Original Article :

Behavioral Health Indicators and Lifestyle Practices Among College Students in The Southern Region of Saudi Arabia: Insights for Health Promotion and Intervention

Mohammed A. Alshehri

Assistant Professor of Public Health & Health Education, Department of Public Health, Faculty of Applied Medical Sciences, Al-Baha University, Al-Baha, Saudi Arabia

Received on Nov 25, 2024, accepted for Publication on Mar 26, 2025, dx.doi.org/10.5455/mjhs.2025.04.003

Corresponding Author:

Mohammed A. Alshehri, PhD, MPH. Assistant Professor of Public Health & Health Education, Department of Public Health, Faculty of Applied Medical Sciences, Al-Baha University, Alaqiq, 65779-7738, Al-Baha, Saudi Arabia, Email: maalshehri@bu.edu.sa.

OPEN ACCESS Distributed under Creative Commons CC BY-NC-ND 4.0

Abstract

Background and Aims:
Behavioral health is a critical component of overall well-being, particularly among young adults. In Saudi Arabia, non-communicable diseases (NCDs) and traffic accidents are major health threats, necessitating the assessment and improvement of health behaviors among college students. This study aimed to comprehensively assess the behavioral health indicators among Saudi college students, providing insights to inform the development of effective health intervention initiatives on campus.

Methods:
A cross-sectional study was conducted at a university in the southeastern region of Saudi Arabia, utilizing a comprehensive survey merging five established tools. Data from 478 students (48.7% male, 51.3% female) were analyzed to evaluate physical activity, nutrition, tobacco use, mental health, and driving behaviors.

Results:
The majority of students rated their health positively, with males giving higher ratings than females. A significant portion of students also gave positive ratings for physical activity, though many did not meet recommended guidelines. Less than half of the students positively rated their nutritional behaviors, and there were notable percentages of students who were underweight or overweight/obese. Most students reported never using tobacco. However, a notable number experienced severe depressive or anxiety disorders, and nearly half had been in a traffic accident, with gender differences observed in seat belt usage.

Conclusion:
This study highlights behavioral health challenges among college students in southern Saudi Arabia, emphasizing the need for targeted interventions to promote healthier lifestyles and align with Vision 2030 goals.

Keywords:
Behavioral health indicators, Nutritional behaviors, Physical activity, Nutrition, Mental health, Smoking, and Traffic safety

Introduction:

Behavioral health is a critical component of overall well-being, especially among young adults. In the Kingdom of Saudi Arabia, non-communicable diseases (NCDs) represent a significant health threat, accounting for approximately 73% of all deaths.[1,2] For the age group between 13 and 18 years, traffic accidents are the leading cause of mortality.[1] This underscores the importance of addressing behavioral risk factors that contribute to these outcomes. According to the United Nations and the Ministry of Health in Saudi Arabia, major health issues such as heart diseases (37%), non-communicable diseases (20%), traffic injuries (16%), and cancers (10%) highlight the urgent need for preventive measures.[1] Behavioral risk factors such as malnutrition, insufficient physical activity, traffic accidents, and tobacco use are prevalent among the youth, significantly impacting their health.[3] Promoting a healthy lifestyle through proper nutrition, regular physical activity, stress management, traffic safety, and adequate sleep can dramatically reduce the incidence of NCDs by up to 80%.[4] These practices are essential for fostering a supportive environment for young adults, especially college students, who are at a pivotal stage in forming lifelong habits.

College students, in particular, face unique challenges that can affect their behavioral health. The transition to college life often involves significant changes in lifestyle, increased academic pressures, and the development of new social networks.[5] These factors can contribute to stress, poor dietary habits, and a sedentary lifestyle, all of which can negatively impact their health.[6] In Saudi Arabia, recent studies have highlighted specific health behaviors among college students. Many students report high levels of stress due to academic pressures and personal expectations, leading to unhealthy coping mechanisms such as smoking and poor dietary choices.[7] Furthermore, physical inactivity is prevalent, with a significant number of students not meeting the recommended levels of physical activity.[8] These behaviors contribute to the increasing rates of obesity and other NCDs among this demographic.[9]

To effectively address these health challenges, it is important to focus on key health habits that can significantly improve the overall well-being of college students. These health habits include healthy nutrition, regular physical activity, effective stress and anxiety reduction, adherence to traffic safety measures, and proper sleep regulation. By promoting these behaviors, we can create a foundation for long-term health and prevent the onset of chronic diseases. Each of these habits plays a crucial role in maintaining and enhancing health, and understanding their importance is vital for developing effective health intervention initiatives.

