Scientific Journal of University of Benghazi

SJUOB (2025) 38 (1) Medical Sciences: Elsherif, et al, 245 – 268
www.sjuob.uob.edu.ly

Effect of socio-demographic Factors and Dietary Behavior on psychological well-being, and mental distress among Adolescents in Benghazi

Sara Ahmed Elsherif[1]*, Salima Saad[1], Mouda Abdulrazak Abdulrahim Alsbehi[1], Hanaa Dou Salah[1], Ameera Salem Atiya[1], Fatima Salem Alnajjar[1]

1 Department of Nutrition , Faculty of Public Health, University of Benghazi, Benghazi, Libya.

Received: 27 / 02 / 2025 | Accepted: 05 / 09 / 2025 | Publishing: 29/06/2025

ABSTRACT

Despite the growing awareness of the importance of nutrition for overall health, the relationship between dietary habits and mental well-being in adolescents remains understudied. This gap in knowledge poses a significant concern, as adolescence is a critical period for developing healthy eating patterns and reducing the risk of mental health issues. This study is aimed to investigate the associations between adolescents' dietary behaviors, psychological well-being, and levels of mental distress in Benghazi, Libya. A cross-sectional descriptive design was employed, involving 391 students (189 (48.6%) boys, 202 (51.4%) girls) from 7 randomly selected secondary schools. Data collection utilized structured questionnaires assessing dietary patterns, psychological well-being, and mental distress indicators. The study revealed a significant association between dietary habits and adolescent mental health outcomes. Regular breakfast consumption, correlated positively with perceived health and sleep satisfaction (P-value 0.000). However, no significant associations were found between happiness and fruit, soft drinks, or fast-food consumption. Higher physical activity levels were consistently linked with better mental well-being (P-value 0.000), while gender differences were evident in stress and depression prevalence. Balanced eating—especially frequent breakfast—and regular physical activity are strongly linked to better psychological well-being and lower mental distress in Libyan adolescents. Nutrition interventions promoting these behaviors may help mitigate the risk of stress and depression during this critical developmental stage.

Keywords: Dietary behavior, psychological well-being, mental distress, Adolescent nutrition, Libya.

Corresponding Author: Sara Ahmed Elsherif, sara.elsherif@uob.edu.ly

 ISSN: Online 2790-1637, Print 2790-1629
National Library of Libya, Legal number: 154/2018

1.INTRODUCTION

Dietary behaviors and food choices play a crucial role in individual health, well-being, and socio-cultural identity, extending beyond mere nutrition to impact long-term health outcomes and disease prevention [1][2]. Adolescence is a critical developmental stage marked by increased autonomy in food choices, making it an opportune time to establish lifelong healthy eating habits. However, various challenges, including peer pressure, busy schedules, and the marketing of unhealthy foods, hinder adolescents from making nutritious choices [3][4][5].

Research consistently links dietary behaviors to both physical and psychological health outcomes. Unhealthy eating patterns, such as excessive consumption of processed foods and sugary drinks, contribute to obesity, chronic diseases, and mental health issues like depression and anxiety, whereas a well-balanced diet supports overall well-being [1][6][7][2]. In recent years, the focus has shifted towards the psychological effects of diet, recognizing that mental health is fundamental to overall health, particularly during adolescence [8][9].

Despite the global burden of adolescent mental health disorders [10,11], many remain undiagnosed. This study explores the link between diet, well-being, and distress among adolescents in Benghazi, Libya, hypothesizing that healthier diets improve mental health [6]. Understanding these associations is vital for public health [11].

Existing studies demonstrate strong associations between poor dietary behaviors and mental distress in adolescents. Research from multiple countries, including Korea, New Zealand, and Southeast Asia, indicates that healthier dietary habits are linked to lower levels of mental distress and improved well-being [1][7][2]. Studies in the UK and Norway have shown that higher fruit and vegetable intake correlates with better mental health, while research in China highlights links between specific dietary patterns and symptoms of anxiety and depression [12][13][14].

Multiple cross-sectional studies across different regions have demonstrated significant associations between unhealthy dietary patterns and mental health issues in adolescents. In Iran (CASPIAN-IV, 2011–2012), a study of 13,486 children and adolescents linked junk food consumption to

increased risks of psychiatric distress and violent behaviors, while a 2013.

