

Physical and Social Impact of Electronic Devices Usage among Adolescents

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Abstract: Technology plays a vital role in adolescents' daily lives; they spend increasingly more time on electronic devices. These include electronic games, home computers, handheld devices and many others. Inappropriate use and staring at electronic screens continuously for long times causes physical problems like musculoskeletal pain, eye problems, sleeping and concentration problems as well as social problems. The aim of the present study was to explore the physical and social impact of electronic devices usage on adolescents. A descriptive design was utilized for this study. The study was conducted at the Faculty of Nursing, Alexandria University, Egypt. Subjects comprised 227 of the 1st year nursing students at the age of adolescents. Two tools were used in this study: Physical impact of electronic devices usage questionnaire and Electronic devices usage impact on social relationship questionnaire. Results of the present study revealed that more than one half of the students had eye strain and eye sensitivity to light and two thirds of the students had blurred vision and three quarters had headache. More than one quarter of the students felt isolated from those around them and the majority of students believed that people can write or say things online that they would never say in real life. Conclusion: results of this study concluded that, adolescents at the faculty of nursing Alexandria University are more vulnerable to harmful effects of electronic devices on many aspects of their health status and social interaction.

Key words: Adolescents • Electronic Devices • Technology • Social Interaction • Physical Status

INTRODUCTION

Nowadays the availability and use of electronic devices (e- devices) such as smart phones, video game consoles, television and its content, internet, audio players, computers and tablets are sharply increasing [1]. Adolescents are the most frequent users of the e-devices which have become an integral part of their lives and they are also able to adapt to the rapidly changing technologies offered in the market place and have an intrinsic understanding of technology that escapes many adults [2].

Adolescence is a unique stage of development as it is a growth transition from childhood into adulthood that occurs between the age of 11 and 20 years and is always marked by dramatic changes. During this period shifting in growth and learning occurs [3]. However the adolescents educational and health status, readiness to take on adult rules and responsibilities and also the support they receive from their families, communities and

government will determine their own future and the future of their countries [3, 4]. Over the past few years, adolescents have increased their use of computers, tablets and smart phones for social networking, recreation, business and academic purposes [5, 6].

Technology has positive impact as well as negative impact on adolescents depending upon how they use it. The use of e-devices is essential to make the tasks of life easier. It plays an important role in better developing motor and cognitive skills, enabling them to get general knowledge and stay in touch with friends and family members across the world. In addition, it is very useful in education, research and better understanding issued matters [7]. However the abnormal, excessive, unnecessary and inappropriate use of electronic devices in terms of content, duration and frequency and also the inappropriate posture that the adolescents adopt result in a variety of physical problems including, musculoskeletal problems, eye strain, obesity as a result of lack of exercise and increasing consumption of high calorie non-nutritious

foods. It also leads to developmental problems and inadequate sleep quality [2, 8, 9]. Long-term sleep deprivation causes drowsiness, difficulty in concentration and depression of the immune system. Eye strain from screen can also worsen existing eye conditions such as eye discomfort, headaches, itchy eyes and difficulty in focusing [1, 6].

Moreover computer and electronic games can cause physical damage. For example, using a mouse and keyboard for many hours every day can lead to repetitive stress injuries, back problems and carpal tunnel syndrome. On the other hand, electronic devices affect adolescents not only by displacing the time they spend doing homework or sleeping but also by influencing their beliefs, behaviors and physical health. Adolescents can download violent videos, send sexual text messages or explicit self-photographs to their friends [1, 6]. Furthermore, overexposure to mobile phone use leads to musculoskeletal symptoms due to maintaining the head in a forward position for long periods of time for talking and chatting, which may cause musculoskeletal disorders. It also results in headaches, earaches, warmth sensations, eye strain, concentration difficulties as well as fatigue [1, 10]. Quick and easy access to the needed information has also reduced the creativity of the adolescents [11].

Adolescents interact with their professors, parents, co-workers, bosses and friends all the time. These interactions are beneficial and allow them to broaden their vocabulary, learn new material and interact with other humans [12]. However, in the rapid expansion of technology, the adolescents have become too immersed in this digital world and almost absent in the real world. The adolescents is physically present with the family or any social event but mentally engaged with the internet and social networks [13, 14]. Although the internet can allow adolescents to communicate with family and friends and strangers across cultures and without constraints, it reduces intra-family interaction and communication, as the face time is replaced with screen time leads to social isolation [11, 14]. Moreover excessive e devices usage interferes with the quality of face-to-face interaction with others since teenagers are more likely to communicate using short messages [15, 16].

