Assessment Of Healthy Lifestyle Among Adults In Jazan, Saudi Arabia

Dr. Moataz mohsen Maashi[1], Dr. Abdulaziz Ahmed Darraj[2], Dr. Mohammad Othman Abu Omrain[3], Dr. Mohamed Salih Mahfouz[4], Dr. Yahya Ali Jarabi[5], Dr. Tayeb Yahya Thobab[6], Dr. Abdulrahman Hassan Khormi[7], Dr. Bader Alsawadys[8], Dr. Abdullah Ibrahim Sabai[9]

1 Preventive Medicine Resident,Ministry of health, Jazan, KSA. Maashi100@gmail.com
2 Consultant of Preventive Medicine and Public Health, MBBS, MD,Ministry of health, Jazan, KSA. dr.darraj@hotmail.com
3 Family medicine physician , JAZAN, KSA HMOMH6@HOTMAIL.COM
4 Associate Professor in the Department of Family and Community Medicine at Jazan University, KSA
mmahfouz@jazanu.edu.sa
5 Consultant Family medicine ,Ministry of health, Jazan, KSA. Ygerbi@moh.gov.sa
6 Family medicine consultant,Ministry of health, Jazan, KSA. tth316@gmail.com
7 senior registrar preventive medicine,Infection Control at Prince Mohammed Bin Nasser Hospital, Jazan, KSA. Alkhormi1988@gmail.com
8 senior registrar preventive medicine, Infection control at Abu Arish General Hospital, Jazan, KSA.
Bader-sawadi@hotmail.com
9 Consultant of Preventive Medicine and Public Health, Ministry of Health Jazan Branch, Jazan, KSA

Abstract:
Background: Lifestyle is defined as a group of personnel's daily habits and behavioral patterns sustained over time, such as diet, physical activity, and behavior. Objective: assess healthy lifestyle patterns among adults in Jazan, Saudi Arabia. Materials and Methods: A cross-sectional study was conducted among 422 students from Jazan University in Jazan region. A multistage cluster random sampling technique was used. The self-administered questionnaire includes sociodemographic, FANTASTIC lifestyle, and EuroQol 5-Dimension 3-level (EQ-5D-3L).
Results: 424 students participated in the study, with a response rate of 46.7% male and 53.3% female. The average age of students was 22.47 years, and most of them (56.6%) lived in villages. The students had a good lifestyle, with a mean score of 32.7995 ± 6.49 on the FANTASTIC questionnaire. The mean EQ-5D-3L index score was 0.87 ± 0.15. The study demonstrated a positive correlation between lifestyle status and health-related quality of life (HRQoL). Additionally, male students were found to have an excellent lifestyle more often than female students.
Conclusion: The findings from the study utilizing the Fantastic questionnaire and EQ-5D dimensions point to the potential benefits of interventions to enhance the healthy lifestyles

and HRQoL of Jazan University students. This can be achieved through educational programs and the promotion of health initiatives, with a specific focus on addressing anxiety and depression among students.

Keywords: Healthy Lifestyle, Assessment, Adult, Jazan, Saudi Arabia, Health Related Quality of Life, FANTASTIC questionnaire.

