Relationship between screen watching and overweight or obesity in a Sample of Iraqi adolescents

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Abstract

Background: Obesity represents a clear and present danger to the health of children and adolescents. Its prevalence among American youth has doubled in the past 3 decades, and there are now more overweight and obese adults in the United States than adults of normal weight.

Objectives of the study:

1- Finding whether screen watching among adolescents has an effect on increasing prevalence overweight and obesity.

2- The effect of other variables like physical activity, eating in front of screen, eating under stress on obesity and overweight among the subjects sample.

Patients &Methods: During 3 months period a cross sectional survey was conducted on 4 high schools at Baghdad with total sample of 500 subjects using time table to assess screen watching hours per week,

Results:Higher percentagesof overweight & obesity were found among female adolescents than males, significant associations was obvious among total sample & male sample betweenthe level of physical activity & BMI,while there was no significant association among female sample for the same variables , There was obvious significant association between BMI a *time spending in screen watching, eatingin front of screen, , eating under stress*in the total & male samples.

Conclusion: Increased levels of physical activity are associated with a lower BMI and less time spent on screen watching .in addition .stress-induced eating may be one factor contributing to the development of obesity; furthermore habits like eating in front of screen could increase BMI of an adolescent.

Keywords: BMI, screen time (TV, Computer, Video games), physical activity, adolescents

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Introduction:

Obesity is a major and rapidly growing global public health concern and is associated with significant morbidity and mortality [1-2]. In the past three decades, obesity has tripled among adolescents [3] and more than doubled among 20–39 year olds in the U.S. [4]. A substantial amount of weight gain [5-8], concomitant with precipitous declines in physical activity [9-12], occurs in the transition from adolescence to young adulthood.

Physical activity and sedentary behavior have become major focal areas in obesity research, interventions, and policies. Both have been linked to obesity among adolescents [13-16] and adults [18-20] in observational studies and assessed as target behaviors in randomized controlled trials among young children and adolescents [20-25], but full understanding of optimal behavior patterns for obesity prevention is far from complete. Sedentary behaviors, such as television viewing and computer games, may influence energy balance through displacement of physical activity [25], increased energy intake [26,27], or reduced metabolic rate [29].

Physical activity and sedentary behavior often co-occur [29,30] despite being inversely correlated [25,31], but there are few studies that examine their combined effects on obesity development over time. Furthermore, longitudinal effects from adolescence to adulthood are particularly important due to high risk of obesity onset and the abundance of changes in lifestyle and environment during this transition period [32,33]. Unfortunately, longitudinal studies examining physical activity and sedentary activity in relation to obesity are sparse: the only American observational cohort that captures the adolescent to adulthood transition is limited to females in three cities [16]; international studies that capture this lifecycle phase assess sedentary activity [13,33] or physical activity [35,36], but not both; and randomized controlled trials are usually of short duration (less than one year) [20-23,37] and do not continue into young adulthood [24].

Obesity is easily recognized but difficult to define precisely. It is generally considered that persons who are 20% over the ideal weight for their height and bone structure are obese. BMI of 25 which exceeds the 85th percentile for men and women is considered to be overweight.

(BMI is (weight (kg) / height (m2)).Excess weight is considered to be fat, although persons who are specially muscular may be overweight but not fat.[37] In the past decade, overweight and obesity among adolescence has become a major public health problem in developed and developing countries [37–39].

Adverse outcomes of overweight and obesity include psychological and physical effects during adolescence and also increased risk of adult obesity, which is a major independent risk factor for cardiovascular diseases, diabetes, hypertension and cancers [38]., and other disorders.[37,38] Some of the other disorders would include liver disease, early puberty or menarche, eating disorders such as anorexia and bulimia, skin infections, and asthma and other respiratory problems.[38] Studies have shown that overweight adolescence are more likely to grow up to be overweight adults.38]

Obesity during adolescents has been found to increase mortality rates during adulthood.[40]This epidemic of adolescences overweight is worldwide; The increasing rates are a result of changing lifestyles and industrialization with the associated increasing rate of television viewing and playing with computer games, consumption of high calorie and high fat foods coupled with low levels of energy expenditure in the form of low physical activity [37]. . Abnormal weight in adolescents is still considered by experts to be caused by an imbalance between diet and habit; although hormonal etiology is also important especially in adolescence and play an important role in weight changes in both genders [40].This study was conducted to determine the prevalence of obesity and overweight among a sample of Iraqi adolescents and if there is an effect of screen time watching on that.