The aim of this study is to comprehensively assess the behavioral health indicators among Saudi college students. By identifying key health behaviors and their associated risk factors, this study seeks to provide valuable insights that will inform the development of effective health intervention initiatives on campus. These initiatives aim to promote healthy lifestyle choices, reduce the prevalence of non-communicable diseases, and improve the overall well-being of the student population.

Methods:

Study Design and Participants:

This cross-sectional study was conducted at a university in southeastern region of Saudi Arabia to assess various dimensions of student well-being and capture key indicators pertaining to prevalent health behaviors among the student population. The study aimed to gain a deeper understanding of the health status of Saudi college students, thereby laying the foundation for targeted interventions and initiatives aimed at fostering a healthier and more supportive campus environment.

Survey Instrument:

A comprehensive online survey instrument was developed by merging five previously established tools, each designed to measure different aspects of health behaviors. The survey was meticulously conducted to evaluate multiple dimensions of student health, offering insights into areas of strength and areas requiring targeted intervention. The survey included the following components:

1. International Physical Activity Questionnaire (IPAQ): The IPAQ short form (IPAQ-SF) was utilized to assess the physical activity levels of students. This tool is widely recognized as the "gold standard" for measuring physical activity across various social groups for both clinical and research purposes.[10]
2. Food Frequency Scale (FFS): The Food Frequency Scale (FFS) was employed to create a dietary profile for survey participants. This simplified measure helps in understanding participants' nutritional status by assessing their dietary behaviors.[11]
3. Smoking Consequences Questionnaire (SCQ): The Smoking Consequences Questionnaire (SCQ) was used to provide insights into tobacco usage behaviors among students. This questionnaire assesses the subjective expected utility of smoking and is a reliable tool for measuring tobacco product consumption.[12]
4. Patient Health Questionnaire-8 (PHQ-8): The PHQ-8 was administered to evaluate depressive symptoms and their severity among survey participants. This tool is a simplified measure for assessing depressive disorders.[13]
5. Driving Behavior Questionnaire (DBQ): The Driving Behavior Questionnaire (DBQ) was utilized to evaluate driving behaviors among students. This questionnaire serves as a simpli-

fied measure for assessing driving habits and behaviors.[14]

By integrating these tools into a comprehensive survey instrument, a holistic understanding of various aspects of student health, including physical activity, nutrition, tobacco usage, mental health, and driving behaviors, was attained. These insights are invaluable for informing targeted interventions and initiatives aimed at promoting student well-being at post-secondary instructions.

Data Collection:

The survey was distributed electronically to all enrolled students. Participation was voluntary, and informed consent was obtained from all participants. The survey ensured anonymity and confidentiality to encourage honest and accurate responses.

Sample Size:

The target population for this study comprised 15,143 students enrolled in 12 medical and non-medical colleges at a university in the southern region of Saudi Arabia during the 2024 (1445H) academic year, of which 44.2% were male and 55.8% were female. Following standard statistical sampling guidelines, the minimum required sample size was calculated to be 375 students, ensuring a 95% confidence level and a ±5% margin of error. To enhance data reliability, a convenient sampling technique was employed, resulting in the participation of 478 students, exceeding the minimum requirement. The final sample included 48.7% males and 51.3% females, providing a balanced representation of both genders and ensuring robust data for analysis.

Data Analysis:

Data collected from the survey were analyzed using statistical software. Descriptive statistics were used to summarize the demographic characteristics of the participants and their health behaviors. Frequencies and percentages were calculated for categorical variables, and means and standard deviations were computed for continuous variables. The study data were analyzed using the IBM SPSS (Statistical Package for the Social Sciences) 20.0 statistical program (IBM Corp., Armonk, NY, USA), acquired by IBM.

