ethiopian Electric Power Athletics Club), and KolfeKeranyo (Kolfe Keranyo Athletics Club). These clubs predominantly train athletes for the Ethiopian Athletic Federation national team and possess superior infrastructure compared to the second-division clubs. They offer high-quality coaching, training facilities, equipment, salaries, and, in some cases, feeding programs. Membership to these clubs is highly competitive, and athletes are selected based on their performance in national competitions, which results in a long waiting list for entry (AACAF 2022; Desta et al. 2015).

Study Design, Population, and Selection Criteria

Study Design: An institution-based cross-sectional study design was employed to assess dietary habits and associated factors among athletes in athletic clubs under the Addis Ababa City Administration Athletic Federation in 2022.

Source of Population: The source population for this study comprised all track and field athletes from first-division athletic clubs under the Addis Ababa City Administration Athletic Federation.

Study Population: The study population consisted of athletes actively participating in training at the selected first-division athletic clubs during the data collection period.

Study Unit: The study unit consisted of athletes selected from each club, with proportional allocation of participants across the various disciplines (throwing, jumping, and track events). Athletes were chosen through simple random sampling from a list of members of each club.

Eligibility Criteria

Inclusion Criteria

- Athletes actively engaged in training at the Addis Ababa City Administration Athletic Federation clubs.
- Athletes aged 18 years and older.

Exclusion Criteria

- Athletes aged 18 years or older who were injured or ill during the data collection period.
- Athletes absent from the study due to participation in competitions outside the city.

Sample Size Determination: The sample size was calculated using the single-population proportion formula (Cochran, 1963), with an assumed 50% proportion (since no prior data on dietary habits were available), a 5% margin of error, and a 10% non-response rate. The sample size was determined as follows:

$$n = \frac{(Z\alpha/2)^2 p(1-p)}{d^2}$$

Substituting the values:

$$n = \frac{1.96^2 * (0.5 * 0.5)}{0.05^2} = \frac{0.009604}{0.0025} = 384$$

After accounting for a 10% non-response rate, the final sample size was adjusted to 422.

Sampling Procedure and Technique: A stratified sampling technique was employed to select respondents from the seven first-division athletic clubs to ensure a sample representative of the entire population. The sample was proportionally allocated across five athletic disciplines: throwing, jumping, short distance, middle distance, and long distance. The allocation formula used for the strata was:

$n = n/N * N_j$ was used to calculate proportional to size allocation, where n is the sample size of the j th stratum, N_j is the population size of the j th stratum/, and N is the population size of all strata/ disciplines. The participants were selected using a simple random sampling technique using a list of athletes from each of the selected clubs based on the disciplines.

Data Collection Tool

Data were collected using a self-administered questionnaire designed based on a review of relevant literature. The questionnaire covered sociodemographic characteristics, dietary habits, nutritional knowledge, nutrition counseling, and physiological, psychological, and behavioral factors. The dietary habits, nutritional knowledge, and counseling sections were adapted from previous studies (Roh et al., 2006; Pineda et al., 2021).

- The **dietary habits section** included 18 questions, with responses ranging from "always"

(4) to "never" (1). Some questions were reverse-scored. A higher total score indicated better dietary habits, with scores ranging from 18 to 72.

- The **nutritional knowledge section** comprised 24 questions assessing the athletes' understanding of nutrition. Responses were scored from "strongly agree" (4) to "strongly disagree" (1), with reverse-scoring applied to certain questions. The total score ranged from 24 to 96.
- The **physiological, psychological, and behavioral factors** section was adapted from various studies (Klein et al. 2020; Alsayegh et al. 2021; Noll et al. 2021; Tabata et al. 2020).

Operational Definitions

- **Dietary Habits:** Refers to the regular eating patterns of athletes. A total score between 18 and 72 was categorized as either poor (0–69%) or good (70–100%) dietary habits (Pineda et al. 2021).
- **Nutritional Knowledge:** Refers to the level of understanding about nutrition. Athletes were categorized based on their score into those with poor knowledge (0–69%) or good knowledge (70–100%) (Pineda et al. 2021).

