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POTENTIAL NEGATIVE EFFECTS TOWARD HEALTH AND WELL-BEING IN RELATION TO SMART DEVICE USE

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ABSTRACT

The purpose of this study was to consider the potential correlation between spinal and neck pain, depression, and college students' time spent on a smart device. The problem is to understand rapid changes in technology use among college students, and how this may impact their health and wellbeing. As technology evolves, and most digital tasks are able to be performed within the palm of our hands. Health and wellbeing may be challenged in different ways. Though smart devices are used as a valuable resource for keeping up with daily advances, this also potentially places college students under a new risk which is unknown. Is there a correlation between frequency of technology use and most specifically smart devices and neck or spinal pain? Is there a correlation between the frequency of technology use and most specifically smart devices and depression? Is there a difference among students based on non-traditional and traditional students or gender between the frequency of technology use and most specifically smart devices and depression?

BACKGROUND

Students choose to use smart devices to achieve in learning environments, and they have been shown to make changes in their technology use through the progression of their academic studies (Shin, Shin, Choo & Beom, 2011). Student technology use is encouraged in part due to the positive role of data collection where faculty and even for-profit corporations can track student usage and intellectual interactions; smart devices in this article are seen as a "u-learning tool" for better organization in academics and future employment (Shin, Shin, Choo & Beom, 2011). Being able to stay constantly connected through texting, calling, and social networking activity has a day to day behavioral effect on humans, and results showed a relationship between the individual and his/her cell phone as an indicator of increased levels of stress and depression but not anxiety; notably the frequency of use was not an indicator of depression or stress (Harwood, Dooley, Scott & Joiner, 2014). Instructors show concerns for students' learning as multi-tasking with smart devices in the classroom can be distracting to their learning. Students seem to get more distracted with smart devices in today's world than the first simple phones. Grinols, Bradstreet & Rajesh, (2014) found organization within students' lives seems to be more directed towards the social media aspect as students seem not to have good organization towards their study dedication and in class learning skills because of this multitasking issue resulting in low academic performance rather than actually learning from the devices. And lastly, Dr. Kenneth Hansraj discovered that bad technology posture causes health problems as students spend an average of two to four hours a day in poor technology posture resulting in frequent neck, head and back pain or damage to the spine (Panganiban, 2015). In conclusion, students, faculty, and administration need to be informed of potential injury or risk of technology and smart device use.

METHODS

A literature review was conducted between January 19th through February 5th. An IRB was completed on February 2nd which was sent to Missoula for permission to conduct a survey assessment on the day of February 28th. The survey was conducted in several classes of students that had no interaction with the researcher. Students had the option to accept or decline the voluntary survey and their information was kept anonymous. Once the surveys were filled, the students returned answered surveys to their corresponding research assistant who then gave the surveys back to the researcher. The information obtained from the surveys was analyzed with SPSS typed into a data chart which then lead to the results observed in the following charts.

RESULTS

Table 1 Frequency Distribution of Dependent Variables

Variables	Entire Sample n= 82	
Dependent Variables	MEAN	STD. DEVIATION
Hours Electronic	3.09	.937
Hours Mobile Device	2.74	1.07
Hours on Cellphone	1.31	.606
Hours Text Messaging	2.28	1.29
Hours Head Neck Down Mobile Device	2.15	1.02
Hours Hold Same Head Tilt	1.48	.820
Stress		
So Stressed couldn't get School work done	1.87	.759
Over Happiness level	3.10	.816
Unplug would make you feel	2.54	.862
Increase technology made it harder to feel close to people	2.60	.965
During the past 3 days I was sad	2.25	2.13
During the past week, I was troubled by things that usually don't bother me	2.13	.765
Overall my quality of life is outstanding	3.03	.692

Table 2 Frequency Distribution of Independent Variables

Independent Variables	Frequency	Percentage	Scale
Shift or change hands			Shift or change hands
No	27	32.9%	0= No
Yes	55	67.1%	1= Yes
Experience Neck, Head and Spinal pain.			Experience Neck/head/spinal pain
No	49	59.8%	0= No
Yes	33	40.2%	1= Yes
Experience Frequent Pain			Experience Frequent Pain
No	49	59.8%	0= No
Yes	33	40.2%	1= Yes
Experience Extensive Pain			Experience Extensive Pain
No	65	79.3%	0= No
Yes	17	20.7%	1= Yes
Get Enough Sleep			Get enough sleep/feeling rested
Wake Feeling Rested			
No	41	50%	0= No
Yes	41	50%	1= Yes
Check My Mobile Before Sleeping			Check Mobile before sleeping
No	12	14.6%	0= No
Yes	70	85.4%	1= Yes