Ethical Considerations:

The study was approved by the Institutional Review Board (IRB) (approval number: 45126732). All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional research committee and comparable ethical standards.

Results:

Demographic and Sample Characteristics:

A total of 478 college students (mean age = 20.95, SD = 2.69) completed the full survey, of whom 51.3% (n = 245) were female, and 90% (n = 430) were bachelor students. Additionally, most participants (80.8%) lived with their immediate family members (i.e., spouse, parents, children, and/or siblings). The majority of students

(64.9%) were in their first, second, or third year, and a plurality 32% (n=153) of them were in the science and engineering colleges. Students were also asked to give their perception of their general health status. The survey revealed that 69.87% of college students (76.82% male and 63.27% female) described their health as good, very good, or excellent (see Table 1 for participant characteristics).

Table 1:Demographic Characteristics of Study Participants (N = 478).

	n	(%)
Gender		
Male	233	(48.7)
Female	245	(51.3)
Academic Level		
Diploma	43	(9.0)
Bachelor	430	(90.0)
Graduate	5	(1.0)
Student Enrolment Level		
First year	62	(13.0)
Second year	138	(28.9)
Third year	110	(23.0)
Fourth year	114	(23.8)
Fifth year or more	54	(11.3)
Currently Living Status		
Alone	46	(9.6)
With family	386	(80.8)
With friends	36	(7.5)
Other	10	(2.1)
Students' Perceptions of their General Health		
Excellent	77	(16.1)
Very good	115	(24.1)
Good	142	(29.7)
Acceptable	70	(14.6)
Poor	64	(13.4)
Don't know	10	(2.1)

Physical Activity:

Results indicated that 63.2% of students (66.09% male and 60.41% female) rated their physical activity behaviors during university as good, very good, or excellent. Additionally, 78.5% of students (75.11% male and 81.63% female) reported agreeing or strongly agreeing with the statement that they noticed positive changes in their physical activity behaviors during college. Additionally, the survey utilized the International Physical Activity Questionnaire (IPAQ) short form to evaluate physical activity behaviors. The results indicated that 73.8% of college students had met or excided the physical activity behaviors guide-

lines within the past 7 days (see Table 2 for within the past 7 days).

participants' physical activity behaviours

Table 2: Physical Activity Behaviors and Eating Habits within the Past 7 Days.

			Physical Activity Status				Total
			Not meeting guidelines		Meeting guidelines	Exciding guidelines	
Gender		Male	69 (31.1%)		57 (25.7%)	96 (40.6%)	222 (48.2%)
	Female		52 (21.8%)		90 (37.7%)	97 (40.6%)	239 (51.8%)
Total			121 (26.2%)		147 (31.9%)	193 (41.9%)	461 (100%)
			Eating habits status				Total
			Needs Improvement	Fair	Good	Excellent	
Gender		Male	7 (3.0%)		102 (43.8%)	119 (51.1%)	233 (48.7%)
	Female		5 (2.0%)		104 (42.4%)	132 (53.9%)	4 (1.6%) 245 (51.3%)
Total			12 (2.5%)		206 (43.1%)	251 (52.5%)	9 (1.9%) 478 (100%)
			BMI Classification				
<18.5 Underweight							
18.5-24.9 Healthy Weight			25-29.9 Overweight		30-34.9 Class I Obesity	35-39.9 Class II Obesity	≥40 Class III Obesity Total
Gender		Male	34 (14.6%)	113 (48.5%)	55 (23.6%)	13 (5.6%)	13 (5.6%) 5 (2.1%) 233 (48.7%)
	Female		70 (28.6%)	114 (46.5%)	38 (15.5%)	16 (6.5%)	4 (1.6%) 3 (1.2%) 245 (51.3%)
Total			104 (21.8%)	227 (47.5%)	93 (19.5%)	29 (6.1%)	17 (3.6%) 8 (1.7%) 478 (100%)

