QMET GROUP V

How does screen time used before bedtime affect sleep?

Flow of the Presentation

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INTRODUCTION

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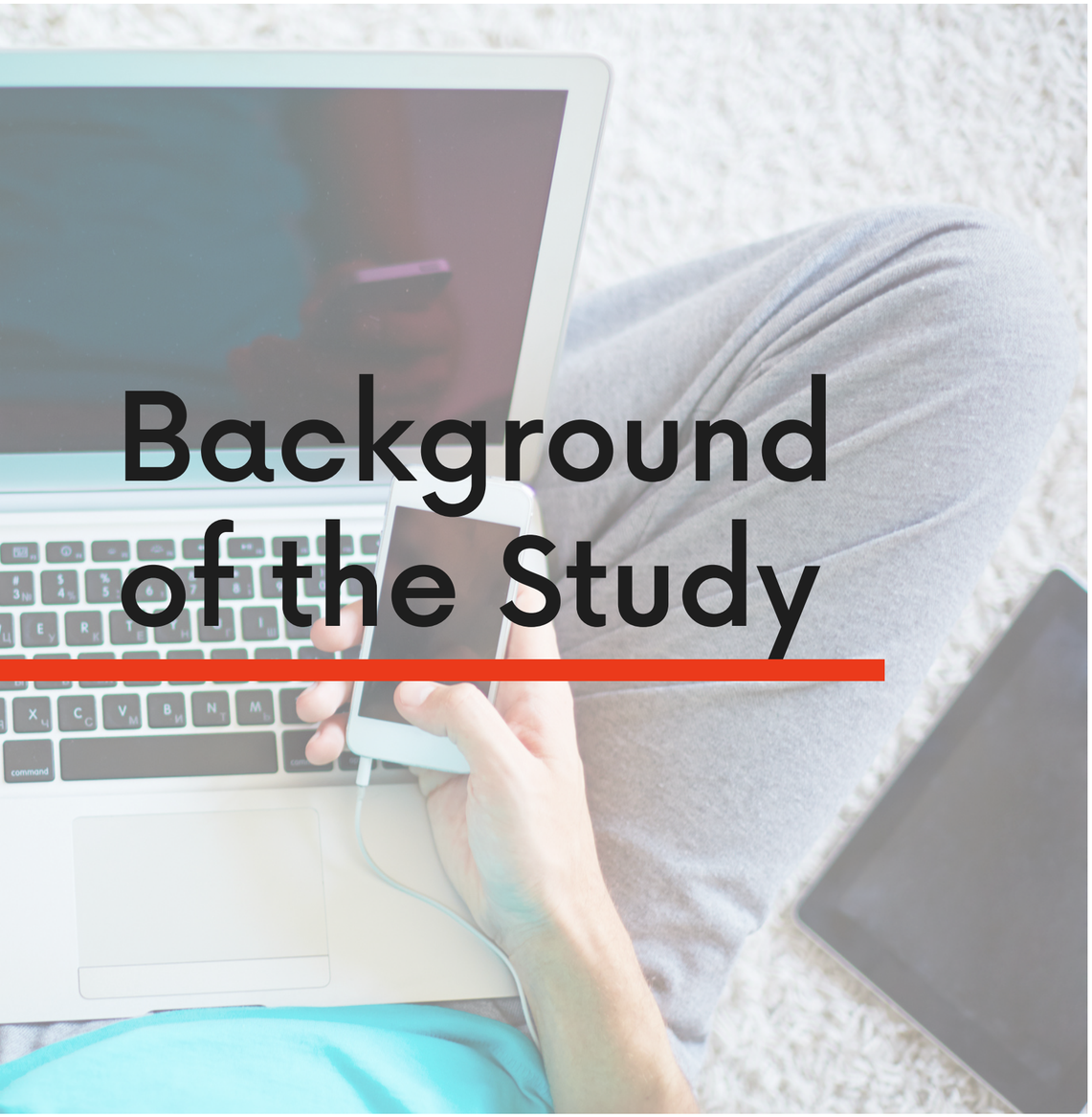
Introduction

- Background of the Study
- Research Problem
- Variables
- Hypothesis

HOW DOES SCREEN TIME USED BEFORE BEDTIME AFFECT SLEEP?

