Screen Time and Associated Health Problems among Undergraduates of University of Sri Jayewardenepura, Sri Lanka

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Abstract

Background and Objective: The time consumed by undergraduates for television viewing, internet usage, and playing video games is considered as screen time. Previous studies provide evidence that screen time is associated with many complaints, such as headache, backache, and sleep problems. This study is aimed to investigate screen time and associated health problems among undergraduates.

Methods: This descriptive cross-sectional study was conducted among conveniently selected 430 participants from four faculties of the University of Sri Jayewardenepura. A pre-tested self-administered questionnaire was used to collect data. Data were analyzed using SPSS version 20. Descriptive statistics and Chi-square tests were used.

Results: Results indicated that the mean screen time was 315.8 (SD=256.2) minutes per day during the week and 456.5 (SD=294.3) minutes per day during the weekend. Using the internet was the commonest screen activity among undergraduates rather than other screen time activities. Excessive screen time was significantly associated with headache, higher sleep latency, shoulder pain, hand pain, and pain in the eyes among undergraduates ($p<0.05$).

Conclusions: The findings of this study indicated that a higher screen time could lead to health problems among undergraduates. Therefore, the student population need to be informed of the impact and adverse effects of excessive screen time usage and actions should also be taken to minimize modifiable determinants of excessive screen time.

Keywords: screen time, health problems, undergraduates

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Introduction

The availability of screens, easy access to the internet, and the increasing importance of social media in the lives of young people have normalized screen time behaviors worldwide (Boniel-Nissim *et al.*, 2015). Screen time includes the time spent on media devices such as television, computers (desktops and laptops), mobile phones, tablets, hand-held devices, or other visual devices for different screen time activities; viewing television, using internet and playing video games (Busch, Manders and De Leeuw, 2013).With the increasing use of these screen-based media devices, people are most likely to have various health problems such as headache, backache, hand, arm, shoulder and neck pain (Jensen *et al.*, 2002; Torsheim *et al.*, 2010), obesity (Maher *et al.*, 2012), feeling low (Marques *et al.*, 2015) and sleep problems (Parent, Sanders and Forehand, 2016). Further, physical factors such as repetitive body movements when engaging in screen activities for long hours cause musculoskeletal symptoms (Jensen *et al.*, 2002). Increased use of screen time negatively affects not only the physical well-being of people, but also the daily routine activities and family relationships (Patrikakou, 2016), social behaviors, and social interactions (Sigman, 2012). Therefore, excessive screen time behavior holds the potential to be harmful to one's health.

Some sleep problems such as sleep onset latency, irregular sleep patterns, shorter sleep duration are predicted with longer hours of watching television and using social networking websites (Tavernier and Willoughby, 2014). Regardless of the developmental stage of youth, higher levels of screen time usage by youth were found to be associated with more sleep disturbances (Parent, Sanders and Forehand, 2016). Using digital media, especially in the hour before going to sleep can contribute to poorer or disrupted sleep, and those are varied by the type of digital media used (Orzech *et al.*, 2014). In addition, bedtime access to and use of a media device were associated with sleep outcomes such as inadequate sleep quantity, poor sleep quality, and excessive daytime sleepiness (Carter *et al.*, 2016). All the above factors imply that prolonged screen usage and associated problems have become a global concern.

University students represent a particularly vulnerable group for problems associated with screen time due to new media use. Every student has at least a mobile phone, many of them own desktop or laptop computers and access to computer facilities and internet within the university. Most of the university students use media devices not only for education purposes but also for watching videos, gaming and social media (Sigman, 2012).

Spending excessive time on screen devices can lead to many health problems among undergraduates which would contribute to disturb or distract them from educational activities (Aust *et al.*, 2019). When they are knowledgeable regarding the associated health problems action could be taken to limit or modify their screen time in order to reduce the harmful health effects and to maintain proper psychosocial status. In addition, students can develop strategies which are helpful to make screen time more meaningful for their academic activities and other purposes thus reducing perceived time wasted on video games, TV viewing, and using the internet. By doing so, university students can enhance their academic performance and well-being. Therefore, this study is aimed to investigate screen time and associated health problems among undergraduates at the University of Sri Jayewardenepura, Sri Lanka.

