

Health-Related Behaviors of Female Adolescent Students: A Comparative Study Between Egypt and Saudi Arabia

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Abstract: Background: Many behaviors concerned with adolescent students' health have been simultaneously studied and reported. This study aims to compare Egyptian and Saudi adolescent students' health risk behaviors. Therefore, among Egyptian and Saudi female adolescents using representative samples recruited from 12 preparatory and secondary schools in two major cities; El-Mansoura in Egypt, and Al-Madinah Almonowarrak, Kingdom of Saudi Arabia. **Methods:** This school-based cross-sectional descriptive comparative study was conducted during the academic year 2011-2012. The participants were 1016 Egyptian and Saudi female adolescent students in preparatory and secondary schools aged 10-19 years, who were randomly selected using a multistage cluster sampling technique. Their weight and height measurements, dietary habits, hygiene, violence and bullying behaviors, mental health, and physical activity and sedentary behaviors (TV viewing, and computer use) were reported using the self-administered Arabic version of a validated questionnaire adopted from WHO. **Results:** Less than two thirds (62.8%) of Saudi female adolescent students compared with almost half (48.4%) of Egyptians spent more than 3 hours daily on sitting activities and almost half of them in both groups did not practice physical activity. The Egyptian group's daily intake of breakfast, fruit, and vegetables was significantly ($p=0.02$ & 0.005 at $p\leq 0.001$, respectively) higher than the Saudis' group who also reported more days per week when they ate or ordered from a fast food restaurant. However, Saudi female adolescent students showed higher proportions (38.5%, 84.0%, & 97.8%) than Egyptians (18.1%, 79.1%, & 91.7%) regarding hygienic-related behaviors (teeth brush, hand wash before eating, and after using toilet, respectively). Furthermore, Saudi female adolescent students were significantly more exposed to physical attack(s) than Egyptians were during the past year ($P=0.004$). Negative feelings of loneliness, and being worried were more likely expressed among adolescent female school students of the Egyptian group than the Saudi ones. Finally, parents of the Egyptian group showed to be significantly keener to care about their daughters (checked their homework, understood their problems and worries, and really knew what they were doing with their free time) than Saudi ones. **Conclusion:** The high prevalence of physical inactivity, unhealthy dietary habits, violence and bullying, parental carelessness, and underestimation of the psychological needs of female adolescents were of major health concerns. There is an urgent need for national policy promoting active living and ensuring healthy lifestyle among female adolescents in Egypt and Saudi Arabia.

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1. Introduction

During the transition from childhood to adulthood, many adolescents experience behavior disorders that may affect both their current and future health.^[1] Adolescence extends from the age of 10 to 19 years, and adolescent school students always relate to both preparatory and secondary years, from the seventh, to the twelfth grades.^[2] Adolescent school students constitute a large proportion of the population worldwide. Specifically in Egypt, the percentage of this age group is estimated by 20% and 15%; from the total population respectively.^[3]

The WHO estimated that overall 10–20% of youth under 19 years in developed and developing

countries have behavioral and mental disorders.^[4] Behaviors established during adolescence often continue into adulthood, eventually resulting in substantial morbidity and mortality.^[5] Given that adolescent girls are tomorrow's of the future mothers and their health and wellbeing are crucial for family's future,^[6-8] the risk behaviors and mental health of this age group should receive attention and resources from the government and many sectors in society.

The Global School-Based Health Survey was designed to provide accurate data on health behaviors and protective factors among students, including dietary behaviors, hygiene, physical activity, drug and alcohol use, and violence and unintentional injury. It

is often used to help countries develop priorities, establish programs, and advocate for resources for school health programs, policies, and youth health.^[9]

Teens need nutritious foods to grow and to function. Many adolescents worldwide skip breakfast by choice either because they did not have the time to eat or in order to lose weight. In addition, many school-aged children depend on junk foods for their nourishment. Studies on American adolescents show that, in general, they have inadequate intake of fruit, vegetables, and whole grains. Therefore, it is not surprising, given such findings, that childhood obesity is increasing.^[10]

Hygiene refers to the state of general cleanliness. Oral health has far-reaching consequences on health. Poor oral health practices can lead to various infections, and tooth decay and loss.^[11] Dental caries can affect the ability to eat, appearance, communication, overall health status, and the ability to learn. Hygiene education and the promotion of hand washing can reduce the number of diarrheal cases by 45%.^[12]

