INJNS (37)2 (2024) 73-83

Iraqi National Journal of Nursing Specialties

Journal homepage: https://injns.uobaghdad.edu.iq/index.php/INJNS

Effectiveness of an Educational Program on Collegians' Perception of Healthy Dietary Patterns

Ayed A. Mustafa, Ph.D.*; Hala S. Abdel Wahed, Ph.D.**.

* PhD Clinical Nurse Specialist, Ministry of Health, Baghdad, Iraq.

Email: aed.ali1106@conursing.uobaghdad.edu.iq.

** Professor, Community Health Nursing Department, College of Nursing, University of Baghdad.

Email: hala63@conursing.uobaghdad.edu.iq

ARTICLE INFO

Article history:

Received :11/5/2023

Accepted: 27/8/2023

Published: 30/12/2024

Keywords:

Effectiveness,

educational program,

dietary pattern,

university students،

Nursing.

ABSTRACT

Objective(s): To determine the effectiveness of the educational program on university collegians' perceptions of healthy dietary patterns, and to determine the relationship between these perceptions and students' socio-demographic characteristics such as age, sex, marital status, monthly family income, place of residence, and level of education.

Methods: A quasi-experimental investigation was performed on students in the University of Mosul to assess the dietary pattern from November 9th of 2022 up to January 2nd of 2023. Non-probability sampling for a sample of (60) students divided into two groups, (study and control groups). Determine the validity of the questionnaire content by presenting it to the experts and using the half-division technique and calculating the Pearson correlation coefficient to determine its validity. A questionnaire has been constructed through extensive review of related literatures to accomplish the study's aims and objectives.

Results: The results of data showed that all (60) students in the study sample did not have an adequate level of perception of healthy dietary pattern in pre-test, 12.53 (±3.72). while the results of the post-test after implementing the program results showed that there is an improvement in their perceptions of the healthy dietary pattern in the study group only, 19.43 (±3.98).

Conclusion: The study showed that there was an improvement in perceptions of a healthy lifestyle related to dietary pattern in study group compared to those in the control group.

Recommendations: The study recommended the need to develop educational programs, lectures, courses and seminars on the benefits of a healthy dietary pattern that university students must follow to increase their perceptions that lead to changing their lifestyle and getting rid of wrong behaviors and habits.

*Corresponding author at: Ministry of Health, Baghdad, Iraq. **Email**: aed.ali1106@conursing.uobaghdad.edu.iq. **(**A. A. Mustafa**)**. ORCID: https://orcid.org/0009-0005-8687-8934, https://doi.org/10.58897/s1b6v946

فاعلية برنامج تعليمي على إدراك طلاب الكلية للنمط الغذائي الصحي

المستخلص

الهدف: تهدف الدراسة الى تقويم فاعلية البرنامج التعليمي في مدارك طلاب الجامعة للنمط الغذائي الصحي. ولمعرفة العلاقة بين مدارك طلاب الجامعة للنمط الغذائي الصحي وبياناتهم الديموغرافية المتعلقة بالعمر والجنس والحالة الزوجية ودخل العائلة الشهري ومكان السكن والمرحلة الدراسية.

منهجية البحث :أجريت دراسة شبه تجريبية لتحديد النمط الغذائي لطلبة جامعة الموصل للفترة من ٩ تشرين الثاني ٢٠٢٢ الى ٢ كانون الثاني ٢٠٢٣. أخذ العينات غير الاحتمالية لعينة قوامها (٦٠) طالبا حيث قسمت العينة الى مجموعتين مجموعة الدراسة والمجموعة الضابطة. تم تحديد صدق محتوى الاستبيان من خلال عرضه على الخبراء واستخدام تقنية نصف القسمة وحساب معامل ارتباط بيرسون لتحديد صدقه. تم بناء استبيان من خلال مراجعة مستفيضة للأدبيات ذات الصلة من أجل تحقيق أهداف الدراسة.