Parents and nurses educators have a crucial role to safeguard adolescence from any harmful effect during their use of electronic devices by informing them about each electronic device and its manual and how to use it. Adolescents should adopt a healthy life style. So it is important to monitor the time, frequency and content while using technological devices and to ensure that

adolescents have adequate physical activity, healthy eating habits, proper sleep cycles and nurturing social environment [1]. Electronic devices connected to the internet should be kept away from the adolescents' bedrooms. Parents should enforce certain rules as not using e-devices during mealtime and bedtime and these roles should not be compromised [2]. Improper use of electronic devices results in personal, social, academic and occupational problems. Real life relationships are disrupted as a result of excessive use. All of these problems were interfere with adolescents' lives social and academic achievement, so the current study aimed to explore the physical and social impact of electronic devices usage among adolescents.

MATERIALS AND METHODS

Materials

Design: A descriptive design was used to carry out this study.

Setting: The study was carried out at Faculty of Nursing Alexandria University.

Subjects: The study subjects included 227 1st year nursing students at the age of adolescent within the 2nd semester of the academic year 2017-2018.

Tool of the Study: Two Tools Were Used in this Study

Tool 1: Physical Impact of E-devices Questionnaire: This tool was developed by the researchers after thorough review of related literature [1, 6, 9], to explore the impact of e- devices on physical state of adolescent. It was consisting of two parts as follows;

Part 1: It consisted of 15 questions to explore the subject's medical history, types of electronic devices, frequency and duration of its usage, instruction received and actions were taken to avoid physical problems.

Part 2: It was used to explore physical problems during using the electronic devices such as musculoskeletal, eye and vision and sleeping problems. The questionnaire measures physical problems including 22 items. Each item employs 2 points (Yes or No).

Tool 2: Electronic Devices Impact on Social Relationship:

It was developed by researchers after thorough review of related literature [14, 17], it is consisting of 19 statements to assess impact of e-devices on social

relation. Students' responses were obtained according to 2 points (Yes or No).

In addition to Socio-demographic characteristics of the study subjects: Age, Number of sibling.

Method:

- Approval from the nursing research ethical committee (NREC) of faculty of nursing, Alexandria University was obtained.
- An official approval for conducting the study was obtained from the responsible authorities of Faculty of Nursing after explaining its purpose.
- Tools were developed by the researchers after extensive review of the related literature.
- Tools were tested for its content validity by five experts in the related field and then the necessary modifications were done.
- A pilot study was carried out on 10% of total sample of students (23) to test the clarity and applicability of the tools and they were excluded from the sample. Accordingly, the necessary modifications were done.
- Tools were tested for its reliability using Cronbach's Alpha test. It was applied to 23 students. The reliability result for the tool was $r = 0.906$.
- Data collection was carried out on nursing students at first academic year after lectures in the presence of the researcher.
- Questionnaire was distributed to be answered by students after explaining the study aim, the researcher responded to any queries or questions raised by students.
- The questionnaire was answered within approximately 15 minutes.
- The data collection covered a period of one month starting from the beginning of March 2018 and extending to end of it.

Ethical Considerations: Informed written consent was obtained from the students who accepted to participate in the study after explaining the importance and aim of the study and students were free to withdraw from the study at any time.

Confidentiality of the obtained information was ensured and the students' privacy and anonymity were respected.

Statistical Analysis: Data were fed to the computer and analyzed using IBM SPSS software package version 20.0. Qualitative data were described using number and percent. Quantitative data were described using range (minimum and maximum), mean and standard deviation.

Table 1: Distribution of the students according to socio-demographic characteristics (N = 227)

Socio-demographic characteristics of adolescence	No.	%
Age (years)		
Min.-Max.	18.0-20.0	
Mean \pm SD.	18.99 \pm 0.94	
Sex		
Male	97	42.7
Female	130	57.3
Number of sibling		
None	1	0.4
1-2	115	50.7
3-4	91	40.1
>4	20	8.8
Min.-Max.	0.0-7.0	
Mean \pm SD.	2.62 \pm 1.23	

RESULTS

Table (1) shows that the student's age ranged from 18 to 20 years with a mean of 18.99 ± 0.94 years. In relation to sex it was observed that more than one half (57.3%) of subjects were female. The table also highlighted that 50.7% of subjects have 1-2 siblings.