Violence among young people is a major concern in most countries.^[13] Data collected from the adolescents' health survey suggested that adolescents have encountered some sort of violence in their daily lives. Unintentional injuries are a major cause of death and disability among young children.^[14] Bullying of adolescents by their peers has been shown to be a significant problem around the worldwide countries regardless their income levels.^[15&16] School bullies occur when a student or group of students purposely target another student, a victim, for recurrent negative physical or verbal unpleasant actions; that have hostile intent and appears in the form of hitting, kicking, pushing, name-calling, and teasing, among others.^[17]

On the other hand, living a social environment, which provides meaningful relationships, structure, and boundaries, encourages the adolescent's self-expression. Specially, parental bonding and connection is usually associated with lower levels of depression and suicidal ideation, alcohol use, sexual risk behaviors, and violence.^[18] Finally, it is estimated that, for most adolescents, school is the most important setting outside of the family. There is a probability that, school attendance is related to the prevalence of several health risk behaviors, so this study aims to compare Egyptian and Saudi adolescents' school students' health risk behaviors.

2. Subjects and Methods

Research design

This is a cross-sectional descriptive comparative study.

Settings

The study was conducted in three preparatory and three secondary schools for girls at Mansoura City, Egypt, and six schools for girls at Al-Madinah Almonawarah, Kingdom of Saudi Arabia (five were included students in both preparatory and secondary levels and the sixth was for secondary students only).

Subjects

The study included female adolescent students aged from 10-19 years who accepted to participate in the study through the academic year 2011-2012.

Sampling technique

Multistage cluster sample was used as a sampling technique.

Representative samples were drawn from 12 Egyptian and Saudi schools exclusive for female students. Mansoura City represented the Egyptian side by 6 schools; (3) preparatory namely; Shagaret El-Dor, El-Ayobeia Banat and Thamarat El-Hayah Banat; and (3) secondary schools namely; El-Thanawia Banat El-Gededa, Om El-Moemenen and El-Thanawia Banat El-Kadema. Despite there were shared schools (for boys and girls) in Egypt, only those for girls were included in this study to be homogenous as legislations in Kingdom of Saudi Arabia, which determine schools exclusive either for boys or for girls. On the other hand, Al-Madinah Almonawarah Governorate contained (44) public and private schools; (30) for both preparatory and secondary levels, and (14) for secondary students only. Six schools were randomly selected to represent the Saudi side, namely; Al-Moataz Bellah Al-Ahliyah, Manarat Al-Madinah Almonawarah, Al-Gharraa Al-Ahliyah, Mogamaa Alrayan, Mogamaa Alhekma and Al-Sabeaa wa-eleshroon. Classes were selected randomly, and the total number of students was (1016), divided equally in both countries.

Tool for data collection

Data were collected using the self-administered Arabic version of an adopted tool from the WHO Global School-based Student Health Survey (GSHS), (2006), which consists of 48 multiple choice questions related to the following main items: 3 questions about age, sex and grade; 7 questions about height, weight, and going hungry; 4 questions about foods that might be eaten; 4 questions about personal health activities, 1 question about clean drinking water, 2 questions about worm infections, 1 question about physical attacks, 1 question about physical fights, 5 questions about the most serious injury, 2 questions about bullying, 1 question about riding in a car or motor vehicle driven by someone who had been drinking alcohol, 4 questions about feelings and friendships, 5 questions about physical activity, 1 question about the time spent mostly sitting when are not in school or doing homework, 2 questions about going to and coming home from school and 5

questions about experiences at school and at home.^[9&19]

Methods

An official request to conduct the study was directed from Faculty of Nursing El-Mansoura University to the Manager of Directorate of Education, Mansoura City. The approval was sent to the managers of the selected schools.

An official request to conduct the study was directed from Al-Ghad International College for Medical Science, Al-Madinah Almonawarrah Branch, Kingdom of Saudi Arabia to the selected schools' managers.

Simple explanation about aim of the study was provided to the students to obtain their initial approval. Then, an informed consent including simple explanation about the aim of the study was sent with each student to be signed from her responsible family member. Questionnaires were completed during the class time and revised by researchers and missed data were completed.

Data analysis

The collected data were coded, entered in a data based file, and analyzed using the statistical package for social science (SPSS) version, 16. Frequency analysis and manual revision were used to detect any errors. Variables were presented as number and percent. Chi square test was used to compare between students of the two countries. $P \leq 0.05$ was considered statistically significant.

