

Impact of Internet Addiction on Lifestyle and Dietary Habits of Secondary School Adolescents

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Abstract Background: Adolescents are the most vulnerable group for internet addiction which can have a negative impact on adolescents' diet, exercise and nutrition. **Objective:** To determine the impact of internet addiction on lifestyle and dietary habits of secondary school adolescents. **Methods:** A cross-sectional design was utilized from January to May 2018 at four governmental secondary schools in Assiut city. It comprised of a stratified sampling technique of 400 adolescents aged from 15-17 years old. Two tools included: Internet addiction test, and lifestyle pattern and dietary habits questionnaire to collect the data. **Results:** There was a statistical significant relation between levels of internet addiction and lifestyle of the studied adolescents. Also, there was statistical significant relation between levels of internet addiction test and change in dietary habits of the studied adolescents. **Conclusion:** Adolescents students who had significant problem from internet use complained of irregular bedtime, sleep disturbance, used tobacco, eat big meals, had loss of an appetite, and had fast eating speed more than their counterparts who had control over internet use. **Recommendations:** Raising adolescents' awareness through mass media and health education program in the schools and family-centered care about adverse effects of internet addiction on their lifestyle and dietary habits.

Keywords: adolescents, dietary habits, internet addiction, lifestyle

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1. Introduction

Now digital technologies highly interfere not only with the life of young adults and adults but also-and mainly-with the life of children and adolescents. Although the use of technology as a learning tool holds much promise for children, the misuse of technology can have the opposite effect and internet activities might interfere with healthy eating, sleep habits, and bed time of children and adolescents [1].

Internet addiction (IA) is "defined as overuse of the internet leading to impairment of an individual's psychological state (both mental and emotional), as well as their occupational and social interactions [2]. Adolescents are the most vulnerable group for internet addiction. As they prefer to communicate with others on social networking sites rather than the actual contact in the real world [3]. Internet addiction in adolescence can have a negative impact on adolescents' diet, exercise and nutrition [4].

The total number of worldwide internet users was estimated as 1.2 billion in the year 2000 and jumped to be 3.17 billion in 2015 [5]. According to [6] about 29 million

users in 2012, increased to about 54.6 % of the population in 2015. While reaching to 34.800 million users in 2017 in Egypt [7] and jumped to be 49.231 million users in 2018 in Egypt [8].

Internet addiction among adolescents widely varies through international estimates. The prevalence of adolescent's internet addiction was reported between 7.9 % and 22.8 % [9]. Also, there were 145 million internet users aged 6 to 19 years [10]. Adolescents spend long time on the internet and this can cause sleep deprivation, irregular bedtime hours, inactivity, irregular eating habits, skipping meals, eating an unbalanced diet and affect other similar activities of daily life [11,12].

Internet addiction has an adverse effect on several lifestyle related factors in adolescents. It can result in irregular dietary habits, extended periods of time spent on the internet, physical inactivity, short duration of sleep and increased use of tobacco. Also, they have reported that the change in lifestyle related factors caused by heavy internet use could have an adverse impact on the growth and development of internet addicts [2,13].

Children should be educated as to what a balanced diet and optimum physical activity routine is to remain healthy and grow. Furthermore, the government should take an active role in designing and evaluating internet addiction

related health intervention strategies. Given the likely adverse effects of internet addiction on adolescents' development because of poor dietary behavior, it is critical for pediatric nurse to raise awareness about internet addiction. Close attention should be paid to students at risk of internet addiction, as well as students at low risk to prevent them from becoming addict to the internet [2].

1.1. Significance of the Study

High-risk internet users have improper nutritional manners and poor diet quality which could result in stunted growth and development of adolescents (Kim et al. 2010). Nevertheless, knowledge of the impact of IA on the dietary behavior of adolescents is limited. So, in this study; we will examine the relationship between IA and its effect lifestyle and dietary habits of secondary school adolescents.

2. Aim of the Study

The current study aimed to determine the impact of internet addiction on lifestyle and dietary habits of secondary school adolescents.

3. Research Question

What is the impact of internet addiction on lifestyle and dietary habits of secondary school adolescents?

4. Subjects and Methods

4.1. Design and Setting

A cross-sectional design was utilized from January to May 2018 at four governmental secondary schools represented all directions in Assiut city. These included; El- Gamaa Al Mowhada (for girls), Fossil El-Walidya (for girls), Gamal Farghaly Sultan (for boys), and Nasser El-Askarya (for boys) secondary schools. It comprised of a stratified sampling technique of 400 adolescents.