Materials and Methods

This descriptive cross-sectional study was carried out at the University of Sri Jayewardenepura, Nugegoda, Sri Lanka. A sample of 430 third year undergraduates of the Faculty of Medical Sciences, Faculty of Humanities & Social Sciences, Faculty of Management Studies and Commerce, and Faculty of Applied Sciences were recruited by using the convenience sampling method. Data was collected during January to March 2018. A pre-tested self-administered questionnaire was used to collect data which was developed using recognized variables following an extensive review of the literature. The questionnaire consisted of three sections, a) socio-demographic data, b) estimation of screen time, and c) associated health problems such as stress, headache, backache, shoulder pain (Torsheim *et al*., 2010), and sleep problems (Vallance *et al*., 2015). Data were analyzed using SPSS software (Version 20). Descriptive statistics were used to determine the frequency of health problems and the Chi-square test was used to identify any significant associations. Data related to sleep were categorized based on Vallance *et al*. (2015) and other data were categorized as 'normal' and 'excessive' based on the median values. Participants who responded as 'often' to each health problem were included in the 'often' category and others were included in the 'not often' category in order to determine associations. Ethical approval was obtained from the Ethics Review Committee of the Faculty of Medical Sciences, University of Sri Jayewardenepura. All subjects were made aware regarding the study and informed written consent was obtained.

Results

Background characteristics

A total of 430 university students (females 71.2%, n=306) participated in this study. The mean age of the participants was 23.79 years (SD$\pm$1.68) with an overall range between 21 and 36 years. The majority (n=423, 98.4%) used mobile phones, followed by laptop computers (76%, n=327) for their day-to-day activities. Only 39.3% (n=169) used television, followed by 13.5% (n=58) desktop computers and 14.7% (n=63) tablets, respectively. Approximately 85% (n=365) of participants used two or more screen devices.

Table 1

Characteristics of Participants (N=430)

Variable	Categories	n (%)
Age	≤24 years	320 (74.4)
	>24 years	110 (25.6)
Gender	Female	306 (71.2)
	Male	124 (28.8)
BMI	Underweight	107 (24.9)
	Normal weight	248 (57.7)
	Overweight	59 (13.7)
	Obese	12 (2.8)

Screen Time

The screen time usage is presented in the Table 2 and Table 3. Accordingly, the mean screen time on a week-day and weekend per day were 315.8 minutes (SD=256.2) and 456.5 minutes (SD=294.3) respectively.

Table 2
Time Spent on Screen Activities (n=430)

Screen Activity	Weekday (Minutes)		Weekend (Minutes)	
	Mean	SD	Mean	SD
Watching TV, offline videos	101.99	107.37	184.34	135.97
Playing videogames	27.76	80.57	40.90	103.17
Using internet	190.28	191.08	239.43	226.27
Total screen time	315.84	256.24	456.49	294.26

Table 3
Screen Time Usage among Study Participants (N=430)

Screen Time Activity		Weekday n (%)	Weekend n (%)
Watching TV, offline videos			
	0-5 hours	416 (96.7)	376 (87.4)
	5-10 hours	13 (3)	53 (12.3)
	>10 hours	1 (0.2)	1 (0.2)
Playing videogames			
	0-5 hours	423 (98.4)	416 (96.7)
	5-10 hours	6 (1.4)	13 (3.0)
	>10 hours	1(0.2)	1 (0.2)
Using internet			
	0-5 hours	368 (85.6)	344 (80.0)
	5-10 hours	54 (12.6)	72 (16.7)
	>10 hours	8 (1.9)	14 (3.3)
Total screen time			
	0-5 hours	263 (61.2)	166 (38.6)
	5-10 hours	131(30.5)	168 (39.1)
	>10 hours	36 (8.4)	96 (22.3)

Health Problems

Subjective physical problems were considered for a period of one month. Associations of these health problems with screen time are presented in Tables 5, 6, and 7. The most common health problem that the participants had reported as ‘very often’ was headache. Of

430 participants, 97 (22.6%) reported that they had headache very often followed by some time (n=211, 49.1%) and rarely (n=98, 22.8%) respectively. Only 24 (5.6%) reported that they never had headaches during the past month.