1. INTRODUCTION

Lifestyle is defined as a constant determinant of health, about 60% of a person's quality of life depends upon lifestyle, according to the World Health Organization (WHO) report [1]. A healthy lifestyle is documented to be associated with low mortality and morbidity rates [2]. Worldwide, less than 10% of adolescents have a healthy lifestyle [3]. Lifestyle is reported to affect human physical and mental health significantly; many factors determine healthy lifestyle patterns, including socioeconomic factors that are essentially correlated with a healthy lifestyle, such as age, gender, marital status, and economic level [4]. Nowadays, there are significant changes in habits and lifestyles globally, such as malnutrition, unhealthy diet, smoking, alcohol consumption, drug use, and life stress [5]. Also, a healthy diet: A poor diet, such as fast foods with related obesity, is a common unhealthy lifestyle in practically urban societies, as an urban lifestyle leads to consecutive nutrition problems such as increased risk of cardiovascular health problems [6]. Regular exercise is listed as a significant healthy lifestyle. Continuous exercise training and a healthy diet reduce morbidity and mortality rates [7]. Normal sleep: Sleep disorders have several social, psychological, economic, and healthy consequences. [8] In addition to behavior factors such as substance abuse, smoking, alcohol, or others. Also, one of the determined healthy lifestyles is the application of advanced technology that facilitates the life of human beings. For example, sleep patterns are affected by the long use of computers and other devices up to midnight. On the other hand, mobile addiction is related to depression disorder [9]. Adopting healthy lifestyles such as exercise, sun exposure, eating a healthy diet, quitting smoking, sun exposure, healthy sleep patterns, and managing stress have a significant role to play in preventing various diseases [10,11]. A healthy lifestyle mostly depends upon the earlier start of healthy living habits, as youth-related unhealthy lifestyles are strongly connected to unhealthy habits in adulthood [3]. However, health-related attitudes in the early stages of life usually negatively affect related diseases in late life [4]. It is important to estimate the knowledge of adult individuals as university students toward healthy lifestyles and its effect on healthy qualified life [2]. Deferent studies show that few students are aware of a healthy lifestyle and its important role in a good qualified life [4]. Recently, the percentage of chronic diseases among students has increased as a result of wrong health practices and lifestyle modification in the world, especially in the Gulf region, due to many changes in the socio-economic situation [12]. This study aims to assess a healthy lifestyle pattern among undergraduate students at Jazan University, Jazan, Saudi.

Many studies have been done worldwide to assess the healthy lifestyle of undergraduate students. In London, an online survey was conducted in 2016 for 468 university students answering a 67-item questionnaire to evaluate their healthy lifestyles. The study reported that 60% of the participants had low physical activity while 47% ate an unbalanced diet. On the other hand, 42% were alcohol drunker and 165 were smokers [9].

In the USA, about 8375 participants above the age of twenty were included in the study, with 4197 men and 4178 women. Various races were involved in the study, such as the following: 4098 whites, 1604 African Americans, 1986 Mexican Americans, and 687 adults of another race or ethnicity. In comparing the mortality and morbidity rates of a different health lifestyle, there was a decreased mortality rate of 56% among non-smokers, 47% among physically active participants, and 26% among those with healthy diets [13].

In Sweden, 479 university students were included in a cross-sectional study to evaluate gender differences in students' health habits and motivation for a healthy lifestyle through a self-validated questionnaire. The study revealed that females had healthier habits related to alcohol consumption and nutrition but with more stress. On the other hand, males reported a high level of overweight and obesity with low nutritional awareness [14].

In Karachi, Pakistan, another cross-sectional study was applied to compare the lifestyles of medical and non-medical university students. 350 students aged between 14-24 years were included in a self-reported questionnaire. A 10-point scale was used, resulting in average knowledge for non-medical students of about 4.4 ± 1.77 and 5.7 ± 1.51 for medical students [15].

In Japan, a cohort study was applied, resulting in the highest mean score for interpersonal relations (3.05 ± 0.44), and the lowest was for health responsibility (2.01 ± 0.53). On the other hand, during the 1st year, it was reported that the overall HPLP-II score was 2.59, and declined by years to be (2.49 ± 0.29) in the 2nd year, (2.47 ± 0.28) in 3rd year, and (2.45 ± 0.30) for the 4th year. Females reported better health responsibility, interpersonal relations, and nutrition than males, but males had better physical activity than females. Those with family had significantly higher nutrition scores than those without family [16].

In Iran, a cross-sectional study was applied to 262 university students at Babol University, resulting in an average age of 21.36 ± 2.28. The results demonstrated that spiritual growth (the only domain of healthy lifestyle behaviors) ($PV = 0.002$) and living situation ($PV = 0.043$) were significant factors affecting academic achievement [17].