النتائج: أظهرت نتائج البيانات أن جميع الطلاب (٦٠) في عينة الدراسة لم يكن لديهم مستوى كافٍ من التصورات للنمط الغذائي الصحي في الاختبار القبلي،12.53 (±3.72). بينما كانت نتائج الاختبار البعدي بعد تنفيذ البرنامج عالية،19.43 (±3.98) مما يدل على أن هناك تحسنا في تصوراتهم للنمط الغذائي الصحي في مجموعة الدراسة فقط.

الاستنتاجات: بينت الدراسة ان هناك تحسنًا في تصورات نمط الحياة الصحي المرتبط بالنمط الغذائي في مجموعة الدراسة مقارنة بأولئك الذين هم في مجموعة التحكم.

التوصيات :أوصت الدراسة بضرورة تطوير برامج تعليمية ومحاضرات ودورات وندوات حول فوائد نمط الغذاء الصحي الذي يجب ان يتبعه طلاب الجامعات لزيادة تصوراتهم التي تؤدي إلى تغيير نمط حياتهم والتخلص من السلوكيات والعادات الخاطئة..

الكلمات المفتاحية: فعالية، برنامج تعليمي، نمط الغذاء، طلاب الجامعة.

Introduction

A healthy lifestyle can help individuals maintain and enhance their health and wellbeing. A healthy lifestyle enables a person to live a joyful existence without fear of becoming ill or infected with a disease. In addition, a healthy lifestyle may help you live longer than those who are not concerned with their health [(1)]. Health education in the context of higher education is an efficient and successful strategy to promote lifetime healthy behaviors since college students are at a unique stage in their lives when they are open to learning and forming their identities [(2)].

The preventive nursing interventions involving multiple actions for obesity prevention that were applied to university students in a planned way, positively benefit the students' nutrition exercise attitudes and behavior and improves their perceptions of the benefits of exercise, the results of which reduce the risk of obesity [(3)].

The overall and average subscale ratings for adopting a healthy lifestyle have greatly improved [(4)]. Additionally, there have been instances of positive changes in people healthy living habits as a result of getting education to that effect. Learning more about college students' perspectives on what constitutes a healthy lifestyle and the factors that influence those views is essential for ensuring their healthy development because they represent a sizeable portion of young population and the main target audience for health promotion campaigns [(4)].

Lifestyles initiated during adolescence often solidify throughout young adulthood, particularly during the college years, and endure into later stages of life (**5**). The transition into college-life experience can bring about significant changes, including greater personal independence, exposure to new surroundings and social circles, and reduced parental oversight [(6)]. These changes can lead to psychological stress for students as they adjust to their new collegiate environment [(7)].

For many young individuals, the transition of leaving the parental home to pursue higher education brings forth a transformative phase encompassing novel

hurdles, such as taking charge of their own dietary habits [8, 9]. Various personal intrinsic factors, including determination, preference, and perception, as well as external objective factors such as the surrounding environment or cultural influences [10], can deter university students from adhering to nutritional guidance during this period. Consequently, numerous adolescents may experience a shift from a healthy weight to being overweight, placing them at a heightened susceptibility to chronic ailments [11,12].

The university environment characterized by an abundance of changes and transformations, leading to significant shifts in lifestyle compared to the past. These changes impose considerable stress on individuals. To attain optimal well-being, happiness, and physical and mental health, students must confront and adapt to these transformations, striving to achieve the highest level of happiness, compatibility, and overall well-being possible [13]. A healthy diet rich in fruits and vegetables, maintaining a normal body weight, avoiding smoking and its detrimental effects, and keeping blood pressure and diabetes under control through regular follow-up [14]. Achieving a balanced diet necessitates to making behavioral adaptations in various aspects, including meal planning, selecting nutritious foods, preparing meals, and making mindful choices when dining out [15].

Processed foods, preserved foods (vegetables and fruits), rapid foods, and salt applied to foods daily have a high salt content [16], while eating healthy foods, keeping a normal body weight, avoiding inactivity, and quitting smoking are all components of a healthy lifestyle [14].

