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Knowledge, Attitudes, and Practices toward Dietary Supplement Use among Sport Sciences Students

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Objective: This study aimed to assess the levels of knowledge, attitudes, and practices (KAP) toward dietary supplement use among students of the Faculty of Sport Sciences and to examine whether these levels differed according to gender, specialization, and academic year.

Methods and Materials: A descriptive analytical cross-sectional design was used. Data were collected from 100 male and female students using a structured questionnaire based on the KAP framework. The questionnaire assessed knowledge, attitudes, and self-reported practices related to dietary supplement use. Descriptive statistics, independent-samples t-tests, and one-way analysis of variance (ANOVA) were used to analyze the data at a significance level of $\alpha \leq 0.05$.

Findings: Students showed a high level of knowledge regarding dietary supplements ($M = 2.52$, $SD = 0.37$), moderate attitudes ($M = 2.36$, $SD = 0.78$), and relatively high but variable practices ($M = 3.70$, $SD = 1.10$). No statistically significant differences were found in KAP scores according to gender, specialization, or academic year.

Conclusion: Although sport sciences students demonstrated adequate knowledge of dietary supplements, this knowledge was not consistently reflected in more favorable attitudes or uniform evidence-based practices. Applied nutrition education and targeted awareness programs are therefore needed to promote safe and responsible supplement use.

Keywords: Dietary Supplements; Knowledge; Attitudes; Practices; Sport Sciences Students

1. Introduction

Proper nutrition and adequate nutritional awareness are fundamental components of physical activity and athletic performance, as they directly contribute to enhancing physical performance, supporting physiological adaptations to training, and accelerating recovery processes

among athletes (1, 2). Meeting athletes' nutritional requirements also helps maintain overall health and reduce fatigue and physical exhaustion, particularly among physically active populations (1, 3). In this context, students enrolled in physical education and sport sciences programs represent an important population, given the health-related nature of their academic preparation and their expected

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future role in promoting healthy lifestyle behaviors within sporting and educational settings (4, 5). Previous studies have shown that students in sport-related disciplines generally demonstrate relatively good levels of nutrition knowledge compared with their peers in other fields; however, this knowledge does not consistently translate into appropriate dietary behaviors in daily practice (6-9). Although physical education students may possess basic nutrition knowledge, several studies have reported a clear gap between theoretical knowledge and actual dietary practices, suggesting that nutritional information alone does not necessarily lead to positive attitudes or scientifically sound nutritional behaviors (10-12). Evidence from educational intervention studies further indicates that improving nutrition knowledge without practical guidance may be insufficient to produce sustainable behavioral change among student-athletes (11, 13-15).

Beyond knowledge-related factors, attitudes and practices toward dietary supplement use are also shaped by the broader sport environment (16). Sport sciences students often operate within a competitive context in which performance expectations, peer influence, coaching guidance, and exposure to marketing messages may significantly affect their perceptions and behaviors (17, 18). The widespread promotion of dietary supplements through social media, sponsorships, and sport culture may contribute to the normalization of supplement use, even in the absence of strong scientific evidence (1). Therefore, students should not be viewed as isolated individuals making purely knowledge-based decisions, but rather as members of a wider sport-marketing ecosystem that may influence their attitudes and practices (11). Moreover, dietary habits appear to be closely associated with psychological factors related to sport participation. Unhealthy eating patterns have been linked to negative mood states, reduced motivation, and lower enjoyment of physical activity, which may ultimately affect adherence to regular exercise. Studies conducted among team-sport athletes have also demonstrated associations between nutritional patterns and psychological mood profiles, highlighting the interactive relationship between dietary behavior and athletic engagement.

Within the Jordanian context, research conducted among physically active individuals, such as gym attendees, has revealed variability in both knowledge and behaviors related to dietary supplement consumption (6). These findings suggest that supplement use is not always guided by evidence-based recommendations, despite the availability of basic nutritional information (6, 19). This further supports

the view that nutritional awareness extends beyond knowledge acquisition and requires the translation of information into safe, rational, and evidence-informed practices (14, 20).