Nutrition, Weight, and BMI:

Results showed that 44.4% of students (53.65% male and 35.51% female) rated their nutritional behaviors during university as good, very good, or excellent. Additionally, 83.7% of students (81.55% male and 85.71% female) reported changes in their nutritional behaviors during college. The Food Frequency Scale (FFS) was also used to assess nutritional behaviors among participants, and the results indicated that 54.4% had good or excellent nutritional behaviors within the past 7 days. The average total score for participants in this survey was 29.7 (Fair). (see Table 2 for participants' eating habits within the past 7 days). Moreover, participants were asked to report their current height and weight to measure their body mass index (BMI). The results indicated that 47.5% of students had a BMI between 18.5-24.9, and the average total BMI score for participants in this survey was 23.3 (Healthy Weight) (SD = 6.3) (see Table 2 for participants' estimated body mass index).

Tobacco Use:

The Smoking Consequences Questionnaire (SCQ) was utilized to evaluate students' perceptions of tobacco use, revealing notable gender differences in beliefs. An overwhelming majority (98.3%) of college students surveyed (97.41% male and 99.81% female) reported that smoking tobacco products is a health risk. However, perceptions diverged significantly between genders regarding other aspects of smoking. Among male students, 53.9% believed that smoking helps calm the nerves during stress, compared to only 30% of female students. Additionally, 51.5% of males thought that tobacco use aids in weight control, while 42.4% of females shared this belief. The survey also indicated that 76.7% of male students thought many of their friends use tobacco products, whereas only 26.9% of female students believed the same. Finally, 51.9% of male students believed that many family members use tobacco products, compared to 47.1% of female students. Moreover, students were asked to report their tobacco use for the last month. Results indicated that 80.1% of students (64.81% male and 94.29% female) reported never using any tobacco products within the past month. For a detailed analysis of the participants' smoking perception, refer to Table 3, which presents data from the Smoking Consequences Questionnaire (SCQ).

Table 3: Participants' Tobacco use Based on the Smoking Consequences Questionnaire (SCQ) and Driving Behavior Questionnaire (DBQ).

		Perceptions of Tobacco Use				
		Agree	Strongly Agree	Total		
Smoking tobacco products shortens a person's lifespan	Male	10 (4.3%)	16 (6.9%)	85 (36.5%)	122 (52.4%)	233 (48.7%)
	Female	11 (4.5%)	4 (1.6%)	50 (20.4%)	180 (73.5%)	245 (51.3%)
	Total	21 (4.4%)	20 (4.2%)	135 (28.2%)	302 (63.2%)	478 (100%)
When you smoke tobacco products, your risk of heart and lung disease .increases	Male	3 (1.3%)	7 (3.0%)	54 (23.3%)	168 (72.4%)	232 (48.7%)
	Female	1 (0.4%)	1 (0.4%)	19 (7.8%)	223 (91.4%)	244 (52.2%)
	Total	4 (0.8%)	8 (1.7%)	73 (15.3%)	391 (82.1%)	476 (100%
Smoking tobacco products is a health .risk	Male	2 (0.9%)	4 (1.7%)	58 (25.0%)	168 (72.4%)	232 (48.6%)
	Female	2 (0.8%)	0 (0.0%)	16 (6.5%)	227 (92.7%)	245 (51.4%)
	Total	4 (0.8%)	4 (0.8%)	74 (15.5%)	395 (82.8%)	477 (100%
Smoking tobacco products calms the nerves when feeling .stressed	Male	44 (19.0%)	63 (27.2%)	56 (24.1%)	69 (29.7%)	232 (48.6%)
	Female	119 (45.6%)	55 (22.4%)	41 (16.7%)	30 (12.2%)	245 (51.4%)
	Total	163 (34.2%)	118 (24.7%)	97 (20.3%)	99 (20.8%)	477 (100%
Tobacco products help control anxiety .and stress	Male	43 (18.5%)	66 (28.3%)	68 (29.2%)	56 (24.0%)	233 (48.8%)
	Female	139 (57.0%)	54 (22.1%)	30 (12.3%)	21 (8.6%)	244 (51.2%)
	Total	182 (38.2%)	120 (25.2%)	98 (20.5%)	77 (16.1%)	477 (100%
Tobacco products help keep a person's .weight down	Male	40 (17.2%)	73 (31.3%)	83 (35.6%)	37 (15.9%)	233 (48.9%)
	Female	76 (31.3%)	64 (27.4%)	60 (24.7%)	43 (17.7%)	243 (51.1%)
	Total	116 (24.4%)	137 (26.8%)	143 (30.0%)	80 (16.8%)	476 (100%
Many of my friends use tobacco prod- .ucts	Male	11 (4.7%)	43 (18.5%)	93 (40.1%)	85 (36.6%)	232 (48.6%)
	Female	125 (51.0%)	54 (22.0%)	40 (16.3%)	26 (10.6%)	245 (51.4%)
	Total	136 (28.5%)	97 (20.3%)	133 (27.9%)	111 (23.3%)	477 (100%)
Many of my family and relatives use to- .bacco products	Male	42 (18.0%)	73 (31.3%)	74 (31.8%)	44 (18.9%)	233 (48.8%)
	Female	80 (32.8%)	49 (20.1%)	77 (31.6%)	38 (15.6%)	244 (51.2%)
	Total	122 (25.6%)	122 (25.6%)	151 (31.7%)	82 (17.2%)	477 (100%)

