

RESEARCH ARTICLE

Exploring Attitudes Towards Healthy Nutrition Among Athletes In Diverse Disciplines

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Abstract

Nutritional awareness and healthy eating are vital aspects for the well-being of society, quality of life, and disease prevention. This study assessed the attitudes of athletes towards healthy nutrition and explored the impact of various factors, such as age, gender, and sports discipline, on such attitudes. A quantitative research approach and descriptive survey method were used. A total of 492 athletes participated in the study, including 287 males and 203 females. The athletes were licensed to participate in different sports disciplines in the Adiyaman province during the 2022-2023 season. The Attitude Scale for Healthy Nutrition (ASHN) was used to collect data. The scale's validity and reliability were established by Tekkurşun-Demir et al. (2019). It was complemented by a personal information questionnaire detailing the athletes' sociodemographic characteristics. The results showed that the athletes had a moderate level of attitude towards healthy nutrition, with an average score of 62.95. A positive correlation was detected between the athletes' age and their healthy nutrition attitude scores, with a moderate correlation coefficient of $r = 0.533$, $p=0,221$. The study underscores the significance of regular physical activity in enhancing athletes' healthy nutrition attitudes. The research also highlights that skipping meals has a detrimental effect on healthy nutrition attitudes among athletes, emphasizing the importance of regular and balanced meal consumption to maintain a positive attitude towards healthy nutrition.

Keywords

Athlete, Healthy Nutrition, Attitude


INTRODUCTION

Nutrition involves the consumption of essential nutrients and bioactive components vital for sustaining life, supporting growth and development, enhancing health, improving the quality of life, and promoting productivity (Tüber, 2015). Inadequate and imbalanced nutrition can result in adverse health outcomes, diminished work efficiency, and delayed recovery from illnesses (Baysal, 2018). Malnutrition is classified as one of the four primary behavioral risk factors, alongside inadequate physical activity, tobacco use, and alcohol consumption, contributing to noncommunicable diseases, as emphasized by the

World Health Organization (WHO) in 2021. Such diseases are responsible for causing approximately 15 million deaths annually among individuals aged 30 to 70. A significant portion of the morbidity and premature mortality attributed to noncommunicable diseases can be mitigated through interventions aimed at reducing the impact of these four major risk factors (WHO, 2019).

Athletes are a group that can be considered at risk in terms of nutrition, given its significant impact on their performance. This risk is not solely related to the potential for obesity, unhealthy lifestyles, and an increased susceptibility to chronic disease but also revolves around a critical juncture in an athlete's exercise and training

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journey when they establish enduring patterns of healthy behavior (Nelson et al., 2008). It is essential to recognize that mere consumption in response to hunger doesn't encompass proper nutrition. Optimal and healthy nutrition necessitates that a diet primarily provides sufficient energy and essential nutrients to meet metabolic requirements essential for the body's proper functioning (Yücecan, 2008). In essence, for human organisms to thrive, it is imperative not only to consume food but to maintain a nourishing diet that aligns with the needs of bodily systems and supports holistic physical and psychological development, a perspective illuminated by Braun and Brown in 2011.

Health policies worldwide are oriented towards the pursuit of a robust and thriving society of individuals in good health. While the provision of health services is undeniably vital, it alone does not suffice to cultivate a healthy society; the individuals themselves must lead lives dedicated to well-being (Demir & Cicioğlu, 2019). To realize a state of collective health, attain a desired quality of life, and stave off the onset of diseases, it becomes imperative to enhance the nutritional consciousness of every constituent of society and transmute healthy nutrition into an ingrained way of life. In this overarching framework, safeguarding, enhancing, and nurturing the lifelong health of every individual, augmenting their quality of life, and fostering the embrace of a health-oriented lifestyle – characterized by healthy dietary choices, sufficient physical activity, and the prevention of alcohol and tobacco consumption – are paramount goals (Tüber, 2015).