Malaysian study of 1,565 adolescents found that skipping meals and frequent eating out were associated with higher stress and depression symptoms. Similarly, a 2010 Chinese study in Bengbu (5,003 adolescents, aged 11–16) revealed that dietary patterns—particularly traditional, snack, and animal food diets—were robustly associated with depression and anxiety symptoms in urban adolescents. Collectively, these findings underscore those poor dietary habits, including high junk food intake, irregular meals, and unbalanced diets, may significantly contribute to mental health disorders in youth across diverse populations. [15][16][17]

Another cross-sectional survey of 300 Saudi girls aged 15–19 in Taif City, 58.3% reported healthy lifestyles and 6.7% unhealthy ones. Despite this, over half (52.5%) showed depressive symptoms (14.8% moderate-severe; 6.9% severe), 42.1% had moderate to severe anxiety, and 18% experienced high stress. Poorer lifestyle scores correlated strongly with worse depression, anxiety, and stress ($p < 0.001$), highlighting that even modest declines in diet, exercise, sleep, or substance avoidance markedly increase psychological distress and underscoring the need for school-based wellness programs. [18]

This study explores the link between diet, well-being, and distress among adolescents in Benghazi, Libya, hypothesizing that healthier diets improve mental health [7]. Understanding these associations is vital for public health [11].

2.METHODOLOGY

2.1. Design:

A cross-sectional descriptive study was utilized to conduct this study.

2.2. Setting:

The study was carried out on Libyan Secondary school students in the city of Benghazi.

The information regarding government schools and student population was acquired from the Ministry of Education in Benghazi. The city accommodates 30 girls-only secondary schools, 21 boys-only secondary schools, and 8 mixed-gender secondary schools, collectively catering to 23,114 students, including 8,622 boys and 14,492 girls. According to Slovin's Formula Calculator a sample size of 391 (189 boys and 202 girls) Students was established for

the study.

A multistage stratified sampling procedure was employed for the selection of study participants. In the initial stage, 7 secondary schools were randomly sampled from the 59 secondary schools in Benghazi, representing a sample size of 12%. These schools were chosen from the 5 sectors (Benghazi square, Berka, El Selawi, Sidi Khalifa, West of Benghazi) within Benghazi and were segregated based on gender, comprising 3 secondary schools for boys, 3 for girls, and one mixed-gender secondary school. Subsequently, one class from each grade (first, second, and third year) of high school was randomly chosen, with students then selected randomly from these classes.

2.3. Study Period:

The data of the study was collected between January 2024 and February 2024.

2.4. Study Participants:

7 secondary school students in Benghazi were participating.

2.4.1. Inclusion Criteria:

The selection was made randomly from government schools for secondary students in the city of Benghazi.(government schools was more feasible since: first they are directly supervised by the Ministry of Education. Second - government school students generally have more homogeneous socio-economic backgrounds. Which helps reduce potential confounding factors related to socio-economic status. Furthermore, government schools accommodate the majority of adolescents in Benghazi, making the study sample more representative of the general adolescent's population).

2.4.2. Exclusion Criteria:

Private schools for secondary students were excluded.

2.5. Study Tools and Methods of Data Collection:

Data collection involved students completing a questionnaire that encompassed assessments of dietary behavior, psychological well-being, and mental distress. The questionnaire, derived from a study conducted in Korea [(1)] The Korean-based questionnaire was adapted for the Libyan cultural context through expert review by faculty members specializing in nutrition and Public .

Health at the University of Benghazi. Modifications were made to ensure the clarity and relevance of the questionnaire items. However, a formal pilot test was not

conducted before data collection. The questionnaire consisted of five parts.

_The first part, Demographic Information, this segment gathered various control variables such as gender, age, type of housing, parental educational attainment, perceived socioeconomic status, and school type (boys only, girls only, or mixed).

_The second part measured psychological well-being by employing three questions regarding self-rated health, happiness and sleep satisfaction.

_The third part measured perceived stress, and depression symptoms.

Self-rated health was measured using a query assessing regular health perception. The responses were categorized as above-average health or average/below-average health. Happiness levels were assessed by asking participants about their usual happiness level, which was then grouped into above-average happiness or average/below-average happiness. Sleep satisfaction was evaluated based on the adequacy of sleep to combat fatigue in the past week. Perceived stress levels were determined by inquiring about the typical stress degree experienced. Depression symptoms were examined by asking about the occurrence of significant sadness or despair affecting daily routines in the previous year.

_The fourth part was regarding dietary behaviors, breakfast regularity over the previous week was rated on an eight-day scale. Participants were also asked about the frequency of consuming various food groups, such as soft drinks, highly caffeinated drinks, sweetened drinks, fast foods, fruits, vegetable dishes, and milk, with response options ranging from none to multiple times per day.