In Saudi Arabia, a descriptive-analytical cross-sectional of 335 students from the University of Hail was conducted. The study included information about lifestyle patterns in terms of age, sex, BMI, study field, and year of study. Nearly 33.8% of university students reported eating unhealthy food. The results reported a low level of awareness among university students on the rules of intermittent medicinal assessment [18].

Another Saudi Arabia study was conducted in Najran. A self-administered questionnaire was conducted for 300 undergraduate students at Najran University. The study reported that about 66% of participant students had between 1 and 2 weekly servings of fruit and vegetables, 50% or more preferred fast food, and only 33% had a regular healthy breakfast. On the other hand, 62% of participants had normal body mass index, and 12% were obese. About 29% of the students had regular exercise [19].

2. MATERIALS AND METHODS

2.1. Study design and area:

This is a cross-sectional study design. It was conducted among the adult population in the Jazan region, Saudi Arabia, at Jazan University from December 2023 to August 2024. Jazan Region, situated in the southwestern part of Saudi Arabia along the Red Sea coast, is densely

populated with 1,637,361 residents. Asir borders it to the north, the Red Sea to the west, and the Republic of Yemen to the south and east [20].

2.2. Study participants:

Adult individuals who are students at Jazan University. Jazan University is a leading higher educational institution that was established in 2006. It is the only university located in the Jazan region. The total number of university students exceeds (56,000) [21].

2.3. Inclusion and exclusion criteria:

- All male and female individuals aged 18 and above were included, provided they were willing to participate in the research.
- No exclusion criteria.

2.5. Sampling technique:

A multistage cluster random sampling technique was used. First, Jazan University colleges were divided into two strata: medical colleges and non-medical colleges. Medical colleges include colleges of medicine, nursing, and applied medical sciences. Non-medical colleges, such as science, engineering, and computer science, were the second strata. In this stage, three medical and three non-medical colleges were randomly selected using a simple random sampling method. In the second stage, random sampling will select two educational levels from each college. In the third stage, all students in each selected educational level were included in the study.

2.6. Data collection tool:

Data was collected using a self-administered, previously validated questionnaire. The Arabic version was used, which has been adopted from previous studies. The questionnaire included three parts: The first part administered the socio-demographics of the participants, such as age, gender, college, BMI, height, weight, marital status, family income, parent's educational level, and place of residence. The second part examined the lifestyle characteristics using the FANTASTIC lifestyle questionnaire. FANTASTIC questionnaire was developed by Wilson, Nielsen, and Ciliska. It represents the first letters of the nine domains in which the 24 questions or items are distributed: F = family and friends; A = activity (physical activity); N = nutrition; T = tobacco&toxins; A = alcohol intake; S = sleep, seatbelts, stress; T = type of behavior (Type A or Type B behavior pattern); I = insight; C = career (work, satisfaction with profession). The questions are distributed on a Likert scale and have multiple-choice questions (three answers) with numeric values ranging from 0-2. Questions are coded by points as follows: 2 for the first column, 1 for the second, and 0 for the third column. The sum of all points yields a total score that classifies individuals into five categories, as follows: "Excellent" (40–48 points), "Very good" (33–39 points), "Good" (32–28 points), "Regular" (27–18 points), and "Needing improvement" (0–17 points). [23], [22] The third part examined the quality of life using the Arabic-translated version of the EuroQol 5-Dimension 3-level (EQ-5D-3L). The EuroQol 5-Dimension 3-level (EQ-5D-3L) is a standardized questionnaire that measures health-related quality of life (HRQoL) in five dimensions:

Mobility: Ability to move around easily. Self-care: Ability to perform daily tasks independently. Usual activities: Ability to carry out usual activities without limitations. Pain/discomfort: presence of pain or discomfort. Anxiety/depression: presence of anxiety or depression. Each dimension has three levels of severity: No problems, some problems, a lot of problems, or unable to do. Scoring: The EQ-5D questionnaire is scored by assigning a score of 1 for "no

problems," 2 for "some problems," and 3 for "a lot of problems or unable to do" for each dimension. The scores for the five dimensions are then combined to calculate the EQ-5D index. The EQ-5D index is calculated by multiplying the score for each dimension by the corresponding weight in a country-specific value set. The value set represents the relative importance of different health states within that population. The EQ-5D index ranges from -0.59 to 1, with -0.59 representing death and 1 representing perfect health. The EQ-5D index classifies into four categories, as follow:

- 1.00- 0.80: Excellent HRQoL
- 0.79 - 0.60: Good HRQoL
- 0.59 - 0.30: Fair HRQoL
- 0.29 - 0.00: Poor HRQoL

In addition to the EQ-5D index, the EQ-5D questionnaire also included a visual analog scale (EQ-VAS) that measures overall health perception. The EQ-VAS ranges from 0 (worst imaginable health state) to 100 (best imaginable health state) [24].

2.7. Statistical analysis:

Statistical Package for Social Sciences (SPSS) version 23 for Windows (IBM Corporation, Armonk, NY, USA) was used for data entry and analysis. The data analysis included both descriptive and inferential statistics. In descriptive statistics, the frequency and percentages were used for qualitative variables, and the mean and SD were used for quantitative variables. Healthy lifestyle is the dependent variable, and various risk factors are the independent variables of the study. The chi-squared test was used to assess the statistical significance of associations. In addition, multivariate logistic regression analysis was used to predict the factors associated with healthy lifestyle status. Spearman correlation test was used to determine the relationship between lifestyle status and quality of life. A p-value<0.05 was considered statistically significant.

3. Results

A total of 424 students took part in the survey. Response rates were 46.7% male students and 53.3% female students. Student's ages ranged from 18 to 41, with an average age of 22.47 and a standard deviation of 3.42. Most students (56.6%) resided in villages, and 84% were single. Table 1 provides a detailed description of the sociodemographic characteristics of the study participants. Furthermore, Table 2 presents the frequency and percentages of the quantitative variables.

Table 1. Sociodemographic characteristics of the study participants.

Characteristics	(%) Frequency
Gender	
Male	(%46.7)198
Female	(%53.3)226
Collage	
Medicine	(%22.9)97
Dentistry	(%2.8)12
Nursing	(%3.3)14
Pharmacy	(%2.4)10
Applied Medical Sciences	(%26.9)114
Public Health	(%1.9)8
Science	(%1.4)6
Art	(%0.5)2
Engineering	(%6.8)2
Computer Science	(%2.6)11
Business Administration	(%28.5)121
Living place	
City	(%43.4)184
Village	(%56.6)240
Material status	
Married	(%13.7)58
Single	(%84.9)360
Divorced	(%0.7)3
Widow	(%0.7)3
Monthly income	
SAR 10000>	(%74.5)316
SAR 15000-10000	(%11.3)48
SAR 15000<	(%14.2)60
Mother education level	
Uneducated	(%10.4)44
Primary school	(%15.3)65
High school	(%18.6)79
Bachelor	(%37.3)158
Post-graduate	(%18.4)78
Father education level	
Uneducated	(%5.2)22
Primary school	(%11.6)49
High school	(%30.4)12
Bachelor	(%23.6)100
Post-graduate	(%29.2)124

Table 2. Quantitative demographic characteristics of the study participants.

	Mean± SD
Age	3.42 ± 22.4717
Weight(kg)	19.52 ± 64.4105
Height(cm)	13.06 ± 162.1439
BMI	14.22 ± 25.1453

The students' total scores on the FANTASTIC lifestyle questionnaire ranged from 16 to 48, with a mean score of 32.7995 ± 6.49, which falls into the 28 to 32 points category, i.e., "Good" Lifestyle. Table 3 shows the participants' scores and classifications. Most students (79%) reported having an excellent, very good, or good lifestyle.