Nutrition and health surveys have furnished compelling evidence of the numerous nutritional and health challenges afflicting our nation. These challenges encompass acute and/or chronic nutritional deficits, including issues such as underweight and stunted growth, as well as deficiencies in essential vitamins and minerals, such as iodine, iron, calcium, zinc, folate, vitamin D, and vitamin B12, among others. Additionally, there is a concerning prevalence of obesity and nutrition-related noncommunicable chronic diseases, such as cardiovascular disease and certain types of cancer (Tüber, 2015).

In recent years, the growing concerns about nutrition and unhealthy eating habits have been amplified by factors such as industrialization, urbanization, changing lifestyles, food safety

concerns, and major changes in eating patterns. Such factors have contributed to the rise in the marketing and consumption of products replete with high levels of saturated fats, carbohydrates, and salt, while being deficient in essential vitamins and minerals. Thus, it becomes an imperative task to disseminate awareness and impart education on healthy nutrition to the public. Concurrently, the implementation of stringent regulations on food, especially processed foods, and the formulation of health and agricultural policies emerge as indispensable measures (Yücecan, 2008).

In a general context, attitude can be defined as an individual's predisposition or orientation towards themselves or any object, phenomenon, or social issue within their environment. Essentially, it represents the expected behavioral response of an individual when confronted with a situation, event, or phenomenon. This concept was articulated by Katz, who described attitude as "an individual's inclination to assess a symbol, an object, or an event in either a positive or negative manner" (İnceoğlu, 2010). Attitude encompasses three fundamental components: cognitive (pertaining to an individual's knowledge about the phenomenon, case, or situation), affective (referring to their emotional stance, which can be positive, negative, or neutral in relation to the situation), and behavioral (relating to the actions and behaviors they exhibit concerning the subject) (Demir & Cicioğlu, 2019).

In light of this theoretical foundation, the primary objective of this study was to investigate the attitudes of athletes participating in various sports disciplines towards the concept of healthy nutrition. Furthermore, the research aimed to scrutinize the influence of diverse variables on these attitudes.

MATERIALS AND METHODS

This quantitative research employed the descriptive survey method, a research approach that seeks to examine and define a particular event, individual, or object within its natural context, without any attempts to manipulate or alter the existing conditions (Karasar, 2012). To conduct this study, ethical clearance was obtained from the Adıyaman University Social and Human Sciences Ethics Committee, which granted permission on the 1st of November 2022, under the decision number 123. All participants volunteered to take

part in the study. Prior to their involvement, a comprehensive explanation on the purpose and scope of the research was provided to the athletes. It was clearly communicated that the data collected during the research would be employed solely for scientific purposes. Participants were also informed that they could withdraw from the study at any time, regardless of the stage of the study.

The study's target population comprised athletes ranging from 17 to 35 years of age who were actively participating in sports competitions within Adıyaman province and held sports licenses in various sports disciplines. The research did not intend to estimate specific event percentages or calculate averages for particular variables with a predefined level of precision, especially when the population size was known. Consequently, sampling calculations were based on methods that considered the entire population when determining the required sample size. In accordance with this approach, the research sample included a total of 490 athletes, comprising 287 males and 203 females, all of whom held sports licenses in various sports branches for the 2022-2023 season. Careful attention was given to ensure that the chosen sample size met the minimum requirements necessary for appropriate statistical analyses.

In this study, data collection was facilitated through the utilization of the Attitude Scale for Healthy Nutrition (ASHN), complemented by a personal information form designed to gather demographic characteristics of the participating athletes. The ASHN, a comprehensive tool for assessing attitudes towards healthy nutrition, was developed by Tekkurşun-Demir et al. in 2019, following rigorous procedures to establish its validity and reliability. This scale adopts a 5-point Likert-type format and comprises a total of 21 items organized into four distinct subdimensions: Knowledge on Nutrition (KN), questions 1 through 5; Emotion towards Nutrition (EN), questions 6 through 11; Positive Nutrition (PN), questions 12 through 16; Malnutrition (MN), questions 17 through 21.