Data Analysis: Data were checked for completeness and consistency before analysis. The responses were coded and entered into EPI Data version 4.6.0.6, then exported to SPSS version 22 for statistical analysis. Descriptive statistics, including frequency, mean, standard deviation, and percentages, were calculated and presented in tables and graphs. Binary logistic regression was used to identify factors associated with dietary habits. Variables with a p-value of less than 0.2 in bivariate analysis were included in the multivariate logistic regression model. Adjusted odds ratios (AOR), 95% confidence intervals (CI), and p-values less than 0.05 were used to assess the strength of the association.

Ethical Approval and Consent to Participate: Ethical approval for this study was obtained from the Research and Ethics Committee of Kotebe University of Education, College of Menelik II Medical and Health Sciences (Reference number: AARHB 38/12/6766/2022). All procedures were conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from all participants after providing them with an introduction to the study's purpose and ensuring their confidentiality and anonymity.

Results

Socio-demographic Characteristics: A total of 422 athletes participated in this study, with 408 athletes completing the survey, yielding a response rate of 96.6%. The age distribution of the respondents indicated that the majority (50.5%) were between the ages of 18 and 23 years. A considerable proportion of participants (36%) were aged 24 to 29 years, while a smaller group (13.5%) fell within the 30 to 35 years age range.

In terms of gender, more than half of the participants were male (59.8%), while 40.2% were female. Regarding educational background, the majority of the respondents had attended secondary school (68.6%), followed by those with tertiary education (19.1%), and a small proportion had completed primary education (12.3%). The marital status of the athletes revealed

that most were single (87.7%), while 10.3% were married. A minority of the athletes were either divorced (1.2%) or widowed (0.7%). When classified by athletic discipline, the largest group of athletes were long-distance runners (52.7%), followed by short-distance runners (16.9%), middle-distance runners (15.4%), jumpers (7.6%), and throwers (7.4%). Regarding the athletic clubs the participants were affiliated with, the highest proportion (28.7%) were members of the Ethiopia Defense Athletic Club. Other clubs represented included Ethiopia Electric Power Athletics Club (19.9%), Ethiopia Commercial Bank Athletics Club (16.4%), Ethiopia Federal Police Athletics Club (13.5%), Ethiopia Federal Maremia Athletics Club (14.2%), Kolfe Keranyo Athletics Club (4.7%), and Ethiopia Construction Worker Corporation Athletics Club (2.7%).

Table 1: *Socio-demographic Characteristics of Athletes at Athletic Clubs, Addis Ababa, Ethiopia, 2022 (n=408)*

Variable	Category	Frequency	Percent (%)
Gender	Male	244	59.8
	Female	164	40.2
Age	18–23	206	50.5
	24–29	147	36.0
	30–35	55	13.5
Educational Level	Primary	50	12.3
	Secondary	280	68.6
	Tertiary	78	19.1
Marital Status	Single	358	87.7
	Married	42	10.3
	Divorced	5	1.2
	Widowed	3	0.7
Type of Disciplines	Throwing	30	7.4
	Jumping	31	7.6
	Short Distance	69	16.9
	Middle Distance	63	15.4
	Long Distance	215	52.7
Type of Clubs	Ethiopia Commercial Bank Athletics Club	67	16.4
	Ethiopia Federal Police Athletics Club	55	13.5
	Ethiopia Electric Power (EELPA) Athletics Club	81	19.9
	Ethiopia Defense Athletic Club	117	28.7
	Kolfe Keranyo Athletic Club	19	4.7
	Ethiopia Construction Worker Corporation Athletics Club	11	2.7
Income (ETB)	Ethiopia Federal Maremia Athletics Club	58	14.2
	< 4300	210	51.5
	4300–8000	119	29.2
	> 8000	79	19.4

In terms of income, more than half of the participants (51.5%) earned a monthly salary of less than 4300 ETB, 29.2% earned between 4300 and 8000 ETB, and 19.4% earned more than 8000 ETB (Table 1).