Table 3. Students' scores of the Fantastic Lifestyle questionnaire.

Scores	Excellent	Very good	Good	Regular	Needing improvement
(%)n	(%13.4)57	(%39.2)166	(%26.4)112	(%19.8)84	(%1.2)5

Regarding the nine domains of the FANTASTIC lifestyle questionnaire, most students reported healthy practices in the "family and friends" domain, as they have honest communication and mutual influence and get emotional support. However, most students reported lower scores in the "nutrition" and "activity" domains, demonstrating a need for change in these areas. In the regard "tobacco&toxins" domain, 65% of the students reported drinking more than 3 cups of caffeine per day, while 85.6% reported not smoking. In the domain of "sleep, seatbelts, and stress," 11.8% of the students reported sleeping less than 7-9 hours per night. 71.2% of students always use seat belts while driving, which is a good practice. However, 26.9% of students admitted to always using their phone while driving, which is unsafe. In addition, more than half of the students reported experiencing stress, anxiety, and depression, indicating that mental health is an area of concern. Most students reported healthy practices in the "type of behavior" and "career" domains.

The respondents' mean EQ-5D-3L index score was 0.87 ± 0.15, indicating excellent Health-Related Quality of Life (HRQoL). They also obtained a mean EQ-VAS score of 71.65 ± 25.77. According to the EQ-5D-3L classification of the study participants, 71.7% of students had an excellent HRQoL, 20.8% had a good HRQoL, 6.6% had a fair HRQoL, and only 0.9% had a bad HRQoL. The distribution of responses to EQ-5D dimensions is shown in Table 4. According to the results, over 85% of the sample did not report any problems in mobility, self-care, and usual activities. In contrast, more than 35% of the participants had a problem with pain/discomfort and anxiety/depression dimensions.

Table 4. The distribution responses to EQ-5D dimensions.

EQ-5D	(%)Response n		
	No problem	Some problems	a lot of problems
Mobility	(%89.4)379	(%9.7)41	(%0.9)4
Personal-care	(%98.1)416	(%1.4)6	(%0.5)2
Usual activity	(%89.6)380	(%9.2)39	(%1.2)5
Pain/discomfort	(%63.4)269	(%35.4)150	(%1.2)5
Anxiety/depression	(%59)253	(%34.9)148	(%5.4)23

Table 5 shows the associations of the Lifestyle status variable with the independent variables. There was no significant association between Lifestyle status and gender, living place, Material status, income, and father's education level. However, Lifestyle status was significantly associated with the mother's education level (p= 0.034). Furthermore, the results revealed a significant association between Lifestyle status and the 5 dimensions of HRQoL variables: Mobility (p=0.012), Self-care (p=0.008), Usual activities (p<0.001), Pain/discomfort (p<0.001), and Anxiety/depression (p<0.001).

The Spearman correlation test examined the relationship between lifestyle status and health-related quality of life. The students' lifestyle status was found to be significantly correlated with QoL (r = 0.55, p<0.05), with a moderate positive linear relationship.

Table 5. Associations of the Lifestyle status variable with the independent variables