Only 19 (4.4%) reported that they had backache very often, followed by sometimes (n=135, 31.5%), rarely (n=166, 38.7%) and never (n=109, 25.4%) respectively. Some participants felt low very often (n=57, 13.3%), sometimes (n=182, 42.5%), rarely (n=126, 29.4%) and never (n=63, 14.7%) during the past month. A substantial number of participants never had any musculoskeletal pain such as neck pain and shoulder pain during the past month compared to the categories of very often, sometimes, or rarely (Table 4). Some participants (n=171, 39.8%) had a moderate level of stress during university life while 12.6% (n=54) of them had experienced extremely severe stress, followed by 22.3% (n=96) severe, 7.7% (n=33) mild and 17.7% (n=76) normal levels of stress respectively.

Table 4

Health problems among participants

Variable	Category	n (%)
Headache (n=430)	Very often	97 (22.6)
	Sometimes	211 (49.1)
	Rarely	98 (22.8)
	Never	24 (5.6)
Backache (n=429)	Very often	19 (4.4)
	Sometimes	135 (31.5)
	Rarely	166 (38.7)
	Never	109 (25.4)
Neck pain (n=430)	Very often	19 (4.4)
	Sometimes	95 (22.1)
	Rarely	153 (35.6)
	Never	163 (37.9)
Shoulder pain (n=429)	Very often	23 (5.4)
	Sometimes	77 (17.9)
	Rarely	142 (33.1)
	Never	187 (43.6)
Pain in eyes (n=430)	Very often	52 (12.1)
	Sometimes	163 (37.9)
	Rarely	124 (28.8)
	Never	91 (21.2)
Feeling low (n=428)	Very often	57 (13.3)
	Sometimes	182 (42.5)
	Rarely	126 (29.4)
	Never	63 (14.7)

Of the 430 participants, more than half (n=256, 59.5%) normally experienced a sleep duration less than seven hours and only 40.5% (n=174) had seven or more hours of sleep during a night. When considering sleep latency, 44.4% (n=191) of participants had a duration of 30

minutes or more time and 55.6% (n=239) had ‘normal’ sleep latency lower than 30 minutes.

Excessive usage of the internet both on weekdays (OR=1.78, 95% CI=1.21-2.62) and weekends (OR=1.86, 95% CI=1.26-2.73), excessive total screen time on weekdays (OR=1.61, 95% CI=1.10-2.37), and excessive usage of social media (OR=1.52, 95%CI=1.03-2.22) were significantly associated with higher sleep latency of more than 30 minutes. Usage of television (OR=1.67, 95% CI=1.19-2.46), usage of desktop computers (OR=1.93, 95% CI=1.10-3.39), and using of more than two devices (OR=1.51, 95% CI=1.02-2.21) were also significantly associated with higher sleep latency of more than 30 minutes. Usage of tablets was significantly associated with seeking medical advice for sleep disturbances (OR=4.46, 95% CI=1.63-12.2).

Some sleep quality indicators showed associations with ‘screen time’. Excessive usage of the internet during weekends was significantly associated with trouble falling asleep often (OR=2.76, 95% CI=1.41-5.41). In addition, trouble falling asleep often (OR=2.05, 95% CI=1.07-3.92) during a day in the weekend was significantly associated with excessive total screen time too. Excessive usage of the internet during weekdays was significantly associated with often feeling of excessively or overly sleepy during the day (OR=1.56, 95% CI=1.03-2.36).