Dietary Habits Score: In this study, more than half of the athletes (53.7%, n=219) reported having good dietary habits, while 46.3% (n=189) exhibited poor dietary habits. Among those with poor dietary habits, the majority of respondents indicated several key behaviors that contribute to their dietary practices. Notably, 98.5% of athletes did not record their food intake, 82.6% did not follow a specific diet plan, and 51.1% did not consume fruits regularly. Additionally, 68.6% reported not consuming dairy products, 55.1% did not eat snacks, and 92.2% did not actively seek nutritional information.

Conversely, several positive dietary habits were reported among athletes with good dietary practices. The majority of athletes (64.7%) ate breakfast regularly, and 61% stated that they did not skip meals. A significant portion (87.5%) reported not taking vitamin supplements, and 80.4% did not take mineral supplements. Additionally, 98.8% of athletes indicated that they drank water regularly, while 70.6% refrained from consuming carbonated drinks. Furthermore, 76.5% of participants consumed three main meals per day, 91.7% ate carbohydrates, and 71.1% included vegetables in their diets. These habits were among the highest reported, reflecting a generally positive dietary pattern in the athlete cohort (Figure 1).

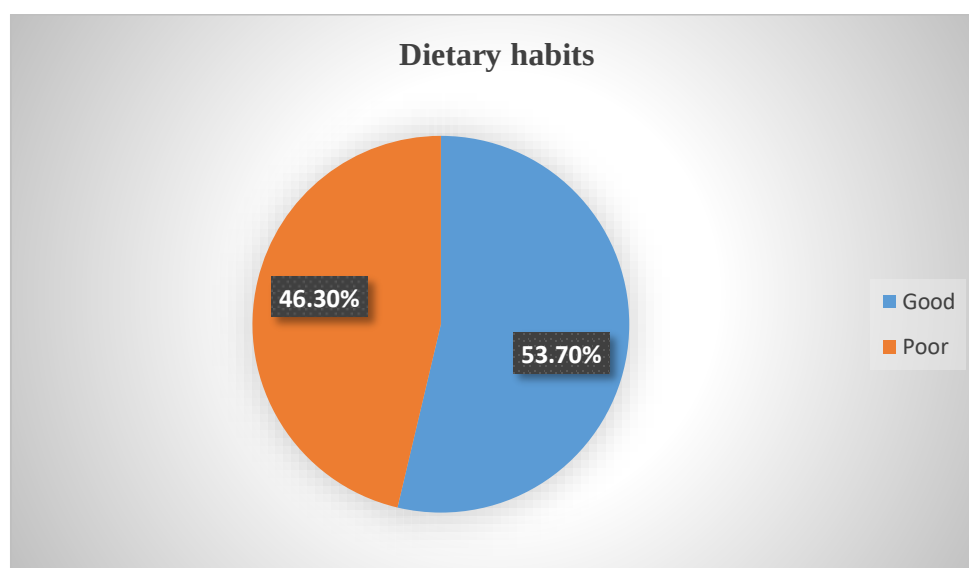


Figure 1: Dietary habits score among athletes at athletic clubs, Addis Ababa, Ethiopia 2022(n=408).

Nutritional-Related Knowledge of Athletes: In terms of nutritional knowledge, the majority of athletes (60%, n=245) exhibited poor knowledge, while 40% (n=163) demonstrated good nutritional knowledge. Higher scores indicated better nutritional knowledge, whereas lower scores reflected poor knowledge in this domain.

Among the athletes with poor nutritional knowledge, several key areas were identified where their understanding was lacking. The majority of respondents demonstrated poor knowledge regarding various components of the food guide pyramid, including the carbohydrate food group (60.3%), dairy food group (62.3%), fruit group (56.4%), and meat group (58.3%). Additionally, significant gaps in knowledge were observed about protein consumption (81.9%), alcohol consumption (53.4%), iron

deficiency (55.1%), and the misconception that overconsumption of protein is beneficial for athletes (65.2%). Further, many athletes showed limited knowledge of iron food sources (52.2%), the functions of fats (59.1%), and fiber sources (57.4%).

