

Effect of Late Night Mobile Phone Use on Sleep

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Abstract: Background: Smartphones have become a prevalent technology and its use does not stop till late night. People take their mobile phones to bed with them and leave them switched on to make sure they do not miss any incoming calls, messages or other notifications which affects their sleep. Materials and Methods: Cross-sectional online survey of 6 months all over India involving 255 subjects of age 18-60 years. PQSI and PMPUS scales were applied along with other questions regarding late night mobile use. Results: As per PMPUS scale, 40% participants experienced sleep problems due to excess mobile use. As per PQSI scale, most (70 %) late night mobile phone users reported decreased sleep duration, 50% reported decreased sleep efficiency, 40 % reported increased sleep latency, 30 % reported sleep disturbances and day-time dysfunctions variables. Adjusted binary and multinomial logistic regression model showed late night mobile users were 1.59 times more likely to have poor sleep quality (PQSI score <5) than non-users ($p < 0.001$). Conclusion: Late night mobile phone use by individuals was associated with poorer sleep quality.

Keywords: mobile phone, sleep quality, sleep duration, sleep efficiency

1. Introduction

There is a small, but growing body of research looking at the impact of the mass media on young people's sleep patterns. Lack of sleep and nightmares have been linked to television viewing (Bulck, 2000). Sleep disturbances have been linked to the presence of a TV set in the child's bedroom (Owens *et al.*, 1991) and to computer game play (Tazawa and Okada, 2001).

Increasingly, young children and adolescents have the use of a personal mobile phone, which they use a lot for text messaging. Mobile telephones may be having a major impact on the quality of sleep of a growing number of adolescents. It affected a quarter of the youngest to almost half of the eldest children in the sample (Bulck, 2003).

The threat to healthy sleep patterns is potentially more important than the threat posed by entertainment media. The latter mainly appear to influence time to bed, while mobile phones actually seem to lead to interrupted sleep (Bulck, 2003).

Sleep disturbance partially mediated the relationship between electronic media use in bed before sleep and symptoms of depression. Electronic media use was negatively related with sleep duration and positively with sleep difficulties, which in turn were related to depressive symptoms in adolescents. Sleep difficulties were the more important mediator than sleep duration (Lemola *et al.*, 2015)

Electronic media have often been considered to have a negative impact on the sleep of children and adolescents. Delayed bedtime and shorter total sleep time have been found to be most consistently related to media use. (Cain & Gradisar, 2010)

Aim: The study aims to assess the relationship between late night mobile-use and sleep duration, quality (efficiency, latency, disturbances)

2. Methodology

Study Type: cross-sectional online survey, DURATION -6 months, **Sample Size-**255, **STUDY SITE:** all over India.

Inclusion Criteria: age 18-60 years. **Exclusion Criteria:** Any psychiatric illness especially primary insomnia or physical illness or substance abuse

TOOLS: 1. Online survey via google forms. 2. All socio-demographic details were recorded and email-id was made mandatory to avoid repetition of responses. 3. PQSI (Pittsburgh Sleep Quality Index Questionnaire) was used for sleep assessment. 4. To see dysfunctional mobile use, PMPUS (Problematic Mobile Phone Use Scale) was used.

3. Results

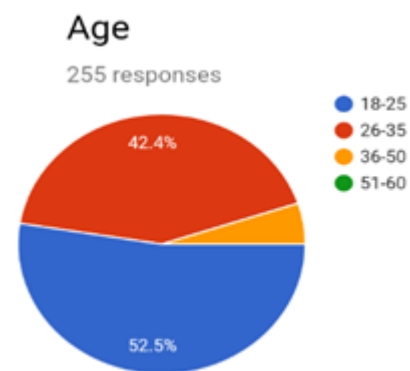


Figure 1

Gender

255 responses

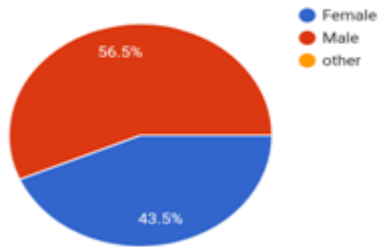


Figure 2

Education

256 responses

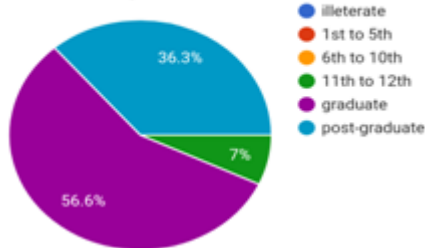


Figure 3

Occupation

255 responses

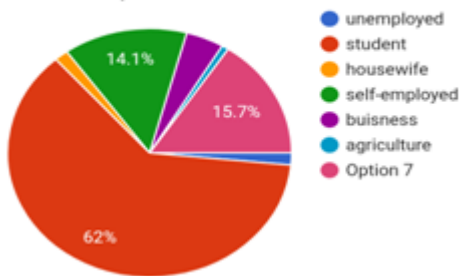


Figure 4

6.) During the past month , how often have yoy take medicine (prescribed or "over the counter") to help you sleep?