The ASHN generates scores that can range from a minimum of 21 to a maximum of 105. Interpretation of these scores is as follows: a score of 21 is considered very low, 23-42 reflects low attitudes towards healthy nutrition, 43-63 indicates a moderate attitude, 64-84 signifies a high attitude, and 85-110 suggests an ideally high attitude towards healthy nutrition.

The scale's internal consistency coefficients, as determined by Demir & Cicioğlu in 2019, are as follows: 0.90 for the BHB factor, 0.84 for BHB, 0.75 for OB, and 0.83 for the CR factor. These coefficients demonstrate the scale's reliability in assessing the various facets of healthy nutrition attitudes among the study participants.

The statistical analysis of the data in this study was carried out using the IBM SPSS Statistics 25.0 software package (IBM Corp., Armonk, NY). Continuous variables were summarized using descriptive statistics such as mean \pm standard deviation, median, minimum-maximum values, while categorical variables were presented as numbers and percentages. To assess the normality of the data distribution, both the Kolmogorov-Smirnov and Shapiro-Wilk tests were employed. When the assumptions for parametric tests were met, Independent Samples T-test and One-Way ANOVA (followed by post hoc Tukey tests) were utilized to investigate differences between groups. Conversely, when the parametric test assumptions were not met, the Mann-Whitney U test and Kruskal-Wallis Analysis of Variance were employed, with post hoc testing using the Mann-Whitney U test and Bonferroni correction. Furthermore, Spearman correlation analysis was employed to explore relationships between continuous variables. The significance level for all statistical analyses was set at $p < 0.05$.

RESULTS

Table 1 provides an overview of the personal characteristics of the athletes who participated in the study. A total of 287 athletes (57.57%) were male, while 203 athletes (41.42%) were female. Regarding the age classification, the largest proportion of athletes, comprising 187 individuals (38.16%), fell within the 19-23 age category. Conversely, the smallest group was represented by athletes aged 34 and above, consisting of 32 individuals (6.55%). The table also reveals that 62.24% of the participating athletes (305) were engaged in team sports disciplines, while 37.75% (185) were involved in individual sports disciplines. Additionally, athletes were asked to assess their overall health status, with 51.64% (253) of them rating their general health as "excellent."

Table 1. Sociodemographic Characteristics of Athletes

| | Characteristics of Athletes | f | (%) |
|-----------------------------------|-----------------------------|-----|-------|
| Gender | Male | 287 | 58.57 |
| | Female | 203 | 41.42 |
| Age | 18 years or younger | 104 | 21.22 |
| | 19 – 23 years | 187 | 38.16 |
| | 24 – 28 years | 93 | 18.97 |
| | 29 – 33 years | 74 | 15.10 |
| | 34 years or older | 32 | 6.55 |
| Sport Age | 3 Years or less | 86 | 17.55 |
| | 4 – 7 years | 212 | 43.27 |
| | 8 – 11 years | 109 | 22.24 |
| | 12 years or more | 83 | 16.93 |
| Branch | Team Sports | 305 | 62.24 |
| | Individual Sports | 185 | 37.75 |
| Status | Amateur | 408 | 83.26 |
| | Professional | 82 | 16.73 |
| Self-Assessment of Overall Health | Excellent | 253 | 51.64 |
| | Good | 178 | 36.32 |
| | Not Bad | 33 | 6.73 |
| | Bad | 26 | 5.30 |

Table 2 provides insights into the eating habits of the athletes in the study. Notably, a significant portion, specifically 58% (288 athletes), admitted to skipping at least one meal per day. Among these instances of meal skipping, the

highest occurrence, at 55.55% (160 athletes), was related to the morning meal. Examining the reasons behind athletes skipping meals, it was found that the most prevalent factor was a lack of economic resources, cited by 30.20% (87 athletes).