3. Results

More than three fifths (63.8%) of Egyptian female adolescent students aged from 12-<16 years, while, almost two-thirds (67.1%) of Saudis aged 16 years or older. There was a statistically significant difference between both of them, as $P \leq 0.001$ (table 1).

There were no statistically significant differences between Egyptian and Saudi female adolescents in relation to knowing their weight, height, trials to do about their weight, and times per day drinking carbonated soft drinks during the past week, as $P=0.2$, 0.7, 0.12 and 0.9 respectively. Almost half (52.4%) of Egyptian female adolescents compared to less than half (45.1%) of Saudis described their weight as about the right weight. More than half (53.0%) of Egyptian female adolescents compared to more than three fifths (62.4%) of Saudi students weighed and measured themselves during the past year (12 months). During the past month before the survey, the majority (88.0% & 79.5%) of both of Egyptian and Saudi female adolescents respectively were never or rarely going hungry because there was no enough food in their homes. Almost half (49.2% & 49.8%) of the female adolescents both in Egypt and Saudi Arabia respectively were eating breakfast most of the time or

always. The majority (85.2% & 88.4%) of Egyptian female adolescents compared to less than half (48.2%) and the majority (81.1%) of Saudis were usually eating fruit and vegetables one or more times per day respectively. Less than one-fourth (22.8%) of Egyptians compared to less than half (45.7%) of Saudi female adolescents ate at or ordered from a fast food restaurant three days or more during the past week. There were statistically significant differences between Egyptian and Saudis ($P \leq 0.001$) (table 2).

Table (3) revealed that, almost two-thirds and most of both female adolescents in Egypt (65.7% & 91.7%) and in Saudi Arabia (64.4% & 97.7%), usually clean or brush their teeth 1 or 2 times/day; and most of the time or always were washing their hands after using the toilet or latrine during the past 30 days respectively. There were statistically significant differences between Egypt and Saudi Arabia ($P \leq 0.001$) for both items. On the other hand, no statistically significant differences were found between Egyptian and Saudi female adolescents in relation to washing their hands before eating during the past 30 days, using soap when washing their hands during the past 30 days, didn't have a source of clean water for drinking at schools, and taught in any of their classes during this academic year about how to avoid worm infection and where to get treatment for a worm infection.

Throughout the year before the survey (12 months), more than three fifths (62.0%), less than three fourths (71.5%), and almost two-thirds (68.7%), of Egyptian female adolescents compared to almost half (52.9%), slightly more than three fifths (60.8%), and near three fourths (74.2%), of Saudi female adolescents were never physically attacked, in a physical fight, or seriously injured by motor vehicle accident respectively, with statistically significant differences between the two groups. Almost half of both female adolescents in Egypt (49.6%) and in Saudi Arabia (46.1%) sometimes were bullied during the past month, with no significant difference between the two groups ($P=0.09$). Among the studied samples, 15.0% of Egyptian female adolescents compared to only 4.5% of Saudis rode in a car driven by someone who had been drinking alcohol one or more times during the past 30 days, which revealed a statistically significant difference between the two groups ($P \leq 0.001$) (table 4).

Table (5) shows that, 30.3% of students sometimes felt so worried about something that they could not sleep at night during the past 12 months. Also 11.4% of female adolescents in Egypt and only 4.3% of them in Saudi Arabia had no close friends, with statistically significant differences ($P=0.05$ & $P \leq 0.001$, respectively). There were no statistically significant differences between both groups in relation

to felt lonely and felt so sad or hopeless almost every day for two weeks or more in a row that they stopped

doing their usual activities (P=0.5 & P=0.3, respectively).