_The fifth part regarding Anthropometric measurement.

The Body Mass Index (BMI) of students was calculated based on their self-reported weight and height to determine their weight status. Students were classified into different categories:[19]

1.Underweight: BMI less than 18.5

2.Normal Weight: BMI between 18.5 and 24.9

3.Overweight: BMI between 25 and 29.9

4.Obese: BMI ≥30

Participants' physical activity levels were categorized as low, medium, or high based on their weekly minutes of moderate or vigorous exercise according to World Health

Organization guidelines: [20]

_Low: less than 150 minutes of moderate OR 75 minutes of vigorous exercise per week. _Medium: 150-300 minutes of moderate OR 75-150 minutes of vigorous exercise per week. _High: More than 300 minutes of moderate OR 150 minutes of vigorous exercise per week.

2.6.Statistical analysis:

Statistical analysis of the data was fed to the computer and analyzed using SPSS software package version 18 (PASW Statistics18). Qualitative data were described using numbers, percent, and the statistically significant association between different variables by using chi-square test at significant level (P-value (probability value) <0.05).

2.7. Ethics:

Consent and approval were received from the Faculty of Public Health at the University of Benghazi, and the Libyan Ministry of Education approved the protocol. Subjects were provided with informed consent and reassured about the confidentiality of their information. The research also received approval from the administration of the schools involved. Before starting the project, written notification was given to the school administrations outlining the study's objectives to secure their maximum cooperation in conducting the study.

3.RESULT

A survey conducted in 2024 among 391 secondary school students provides valuable insights into their demographics, socioeconomic backgrounds, and health-related behaviors. The majority of students in the sample are 17 or 18 years old, and the genders are split almost evenly. Although they live in different types of residences, (93.6%) come from medium-income households and live in either traditional homes or apartments. The majority of parents are highly

educated; many have college or graduate degrees. 25.1% of teenagers are overweight or obese, 13.8% are underweight, and 61.1% maintain a normal weight in terms of health. The majority report low (44.8%) levels of physical activity, while just 12.5% engage in high-intensity exercise, which is concerning and may pose long-term health hazards. Table (1)

Table (1). Sample Characteristics of Secondary Students, 2024 (N = 391)

Variable name	Variable specification	No.	Percent (%)
Gender	Male	190	48.6
	Female	201	51.4
Age in year	15	36	9.2
	16	114	29.2
	17	159	40.7
	18	74	18.9
	19	8	2.0
Place of residence	Villa	75	19.2
	Classic newly built house	121	30.9
	Classic old house	57	14.6
	Flat	138	35.3
Economic status	Low	3	0.8
	Medium	366	93.6
	High	22	5.6
School address	The west of Benghazi	94	24.0
	Benghazi sequare	129	33.0
	Berka	60	15.3
	El_Selawi	54	13.8
	Sidi Khalifa	54	13.8
Mother's education level	Illiterate	6	1.5
	Basic education	30	7.7
	Secondary education	146	37.3
	University degree	169	43.2
	Postgraduate degree	40	10.2
Father's education level	Illiterate	4	1.0
	Basic education	31	7.9
	Secondary education	165	42.2
	University degree	156	39.9
	Postgraduate degree	35	9.0
BMI	<18.5	54	13.8
	18.5-24.99	239	61.1
	25-29.99	62	15.9
	30 and above	36	9.2
Physical activity	High	49	12.5
	Moderate	167	42.7
	Low	175	44.8

Even while the majority of adolescents have a favorable view of their health (62.4%) and are happy (48.5%), a significant part of them suffer from mental health and well-being, with 34.5% reporting symptoms of depression and 56% expressing dissatisfaction with their sleep. Overall, the data shows developments in the physical, mental, and nutritional health of adolescents that are both encouraging and alarming. Table (2).

Table (2). Prevalence of mental health among adolescents (Total= 391)

1. Well-being outcomes	No.	Percent (%)
Perceived health		
Very healthy Healthy Fair Poor Very poor	84 160 129 13 5	21.5 40.9 33.0 3.3 1.3
Perceived happiness		
Very happy Happy Fair Unhappy Very unhappy	60 130 160 29 12	15.3 33.2 40.9 7.4 3.1
Sleep satisfaction (Fatigue recovery from sleep)		
Quite sufficient Sufficient Neutral Not Sufficient	61 111 118 101	15.6 28.4 30.2 25.8
2. Mental distress outcomes		
Perceived stress		
Very much Somewhat Average Not so much	70 103 105 113	17.9 26.3 26.9 28.9
Signs and symptoms of depression during the last year		
Yes No	135 256	34.5 65.5
Total	391	100.0

Tables (3) demonstrate the association between patient characteristics and well-being outcome health. Physical activity and gender significantly impact perceived health, while happiness is influenced by paternal education, and sleep satisfaction is influenced by age and economic status. Teenagers who were male and engaged in physical activity reported higher health. while older, less well-off teenagers reported higher levels of sleep satisfaction; No significant correlations with other socio-demographic characteristics.