MAY 22, 2021



Background of the Study

Some college students across the world must have underestimated the importance of having a good sleep. Screen time usage among college students are highly prioritized for their school activities and requirements. Also it makes them stay connected with their classmates and professors in this pandemic state. On the other half, Sleep deficiency is a common health risk in this generation that continues to increase per year with the adjustments of technological advancements with the daily usage of electronic devices. Electronic devices or gadgets become essential to students especially for their school work and for some leisure time.

Too much screen time may affect the body system and sleeping patterns of an individual. It can lead to some sleep deprivation or loss of body productivity and energy within the day. As medical professionals recommend seven to nine hours of sleep each night for college students to function properly (Hysing et al., 2015). Many college students prefer settling in their sleeping phase with the presence of an electronic device before going to sleep. This practice is more observed to fill in for their sleep schedule and can to find causes of sleep in doing screen time.

To calibrate the connection of technology usage before going to sleep and poor sleep quality can set out an obstruction to have an accurate sleeping pattern and bedtime schedule in developing good lifestyle habits. Preventing and aligning the sleeping patterns to screen time may increase the improvements of sleep delays among college students. This study can be helpful in comprehending and acknowledging the impact of screen time to a college student's sleeping pattern.

Research Problem

How does screen time used before bedtime affect sleep?

Variables

Independent Variable:
Amount of time using your phone before bed

Dependent Variable:
Number of hours of sleep

Hypothesis

If you often use your phone before bed, then the number of hours of sleep decreases.

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Review of Related Literature

HOW DOES SCREEN TIME USED BEFORE BEDTIME AFFECT SLEEP?

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Adolescents today live in an era of continued advancement in technology, resulting in an increase in the ownership and use of screen viewing devices such as television (TV), mobile phones and other portable devices . The total daily screen time across devices had increased from 5 hours/day in 1996 to 8 hours/day in 2016 .

Individual associations have been established between increasing screen time and concurrent reduction in sleep duration and quality. Mechanisms by which screen times cause sleep disturbance have been attributed 121 to time displacement, such as device use leading to delay in bedtime, factors such as content of the media causing arousal and interfering with the ability to fall asleep,

and even biological factors, such as light emission of devices in the blue spectrum cause melatonin suppression, leading to difficulty in sleep initiation and non-restorative sleep]. An association noted between excessive screen time and behavioural disturbances, being possibly mediated through sleep disturbances, has been postulated by Parent et al. They found that higher levels of screen time were associated with higher rates of internalising, externalising behaviours and peer problems .

The other mechanism is the content of the media itself influencing behaviour, such as violent video games leading to increase in aggressive behaviour as found by a meta- analysis .

Data from India is not well studied, and the acquired data in the present study would help to identify correlations in the Indian population and would be of use in formulating recommendations for healthy screen use in the Indian population.Given this background, this study aims to explore the effects of screen viewing on sleep duration, sleep quality and behavioural disturbances in a cross-sectional sample of adolescents and to compare the various parameters between rural and urban populations.

Literature relating to digital media addictive behavior has focused mostly on Internet use and video games, yet the growing use of applications and texting (mostly used on mobile devices) may also lead to addictive behavior (Love et al., 2015). While males appear to demonstrate video game addiction, the addictive behavior of females is found to be focused primarily on social networking (Andreassen et al., 2016).

Studies have utilized brain imaging techniques to determine the involvement of neural circuits in executive functions and craving behavior in individuals who experience a lack of control over their Internet and games time (Brand et al., 2014)

Findings concluded that craving behavior in online gaming resembles the addictive behavior in substance dependence (Love et al., 2015). Numerous studies concluded that Internet addictive behavior results in brain frontal lobe structural stated. Such structural changes are related to the ability to filter out irrelevant information and less coping with complicated task demands. The frontal lobe is also related to empathy, suppressing prepotent but incorrect responses, and adapting to change in the environments (Brand et al., 2014; Yuan et al., 2011; Dong et al., 2012; Hou et al., 2017).