Table (1): Demographic characteristics of female adolescent students

Demographic Characteristics	Egyptians (508)		Saudis (508)		Test/ Sign.
	No	%	No	%	
Age (in years):					
<12	19	3.7	2	0.4	$\chi^2=126.7,$ P≤ 0.001
12-<16	324	63.8	165	32.5	
16 +	165	32.5	341	67.1	
Educational stage					
Preparatory	260	51.2	244	48.0	$\chi^2=1.01,$ P=0.32
Secondary	248	48.8	264	52.0	

Table (2): Weight, height, and dietary behaviors of female adolescent students

Items	Egyptians (508)		Saudis (508)		Test/ Sign.
	No	%	No	%	
Knowing their weight	255	50.2	277	54.5	$\chi^2=1.9, P=0.2$
Knowing their height	306	60.2	311	61.2	$\chi^2=0.1, P=0.7$
Describe their weight as:					
Slightly underweight or very underweight	109	21.5	152	29.9	$\chi^2=9.99,$ P=0.006
About the right weight	266	52.4	229	45.1	
Slightly overweight or very overweight	133	26.2	127	25.0	
Trails to do about their weight					
Not trying to do anything toward their weight	153	30.1	122	24.0	$\chi^2=5.8,$ P=0.12
Trying to lose weight	154	30.3	180	35.4	
Trying to gain more weight	49	9.7	54	10.6	
Trying to keep the same weight	152	30.0	152	30.0	
Weighed and measured themselves during the past 12 months	269	53.0	317	62.4	$\chi^2=9.3,$ P=0.002
Going hungry because there was not enough food in their homes during the past 30 days					
Never or rarely	447	88.0	404	79.5	$\chi^2=16.29,$ P≤ 0.001
Sometimes	44	8.7	61	12.0	
Most of the time or always	17	3.3	43	8.5	
Taking breakfast during the past 30 days					
Never or rarely	114	22.4	144	28.4	$\chi^2=7.8,$ P=0.02
Sometimes	144	28.4	111	21.8	
Most of the time or always	250	49.2	253	49.8	
Times per day they usually eat fruit (such as banana, dates, mango, or grapes during the past 30 days)					
Did not eat	23	4.6	90	17.7	$\chi^2=156.9,$ P≤ 0.001
Less than one time per day	52	10.2	173	34.1	
Usually one or more times per day	433	85.2	245	48.2	
Times per day they usually eat vegetables (such as tomato, potato, or eggplant during the past 30 days)					
Did not eat	18	3.5	31	6.1	$\chi^2=10.5,$ P=0.005
less than one time per day	41	8.1	65	12.8	
Usually one or more times per day	449	88.4	412	81.1	
Times per day drinking carbonated soft drinks (like Coke, 7up, Mirenda, Biril, shiweps, and Pepsi Cola during the past 30 days)					
Did not drink	47	9.3	43	8.5	$\chi^2=0.2,$ P=0.9
less than one time per day	94	18.5	97	19.1	
Usually one or more times per day	367	72.2	368	72.4	
Days they ate at or ordered from a fast food restaurant (such as McDonalds, Kintaky, Wimpy, Pizza hut, Moemen, Big burger, Tikka, or Hardies) during the past 7 days.					
Did not eat	200	39.4	65	12.8	$\chi^2=108.3,$ P≤ 0.001
One or two days	192	37.8	211	41.5	
Three days or more	116	22.8	232	45.7	

Table (3): Hygiene-related behaviors of female adolescent students

Items	Egyptians (508)		Saudis (508)		Test/ Sign.
	No	%	No	%	
Times per day, they usually clean or brush their teeth during the past 30 days					
Did not clean or brush their teeth	34	6.7	9	1.8	$\chi^2=32.3$, P \leq 0.001
Less than one time/day	48	9.5	27	5.3	
1 or 2 times/day	334	65.7	327	64.4	
3 times or more/day	92	18.1	145	38.5	
Washing their hands before eating during the past 30 days					
Never or rarely	39	7.7	37	7.3	$\chi^2=5.6$ P=0.06
Sometimes	67	13.2	44	8.7	
Most of the time or always	402	79.1	427	84.0	
Washing their hands after using the toilet or latrine during the past 30 days					
Never or rarely	14	2.8	6	1.2	$\chi^2=20.2$, P \leq 0.001
Sometimes	28	5.5	5	0.9	
Most of the time or always	466	91.7	497	97.8	
Using soap when washing their hands during the past 30 days					
Never or rarely	6	1.2	12	2.4	$\chi^2=2.4$ P=0.3
Sometimes	22	4.3	18	3.5	
Most of the time or always	480	94.5	478	94.1	
Students taught in any of their classes during this academic year how to avoid worm infection	170	33.5	160	31.5	$\chi^2=0.5$ P=0.5
Students taught in any of their classes during this academic year where to get treatment for a worm infection	137	27.0	125	24.6	$\chi^2=0.7$ P=0.4

Table (4): Violence and unintentional injury occurred to female adolescent students