The Knowledge, Attitudes, and Practices (KAP) framework has been widely used to examine health-related behaviors because it provides an integrated approach for understanding how knowledge may influence attitudes and, ultimately, behavioral practices. Previous studies applying this framework among sport sciences students have shown that higher nutrition knowledge does not necessarily ensure appropriate dietary practices, underscoring the need for structured educational and behavioral interventions within academic institutions. Given the important role of physical education and health education students in promoting physical activity and healthy lifestyles, examining their nutritional awareness and dietary supplement-related behaviors is necessary. Such research can help identify gaps in knowledge, attitudes, and practices and provide an evidence-based foundation for improving academic curricula and training programs within physical education departments, thereby supporting the integration of sound nutrition principles with physical activity promotion. Despite growing interest in dietary supplement use among university populations, most existing studies have focused mainly on individual-level factors, particularly knowledge, with limited attention to the broader environmental, social, and marketing influences that shape students' attitudes and practices. This gap is especially important for sport sciences students, who are embedded within a performance-driven and highly commercialized sport environment. Furthermore, research examining dietary supplement use among sport sciences students within the KAP framework remains limited, particularly in the local academic context. In addition, the influence of demographic and academic variables, such as gender, specialization, and academic year, has not been sufficiently explored. Therefore, the present study aimed to assess the levels of knowledge, attitudes, and practices regarding dietary supplement use among students of the Faculty of Sport Sciences and to examine whether these levels differed according to gender, specialization, and academic year.

1. Methods and Materials

1.1 Study Design

This study used a descriptive analytical cross-sectional design to assess the levels of knowledge, attitudes, and

practices related to dietary supplements among students of the Faculty of Sport Sciences. The study also examined differences in knowledge, attitudes, and practices according to gender, specialization, and academic year.

1.2 Study Population and Sampling

The study population consisted of students enrolled in the Faculty of Sport Sciences. A convenience sampling method was used due to accessibility and feasibility considerations, as the study targeted students within a single Faculty of Sport Sciences in a specific academic context. This approach was considered appropriate for obtaining initial insights into the research topic.

The final sample included 100 male and female students from different specializations and academic years. Participation was limited to students who were officially enrolled in the Faculty of Sport Sciences during the data collection period and who agreed to participate in the study. Incomplete questionnaires, questionnaires with missing or invalid data, and responses from students who were not regularly enrolled or not affiliated with the Faculty of Sport Sciences were excluded.

1.3 Study Instrument

Data were collected using a questionnaire developed to assess dietary supplement use and students' knowledge, attitudes, and practices. The instrument was based on the Knowledge, Attitudes, and Practices (KAP) scale used by Elshahoryi et al. (2023) (21), with minor modifications to align the questionnaire with the objectives of the present study and the characteristics of the study sample.

The final questionnaire consisted of 14 items distributed across three domains: knowledge, attitudes, and practices. The knowledge domain included six items assessing students' knowledge of dietary supplements, including their definition, reasons for use, appropriate dosage, and duration of use, possible side effects, and potential drug or food interactions. The attitudes domain included four items assessing students' perceptions of supplement safety, preventive role, necessity alongside a healthy diet, and encouragement of use among healthy individuals. The practices domain included four items assessing behaviors related to supplement use, including undergoing medical examinations before use, reliance on professional prescriptions, reading instructions, and adherence to a complementary dietary regimen.

1.4 Scoring and Interpretation

Responses in the knowledge domain were measured using a three-point Likert scale: Yes = 3, Not sure = 2, and No = 1. Responses in the attitudes and practices domains were measured using a five-point Likert scale: Strongly agree = 5, Agree = 4, Agree to some extent = 3, Neutral = 2, and Disagree = 1.

For interpretation, three levels were adopted: low, moderate, and high. These levels were determined based on the possible score range and class interval length. Knowledge scores were classified as low (1.00–1.66), moderate (1.67–2.33), and high (2.34–3.00). Attitudes and practices scores were classified as low (1.00–2.33), moderate (2.34–3.67), and high (3.68–5.00).

1.5 Validity of the Instrument

The validity of the questionnaire was evaluated through expert review. A panel of experts specializing in physical education and sports nutrition reviewed the instrument to assess the clarity of item wording and the appropriateness of the items for measuring the intended domains. Their feedback was used to revise the wording of several items and to improve the scientific soundness of the questionnaire. This process provided expert-based content validation of the instrument.

1.6 Reliability of the Instrument

The reliability of the questionnaire was assessed using a pilot sample of 10 students drawn from the study population but excluded from the main sample. Internal consistency reliability was examined using Cronbach's alpha coefficient for each domain. The Cronbach's alpha values were 0.84 for knowledge, 0.89 for attitudes, and 0.87 for practices. These values exceeded the commonly accepted threshold of 0.70, indicating satisfactory internal consistency reliability for use in the present study.

