



Research Article

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Active Screen Time Habits and Headache Features among Adolescents and Young Adults in Saudi Arabia

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ABSTRACT

Introduction: Digital media and screens in their various forms are ubiquitous to modern society not only in the lives of adults but of children as well. Excessive screen time has been associated with obesity, sleep disturbance and has negatively impacted cognitive development and in some, may cause behavioral problems. Screen time has been linked to reports of headaches not only in adults but in children as well. **Methodology:** A cross-sectional study was conducted as an online survey distributed amongst 13-30 years old population across Saudi Arabia from July to August 2020. Ethical approval was obtained from the Research Ethics Committee of the Faculty of Medicine at King Abdulaziz University in Jeddah, Saudi Arabia. The survey data used to support the findings of this study are available upon request from the corresponding author. Statistical analysis was done using IBM SPSS Statistics Version 20. **Results:** A total of 421 volunteers participated in the study. More than half (55.3%) of the respondents were between 19-24 years of age, almost two-thirds (62.9%) were male and the majority (96.7%) were Saudi. 51.1% have suffered a headache after an average of 2.55 ± 1.785 hours of active screen time. The age of starting active screen time was significant for headache after screen time ($p = 0.036$), however, there was no significance for the occurrence of headache after a certain duration of active screen time in hours or days per week ($p = 0.367$ and $p = 0.479$, respectively). **Conclusion:** Modern society has imposed digital media in day to day life. However, excessive use and unregulated utilization especially among children may have a negative impact on their physical, social, and cognitive development.

Key words: Screen time, headache, Saudi Arabia, video games

INTRODUCTION

Digital media and screens in their various forms are ubiquitous to modern society not only in the lives of adults but of children as well [1, 2]. It has been estimated that 98% of the US children less than 8 years of age spend more than two hours per day on internet-connected devices [3]. The American Academy of Pediatrics suggests that children are not only influenced by direct screen time and therefore should have age-limited use, but they are also affected by their parents' screen-viewing habits, which can cause distraction in the household and decrease child-parent communication ("Media and Young Minds."). Excessive screen time has been associated with obesity, sleep disturbance, and has negatively impacted cognitive development and in some, may cause behavioral problems [4-7]. Screen time has been linked to reports of headaches not only in adults but in children as well [8, 9].

Limited data is available regarding the effect of active screen time on adolescents and young adults in Saudi Arabia [10, 11].

The aim of this study was to explore the active screen time habits of adolescents and young adults in Saudi Arabia while playing videogames and the relationship to various headache features.

METHODOLOGY:

A cross-sectional study was conducted as an online survey distributed amongst the 13-30-year-old population across Saudi Arabia from July to August 2020. Ethical approval was obtained from the Research Ethics Committee of the Faculty of Medicine at King Abdulaziz University in Jeddah, Saudi Arabia, and the guidelines outlined in the Declaration of Helsinki were followed.

The electronic questionnaire entailed portions about participant demographics such as sex, age group, region, and nationality; active screen time habits such as duration of time spent, room lighting, and the relationship of active screen time playing video games to sleep hygiene, and headache features. All participants were included in the study after giving consent. Those less than 18 years of age were required to give assent and confirm parental permission to participate.

The survey data used to support the findings of this study are available upon request from the corresponding author. Statistical analysis was done using IBM SPSS Statistics Version 20. The level of significance, (*P*-value), was taken at < 0.05. The Likelihood ratio (LR) Chi statistic and Pearson Chi statistic were applied to measure variable independence. The Bonferroni correction was used in post hoc testing of the data.

RESULTS:

A total of 421 volunteers participated in the study. More than half (55.3%) of the respondents were between 19-24 years of age, almost two-thirds (62.9%) were male and the majority (96.7%) were Saudi. Study volunteers participated from all over Saudi Arabia with the majority (62.5%) from the western region of the country. Detailed demographic information on study participants can be found in Table 1.