On the other hand, among those with good nutritional knowledge, the majority demonstrated an understanding of key concepts. Most athletes knew the importance of eating breakfast (73.3%), its impact on mental performance (90.7%), the importance of pre-event meals (72.8%), and the role of concentration (63.7%) in performance. Furthermore, a high proportion of athletes correctly understood the benefits of carbohydrate consumption (64%) and vitamin consumption (51.7%), and they could accurately identify carbohydrate food sources (92.2%), protein food sources (73.3%), and the

function of protein (54.9%). Knowledge on dehydration (84.1%) was also notably high, suggesting that athletes understood the importance of maintaining hydration for optimal performance.

Source of Nutrition Information: The majority of athletes (51.2%) reported that their primary source of

nutrition information came from their coach, while 21.8% obtained their nutritional knowledge from social media. Only a small proportion of athletes reported receiving nutrition information from dietitians/nutritionists (5.6%) or health professionals (7.4%) (Figure 2).

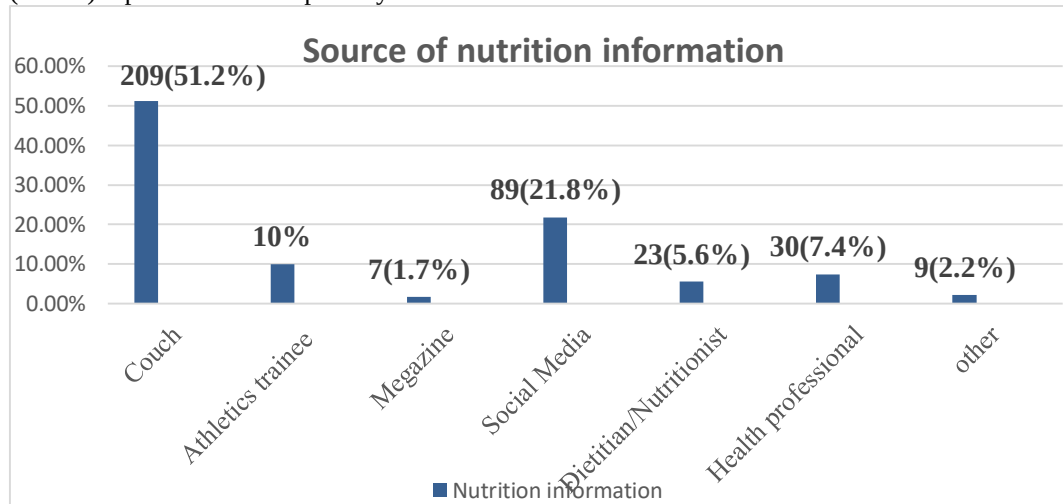


Figure 2: Source of nutrition information among athletes at athletic clubs, Addis Ababa, Ethiopia 2022(n=408)

Nutrition Counseling: A large proportion of athletes (82.6%) had not received prior nutrition counseling, while only 17.4% of participants had undergone nutrition counseling.

Psychological and Physiological Factors among Athletes: Most participants (96.8%) did not use vomiting or laxatives to lose weight, while a small proportion (3.2%) did. Over half of the athletes

(52.2%) were satisfied with their body image, and half (50.2%) reported having a good appetite (Table 2).

Behavioral factors among athletes: The majority of athletes did not engage in substance use, including alcohol (62.5%), khat (99%), and cigarettes (99.3%). More than half (59.1%) of athletes did not use performance-enhancing products. However, 13% of athletes used sports drinks, and 10.3% consumed amino acids (Table 2).

Table 2: Psychological and physiological factors among athletes at Athletic Clubs, Addis Ababa, Ethiopia, 2022 (n=408)

Variable	Category	Frequency	Percent (%)
Psychological Factors			
Body Weight Control	Vomiting or laxatives	Yes	13
		No	395
	Pills to lose weight	Yes	26
		No	382
	Pills to improve muscle mass	Yes	51
Body Image Concern		No	357
	Satisfied body image	Yes	213
	Not satisfied	141	34.6
Physiological Factors (Appetite)	Dissatisfied	54	13.2
	Good	205	50.2
	Moderate	82	20.1
	Poor	121	29.1