		Perceptions of Driving Behaviors				
		Agree	Strongly Agree	Total		
I drive at high speeds a lot of the time, and I don't pay attention to my speed or the speed limit on the road.	Male	74 (31.8%)	97 (41.6%)	4720.2%)	15 (6.4%)	233 (48.7%)
	Female	166 (67.8%)	61 (24.9%)	15 (6.1%)	3 (1.2%)	245 (51.3%)
	Total	240 (5.2%)	158 (33.1%)	62 (13.0%)	18 (3.8%)	478 (100%)
I crowd the cars in front of me because I feel like it goes slow a lot of the time.	Male	72 (31.0%)	80 (34.5%)	64 (27.6%)	16 (6.9%)	232 (48.7%)
	Female	157 (64.3%)	65 (26.6%)	15 (6.1%)	7 (2.9%)	244 (52.2%)
	Total	229 (47.9%)	145 (30.3%)	79 (16.5%)	23 (4.8%)	476 (100%)
I often change lanes to pass cars in front of me.	Male	37 (15.9%)	58 (24.9%)	112 (48.1%)	26 (11.2%)	233 (48.7%)
	Female	135 (55.1%)	53 (21.6%)	49 (20.0%)	8 (3.3%)	245 (51.3%)
	Total	172 (36.0%)	111 (23.2%)	161 (33.7%)	34 (7.1%)	478 (100%)
I do not use the turn signal when changing lanes or turning most of the time.	Male	115 (49.4%)	60 (25.8%)	49 (21.0%)	9 (3.9%)	233 (48.8%)
	Female	180 (73.8%)	54 (22.1%)	10 (4.1%)	0 (0.0%)	244 (51.2%)
	Total	295 (61.7%)	114 (23.8%)	59 (12.3%)	9 (1.9%)	477 (100%)
I run red lights and go through stop signs a lot of times.	Male	184 (79.0%)	34 (14.6%)	12 (5.2%)	3 (1.3%)	233 (48.7%)
	Female	213 (86.9%)	28 (11.4%)	4 (1.6%)	0 (0.0%)	245 (51.3%)
	Total	397 (93.1%)	62 (13.0%)	16 (3.3%)	3 (0.3%)	478 (100%)
I use mobile devic-es to call and text while driving a lot of the time.	Male	58 (25.0%)	64 (27.6%)	81 (34.9%)	29 (12.5%)	232 (48.8%)
	Female	167 (68.7%)	50 (20.6%)	19 (7.8%)	7 (2.9%)	243 (51.2%)
	Total	225 (47.1%)	114 (23.8%)	100 (20.9%)	36 (7.5%)	475 (100%)
I don't use a seat .belt very often	Male	183 (78.5%)	30 (12.9%)	14 (6.0%)	6 (2.6%)	233 (48.8%)
	Female	147 (60.2%)	40 (16.4%)	38 (15.6%)	19 (7.8%)	244 (51.2%)
	Total	330 (69.0%)	70 (14.6%)	52 (10.9%)	25 (5.2%)	477 (100%)