Table 5

Associations of Screen Time with Health Problems (Headache, Backache and Feeling Low)

		Headache (n=430)				**Backache** (n=429)				**Feeling Low** (n=428)			
		Often	**Not Often**	**OR**	**95%CI**	**Often**	**Not Often**	**OR**	**95%CI**	**Often**	**Not Often**	**OR**	**95%CI**
Viewing TV, videos on a weekday	Excessive	50	164	1.09	0.69-1.72	11	202	1.41	0.56-3.59	30	182	1.15	0.66-2.02
	Normal	47	169			8	208			27	189		
Viewing TV, videos on a day during weekend	Excessive	40	120	1.25	0.78-1.97	10	150	1.9	0.76-4.85	20	138	0.91	0.51-1.63
	Normal	57	213			9	260			37	233		
Playing videogames on a weekday	Playing	31	81	1.46	0.89-2.40	3	109	0.52	0.15-1.81	13	98	0.82	0.42-1.59
	Not playing	66	252			16	301			44	273		
Playing videogames on a day during weekend	Playing	28	84	1.20	0.73-1.99	4	108	0.74	0.24-2.30	15	96	1.02	0.54-1.93
	Not playing	69	249			15	302			42	275		
Using internet on a weekday	Excessive	50	150	1.30	0.83-2.04	11	189	1.61	0.63-4.08	33	166	1.70	0.97-2.99
	Normal	47	183			8	221			24	205		
Using internet on a day during weekend	Excessive	57	134	2.12	1.34-3.35*	12	179	2.21	0.85-5.73	34	157	2.02	1.14-3.56*
	Normal	40	199			7	231			23	214		
Total screen time per weekday	Excessive	48	160	1.06	0.67-1.67	12	196	1.87	0.72-4.85	33	174	1.56	0.89-2.74
	Normal	49	173			7	214			24	197		
Total screen time per day during weekend	Excessive	52	135	1.70	1.08-2.67*	11	176	1.83	0.72-4.64	27	159	1.2	0.69-2.10
	Normal	45	198			8	234			30	212		
Using social media	Excessive	48	148	1.22	0.78-1.93	12	184	2.11	0.81-5.48	36	158	2.31	1.30-4.11*
	Normal	49	185			7	226			21	213		
Using TV	Yes	40	129	1.11	0.70-1.76	10	159	1.75	0.70-4.41	24	144	1.15	0.65-2.02
	No	57	204			9	251			33	227		
Using desktop computers	Yes	23	35	2.64	1.47-4.73*	1	57	0.34	0.05-2.62	9	49	1.23	0.57-2.66
	No	74	297			18	352			48	321		
Using laptop computers	Yes	66	261	0.58	0.36-0.97	15	312	1.18	0.38-3.63	40	285	0.71	0.38-1.32
	No	31	72			4	98			17	86		
Using tablet computers	Yes	20	43	1.75	0.97-3.15	3	60	1.09	0.31-3.87	9	54	1.01	0.51-2.37
	No	77	290			16	350			48	317		
Using mobile phones	Yes	97	326	0.77	0.73-0.81	19	403	0.96	0.93-0.98	57	364	0.87	0.83-0.90
	No	0	7			0	7			0	7		
No. of devices	>2	50	135	1.55	0.98-2.45	11	174	1.86	0.73-4.71	27	157	1.22	0.70-2.14
	≤2	47	197			8	235			30	213		

Chi-square statistics *Significant associations (p <0.05)

Table 6

Associations of Health Problems with Screen Time (Neck Pain, Shoulder Pain and Hand Pain)