Factors Associated with Dietary Habits among Athletes: Several factors were found to be significantly associated with dietary habits. Variables with a P-value of <0.2 in bivariate logistic regression analysis, such as age, monthly income, type of discipline, type of club, nutritional knowledge, nutritional counseling, and body image satisfaction, were included in multivariate logistic regression analysis to control for potential confounders. In the multivariable logistic regression analysis, the following factors were significantly associated with dietary habits at a P-value of <0.05:

- **Age:** Athletes aged 30-35 had 2.6 times higher odds of having good dietary habits (AOR: 2.6, 95% CI: 1.1-5.9) compared to those aged 18-23 and 24-29.
- **Discipline:** Athletes in throwing events had 6.1 times higher odds of good dietary habits (AOR: 4.1,

95% CI: 1.3-13.2) compared to those in long distance, middle, short distance, and jumping events.

- **Income:** Athletes with an income greater than 8000 ETB had 3.4 times higher odds of good dietary habits (AOR: 3.4, 95% CI: 1.1-11.1) compared to those with lower incomes.
- **Nutritional Knowledge:** Athletes with good nutritional knowledge were 1.7 times more likely to have good dietary habits (AOR: 1.78, 95% CI: 1.1-2.8) compared to those with poor nutritional knowledge.
- **Nutritional Counseling:** Athletes who had received nutritional counseling had 2.8 times higher odds of good dietary habits (AOR: 2.87, 95% CI: 1.4-5.5) compared to those who had not received counseling (Table 3).

Table 3: Results of Binary and Multivariable Logistic Regression Analysis of Factors Associated with Dietary Habits Among Athletes, Addis Ababa, Ethiopia, 2022 (n=408)

Variable	Category	Frequency	Dietary habits		COR(95%CI)	AOR (95 % CI)	P-value
			Poor(n)	Good (n)			
Age	18-23	206	102	104	1	1	
	24-29	147	73	74	0.99(0.65-1.51)	0.87(0.50-1.4)	0.629
	30-35	55	14	41	2.87(1.47-5.58)	2.68(1.1-5.9)	0.018
Disciplines	Throwing	30	4	26	5.5(1.87-16.4)	4.1(1.3-13.2)	0.017
	Jumping	31	20	11	0.46(0.21-1.02)	0.47(0.2-1.13)	0.96
	Short distance	69	34	35	0.87(0.51-1.51)	0.92(0.47-1.79)	0.81
	Middle distance	63	32	31	0.82(0.47-1.45)	0.93(0.47-1.84)	0.89
	Long distance	215	99	116	1	1	
Type of club	commercial bank	67	22	45	1	1	
	Federal police	55	33	22	0.32(0.15-0.68)	1.1(0.33-3.4)	0.897
	Ethiopia electric	81	35	46	0.64(0.32-1.26)	1.45(0.61-3.4)	0.392
	Ethiopia Defense	117	54	63	0.57(0.30-1.06)	1.81(0.54-6)	0.329
	KolfeKeranyo	19	7	12	0.83(0.29-2.42)	3.9(1.06-14.7)	0.040
	Ethiopia Construction	11	3	8	1.30(0.31-5.4)	5.05(0.99-25.5)	0.050
	Federal Maremiya	58	35	23	0.32(0.15-0.66)	1.04(0.29-3.7)	0.941
Income(ETB)	>4300	210	113	97	1	1	1
	4300-8000	119	56	63	1.31(0.83-2.05)	0.76(0.31-1.85)	0.554
	<8000	79	20	59	3.43(1.93-6.1)	3.4(1.1-11.1)	0.036
Nutritional knowledge	Poor	245	134	111	1	1	1
	Good	163	55	108	2.37(1.57-3.57)	1.78(1.11-2.84)	0.015
Nutrition counseling	Yes	71	17	54	3.31(1.84-5.94)	2.87(1.48-5.54)	0.002
	NO	337	172	165	1	1	1
Satisfied body Image	Satisfied	213	88	125	1.91(1.04-3.50)	1.61(0.82-3.18)	0.165
	Not yet satisfied	141	70	71	1.36(0.72-2.57)	1.153(0.57-2.32)	0.691
	Dissatisfied	54	31	23	1	1	1

Significant at p-value < 0.05; COR: Crude Odds Ratio, AOR: Adjusted Odds Ratio, CI: Confidence Interval.