Traffic Safety:

The study revealed that 45.6% of students had experienced a traffic accident, with a significant gender disparity: 68.2% of males compared to 24.1% of females. Furthermore, a higher percentage of male students reported consistently wearing seat belts than their female counterparts (91.85% vs. 47.35%). For a detailed analysis of the participants' driving behaviors, refer to Table 3, which presents data from the Driving Behavior Questionnaire (DBQ).

Mental Health:

To measure underlying depressive symptoms or anxiety disorders, students were asked several questions based on the Patient Health Questionnaire-8 (PHQ-8). The results indicated that 17.4% of college students reported severe depressive or anxiety disorders in the past seven days. This included 12.4% of male students and 22.0% of female students. A chi-square test of independence was performed to examine the relation between gender and mental health status. The relation between these variables was significant, X2 (4, N = 478) = 17.9, p = .001. Females were more likely than males to report moderate or severe depressive or anxiety disorders. Additionally, an effect size was calculated using Cramer's V, which was found to be 0.193. While this effect size is statistically significant, it is moderate in magnitude. For detailed information, refer to Table 4, which provides a comprehensive breakdown of the participants' reported depressive or anxiety disorders.

Table 4: Underlying Depressive or Anxiety Disorder.

		Depressive Symptoms Severity					
None-minimal		Mild	Moderate	Moderately Severe	Severe		Total
Gender	Male	39 (16.7%)	76 (32.6%)	54 (23.2%)	35 (15.0%)	29 (12.4%)	233 (48.7%)
	Female	25 (10.2%)	57 (23.3%)	53 (21.6%)	56 (22.9%)	54 (22.0%)	245 (51.3%)
Total		64 (13.4%)	133 (27.8%)	107 (22.4%)	91 (19.0%)	83 (17.4%)	478 (100%)

Discussion:

The findings of this study offer valuable insights into the general health, physical activity, nutrition, tobacco use, mental health, and traffic safety behaviors of Saudi college students. These results highlight the need to address critical health behaviors to create a healthier and more supportive campus environment.

One notable aspect of the study is the self-reported health status of the students. A significant proportion (69.87%) rated their health as good, very good, or excellent, with males reporting a higher percep-

tion of good health compared to females (76.82% vs. 63.27%). This gender difference in health perception is consistent with previous research, suggesting that male students often report better health outcomes than their female counterparts, possibly due to variations in health behaviors and stress levels.[15] Furthermore, the high prevalence of positive self-rated health among students indicates a generally favorable view of their well-being, though it may conceal underlying health issues that require targeted interventions.

Additionally, physical activity levels among students showed that 63.2% evaluated their behaviors as good, very good, or excellent, with a higher percentage of males meeting the guidelines for physical activity compared to females. Despite this, 31.1% of males and 21.8% of females did not meet the recommended guidelines. This finding aligns with global trends indicating lower physical activity levels among young adults, particularly females.[16] Interventions promoting physical activity, especially among female students, are essential to enhance their physical health. Previous studies in Saudi Arabia have also highlighted the need for increased physical activity among university students to combat rising rates of obesity and related health issues.[17]

Moreover, nutritional behaviors were positively rated by 44.4% of students, yet a significant number (83.7%) reported changes in their nutritional habits during college. The average BMI score for participants was 23.3, indicating a healthy weight, though there were concerns with underweight (21.8%) and overweight/obesity rates (29.5%). These results reflect the need for continuous nutritional guidance and support to help students maintain healthy eating habits and manage their weight effectively. Other studies have reported similar findings, emphasizing the importance of nutrition education and interventions in universities.[18]