Significant correlations between gender, physical activity, and teenage mental health are seen in Tables 4 Perceived stress and depression were higher among females. Stress and depression were significantly correlated with low levels of physical activity. BMI did not correlate with depression (p=0.352), although it did correlate with stress (p=0.003). Other factors, including place of residence, parental education, and economic status, did not show any significant association. These findings demonstrate the impact of gender and physical activity on adolescents' mental health.

The association between dietary practices and teenagers' perceptions of their health, happiness, and sleep satisfaction are examined in Tables 5. Frequent breakfast eating was not substantially associated with happiness, but it was significantly associated with improved sleep satisfaction and felt health. Increased consumption of highly caffeinated beverages was linked to lower levels of sleep pleasure (p=0.021) and exhibited a marginally positive correlation with dissatisfaction

(p=0.058). There was a non-significant tendency toward decreased sleep satisfaction with fast food consumption (p=0.067). These results highlight the benefits of eating a balanced diet, especially one that includes breakfast, veggies, and milk, in promoting teenagers, while highlighting the potential negative effects of high caffeine intake on sleep and happiness. Note that: Good" = above-average health, "Bad" = average/below-average health)

Tables (6) examine the association between dietary behaviors and perceived stress and depression among adolescents. There is no obvious correlation between eating habits and perceived stress because all of the p-values are more than 0.05. However, Table demonstrates that eating breakfast

 ISSN: Online 2790-1637, Print 2790-1629
National Library of Libya, Legal number: 154/2018

(p=0.000) and drinking a lot of caffeinated beverages (p=0.007) are significantly linked to depression. Regular consumption of highly caffeinated beverages and adolescents who eat breakfast infrequently or never are also associated with higher probabilities of depression. Foods including milk, fruit, vegetables, soft drinks, sweetened beverages, and fast food are also not substantially associated with sadness.

Table (3): Association between socio-demographic factors and wellbeing outcomes

Factors		Wellbeing outcomes No (%)						*Significance=P-value < 0.05		
		1.Perceived health			2.Perceived happiness			3.sleep satisfaction		
		Good	Bad	P-value	Happy	Un Happy	P-value	Sufficient	In Sufficient	P-value
Gender:	Male	189(50.7)	1(5.6)	P=0.000	168(48.0)	22(53.7)	P=0.493	147(50.7)	43(42.6)	P=0.160
	Female	184(49.3)	17(94.4)		182(52.0)	19(46.3)		143(49.3)	58(57.4)	
Age	14-16	143(38.3)	7(38.9)	P=0.693	140(40)	10(8.9)	P=0.052	123(42.2)	27(26.7)	P=0.005
	17-19	230(61.7)	11(61.1)		210(60.0)	31(75.6)		167(57.6)	74(73.3)	
Place of residence:										
Villa		74(19.8)	1(5.6)	P=0.053	69(19.7)	1(5.6)	P=0.723	52(17.9)	23(22.8)	P=0.306
Classic newly build house		114(30.6)	7(38.9)		106(30.3)	7(38.9)		97(33.4)	24(23.8)	
Classic old house		51(13.7)	6(33.3)		50(14.3)	6(33.3)		42(5.14)	15(14.9)	
Flat		134(35.9)	4(22.2)		125(35.7)	4(22.2)		99(34.1)	39(38.6)	
Economic status:										
Low-medium		352(94.4)	17(94.4)	P=0.989	330(94.3)	39(95.1)	P=0.826	278(95.9)	91(90.1)	P=0.030
Haigh		21(5.6)	1(5.6)		20(5.7)	2(4.9)		12(4.1)	10(9.9)	
Mother educational level:										
Illiterate		6(1.6)	0(0.0)	P=0,582	4(1.1)	2(4.9)	P=0.205	5(1.7)	1(1.0)	P=0.826
Basic education		30(8.0)	0(0.0)		26(7.4)	4(9.8)		21(7.2)	9(8.9)	
Secondary		139(37.3)	7(38.9)		129(36.9)	17(41.5)		111(38.3)	35(43.7)	
University		198(53.1)	11(61.1)		191(54.6)	18(43.9)		153(52.8)	56(55.4)	
Father educational level:										
Illiterate		3(0.8)	1(5.6)	P=0.162	1(0.3)	3(7.3)	P=0.000	0(2.7)	2(2.0)	P=0.537
Basic education		29(7.8)	2(11.1)		27(7.7)	4(9.8)		25(8.6)	6(5.9)	
Secondary		160(42.9)	5(27.8)		148(42.3)	17(41.5)		124(42.8)	41(40.6)	
University		181(48.5)	10(55.6)		174(49.7)	17(41.5)		139(47.9)	52(51.5)	
BMI:										
Underweight		53(14.2)	1(5.6)	P=0.236	50(14.3)	4(9.8)	P=0.735	39(13.4)	15(14.9)	P=0.702
Normal weight		224(60,1)	15(83.3)		213(60.9)	26(63.4)		180(62.1)	59(58.4)	
Overweight		61(16.4)	1(5.6)		54(15.4)	8(19.5)		47(16.2)	15(14.9)	
Obese		35(9.4)	1(5.6)		33(9.4)	3(7.3)		24(8.3)	12(11.9)	
Physical activity: High		49(13.1)	0(0.00)	P=0.012	47(13.4)	2(4.9)	P=0.165	39(13.4)	10(9.9)	P=0.454
Moderate		163(43.7)	4(22.2)		151(43.1)	16(39.0)		126(43.4)	41(40.6)	
Low		163(43.2)	14(77.8)		152(43.4)	23(56.1)		125(43.1)	50(49.5)	

