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SCREEN- TIME ADDICTION AND FATIGUE AMONG DIFFERENT AGE GROUPS DURING COVID19 LOCKDOWN

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Abstract

COVID19 pandemic has influenced the world globally where an uncertain situation induced lockdown which eventually has reduced physical activities and less socializing for humans. Staying at home begotten increased screen-time and further might have caused addiction to it. Increased screen-time could be due to academic, vocational and entertainment purposes, while everyone was homebound. Along with the increase in screen-time and usage of digital devices, there tend to be some adverse effects on health like fatigue. To explore the phenomenon further, the present study was conducted on a sample of 180 individuals, both males and females, belonging to different age groups. Two instruments named Screen-Time Addiction Questionnaire (STAQ) & Chalder's Fatigue Scale (CFS-11) were administered along with some basic demographic information. Findings suggested that, during Covid19 situation there was a positive relation between screen-time addiction and fatigue. It was further concluded that there was no significant difference between age when it comes to screen-time addiction and fatigue during Covid19 lockdown. More studies in this area may look into other aspects that might differentiate between mental and physical fatigue during lockdown.

Keywords

Digital Screen, Screen-time Addiction, Fatigue, Covid19 Lockdown

1. Introduction

"Screen-time" is a term used for tasks conducted in front of a screen, such as watching TV, operating on a computer, playing video games or social media browsing. Screen-time is a sedentary practice, meaning you sit down and are physically inactive. During screen-time, relatively little energy is used. Screen-time totaling five to seven hours a day has found to have an adverse impact on health of adults as well as old people (Mayo clinic, 2016). Many detrimental health consequences are because of spending so much time on the screen (phone/computer). According to Mayo Clinic, the unnecessary or low quality screening period is associated with: weight gain, irregular sleep, personality disorders, cognitive skills deficit, etc. According to Majumdar, Biswas and Sahu, (2020), individuals reported a drastic increase in gastrointestinal problems and hypertension during lockdown as compared to pre-pandemic period. Moreover, due to social distancing and home confinement, the use of cell phones and laptops (screen-time) enhanced tremendously. The excessive screen-time was observed to have an impact sleep patterns and durations due to the imbalance in melatonin that improves sleep. Furthermore, increased screen-time was also associated with symptoms of depression as reported by respondents. It was also reported that sleep disturbance could be resulted from screen-usage before bedtime. Prolonged screen-time may lead to its addiction. As addiction is considered as a main focus and central of attention in an individual's life, which in the end causes an individual not to be able to perform other tasks and cause harm of any sorts to himself and others (Engs. 1987). Fatigue has found to be one of the negative outcomes of excessive screen-time. The word "Fatigue" typically applies in studies to the general feeling of tiredness or problems in initiating physical or mental tasks of a person for several days or weeks. The second critical distinction is 'physical or mental' subjective exhaustion. Subjective physical exhaustion that refers to physical fatigue is basically the amount of any work that an individual think is needed, to perform and complete some tasks i.e. cycling, doing some manual work, running, jogging, lifting weights or any such physical work that involves skeletal muscles to generate any kind of energy or power whereas mental fatigue is the degree to which a person may devote energy or focus as needed for a given period of time (Fauci*et al*., 2008). Mental Fatigue has been further elaborated as a state caused due to "extended periods of difficult cognitive activities" (Marcora, Staiano, & Manning 2009). Excessive screen-time is also found to be associated with BMI and obesity (Barnett *et al*., 2010), sleep patterns and one of the major causes of backache (Bélanger*et al*., 2011). Moreover, prolonged screen-time has been associated with depression (Liu, Wu, & Yao, 2016). Screen-time was also seen to impact body image of an individual (Spurr,*et al.,* 2013). In another study, excessive screen-time was revealed to have effect on mental and physical health (Mutz *et al.,* 2019). WHO (2003) claimed that physical inactivity was the fourth leading risk factor of mortality. According to Feng*et al*., (2014), higher levels of physical activity and lower levels of screen-time combined was associated with lower levels of depressive symptoms; sleep disturbances and risk to individual mental wellbeing (Wu *et al*., 2015). A research conducted by Ge *et al.*, (2019) suggested that prolonged screen-time of college students was associated with feelings of stress. At another instance, young adults reported that excessive screen-time resulted in higher levels of stress (Thomée *et al.,* 2011) and lower levels of