Other findings revealed impaired white matter associated with emotional processing, dysfunctional decision making and compulsive-repetitive behaviors (Lin et al., 2012). As divided attention between media devices becomes the "real world" behavior, studies have focused on the effect of screen multitasking. Pea et al. (2012) found that among college students, heavy multitasking scores correspond to decreased gray matter in the anterior cingulate cortex associated with cognitive control performance and socio-emotional regulation.

These college students displayed poor results in cognitive functioning factors like task switching, working memory and filtering.

The same population presented, in another study, an association between decreased gray matter and poor conflict detection, increased neuroticism and impulsivity, poor control over goal directed behavior and increased sensation-seeking behavior (Loh and Kanai, 2014).Heavy multitasking and screen-addicted adolescents were also found to have less social support and attachment with family and peers (Wu et al., 2016; Pea et al., 2012; Richards et al., 2006). Consequently, their life satisfaction level is negatively affected (Boniel-Nissim et al., 2015; Mentzoni et al., 2011).

While face-to-face communication is strongly related to positive social well-being (Pea et al., 2012), adolescents are shifting away from this form of communication hindering offline social support.

Then, to revive social support while in times of social difficulty, adolescents are inclined to immerse themselves in a vicious cycle of further use of Internet/social networks. However, the social support that they may find online serves to further maintain addictive Internet behavior. On the other hand, non-screen related social support may decrease the Internet addictive behavior (Wu et al., 2016).

Lissak, G. (2018).Adverse physiological and psychological effects of screen time on children and adolescents: Literature review and case study: Meuhedet Health Services, Jerusalem, Israel

A low level of social support, together with higher levels of mind wandering are likely to decrease social coping, increase the risk for further depression, isolation, and loneliness, a process which may further maintain addictive behavior (Andreassen et al., 2016).

Furthermore, social and psychological factors, which are negatively affected by addictive screen usage, i.e., social support, attachment, mindfulness and level of life satisfaction, were also noted as crucial to the individual's resilience necessary to face life stressors (Pop, 2014; SahinBaltaci and Karatas, 2015; Nemati and Farnaz, 2016).

Finally, social aspects of addictive Internet behavior seem to converge around cyberbullying behavior. A study of 14–18-year-old students linked addictive Internet use to cyberbullying. Results demonstrated that Internet use time of more than six daily hours together with high Internet addiction score predicted cyberbullying behavior (Nartgün and Cicioğlu, 2015).

Excessive screen use such as six daily hours is reported to result in neuroanatomical changes which are related to decreased empathy, poor impulse control and emotional processing, and dysfunctional decision-making; all components which seem to lay the grounds for cyberbullying behavior.

Lissak, G. (2018).Adverse physiological and psychological effects of screen time on children and adolescents: Literature review and case study: Meuhedet Health Services, Jerusalem, Israel

Studies have found a causal relationship between TV violent content to increased risk for antisocial behavior in young children (Christakis and Zimmerman, 2007). Longitudinal studies sampling various age groups between 5 and 11-year old support this claim and argue that time spent on TV viewing (during ages 6–10) is associated with violent behavior 15 years later (Huesmann et al., 2003).

Robertson et al. (2013) showed that childhood TV viewing is associated with a diagnosis of antisocial personality disorder and with criminal/violent convictions by early adulthood.

Another longitudinal study of 2 year-olds stated that only one hour of daily TV exposure is related to aggression expression, social difficulties, and increased peer victimization at age 13 (Pagani et al., 2016).

Studies have found a causal relationship between violent content in video games and short-term increased violence and aggressive behavior (Huesmann et al., 2003; Lemmens et al., 2011). Viewing violent content was also linked to decreased prosaically behavior and empathy and reduced inhibition.

Suhas Chandran, K. M. (2020).A comparative study of screen time, sleep duration and behavioural disturbances in urban and rural high school children: Journal of Indian Association for Child and Adolescent Mental Health

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Methodology

- Target Population
- Sampling Used
- Instrument Used
- Data Collection Method
- Statistical Treatment Used

HOW DOES SCREEN TIME USED BEFORE BEDTIME AFFECT SLEEP?

MAY 22, 2021

Target Population

The population for this study is composed of 112 random people who spend more time on their screens before bedtime.