 ISSN: Online 2790-1637, Print 2790-1629
National Library of Libya, Legal number: 154/2018

Table (4): Association between socio-demographic factors and Mental distress

Factors		Wellbeing outcomes No (%)			*Significance=P-value < 0.05		
		1.Perceived health			2.Depression		
		Much	Less	P-value	Yes	No	P-value
Gender:	Male	113(40.6)	77(68.1)	P=0.000	37(50.0)	140(54.7)	P=0.001
	Female	165(59.4)	36(31.9)		85(63.0)	116(45.3)	
Age	14-16	106(38.1)	44(38.9)	P=0.882	42(31.1)	108(42.2)	P=0,032
	17-19	172(61.9)	69(61.1)		93(68.9)	148(57.8)	
Place of residence:							
Villa		61(21.9)	14(12.4)	P=0.062	27(20.0)	48(18.8)	P=0.853
Classic newly build		85(30.6)	36(31.9)		39(28.9)	82(32.0)	
house		43(15.5)	14(12.4)		22(16.3)	35(13.7)	
Classic old house		89(32.0)	49(43.4)		47(34.8)	91(35.5)	
Flat		264(95.0)	105(92.9)		128(94.8)	241(94.1)	
Economic status:							
Low-medium		14(5.0)	8(7.1)	P=0.427	7(5.2)	15(5.9)	P=0.783
Haigh		6(2.2)	0(0.0)		2(1.5)	4(1.2)	
Mother educational level:							
Illiterate		24(8.6)	6(5.3)	P=0.152	10(7.4)	20(7.8)	P=0.675
Basic education		107(38.5)	39(34.5)		56(41.5)	90(35.2)	
Secondary		141(50.7)	68(60.2)		67(49.6)	142(55.5)	
University		3(1.1)	1(0.9)		2(1.5)	2(0.8)	
Father educational level:							
Illiterate		24(8.6)	7(6.2)	P=0.596	13(9.6)	18(7.0)	P=0.5603
Basic education		121(43.5)	44(38.9)		59(43.7)	106(41.4)	
Secondary		130(46.8)	61(54.0)		61(45.2)	130(50.8)	
University		28(10.1)	26(23.0)		16(11.9)	30(14.8)	
BMI:							
Underweight		173(62.1)	66(58.4)	P=0.003	78(57.8)	161(62.9)	P=0.352
Normal weight		51(18.3)	11(9.7)		26(19.3)	36(14.1)	
Overweight		26(9.4)	10(8.8)		15(11.1)	21(8.2)	
Obese		25(9.0)	24(21.2)		11(8.1)	38(14.8)	
Physical activity:							
High Moderate		110(39.6)	57(50.4)	P=0.000	42(31.1)	125(48.8)	P=0.000
Low		143(51.4)	32(28.3)		82(60.7)	93(36.3)	