Table (2) reveals that the majority (96.9%) of students were using mobile phone, while less than three quarters (70.5) of students use T.V and T.V based games. About one half of them use desktop computer and laptop (49.3, 47.1, respectively). While 22.9% of them were using hand held devices (I pod, tablets). Regarding years of using, it was ranged from 2-14 years with mean 8.09 ± 2.84 years. In relation to frequency and duration of devices using, Most of students (94.3 %) were using the devices on a daily basis and 63.0 % of them spend more than 4 hours on it.

More than one half of the students take a break, about one quarter of them were taking break every halve an hour and one hour (29.7, 25 respectively). Moreover, 88% of the students experienced pain or physical problems during using the e devices.

Table (3) shows that 60% of student hade neck pain. Moreover more than one half of student had eye strain and eye sensitivity to light (56% and 57.5 respectively). Furthermore two third of student (66%) had blurred vision and three quarter (75%) had headache. Regarding lack of concentration and lack of attention the student had nearly equal percentage (61% and 61.5% respectively).

Table (4) reveals that an equal proportion of students 82.4% feel as an active member and sharing decisions with their families. More than one quarter of students (32.6%) felt isolated from those around. while about three quarter of the subjects (73.1%) agreed that technology-based

Table 2: Distribution of the students according to e-devices usage (N = 227)

E-devices usage	No.	%
Which type of e device you use? *		
T.V (T.V based games)	160	70.5
Desktop computer	112	49.3
Laptop	107	47.1
Mobile phone	220	96.9
Hand held devices (I pod, tablets)	52	22.9
Play station	2	0.9
When did you start using of e- devices (Years)		
Min.-Max.	2.0-14.0	
Mean ± SD.	8.09 ± 2.84	
How much often do you use e- devices?		
Once a week	2	0.9
Twice a week	4	1.8
Three a week	7	3.1
Daily	214	94.3
How much time do you spend per day on e- device		
About half an hour	5	2.2
1-2 hours	15	6.6
2-3 hours	19	8.4
3-4 hours	45	19.8
More than 4 hours	143	63.0
Do you take break away from e-devices		
Yes	148	65.2
No	79	34.8
If, yes specify (n=148)		
Every half an hour	44	29.7
Every hour	37	25.0
Every one hour and half	11	7.4
Every two hours	23	15.5
Every three hours	16	10.8
More than 3 hours	17	11.5
Did you experience any pain or physical problems during using the e-devices		
Yes	200	88.1
No	27	11.9

* More than one answer

Table 3: Distribution of the studied students according to physical problems (N = 200)

Physical problems*	No		Yes	
	No.	%	No.	%
Neck pain	80	40.0	120	60.0
Shoulders pain	107	53.5	93	46.5
Arms or Elbows pain	122	61.0	78	39.0
Wrists or hands pain	107	53.5	93	46.5
Upper back pain	119	59.5	81	40.5
Mid back pain	119	59.5	81	40.5
Lower back pain	108	54.0	92	46.0
Hips, legs or feet pain	160	80.0	40	20.0
Eye strain	88	44.0	112	56.0
Fingers pain	108	54.0	92	46.0
Eye sensitivity to light	85	42.5	115	57.5
Awaking at night with numbness and pain at hands	136	68.0	64	32.0
Eye dryness	114	57.0	86	43.0
Blurred vision	68	34.0	132	66.0
Headache	50	25.0	150	75.0
Ear pain	143	71.5	57	28.5
Neck muscle cramps	109	54.5	91	45.5
Leg edema	175	87.5	25	12.5
Fine motors skills difficulties	170	85.0	30	15.0
Sleeping problems	109	54.5	91	45.5
Lack of concentration	78	39.0	122	61.0
Lack of attention	77	38.5	123	61.5
Total Score				
Min.-Max.	0.0-22.0			
Mean ± SD.	9.84 ± 6.06			

* More than one answer

Table 4: Distribution of the students according to e-devices usage impact on social relationship (N = 227)