4.2. Sampling Technique

A list of all governmental secondary schools was obtained from the directorate of education in Assiut City. One school was selected randomly from each direction (North, South, East, and West) in Assiut City. The researcher followed a stratified random sampling technique inside each school. Two classes for each grade (first and second) were chosen randomly from each school. The number of students in each class ranged from (20-30) students. The researcher interviewed all children to fill the sheet in the selected classes. Adolescents' consents for participation were gotten in this study after explaining the aim of the study.

4.3. Sample Size Estimation

Sample size was detected using Epi info version 3 with precision levels 5% where confidence level is 95% and

$p \leq 0.05$. After estimating the total number of secondary schools students in all public schools in Assiut city, which was 4995. The actual sample size was 357 students. It was increased to 450 to compensate any drop out. Approximately, 50 students were excluded because of either incomplete data or they didn't want to participate in the study.

4.4. Procedure

Two tools were included after reviewing the relevant literatures: Tool (I) internet addiction test: It was adopted from [14]: It contains a 20-item. The adolescents were invited to rate the items on a five-point Likert scale extending from (1 to 5). For every response: rarely=1, sometimes= 2, frequently =3, often = 4 and always = 5. The minimum score was 20, while the maximum was 100; the higher the score the greater the problems of internet use. A score of 20-49 was an average online user who has control of usage, a score of 50-79 indicated occasional to frequent problems due to internet use, and a score of 80-100 indicated that the internet is causing significant problems. IAT domains showed good to moderate internal consistency (alpha coefficients ranged from 0.63 to 0.82). Tool (II) included two parts: Part one; lifestyle pattern adapted from [2] composed of 4 items as bed time to assess regularity of bed time, sleep disturbance and tobacco use within the latest 3 months. The researcher excluded the fourth item (alcohol use) because this item doesn't match with our culture. The students were asked to answer each item either with "Yes" or "No". Part two included dietary habits questionnaire; it was developed by [15] it included changes in meal size, changes in appetite and changes in eating speed

An official permission to collect the data was obtained from Ministry of Education in Assiut governorate. The tools were prepared, translated into Arabic language and reviewed by five experts in the field of pediatric nursing to ascertain their content validity index, it was 0.97. Internal consistency of the Arabic version of the tools was done using alpha Cronbach test. Alpha coefficients were 0.94 for internet addiction test and ranging from 0.68 to 0.81 for tool two. This indicated good reliability.

The study proposal was accepted by Ethical Committee of the Faculty of Nursing. The adolescent students were informed about the study and they were advised that they were under no obligation to participate in the study and the study will not affect their education or assessment. Confidentiality and anonymity were assured. Adolescents had the rights to refuse to participate in the study without any rational. The pilot study was carried on 40 (10%) adolescents. It was accomplished to estimate the feasibility and clarity of the study tools and the desirable time to accomplish the questionnaire. It was excluded from the total sample. Time needed to fill out the sheet was 15-20 minutes.

Data collection was done by the researchers during the school day. The data were collected according to every school day. The actual work started by meeting the school manager in the morning. Firstly, the researchers introduced themselves to and gave them a complete background about the study and the sheet format which was pre-designed by the researchers in Arabic language in

order to collect the required data. Then the researchers went to students' classroom during activity lesson and introduced themselves, also, explained the research aim. After that the questionnaire was distributed. The researcher invited the students to participate in the study by filling out questionnaire.

Students were asked to read each question carefully and to answer the questions honestly. Students were asked to circle the answer that best describe them. The researchers were available for more clarification whenever needed. Students' participation was voluntary and once the student completed the questionnaires, the researchers collected the questionnaires from the students by themselves in every visit. The time needed was about 45 – 60 minutes for each class. The researcher visited each school from three to four times per week to collect data.

4.5. Data Analysis

The data were analyzed for normality by the Anderson-Darling test and for homogeneity variances before starting the statistical analysis. The number and percent were used in categorical variables which were compared by Chi-square test and Fisher exact test. While, Mean and SD were used in continuous variables which were compared by One-way ANOVA test and t-test. Also, P-value was considered significant if it was below 0.05. The correlation between variables was computed by using the Pearson and Spearman correlation. The statistical analysis was done by using IBM SPSS 20.0 software.

5. Results

Table 1: Indicates the biosocial data of studied adolescents and their mothers. It revealed that the majority of students aged between 16 and 17 years old (39.5% and 44% respectively) with the mean age of 16.32 ± 0.81 years. Male to female ratio was 1:1. Also, it was noticed that near half of mothers (48%) hold a university qualification, while 37.75% of them graduated from secondary school but only 7.5% hold master & doctoral degree. Regarding mothers' working condition more than half of mothers

(57.25%) were working compared to 42.75% of them were housewives. There was a major difference regarding residence whereby 85.5% of students live in urban and only 14.5% reside in rural areas.