Table 1: Demographic Information

Demographics	
Age Group	<i>n</i> (%)
13-15 years	32/421 (7.6)
16-18 years	77/421 (18.3)
19-24 years	233/421 (55.3)
25-30 years	79/421 (18.8)
Sex	<i>n</i> (%)
Male	265/421 (62.9)
Female	156/421 (37.1)
Region	<i>n</i> (%)
Eastern	73/421 (17.3)
Central	57/421 (13.5)
Western	263/421 (62.5)
Northern	8/421 (1.9)
Southern	20/421(4.8)
Nationality	<i>n</i> (%)
Saudi	407/421 (96.7)
Non- Saudi	14/421 (3.3)

Almost half of those surveyed (48.5%) began to engage in active screen time when they were less than 10 years of age while only 10% started after the age of 21 years. 43.9% of participants spent anywhere between two to six hours engaging in active screen time activities, 57% usually used a screen in dim-lit rooms and almost one-third (33.7%) lost sleep due to screen time. Table 2 features the active screen time habits of those surveyed.

Table 2: Active Screen Time Habits

Active Screen Time Habits	
How many days per week do you engage in active screen time (video games)?	n (%)
1-3 days	170/421 (40.4)
4-5 days	78/421 (18.5)
6-7 days	173/421 (41.1)
On average, how many hours per day do you spend on active screen time?	n (%)
Less than 2 hours	178/421 (42.3)
2-6 hours	185/421 (43.9)
7-10 hours	38/421 (9.0)
More than 10 hours	20/421 (4.8)
Do you engage in active screen time within one hour of sleep?	n (%)
Yes	222/421 (52.7)
No	199/421 (47.3)
Do you lose sleep due to active screen time?	n (%)
Yes	142/421 (33.7)
No	279/421 (66.3)
At what age did you start to engage in active screen time?	n (%)
Less than 10 years of age	204/421 (48.5)
10-15 years of age	121/421 (28.7)
16-20 years of age	54/421 (12.8)
21 years of age and older	42/421 (10.0)
While engaging in active screen time:	n (%)
There is dim lighting	240/421 (57.0)
There is bright lighting	111/421 (26.4)
The room is usually dark	70/421 (16.6)

Of those studied, only 12.8% had ever been diagnosed with a headache disorder; however, 51.1% had suffered a headache after an average of 2.55 ± 1.785 hours of active screen time. Migraine headache (91.4%) was the most common among the families of those with a family history of headache (20.9%). Those experiencing aura prior to their headache reported visual symptoms as the most common (24.2%) with the least being speech difficulty (2.3%). During the attack of headache, 42.8% of those surveyed experienced photophobia, 22.8% phonophobia, and 20% had lacrimal tearing. Among those who participated, 43.7% of those with headache reported daily stress, 40% consumed caffeine and energy drinks daily, and almost one third (30.7%) felt depressed (Table 3).

Table 3: Headache survey

Headache	
Have you ever been diagnosed with a headache disorder?	n (%)
Yes	54/421 (12.8)
no	367/421 (87.2)
If yes, please specify:	n (%)
Migraine	36/51 (70.6)
Tension	11/51 (21.6)
Migraine and tension	2/51 (3.9)
Migraine, tension and cluster	2/51 (3.9)
Missing	2/51 (3.9)
Have you ever suffered from a headache after active screen time?	n (%)
Yes	215/421 (51.1)
No	206/421 (48.9)
If yes, after an average of how many hours of active screen time do you experience your headache?	
Minimum- maximum	1-8
Mean \pm SD	2.55 ± 1.785
From 0 denoting no pain to 10 as the most pain, on average, how do you rate the pain you experience from your headache?	
Minimum- maximum	1-10

Mean ± SD	5.46 ± 2.018
Do you have a family history of headache disorder?	n (%)
Yes	45/215 (20.9)
No	170/215 (49.1)
If yes, please specify:	n (%)
Migraine	32/35 (91.4)
tension	3/35 (8.6)
Which symptom describes your headache the most?	n (%)
Heaviness	47/215 (21.9)
Throbbing	88/215 (40.9)
Band like pressure	66/215 (30.7)
stabbing	14/215 (6.5)
Which of the following aura symptoms do you experience prior to your headache?	n (%)
Motor weakness	13/215 (6.0)
Visual symptoms	52/215 (24.2)
Sensory disturbance	7/215 (3.3)
Speech difficulty	5/215 (2.3)
Other	15/215 (7.0)
None	123/215 (57.2)
Do you use medication to treat your headache?	n (%)
Yes	73/215 (34.0)
No	142/215 (66.0)
What type of medication do you use?	n (%)
Paracetamol	62/64 (96.9)
Ibuprofen	1/64 (1.6)
Paracetamol and Diclofenac sodium	1/64 (1.6)
Which of the following symptoms have you experienced during your headaches?	n (%)
Photophobia	92/215 (42.8)
Phonophobia	49/215 (22.8)
Tearing	43/215 (20.0)
Rhinorrhea	7/215 (3.3)
Conjunctivitis	16/215 (7.4)
Nausea and vomiting	37/215 (17.2)
Nasal congestion	19/215 (8.8)
None	82/215 (38.1)
Do you suffer from any of these exacerbating factors?	
Feeling depressed	66/215 (30.7)
Smoking	38/215 (17.7)
Obesity	32/215 (14.9)
Daily stress	94/215 (43.7)
Daily caffeine and energy drink intake	86/215 (40.0)
Past history of head trauma	16/215 (7.4)
Other	9/215 (4.2)
None	49/215 (22.8)