Individuals are more concerned and aware of maintaining healthy lifestyle and good health that necessitates a well-balanced diet. Changes in dietary habits and lifestyle are regarded as fundamental factors in various types of diet-related diseases [17,18]. Among teenagers aged 12 to 19 years, the obesity rate has more than doubled over the last three decades [19]. In recent decades, the issue of excessive weight and obesity has evolved into a grave worldwide public health issue [20].

The environment and nourishment play a significant influence in the development of obesity. In the meantime, recently the scientific findings indicate that increased consumption of fat is linked to weight gain and the development of various diseases [21].

Perceptions is the individual's subjective assessment of the positive and negative aspects of their existence, which are shaped by their health status [22]. It includes personal evaluations of physical functionality, mental well-being, and social role performance [23].

Methods

Study Design and Setting

A quasi-experimental design is employed for the study from November 9th, 2022 to January 2nd, 2023. The study is conducted at the University of Mosul, College of Political Science and the College of Civil Engineering at the left side of Mosul City.

Study sample and Sampling

A non-probability sampling method, specifically purposive sampling, was utilized to select a group of (60) male and female collegians within criteria established for this purpose who are currently pursuing their studies at the University of Mosul.

Data for the assessment need were collected from (20) students at the University of Mosul in Mosul City. The assessment tool is constructed based on extensive review of related literature. The objective of this assessment is to identify the needs of collegians to instructions associated with their perceptions of a healthy lifestyle. The assessment is carried out during the period of March 6th to 15th 2022.

Data collection and study Instrument

In order to accomplish the study objectives, a questionnaire was constructed, taking into consideration the program contents. The questionnaire is comprised of (10) items that evaluate university students' perception toward healthy dietary pattern,

ensured as (agree, not sure, disagree). Data were collected through self-administration questionnaire of all study participants (experimental and control groups) by administrating the pre-test, it was conducted (for experimental and control) before implementation of the health lifestyle program from 9th to the 13th November, 2022. Application for the health lifestyle program (for the experimental group only) from 14th to 30th November 2022. The first post-test (post-test-1) was conducted (for experimental and control) after completing the program (30th November 2022). The second post-test (post-test-2) was conducted (for experimental and control) after (1) months of post-test-1st on 2nd January 2023.

The program for the period of 1st to 25th June, 2022 was constructed based on the results of the assessment of the requirements of collegians perception toward healthy dietary pattern, and a comprehensive review of the relevant literature.

The program is comprised of six main sessions. Each session is designed and scheduled for at least (60) minutes which deals with their perceptions of a healthy lifestyle. All sessions are presented at classroom in the University of Mosul. The implementation of health intervention program is initiated during the period of 14th to 30th November, 2022. The plan of each session is included of the following: Topic of the session, Teaching objectives, Content, and Evaluation of each session (feedback).

Validity and Reliability of the Questionnaire

To assess the internal consistency reliability and content validity of the study instrument, a pilot study is performed. The split-half technique is utilized for this purpose. A purposive sample of (10) students was chosen. The Pearson Correlation Coefficient is calculated. The correlation coefficient for the phenomenon under research, as measured by the questionnaire, is (r=0.833), which is regarded acceptable and adequate by the results. A panel of (13) experts determine the instrument's content validity. The specialists are consulted to evaluate the tool. Their comments show that all experts concur that all instrument items are sufficiently valid criteria for measuring the phenomena that underlies the investigation.

Ethical Consideration

The study has received the official agreement from the College of Nursing Council, and a comprehensive description outlining the study's objectives has been submitted to the Ministry of Planning (Central Statistical Organization). An approval was obtained from the University of Mousl for conducting the study at the Mosul City’s Colleges. Additional implicit agreements are obtained from the study participants to ensure their active involvement. Each student is assured of confidentiality and the preservation of their identity anonymity.