		Neck pain (n=430)				**Shoulder pain** (n=429)				**Hand Pain** (n=430)			
		Often	**Not Often**	**OR**	**95%CI**	**Often**	**Not Often**	**OR**	**95%CI**	**Often**	**Not Often**	**OR**	**95%CI**
Viewing TV, videos on a weekday	Excessive	9	205	0.90	0.36-2.27	14	199	1.62	0.68-3.82	17	197	1.01	0.50-2.03
	Normal	10	206			9	207			17	199		
Viewing TV, videos on a day during weekend	Excessive	9	151	1.55	0.62-3.66	9	151	1.09	0.46-2.44	15	154	1.38	0.67-2.77
	Normal	10	260			14	255			19	251		
Playing videogames on a weekday	Playing	8	104	2.14	0.84-5.48	8	104	1.55	0.64-3.76	14	98	2.13	1.04-4.38*
	Not playing	11	307			15	302			20	298		
Playing videogames on a day during weekend	Playing	7	105	1.70	0.65-4.43	7	105	1.25	0.50-3.13	13	99	1.86	0.90-3.85
	Not playing	12	306			16	301			21	297		
Using internet on a weekday	Excessive	11	189	1.62	0.64-4.10	17	183	3.45	1.33-8.94*	22	178	2.25	1.08-4.66*
	Normal	8	222			6	223			12	218		
Using internet on a day during weekend	Excessive	11	180	1.77	0.70-4.48	13	191	1.67	0.71-3.89	24	167	3.29	1.53-7.07*
	Normal	8	231			10	238			10	229		
Total screen time per weekday	Excessive	10	198	1.20	0.48-3.00	17	191	3.19	1.23-8.25*	21	187	1.81	0.88-3.71
	Normal	9	213			6	215			13	209		
Total screen time per day during weekend	Excessive	11	176	1.84	0.72-4.66	14	173	2.10	0.89-4.95	23	164	2.96	1.40-6.24*
	Normal	8	235			9	233			11	232		
Using social media	Excessive	12	184	2.12	0.82-5.48	16	180	2.87	1.16-7.13*	25	171	3.66	1.66-8.03*
	Normal	7	227			7	226			9	225		
Using TV	Yes	7	162	0.89	0.35-2.33	10	159	1.20	0.51-2.79	15	154	1.24	0.61-2.51
	No	12	249			13	247			19	242		
Using desktop computers	Yes	6	52	3.18	1.16-8.73*	6	52	2.40	0.90-6.35	7	51	1.75	0.72-4.22
	No	13	358			17	353			27	344		
Using laptop computers	Yes	14	313	0.88	0.31-2.50	17	310	0.87	0.34-2.29	28	299	1.51	0.61-3.76
	No	5	98			6	96			6	97		
Using tablet computers	Yes	6	57	2.87	1.05-7.85*	7	56	2.73	1.08-6.95*	6	57	1.27	0.51-3.22
	No	13	354			16	350			28	339		
Using mobile phones	Yes	19	404	0.96	0.94-0.98	22	400	0.33	0.04-2.86	34	389	0.92	0.89-0.97
	No	0	7			1	6			0	7		
No. of devices	>2	12	173	2.35	0.91-6.09	15	170	2.59	1.07-6.25*	20	165	1.99	0.98-4.06
	≤2	7	237			8	235			14	230		

Chi-square statistics *Significant associations (p <0.05)

Table 7

Associations of Health Problems with Screen Time (Pain in Eyes, Strass Level and BMI)