Aim of the study:

1- Finding whether screen watching among adolescents has an effect on increase overweight and obesity.

2- The effect of other variables like physical activity, eating in front of screen, eating under stress on obesity and overweight among the subject sample.

Methods:

A cross sectional study was conducted in 4 high schools in Baghdad since the first of Jan. till the 30th of March 2012, data were obtained from 500 students with total number of 250 females & 250 males high school students between 10th- 12th grades.

Students had completed an interview questionnaire to identify usual patterns of physical activity, Subjects were presented with 7-days timetables and asked to recall, on an hourly basis, on which they reported screen viewing time on an hourly basis (including time spent watching videos or playing video games, TV, computer screen). Timetables were completed for school and weekend days.

The average daily time spent in each activity was computed. Screen time was based on reported time spent viewing television, videotapes, or playing video games, computer screen,. Subjects completed other questionnaire grids that ask about eating under stress, eating in front of screen, type of physical activity, were it was classified as no physical activity 1-3 hours / week, > 4hours / week

The B.M.I (body mass index) then was calculated for each student from subject's height and weight which were ascertained in the questionnaire by range-based values selected by the students. The B.M.I calculated by this equation: BMI = weight (Kg) /height^2 (m^2)

In this study, the combined association of physical activity and TV/video viewing (screen time) on incident obesity in a survey of adolescents was assessed. It is hypothesized that cross-sectional and longitudinal patterns of physical activity would mitigate the adverse association between sedentary behavior and both current and incident obesity.

Statistical analysis:

Data were entered and analyzed by Mini Tab version 13. The following statistics were used:

1. Descriptive statistical: frequency Tables (No. & percents), mean and standard deviation.
2. Inferential statistical: student t test was used to find the difference in mean between two groups, while one way

ANOVA was used to find the difference in mean among three groups.
P-value <0.05 was considered statistically significant.

Results:

The total sample which was included in the study was 500 students of which were evenly chosen as 50% female and male participants as shown in table (1).
The results showed that there was significant association between the level of physical activity & BMI those with low level of physical activity(PA) were (31.8%) those with no physical activity,31.6% had 1-3 hr PA/ week, while only 29.6% of the sample had 1-4 hr. PA/week, similar results as significant association was obvious with the male participants as shown in table (2) (3) respectively , meanwhile there was ***no***statistical associationdiagnosed between level of physical activity and BMI among female sample *p value* = ***0.369*** (table 4).
Regarding distribution of BMI in those with no physical activity , and PA 1-3 hr./week regarding gender show no statistical association (table 5,6).
There was nosignificant association*among the total sample*, between BMI distribution in those with PA >4 hr regarding gender*p value*=***0.468*** (table 7)
There was obvious significant association between BMI and different levels of time spending in screen watching among the total sample & male sample of adolescents as shown in table (8),(9)respectively ,regarding female participant, a significant association also was found concerning BMI & different levels of time spending in screen watching (*p value* =***0.036***) as shown clearly in table (10).
Regarding relation of BMI with eating under stress, there was significant association among the total sample& female sample between the two variables(tables, 11, 13respectively) were p value = **0.041, 0.019** respectively, yet there was no association among male samples(table12).

Significant Association was shown among male sample, the total sample&female sample regarding BMI and eating in front of screen(table 14, 15,16) *p value* =***0.000, 0.002, 0.024***respectively

Discussion:

Physical activity & obesity:
In this study The result shows that statistical association was clearly shown at the total sample & female male sample between level of physical activity and BMI meanwhile no statistical association was diagnosed among female sample for the same variables.
similar results were shown In a study done by(Joey C., et,al) 45% reported of over all participating in moderate physical activity (MPA) ≥3 d/wk, 65% reported participating in vigorous physical activity (VPA) ≥3 d/wk, Boys reporting six to seven bouts of MPA had a significantly lower BMI compared with boys reporting three to five or less than two. The mean BMI differed significantly between the lowest and highest levels of MPA groups in girls. The mean BMI was significantly lower in the highest VPA group compared with the other two groups in both sexes.