Data Analysis

The SPSS-24 and Microsoft Excel (2010) programs were used to statistically analyze the data obtained from the study sample in order to arrive at the results, find the relationships between the variables, and derive the research's final results based on a series of statistical tests. Statistical tables (Frequencies and percentages). Inferential Data Analysis: For the equality of Means, multivariate analysis and analysis of variance (ANOVA) are used.

Results

Table 1. Socio-demographic characteristics of the students (No.= 60)

SDCs	Classification	*Study group*		*Control group*		*Sig.*
		No.	**%**	**No.**	**%**	
Age	19 years old	11	36.7	8	26.7	*.450*
	20 years old	9	30.0	11	36.7	
	21 years old	10	33.3	11	36.7	
	M ± SD	**19.9 ± 0.85**		***20.1 ± 0.80***		
Sex	Male	15	50.0	14	46.7	*.721*
	Female	15	50.0	16	53.3	
Marital status	Single	28	93.3	26	86.7	*.831*
	Married	2	6.7	4	13.3	
Family monthly income	<300 thousand dinars	2	6.7	2	6.7	*.911*
	300-600 thousand dinars	4	13.3	4	13.3	
	501-900 thousand dinars	11	36.7	13	43.3	
	>900 thousand dinars	13	43.3	11	36.7	
Residents	Urban	18	60.0	18	60.0	*.275*
	Rural	12	40.0	12	40.0	
Study year	Second	10	33.3	10	33.3	*1.000*
	Third	10	33.3	10	33.3	
	Fourth	10	33.3	10	33.3	

No= Number**, %**= Percentage, Sig= (p-value >0.05).

Table (1) shows that the mean age of the college students in the study group was determined to be (19.9+0.85) and the mean age in control group is (20.1±0.80). In terms of sex, (50%) were female participants the study group, while the female participants (53.3%) in control group. Singles were predominated in both study and control groups (93.3%) and (86.7%) respectively. In regards to family monthly income, most of participants expressed >900 thousand Iraqi dinars (43.3%) in study group and (43.3%) expressed 501-900 thousand dinars in control group. In terms of residents, more than half of participants were urban residents (60%) for both study and control with no differences between study and control groups based all p-value (*p >0.05*).

Table 2. Overall Evaluation of Collegians Perception toward Healthy Dietary Pattern for the Study and Control Groups at the Pre-test and the Post-test I and II

Dietary Pattern	Study Group				Control Group			
	Low N (%)	Moderate N (%)	High N (%)	*M ±SD*	Low N (%)	Moderate N (%)	High N (%)	*M ±SD*
Pre-test	19 (63.3)	9 (30.0)	2 (6.7)	*15.6±4.74*	21 (70.0)	6 (20.0)	3 (10.0)	*15.53±5.34*
Post-test I	4 (13.3)	7 (23.3)	19 (63.3)	*24.7±5.18*	20 (66.7)	7 (23.3)	3 (10.0)	*16.13±5.19*
Post-test II	4 (13.3)	8 (26.7)	18 (60.0)	*24.4±5.13*	20 (66.7)	7 (23.3)	3 (10.0)	*15.37±5.04*

No= number; **%**= percentage, "Level of Assessment (Low=10-16.66, Moderate=16.67-23.33, High=23.34-30"

In study group, findings showed that the collegians expressed a low perception towards healthy dietary pattern at the pre-test period (M±SD=15.6±4.74) (Before the educational program commenced). At post-test I (following the educational program), the findings indicated that the students exhibited a strong perception of a healthy dietary pattern,

scoring(M±SD=24.7±5.18). After a one-month interval (post-test II), the students maintained similar responses to those observed in post-test I, scoring (24.4±5.13).

In the control group, findings showed that the collegians expressed a low perception towards healthy dietary pattern at the pre-test period 15.53 (±5.34), at the post-test I, their perception was low 16.13±5.19) and after a month has been passed at the post-test II, they expressed the same low perception of the early stated pre-posttest I (15.37 ±5.04).

Table 3. Comparative of the Overall Collegians' Perception toward Healthy Dietary Pattern between Study and Control Groups at the Pre-test and the Post-test I and II.