Variable		Lifestyle status					p-value
		Excellent	Very good	Good	Regular	Need improvement	
Gender	Male	30	81	41	42	4	0.082
	Female	27	85	71	42	1	
Living place	City	19	73	50	41	1	0.336
	Village	38	93	62	43	4	
Material status	Married	12	24	15	7	0	0.784
	Single	44	140	95	76	5	
	Divorced	1	1	1	0	0	
	Widow	0	1	1	1	0	
Monthly income	10000>	45	128	78	61	4	0.710
	15000-10000	6	16	17	8	1	
	15000<	6	22	17	15	0	
Mother education level	Uneducated	8	18	8	7	3	0.034
	Primary school	9	25	18	13	0	
	High school	14	29	13	22	1	
	Bachelor	20	60	49	28	1	
	Post-graduate	6	34	24	14	0	
Father education level	Uneducated	4	7	8	2	1	0.319
	Primary school	10	17	12	8	2	
	High school	15	51	29	32	2	
	Bachelor	15	38	28	19	0	
	Post-graduate	13	53	35	23	0	
Mobility	No problem	54	157	96	69	3	0.012
	Some problems	3	9	14	13	2	
	a lot of problems	0	0	2	2	0	
Personal care	No problem	56	164	111	81	4	0.008
	Some problems	1	2	1	1	1	
	a lot of problems	0	0	0	2	0	
Usual activity	No problem	56	159	98	65	2	0.001>
	Some problems	1	6	13	16	3	
	a lot of problems	0	1	1	3	0	
Pain/discomfort	No problem	48	129	63	28	1	0.001>
	Some problems	9	34	48	55	4	
	a lot of problems	0	3	1	1	0	
Anxiety/depression	No problem	53	129	54	17	0	0.001>
	Some problems	3	37	56	50	2	
	a lot of problems	1	0	2	17	3	

Table 6 shows the results of the multivariate logistic regression analysis. The results show that the gender variable was the only factor significantly associated with lifestyle status. Male students are more likely to have excellent lifestyle status than female students (B = 3.291, p = 0.035). Additionally, participants with<10000 monthly incomes are less likely to have an excellent lifestyle (B = -7.550). However, the result is not statistically significant.

Table 6. Multivariate logistic regression analysis of factors associated with excellent lifestyle.

Variables	B	.Sig
Age	0.367	0.263
BMI	0.016-	0.718
EQ-5D index	15.266	0.127
EQ_VAS	0.039	0.268
Gender		0.035
Male	3.291	
Female	0	
Living place		0.347
City	1.337-	
Village	0	
Marital status		
Married	25.242	0.971
Single	15.732	0.981
Divorced	26.408	0.992
Widow	0	.
Monthly Income		
10000>	7.550-	0.944
15000-10000	6.969-	0.949
15000<	0	.
health-related quality of life (HRQoL)	0.146-	1.000
Excellent	12.910-	0.997
Good	8.626-	0.998
Fair	0	.
Poor		

4. DISCUSSION

A healthy lifestyle is crucial due to major lifestyle changes in recent years, which have led to chronic conditions such as obesity, diabetes, and high blood pressure. It is essential to evaluate the healthy lifestyle patterns among adults in Jazan and identify related risk factors. This research aims to examine the healthy lifestyle patterns of adult students at Jazan University and identify associated risk factors.

In this study, 424 students participated, with 46.7% male and 53.3% female respondents. The average age of the participants was 22.47 years. Most students (56.6%) lived in villages, and 84% were single. The response rate of participants who had regular and needed improved lifestyles was 21%, which was a relatively small percentage compared to students who had excellent, very good, and good lifestyles.

The FANTASTIC lifestyle questionnaire revealed that most students reported healthy practices in the "family and friends" domain but scored lower in the "nutrition" and "activity" domains. Most students don't smoke but consume more than 3 cups of caffeine daily. The "sleep, seatbelts, and stress" domain results show that some students don't get enough sleep, and many use their phones while driving. Over 50% of students reported stress, anxiety, and depression, highlighting mental health as a major concern.

Our results have demonstrated that the most common problems reported by respondents were pain/discomfort and anxiety/depression compared to other EQ-5D dimensions. Similar to the results of a study conducted in King Abdulaziz Medical City in Riyadh, they found that the most common problems reported by respondents were pain/discomfort and anxiety/depression [25]. The latter is usually associated with various health problems, possibly leading to lower HRQoL. Our study's findings demonstrated a positive correlation between lifestyle status and HRQoL, suggesting that a healthier lifestyle is associated with a higher quality of life. Furthermore, the results of a multivariate logistic regression revealed that male students are significantly more likely to have excellent lifestyles than female students. The descriptive statistics showed that participants with an income of less than 10000 SAR are less likely to have an excellent lifestyle. Moreover, students living in villages tend to have an excellent lifestyle, although this association is not statistically significant.