Electronic devices usage impact on social Relationship	Yes		No	
	No.	%	No.	%
Do you feel you are active member in your family.	187	82.4	40	17.6
Do you share your family to take a decision.	187	82.4	40	17.6
Do you feel isolated from those around you.	74	32.6	153	67.4
Technology-based relationships are often very superficial	166	73.1	61	26.9
Technology cannot replace time spent face-to-face	170	74.9	57	25.1
Do you fell have strong relationship with your family.	149	65.6	78	34.4
Do you feel the time you spend with family is boring.	64	28.2	163	71.8
Do you feel family meeting is meaningful.	170	74.9	57	25.1
Do you feel comfortable to discuss your opinions with your family.	153	67.4	74	32.6
Technology does not encourage or develop meaningful, healthy, long-term relationships	133	58.6	94	41.4
Do you feel your older family member not understand you.	136	59.9	91	40.1
Do you prefer to spend more time online than with your family.	106	46.7	121	53.3
Do you use your e device when you are having a meal with family and friends	118	52.0	109	48.0
Do you occupied with e devices when taking to others	118	52.0	109	48.0
Do you think that today's technologies and communication have a positive impact on relationships	173	76.2	54	23.8
Technology-based relationships are often more meaningful	50	22.0	177	78.0
Technology makes is easier to stay in touch with family and friends	181	79.7	46	20.3
People often write or say things online that they would never say in real life, so you don't really know who you can trust.	207	91.2	20	8.8
Technology can help relationships focus on ideas and common values and not focus so much on superficial physical appearance	169	74.4	58	25.6

Table 5: Relation between sex of students and physical problems (N = 200)

Problem	Sex								χ^2	p
	Male (n = 84)				Female(n = 116)					
	No		Yes		No		Yes			
	No.	%	No.	%	No.	%	No.	%		
Neck pain	34	40.5	50	59.5	46	39.7	70	60.3	0.014	0.907
Shoulders pain	50	59.5	34	40.5	57	49.1	59	50.9	2.112	0.146
Arms or Elbows pain	51	60.7	33	39.3	71	61.2	45	38.8	0.005	0.944
Wrists or hands pain	45	53.6	39	46.4	62	53.4	54	46.6	0.000	0.986
Upper back pain	48	57.1	36	42.9	71	61.2	45	38.8	0.334	0.563
Mid back pain	50	59.5	34	40.5	69	59.5	47	40.5	0.000	0.995
Lower back pain	46	54.8	38	45.2	62	53.4	54	46.6	0.034	0.854
Hips, legs or feet pain	69	82.1	15	17.9	91	78.4	25	21.6	0.416	0.519
Eye strain	37	44.0	47	56.0	51	44.0	65	56.0	0.000	0.991
Fingers pain	44	52.4	40	47.6	64	55.2	52	44.8	0.153	0.696
Eye sensitivity to light	37	44.0	47	56.0	48	41.4	68	58.6	0.142	0.706
Awaking at night with numbness and pain at hands	53	63.1	31	36.9	83	71.6	33	28.4	1.601	0.206
Eye dryness	45	53.6	39	46.4	69	59.5	47	40.5	0.695	0.405
Blurred vision	34	40.5	50	59.5	34	29.3	82	70.7	2.707	0.100
Headache	21	25.0	63	75.0	29	25.0	87	75.0	0.000	1.000
Ear pain	61	72.6	23	27.4	82	70.7	34	29.3	0.089	0.765
Neck muscle cramps	43	51.2	41	48.8	66	56.9	50	43.1	0.640	0.424
Leg edema	74	88.1	10	11.9	101	87.1	15	12.9	0.047	0.829
Fine motors skills difficulties	73	86.9	11	13.1	97	83.6	19	16.4	0.412	0.521
Sleeping problems	48	57.1	36	42.9	61	52.6	55	47.4	0.408	0.523
Lack of concentration	37	44.0	47	56.0	41	35.3	75	64.7	1.551	0.213
Lack of attention	34	40.5	50	59.5	43	37.1	73	62.9	0.239	0.625

χ^2 : Chi square test

p: p value for association between different categories

Table 6: Relation between taking a break from using electronic devices and occurrence of physical problem (n = 200)