Periods	Weighted	M	SD	Std. Error	t-value	df	P value
Pre-test	Study	1.5600	.47460	.08665	.051	58	.959
	Control	1.5533	.53481	.09764			
Post-test I	Study	2.4700	.51872	.09470	6.390	58	0.001*
	Control	1.6133	.51977	.09490			
Post-test II	Study	2.4400	.51300	.09366	6.598	58	0.001*
	Control	1.5733	.50442	.09209			

M= Mean, **SD**: Standard deviation, **t**= t-test, **df**= degree of freedom, Sig.: Significant; (P-value=959)

Table (3) shows that there is no statistically meaningful distinction observed between the study group and the control group during the pre-test period (t =.051; *P*-value= 0.959). At post-test I (t=6.390; *P* value=0.001) and post-test II (t=6.598; *P-Value*=0.001). A noticeable and statistically significant variation exists between the study and control groups. The results of the study indicate that, relative to the statistical mean, the perceptions of those in the study group regarding healthful dietary patterns are more positive than those in the control group.

Table 4. Comparative Differences Between Collegians' Perception toward Dietary Pattern for the Study and Control Groups at the Pre-test and the Post-test I and II.

Groups	Dietary Pattern (I)	Dietary Pattern (J)	Mean Differences (I-J)	Std. Error	P value	95% Confidence Interval	
						Lower Bound	Upper Bound
Study Group	Pre-test	Post-test I	-.91000-*	.12974	.000	-1.1679-	-.6521-
		Post-test II	-.88000-*	.12974	.000	-1.1379-	-.6221-
	Post-test I	Pre-test	.91000*	.12974	.000	.6521	1.1679
		Post-test II	.03000	.12974	.818	-.2279-	.2879
	Post-test II	Pre-test	.88000*	.12974	.000	.6221	1.1379
		Post-test I	-.03000-	.12974	.818	-.2879-	.2279
Control Group	Pre-test	Post-test I	-.06000-	.13422	.656	-.3268-	.2068
		Post-test II	-.02000-	.13422	.882	-.2868-	.2468
	Post-test I	Pre-test	.06000	.13422	.656	-.2068-	.3268
		Post-test II	.04000	.13422	.766	-.2268-	.3068
	Post-test II	Pre-test	.02000	.13422	.882	-.2468-	.2868
		Post-test I	-.04000-	.13422	.766	-.3068-	.2268

Pretest perceptions of healthful dietary pattern among college students in the study group differ significantly from posttest I (*P* value= 0.001) and posttest II perceptions (*P* value =0.001*). These perceptions on the posttest I differ statistically from those on the pretest (*P*-value= 0.001), but not on the posttest II (*P* value= 0.818). These perceptions on the posttest II differ statistically from those on the pretest (p=.000) but not on the posttest I (*P* value= 0.818). For the control group, pre-test perceptions of dietary pattern do not statistically differ from posttest I (*P* value= 0.656) or posttest II (*P* value= 0.882) perceptions. These perceptions on the posttest I do not differ statistically from those on the pretest (p =.656) or the posttest II (*P* value= 0.766). In the end, these perceptions on the posttest II do not statistically differ from those on the pretest (*P* value= 0.822) or the posttest I (*P* value= 0.766). (Table 4).

Discussion

The findings of the study indicate that there was a slight difference in the mean age between the study group and the control group. The mean age for participants in both study and control groups was 20 years. The participants in the two groups were likely rather close in age, based on the little difference in mean ages between the two groups. It's crucial to keep in mind, though, that the standard deviations reveal details about the range or variety of ages within each group. There may have been more variation in the ages of individuals within the study group because its standard deviation was slightly higher (±0.85) than that of the control group (±0.80). This finding concurred a study done by Alves et al. in Portugal, showed that the average mean age of the university students was 20.78 years (SD=4.221) [24].