Time spends watching screen & obesity:
In the present study there was significant relation between BMI and different levels of time spent in screen watching among the total sample & male sample of adolescents, yet, no significant association was found among female sample,
Even with bouts of physical activity, more time spent in front of a screen during adolescence is associated with increased obesity in both adolescence and young adulthood, and the association is greater among females than males [(42)]
At the (Joey C et, al. study) a graded response existed between TV and overweight in both sexes. Boys and girls were ~20% to 25% less likely to be classified as overweight if they reported 2 to 3 hours of TV per day and ~40% less likely to be classified as overweight if they reported ≤1 hour of TV per day compared with those who watched ≥4 hours of TV. In general, youth who engaged in less physical activity watched more TV per week. [41]
Eating in front of screen & obesity:

Significant association was shown among male sample, the total sample& female sample regarding BMI and eating in front of screen(table 14, 15, 16).

Limit television-viewing time. There is a direct relationship between the amount of time spent watching TV and degree of overweight. TV-viewing can directly cause obesity through replacing physical activity, increased eating while watching, and reduced metabolism while watching. Television can also have an indirect effect; advertising can influence kids to increase their calorie intake by eating and drinking more junk food/beverages.[43]

Eating under stress & obesity:

Regarding relation of BMI with eating under stress, there was significant association among the total sample & female sample between the two variables, yet there was no association among male .

Behaviors such as making food choices can be impacted by psychosocial factors such as stress, anger, depression, and anxiety. Stress has been defined as the demands between individuals and their internal and external environment that influence behavior [44]

Individuals' cognitive appraisal or perception of their experiences as being stressful depend on whether they perceive the experience as exceeding their resources or their ability to cope.(45) Eating in response to stress has been well-documented in the health and psychology literature.(46-48)

The inability of individuals to satisfy needs successfully may be perceived as a stressor and individuals may engage in emotional eating as an alternative to fulfill their needs(48) Emotional and stress responses to life events, either directly or indirectly, have been associated with abnormal eating behaviors and have been shown to affect food consumption and body weight.(49-50) Stress, as a psychosocial factor, has been identified as one of the predictors of relapse and overeating among dieters.(50)

Conclusions:

Increased levels of physical activity are associated with a lower BMI and less time spent on screen watching .in addition .stress-induced eating may be one factor contributing to the development of obesity; furthermore habits like eating in front of screen could increase BMI of an adolescent

Recommendations:

Obesity is a complex, multifactor problem, and effective solutions require comparable sophistication. Although the causes of obesity have not been exhaustively and precisely characterized, there are choices that can combat the problem and reduce its impact. As with most interventions, prevention typically trumps treatment, and policymakers should keep that in mind while developing policies.

- Increase opportunities for and access to physical activity, including support for evidence-based physical education curricula.
- Messages to decrease time spent watching screen should be emitted to adolescent age group accompanied by family supervision.
- Future studies that measure biological markers of stress will assist our understanding of the physiologic mechanism underlying the stress-eating relation and how stress might be linked to neurotransmitters and hormones that control appetite.
- Fund promising demonstration projects addressing disparities in obesity rates and further research into culturally responsive alternatives.

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Table (1): Distribution of the sample BMI variable by gender

Gender	N (%)	BMI		P value
		Mean	StDev	
Male	250 (50)	23.98	3.90	0.000
Female	250 (50)	22.32	2.85	
T-Test: T-Value = 5.45				

Table (2): Distribution of total studied sample BMI with different levels of physical activity.

Physical activity	N (%)	BMI		P value
		Mean	StDev	
NO.PA	159 (31.8)	24.79	4.04	0.00
1-3 hrs	193 (38.6)	23.16	3.33	
>4 hrs	148 (29.6)	21.70	2.78	
one way ANOVAs analysis: F= 27.91				

Table (3): Distribution of Male BMI with different levels of physical activity.

Physical activity	N (%)	BMI		P value
		Mean	StDev	
NO.PA	83 (33.2)	28.517	3.256	0.00
1-3 hrs	56 (22.4)	25.517	3.072	
>4 hrs	111 (44.4)	21.604	3.072	
one way ANOVAs analysis: F= 94.23				

Table (4): Distribution of Female BMI by with different levels of physical activity.

