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RESEARCH PAPER

The relationship between the level of physical activity and nutrition awareness among female students at the college of sports sciences at the university of Jeddah

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Abstract

This study focuses on female students at the College of Sports Sciences at the University of Jeddah to explore the correlation between their physical activity levels and nutrition awareness. A sample of 140 students will be randomly selected. Data collected through; questionnaires and structured interviews, analyzed using descriptive statistics. Results revealed that the almost samples were between 21-25 years old which was 73 (52.1%) while almost samples were eaten three meals per day 63 (45%) followed by 58 (41.4%) were eat two meals daily. The most important meals for female university students as following; 47 (33.6%), 42 (30%), 37 (26.4%) and 14 (10%) for lunch, breakfast, dinner, and small meals, respectively. The priorities in choosing female university students' meals were; 95 (67.9%), 17 (12.1%), 16 (11.4%), 12 (8.6%) for Taste, Health value, Calories, and price respectively. The frequency of high intensity physical activity performed weekly by the females' students' meals explained were about 65 (46.4%) hadn't perform any high intensity physical activity while, about 34 (24.3%) perform about three section weekly of moderate intensity physical activity, on the other hand the higher ratio of tested samples were performing low intensity physical activity four time per week by 37 (26.4%). The period of different intensities physical activity each session by the females' students' meals as following; 65 (46.4%) expand High intensity sport for more than 120 minutes, while 34 (24.3%) performed Moderate intensity sport for more than 120 minutes, and about 40 (28.6%) exercised Low intensity exercise more than 120 minutes also. From the provided text, it seems to be a summary or excerpt from a research study conducted on female university students in Saudi Arabia, focusing on various aspects related to their demographics, dietary habits, physical activity levels, and perceptions about food and health.

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Introduction

The modern understanding of health underscores the critical interplay between physical activity and nutrition, which together form the cornerstone of a healthy lifestyle. This relationship is especially relevant among young adults, such as university students, who are developing lifelong habits during a transitional phase of life. This study focuses on female students at the College of Sports Sciences at the University of Jeddah to explore the correlation between their physical activity levels and nutrition awareness. Given their academic focus, these students are uniquely positioned to offer insights into the dynamics between education, physical activity, and nutritional habits (AlFaris *et al.*, 2020).

Physical activity is acknowledged for its extensive health benefits, which include the prevention of chronic diseases, improvement of mental health, and enhancement of overall well-being (Warburton and Bredin, 2017). For university students, regular exercise can also alleviate stress, boost academic performance, and foster social relationships (Keating *et al.*, 2018). Concurrently, proper nutrition is vital for maintaining energy levels, supporting cognitive functions, and preventing diet-related diseases (World Health Organization, 2020).

Despite these benefits, there is a troubling trend of declining physical activity and poor nutritional habits among university students globally (Bailey *et al.*, 2022). This decline is attributed to several factors, including academic pressures, lifestyle changes, and greater independence in food choices. It is hypothesized that students in sports sciences might exhibit higher physical activity levels and better nutritional awareness due to their specialized education, though empirical data on this specific cohort remains limited (Alsubaie, 2019).

Focusing on female students at the University of Jeddah's College of Sports Sciences is significant for multiple reasons. Gender differences in physical activity and nutritional behaviors are well documented, with females generally displaying lower

physical activity levels compared to males (Guthold *et al.*, 2018). Additionally, cultural factors within Saudi Arabia might further influence these behaviors, necessitating a context-specific investigation.

Recent studies highlight a positive correlation between physical activity and nutritional knowledge. For example, Kalkan (2019) found that physically active students often have better dietary habits and higher nutritional awareness. This relationship is likely due to an increased consciousness about health and well-being that accompanies regular physical activity.

Moreover, education in sports sciences is presumed to enhance students' understanding of the interplay between physical activity and nutrition. According to Loney *et al.* (2021), students in health-related fields typically demonstrate greater nutritional knowledge and more engagement in health-promoting behaviors compared to their peers in non-health disciplines.