Regarding sex, participants in the study group have been split equally between male and female each making up 50% of the total. In contrast, the control group comprised somewhat more female participants than the experimental group (53.3%). This difference between the study and control groups shows a modest sex imbalance. Given that both sexes were equally represented in the study group, one possible conclusion of this distribution is that the results may be more indicative of the general population. This balance can lessen sex bias and make the results more generalizable. Furthermore, the current study results are agreed with a study conducted by Hyska and Mersini, in Tirana, Albania indicated that 61% of student were females [25].

Moreover, the findings in both study and control groups revealed that single students were predominant in both groups, with percentages of 93.3% and 86.7%, respectively. This study result is consistent with the analysis of Liu et al. in Dublin, which reveals that the percentage of unmarried students was (82.8%) [26].

Additionally, it was observed that a significant proportion, approximately 43.3%, reported a monthly income exceeding 900 thousand Iraqi dinars in the study group. This indicates that a substantial portion of individuals in the study group have relatively higher income levels. Additional research and comparisons across the groups can clarify the effects of income levels on various elements of life and give insightful data for researchers and policymakers.

According to the findings of a descriptive study conducted on a sample of 280 nursing students at the University of Mosul, Iraq, 11.45% of the students received less than 200,000 Iraqi dinars per month, while 52.85% had a monthly income ranging between 200,000 - 500,000 Iraqi dinars. Additionally, 27.85% of the students earned between 500,000 - 1,000,000 Iraqi dinars per month, whereas 7.85% received more than 1,000,000 Iraqi dinars monthly [27].

Also, more than half of the students (60%) were lived in urban areas for both the study and control groups. Higher population density, more developed infrastructure, and easier access to services and amenities are typical characteristics of urban regions. These elements may offer residents benefits and possibilities, such as superior healthcare

facilities, a greater choice of cultural and recreational opportunities, and better educational and employment prospects. According to the findings of a cross sectional descriptive study conducted at high health institute in Basrah, Iraq found that more than half of the students (52.6%) were lived in rural areas [28].

The evaluation of university students' perceptions of dietary patterns in both the study and control groups at the pre-test, post-test I, and post-test II revealed that, in the study group, students initially demonstrated a low level of awareness and understanding of dietary patterns during the pre-test phase, prior to the implementation of the educational program. At the post-test I after the implementation of the education program, students were demonstrated positive perceptions about dietary pattern. After a month of the application of post-test II, students expressed the same responses as in post-test I.

The findings show that the university stage is a phase of changes in the student's life, including dietary habits, which are an integral part of the health of individuals and society as a whole. It was found from the pre-test that there is weakness in the students' perceptions of the healthy food pattern in the two tests of two groups. This imply that the majority of students did not eat breakfast, ate fast food, and avoided home-cooked meals due to stress heavy workload, and lack of time, it is believed that their perceptions of a healthy diet were inadequate. As a result, university students often make unhealthy food choices.

According to previous studies conducted in Portugal, Brazil, and Argentina revealed that participants' perceptions of healthy eating were generally accurate. Significant differences were found by country and level of education, with adults with a higher level of education in Portugal having a healthier perception of what constitutes healthful food [29].

When compare the results between groups, the study findings reveals that there is no statistically significant distinction between the study and control groups during the pre-test phase. However, a significant statistical difference arises between the study and control groups during the post-test I and II phases. Also, the study results indicate a noticeable enhancement in the perceptions of a healthy lifestyle, particularly pertaining to dietary patterns among the study group.

This study indicates that students' maturity, the independence of their personalities, and their influence on new friends in the university environment can lead to changes in their perceptions of a healthy dietary pattern. This is evident through the initial testing of both groups. A previous study conducted by Pogge showed that educational courses significantly improved knowledge about nutrition and lifestyle modification among university students [30].

The perception of healthy dietary pattern in the study group at pretest was statistically differs from such perceptions at posttest I and posttest II. There is a statistical difference between the perceptions on the posttest I and the pretest II, but not between the two. Though not on the posttest I, these perceptions statistically differ from the pretest on the posttest II.