well-being (Babic *et al.,* 2017). In one of the studies, Carson *et al*., (2016) have suggested that screening period is related to decreased health and muscle strength/endurance but there was far less evidence of these findings than for adiposity or metabolic risk factors. Spending excessive time on our phones pose us with the risk of obesity, heart disease, type 2 diabetes and some cancers too. Under the Canadian Physical Activity Guidelines youth assessment periods recommendations do not go past 120 minutes a day for young people to take part in screen-based sedentary behaviours. Given the likely adverse effects of excess screening time and diminished physical activity, the screen-time health metrics of the target group need to be investigated. The key aim of this systematic analysis was therefore to investigate the association between time spent on sedentary behaviour focused on recreation (specifically television watching, computers/internets, and/or online gaming) and the physical, plus mental measures of teenagers, including a broad overview of different health indicators related to screen-time (Tremblay, 2011). Recently, sedentary scanning (screens) behaviours, regardless of physical exercise or other fitness-related activities, has been acknowledged as a major contributor to adverse health (physiological and mental) in children and young adults. This emerging risk factor poses a significant challenge to public health considering the high prevalence of screen-time (Saunders*et al*, 2014). The COVID-19 pandemic has globally influenced people by leaving negative impact socially and economically'; along with physical and mental health of human beings (Khan *et al*., 2020; Tran *et al.,* 2020; WHO, 2020). In several nations, different strategies have been introduced to reduce the spread of the disease, including the introduction of policy for shelters, home stay, and limits on entry to nursing homes, restricting physical meetings in locations that may lead to closer encounters (Altmann, Douek & Boyton, 2020). In communities with strict prevention policies, improved touch monitoring and quicker clinical treatments, better results for public health during the pandemic would occur (Esposito, Principi, Leung, & Migliori, 2020; Kuguyo, Kengne, & Dandara, 2020; McKee, 2020). Online work functioning in educational systems, workplaces, and businesses led to extended usage of digital technology for the purpose of academic learning, interpersonal interactions and other corporate practices such as cell phones, computers, tablets or handheld devices (Robbins *et al.,* 2020; Ting *et al.,* 2020) However, people living at home or closed spots spend more time on television or on streaming platforms (Hong *et al*., 2019; Flayelle *et al., 2020*; Petersen *et al*., 2020). Furthermore, the lockdown / quarantine has been "linked with stress level, insomnia, and depression" (Rossiet *et al.,* 2020). Lockdown is defined as the state of confinement at home for longer periods in order to control the outbreak of a disease. The state is said to affect mental and physical health of an individual (Errenet *et al.,* 2020; Kang *et al*. 2020). Deskbound lifestyle, prolonged screen-time and irregular sleep habits all lead to "higher Body Mass Index and reduced cognitive abilities" (Dutta *et al.,* 2020). Although social media may help in decreasing social isolation, excessive use of it near bedtime may have negative effects on quality of sleep among adults (Orzech *et al.,* 2016). Moreover, prolonged screen-time may affect sleep negatively and cause inattentiveness (Guerrero *et al.,* 2019; Parent *et al*., 2016; Tamana *et al.,* 2019). Research suggested an association between "sedentary lifestyle and deteriorating physical health" (Bressa *et al.,* 2017; Tremblay *et al.,* 2011). A significant number of studies during COVID-19 timeframe and in the pre-pandemic period have been