Physical activity	N (%)	BMI		P value
		Mean	StDev	
NO.PA	76 (30.4)	22.69	2.71	0.369
1-3 hrs	137 (54.8)	22.20	2.94	
>4 hrs	37 (14.8)	21.99	2.81	
one way ANOVAs analysis: F= 1.00				

Table (5): Distribution of the BMI in those with no physical activity regarding gender.

Gender	N (%)	BMI		P value
		Mean	StDev	
Male	83 (52.2)	28.52	3.26	0.000
Female	76 (47.8)	22.69	2.71	
T-Test: T-Value = 9.95				

Table (6): Distribution of the BMI in those with 1-3 hrs physical activity regarding gender.

Gender	N (%)	BMI		P value
		Mean	StDev	
Male	56 (29.02)	25.52	3.07	0.000
Female	137 (70.98)	22.20	2.94	
T-Test: T-Value = 6.89				

Table (7): Distribution of the total sample BMI in those with >4 hrs physical activity regarding gender.

Gender	N (%)	BMI		P value
		Mean	StDev	
Male	111 (75.0)	21.60	2.78	0.468
Female	37 (25.0)	21.99	2.80	
T-Test: T-Value = 0.73				

Table (8): Distribution of total sample BMI with different levels of time in screen watching per week.

Time of Screen watching(Hrs/Wks)	N (%)	BMI		P value
		Mean	StDev	
< 10 hr.	75 (15.0)	21.95	2.72	0.001
10-20hr.	115 (23.0)	22.80	2.93	
> 20 hr.	310 (62.0)	23.57	3.80	
one way ANOVAs analysis: F= 7.27				

Table (9): Distribution of male BMI with different levels of time in screen watching per week.

Time of Screen watching(Hrs/Wks)	N(%)	BMI		P value
		Mean	StDev	
< 10 hr.	31 (12.4)	22.23	2.71	0.017
10-20hr.	34 (13.6)	23.67	2.88	
> 20 hr.	185 (74.0)	24.34	4.15	
one way ANOVAs analysis: F= 4.12				

Table (10): Distribution of female BMI with different levels of time in screen watching per week.

Time of Screen watching(Hrs/Wks)	N(%)	BMI		P value
		Mean	StDev	
< 10 hr.	44(17.6)	21.56	2.74	0.036
10-20hr.	81 (32.4)	22.34	2.89	
> 20 hr.	125 (50.0)	22.83	2.87	
one way ANOVAs analysis: F= 3.44				

Table (11): Distribution of total sample BMI regarding eating under stress.

Eating under stress	N (%)	BMI		P value
		Mean	StDev	
Yes	395 (79.0)	22.97	3.35	0.041
No	105 (21.0)	23.85	4.01	
T-Test: T-Value = -2.07				

Table (12): Distribution male BMI sample regarding eating under stress

Eating under stress	N (%)	BMI		P value
		Mean	StDev	
Yes	211 (84.4)	23.78	3.69	0.110
No	39 (15.6)	25.10	4.79	
T-Test: T-Value =-1.63				

Table (13): distribution of female BMI sample regarding eating under stress

Eating under stress	N (%)	BMI		P value
		Mean	StDev	
Yes	184 (73.6)	22.03	2.63	0.019
No	66 (26.4)	23.11	3.29	
T-Test: T-Value =-2.39				

Table (14): Distribution of total sample BMI sample regarding eating in front of screen

Eating in front of screen	N (%)	BMI		P value
		Mean	StDev	
No	116 (33.2)	22.00	2.92	0.000
Yes	384 (66.8)	23.50	3.61	
T-Test: T-Value =-4.58				

Table (15): distribution of male BMI sample regarding eating in front of screen variable

Eating in front of screen	N (%)	BMI		P value
		Mean	StDev	
No	44 (17.6)	22.48	3.34	0.002
Yes	206 (82.4)	24.31	3.94	
T-Test: T-Value =-3.18				

Table (16): Distribution of female BMI sample regarding eating in front of screen variable

Eating in front of screen	N (%)	BMI		P value
		Mean	StDev	
No	72 (28.8)	21.70	2.62	0.024
Yes	178 (71.2)	22.57	2.91	
T-Test: T-Value = -2.28				

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