Table 2. Nutritional Habits of Athletes

| | Characteristics of Athletes | f | (%) |
|--------------------------------------|----------------------------------|-----|-------|
| Skipping Meals | Yes | 288 | 58.77 |
| | No | 202 | 41.22 |
| Most Frequently Skipped Meal (n=288) | Breakfast | 160 | 55.55 |
| | Lunch | 103 | 35.76 |
| | Dinner | 25 | 8.68 |
| Reasons for Skipping Meals (n=288) | Lack of appetite | 34 | 11.80 |
| | Problem waking up in the morning | 81 | 28.12 |
| | Lack of time | 14 | 4.86 |
| | Dieting | 18 | 6.25 |
| | Inadequate economic resources | 87 | 30.20 |
| | Other | 54 | 18.75 |

Table 3 presents the mean scores of the athletes on the Attitude Scale for Healthy Nutrition (ASHN) and its subdimensions. The data reveals that the athletes had an average total score on the ASHN of 62.95. In terms of the scale's grading,

this score falls within the "moderate" category, indicating that the athletes' attitudes towards healthy nutrition were 1.05 points below the threshold for a "high" level of healthy nutrition attitude.

Table 3. Distribution of Scores for the Total and Subdimensions of ASHN

| Scale | Lowest | Highest | Mean | SD |
|----------------------------------|--------|---------|-------|-------|
| ASHN Total Score | 21 | 105 | 62.95 | 10.86 |
| Knowledge on Nutrition | 5 | 25 | 14.78 | 4.28 |
| Emotion towards Nutrition | 6 | 30 | 17.63 | 5.06 |
| Positive Nutrition | 5 | 25 | 16.60 | 3.99 |
| Malnutrition | 5 | 25 | 13.94 | 4.01 |

*p<0.05

Table 4 presents the results of the statistical analysis concerning the influence of the athletes' gender on their scores from the ASHN and its subdimensions. The findings indicate that there was a significant difference in the total ASHN score ($t=-3.648$, $p=0.000$), as well as in the subdimensions of Knowledge on Nutrition ($t=2.028$, $p=0.001$) and Emotion towards Nutrition

($t=3.227$, $p=0.000$) based on the gender of the participating athletes. Female athletes obtained higher mean ASHN scores as compared to their male counterparts. However, in the subdimensions of Positive Nutrition ($t=-1.068$, $p=0.126$) and Malnutrition ($t=-2.640$, $p=0.218$), no statistically significant differences were observed between male and female athletes.

Table 4. Gender-Based Differences in Scores for Total and Subdimensions of ASHN: T-Test Results

| Scale | Gender | n | Mean | SD | t | Sd | p |
|----------------------------------|--------|-----|-------|-------|--------|-----|---------------|
| ASHN Total Score | Female | 203 | 63.35 | 10.34 | 3.648 | 488 | 0.000* |
| | Male | 287 | 62.58 | 11.28 | | | |
| Knowledge on Nutrition | Female | 203 | 15.93 | 4.32 | 2.028 | 488 | 0.001 |
| | Male | 287 | 14.41 | 4.41 | | | |
| Emotion towards Nutrition | Female | 203 | 19.02 | 4.92 | 3.227 | 488 | 0.000 |
| | Male | 287 | 16.84 | 4.88 | | | |
| Positive Nutrition | Female | 203 | 16.88 | 3.61 | -1.068 | 488 | 0.126 |
| | Male | 287 | 16.42 | 3.89 | | | |
| Malnutrition | Female | 203 | 14.32 | 4.21 | -2.640 | 488 | 0.218 |
| | Male | 287 | 13.81 | 4.08 | | | |

Table 5 provides insights into the correlations between various independent variables of the research group and the total scores and subdimensions of the Attitude Scale for Healthy Nutrition (ASHN). The following key observations can be made based on the data: There was a positive correlation between the age of the athletes and their ASHN scores. As athletes' age increases, their ASHN scores also tend to increase. This correlation is moderate in strength ($r=0.533$). A negative correlation was found between the frequency of meal skipping among athletes and their total ASHN scores. In other words, as athletes skipped meals more frequently, their overall

attitudes towards healthy nutrition, as measured by the ASHN, tended to be lower. This correlation was relatively strong ($r=-0.621$). A positive correlation exists between the total scores on the ASHN and the athletes' self-assessed health status. Athletes who rated their health more positively tended to have higher ASHN scores. This correlation is of moderate strength ($r=0.374$). These correlations shed light on the interplay between various factors, such as age, meal habits, and self-perceived health, and athletes' attitudes towards healthy nutrition, as reflected in their ASHN scores.