Table (5): Association between dietary behavior and wellbeing outcomes of adolescents

Food groups consumed over the past 7 days	Wellbeing outcomes No (%)						*Significance=P-value < 0.05		
	1.Perceived health			2.Perceived happiness			3.sleep satisfaction		
	Good	Bad	P-value	Happy	Un Happy	P-value	Sufficient	In Sufficient	P-value
Breakfast									
Almost every day	212(56.8)	2(11.1)	P=0.00	197(56.3)108	17(41.5)	P=0.174	167(60.7)	38 (37.6)	P=0.000
Sometimes	115(30.8)	11(61.1)		(30.9)45	18(43.9)		87(30.0)	39(38.6)	
Rarely or never	46(12.3)	5(27.8)		(12.9)208	6(14.6)		27(9.3)	24(23.8)	
Soft Drink									
Never or 1-2 time per week	217(58.2)	13(72.2)	P=0.479	(59.4)	22(53.7)	P=0.479	171(59.0)	59(58.4)	P=0.801
6-3 times per day	74(19.8)	2(11.1)		65(18.6)77	11(26.8)		58(20)	18(17.8)	
At least once per week	82(22.0)	3(16.7)		(22.0)	8(19.5)		61(21.0)	24(23.8)	
Highly caffeinated Drink									
Never or 1-2 times per week	208(55.8)	12(66.7)	P=0.627	204(58.3)	16(39.0)	P=0.058	175(60.3)	45(44.6)	P=0.021
6-3 times per week	38(10.2)	1(5.6)		34(9.7)	5(12.2)		27(9.3)	12(11.9)	
At least once per day	127(34)	5(27.8)		112(32)	20(48.8)		188(30.3)	44(43.6)	
Sweetened Drink									
Never or 1-2 times per week	134(35.9)	7(38.9)	P=0.697	124(35.9)	17(41.5)	P=0.737	108(37.2.6)	33(32.7)	P=0.102
6-3 times per week	95(25.5)	3(16.7)		89(25.4)	9(22.0)		78(26.9)	20(19.8)	
At least once per day	144(38.6)	8(44.4)		137(39.1)	15(36.6)		104(35.9)	48(47.5)	
Fast Food:									
Never or 1-2 times per week	237(63.5)	13(72.2)	P=0.496	232(63.7)	27(65.9)	P=0.533	191(65.9)	59(58.4)	P=0.067
6-3 times per week	59(15.8)	1(5.6)		59(16)	4(9.8)		47(16.2)	13(12.9)	
At least once per day	77(20.6)	4(22.2)		71(20.3)	10(24.4)		52(17.9)	29(28.7)	
Fruit									
Never or 1-2 times per week	115(30.8)	9(50)	P=0.233	106(30.3)	18(43.90)	P=0.533	91(31.4)	33(32.7)	P=0.710
6-3 times per week	117(31.4)	4(22.2)		101(31.4)	11(26.8)		93(32.1)	28(27.7)	
At least once per day	141(37.8)	5(27.8)		134(38.3)	12(29.3)		106(36.6)	40(39.6)	
Vegetables									
Never or 1-2 times per week	141(37.8)	14(77.8)	P=0.003	133(38)	22(53.7)	P=0.150	111(38.3)	44(43.6)	P=0.642
6-3 times per week	78(20.9)	2(11.1)		74(21.1)	6(14.6)		61(21.0)	19(18.8)	
At least once per day	154(41.3)	2(11.1)		143(40.9)	13(31.7)		118(40.7)	38(37.6)	
Milk consumption									
Never or 1-2 times per week	128(34.3)	12(66.7)	P=0.001	119(34.0)	21(51.2)	P=0.079	97(33.4)	43(42.6)	P=0.257
6-3 times per week	55(14.7)	5(27.8)		54(15.4)	6(14.6)		46(15.9)	14(13.9)	
At least once per day	190(50.9)	1(5.6)		177(50.6)	14(34.1)		147(50.7)	44(34.6)	

Table (6): Association between dietary behavior and Mental distress of adolescents