Tobacco use among students revealed that 80.1% had never used tobacco products in the past month, with a higher non-usage rate among females (94.29%) compared to males (64.81%). However, the perception of tobacco use on campus varied significantly between genders, indicating a possible underestimation of tobacco use among male students. The high awareness of the health risks associated with smoking (98.3%) is encouraging, yet further efforts are needed to reduce tobacco use among students. Previous research in Saudi Arabia has shown that while awareness of the dangers of smoking is high, actual smoking rates among university students remain a concern.[19]

In terms of mental health, the PHQ-

8 results showed that 17.4% of students experienced severe depressive or anxiety disorders, with a significantly higher prevalence among females (22.04%) compared to males (12.45%). These findings are concerning and highlight the urgent need for mental health services and interventions on campus. Previous studies have shown that college students are particularly vulnerable to mental health issues due to academic pressures and social changes, emphasizing the importance of accessible mental health support.[20] In Saudi Arabia, mental health awareness and services are gradually improving, but more targeted efforts are needed to support university students.[21]

Traffic safety behaviors also emerged as a significant concern, with 45.6% of students having been in a traffic accident, and a significant gender difference (68.24% males vs. 24.08% females). Additionally, a higher proportion of male students reported consistently wearing seat belts compared to female students (91.85% vs. 47.35%). These results underscore the need for enhanced traffic safety education and interventions to reduce accidents and promote safe driving behaviors among students.[22]

Future research should focus on longitudinal studies to track changes in health behaviors over time and their long-term impacts on student health. Additionally, qualitative studies could provide deeper insights into the reasons behind certain health behaviors and the effectiveness of interventions. There is also a need for more comprehensive studies that include a wider range of universities across different regions of Saudi Arabia to ensure the generalizability of findings. Further research should explore the impact of cultural, social, and economic factors on health behaviors among college students. Finally, intervention studies aimed at improving health behaviors and outcomes among university students should be conducted to evaluate the effectiveness of specific health promotion strategies.

Limitations of the Study:

This study has several limitations that should be considered. Firstly, the findings are inherently subjective, as they rely on students' self-evaluation of their behaviors and recall, which may be influenced by individual perceptions and biases. Additionally, participation in the study was entirely voluntary. Consequently, the sample may be skewed toward individuals with a higher-than-average level of interest in the subject matter, potentially affecting the generalizability of the results.

Conclusions:

This study highlights key behavioral health indicators among Saudi college students, emphasizing areas such as physical activity, nutrition, tobacco use, mental

health, and traffic safety. Significant gender differences were observed, pointing to the need for targeted interventions. Promoting healthy behaviors, including balanced nutrition, regular exercise, stress management, traffic safety, and tobacco prevention, is critical to fostering a supportive campus environment and reducing the prevalence of non-communicable diseases. Future efforts should focus on health education campaigns, mental health support, and safety initiatives tailored to the cultural context of Saudi Arabia. These findings provide a foundation for developing effective health promotion programs, contributing to the overall well-being of college students and supporting the Kingdom's Vision 2030 goals.

References:

1. United Nations. Prevention and Control of Non-communicable Diseases in the Kingdom of Saudi Arabia: Health status table and percentages of deaths among the population in the Kingdom of Saudi Arabia. Available at: https://www.undp.org/sites/g/files/zskgke326/files/2024-02/ksa_ncd_ic_report_eng.pdf.
2. Alqunaibet A, Herbst CH, El-Saharty S, Algwizani A, editors. Noncommunicable diseases in Saudi Arabia: toward effective interventions for prevention. World Bank. 2021:6. Available at: https://www.pha.gov.sa/ar-sa/OpenData/OpenData/NCD-Book-Final-Version.pdf.
3. Ministry of Health, Kingdom of Saudi Arabia. World Health Survey for the Kingdom of Saudi Arabia: Preventive Health Behaviors. Available at: https://www.moh.gov.sa/en/Ministry/Statistics/Indicator/Documents/2-Preventive-Health-Behaviors.pdf.
4. World Health Organization. Global Action Plan for the Prevention and Control of NCDs 2013-2020. WHO; 2021. Available at: https://www.who.int/news/item/10-05-2015-global-action-plan-for-the-prevention-and-control-of-ncds-2013-2020.
5. American College Health Association. National College Health Assessment: Reference Group Executive Summary. ACHA; 2022. Available at: https://www.acha.org/ncha/data-results/survey-results/academic-year-2022-2023/.
6. Baghianimoghadam MH, Rahaii Z, Khajeali N, Askarshahi M, Norbala MT, Zarei F. Mental health status and related factors among female students of University of Yazd. Toloo-e-behdasht. 2011;10(3):110-120.
7. Al-Qahtani MH, Alsubaie MM. The impact of stress on students in Saudi Arabia: A study in the city of Jeddah. J Family Community Med. 2020;27(2):128-134.
8. Al-Hazzaa HM, Al-Rasheedi AA,