Figure 1: It was clear from the figure that more than one-third of studied adolescents (36.75%) had control over internet use, while 40.75% of students had occasional to frequent problem due to internet use. The studied adolescents who were more likely to have significant problem from internet use were 22.5%.

Table 1. Biosocial data of studied adolescents and their mothers (n=400):

Biosocial data	No	%
Age (years):		
15-	66	16.5
16-	158	39.5
17	176	44.0
Mean \pmSD	16.32\pm0.81	
Gender:		
Male	200	50.0
Female	200	50.0
School class:		
First grade	200	50.0
Second grade	200	50.0
Level of mother's education:		
Illiterate	8	2.0
Read and write	3	.75
Basic education*	16	4
Secondary	151	37.75
University	192	48.0
Master & doctoral degree	30	7.5
Mother's working condition:		
Working	229	57.25
Housewife	171	42.75
Residence:		
Rural	58	14.5
Urban	342	85.5

*Basic education was two primary and fourteen preparatory educations.

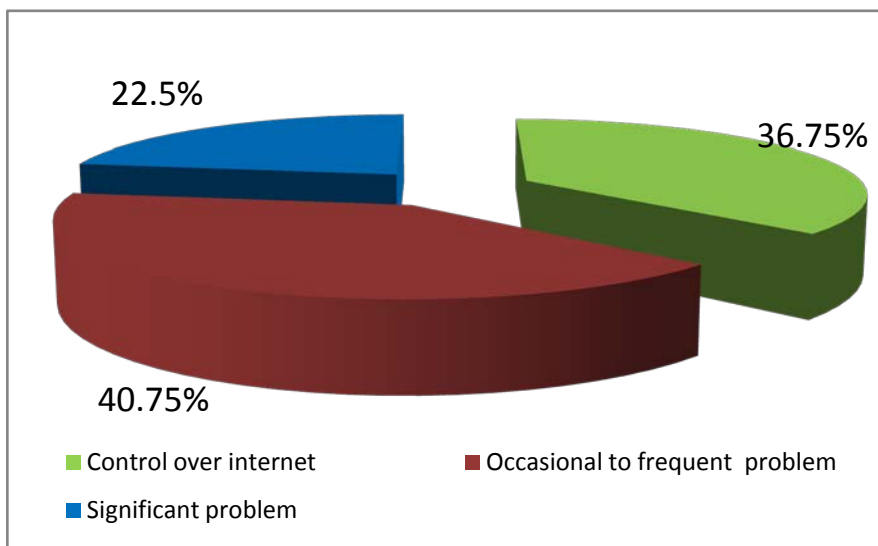


Figure 1. Levels of internet addiction of the studied adolescents (n=400)

Table 2. Relationship between internet addiction and life style of the studied adolescents

Lifestyle	Total	Internet addiction levels						X ²	P. value
		Control over internet		Occasional to Frequent problem		Significant problem			
		No	%	No	%	No	%		
Bedtime:									
• Always regular	18	17	94.4	0	0.0	1	5.6	182.96	<0.001**
• Often regular	144	106	73.6	24	16.7	14	9.7		
• Not regular	238	24	10.1	139	58.4	75	31.5		
Sleep disturbance:									
• No	163	126	77.3	23	14.1	14	8.6	194.66	<0.001**
• Yes	237	21	8.9	140	59	76	32		
Tobacco use:									
• No	325	134	41.2	135	41.5	56	20	31.12	<0.001**
• Yes	75	13	17.4	28	37.3	34	45.3		

Table 3. Relationship between internet addiction test and changes in dietary habits of the studied adolescents (n=400):

Dietary habits	Internet addiction levels						X ²	P. value
	Control over internet		Frequent problem		Significant problem			
	No	%	No	%	No	%		
Changes in meal size:								
• Increased	23	15.6	78	47.9	70	77.8	125.15	<0.001**
• Decreased	15	10.2	32	19.6	15	16.7		
• No change	109	74.1	53	32.5	5	5.6		
Changes in appetite:								
• Better	25	17.0	8	4.9	0	0.0	200.02	<0.001**
• Worse	6	4.1	105	64.4	75	83.3		
• No change	86	58.5	19	11.7	7	7.8		
• Do not know	30	20.4	31	19.0	8	8.9		
Changes in eating speed:								
• Fast	9	6.1	25	15.3	46	51.1	246.59	<0.001**
• Slow	15	10.2	17	10.4	4	4.4		
• Average	107	72.8	18	11.0	0	0.0		
• Irregular	16	10.9	103	63.2	40	44.4		

Table 2: It was clear from the table that there was statistical significant difference between levels of internet addiction and lifestyle of the studied adolescents ($p < 0.001^{**}$) as regard bedtime, sleep disturbance, and tobacco use. Adolescents who had control over internet use represented 73.6% of them often had regular bedtime pattern. While adolescents who had occasional to frequent problem and significant problem due to internet use complained of irregular bedtime were 58.4% and 31.5% respectively.