Items	Egyptians (508)		Saudis (508)		Test/ Sign.
	No	%	No	%	
Times they were physically attacked during the past 12 months					
Ever	315	62.0	269	52.9	$\chi^2=8.5$ P=0.004
One time or more	193	38.0	239	40.1	
Times they were in a physical fight during the past 12 months					
Ever	363	71.5	309	60.8	$\chi^2=12.8$ P \leq 0.001
One or more times	145	28.5	199	39.2	
Times they were seriously injured during the past 12 months					
Ever	349	68.7	377	74.2	$\chi^2=3.81$ P=0.05
One or more times	159	31.3	131	25.8	
What they were doing when the most serious injury happened to them during the past 12 months?					
Playing or training for a sport	26	5.1	27	5.3	$\chi^2=0.02$, P=0.9 Fisher's exact test, P \leq 0.2 $\chi^2=0.04$, P=0.8
Riding a bicycle or scooter	5	1.0	1	0.2	
Doing housework or cooking	11	2.1	12	2.4	
The major cause of the most serious injury that happened to them during the past 12 months:					
A motor vehicle accident or being hit by a motor vehicle	18	3.5	12	2.4	$\chi^2=1.2$, P=0.3 $\chi^2=1.3$, P=0.2 $\chi^2=3.6$, P=0.06
Falling	28	5.5	37	7.3	
Fire, flame or something hot	2	0.4	8	1.6	
The most serious injury happened to them during the past 12 months through:					
They hurt themselves by accidents	80	15.7	53	10.4	$\chi^2=6.3$, P=0.01 $\chi^2=1.1$, P=0.3
They hurt themselves on purpose	14	2.8	9	1.8	
The most serious injury that happened to them during the past 12 months					
A broken bone or dislocated joint	31	6.1	30	5.9	$\chi^2=0.02$, P=0.9 $\chi^2=1.6$, P=0.2
A cut, puncture, or stab wound	28	5.5	38	7.5	
Days they were bullied during the past 30 days					
Ever	191	37.6	223	43.9	$\chi^2=4.8$ P=0.09
Sometimes	252	49.6	234	46.1	
Always	65	12.8	51	10.0	
They were bullied most often during the past 30 days through:					
Hit, kicked, pushed shoved around or locked indoors	11	2.2	23	4.5	$\chi^2=4.4$, P=0.04 $\chi^2=7.2$, P=0.007 $\chi^2=0.2$, P=0.7
Made fun of because of their religion	12	2.4	2	0.4	
Made fun of with sexual jokes, comments, or gestures	47	9.3	43	8.5	
Rode in a car driven by someone who had been drinking alcohol one or more times during the past 30 days	76	15.0	23	4.5	$\chi^2=31.4$ P \leq 0.001

Table (5): Mental health issues of female adolescent students

Items	Egyptians (508)		Saudis (508)		Test/ Sign.
	No	%	No	%	
Felt lonely during the past 12 months					
Never	224	44.1	243	47.8	$\chi^2=1.5$ P=0.5
Sometimes	139	27.4	133	26.1	
Most of the time or always	145	28.5	132	26.0	
Felt so worried about something that they could not sleep at night during the past 12 months					
Never	184	36.2	216	42.5	$\chi^2=5.9$ P=0.05
Sometimes	154	30.3	154	30.3	
Most of the time or always	170	33.5	138	27.2	
Felt so sad or hopeless almost every day for two weeks or more in a row that they stopped doing their usual activities during the past 12 months					
	257	50.6	274	53.9	$\chi^2=1.1$ P=0.3
Students who had no close friends					
	58	11.4	22	4.3	$\chi^2=17.6$, P \leq 0.001

One in two students, both among Egyptian female adolescents (49.6% & 48.6%), and Saudi ones (48.8% & 53.1%) ever performed physical activity movement for a total of at least one hour, either in the last week or a typical or usual week days, respectively. There were statistically significant differences between Egyptian and Saudi groups (P \leq 0.001). More than two fifths (42.5%) and about two thirds (66.3%) of Egyptian female adolescents compared to the majorities (87.2% & 84.8%) of Saudis neither went to physical educational classes weekly nor played with sport teams during the past 12 months. Less than half (45.5% & 48.4%), and

more than one fourth (29.3%) of female adolescents in Egypt compared to slightly more than one third (34.8%), almost three fifths (62.8%), and the majority (83.5%) of Saudi group were taught in any of their classes during this academic year about the benefits of physical activity, spent three or more hours/day doing sitting activities such as; watching television, playing computer games, talking with friends during a typical or usual day and did not walk or ride a bicycle to and from school during the past 7 days respectively. There were statistically significant differences between Egypt and Saudi Arabia (table 6).