Sulaiman MA. Physical activity levels and dietary habits of Saudi youth: A cross-sectional study. BMC Public Health. 2018;18(1):1-10.

9. Al-Rethaiaa AS, Fahmy AE, Al-Shwaiyat NM. Obesity and eating habits among college students in Saudi Arabia: a cross-sectional study. Nutr J. 2010;9(1):39.
10. International Physical Activity Questionnaire short form (IPAQ-SF). 2002.
11. Paxton AE, Strycker LA, Toobert DJ, Ammerman AS, Glasgow RE. Starting the conversation: performance of a brief dietary assessment and intervention tool for health professionals. Am J Prev Med. 2011;40(1):67-71. doi:10.1016/j.amepre.2010.10.009.
12. Brandon TH, Baker TB. The Smoking Consequences Questionnaire: The subjective expected utility of smoking in college students. Psychol Assess. 1991;3(3):484-491. doi:10.1037/1040-3590.3.3.484.
13. Kroenke K, Spitzer RL. The PHQ-8: a new depression diagnostic and severity measure. Psychiatr Ann. 2002;32(9):509-515. doi:10.3928/0048-5713-20020901-06
14. Parker D, Reason JT, Manstead ASR, Stradling SG. Driving errors, driving violations and accident involvement. Ergonomics. 1995;38(5):1036-1048. doi:10.1080/00140139508925148
15. Ibrahim N, Al-Kharboush D, El-Khatib L, Al Habib A, Asali D. Prevalence and predictors of anxiety and depression among female medical students in King Abdulaziz University, Jeddah, Saudi Arabia. Pak J Med Sci. 2013;29(6):1415-1420.
16. Al-Hazzaa HM, Al-Rasheedi AA, Sulaiman MA. Physical activity levels and dietary habits of Saudi youth: A cross-sectional study. BMC Public Health. 2018;18(1):1-10.
17. Al-Qahtani MH, Alsubaie MM. The impact of stress on students in Saudi Arabia: A study in the city of Jeddah. J Family Community Med. 2020;27(2):128-134.
18. Al-Rethaiaa AS, Fahmy AE, Al-Shwaiyat NM. Obesity and eating habits among college students in Saudi Arabia: a cross-sectional study. Nutr J. 2010;9(1):39.
19. Alswat K, Abdalla M, Alsaadi M, Alzeghayer S, Mohamed O, Hussain MA. Smoking among medical students in Saudi Arabia: Findings from a large national cross-sectional survey. BMC Public Health. 2020;20:1470.
20. Ibrahim N, Al-Kharboush D, El-Khatib L, Al Habib A, Asali D. Prevalence and predictors of anxiety and depression among female medical students in King Abdulaziz University, Jeddah, Saudi Arabia. Pak J Med Sci. 2013;29(6):1415-1420.
21. Baghianimoghadam MH, Rahaii Z,

Khajeali N, Askarshahi M, Norbala MT, Zarei F. Mental health status and related factors among female students of University of Yazd. Toloo-e-behdasht. 2011;10(3):110-120.

22. National Highway Traffic Safety Administration. Traffic Safety Facts. NHTSA; 2021. Available at: https://www.nhtsa.gov/research-data