However, specific cultural and academic contexts, such as those in Saudi Arabia, can influence these behaviors. For instance, a study by AlFaris *et al.* (2020) indicated that Saudi university students' dietary habits and physical activity levels are shaped by cultural norms and academic pressures. Therefore, examining these factors among female sports sciences students at the University of Jeddah provides a nuanced understanding of their health behaviors.

Understanding the relationship between physical activity and nutrition awareness among these students can inform the development of targeted interventions. Such interventions could enhance health education programs, inform policymaking within educational institutions, and contribute to broader public health outcomes (AlQuaiz *et al.*, 2019).

This research seeks to fill a gap in the literature regarding the relationship between physical activity and nutrition awareness among female sports sciences students in Saudi Arabia. By exploring this relationship, the study aims to contribute to the

development of effective strategies for promoting healthier lifestyles within this demographic. The findings will have implications for health education programs and policymaking, ultimately supporting the well-being of students at the University of Jeddah and beyond. This study aims to investigate the relationship between physical activity levels and nutrition awareness among female students at the University of Jeddah's College of Sports Sciences. The specific objectives include, assessing the physical activity levels of these students, evaluating their awareness and knowledge of proper nutrition, examining the correlation between physical activity levels and nutrition awareness, Identifying potential barriers to physical activity and healthy eating in this demographic (Alshammari *et al.*, 2020).

Materials and methods

The current research aims to identify the relationship between nutritional behaviors and the level of physical activity among university of Jeddah students, and to achieve the objectives of the research, it was conducted on a random sample of female university students consisting of (140) students, and the research was conducted by using the descriptive approach. This is due to its relevance to the nature of the research, as the researcher used a food behavior questionnaire as a scale to measure nutritional behaviors consisting of (10) questions, and the IPAQ International physical scale questionnaire to measure the level of physical activity as a tool for the current research work and it consists of (7) questions.

Research community

Determining the research population is crucial as it serves as the frame of reference for selecting the sample. This frame may be a large community or a small community (Creswell, 2014). The research community is defined as the total group of elements upon which the researcher seeks to design their results related to the problem studied (Trochim, 2006). For the current research, the community consists of female students at the university level who are affiliated with some University of Jeddah.

Population and sample

The target population for this study includes all female students enrolled in the College of Sports Sciences at the University of Jeddah. A sample of 140 students will be randomly selected to ensure a representative distribution. The sample size is determined based on the population size and the expected variability in responses.

Data collection methods

Data will be collected through a combination of questionnaires and structured interviews. The questionnaire will be designed to gather quantitative data on the students' levels of physical activity, nutritional habits, and awareness. It will include sections on demographic information, physical activity frequency and intensity, dietary habits, and knowledge about nutrition. The structured interviews will aim to collect qualitative data to provide deeper insights into the students' attitudes and perceptions regarding physical activity and nutrition.

Search variables

Independent variable: level of physical activity,
Dependent variable: nutritional culture - age - female students practicing sports at the university level.

Research materials and tools

In the current research, the researcher used the following tools: First: Food Culture Scale (Eat-26). Which was translated by the researcher, Second: Physical activity level scale (IPAQ International physical). The following is a brief overview of the metrics that were used: First: Food culture scale; This scale aims to obtain a quantitative estimate of the dimensions of food culture among female university students. It was built after reviewing some references that dealt with food behavior measures as an indicator

Scale dimensions

The dimensions of the scale consist of four dimensions: dieting, bulimia, and preoccupation with eating, and oral control. The researcher described the themes under the dimension. The questionnaire

consisted of (Garner *et al.*, 1982) questions, and it was considered when formulating the scale's items that they should be easy and clear to facilitate the sample. See Appendix (Fairburn and Beglin, 1994). The dimensions of the scale used in this research consist of four dimensions: dieting, bulimia, preoccupation with eating, and oral control. Each dimension is designed to capture specific aspects of the participants' eating behaviors and attitudes towards food. Dieting: This dimension assesses the extent to which individuals restrict their food intake to control their weight. It includes questions about their eating habits, choices of low-calorie foods, and efforts to avoid high-fat foods. Bulimia: This dimension measures tendencies towards binge eating and compensatory behaviors such as vomiting or excessive exercise. It includes questions about episodes of overeating and subsequent feelings of guilt or attempts to compensate for overeating. Preoccupation with Eating: This dimension examines how much time and mental effort individuals devote to thinking about food, meal planning, and weight control. It includes questions about cravings, obsessive thoughts about food, and anxiety related to eating. Oral Control: This dimension looks at the level of self-control individuals have over their eating behaviors, including their ability to resist overeating and their general discipline regarding food intake (Garner *et al.*, 1982).