1.7 Data Collection Procedures

After the questionnaire was developed and its validity and reliability were assessed, it was distributed to participants during the first semester of the 2024/2025 academic year. Before completing the questionnaire, participants were informed about the objectives of the study. They were also informed that participation was voluntary, that the collected data would be used only for scientific research purposes, and

that confidentiality and anonymity would be maintained. No personal identifying information was collected.

Participants completed the questionnaire independently. All completed questionnaires were collected and screened to ensure their suitability for statistical analysis.

1.8 Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize the demographic characteristics of the study sample using frequencies and percentages. Means and standard deviations were calculated to determine the levels of knowledge, attitudes, and practices related to dietary supplement use.

Independent-samples t-tests were used to examine differences in knowledge, attitudes, and practices according

to gender and specialization. One-way analysis of variance (one-way ANOVA) was used to assess differences according to academic year. The level of statistical significance was set at $\alpha \leq 0.05$.

2. Results

The overall levels of knowledge, attitudes, and practices regarding dietary supplement use among sport sciences students are presented in Table 1. The mean knowledge score was 2.52 ± 0.37 , indicating a high level of knowledge. The mean attitude score was 2.36 ± 0.78 , corresponding to a moderate level, whereas the mean practice score was 3.70 ± 1.10 , indicating a high level of practice. As shown in Figure 1, practices had the highest mean score, followed by knowledge and attitudes.

Table 1. Overall KAP Levels Toward Dietary Supplement Use among Sport Sciences Students (n = 100)

Domain	Mean	SD	Level
Knowledge about dietary supplements	2.52	0.37	High
Attitudes toward dietary supplements	2.36	0.78	Moderate
Practices related to dietary supplement use	3.70	1.10	High

Note. Knowledge was scored on a 1–3 scale, whereas attitudes and practices were scored on a 1–5 scale.

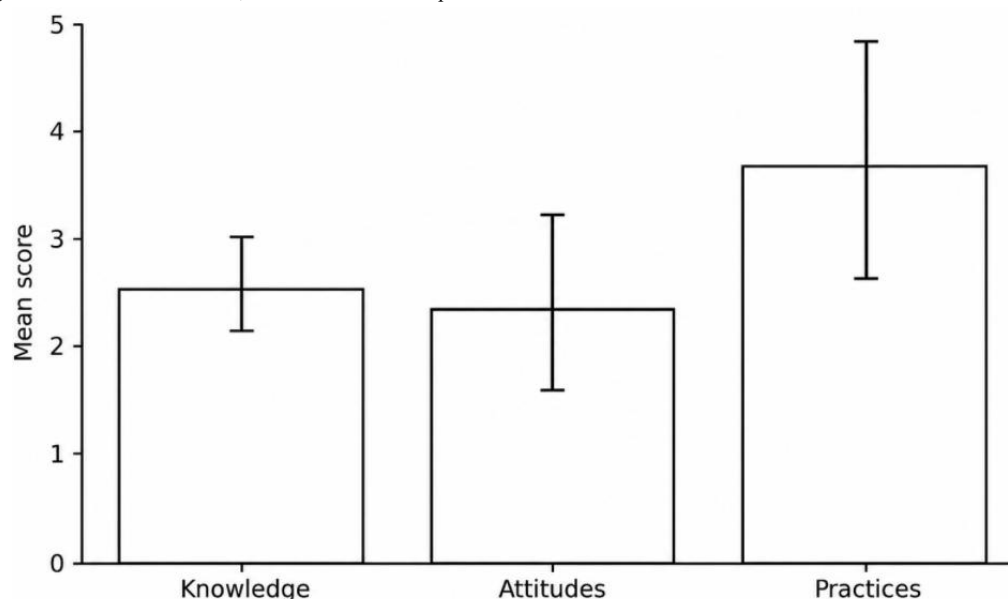


Figure 1. Overall, mean scores of knowledge, attitudes, and practices toward dietary supplement use among sport sciences students.

Note. Knowledge was scored on a 1–3 scale, whereas attitudes and practices were scored on a 1–5 scale. Error bars represent standard deviations.

The comparison of KAP scores by gender is shown in Table 2. Female students had slightly higher mean scores than male students in knowledge (2.58 ± 0.30 vs. 2.43 ± 0.47), attitudes (2.47 ± 0.76 vs. 2.16 ± 0.79), and practices

(3.76 ± 1.06 vs. 3.60 ± 1.20). However, independent-samples t-tests showed no statistically significant gender differences in knowledge ($t = -0.381$, $p = 0.173$), attitudes ($t = -0.409$, $p = 0.165$), or practices ($t = -0.506$, $p = 0.615$).