analysed for child and young people due to their fragility and likely long term effects of excessive screen-time (Janssen *et al.,* 2020; Stiglic & Viner, 2019). It is necessary, by an evaluation of evidence and agreement among paediatricians, general practitioners, parents, teachers, social workmen and other parties involved, to determine the safe screening times for age-based classes. COVID-19 influences many facets of people's lives, particularly interactive screen use habits. There are not sufficient research evidences on screen-time and its impact on fatigue still many previous research records numerous amounts of screen-time-related health effects, although more recent findings indicate an increased screen-time pattern across various communities with potential impacts on health. Generation Z also known as the "internet generation" has a hard time adjusting if separated from their digital gadgets (Törocsik, Szucs, & Kehl, 2014). Due to this gadget addiction, individuals today are also getting addicted to screens (Rana, M., & Kaur. 2020). It is assumed that internet addiction not only causes depression and disturbed sleep cycle, it also has an overall negative impact on an individual's life (Porter *et al.,* 2012). Gadget and digital screen's addiction may affect family functioning negatively (Chasanah & Kilis 2018). Moreover, digital addiction and the harm it causes, still remains to be explored and conclusions need to be drawn (Przybylski, Orben, & Weinstein, 2020). The reason for conducting this research is the huge shift that has been taken from the manual world to a whole new era of digital world along with the fatigue element during lockdown. The World Health Organization (WHO) has issued numerous guidelines which include some directives for revisiting and developing future strategies and recommendations for health issues (physical & mental) during and post-pandemic times (WHO, 2019).

1.1 Hypotheses

1. There would be a relationship between screen-time addiction and fatigue during Covid19 lockdown.
2. There would be an impact of screen-time on fatigue during Covid19 lockdown.
3. There would be a significant difference among different age groups regarding screen-time addiction and fatigue.

2. Methodology

2.1 Participants

The study was conducted using quantitative method on a sample of 180 participants including both male (78.9 %) and female (21.1%). The mean age of the sample was 22.4 years. Inclusion criteria defined was that the sample had an access to mobile; tablet, TV or any screen tools, and must had spent some time on screens before and during the lockdown. The sample was selected using convenience/purposive sampling technique.

2.2 Instruments

2.2.1 Screen-Time Addiction Questionnaire

The Screen-Time Addiction Questionnaire was developed by Katie Singer (2017) to evaluate the level of screen dependence for all age groups of individuals. This tool is comprised of 7 items. The scale reported the acceptable internal consistency and reliability with coefficient of Cronbach's alpha (0.650).

2.2.2 Chalder Fatigue Scale (CFS-11)

The Chalder Fatigue Scale (Chalder *et al*., 1993) consisting of 11 items to assess both physical and psychological fatigue. The scale reported internal consistency with reliability coefficient of Cronbach alpha (0.785). Permissions for the use of scales were taken from the authors through email explaining the purpose of research and assurance of ethical principles while using the scales.

2.3 Procedure: The research used survey design in order to collect data from representative sample.

The survey was provided to the sample through online platforms by posting the link via Google forms on various social media apps including Facebook and WhatsApp in order to reach the target population. The Google Document included a consent form, demographic form (gender, age and the average screen-time usage before and during lockdown), Screen-Time Addiction Questionnaire and Chalder Fatigue Scale.

3. Results

Table 1: Shows a significant positive relationship between screen-time addiction and fatigue during Covid-19 lockdown (n=180).

3.1 Table of Correlation

		Screen-Time-Addiction	Fatigue
Screen-Time-Addiction	Pearson Correlation		.482**
	Sig. (2-tailed)		<.001
Fatigue	Pearson Correlation	.482**	
	Sig. (2-tailed)	<.001	

Correlation is significant at the 0.01 level (2-tailed)

3.2 Regression Analysis

Table 2: Indicates the values of R, R square, Adj. R square and error estimation showing association between observed and predicted values of dependent variable.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.482[a]	.232	.228	5.37275

a. Predictors: (Constant), Screen-Time-Addiction

b. Dependent Variable: Fatigue

3.3 Regression Anova

Table 3: Shows screen-time addiction is resulting significantly in fatigue during Covid-19 lockdown (n=180).

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1555.358	1	1555.358	53.881	.000[b]
	Residual	5138.220	178	28.866		
	Total	6693.578	179			

a. Dependent Variable: Fatigue

b. Predictors: (Constant), Screen-time Addiction

3.4 Coefficients

Table 4: Shows significant impact of screen-time addiction on fatigue during Covid19 lockdown. (n=180)

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.240	1.183		16.262	.000
	Screen-time Addiction	1.653	.225	.482	7.340	.000

a. Dependent Variable: Fatigue

3.5 Residuals

Table 5: Shows screen-time addiction has a significant residual effect on fatigue during Covid-19 lockdown (n=180).