Psychometric determinants of the scale

The process of verifying the scales' psychometric properties included several steps: Validity: The content validity of the scales was established through expert reviews. Faculty members from the College of Sports Sciences evaluated the scales for clarity, relevance, and comprehensiveness. Construct validity was assessed using factor analysis to ensure that the items accurately represented the underlying constructs of dieting, bulimia, preoccupation with eating, and oral control. Reliability: The internal consistency of the scales was tested using Cronbach's alpha. A Cronbach's alpha value of 0.70 or higher was considered acceptable, indicating that the items within each dimension were reliably measuring the

same underlying construct. Second - Physical Activity Scale (IPAQ - International Physical Activity Questionnaire);_The International Physical Activity Questionnaire (IPAQ) was employed to measure the physical activity levels of the participants. This questionnaire is widely used for its ability to provide internationally comparable data on health-related physical activity (Garner *et al.*, 1982; Hagströmer *et al.*, 2006).

Steps of search procedures

The researcher applied the research according to the following steps: View and search for Arabic and foreign references related to the research, Preparing, and distributing questionnaires to measure dietary behaviors and others to measure physical activity among the selected sample, Analyzing and processing data statistically, Interpreting the results considering the theoretical framework and previous studies, Providing recommendations and proposals (Creswell, 2014).

Data analysis

Quantitative data from the questionnaires will be analyzed using descriptive statistics, such as means, frequencies, and percentages. Correlation analysis will be conducted to examine the relationship between physical activity levels and nutrition awareness. Qualitative data from the interviews will be analyzed thematically, identifying common themes and patterns in the responses, using the Statistical Analysis Program for the Social Sciences (SPSS). The researcher used processing methods (SPSS, 2007; Pallant, 2020).

Ethical considerations

This study will adhere to ethical standards in research. Informed consent will be obtained from all participants, ensuring that they are fully aware of the study's purpose and procedures. Participation will be voluntary, and participants will have the right to withdraw from the study at any time. Confidentiality and anonymity will be maintained by assigning codes to participants instead of using their names. The descriptive method, with its focus on describing and

interpreting existing conditions, is well-suited for this study. By combining quantitative and qualitative data collection methods, the research aims to provide a comprehensive understanding of the relationship between physical activity and nutrition awareness among female students at the University of Jeddah's College of Sports Sciences. The findings will have implications for designing targeted health education programs and policies to promote healthier lifestyles within this demographic.

Results

According to Fig. 1, the almost samples were between 21-25 years old which was 73 (52.1%) while Fig. 2 explained the most important meals for female university of Jeddah students in the Kingdom of Saudi Arabia as following; 47 (33.6%), 42 (30%), 37 (26.4%) and 14 (10%) for lunch, breakfast, dinner, and small meals, respectively.

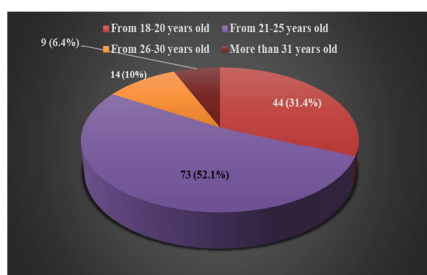


Fig. 1. Distribution of the study sample items according to the age group variable



Fig. 2. Explains the most important meals for female university of Jeddah students

The priorities in choosing female university students' meals discussed in Table 1 as following; 95 (67.9%), 17 (12.1%), 16 (11.4%), 12 (8.6%) for Taste, Health value, Calories, and price, respectively. The frequency of high intensity physical activity performed weekly by the females' university of Jeddah students' meals

explained in Table 2 were about 65 (46.4%) hadn't perform any high intensity physical activity while, about 34 (24.3%) perform about three section weekly of moderate intensity physical activity, on the other hand the higher ratio of tested samples were performing low intensity physical activity four time per week by 37 (26.4%).