Table 5. Results of Correlation Analysis Between Independent Variables and Scores for Total and Subdimensions of ASHN

| | | Age | Sport Age | Health Assessment | Skipping Meals |
|----------------------------------|----------|-------|-----------|-------------------|----------------|
| ASHN Total Score | r | .533 | .605 | .374 | -.621 |
| | p | .221 | .068 | .077 | .003 |
| Knowledge on Nutrition | r | .674 | .781 | .068 | -.437 |
| | p | .002 | .086 | .215 | -.391 |
| Emotion towards Nutrition | r | .334 | .261 | .328 | -.189 |
| | p | .320 | .050 | .067 | .105 |
| Positive Nutrition | r | .599 | .804 | .309 | -.721 |
| | p | .004 | .024 | .066 | .003 |
| Malnutrition | r | -.318 | -.228 | -.114 | .494 |
| | p | 0.002 | .161 | .610 | .005 |

p<0.01**

DISCUSSION

In the current study, the mean ASHN score among athletes pertaining to their attitudes towards healthy nutrition stood at 62.95 ± 10.86 , signifying a generally favorable disposition toward healthy dietary practices. This aligns with findings from prior research. Specifically, a study among medical faculty students by Güleş (2021) reported that 76.4% of participants exhibited a notably elevated level of positive attitudes towards healthy nutrition. Similarly, a study involving students from a sports sciences faculty by Göral and Yıldırım (2022) revealed a mean ASHN score of 74.67 ± 12.50 , suggesting a robust inclination toward healthy eating behaviors. Furthermore, research involving nutrition and dietetics, as well as nursing students within a university context unveiled an ASHN score of 76.17 ± 9.13 , affirming a noteworthy commitment to sound nutritional principles within this cohort (Sönmez, 2022). Additionally, Çelik and Duran (2022) conducted a study involving medical faculty students, distinguishing between genders, with female students scoring an ASHN average of 73.3 ± 10.72 and male students scoring 71.2 ± 10.32 . These findings collectively underscore the prevalence of positive attitudes towards healthy nutrition in various academic populations, potentially attributed to the provision of health education in diverse settings as noted in the relevant literature.

Our study found that female athletes had higher attitude scores regarding healthy nutrition than male athletes. This is contrary to the general

observation that men have better healthy nutrition behaviors, as women tend to have more irregular eating behaviors to lose weight due to aesthetic concerns, eating disorders are more common in women, and eating behaviors are more affected by emotional factors such as sadness (Vançelik et al., 2007; Wah, 2016). Supporting this pattern, Öztürk (2021) found that men tend to have a higher healthy nutrition attitude compared to women, speculating that this outcome could be linked to men's potentially superior psychological coping mechanisms. In a related study conducted by Göral and Yıldırım (2022) among sports sciences faculty students, it was observed that male students exhibited more favorable attitudes towards healthy nutrition than their female counterparts.

Expanding beyond the athletic context, research involving university students by Vançelik et al. (2007) indicated higher nutritional habit scores among males. Similarly, a study involving 7,669 adolescents in Tehran revealed that, despite girls having greater nutritional knowledge, their dietary habits lagged behind those of boys (Mirmiran et al., 2007). These findings collectively underscore the multifaceted nature of gender-related distinctions in healthy nutrition attitudes and behaviors.