The age range of the participants is 18 to 22 years old male and female.

Sampling Used

The research used random sampling for this study. The population for this study comprised all individuals who spend excessive time looking on their screens before bedtime.

Instrument Used

The instrument was a survey questionnaire with ten items with questions 1, 2, 3 are dependent variable questions, and questions 5, 6, 9 are independent variables.

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HOW DOES SCREEN TIME USED BEFORE BEDTIME AFFECT SLEEP?

Dependent variable Questionaires

Question 1

On an average, what time do you usually go to sleep? *

- [ ] 9 – 10 pm evening
- [ ] 11 – 12 pm evening
- [ ] 1 – 2 am morning
- [ ] 3 - 4 am morning
- [ ] 5 - 6 am morning
- [ ] 6 - 7 am morning
- [ ] 7 – 9 am morning
- [ ] Other:

Question 2

How long will it take for you to fall asleep once you are in bed? *

- [ ] Less than 15 min
- [ ] 15-30 min
- [ ] 31-45 min
- [ ] 46-60 min
- [ ] Other:

Question 3

How many hours of sleep do you get in 24 hours? (Approximately)Less than 3 hours. *

- [ ] 4 hours
- [ ] 5 hours
- [ ] 6 hours
- [ ] 7 hours
- [ ] 8 hours
- [ ] More than 9 hours

Independent variable Questionaires

Question 5

How many times you use your smart phone at bedtime.

- [ ] Always
- [ ] Often
- [ ] More Often
- [ ] Never

Question 6

Awakened by your mobile phone at night? *

- [ ] Almost Everyday
- [ ] A few time a week
- [ ] A few times a month
- [ ] Occasionally
- [ ] Never

Question 9

Have you tried reducing screen time before bedtime? If yes, How? If no, type 'No'.

Your answer

Data Collection Method

Survey Method

The link was sent for the survey questionnaire to each respondent for the study.

Statistical Treatment Used

Chi-Square Test was used for the statistical treatment to compare the relationship between screen time use and hours of sleep.

The test discovers the most dominant among the responses, with the highest and the lowest among them, which has a significant meaning.