Table 1. The priorities in choosing female university of Jeddah students' meals

Characters	Frequency	Percentage
Calories	16	11.4
Taste	95	67.9
Health value	17	12.1
Price	12	8.6
Total	140	100%

Table 2. The frequency of high intensity physical activity performed weekly by the females' of Jeddah students' meals

Status	Low intensity	Moderate intensity	High intensity
Zero time	10 (7.1%)	27 (19.3%)	65 (46.4%)
Once	18 (12.9%)	26 (18.6%)	28 (20%)
Twice	22 (15.7%)	31 (22.1%)	17 (12.1%)
Three	27 (19.3%)	34 (24.3%)	15 (10.7%)
Four	37 (26.4%)	12 (8.6%)	8 (5.7%)
Five	26 (18.6%)	10 (7.1%)	7 (5.0%)
Total	140 (100%)	140 (100%)	140 (100%)

Table 3. The period of different intensities physical activity each session by the females of Jeddah students' meals

Status	Low intensity	Moderate intensity	High intensity
Zero minute	24 (17.1%)	10 (7.1%)	6 (4.3%)
15 minutes	16 (11.4%)	12 (8.6%)	5 (3.6%)
30 minutes	14 (10.0%)	26 (18.6%)	17 (12.1%)
60 minutes	31 (22.1%)	27 (19.3%)	26 (18.6%)
120 minutes	15 (10.7%)	31 (22.1%)	21 (15.0%)
More than 120 minutes	40 (28.6%)	34 (24.3%)	65 (46.4%)
Total	140 (100%)	140 (100%)	140 (100%)

Table 3 revealed the period of different intensities physical activity each session by the females' Saudi universities students' meals as following; 65 (46.4%) expand High intensity sport for more than 120 minutes, while 34 (24.3%) performed Moderate intensity sport for more than 120 minutes, and about 40 (28.6%) exercised Low intensity exercise more than 120 minutes also.



Fig. 3. The methods of food prepared by the female of Jeddah students'

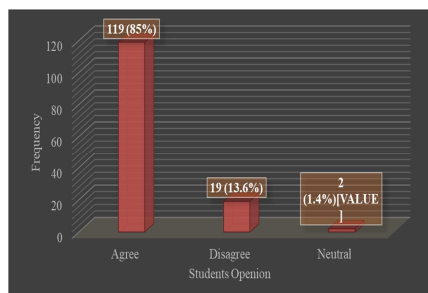


Fig. 4. The opinion of female university students whether food has a significant impact on human health

The methods of food prepared by the female students in University of Jeddah declared in Fig. 3 as following; 65 (46.4%) self-prepared their meals, while about 22 (15.7%) had their meals from restaurant and 53 (37.9%) obtained their meals from others. Fig. 4 viewed the opinion of female university students whether food has a significant impact on human health were about 119 (85%) of the tested samples were agree while, about 19 (13.6%) disagree and 2 (1.4%) had neutral opinion.

Table 4. Duration of weekly exercise

Number of Training	Frequency	Percentage
Less than 5 hours	35	25
From 5-7 hours	46	32.9
From 8-10 hours	26	18.6
From 11-12 hours	33	23.6
Total	140	100%

Table 4 discussed the duration of weekly exercise as following; 46 (32.9%), 35 (25%), 33 (23.5%), 26 (18.6%) From 5-7 hours, less than 5 hours, from 11-12 hours and from 8-10 hours, respectively.