While some research, as previously mentioned, indicates that men tend to exhibit more favorable dietary behaviors and attitudes, there are also studies that yield contrasting results. For instance, Sönmez (2022) conducted a study where women's attitudes toward healthy nutrition were found to be higher than those of

men. In a study involving 316 athletes, including 142 females aged between 17-25 years, Demir et al. (2021) did not find statistically significant differences in healthy nutrition attitudes based on gender. Similarly, in investigations carried out among university students, researchers such as Güleş (2021) and Alamehmet (2021) found no significant gender-based disparities in healthy nutrition attitudes. This variability in research outcomes underscores the intricate interplay of factors influencing individuals' attitudes toward healthy nutrition, suggesting that the relationship between gender and dietary preferences is not uniform and may be influenced by contextual, cultural, and individual factors that vary across different study populations. Thus, it is essential to consider the diversity of findings in the literature when examining gender-related trends in healthy nutrition attitudes.

Educational interventions aimed at promoting healthy eating have demonstrated a beneficial impact on the adoption of healthy nutrition behaviors. For instance, Kastorini et al. (2016) conducted research on school-based nutrition programs and identified significant improvements in the dietary habits of adolescents from low socioeconomic backgrounds as a result of these interventions. In a comparative study involving university students from both Turkey and the USA, Özgen (2016) observed that students who received nutrition education exhibited notably higher levels of nutrition knowledge and more favorable nutrition attitude scores. Likewise, A study involving second-year students in a faculty of health sciences, where nutrition education was introduced for the first time (Yardımcı & Özçelik, 2015), found that such education had a positive impact on students' nutritional knowledge levels. Furthermore, within the context of athletic literature, studies have highlighted the positive influence of nutrition education on athletes' nutrition attitudes. Notable examples include the

The combination of dieting alongside exercise and training is identified as a factor that can improve an athlete's nutritional status. This implies that a holistic approach, integrating both dietary and physical activity components, can be beneficial for athletes' nutritional well-being. The research also highlights that skipping meals has a detrimental effect on healthy nutrition attitudes among athletes, emphasizing the importance of regular and balanced meal consumption to

research conducted by Richards et al. (2006) and Ha & Caine (2011), both of which underscore the potential for nutrition education to enhance athletes' dietary perspectives and choices.

Previous research in the relevant literature has consistently pointed out the positive impact of increased physical activity on individuals' nutritional habits (Koca & Arkan, 2021). For instance, Vançelik et al. (2007) discovered that university students who engaged in regular sports activities exhibited higher scores in healthy nutrition attitudes compared to their non-active peers. This trend was also observed in various studies involving university students, demonstrating that those who partook in regular physical activity generally displayed more favorable attitudes towards healthy nutrition (Ari & Çakır, 2021). Moreover, Yılmaz et al. (2022) conducted a study focusing on healthy nutrition attitudes among university students and found a significant difference based on the frequency of physical activity. Students who exercised daily exhibited more positive attitudes towards healthy nutrition. Our research aligns with these findings, as we observed that athletes who maintained a consistent exercise regimen displayed above-average healthy nutrition attitudes. This indicates that an increase in daily exercise time could potentially lead to a further enhancement of these attitudes.

Athletes who receive nutrition education or information tend to exhibit more positive attitudes towards healthy nutrition. This suggests that incorporating nutritional guidance into athletes' routines can be a valuable strategy for fostering healthier eating habits. The study underscores the significance of regular physical activity in enhancing athletes' healthy nutrition attitudes. Engaging in exercise and training on a consistent basis appears to contribute positively to their overall dietary choices. maintain a positive attitude towards healthy nutrition.

Based on these findings, it is recommended that comprehensive programs be devised to promote the physical and mental health of athletes, incorporating both exercise and nutritional education. Economic measures should also be implemented to enable athletes to meet their daily energy requirements effectively. These combined efforts can contribute to the overall well-being and performance of athletes.

Declaration of Conflicting Interests

All authors declare no conflicts of interest.

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Ethics Statement

The study protocol was approved by Adıyaman University Social and Human Sciences Ethics Committee, which granted permission on the 1st of

November 2022, under the decision number 123. All participants volunteered to take part in the study.

Author Contributions

Planned by the author: Study Design, Data Collection, Statistical Analysis, Data Interpretation, Manuscript Preparation, Literature Search. Author have read and agreed to the published version of the manuscript.

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