Formula: $\chi 2 = \Sigma (O - E)2 / E$

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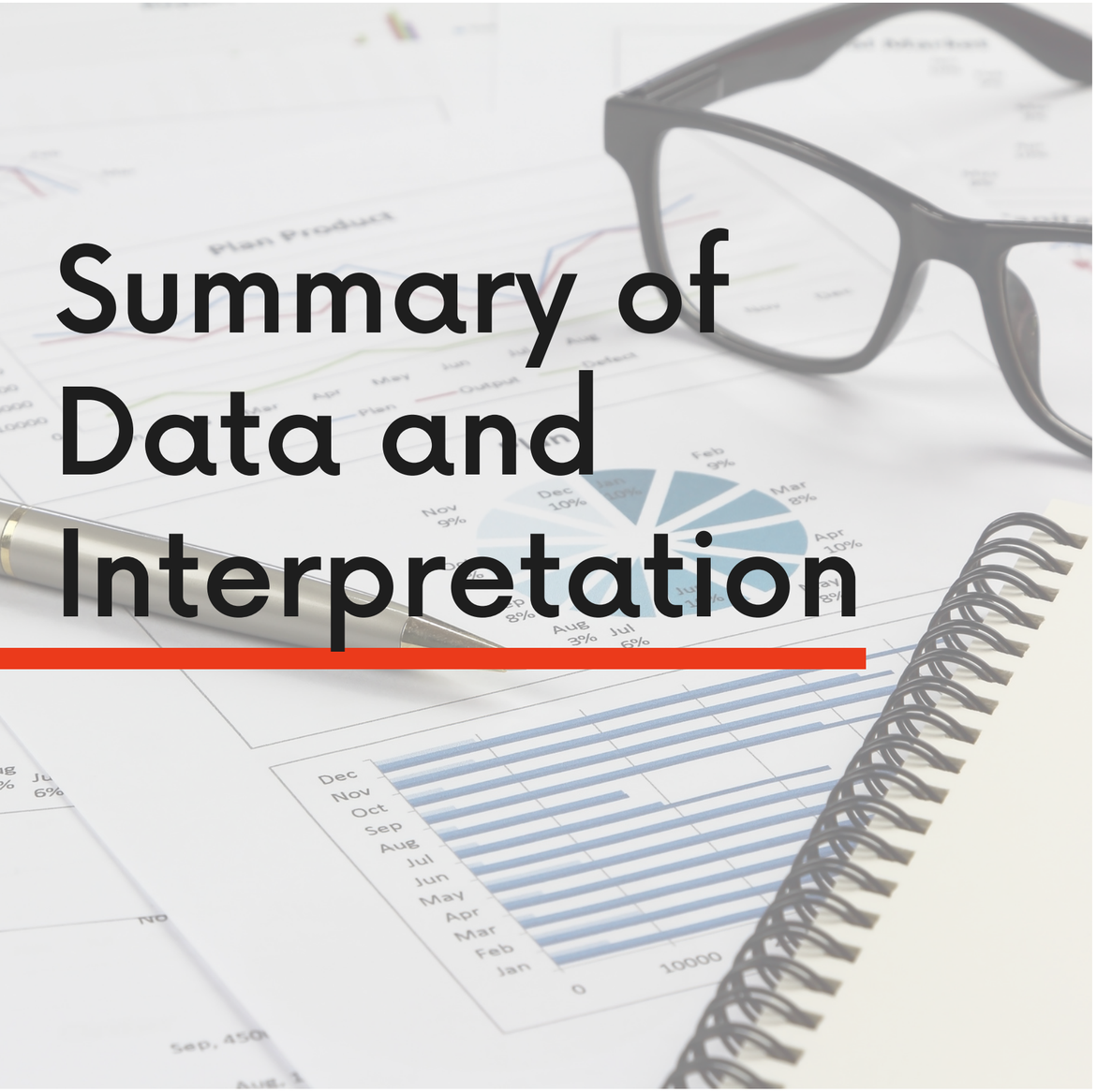
Data presentation and Analysis

- Summary of Data and Interpretation
- Statistical Treatment Computations

HOW DOES SCREEN TIME USED BEFORE BEDTIME AFFECT SLEEP?

MAY 22, 2021



Summary of Data and Interpretation

Each question was tabulated with the corresponding results and interpretations.

Time usage before sleep of the Respondents

1. On an average, what time do you usually go to sleep?	Frequency	Percent
9 – 10 pm evening	13	14%
11 – 12 pm evening	40	48.10%
1 – 2 am morning	20	22.80%
3 - 4 am morning	9	9.70%
5 - 6 am morning	4	4.30%
6 - 7 am morning	1	1.10%
7 – 9 am morning	0	0
TOTAL	87	100%

Table 4.1
shows the time usage before sleep of the respondents based on the result.

Majority of the answers are 11 – 12 pm evening when they're going to sleep. Meaning, they have much time to use mobile devices before sleeping. However, some of the respondents answered 9 – 10 pm evening and 1 – 2 am morning. Meaning, some of the respondents are going to sleep early and some respondents wants to sleep whenever they want.

Long of asleep of the Respondents

2. How long will it take for you to fall asleep once you are in bed?		
	Frequency	Percent
Less than 15 min	27	31%
15-30 min	29	35.70%
31-45 min	16	16.50%
46-60 min	15	16.80%
3 HOURS	0	0
It depends	0	0
TOTAL	87	100%

Table 4.2
shows the long of asleep of the respondents based on the result.

The table shows that 35.7% of the respondents fall asleep 15 – 30 mins and some of the respondents fall asleep less than 15 mins, but the other respondents their taking 31 – 45 mins and 46 – 60 mins to fall asleep. Meaning, the other respondents are taking hard to fall asleep when in bed.

Hours in sleep of the Respondents

3. How many hours of sleep do you get in 24 hours? (Approximately)Less than 3 hours.	Frequency	Percent
4 hours	4	4.30%
5 hours	12	12.90%
6 hours	20	25.60%
7 hours	20	22%
8 hours	19	21.20%
More than 9 hours	12	14%
TOTAL	87	100%

Table 4.3
shows the hours in sleep of the respondents based on the result.