The age of starting active screen time was significant for headache after screen time ($p = 0.036$); however, there was no significance for the occurrence of headache after a certain duration of active screen time in hours or days per week ($p = 0.367$ and $p = 0.479$, respectively). The current age group and the occurrence of headache after screen time were not statistically significant ($p = 0.90$).

Loss of sleep due to active screen time and playing within one hour of sleep was significant for suffering a headache after active screen time ($p = 0.001$ and $p = 0.001$ respectively). Light setting and headache after screen time were not significant ($p = 0.080$).

In those suffering from headache, days per week spent on active screen time was associated with lacrimal tearing ($p < 0.0001$). Photophobia ($p = 0.006$), phonophobia ($p = 0.003$), and nausea and vomiting ($p = 0.028$) were related to the duration of screen time per day. Nausea and vomiting tended to occur more commonly in those with

headache and active screen time within one hour of sleep ($p=0.043$) and loss of sleep due to screen time ($p < 0.0001$). Room light setting was related to phonophobia ($p=0.026$), tearing ($p=0.024$), and runny nose ($p=0.021$). Regarding factors that may exacerbate headache, daily stress was associated with duration spent on active screen ($p=0.016$) and playing within one hour of sleep ($p=0.029$). Participants who felt depressed lost sleep due to playing ($p=0.045$), played within one hour of sleep ($p=0.018$), and also the room light setting was significant for them ($p=0.040$). Daily caffeine and energy drink consumption was associated with the loss of sleep due to active screen time ($p=0.036$).

DISCUSSION:

The purpose of this study was to assess the active screen time habits among study participants and to correlate them with headache occurrence. 77.2% of those included in the study began to engage in videogames prior to the age of 16. It was found that the age of starting active screen time was significant for headache after screen time ($p=0.036$). Although study volunteers did not have statistical significance for the occurrence of headache after a certain duration of active screen time in hours or days per week ($p=0.367$ and $p=0.479$, respectively), 51.1% have suffered a headache after an average of 2.55 ± 1.785 hours of active screen time. Other studies in the literature have reported that increased duration of time spent exposed to screens was associated with headache, especially migraine without aura [8].

The majority (52.7%) of those studied played video games within one hour of sleep. Loss of sleep due to active screen time and playing within one hour of sleep was significant for suffering from a headache after active screen time ($p=0.001$ and $p=0.001$, respectively). It has been found that the circadian rhythm may be disrupted due to screen use near bedtime causing physiological disturbances [12]. Shorter sleep duration in children has been linked to behavioral trouble and educational difficulty [13].

Regarding risk factors for headache and screen time, obesity, feeling depressed, smoking or daily intake of caffeinated or energy drinks were the most reported exacerbating factors. Daily stress, caffeine, or energy drink consumption and feeling depressed were found to be statistically significant with participants suffering from headache. A study found that videogames use was associated with withdrawal or depression [13]. Several studies have linked the sedentary lifestyle associated with screen time with obesity [4, 14].

CONCLUSION:

Modern society has imposed digital media in day to day life. However, excessive use and unregulated utilization especially among children may have a negative impact on their physical, social, and cognitive developments. Further research is needed especially in the Middle East and Saudi Arabia regarding the prevalence of media use among children and the association between obesity, behavioral problems, and learning difficulties.

Conflict of Interest Disclosures (includes financial disclosures):

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