Table 5. Results of the One-Way ANOVA test for the significance of differences according to age

	Variation source	Groups Square	Average	F value	Significant	Freedom Degree
The interest of female of Jeddah students about the health impact of choosing meals	Between Groups	12.419	4.14	4.687	**0.004	3
	Within Groups	120.117	0.883			
	Total	132.536				

Table 6. Results of the chi-square test for the relationship between the number of daily meals and the time spent by female university students walking

No. of daily meals	The time spent by female university students practicing walking						Total
	One	Twice	Three	Four	More than 4		
Zero minute	No.	0	19	6	2	0	27
	%	0.0%	13.6%	4.3%	1.4%	0.0%	19.3%
15 minutes	No.	0	13	9	4	0	26
	%	0.0%	9.3%	6.4%	2.9%	0.0%	18.6%
30 minutes	No.	1	7	18	4	1	31
	%	0.7%	5.0%	12.9%	2.9%	0.7%	22.1%
60 minutes	No.	0	10	20	4	0	34
	%	0.0%	7.1%	14.3%	2.9%	0.0%	24.3%
120 minutes	No.	1	4	5	0	2	12
	%	0.7%	2.9%	3.6%	0.0%	1.4%	8.6%
More than 120 minutes	No.	0	5	5	0	0	10
	%	0.0%	3.6%	3.6%	0.0%	0.0%	7.1%
Total	No.	2	58	63	14	3	140
	%	1.4%	41.4%	45.0%	10.0%	2.1%	100.0%
Chi square value							40.226
P value							0.005

Table 5 viewed Results of the One-Way ANOVA test for the significance of differences according to age while, Table 6 revealed the chi-square test for

the relationship between the number of daily meals and the time spent by female university students walking.

Table 7. Results of the Chi-square test for the relationship between the effect of food on human health and the time spent by female university students sitting on a day other than a weekday

The time spent by female university students sitting		Effect of nutrition on public health			Total
		Strongly agree	Agree	Neutral	
Less than 5 hours	No.	28	7	0	35
	%	20.0%	5.0%	0.0%	25.0%
From 5-7 hours	No.	40	4	2	46
	%	28.6%	2.9%	1.4%	32.9%
From 8-10 hours	No.	23	3	0	26
	%	16.4%	2.1%	0.0%	18.6%
From 11-12 hours	No.	28	5	0	33
	%	20.0%	3.6%	0.0%	23.6%
Total	No.	119	19	2	140
	%	85.0%	13.6%	1.4%	100.0%
Chi square value					6.259
<i>P value</i>					0.395

Table 8. Results of the chi-square test to determine the effect of the amount of university female students eating when eating with others on the time they practice moderate-intensity physical activity

Time for female students to engage in moderate-intensity physical activity		The amount of food female university students eats when eating with others			Total
		Eat less amount	Eat more amount	Eat same amount	
Zero minute	No.	14	5	8	27
	%	10.0%	3.6%	5.7%	19.3%
15 minutes	No.	8	3	15	26
	%	5.7%	2.1%	10.7%	18.6%
30 minutes	No.	8	5	18	31
	%	5.7%	3.6%	12.9%	22.1%
60 minutes	No.	6	1	27	34
	%	4.3%	0.7%	19.3%	24.3%
120 minutes	No.	3	2	7	12
	%	2.1%	1.4%	5.0%	8.6%
More than 120 minutes	No.	1	3	6	10
	%	0.7%	2.1%	4.3%	7.1%
Total	No.	40	19	81	140
	%	28.6%	13.6%	57.9%	100.0%
Chi square value					20.007
<i>P value</i>					0.005

Table 9. Results of the chi-square test to determine the effect of female university students following a specific diet on their practice of walking for at least 10 minutes each time during the seven days

Students practice walking for at least 10 minutes each time during the seven days		Female university students follow a specific diet		Total	
		Yes	No		
Zero time	No.	1	23	24	
	%	0.7%	16.4%	17.1%	
Once	No.	2	14	16	
	%	1.4%	10.0%	11.4%	
Twice	No.	0	14	14	
	%	0.0%	10.0%	10.0%	
Three	No.	6	25	31	
	%	4.3%	17.9%	22.1%	
Four	No.	4	11	15	
	%	2.9%	7.9%	10.7%	
Five	No.	3	37	40	
	%	2.1%	26.4%	28.6%	
Total	No.	16	124	140	
	%	11.4%	88.6%	100.0%	
Chi square value					9.050
<i>P value</i>					0.107

Table 7 viewed the Chi-square test for the relationship between the effect of food on human health and the time spent by female university students sitting on a day other than a weekday. Table 8 declared the chi-square test to determine the effect of the amount of university female students eating when eating with others on the time they practice moderate-intensity physical activity. Table 9 viewed the chi-square test to determine the effect of female university students following a specific diet on their practice of walking for at least 10 minutes each time during the seven days.