Table (6): Physical activity of female adolescent students

Items	Egyptians (508)		Saudis (508)		Test/ Sign.
	No	%	No	%	
Days they were performing physical activity for a total of at least 60 minutes per day during the past seven days					
Ever	252	49.6	248	48.8	$\chi^2=17.3$ P \leq 0.001
Sometimes (<7 days/week)	237	46.7	208	40.9	
Seven days/week	19	3.7	52	10.2	
During a typical or usual week days, they were performing physical activity for a total of at least 60 minutes/day during the past seven days					
Ever	247	48.6	270	53.1	$\chi^2=21.9$ P \leq 0.001
Sometimes (<7 days/week)	247	48.6	195	38.4	
Seven days/week	14	2.8	43	8.5	
Days they went to physical educational class weekly					
Ever	216	42.5	443	87.2	$\chi^2=239.3$ P \leq 0.001
Sometimes (<5 days/week)	250	49.2	49	9.6	
Five days or more	52	10.2	16	3.1	
Sport teams they are playing in during the past 12 months					
Never	337	66.3	431	84.8	$\chi^2=47.1$ P \leq 0.001
one or more	171	33.7	77	15.2	
Were they taught, in any of their classes during this academic year, the benefits of physical activity					
	231	45.5	177	34.8	$\chi^2=11.9$ P \leq 0.001
Spent three or more hours/day doing sitting activities such as; watching television, playing computer games, talking with friends during a typical or usual day					
	246	48.4	319	62.8	$\chi^2=21.3$ P \leq 0.001
Did not walk or ride a bicycle to and from school during the past seven days					
	149	29.3	424	83.5	$\chi^2=302.7$ P \leq 0.001

Almost half (51.8%), more than one third (38.7%), almost two fifths (40.1%), more than two

fifths (44.1%), and more than half (57.7%) of Egyptian students compared to approximately two thirds

(64.8%), almost half (47.2%), three fifths (60.6%), more than half (56.9)%, and more than one third (36.8%) of Saudi students missed classes or school without permission on one or more days in the past 30 days, mentioned their schoolmates that they were kind and helpful most of the time or always in the past 30 days, responded that their parents or guardians never or rarely checked their homework to see if it was done

and never or rarely understood their problems and worries in the 30 days preceding the survey, and finally mentioned that most of the time or always their parents or guardians really knew what they were doing with their free time respectively. There were statistically significant differences between Egyptian and Saudi adolescent school students (table 7).

Table (7): Female adolescent students' experiences at school and at home

Items	Egyptians (508)		Saudis (508)		Test/ Sign.
	No	%	No	%	
Missed classes or school without permission on one or more times in the past 30 days	263	51.8	329	64.8	$\chi^2=17.6$ $P\leq 0.001$
Most of the students in their school were kind and helpful during the past 30 days					
Never or rarely	172	33.9	156	30.7	$\chi^2=7.9$ $P=0.02$
Sometimes	139	27.4	112	22.0	
Most of the time or always	197	38.7	240	47.2	
Parents or guardians checked to see if students' homework was done during the past 30 days					
Never or rarely	204	40.1	308	60.6	$\chi^2=47.9$ $P\leq 0.001$
Sometimes	105	20.7	90	17.7	
Most of the time or always	199	39.2	110	21.7	
Parents or guardians understood students' problems and worries during the past 30 days					
Never or rarely	224	44.1	289	56.9	$\chi^2=16.7$ $P\leq 0.001$
Sometimes	101	19.9	79	15.6	
Most of the time or always	183	36.0	140	27.5	
Parents or guardians really knew what students' were doing with their free time during the past 30 days					
Never or rarely	122	24.0	230	45.3	$\chi^2=56.6$ $P\leq 0.001$
Sometimes	93	18.3	91	17.9	
Most of the time or always	293	57.7	187	36.8	

4. Discussion

Despite the enormous health-related behaviors surrounding the age group of adolescents, few researchers have simultaneously been conducted on female gender's dietary behaviors, hygiene, violence, mental health, physical activity, and their experiences at school and at home.