The table shows that the hours of sleep of the respondents are 6 hours, 7 hours, and 8 hours. Meaning, they're taking numbers of hour of sleep which is good and the usual time we need is 7 to 8 hours of sleep.

Activities before sleep of the Respondents

4. Please state which of the following activities do you usually do before you sleep?	Frequency	Percent
Check email	2	2.10%
Watch social media	68	70.50%
Watch TV	2	5.40%
Play games on a screen	13	16.80%
None of the above	0	0%
Other	2	5.20%
TOTAL	87	100%

Table 4.4
shows the activities before sleep of the respondents based on the result.

Table 4.4 shows the activities before sleep of the respondents based on the result.

It shows that the 70.5% of the respondents are watch social media in their mobile devices before they sleep, Meaning, there are a higher chance that's why they take so much time to sleep in bed. It indicated that they were not the same when it comes of social activities.

Average time using of smartphones of the Respondents

5. How many times you use your smart phone at bed time.	Frequency	Percent
Always	83	89.20%
Often	3	9.70%
More Often	1	1.10%
Never	0	0
TOTAL	87	100%

Table 4.5
shows the time usage of smart phone of the respondents based on the result.

Table 4.5 shows the time usage of smart phone of the respondents based on the result.
The table shows that 89% of the respondents are always use their smartphones at bedtime. Meaning, it shows that the most of them are spending so much time in screen time.

Times of Awakened of the Respondents

6. Awakened by your mobile phone at night?	Frequency	Percent
Almost Everyday	34	37.60%
A few times a week	15	18.80%
A few times a month	0	0
Occasionally	25	28.60%
Never	13	15%
TOTAL	87	100%

Table 4.6
shows the time of awakened of the Respondents based on the result.

Table 4.6 shows the time of awakened of the Respondents based on the result.

The tables shows that 37% of the respondents are almost everyday awakened by their mobile devices at night. And some of respondents are occasionally awakened by their mobile phones.

Quality of sleep of the Respondents

7. Does silence mode of phone after screen time helps you to get quality sleep?	Frequency	Percent
YES	73	81.70%
NO	14	18.30%
TOTAL	87	100

Table 4.7
shows the quality of sleep of the respondents based on the result.

The table shows that the silence mode of their phone are helps them to get a good sleep.

Gadgets used while charging of the Respondents

8. If you're using gadgets, do you use it while charging to have continuous screen time?	Frequency	Percent
YES	44	51.60%
NO	43	50.50%
TOTAL	87	102.10%

Table 4.8
shows the gadget used while charging of the respondents based on the result.

The table shows are some of respondents are using their smartphones while charging and some of respondents are not using their smartphones while charging. Meaning, the respondents want to enjoy their time on their smartphones and some of them are want to take a break.

Reduce screen time of the Respondents

9. Have you tried reducing screen time before bedtime? If yes, How? If no, type 'No'.	Frequency	Percent
YES	55	63.70%
NO	32	36.30%
TOTAL	87	100%

Table 4.9
shows the reducing screen time of the respondents based on the result.

Based on the answers of the respondents are they tried to reduce screen time to do some other activities like drawing, reading, writing, and some respondents have different reason like when they not get enough sleep, and when have class tomorrow.

Social Habit of the Respondents

10. Do you have a habit of checking your phone for no reason while catching up some sleep?	Frequency	Percent
YES	63	71%
NO	24	29%
TOTAL	87	100%

Table 4.10
shows the social habit of the respondents based on the result

It shows that the respondents have a habit of checking their phone for no reason. Meaning, some of the respondents are difficulty going to sleep and while sleeping.