	Min.	Max.	Mean	SD
Predicted Value	19.2395	30.8083	27.4111	2.94774
Residual	-14.80829	14.14976	.00000	5.35772
Std. Predicted Value	-2.772	1.152	.000	1.000
Std. Residual	-2.756	2.634	.000	.997

3.6 Anova

Table 6: Shows that there is no significant difference in screen-time addiction and fatigue relative to different age groups during Covid-19 lockdown (n=180).

		ANOVA				
		Sum of Square	*df*	*Mean Square*	*F*	*Sig.*
Screen-Time Addiction	Between Groups	3.713	2	1.856	.581	.560
	Within Groups	565.732	177	3.196		
	Total	569.444	179			
Fatigue	Between Groups	70.885	2	35.443	.947	.390
	Within Groups	6622.692	177	37.416		
	Total	6693.578	179			

4. Discussion

The purpose of the current study was to evaluate the relationship between screen-time and physical-mental fatigue; and further to determine if a significant difference exist among different age groups during COVID-19 lockdown. Table 1 shows the relationship between screen-time addiction and physical-mental fatigue among participants (n=180) during COVID-19 lockdown. A significant positive (0.01) relationship was found between the variables demonstrating that increased screen-time seemed to raise the level of physical & mental fatigue during lockdown. The paradigm shifts in mode of learning, working and social interaction due to uncertain situation in pandemic has forced the individuals in every field of life to rely on screens for their academic, work and even leisure purposes. The more time they seemed to spend on screens, the more they were likely to indulge in the new normal life of technological dependence

resulting in enhanced levels of physical-mental fatigue among them. The stay at home and disruption in daily life routine with enhanced screen-time has increased the disturbance in physical/ psychological health, sleep and work-family relationship among university students and corporate workers (Majumdar, Biswas & Sahu, 2020). On the other hand, physical activeness and less dependence on screen during lockdown seemed to be negatively associated with mood disturbance and family conflict among adolescents and youth (Xiao, Yan & Zhao, 2020). Empirical evidence also suggested that more time spent on screens per day is associated with lower psychological wellbeing including poor self-control, emotional instability, distractibility and behavioural problems significantly among children and adolescents (Twenge *et al.*, 2018). Screen-time addiction is likely to have a significant impact on physical-mental fatigue among the participants (n=180) during the lockdown period as indicated in regression analyses table 2, 3, 4 and 5. More time spent on screen devices leads towards lesser physical activity, inaccurate sitting postures and insufficient mental breaks; adversely influencing the physical and psychological wellbeing of the users. Technological and online dependence was observed at higher level during pandemic lockdown; mainly the students had to spend their time doing online curriculum and non-curriculum activities with parents having minimum understanding of ergonomics effect, leading towards headache, backache, eye strain, sleep and behavioural disturbance among the students (Choudhary *et al.*, 2020). Work-from-home during uncertain circumstances led the overuse of technological devices for attending online meetings and conference calls to meet the work deadlines, although it facilitated the work but, simultaneously the endless screen timing had negative impact on mental and physical states of the users. Even the news or binge watching by constantly sitting in front of TVs, laptops or tablets tend to have severe impact on physical wellbeing (tiredness) and mental health (anxiety, stress and depression). These programs with concerned contents were reported to be specifically designed to catch the viewers' engagement influencing their moods and states (Cico, 2020).