Although both the Egyptian and Saudi female adolescents were matched in the educational stage, Saudi female students were older. This may be interpreted in relation to delayed age of school entrance among Saudi female children, or low student achievement and grade repetition due to the country educational system, which put strong emphasis on religious studies in schools instead of mathematics or science.^[20]

One in four students of both Egyptian and Saudi female adolescents reported that they are either slightly overweight or very obese. Previous studies have shown the similar results; and found rates of obesity of 25% for girls.^[21&22] Mean while, it is heartwarming to found that very few female

adolescent students reported being hungry because of lack of food in their homes, which is similar to many Global School-Based Student Health Surveys conducted in Mongolia, China, Thailand, United Arab Emirates, and Lebanon between 2005 and 2010.^[23-26]

The majority of female adolescents in both Egyptian and Saudi groups reported that they sometimes or always ate breakfast during the past 30 days. However, the findings of Al-Hazzaa et al.^[27] contradicted with as, they reported that the majority of Saudi adolescents are skipping breakfast. However, a high percentage of Egyptian female adolescents mentioned that they ate fruits and vegetables at least once per day, while fruit, and vegetable consumption by Saudi adolescents was less by 37% and 7.3% respectively. This is going with a study conducted by Musaiger^[28] who highlighted that, recently the intake of animal products and refined sugar increased, while the intake of fruit and vegetables and complex carbohydrates decreased.

On the same context, less than three fourths of both Egyptian and Saudi female adolescents frequently consumed unhealthy dietary items, as they usually had drunk carbonated soft drinks at least once per day during the past 30 days. However, Eaton et al.^[29] finding is much lower than one-third (29.2%) prevalence reported for Soda intake by Saudi adolescents. In addition, the overall weekly frequency of fast-food intake was three folds and significantly higher among Saudi group than in Egyptian one, which, may be attributed to economic reasons. Such percentages are much lower than the rate of fast-food intake reported in recent two studies carried on male and female Saudi adolescents in Riyadh and Dubai.^[30&31]

The prevalence of hygienic behaviors regarding teeth brush frequency, and hand washing in relation to eating and using the toilet was found in the present study as remarkably higher among Saudi female adolescents than Egyptian ones. This is matched with the findings of another local study conducted on adolescent males and females enrolled in secondary schools from three major cities in Saudi Arabia: Riyadh, Jeddah, and Al-Khobar.^[27]

Equally, 3-4 out of 10 female students under study both in Egypt and in Saudi Arabia were in interpersonal violence (physical fight or physical attack) one or more times during the past 12 months. This is consistent with the results of other two studies, revealed that 36% and 37% of adolescents, in Lebanon and Oman respectively, have encountered some sort of violence in their daily lives.^[26&32] Another study reported that the prevalence of experiencing violence among Mexican (14%) and Egyptian (17%) youth who attend public school, which is relatively low compared to what is found in the present study.^[33] Furthermore, in the current study Egyptian female adolescents mentioned that they suffered from serious injuries more than Saudi adolescents did during the past year. Falling was relatively the most common cause of unintentional injuries among female adolescent students of both groups, which was roughly comparable to other countries as; Lebanese females (28.4%), Indonesia (33.7%), the Philippines (45.0%), and Thailand (34.1%).^[25&26] In the same trend, Adnan et al.^[34] found that the prevalence of unintentional injuries is mostly high among adolescents of the developing countries, including Egypt.

During the past 30 days period, more than one tenth of Egyptian female adolescents rode in a motor vehicle driven by someone who had been drinking alcohol one or more times. This percent declined to a minority among Saudi group because they usually rode with a private driver or one person from the family (father or brother). This is particularly

problematic as it indicates that adults are having a bad model for many schoolchildren.

