Associations Between Hours Spent Watching TV and Sleep Quality

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Math 615: Statistical Methods for Graduate Research

Abstract

Objective: This study examined associations between hours spent watching TV and overall sleep quality in adults.

Methods: Data was obtained from AddHealth codebook: Wave IV In-Home Interview. The sections used for the purpose of this research were "Daily Activities" and "Sleep Patterns"

Results: It was found that males watch on average more hours of TV than females, and individuals experiencing lower incidences of difficulty falling asleep watched less hours of TV than those experiencing higher incidences of difficulty falling asleep (p<.0001). Controlling for gender did not change this relationship.

Conclusion: Based on the evidence, it can be concluded that higher hours spent watching TV corresponds to a higher frequency of difficulty falling and staying asleep in adults.

Introduction

With insomnia becoming a more prominent issue in our society today, individuals are constantly seeking out ways to improve their sleep quality[1]. A high quality night of sleep is what most individuals strive for in order to wake up in the morning feeling refreshed. Poor quality sleep can decrease productivity throughout the day and cause people to be lethargic. A wide array of factors can contribute to overall sleep quality, but with technology becoming increasingly used in the modern world, it is becoming one of the emerging factors that affect sleep quality[2]. Almost every individual owns some kind of electronic device nowadays, and as they spend increasing amounts of time on these devices, it may be affecting overall sleep quality[3]. This study strives to investigate associations between television watching and sleep quality.

Hypotheses

1.Individuals watching more hours of TV will experience higher incidences of difficulty falling asleep.
2.Individuals watching more hours of TV will experience higher incidences of difficulty staying asleep.
3.Gender will modify the relationship between difficulty falling asleep and hours spent watching TV.

Methods

All data was obtained from AddHealth: Wave IV In-Home Interviews. Sections used for the purpose of this study includes: "Daily Activities" and "Sleep Patterns"

Variables used:

- Gender (Male/Female)
- Difficulty falling, or staying asleep (ranges from "never in the past 4 weeks" to "5 or more times a week")
- Hours spent watching TV in a week
- Snore/Stop Breathing During Sleep (yes/no)

Statistical Analysis:

- ANOVA test to compare differences in hours of TV watched among the different levels of difficulty falling, and staying asleep.
- Independent t-test to compare mean hours of TV watched between those who do snore/stop breathing during sleep and those who do not.

Data was analyzed using IBM Statistical Package for the Social Science [SPSS Statistics] version 24. Results were considered statistically significant if the p-value obtained was less than 0.5. Descriptive statistics were used to characterize the general demographic characteristics of the sample and survey responses.

Sample Characteristics

Table 1. Sample Characteristics

Gender	n	%
Male	3147	48.4
Female	3356	51.6
Difficulty Falling Asleep		
Never in the past 4 weeks	2400	36.9
Less than once a week	950	14.6
1 or 2 times a week	911	14.0
3 or 4 times a week	395	6.1
5 or more times a week	411	6.3
Difficulty Staying Asleep		
Never in the past 4 weeks	2237	34.4
Less than once a week	866	13.3
1 or 2 times a week	866	13.3
3 or more times a week	500	7.7
5 or more times a week	598	9.2
Snore/Stop Breathing During Sleep		
Yes	2595	39.9
No	2458	37.8
	Mean	**SD**
Age (mean, SD)	29	1.8
Hours Spent watching TV	13.2	12.4

Results

Figure 1: Associations between difficulty falling asleep and hours spent watching TV.

There was a difference in the average hours of TV watched between the groups (p<.0001).

- Individuals who have "never in the past 4 weeks" had difficulty falling asleep spent on average 2.2 less hours watching TV compared to those who had difficulty falling asleep "3 or 4 times per week" (p = .010) and 4.4 less hours than those who have difficulty falling asleep "5 or more times per week". (p<.0001)
- Individuals who had difficulty falling asleep "less than once a week" spent on average 3.9 less hours watching TV than those who had difficulty falling asleep "5 or more times per week". (p<.0001)
- Individuals who had difficulty falling asleep "1 or 2 times per week" spent on average 2.9 less hours watching TV than those who had difficulty falling asleep "5 or more times per week". (p = .010)

Figure 1.