Food groups consumed over the past 7 days	Mental Distress No (%)					
	1.Perceived stress			2.Depression		
	Much	Less	P-value	Much	Less	P-value
Breakfast						
Almost every day	145(52.2)	69(61.1)		56(41.1)	158(61.7)	
Sometimes	95(34.2)	31(27.4)	P=0.257	54(40)	72(28.1)	P=0.000
Rarely or never	38(13.7)	13(11.5)		25(18.5)	26(10.2)	
Soft Drink						
Never or 1-2 time per week	164(59.0)	66(58.4)		77(57.0)	153(59.8)	
6-3 times per day	51(18.3)	25(22.1)	P=0.615	24(17.8)	52(20.3)	P=0.465
At least once per week	63(22.7)	22(19.5)		34(25.2)	51(19.9)	
Highly caffeinated Drink						
Never or 1-2 times per week	161(57.9)	95(52.2)		62(45.9)	158(61.7)	
6-3 times per week	27(9.7)	12(10.6)	P=0.548	14(10.4)	25(9.8)	P=0.007
At least once per day	90(32.4)	42(37.2)		59(43.7)	73(28.5)	
Sweetened Drink						
Never or 1-2 times per week	98(35.3)	43(38.00)		51(37.8)	90(35.2)	
6-3 times per week	76(27.3)	22(19.5)	P=0.260	30(22.2)	68(26.6)	P=0.638
At least once per day	104(37.4)	48(42.5)		54(40.0)	98(38.3)	
Fast Food:						
Never or 1-2 times per week	173(36.3)	77(33.5)		50(37.0)	168(56.6)	
6-3 times per week	48(16.2)	12(31.3)	P=0.250	37(27.4)	39(15.2)	P=0.542
At least once per day	57(47.5)	24(35.3)		48(35.6)	49(19.1)	
Fruit						
Never or 1-2 times per week	93(33.5)	31(27.4)		93(33.5)	74(28.9)	
6-3 times per week	87(31.3)	34(30.1)	P=0.354	87(31.3)	84(32.8)	P=0.240
At least once per day	98(35.3)	48(42.5)		98(35.3)	98(38.3)	
Vegetables						
Never or 1-2 times per week	117(42.1)	38(33.6)		59(43.7)	96(37.5)	
6-3 times per week	57(20.5)	23(20.4)	P=0.230	27(20.0)	53(20.7)	P=0.461
At least once per day	104(37.4)	52(46.0)		49(36.3)	107(41.8)	
Milk consumption						
Never or 1-2 times per week	101(36.3)	34(42.6)		57(42.2)	83(32.4)	
6-3 times per week	45(16.2)	13.3(13.9)	P=0.642	19(14.1)	41(16.0)	P=0.157
At least once per day	132(47.5)	52.2(34.6)		95(43.7)	132(51.6)	

4.DISCUSSION

This Benghazi study examined the intricate association between eating habits and psychological health. The findings show a strong correlation between eating patterns and mental health outcomes, highlighting the significance of nutrition for teenagers' general well-being.

The study found that age had little impact on self-reported health, consistent with Currie et al. (2012) (21). Men reported better health than women, in line with Wade & Pevalin (2005) (22) and Hong & Peltzer (2017) (1), but differing from Sweeting & West (2003) (23). No significant association was found between health and economic status, supporting Chen et al. (2002) (24). Parents' education showed no correlation with perceived health, agreeing with Basu & Stephenson (2005) (25), but conflicting with Schwimmer (2003) (26). There was no link between BMI and perceived health, but a strong correlation between physical activity and perceived health, supporting the Korean study (1). These emphasize physical activity as important to perceived health.

The findings of this study suggest that gender and age were not significantly associated with perceived happiness, aligning with Weech-Maldonado et al. (2017) (27), but in contrast to a Korean study (1) that found a significant correlation. Furthermore, this study revealed no correlation between residential settings and well-being, despite Cicognani et al. (2008) (28) confirming this effect. In contrast to a Malaysian study that found a positive correlation between happiness and both parents' educational attainment, this study found a favorable correlation between teenage happiness and the father's education while the mother's education had no discernible impact (29). There was no correlation between happiness and BMI, which runs counter to research from Italy that shows happiness decreases as BMI rises (30). In a similar vein, no link between happiness and physical activity was found, although Zhang et al. (2019) (31), van Woudenberg et al. (2020) (32), and An et al. (2020) (33) found a positive correlation.

In contrast to studies from India, which showed that higher economic status was related to worse sleep, people of low to medium economic status reported better sleep (34). Economic status was also linked to sleep satisfaction. There was no correlation

between gender and sleep satisfaction, which is consistent with Nepalese studies (35). Furthermore, contrary to a Korean study that found a positive association, our study found no significant association between physical activity and sleep satisfaction (36).

The study found significant association between gender and stress; women reported higher levels of stress, which differs from Karnataka (37).