Physical problems	Taking break away from using electronic devices				χ^2	p
	Yes (n = 132)		No (n = 68)			
	No.	%	No.	%		
Neck pain	72	54.5	48	70.6	4.813*	0.028*
Shoulders pain	55	41.7	38	55.9	3.646	0.056
Arms or Elbows pain	46	34.8	32	47.1	2.813	0.094
Wrists or hands pain	50	37.9	43	63.2	11.599*	0.001*
Upper back pain	50	37.9	31	45.6	1.107	0.293
Mid back pain	47	35.6	34	50.0	3.859*	0.049*
Lower back pain	55	41.7	37	54.4	2.935	0.087
Hips, legs or feet pain	28	21.2	12	17.6	0.357	0.550
Eye strain	71	53.8	41	60.3	0.771	0.380
Fingers pain	53	40.2	39	57.4	5.346*	0.021*
Eye sensitivity to light	76	57.6	39	57.4	0.001	0.976
Awaking at night with numbness and pain at hands	41	31.1	23	33.8	0.157	0.692
Eye dryness	48	36.4	38	55.9	6.976*	0.008*
Blurred vision	78	59.1	54	79.4	8.259*	0.004*
Headache	96	72.7	54	79.4	1.070	0.301
Ear pain	34	25.8	23	33.8	1.433	0.231
Neck muscle cramps	57	43.2	34	50.0	0.841	0.359
Leg edema	17	12.9	8	11.8	0.051	0.821
Fine motors skills difficulties	20	15.2	10	14.7	0.007	0.933
Sleeping problems	58	43.9	33	48.5	0.381	0.537
Lack of concentration	77	58.3	45	66.2	1.160	0.281
Lack of attention	77	58.3	46	67.6	1.644	0.200

χ^2 : Chi square test

p: p value for association between different categories

*: Statistically significant at $p \leq 0.05$

relationships are often very superficial. Moreover, 74.9 % of the students felt that family meeting is meaningful. More than one half (67.4%) of students feel comfortable to discuss opinions with their families. While 58.6% of them agreed that technology does not encourage or develop meaningful, healthy, long-term relationships. Less than one half of students (59.9%) of students felt that older family members not understand them.

The same percent of students 52.0% use e devices when having a meal with family and friends and occupied with e devices when taking to others. The majority of students (91.2%) believed that people can write or say things online that they would never say in real life.

Table (5) shows that relation between sex of students and their physical problems. It was found that no statistically significant differences between the sex of student and their physical problems.

Table (6) reveals that more than one half of students did not take break away from using electronic devices, report neck, wrist or hand and finger pains. Statistically significant differences was found were ($p=0.028^*$, $p=0.001^*$, $p=0.021^*$ respectively). Moreover 50

% of students, report mid back pain and the difference was statistically significant ($p=0.049^*$). In addition eye dryness and blurred vision was reported in more than one half of students and the difference was found to be statistically significant ($p=0.008^*$, $p=0.004^*$ respectively).

DISCUSSION

Electronic devices have proven to be intrinsically attractive to adolescents, as shown by the time they spend in the virtual space, juggling multiple devices and using software applications. It has become a substantial task in their social and educational lives. Adolescents all over the world are growing up in a world in which the internet, cell-phones, video games and other technologies dominate their communication and are an integral part of their everyday life. Hence, the purpose of the current study is to determine the physical and social impact of e- devices usage among adolescents [18, 19].

The findings of the current study revealed that more than one half of students experienced neck pain and slightly less than half of them reported shoulder, Wrist or

hand and low back pains. This is in line with Namwongsa *et al.* [20] who reported that college students had pain complaints in their neck, trunk, upper extremity and lower extremity but the neck was the most common site. Lee and Seo, [21] conducted a study about musculoskeletal symptoms among mobile hand-held device users. His findings revealed that the majority of participants had pain in at least one part of their body especially the shoulder and the neck. In the study of Alabdulwahab *et al.* [22] a statistically significant relationship was found between the mobile devices addiction Scale (SAS) and the Neck Disability Index (NDI).

This is also in accordance with Shan *et al.* [23] who reported that the high rate of neck, shoulder and back pains were reported among young people using mobile devices. Cakir and Demir [24] found that half of the students who have pain feel the pain in all four areas neck, shoulder, upper and lower back. This may be due to the repetitive movements during using the devices which trigger the pain. During e devices use, remaining continuously in the same downward position might cause pain in the neck muscles due to the excessive contraction and tightness and improper posture for a long period of time without taking break.

Furthermore, results of the current study show that statistically significant differences were found between taking break away from using electronic devices and reporting neck, wrist or hand and finger pains. This result is in accordance with Silva *et al.* [9] who found that musculoskeletal complaints were more frequent in individuals with high prevalence of electronic devices. Also the pain in the cervical and sacrolumbar area increases when the duration of these devices' usage increases. It may be attributed to the nature of adolescents' life as they spend a lot of time on screen-based activity for communication, gaming, education and entertaining. Harmful effect of electronic devices with the increasing duration of usage, are increasing different types of pains. Yet, this same result is dissimilar to the results of Yagcı and Calık [25] who reported that the duration of devices use had no effect on neck pain.