Table 3 Differences with sleep

VARIABLE	MEAN	STD. DEVIATION	t	p
Frequency Technology use				
Hours Electronic			.000	
No	3.097	1.019		1.000
Yes	3.097	.860		
Hours on Mobile Device			1.554	
No	2.926	1.104		.124
Yes	2.561	1.025		
Hours on Cellphone			1.849	
No	1.439	.672		.068
Yes	1.195	.510		
Hours Text Messaging			.764	
No	2.390	1.320		.447
Yes	2.170	1.282		
Hours Head Neck Down Mobile Device			.753	
No	2.243	1.113		.454
Yes	2.073	.932		
Hours Hold Same Head Tilt			2.205	
No	1.682	.906		.030*
Yes	1.292	.679		
Stress Related				
Over Happiness level			-2.363	
No	2.902	.830		.021*
Yes	3.317	.756		
Unplug would make you feel			-.382	
No	2.512	.840		.704
Yes	2.585	.893		
Increase technology made it harder to feel close to people			1.617	
No	2.780	.908		.110
Yes	2.439	1.001		
During the past 3 days I was sad			3.921	
No	2.609	.833		.000***
Yes	1.902	.800		

No= Not getting enough sleep
Yes= Is getting enough sleep

P < 0.05*
P < 0.01**
P < .001***

Table 4 Differences with Neck and Spinal Pain

VARIABLE	MEAN	STD. DEVIATION	T	p
Frequency Technology Use				
Hours Electronic			.053	
No	3.102	.962		.958
Yes	3.090	.913		
Hours Mobile Device			.746	
No	2.816	1.093		.458
Yes	2.636	1.055		
Hours on Cellphone			-.200	
No	1.306	.619		.842
Yes	1.333	.595		
Hours Text Messaging			.379	
No	2.226	1.231		.706
Yes	2.212	1.408		
Hours Head Neck Down Mobile Device			-.827	
No	2.281	.862		.411
Yes	2.272	1.231		
Hours Hold Same Head Tilt			-1.291	
No	1.387	.750		.202
Yes	1.636	.929		
Stress Related				
Over Happiness Level			.445	
No	3.142	.912		.657
Yes	3.060	.658		
Unplug would make you feel			2.742	
No	2.755	.829		.008**
Yes	2.242	.830		
Increase technology made it harder to feel close to people			-2.894	
No	2.367	.993		.005**
Yes	2.969	.899		
During the past 3 days I was sad			-2.773	
No	2.040	.840		.007**
Yes	1.575	.867		
During the past week, I was troubled by things that usually don't bother me			-2.247	
No	1.979	.721		.028*
Yes	2.363	.783		
Overall my quality of life is outstanding			1.375	
No	3.122	.780		.142
Yes	2.909	.522		

No= Does not Experience Neck, Head or Spinal Pain
Yes= Does Experience Neck, Head or Spinal Pain

P < 0.05*
P < 0.01**
P < 0.001***

CONCLUSION

The results from the survey and data analyses showed that there isn't much difference between the amount of usage and frequency of technology when considering levels of neck pain. Approximately 60% of the students surveyed do not experience any neck, head, or spinal pain during the use of mobile devices. However, students who do experience pain in their neck, head or spinal area, show higher levels of anxiety and/or depression. Students experiencing pain seem to show happier effects when unplugging from the technology surrounding them. Students that claim to have a good night sleep show in the results to switch more often to different head tilts during mobile use than those students that don't get enough sleep. Results also reveal that students with good sleep have a happier overall view in their lives than students with poor sleep. Therefore, the results also demonstrate that students with good sleep have lower levels of sadness in the past 3 days prior to the survey than the students with poor sleep.

FUTURE STUDIES

The results for this research were limited to a small group of students, perhaps a larger group of students could result in different results. Another aspect that could be considered is the relation between smart device usage and anxiety. Perhaps the higher anxiety levels the more the student uses their smart device? If using smart devices doesn't cause extensive pain what does cause the pain? Further studies could be done on how to measure proper mobile device usage. What is excessive usage and what it not? How can pain be avoided? When should humans unplug from technology? Could excessive usage of technology affect our social behaviors or make us more social?

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