5. CONCLUSIONS

This study evaluated healthy lifestyle patterns among adults in Jazan and identified associated risk factors. The results showed that students scored lower in the "nutrition" and "activity" domains. Mental health was a major concern, with over 50% reporting stress, anxiety, and depression. The study demonstrated a positive correlation between lifestyle status and HRQoL. Additionally, male students were found to have an excellent lifestyle more often than female students. The findings from the study utilizing the Fantastic questionnaire and EQ-5D dimensions point to the potential benefits of interventions to enhance the healthy lifestyles and HRQoL of Jazan University students. This can be achieved through educational programs and the promotion of health initiatives, with a specific focus on addressing anxiety and depression among students.

Supplementary Materials: The following supporting information can be downloaded at: www.mdpi.com/xxx/s1, Figure S1: title; Table S1: title; Video S1: title.

Author Contributions: Conceptualization, X.X. and Y.Y.; methodology, X.X.; software, X.X.; validation, X.X., Y.Y. and Z.Z.; formal analysis, X.X.; investigation, X.X.; resources, X.X.; data curation, X.X.; writing—original draft preparation, X.X.; writing—review and editing, X.X.; visualization, X.X.; supervision, X.X.; project administration, X.X.; funding acquisition, Y.Y. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: This study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of Jazan University (No.1111).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Ref. Barayan SS, Al Dabal BK, Abdelwahab MM, Shafey MM, Al Omar RS. Health-related quality of life among female university students in Dammam district: Is Internet use related? Journal of family&community medicine 2018, 25, 20-28. https://doi.org/10.4103/jfcm.jfcm_66_17
2. Alexander B, Vladislav B. Structure and content of the educational technology of managing students' healthy lifestyle. Journal of Physical Education and Sport 2015, 15, 362-364. http://dx.doi.org/10.7752/jpes.2015.03054
3. MARQUES, Adilson, et al. Adolescents' healthy lifestyle. Jornal de pediatria, 2020, 96, 217-224.
4. Jacob CM, Baird J, Barker M, Cooper C, Hanson M. The importance of a life course approach to health: chronic disease risk from preconception through adolescence and adulthood. Geneva: WHO. 2017.
5. Mamurov, B., Mamanazarov, A., Abdullaev, K., Davronov, I., Davronov, N., & Kobiljonov, K. Acmeological approach to the formation of healthy lifestyle among university students. In: III International Scientific Congress Society of Ambient Intelligence 2020 (ISC-SAI 2020). Atlantis Press, 2020. p. 347-353. https://doi.org/10.2991/aebmr.k.200318.043
6. Mandy M, Nyirenda M. Developmental Origins of Health and Disease: the relevance to developing nations. International health 2018, 10, 66-70. https://doi.org/10.1093/inthealth/ihy006
7. Ludwig DS, Astrup A, Bazzano LA, Ebbeling CB, Heymsfield SB, King JC, Willett WC. Ultra-processed food and obesity: the pitfalls of extrapolation from short studies. Cell metabolism 2019, 30, 3-4. https://doi.org/10.1016/j.cmet.2019.06.004
8. Mahmoodi H, Nadrian H, Javid F, Ahmadi G, Kasravi R, Chavoshi M, Golmohammadi F. Factors associated with happiness among college students: do academic self-efficacy and stress predict happiness? International Journal of Happiness and Development 2019, 5, 14-24. https://doi.org/10.1504/IJHD.2019.098048
9. Aceijas C, Waldhäusl S, Lambert N, Cassar S, Bello-Corassa R. Determinants of health-related lifestyles among university students. Perspectives in public health 2017, 137, 227-236. https://doi.org/10.1177/1757913916666875
10. Pender NJ. Barkauskas VH. Hayman L, Rice VH, Anderson ET. Health promotion and disease prevention: Toward excellence in nursing practice and education. Nurs Outlook 1992, 40:106-12, 120.
11. Beasley LJ, Hackett AF. Maxwell SM. The dietary and health behavior of young people aged 18-25 years living independently or in the family home in Liverpool, UK. Int J Consum Stud. 2004, 28, 355-63. https://doi.org/10.1111/j.1470-6431.2004.00394.x
12. Wagner GA, Andrade AG. Uso de álcool, tabaco e outras drogas entre estudantes universitários brasileiros. Rev Psiquiatr Clin 2008, 35, 48-54. https://doi.org/10.1590/S0101-60832008000700011
13. Ford ES, Bergmann MM, Boeing H, Li C, Capewell S. Healthy lifestyle behaviors and all-cause mortality among adults in the United States. Preventive medicine 2012, 55, 3-7. https://doi.org/10.1016%2Fj.ypmed.2012.04.016