For the control group, there is no statistical difference between the perceptions of dietary pattern at the time of the pretest, posttest I, and posttest II. These perceptions on the posttest I do not statistically differ from those on the pretest or posttest II. Hence, these perceptions on the posttest II do not statistically differ from those on the pretest or posttest I.

The study demonstratives that the educational program had a significant effect on changing the students' perceptions of the healthy food pattern, and this was evident by changing the students' perceptions of the healthy food pattern during the first and second test. According to previous study, there was a statistically significant association between participants' nutritional knowledge and their perception of their own nutritional status [31].

This study demonstrates that educational interventions effectively reshape perceptions by enhancing knowledge, correcting misconceptions, and reinforcing learning. The program increased awareness and motivation,

leading to a significant shift in students' perceptions of healthy food patterns.

Conclusion

The present educational program has increased the study group's perceptions toward the healthy food pattern, which led to their adoption of the healthy dietary pattern. This had a favorable impact on those students. The study suggested the need for developing more educational programs, lectures, courses and seminars on the benefits of a healthy dietary pattern that university students should follow to change their perceptions that lead to modify their lifestyle and getting rid of the unhealthy behaviors and habits related to their diet.

References

1. Spanakis EG, Santana S, Tsiknakis M, Marias K, Sakkalis V, Teixeira A, Janssen JH, De Jong H, Tziraki C. Technology-based innovations to foster personalized healthy lifestyles and well-being: a targeted review. Journal of medical Internet research. 2016 Jun 24;18(6):e128.
2. Sharma M. Theoretical foundations of health education and health promotion. Jones & Bartlett Learning; 2021 Jul 14.
3. Özaydın T, Akın B. The Effect of Preventive Nursing Interventions on Reduction of Obesity Risk University Students: A Randomized Controlled Trial. Clinical and Experimental Health Sciences. 2024;14(1):22-31.
4. Ministry of Education of the People's Republic of China. Outline of China's National Plan for Medium and Long-term Education Reform and Development (2010-2020).
5. Hultgren BA, Turrisi R, Cleveland MJ, Mallett KA, Reavy R, Larimer ME, Geisner IM, Hospital MM. Transitions in drinking behaviors across the college years: A latent transition analysis. Addictive behaviors. 2019 May 1;92:108-14.
6. Deasy C, Coughlan B, Pironom J, Jourdan D, Mannix-McNamara P. Psychological distress and coping amongst higher education students: A mixed method enquiry. Plos one. 2014 Dec 15;9(12):e115193.
7. Deforche B, Van Dyck D, Deliens T, De Bourdeaudhuij I. Changes in weight, physical activity, sedentary behaviour and dietary intake during the transition to higher education: a prospective study. International Journal of Behavioral Nutrition and Physical Activity. 2015 Dec;12:1-0.
8. Das BM, Evans EM. Understanding weight management perceptions in first-year college students using the health belief model. Journal of American College Health. 2014 Oct 3;62(7):488-97.
9. Sogari G, Velez-Argumedo C, Gómez MI, Mora C. College students and eating habits: A study using an ecological model for healthy behavior. Nutrients. 2018 Nov 23;10(12):1823.
10. Blissett J, Fogel A. Intrinsic and extrinsic influences on children's acceptance of new foods. Physiology & behavior. 2013 Sep 10;121:89-95.
11. Lorenzoni V, Triulzi I, Martinucci I, Toncelli L, Natilli M, Barale R, Turchetti G. Understanding eating choices among university students: A study using data from cafeteria cashiers' transactions. Health Policy. 2021 May 1;125(5):665-73.
12. Hilger-Kolb J, Diehl K. 'Oh God, I have to eat something, but where can I get something quickly?'—A qualitative interview study on barriers to healthy eating among university students in Germany. Nutrients. 2019 Oct 14;11(10):2440.
13. Abdown SN, Hussein HA. Lifestyle behavior and mental health among nursing collegians at Baghdad University.