Table 2. Gender Differences in KAP Scores Toward Dietary Supplement Use (n = 100)

Scale	Gender	Mean $\pm$ SD	t (df = 98)	p-value
Knowledge	Male	2.43 $\pm$ 0.47	-0.381	0.173
	Female	2.58 $\pm$ 0.30		
Attitudes	Male	2.16 $\pm$ 0.79	-0.409	0.165
	Female	2.47 $\pm$ 0.76		
Practices	Male	3.60 $\pm$ 1.20	-0.506	0.615
	Female	3.76 $\pm$ 1.06		

Differences in KAP scores according to specialization are presented in Table 3. Students majoring in Physical Education and those majoring in Movement Sciences showed comparable mean scores across all domains. No statistically significant differences were observed between

the two specializations in knowledge (2.53 $\pm$ 0.38 vs. 2.51 $\pm$ 0.35; $t = 0.148$, $p = 0.883$), attitudes (2.38 $\pm$ 0.78 vs. 2.31 $\pm$ 0.78; $t = 0.270$, $p = 0.789$), or practices (3.73 $\pm$ 1.16 vs. 3.63 $\pm$ 0.97; $t = 0.323$, $p = 0.748$).

Table 3. Differences in KAP Scores Toward Dietary Supplement Use by Specialization (n = 100)

Scale	Specialization	Mean $\pm$ SD	t (df = 98)	p-value
Knowledge	Physical Education	2.53 $\pm$ 0.38	0.148	0.883
	Movement Sciences	2.51 $\pm$ 0.35		
Attitudes	Physical Education	2.38 $\pm$ 0.78	0.270	0.789
	Movement Sciences	2.31 $\pm$ 0.78		
Practices	Physical Education	3.73 $\pm$ 1.16	0.323	0.748
	Movement Sciences	3.63 $\pm$ 0.97		

The results of the one-way ANOVA examining differences in KAP scores by academic year are presented in Table 4. No statistically significant differences were found across academic years for knowledge ($F(3, 96) = 1.538$, $p = 0.216$), attitudes ($F(3, 96) = 0.236$, $p = 0.871$), or practices

($F(3, 96) = 1.055$, $p = 0.376$). These results indicate that students' knowledge, attitudes, and practices regarding dietary supplement use did not differ significantly according to academic year.

Table 4. One-way ANOVA Summary for KAP Scores Toward Dietary Supplement Use by Academic Year (n = 100)

Scale	F (df = 3, 96)	p-value
Knowledge	1.538	0.216
Attitudes	0.236	0.871
Practices	1.055	0.376

3. Discussion

The present study examined the levels of knowledge, attitudes, and practices (KAP) regarding dietary supplement use among sport sciences students and explored whether these levels differed according to gender, specialization, and academic year. Overall, the findings showed a pattern characterized by high knowledge, moderate attitudes, and relatively high but variable practices. No statistically significant differences were observed across the examined demographic and academic variables. The high level of knowledge observed among sport sciences students is consistent with previous research indicating that students

and athletes enrolled in sport-related disciplines generally possess adequate nutrition- and supplement-related knowledge because of their academic background and exposure to health-related coursework. Similarly, Son et al. (2025) demonstrated that physical education students recognize the importance of sports nutrition for their future professional careers, reflecting the role of academic specialization in shaping nutritional awareness and knowledge (22). This finding suggests that formal education may play an important role in developing foundational awareness of dietary supplements, including their purposes, potential benefits, and associated risks. Comparable findings have also been reported in KAP-based studies among university students, in which knowledge scores tended to be

higher than attitudes and practices. Despite the high level of knowledge, students' attitudes toward dietary supplement use were moderate. This finding is consistent with the conceptual assumptions of the KAP framework, which suggest that knowledge does not automatically translate into positive attitudes or behavioral intentions. Previous studies have shown that attitudes toward supplement use are influenced by several factors beyond knowledge, including perceived safety, personal experience, social influence, and exposure to non-scientific information sources. Therefore, the moderate attitude level observed in the present study may reflect caution or ambivalence toward supplement use rather than strong approval or rejection. Regarding practices related to dietary supplement use, the results indicated a relatively high mean score, accompanied by noticeable variability among participants. This variability suggests that although some students may follow evidence-based practices, others may rely on informal advice or personal judgment. Similar findings have been reported among athletes and physically active individuals, showing that adequate knowledge does not necessarily ensure consistent or scientifically sound practices (23, 24). This knowledge–practice gap has been widely documented in the sports nutrition literature and highlights the complexity of dietary behavior change.