In contrast to research from Bangladesh (38) and Karnataka (39), no correlation was detected between stress and parents' age or level of education (40) or both. In contrast to findings in Bangladesh, BMI was substantially correlated with stress, with adolescents of normal weight reporting higher levels of stress (38). There was a significant association between stress and physical activity, with lower levels of exercise leading to higher stress levels, consistent with studies from Bangladesh (39).

Depression was also significantly linked with age and gender, with older adolescents and females reporting higher levels, which is consistent with studies from Bangladesh (41, 42) and China (43). Depression did not significantly correlate with parental education (41, 43), economic position (44), or area of residence (41, 45). Furthermore, BMI did not substantially correlate with depression, which is in contrast to research from Bangladesh (42) and Australia (46). Low levels of physical exercise, however (47), and Korea (1). No direct link was found between soft drink consumption and perceived health, similar to Norwegian research (48), though Korean studies indicated indirect effects (1). The study also supported research from Korea (1) and Tuscan (49) on the positive impact of vegetable consumption and aligned with Korean findings on milk consumption (1).

In contrast to Korean studies that connected fast food intake to obesity and ill health, no meaningful correlation between the two variables was discovered (1). These variations demonstrate how dietary customs, health beliefs, and research methods can differ among groups and impact results.

Remarkably, there was no significant correlation between breakfast eating and happiness levels. This result is in contrast to research that found a similar association between regular breakfast consumption and happiness in other nations, including Korea (50), Japan (47), the United States, Japan, and

Switzerland [51, 52].

Furthermore, there was no clear correlation between the use of soft drinks and caffeine and happiness, which is consistent with Norwegian study (48) but contradicts U.S. research (53), which associated high consumption with negative emotional states. Similarly, contrary to the findings of Huth et al., there was no correlation between happiness and milk consumption (54). Although eating more vegetables was associated with better feelings of happiness, this correlation was not statistically significant, which contrasts with research from Switzerland (51) and New

Zealand (55). The study confirmed a positive association between breakfast consumption and sleep satisfaction, which is in line with research done in the United States (56,53). No significant correlations were found between the consumption of fruit, vegetables, and fast food and sleep satisfaction, which is in contrast to studies by St-Onge et al. (57), which found a link between healthy eating habits and better sleep.

The study found no significant correlation between breakfast eating and stress or unhappiness, consistent with Spanish research (50).

There was no discernible link between stress and caffeine-containing beverages, in contrast to a Korean study (58).

Similarly, contrary to Australian findings, fast food and sugary beverages were not linked to stress (54). In line with Dutch (49) and Canadian (51) studies, the study also showed no connection between stress and consuming fruits, vegetables, or milk.

These differences in conclusions between the current study and prior research may be due to several contextual and methodological factors. Differences in sample characteristics—such as age group, cultural background, or socioeconomic distribution—could influence how individuals perceive and report their health and happiness. and even self-reporting tendencies can greatly influence outcomes related to health and well-being.

importantly, it must be noted that the cross-sectional nature of the study limits the ability to infer causal relationships. For instance, it remains unclear whether unhealthy eating patterns contribute to psychological distress or if existing mental health issues lead to poor dietary choices.

5.CONCLUSION AND RECOMMENDATIONS

This study emphasizes the importance of socio-demographic characteristics, food habits, and physical exercise on adolescent mental health. Gender disparities were noticeable, with girls reporting higher levels of stress and despair. Regular breakfast eating, vegetable intake, and physical activity were connected to improved health and reduced stress, whereas fast food and soft drinks had no meaningful impact.

To increase adolescent well-being, interventions should focus on a balanced diet (e.g, promoting regular breakfast programs in schools and reducing access to highly caffeinated drinks for adolescents), physical activity, and mental health support through school programs. Longitudinal studies are required to evaluate intervention efficacy and inform future health measures. Implementing these practices can lead to a healthier and more resilient adolescent population.

While this study sheds light on the association between demographics, food habits, and mental well-being, it does have some drawbacks. The cross-sectional study doesn't determine cause-and-effect linkages. In addition, self-reported data (e.g., self-report bias for dietary habits and BMI) may be impacted by memory biases or the proclivity to provide socially desired results. And the lack of diversity in the sample (only government schools). Lastly, differences in gender comparisons may be affected by an imbalance in sample size.

6. ACKNOWLEDGMENT

We sincerely thank the secondary school administrations and staff for their assistance in conducting this research. thanks also to the Ministry of Education for providing vital information. Most importantly, we thank the students for their contributions, which were critical to the success of this project.

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