Discussion

This study found that 53.7% (95% CI: 48.7-58.6) of the athletes in Addis Ababa had good dietary habits. This proportion is higher than findings from studies conducted in California (46.99%) (Roh et al. 2006) and Oman (49%) (Ali et al. 2015). The differences can be attributed to variations in the study populations, geographic areas, and sample selection techniques. In contrast, our findings were lower than studies from Southern Illinois University Carbondale (64.30%) (Giroux 2015) and the Philippines (56.82%) (Pineda et al. 2021), which may be influenced by factors such as study location, sample size, or socioeconomic status. Furthermore, differences in exposure to nutrition-related education could also play a role in these variations.

The multivariate logistic regression analysis revealed that age was a significant factor influencing dietary habits, with older athletes (aged 30-35 years) being 2.6 times more likely to exhibit better dietary habits compared to younger athletes (aged 18-29). This finding is consistent with studies from Iran (Bazyar et al. 2018) and Bangladesh (Bakhtiar et al. 2021), which showed that nutritional practices tend to improve with age. Older athletes may have more experience and better understanding of their nutritional needs, which may be influenced by years of training and competition.

Income was also found to be significantly associated with dietary habits. Athletes with higher incomes were 3.4 times more likely to have better dietary habits than those with low or middle incomes. Similar findings were reported in studies conducted in Malaysia and Southwest Ethiopia, where higher income was positively associated with good dietary habits (Azizan et al. 2018; Girma et al. 2021). This can be attributed to the ability of higher-income athletes to afford a wider variety of nutritious foods.

Athletes with good nutritional knowledge were 1.7 times more likely to have good dietary habits than those with poor knowledge. This aligns with findings from Bangladesh, where nutrition knowledge was positively associated with nutritional practices (Bakhtiar et al. 2021). Athletes who understand the importance of balanced nutrition are more likely to make better dietary choices. Additionally, athletes who had received nutritional counseling were 2.8 times more likely to exhibit good dietary habits compared to those who had not. This finding is consistent with research from Iran, which highlighted the positive impact of nutritional counseling on athletes' dietary knowledge and practices (Bazyar et al. 2018). Exposure to proper nutritional guidance likely

equips athletes with the necessary tools to adopt healthier dietary habits.

Limitations and Strengths of the Study

One limitation of this study is its cross-sectional nature, which does not allow for the establishment of cause-and-effect relationships. Another limitation is the use of a food frequency questionnaire, which could introduce recall bias. Although the questionnaire was adapted from previous studies, there may be discrepancies in the actual food consumption patterns of Ethiopian athletes. Additionally, the validity and reliability of the tool were not assessed due to time constraints. A further limitation is the lack of sufficient local literature and references.

Despite these limitations, this study has several strengths. The inclusion of athletes from multiple clubs and a wide range of sports disciplines enhances the generalizability of the findings. This also makes it relevant for designing institutional-based nutrition interventions that can address the diverse needs of athletes.

Conclusions

In conclusion, this study found that 53.7% of athletes at athletic clubs in Addis Ababa had good dietary habits. Factors such as age, income, sports discipline, nutritional knowledge, and nutritional counseling were found to be significantly associated with dietary habits among athletes.

Recommendations

Based on the findings of this study, it is recommended that the Addis Ababa City Athletic Federation, athletic clubs, and other responsible bodies focus on enhancing nutritional knowledge and promoting good dietary habits among athletes, tailored to the specific needs of their sports disciplines and training requirements. This can be achieved by developing comprehensive nutrition counseling packages and policies for athletes, coaches, and managers. Additionally, a discipline-specific nutritional counseling approach should be implemented, along with institutional-based nutritional awareness campaigns led by qualified nutrition experts. These initiatives should educate coaches, athletes, and managers on healthy dietary habits, incorporating nutrition education into their training programs. Furthermore, efforts should be made to improve the financial income of athletes to increase their access to a variety of nutritious foods, which could enhance both their physical and mental performance.

Competing Interests: The authors declare that there are no conflicts of interest related to this research.

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