International Journal of Health Sciences. 2022;6:15209-16.
14. Mousa AM, Mansour K. Effectiveness of an Instructional Program Concerning Healthy Lifestyle on Patients' Attitudes after Percutaneous Coronary Intervention at Cardiac Centers in Baghdad City. Iraqi National Journal of Nursing Specialties. 2020 Jun 30;33(1):1-1.
15. Ahmmad SR, Abdulwahid HS. Assessment of food frequency intake and dietary habits for diabetic pregnant women. Iraqi National Journal of Nursing Specialties. 2015;28(1).
16. Ahmed AH. Possible relationships of selected food items to osteoporosis among a group of Iraqi women. Journal of the Faculty of Medicine Baghdad. 2021;63(4):171-5.
17. Nahidh M, Ibraheem MA. Diet and orthodontics-A review. Journal of baghdad college of dentistry. 2021;33(3).
18. Alazawii LH, Hamood WT. Effect of Eating Habits on Obesity among Sample of University Students in Baghdad City, Iraq. InJournal of Physics: Conference Series 2019 Sep 1 (Vol. 1294, No. 6, p. 062011). IOP Publishing.
19. Hussein KA. Obesity and Overweight among Students in Arabic Secondary Schools in Erbil City. Iraqi National Journal of Nursing Specialties. 2012;25(2):90-7.
20. Ma'ala EG. Prevalence of obesity among adolescents at secondary schools in Kirkuk city. Iraqi National Journal of Nursing Specialties. 2013;26(2).
21. Rosnah R, Taslim NA, Aman AM, Idris I, As'ad S, Buchari A, Bahar B, Aminuddin A, Wahyudin E, Nugraha GI. The formulation and evaluation of high-fat pellet on lipid profiles and body mass index of male Wistar rats. Iraqi Journal of Pharmaceutical Sciences (P-ISSN 1683-3597 E-ISSN 2521-3512). 2022 Jun 23;31(1):285-92.
22. Blazer DG. How do you feel about…? Health outcomes in late life and self-perceptions of health and well-being. The Gerontologist. 2008 Aug 1;48(4):415-22.
23. Alnaqeeb NS, Raheem YA, Ali BM. Health-Related Quality of Life in Diabetic Women: Comparing Obese & Normal weight. AL-Kindy College Medical Journal. 2022 Aug 31;18(2):136-43.
24. Alves RF, Precioso J, Becoña E. Knowledge, attitude and practice on healthy diet among university students in Portuga(2020)l.
25. Hyska J, Mersini E. Assessment of knowledge, attitudes and practices about public health nutrition among students of the University of Medicine in Tirana, Albania. South Eastern European Journal of Public Health. 2023 Jan 24.
26. Liu X, Chen H, Zhou Q, Zhang H, Asawasirisap P, Kearney J. Knowledge, attitude and practices (KAP) towards diet and health among international students in Dublin: a cross-sectional study. International journal of environmental research and public health. 2020 May;17(9):3182.
27. Hussein AA, Younis NM, Ahmed MM. Health Promoting Lifestyle profile Among Nursing Students in Mosul University. International Journal of Psychosocial Rehabilitation. 2020;24(09).
28. Molan JA. Dietary habits and nutritional knowledge among high health institute students in Basrah. The Medical Journal Basrah University. 2019 Dec 25;37(2):81-90.
29. Cardoso AP, Ferreira V, Leal M, Ferreira M, Campos S, Guiné RP. Perceptions about healthy eating and emotional factors conditioning eating behaviour: a study involving Portugal, Brazil and Argentina. Foods. 2020 Sep 4;9(9):1236.
30. Pogge E. Evaluation of an interprofessional team-based learning nutrition and lifestyle modification course.

Journal of Interprofessional Care. 2016 Mar 3;30(2):248-50.

31. Trumbo G. Assessing Self-Perceived Nutrition-Related Lifestyle Behaviors and Knowledge of University Music Students Following a Targeted Presentation. (2021).