Moreover, the findings indicated that more than one half of the students experienced eye strain and eye sensitivity to light and two third had blurred vision, while three quarter of them experienced headache. In this respect, Muniraju *et al.* [26] reported that many individuals experience eye discomfort and vision problems when viewing digital screens for extended

periods. The level of discomfort appears to increase with the amount of digital screen use. This finding also is in the same line with the findings of Rosenfield [27] who stated that long use of computer, mobile, or T.V can strain eyes, which leads to worsening the existing eye condition and causing difficulty in focusing. In addition, Zein El Dein [1] stated that electronic devices expose adolescence to itchy eyes and eye problems which cause headache. This may be attributed to staring too closely at screens and looking at electronic screens and small screens with small text for lengthy periods of time without blinking. This means that eyes are constantly trying to bring the images or texts on screen into focus, which can cause the eyes to get tired and drained. In addition, high-energy visible light (HEV), emitted by devices such as tablets and smartphones, frequent exposure to HEV, particularly at night, can cause vision to deteriorate over time. A Statistically significant difference was found between time of break and the occurrence of eye problems, as the students spent more time, reported more eye problems. So, it is important to rest eyes while working on computer or watching T.V and to look at more long distance objects.

More than one half of students experienced lack of attention and concentration. These results are supported by AlZarea and Patil [28] who reported that symptoms associated with the use of mobile phones most commonly includes headache, earache, warmth sensation, perceived difficult concentration and fatigue. This may be due to the long period of time which had been spent for gaming or on social network without break. It was found that no statistically significant differences between the sex of student and their physical problems. On the contrary, Eugenia *et al.* [29] found that a statistically significant difference in exposure to electronic devices and musculoskeletal outcomes between genders.

Regarding impact of e devices on their social relation, the results of the present study showed that the majority of students felt as an active member and sharing decisions with their families and more than one half of them felt comfortable to discuss opinions with their families. It may be attributed to the fact that they are becoming more reliant on communicating with friends and family through e devices.

This result disagrees with Elsobeihi and Abu Naser [30] regarding technology and its effect on the families. They showed that technology has always altered the nature of social interactions, including those within the family.

Additionally, more than one quarter of students felt isolated from those around and more than one half of students felt that older family members cannot understand them. This result is congruent with Schumacher [31] who claimed that by increasing face-to-face interactions and reducing the amount of time spent using phones, email or other social media to communicate, people will build a greater, deeper relationship with others, decrease misunderstandings and increase productivity at work and at home. This is may be due to the fact that the adolescents deal with devices as virtual reality.

On the contrary, other research has shown that mobile phones may actually promote face-to-face interactions and are used as a means to organize such interactions [32]. Similar results were described in another study by Gosicki [33] showing a positive correlation between face-to-face interaction and mobile phone usage. Specifically, the more people used their phones, the more they engaged in face-to-face interactions.

The majority of students believed that they can write or say things online that they would never say in real life. About three quarters of students agreed that technology can help relationships focus on ideas and common values and not focus so much on superficial physical appearance. This is attributed to that they believe they can express themselves better through e devices application and that this type of communication requires less commitment. There was a positive correlation found between technology cannot replace time spent face-to-face and taking break from electronic devices. This in line with Misra *et al.* [34] who reported that People who had conversations in the absence of mobile devices reported higher levels of interaction, while those conversing in the presence of a mobile device reported lower levels of interaction. In another study, Dwyer *et al.* [35] showed similar results that proved that the presence of mobile communication devices in social settings interferes with human relationships.

CONCLUSIONS

Finding of the present study concluded that adolescents at the faculty of nursing, Alexandria University had adolescents are more vulnerable to harmful effect of electronic devices on many aspects of their health status and social interaction. So, it is important to educate adolescence and parents' the appropriate use of each electronic device and considering that their health is

the first. In addition Parent and nurse educators should fulfill their roles to safeguard adolescence from any harmful effect during the use of electronic devices.

Recommendation:

- Written instruction about the use of each electronic device for adolescence should be clearly defined by faculties to safeguard them from harmful effect.
- Nursing educational programs should be planned to guide adolescents about the appropriate use of electronic media and inform them about physical, educational and behavior hazards.
- Nurse educators should encourage students to use mobile devices for educational purposes such as blended and online learning.
- Embracing devices in classroom activities to increase students' academic engagement.
- Further studies to examine the effect of electronic devices on students' academic achievement.

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