Statistical Treatment Computations

Statistical computation using Chi-Square Test

Observed Values

Observed Values					
checking phone for no reason while catching up some sleep	activities usually do before to sleep				TOTAL
	Check email	Watch social media	Play games on a screen	None of the above	
YES	9	39	9	5	62
NO	4	15	4	2	25
TOTAL	13	54	13	7	87

Expected Values

Expected Values					
checking phone for no reason while catching up some sleep	activities usually do before to sleep				TOTAL
	Check email	Watch social media	Play games on a screen	None of the above	
YES	9.26	38.48	9.26	4.99	62
NO	3.74	15.52	3.74	2.01	25
TOTAL	13	54	13	7	87

Expected counts $\frac{(row\ total)\cdot(column)}{table\ total}$

$\frac{(62)(13)}{87} = 9.26$ $\frac{(62)(54)}{87} = 38.48$ $\frac{(62)(13)}{87} = 9.26$ $\frac{(7)(62)}{87} = 4.99$

$\frac{(25)(13)}{87} = 3.74$ $\frac{(25)(54)}{87} = 15.52$ $\frac{(25)(13)}{87} = 3.74$ $\frac{(25)(62)}{87} = 2.01$

OBSERVED VALUES	EXPECTED VALUES	χ^2
9	9.26	-0.26
39	38.48	0.52
9	9.26	-0.26
5	4.99	0.01
4	3.74	0.26
15	15.52	-0.52
4	3.74	0.26
2	2.01	-0.26
TOTAL		0.01

Degree of Freedom – $(r-1)^*(c-1)$

$= (2-1)^*(4-1)$

$df = 3$

$\chi^2 = \Sigma (O - E)2 / E$

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Conclusion Summary

HOW DOES SCREEN TIME USED BEFORE BEDTIME AFFECT SLEEP?

- Summary
- Conclusion
- Recommendation

MAY 22, 2021

Summary

Contains research main points presented in the Data presentation and analysis.

To summarize the research work, the study shows that the majority of respondents tend to spend more time on their phones at night that distracts them or keeps them occupied throughout the night. On the other hand, the results in having less hours of sleep and due to less time of resting they tend to wake up more late than they would get proper rest on time. Most of the respondents tend to cling on their phones every night in order for them to sleep. They depend too much on screen time to tire themselves mentally that can be unhealthy mentally and physically.

In the presented data tabulation, it is stated that most of the respondents are syncing in social media, this invites them to be updated and informed which causes them to spend time bit by bit to address some trends.

People rely on their cell phones or mobile devices rather than other electronic devices in having entertainment or screen time. Therefore, individuals tend to be involved with screen time with what makes them comfortable in using things like gadgets, television or any devices that incorporate their interest.

Lastly, respondents have different initiatives and interest in dealing with screen time and sleep. It may depend on the time and particular intention they want to do with their gadgets or electronic devices. The data analysis showed that people have different tastes and ways to get sleep and to catch up on some sleep in a day.

Conclusion

Conclusion was based on the relationship where screen time usage before bed may affect the sleep of an individual.

Base on the research study “How does screen time use before bedtime affect sleep” the researchers concluded that having too much screen time can lead to sleep deprivation or having irregularities to their body clock that can lead to the respondent’s lack of performance in his or her life and it can weaken the immune system that may lead to some serious sickness.

The researchers also found that a high number of respondents sleeping around noon because of too much screen time through their smartphones they spend more time on entertaining themselves than to get some rest or to tire themselves out with the use of their mobile smartphones.

All things considered, too much screen time can affect the sleep of an individual depending on the duration of gadget or device usage.It is also concluded that individuals are mostly attached with electronic devices which causes them to be entertained and invalidates the good effect of enough sleep in a day. This can also be connected to some health factors that arise with the excessive usage of gadgets before going to sleep or after sleeping.

Recommendation

It is based on the results of the research, conclusion and the indication of the specific data interpretation

To address the associated problem in this research, the researchers encourage every individual to eat healthier meals and do exercise in order to fix their sleeping pattern and have an overall better health. Also it is advised to have less screen time when going to bed and always have some free time to relax or meditate in order to have an easier way to sleep. The researchers also recommend having or visiting a doctor for your health so that you can be advised in trying sleeping pills or anti-depressant medicines in order to have a more optimal and quick way to sleep to fully rest the body.

Medical consultation is also a good solution in case of insomnia or having a hard time to fall asleep and get rest. Researchers also suggest engaging more in physical activities to tire up the body and also to lessen screen time before going to bed, this can be a good practice on preventing health risks that can be caused by too much screen time and radiation.