

An Association Study on Smartphone Addiction & Sleep Quality Among Young Adults, Malaysia

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ABSTRACT

Background: It is evident that addiction to smartphone is a problem for today's young adults. Poor sleep quality is due to a multitude of reasons. Could smartphone addiction be one of them? We aim to find the relationship between the two.

Objectives: To assess the prevalence of smartphone addiction, poor sleep quality and their association with each other as well as the activities spent on smartphones.

Material and Methods: A cross-sectional study was carried out among 200 young adult in Malaysia. The SAS-SV and PSQI were used as the collecting instruments. Data analysis was done using Jeffrey's Amazing Statistics Program (JASP)

Results: 55.5% of young Adults in Malaysia are addicted to smartphones and 85% of them are having poor sleep. There is a significant association between smartphone addiction and sleep quality.

Conclusion: Lack of motivation is the greatest deterrent to a more active lifestyle, fundamentally today's communities are lacking the push factor to be active, if tackled we expect the results to be remarkable.

Keywords: Smartphone addiction, Sleep Quality, Young Adults, Malaysia

INTRODUCTION

We can define a mobile phone addiction the same way we describe any other addiction; the loss of control over a certain use of an object of substance despite the adverse

consequences of it.^[1] Several studies have shown beyond a doubt, we are highly dependent on our mobile whereby a proportion of 95% of respondents have smartphones, with 64.3% of them using it for more than an hour daily, moreover 36.7% of respondents using their mobile phones in between their sleep.^[2] these numbers are alarming to say the least, the above study also deduced that mobile phones have become a very integral part of today's society to the point where it is seen as peculiar for not owning one, which is assumed to be the primary cause of smartphone addiction.

Now what is sleep quality? In simple words it's the quality of our sleep, how satisfactory or substandard our sleep is, and surprisingly it can be quantitated, we can calculate sleep quality using the time it takes to sleep, how many hours a day is spent sleeping, how long does it take to get out of bed after awoken and others, using these values we can deduce ones sleep quality, a satisfactory sleep quality would be one where it takes 30 minutes to fall asleep, not waking up multiple times at night and other times, we then would try and relate the values of how addicted they are to their phones to how bad or good their sleep quality is.^[3]

Within the scope of this article, we have gone through several research papers and written literature reviews to determine the exact relevant areas of research within the fields of mobile phone addiction as well as sleep quality. Using validated questionnaire tools

to gauge average mobile phone usage in a day as well as self-reported indicators of sleep quality such as; how many hours a day they sleep, how long it takes to sleep after the lights are out etc.

Multiple studies have concluded that a decline in sleep health is a direct cause of serious health issues, where CDC, 2022, reported that adults with less than 7 hours of sleep have an increased risk for heart disease, heart attack and stroke, with the massive increase of mobile phone usage.^[4] Hence, we felt the need to see if there is any correlation between the both. The effects on our generation of chronic smartphone users could be in serious danger if an intervention is not set forth, we hope to make an evidence-based recommendation to aid in the future of at least one person.

MATERIALS & METHODS

This is a cross-sectional study that was conducted among young adults in Malaysia. The respondents were obtained using

convenience sampling using an online survey being distribute through social media platforms.

Only young adults residing in Malaysia aged 18 to 26 were eligible to participate in this study. Those who do not own a smartphone or is diagnosed with a sleep disorder are excluded from this study. Respondents had to provide consent before answering the survey questions.

This survey was an adaptation of two validated instruments: Smartphone Addiction Scale – Short Version (SAS-SV) and the Pittsburgh Sleep Quality Index (PSQI) Scale. The SAS-SV is a ten-question questionnaire where each is given a score from 1-6. The PSQI has 9 items which assesses seven components of sleep quality.^{[5][6]}

RESULT

A total of 200 respondents participated in our study with a response rate of 98.5%.