Discussion

Previous studies have explored the association between physical activity levels and nutrition awareness among various populations, including athletes, students, and the public. Research suggests that individuals who engage in regular physical activity are more likely to be aware of the importance of nutrition for performance and overall health (Meyer *et al.*, 2018). For example, a study by Deforche *et al.* (2015) found that higher levels of physical activity were associated with greater knowledge of dietary guidelines and healthier eating habits among adolescents. Within the academic context of sports sciences, education and specialization may play a significant role in shaping students' awareness of nutrition's role in supporting physical activity and athletic performance. Studies have shown that students majoring in sports-related disciplines often have higher levels of nutrition knowledge compared to their peers in other fields (Trakman *et al.*, 2016). Furthermore, research suggests that nutrition education programs tailored to the needs of athletes and individuals involved in physical activity can enhance nutrition awareness and promote healthier dietary behaviors (Spronk *et al.*, 2016).

Gender differences in physical activity levels and nutrition awareness have been documented in the literature, with studies highlighting disparities in health behaviors between male and female populations (Ball *et al.*, 2019). While research on

female athletes' nutrition awareness is relatively limited compared to male athletes, emerging evidence suggests that female athletes may face unique challenges related to body image, dietary restraint, and disordered eating behaviors (Alzeidan *et al.*, 2019; Torstveit *et al.*, 2019).

Most of the sampled students fall within the 21-25 age range, which is a critical period for the adoption of lifelong health behaviors. The concentration of students from the University of Jeddah suggests the need to consider regional differences in dietary and physical activity patterns. The preference for three meals per day among the sampled students aligns with traditional eating patterns, but the emphasis on taste over health value raises concerns about nutritional quality. The factors influencing meal choices, such as taste preferences and cost considerations, can inform targeted interventions to promote healthier eating habits (Yahia *et al.*, 2008; Laska *et al.*, 2010; Deliens *et al.*, 2018).

The data reveal low engagement in high-intensity physical activity among female university students in Saudi Arabia, with a significant portion not performing any high-intensity activity. Efforts to promote regular physical activity, particularly high-intensity exercise, are essential for improving overall health and reducing the risk of chronic diseases among young adults. The preference for self-prepared meals indicates a level of autonomy and control over dietary choices among female university students. Promoting cooking skills and providing resources for healthy meal preparation can empower students to make nutritious choices and develop lifelong cooking habits (Racette *et al.*, 2007; Laska *et al.*, 2009; El Ansari *et al.*, 2010; Alsubaie *et al.*, 2019; Alshammari *et al.*, 2020).

Most students acknowledge the significant impact of food on human health, highlighting a potential receptivity to health-promoting interventions. Leveraging this awareness can facilitate the adoption of healthier dietary habits and behaviors among university students. Food and overall, the findings

suggest opportunities for targeted interventions to improve the dietary habits and physical activity levels of female university students in Saudi Arabia. By addressing factors influencing meal choices, promoting physical activity, and enhancing health literacy, stakeholders can support the health and well-being of young adults in higher education settings (Al-Hazzaa *et al.*, 2017; AlQuaiz *et al.*, 2019; Das and Evans, 2020).

Conclusion

In summary, while there may be variations in dietary habits, physical activity levels, and health perceptions among university students across different countries, there are also commonalities in the challenges and opportunities for promoting health and well-being. By comparing findings from diverse cultural contexts, researchers can gain a more comprehensive understanding of the factors influencing health behaviors among young adults and identify effective strategies for promoting positive lifestyle changes.

Recommendation(s)

From the provided text, it seems to be a summary or excerpt from a research study conducted on female university students in Saudi Arabia, focusing on various aspects related to their demographics, dietary habits, physical activity levels, and perceptions about food and health.

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