The relatively high self-reported practice scores should also be interpreted with caution. Self-reported data may be influenced by response bias and social desirability bias, whereby participants report behaviors that are perceived as appropriate or expected rather than their actual practices. In the context of sport sciences students, this effect may be more pronounced because students are likely to be aware of what constitutes “correct” nutritional behavior. Environmental, cultural, and normative factors may have further influenced participants' responses. Students in a performance-oriented sport environment may feel implicit pressure to report supplement-related behaviors or adherence to healthy practices, as such behaviors are often normalized within sport culture. Exposure to peers, coaches, and social media may also shape perceived norms around supplement use, affecting both actual behaviors and how these behaviors are reported. Accordingly, the practice scores should be interpreted as reflecting not only actual behaviors but also perceived expectations within the sport environment. The absence of statistically significant gender differences in knowledge, attitudes, and practices is consistent with previous studies reporting comparable nutrition-related awareness and behaviors among male and

female sport sciences students when exposed to similar academic environments (25, 26). This finding may indicate that shared educational content and similar training experiences reduce gender-based differences in supplement-related perceptions and behaviors within academic sport settings (8, 27). Similarly, no significant differences were observed according to specialization or academic year. This suggests a relatively homogeneous level of nutritional awareness and behavior across different sport science tracks and stages of academic progression. Comparable findings have been reported in earlier research, indicating that progression through academic years does not necessarily lead to substantial improvements in dietary supplement-related attitudes or practices unless targeted and applied nutrition education is incorporated into the curriculum (28, 29). This finding highlights the limitation of relying solely on theoretical instruction without structured practical or behavioral components.

Taken together, these findings reinforce the notion that although sport sciences students may possess satisfactory knowledge regarding dietary supplements, knowledge alone is insufficient to ensure optimal attitudes and safe, evidence-based practices. Therefore, targeted educational and awareness programs should be implemented within faculties of sport sciences to improve students' attitudes and promote rational dietary supplement use. More applied sport nutrition content should be integrated into academic curricula to help bridge the gap between knowledge and actual practices. Collaboration between sport nutrition specialists, academic staff, and healthcare professionals may also help provide students with reliable guidance and evidence-based information. Several limitations should be considered when interpreting the findings. First, the study relied on a self-reported questionnaire, which may be subject to response bias and social desirability bias. Second, the use of convenience sampling from a single faculty, together with the relatively limited sample size, may restrict the generalizability of the findings to all sport sciences students or other populations. Since the sample represented a specific academic and contextual setting, the results may not fully reflect students in other institutions or cultural environments, which may affect the external validity of the study. Third, the cross-sectional design does not allow causal inferences between knowledge, attitudes, and practices. Future research should therefore include larger and more diverse samples and examine additional factors influencing dietary supplement use, such as information sources,

motivations, and possible associations with health and performance outcomes.

4. Conclusion

This study examined the levels of knowledge, attitudes, and practices regarding dietary supplement use among students of the Faculty of Sport Sciences. The findings showed that students had a high level of knowledge about dietary supplements, moderate attitudes, and relatively high but variable practices. No statistically significant differences were found according to gender, specialization, or academic year, indicating relatively homogeneous perceptions and behaviors toward dietary supplement use among the study sample. These results suggest that although sport sciences students possess adequate knowledge, this knowledge is not always consistently reflected in optimal attitudes and practices. Therefore, structured educational interventions are needed to promote safe, rational, and evidence-based dietary supplement use among future sport professionals.

Authors' Contributions

All authors made substantial contributions to the conception and development of this study. All authors reviewed and approved the final version of the manuscript.

Declaration

Artificial intelligence tools were used solely for language editing and grammatical correction of the manuscript. The use of AI did not influence the study design, data collection, data analysis, interpretation of results, or the scientific content of the manuscript. The author takes full responsibility for the integrity and accuracy of the work.

Transparency Statement

All data analyzed in this systematic review were extracted from previously published studies and are summarized within this article. No new datasets were generated during the review. Additional extraction details are available from the corresponding author upon reasonable request.

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Declaration of Interest

The authors report no conflict of interest.

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Ethical Considerations

The study was conducted in accordance with ethical principles for research involving human participants. Official approval was obtained from the Dean's Office of the Faculty of Sport Sciences to conduct the study and administer the research instrument. Participants were informed about the study objectives before data collection, and informed consent was obtained. They were also informed of their right to withdraw from the study at any time without any consequences.

The questionnaire was anonymous, no personal identifying information was collected, and the data were used solely for scientific research purposes. The study involved no potential risks to the participants.

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