Table 3: The majority of studied adolescents (77.8%) who had significant problem due to internet use their dietary habits had been changed to have big meal sizes and 83.3% of them had a worse appetite than adolescents who had control over internet use and occasional to frequent problem due to internet usage. Regarding the changes in eating speed, 51.1% of adolescents who had significant problem due to internet use had fast eating speed. It was revealed from the table that there is statistical significant difference between levels of internet addiction test and change in dietary habits of the studied adolescents ($p < 0.001^{**}$).

6. Discussion

The current study was conducted to determine the impact of internet addiction on lifestyle and dietary habits of secondary school adolescents. The present study found that almost one-quarter of studied adolescents had a significant problem due to internet use and more than one-third of them had a frequent problem from internet use. This was in the same line with a study of [16] who found that about one-quarter of the study participants have addicted the internet.

These results might be due to many factors as the changes in the routine of their daily life and the preoccupation of parents with their jobs and positions more than before, lack of social communication and dialogue, the amount of time spent with their children was limited than before which lead the parents to compensate their children by providing the latest technology available such as iPad, iPhone, mobile, tablets, laptops and others. These factors could make teenagers busy with everything that is new in this technology especially with social communication and friendship where they could find

friends and peers to communicate with. Furthermore, they begin to be engaged in online gaming.

The results of the present study showed a significant relation between the internet addiction and sleep disturbance, irregular bedtime, and tobacco use. This was in the same line with [17] who found that sleep quality, excessive daytime sleepiness, insomnia, and internet addiction disorder showed a significant difference. A study conducted by [18] found that problematic internet use or internet addiction was linked with negative lifestyle. Results of the current study reported that the majority of adolescents who had a significant problem due to internet use had irregular bedtime and sleep disturbances than adolescents who had control over internet use.

These results were in agreement with [2] who found that high-risk internet users had more irregular sleep patterns and more episodes of sleep disturbance than no risk internet users. In addition; [19] and [20] stated that internet addiction and other problematic internet use behaviors can have major consequences on the sleep-wake program, leading to sleeplessness, irregular bedtime, and other sleep disorders. Excessive use of the internet associated with insomnia also increased the amount of time spent on the internet led to the important disturbance of sleep. So that the adolescents who had a significant problem due to internet use were more likely to experience physical and mental health problems. Problematic internet use was significantly related to depressive signs and sleep disorder [21].

The difference was a statistically significant relation between internet addiction and change in dietary habits. This result was in agreement with [22]. In the present study, the researcher demonstrated that adolescent students with significant problem from internet use eat big meals, decrease appetite, skip meals, and snack more than their counterparts who had frequent problems due to internet use or had control over internet use. Moreover, the current study revealed that the dietary habits of students who had significant problem from internet use had been changed to have big meal sizes and there was statistical significant relation between internet addiction and changing in meal size. This was in contrary to the result of [2] who found that high-risk internet users eat smaller meals than their potential-risk and normal-risk internet user counterparts.

This could be due to skipping breakfast so they feel that they were very hungry and needed to eat large meal to feel full. This result was also explained by the studied adolescents, who expressed that they eat one big meal rather than three small meals because they have no time to eat three meals daily.

7. Conclusion

One-quarter of studied adolescents had significant problem from internet use. Also, adolescent students who had significant problem from internet use complained of irregular bedtime, sleep disturbance, used tobacco, eat big meals, had loss of an appetite, and had fast eating speed more than their counterparts who had control over internet use.

8. Recommendations

1. Health care professionals especially the pediatric nurse should educate the adolescent students what a balanced diet and optimum physical activity to remain healthy and maintain growth.
2. Secondary school adolescents should include in their educational program, symposium, and seminars about adolescents' health, nutrition, and safe use of internet.
3. Raising adolescents' awareness through mass media and health education program in the schools and family-centered care about adverse effects of internet addiction on their lifestyle and dietary habits.

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