Egyptian female adolescents accounting for more than three fifths in preparatory and secondary schools reported higher rate than Saudis representing more than half of being bullied or experiencing aggression from other students during the past 30 days. However, these prevalences are similar to the rate of bullying reported in a previous study about Egypt compared with other 3 North African countries examined^[35], as well as the rates reported from previous two studies from countries in other high-income and low-income regions of the world.^[16&36] Overall, the large proportion of female adolescents in both groups reported that they were bullied through verbal comments or gestures rather than physical or spiritual bullying. Other studies supporting these results, mentioned that, girls tend to bully other girls indirectly through verbally share or socially by media with other girls hurtful information about the targeted victim, in contrast, boys, who tend to be physically aggressive (e.g., hit, kick, slap, push, or punch).^[37-40]

The study revealed wide existence of feeling lonely, and being worried among females of this age group, with the Egyptian group, they more likely expressed these negative feelings than the Saudi ones with slightly more percentages. These findings are in agreement with other studies, which found that cultural background plays a definitive role in the experience of loneliness,^[41-44] while another study described felt so worried to the extent of insomnia as one of the emotional symptoms of depression.^[45]

Overall, levels of hopelessness in this study were also high representing more than half of both groups. In this respect, Abdel-Aziz and his colleagues^[46] found similarly significant high rates of depressive symptoms in the form of feelings of hopelessness and sadness among adolescent high school students. More than 1 in 10 of Egyptian female adolescents compared with 1 in 20 of Saudi ones did not have close friends at all. Previous studies reported similar findings.^[25,26&44]

Despite insufficient levels of physical activity, Egyptian adolescent females were found to be more active than their Saudi peers were. This is consistent with the results of many other studies conducted in similar cultures,^[47-52] and others carried out in different cultures but similar Middle East lifestyle patterns, which concluded high inactivity levels among female students.^[53-55] Reasons for the observed similarities may be explained in terms of a trend towards replacement of an active lifestyle with an increasing frequency of sedentary routines in daily life.^[56]

Lack of physical activity among almost half of Egyptian and Saudi female adolescents is

compounded by spending three or more hours a day doing sitting activities. In addition, it was worrisome that female participation in sports team or even single simple sports was very poor overall students of the study sample. This may be due to the social and Islamic cultural backgrounds of the study in two Arabic countries, Egypt, and Kingdom of Saudi Arabia. A previous survey conducted on Mongolian school students reported similar findings.^[25]

Missed classes or school without permission in one or more times despite the sense of kindness and helpfulness from peers at schools and parents or guardians who checked that homework was done, all those issues were interrelated. During the past 30 days unexpectedly, about 3 in 5 female adolescents of both Saudi and Egyptian groups declared that they missed classes or school without permission on one or more times, one out of three of both Egyptians and Saudis, responded that most of the students in their school were never or rarely kind and helpful and almost two fifths of Egyptians compared with approximately three fifths of Saudis reported that their parents or guardians never or rarely checked to see if their homework was done during the past 30 days.

Many conducted surveys discussed similar findings^[24-26,32&44] mentioned that, among female adolescents, school attendance may be related to their health and well being and satisfaction with school.^[57] Students enjoy the school atmosphere when everyone feels that most of their friends are kind and helpful.^[44] There were significant differences between Saudi and Egyptian groups, which may be related to social pattern of Saudis' families that mainly depend on nannies unlike the Egyptians' families. On the other side, adolescent stage is, characterized by the pattern of social cohesion, willingness to engage within a group and poor ability to accept or help others outside this group.

As regards to parents or guardians understood their daughters' problems and worries and knowing what they were doing with their free time during the past 30 days, the Egyptian parents were found to be significantly more likely capable to be aware of their daughters in this context than Saudi parents were. Many previously conducted surveys showed similar results and concluded that, without adequate regulation and monitoring, students at this critical age do not learn to self-regulate, tend to be impulsive, more susceptible to peer influences, and more likely to engage in various health risk behaviors including alcohol use and sexual risk behaviors.^[24-26,32,44&58] Parental bonding and connection is associated with lower levels of harmful behaviors, and violence.^[59]

Conclusion

This comparative study had provided a baseline data on the prevalence of health behaviors associated with the Egyptian and Saudi adolescent female school students aged 10-19 years. Comparison with other countries, which implement the School Health Surveillance, showed that risky behaviors among school students were more or less similar. The current results showed important and alarming behaviors; highlighted the need for organizing and establishing future executive plan of action to promote the female adolescent students' health.

Recommendations

Empowering the components of school health program in Egypt and Kingdom of Saudi Arabia.

Similar surveys should be carried out periodically; as they are considered a base of surveillance system to detect health-related behaviors of all school students.

Limitation

Although the authors were attending classes at times of distribution and collection of questionnaire sheets and were ready to clarify any inscrutable question, they were not sure that students fully understood the questions as they meant. As well despite careful and well thought out definitions of terms included in the survey sheets, students often answered questions without reading such definitions.

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