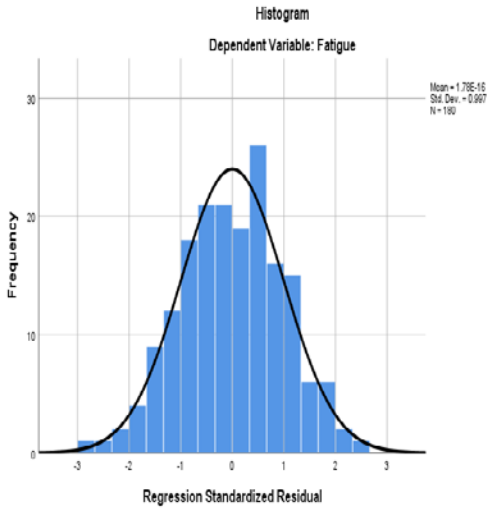

Figure 1: Linear Relationship between Screen-Time Addiction and Fatigue

Figures 1 and 2 show the linear relationship between the screen-time addiction (independent variable) and mental-physical fatigue (dependent variable). The increase in the frequency of screen-time during lockdown seemed to have a

linear and direct impact on elevated mental-physical fatigue among the participants.

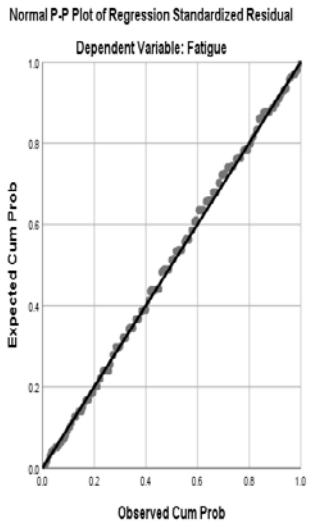

Figure 2: Regression Plot of Fatigue

The more time spent on screens during lockdown, the more chances of adverse influence on overall lifestyle were observed among the users. The most recent study on adolescents revealed that, the use of social media was reported as the most common screen activity; which is more likely to increase the daytime sleeping pattern and decrease the physical activity among its users (Malheiros *et al.,* 2020). Table 6 represents no significant difference of screen-time addiction on physical/mental fatigue among different age groups, demonstrating that individuals of all age groups were equally and adversely influenced with enhanced screen timing. Individuals from all age groups including; young students, adult workers and elderly people were seemingly exposed to screens during the lockdown period for learning, work or entertainment purposes; therefore, all age groups indifferently seemed to experience mental and physical fatigue. An empirical data reported that the lifestyle changes with the new normal among the young adults during the period of lockdown has impacted their eating, living, sleeping behaviors ultimately deteriorating the physical and psychological wellbeing. The cross-sectional findings suggest that young adults during the lockdown has gained weight with unhealthy eating styles, were physically inactive, and spent more than 5 hours on screen for entertainment purpose which ultimately resulted in sleep disruption, irritability, stress, physical and emotional exhaustion while staying at home during the pandemic situation (Ismail *et al.,* 2020). Moreover, the young students are reported to be the excessive users of technology and more screen addictive; resulting in their poor sleep quality, mental and physical states during the pandemic lockdown; whereas more physical activeness and less screen exposure seemed to have a positive impact on their wellbeing and they are less likely to experience physical and mental fatigue (Tajane *et al.,* 2020).

4.1 Limitations of the study

Since the study was undertaken during Covid-19 days, data was collected through online only. Further, the study didn't use mixed approach and relied only on quantitative survey method; which would have resulted in some in-depth insights on the constructs under study. Lastly, fatigue reported could be due to multiple factors and not solely screen-time spent during lock down.

4.2 Implications

The study findings could provide guidelines for parents, teachers, society and human race as a

whole regarding the impact of screen-time during pandemic days; and its contribution towards mental and physical fatigue. Further, existence of mental and physical fatigue could help individuals to overcome screen-time addiction and seek more constructive ways to overcome it.

5. Conclusion

COVID-9 lockdown has huge impact on us as there seems intensification in screen-time and individuals might have addicted to it due to low level of physical activity and more staying at home. It was observed that the use of technology has increased during the lockdown which further increased the time spent on screens. If there is increase in screen-time, fatigue may also increase drastically which is again leading us to become conscious about our screen-time usage in order to tackle fatigue and decrease it by decreasing screen-time. The study determined the impact of screen-time addiction on fatigue among different age groups during lockdown. Insights of the study indicated that addiction to screen-time does increase the fatigue factor; though no difference could be established between physical and mental fatigue. Fatigue was equally experienced across different age groups.

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