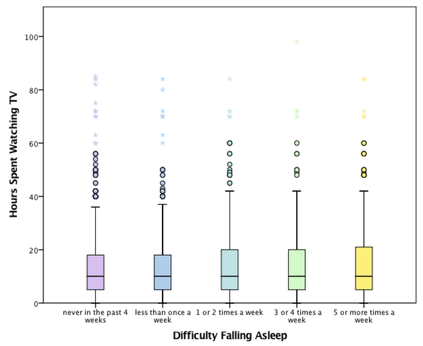

Figure 2.

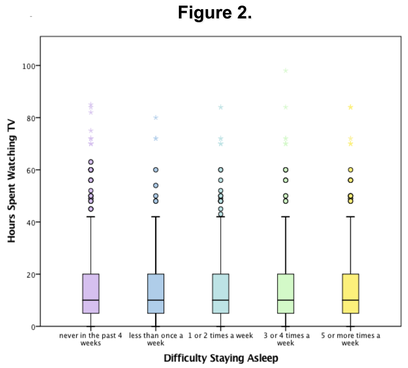

Figure 2: Associations between difficulty staying asleep and hours spent watching TV.

There was a difference in the average hours of TV watched between the groups (p = .002).

Individuals who have "never in the past 4 weeks" had difficulty staying asleep spent on average 1.7 less hours watching TV than those who had difficulty staying asleep "5 or more times a week". (p = .029)

Individuals who had difficulty staying asleep "less than once a week" spent on average 2.4 less hours watching TV compared to those who had difficulty staying asleep "5 or more times a week". (p = .003)

Multivariate:

Figure 3: Associations between difficulty falling asleep and hours spent watching TV between the two genders.

After adjusting for gender, the association between difficulty falling asleep and hours spent watching TV stayed significant. This concludes that gender is not a moderating variable in this relationship.

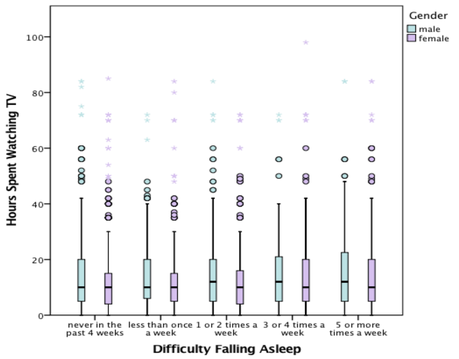

Figure 3.

Conclusion/Discussion

Overall, the analysis showed significant associations between sleep quality and hours spent watching television. Individuals who had less frequent instances of difficulty falling asleep or staying asleep spent on average less hours watching TV compared to those who had more frequent instances of difficulty falling/staying asleep.

Gender was not a moderating variable for this relationship, though the analysis did show that males watched on average more hours of TV compared to females.

Another analysis was done to determine differences in mean hours of TV watched between those who did snore/stop breathing during their sleep and those who did not. The independent t-test results showed that individuals who did snore/stop breathing during sleep watched on average more hours of TV compared to those who did not.

Based on these analysis, we can conclude that hours spent watching TV does have an impact on sleep quality.

This supports previous research showing that using media devices and watching TV for more than 120 min/day decreases sleep time and quality[2]. Studies have also shown that presence of a television in a child's room reduces sleep quality[3].

Limitations to this study include:

- Other factors that may be associated with sleep quality were not examined (time of sleep/wake up, diet, exercise, mental health etc.)
- Survey questions asking about difficulty falling asleep/staying asleep was for a time period of 4 weeks, in which participants may have difficulty remembering

Implications/Future Research:

- Individuals who may have difficulty falling asleep or experience insomnia frequently may want to reduce the amount of time they spend watching television.
- Future research could look at the time that an individual watches TV or uses other forms of technology and how that is associated with sleep quality. For example, individuals who typically watch TV in the morning compared to those in the evening.
- Examining effects of other media usage and sleep quality, such as cellphone and computer usage.
- Another interesting relationship to look at would be an individual's job setting and how that affects their sleep patterns.

References

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