Table 1: Prevalence of smartphone addiction among respondents

Smartphone Addiction	Frequency, n	Percentage, %
Present addiction	111	55.5
Absent addiction	89	44.5
Total	200	100

Table 1 shows the prevalence of smartphone addiction among young adults in Malaysia is 55.5%

Table 2: Prevalence of smartphone addiction among respondents

Sleep Quality	Frequency, n	Percentage, %
Poor Sleep Quality	170	85
Adequate Sleep Quality	30	15
Total	200	100

The prevalence of poor sleep quality among respondents in 85% (Table 2).

Table 3: Association between smartphone addiction and sleep quality

Smartphone addiction	Sleep Quality			p-value	OR (95% CI)
	Good sleep quality, n (%)	Poor sleep quality, n (%)	Total, n (%)		
Addiction absent	21 (23.6)	68 (76.4)	89 (100.0)	0.002	3.50 (1.51 – 8.10)
Addiction present	9 (8.1)	102 (91.9)	111 (100.0)		

Table 3 depicts that those addicted to smartphones are more likely to be having poor sleep (OR: 3.50, 95% CI: 1.51 - 8.10). There is a significant association between smartphone addiction and sleep quality (p = 0.002).

Table 4: Association between activity spend on phone and smartphone addiction

Activity spent on phone	Smartphone addiction			p - value	OR (95% CI)
	Absent addiction, n (%)	Present addiction, n (%)	Total, n (%)		
Gaming	11 (78.6)	3 (21.4)	14 (100.0)	0.002	0.27 (-0.40 – 0.40)
Social Networking	29 (33.0)	59 (67.0)	88 (100.0)		2.48 (0.12 – 1.31)
Watching videos	49 (50.0)	49 (50.0)	98 (100.0)		1.00

Table 4 shows that respondents spend more time on social networking significantly are more addicted to smartphones (67%) compared to other activities (p=0.002).

Table 5: Association between demographic factors and sleep quality

Demographics		Poor Sleep n (%)	Good Sleep n (%)	p - value	aOR (95% CI)
Age	18 – 21	64 (86.5)	10 (13.5)	0.505	1.71 (-0.75 - 1.82)
	22 – 25	91 (85.)	16 (15.0)	0.416	1.52 (-0.81 - 1.64)
	>25	15 (79.0)	4 (21.0)	-	1.00
Gender	Male	44 (88.0)	6 (12.0)	-	1.00
	Female	126 (84.0)	24 (16.0)	0.383	0.64 (-1.47 - 0.56)
Year of study	1	29 (96.7)	1 (3.3)	0.025	22.49 (0.39 - 5.85)
	2	33 (84.6)	6 (15.4)	0.175	3.86 (-0.60 - 3.30)
	3	43 (81.1)	10 (18.9)	0.320	2.41 (-0.85 - 2.61)
	4	49 (89.1)	6 (10.9)	0.107	4.55 (-0.33 - 3.36)
	5	4 (57.1)	3 (42.9)	0.683	0.62 (-2.74 - 1.79)
	More than 5 years/Postgraduate/working	12 (75.0)	4 (25.0)	-	1.00
Field of study	Other fields	50 (87.7)	7 (12.3)	-	1.00
	Health and Medicine	120 (83.9)	23 (16.1)	0.353	0.62 (-1.51 - 0.54)
Household income	B40	43 (84.3)	8 (15.7)	-	1.00
	M40	71 (85.5)	12 (14.5)	0.765	1.17 (-0.87 - 1.18)
	T20	56 (84.8)	10 (15.2)	0.826	1.13 (-0.96 - 1.20)
Smartphone addiction status	Addiction Present	102 (91.9)	9 (8.1)	0.004	3.57 (0.42 - 2.13)
	Addiction Absent	68 (76.4)	21 (23.6)	-	1.00

Multivariate logistic regression shows that present addiction to smartphones still significantly shows a high odds ratio of having poor sleep quality (OR 3.57 95% CI: 0.42 – 2.13) (p=0.004) (Table 5).