		Pain in eyes (n=430)				**Stress level** (n=430)				**BMI** (n=426)			
		Often	**Not Often**	**OR**	**95%CI**	**Severe**	**Not severe**	**OR**	**95%CI**	**Overweight**	**Not overweight**	**OR**	**95%CI**
Viewing TV, videos on a weekday	Excessive	31	183	1.57	0.87-2.83	71	143	0.86	0.57-1.28	34	179	0.90	0.54-1.51
	Normal	21	195			79	137			37	176		
Viewing TV, videos on a day during weekend	Excessive	24	136	1.53	0.85-2.74	54	106	0.92	0.61-1.39	23	137	0.76	0.44-1.31
	Normal	28	242			96	174			48	218		
Playing videogames on a weekday	Playing	18	94	1.60	0.86-2.97	45	67	1.36	0.87-2.12	25	87	1.67	0.97-2.88
	Not playing	34	284			105	213			46	268		
Playing videogames on a day during weekend	Playing	17	95	1.45	0.78-2.70	42	70	1.17	0.75-1.83	26	86	1.81	1.05-3.10*
	Not playing	35	283			108	210			45	269		
Using internet on a weekday	Excessive	32	168	2.00	1.10-3.62*	67	133	0.89	0.60-1.33	33	165	1.00	0.60-1.67
	Normal	20	210			83	147			38	190		
Using internet on a day during weekend	Excessive	31	160	2.01	1.15-3.63*	75	116	1.41	0.95-2.11	35	155	1.25	0.75-2.09
	Normal	21	218			75	164			36	200		
Total screen time per weekday	Excessive	34	174	2.22	1.21-4.06*	77	131	1.20	0.81-1.78	33	173	0.91	0.55-1.52
	Normal	18	204			73	149			38	182		
Total screen time per day during weekend	Excessive	30	157	1.92	1.07-3.45*	72	115	1.32	0.89-1.97	30	156	0.93	0.56-1.56
	Normal	22	221			78	165			41	199		
Using social media	Excessive	28	168	1.46	0.82-2.61	72	124	1.16	0.78-1.73	33	162	1.04	0.62-1.73
	Normal	24	210			78	156			38	193		
Using TV	Yes	23	146	1.26	0.70-2.26	61	108	1.09	0.73-1.64	29	139	1.07	0.64-1.80
	No	29	232			89	172			42	216		
Using desktop computers	Yes	9	49	1.40	0.64-3.05	27	31	1.76	1.00-3.07*	11	46	1.23	0.60-2.51
	No	43	328			23	248			60	308		
Using laptop computers	Yes	39	288	0.94	0.48-1.83	105	222	0.61	0.39-0.96	52	273	0.82	0.46-1.47
	No	13	90			45	58			19	82		
Using tablet computers	Yes	8	55	1.07	0.48-2.39	24	39	1.17	0.68-2.05	17	46	2.12	1.13-3.96*
	No	44	323			126	241			54	309		
Using mobile phones	Yes	52	371	0.88	0.85-0.91	149	274	3.26	0.39-27.4	71	348	0.83	0.79-0.87
	No	0	7			1	6			0	7		
No of devices	>2	26	159	1.37	0.77-2.45	68	117	1.15	0.77-1.71	35	149	1.34	0.80-2.23
	≤2	26	218			82	162			36	205		

Chi-square statistics *Significant associations (p <0.05)

Discussion

According to the results of the current study, the mean screen time of undergraduates per weekday was 315.8 minutes (~5 hours) and 456.5 minutes per day during a weekend (~7.5 hours). This shows that screen time on a day during weekend was higher than on weekdays and it was consistent with previously published literature (Ferreira *et al.*, 2016; Bucksch *et al*., 2016). The current study further found that university students spent more time on the internet and television rather than playing video games both during weekdays and weekends.

A significant association between headache and the screen time was found in the present study. Further, excessive usage of internet during weekends and excessive total weekend screen time was associated with frequent headache. Similarly, Torsheim *et al.*, (2010) reported that there had been an association between the screen-based activities and recurrent episodes of headache. Excessive screen time leads to a reduction of free time for leisure activities and also it overloads the visual system which might contribute to trigger headaches (Xavier, *et al*., 2015). Although past studies conducted in Nordic countries (Torsheim *et al.*, 2010; Hakala *et al.*, 2006) showed associations between screen-based activities and recurrent backache, the results of the present study showed that there were no such associations. A Finnish study (Hakala *et al.*, 2006) found that the computer usage exceeding five hours/day leads to backache, and digital gaming exceeding five hours/day as a threshold for backache. In the present study, a very small percentage of participants had exceeded video gaming for more than five hours/day (1.6%) while most of them have used mobile phones more than computers and that could be the reason for this result.