14. Von Bothmer MI, Fridlund B. Gender differences in health habits and in motivation for a healthy lifestyle among Swedish university students. Nursing&health sciences 2005, 7, 107-118. https://doi.org/10.1111/j.1442-2018.2005.00227.x
15. Alghamdi SA, Alqarni AA, Alghamdi AF, Alghamdi TK, Hasosah NM, Aga SS, Khan MA. Knowledge, attitude, and practices regarding dietary habits among medical and non-medical university students. Journal of Family Medicine and Primary Care 2021, 10, 3436-3443. https://doi.org/10.4103/jfmpc.jfmpc_2227_20
16. Wei CN, Harada K, Ueda K, Fukumoto K, Minamoto K, Ueda A. Assessment of health-promoting lifestyle profile in Japanese university students. Environmental health and preventive medicine. 2012, 17, 222-227. https://doi.org/10.1007/s12199-011-0244-8
17. Yaqub F, Nuttall C. Are healthy lifestyle behaviours positively associated with the academic achievement of the university students? Journal of Advances in Medical Education&Professionalism 2020, 8, 204-205.
https://doi.org/10.30476%2FJAMP.2019.84152.1129
18. Algahtani FD. Healthy Lifestyle among Ha'il University Students, Saudi Arabia. Int. J. Pharm. Res. Allied sci. 2020;9(1):160-3
19. Al-Shehri HM, Al-Qahtani AM, Shaikh IA, Hassan MA, Al-Qahtani NS, Al-Qahtani AM, Alabas MA. Assessment of lifestyle and eating habits among undergraduate students in Najran University, Najran, Saudi Arabia. International Journal of Medical Science and Public Health 2017, 6, 638-647. http://dx.doi.org/10.5455/ijmsph.2017.1059801122016
20. Book SY. Kingdom of Saudi Arabia Statistical Year Book. 2016.
21. Excellence education in the Kingdom of Saudi Arabia. Jazan University. (n.d.). https://www.jazanu.edu.sa/en
22. Elgendy, M. F., Dawah, A. E. A. E., Elawady, M. A., Zidan, S. Y. E., & Elmahdy, M. A. Lifestyle Modification and Its Effect on The Control of Hypertension. The Egyptian Journal of Hospital Medicine 2022,89, 4811-4816.
https://dx.doi.org/10.21608/ejhm.2022.260745
23. Wilson DMC, Ciliska D. Lifestyle assessment: Development and use of the FANTASTIC checklist. Canadian Family Physician, 1984, 30,1527-1532. PMCID: PMC2153572.
24. EuroQol Group. EuroQol--a new facility for the measurement of health-related quality of life. Health Policy 1990, 16, 199-208. https://doi.org/10.1016/0168-8510(90)90421-9
25. Bekairy AM, Bustami RT, Almotairi M, Jarab A, Katheri AM, Aldebasi TM, Aburuz S. Validity and reliability of the Arabic version of the EuroQOL (EQ-5D). A study from Saudi Arabia. International journal of health sciences 2018, 12, 16-20. https://pubmed.ncbi.nlm.nih.gov/29599689/