DISCUSSION

Our first objective was to determine the prevalence of smartphone addiction among young adults in Malaysia. The results revealed that almost more than half of our respondents are exhibiting smartphone addiction (55.5%), surpassing the prevalence rates in studies conducted around the world whereby the reported prevalence was 38.9% in the UK [7] and from another study conducted in Mexico the reported prevalence was 39.8%. [8] However, when compared locally in Malaysia, our reported prevalence is more or less the same as the local study done where the prevalence of smartphone addiction was 52.3% the likely reason being the sample size used in the international studies were 3 times the sample size used in Malaysia. [9]

According to the findings in a previous study, a majority of the respondents (61.6%) experienced poor sleep. [7] Similarly, our study observed a greater prevalence rate of 85.0% of respondents reporting poor sleep. The disparity in percentages could be attributed to several factors, including the smaller sample size in our study and potential differences in the demographics of the participant groups.

The pinnacle of this study is the strong statistical association between smartphone

addiction and sleep quality. Our study findings highlighted a significant association between smartphone addiction and sleep quality (p = 0.002). More specifically those with a present addiction to smartphones are more likely to be having poor sleep (OR: 3.50, 95% CI: 1.51 - 8.10). This is in line with most studies conducted where it was similarly found that there is a significant association between positive smartphone addiction and poor sleep [10] Another study also concluded that those with poor sleep are more likely to be smartphone addicts (p<0.001). This can be attributed to the blue light exposure of phones where one study showed that prolonged blue light exposure resulted in decreased sleep components. [11] This is especially during pre-bed time habitual use of phones as it is strongly correlated to poor sleep quality as well. [12] It may also be explained by the fact that smartphone addiction is closely intertwined with anxiety and depression, which are themselves strongly associated with poor sleep quality where smartphone addiction was strongly correlated with both depression and anxiety (p < 0.001) suggesting that these factors may precede and contribute to the development of poor sleep. [13][14]

Our study examined the impact of various demographic factors on sleep quality, and

interestingly, we found no statistically significant differences except for years of study. We found that those in their first year of studies are 22.5 times more likely to have poor sleep quality compared to other years. Our findings are in contrast with another study based on medical students in China, which reported that 1st years have statistically better sleep quality in comparison to subsequent years which they attributed to the timing of the study, as it was conducted just as the first-year students joined the program, before they encountered the academic stress that typically impacts sleep quality ($p < 0.05$).^[15]

Our study revealed that social networking is the activity most significantly associated with smartphone addiction, followed by watching videos and gaming subsequently, ($p = 0.002$). This finding is supported by recent studies, which indicate that popular social media platforms such as WhatsApp (93.6%) and Instagram (85.4%) are commonly used by smartphone users^[16] Similarly, our finding is consistent with another study which concluded that social networking functions such as messaging, online calls and checking social media accounts were the top three purposes of smartphone use.^[17] As to why social networking is the most common activity spent, this could be due to the feeling of missing out being a good predictor of social media.^[18]

The benefit of this study would benefit the field of psychiatry and psychology especially when it comes to the problems of addiction in today's society. Smartphone addiction is a very common problem in this modern era as mentioned previously by the findings and even more so during the covid-19 pandemic where all forms of communication is through online means. Sleep quality is also a dependent factor that is affected by many variables. Being able to investigate the relationship between the smartphone addiction levels and also sleep quality would bring up a new factor that plays a role in declining sleep quality among the people and could help professionals in their management

of those with poor sleep quality and phone addiction.

The limitation is this study is the use of a cross-sectional study design which only captured the prevalence of both variables at that point in time. We would like to highlight that aside from just using the SAS-SV alone there are other predictors for smartphone addiction such as duration of use as well as the time of using throughout the day does have an impact on the sleep quality. Our rather small sample space may not be the most accurate representation of the entire population of young adults in the country but larger more focused research can be done in the future to conclude the exact representation of this association.

CONCLUSION

To conclude, smartphone addiction is quite prevalent in today's young adult population. It is also one of the key contributors to poor sleep quality in the young adult population. Therefore, by employing methods to curb the smartphone addiction would be the best first step to curb problems with poor sleep.

Declaration by Authors

Ethical Approval: Approved

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