The present study found that various screen time activities had significant relationships with neck pain and shoulder pain. Similarly, Hakala *et al.*, (2006) found that frequent computer-related activities were independent risk factors for neck-shoulder pain. Higher screen time and excessive usage of the internet and social media were associated with frequent shoulder pain. This may be due to the excessive usage of shoulders for operating electronic devices while keeping the upper limbs in a static posture. The current study also showed that using tablet computers had an association with shoulder pain. Reason for this might be the strain on shoulders when using the tablets. Previous studies also had shown the same outcomes. One study revealed that using tablet computers had caused various musculoskeletal problems than using desktops (Straker *et al.*, 2008). A significant association between the usage of higher number of screen devices and a frequent pain in the shoulder was found in the current study. Similarly, an association was found between the usage of both desktop computers and tablet computers with frequent neck pain (Hakala *et al.*, 2006).

Playing video games was found to be associated with hand pain in the current study. Excessive usage of the internet, social media, and excessive weekend screen time had also shown significant associations with ‘often’ hand pain. A Danish study by Jensen *et al.*, (2002) also highlighted that long hours of computer usage was associated with musculoskeletal symptoms such as shoulder, neck, and hand/wrist pain. Further, the authors suggested that it may be due to repetitive movements of the hand in using the computer in static or awkward postures all the time at work.

An association between the excessive

internet usage and the excessive screen time with pain in the eyes was found in the current study, may be due to looking at a screen for a long time leading to eye strain. Previous studies also have provided evidence that screen time behavior causes significant vision complaints (Ranasinghe, *et al*., 2016; Meo-Al-Drees, 2005).

Playing videogames was significantly associated with being overweight and obese in the current study. Screen time activities including video games generally lead to sedentary behavior might be a cause for overweight. Findings of another research by Maher *et al.*, (2012) reported that weight status was more consistent and strongly associated with screen time than level of physical activity.

The findings of this study indicated that excessive screen time, excessive usage of the internet, and excessive usage of social media had an association with a higher sleep latency of over 30 minutes. Tavernier and Willoughby (2014) also described that spending longer time watching television and engaging in social networking websites lead to sleep problems. Further, screen time was associated with some indicators of sleep quality in the current study. Excessive internet usage on weekdays was associated with feeling excessively or overly sleepy during the day and total screen time and excessive internet usage during weekends were associated with trouble of falling asleep. This shows that higher screen time can cause sleep problems leading to lower sleep quality as evidenced by previous studies (Parent, Sanders and Forehand, 2016; Vallance *et al*., 2015).

Interestingly, the current study found an association between excessive time on social media and feeling low, and higher sleep latency. This result is consistent with Woods & Scott (2016) who found that social media is directly related to lower self-esteem and poor sleep quality. It was evident that when someone is engaged in upward social comparisons and receiving negative feedback through social media, both the mood and self-esteem of that person become low (Vogel *et al.,* 2014). On the other hand, Woods & Scott (2016), has described that lower feelings of one's own-self among heavy social media users can be due to their poor sleep quality.

However, the findings of this study may still have limitations because the data were collected conveniently without considering the study programs followed by the participants from different faculties where some students engage more in computer usage. Additionally, the descriptive nature of the study and self-report method of data collection might have recall biases especially about physical symptoms in the past months. Despite these limitations, the findings of this study may shed light on the screen time behavior of university students that might be useful for both academics as well as the undergraduates themselves.

Conclusions and Recommendations

The main findings of this study revealed that university students had higher screen time during both weekdays and weekends, while weekend screen time was higher than on weekdays. Majority of them used one or more electronic devices for different purposes and consequently they experienced physical problems related to screen time behavior. Excessive total screen time during weekends and excessive weekend internet use were associated with headaches. Some of the screen time activities have shown associations with pain in shoulder, neck, hand and eyes. Higher levels of screen time had also shown significant associations with the

poor sleep latency and poor sleep quality. Thus, all these findings indicated that higher screen time can lead to a variety of health problems. The undergraduates should take actions to limit their screen time to prevent such problems. Further research is required to identify problems related to screen time and screen time behaviors among undergraduates.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

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