240 responses

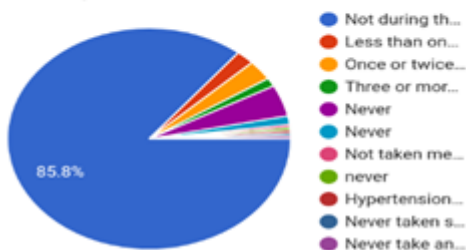


Figure 5

7.) During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

243 responses

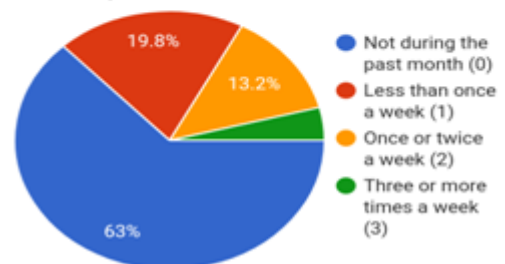


Figure 6

8.) During the past month , how much of a problem has it been for you to keep up enthusiasm to get things done?

242 responses

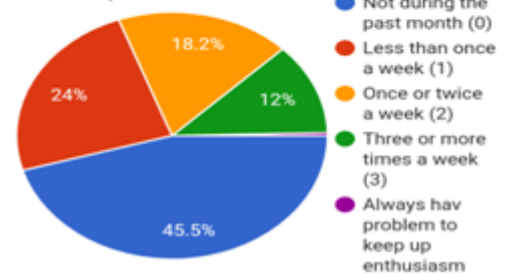


Figure 7

9.)During the past month, how would you rate your sleep quality overall?

252 responses

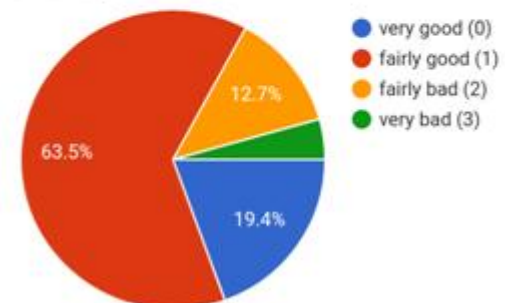


Figure 8

4. Results

- 1) As per PMPUS scale, 40% participants experienced sleep problems due to excess mobile use.
- 2) 150 participants reported mobile phone use after 11 pm.
- 3) As per PQSI scale, most (70 %) late night mobile phone users reported decreased sleep duration, 50% reported decreased sleep efficiency, 40 % reported increased sleep latency, 30 % reported sleep disturbances and day-time dysfunctions variables.
- 4) Wake-up time was 9-11 am among late-night mobile phone users and 6-10 am among non-users.
- 5) Adjusted binary and multinomial logistic regression model showed late night mobile users were 1.59 times more likely to have poor sleep quality (PQSI score <5) than non-users ($p < 0.001$).

5. Discussion

Most of the participants were of the age group 18-25 yrs (52.5%), male (56.5%), graduate (56.6%), student (62%). 12% of subjects experienced lack of enthusiasm in daily activities 3 or more times a week (depressive feature) after late night mobile use. 18.2% of subjects experienced lack of enthusiasm in daily activities once or twice a week (mild depressive feature) after late night mobile use. This finding is consistent with the study (Lemola et al., 2015) 13.2 % had day time sleepiness after late night mobile use once or twice a week.

19.4 % had rated their subjective sleep quality as very good and 12.7 % rated as fairly bad.

150 participants reported mobile phone use after 11 pm. Wake-up time was 9-11 am among late-night mobile phone users and 6-10 am among non-users. Late night mobile use affected their next day work productivity. This finding is consistent with the study (Lanaj et al., 2015)

As per PMPUS scale, 40% participants experienced sleep problems due to excess mobile use.

As per PQSI scale, most (70 %) late night mobile phone users reported decreased sleep duration, 50% reported decreased sleep efficiency, 40 % reported increased sleep latency, 30 % reported sleep disturbances and day-time dysfunctions variables.

Adjusted binary and multinomial logistic regression model showed late night mobile users were 1.59 times more likely to have poor sleep quality (PQSI score <5) than non-users ($p < 0.001$).

The above findings are consistent with the studies (Bulck, 2003; Cain & Gradisar, 2010; White et al., 2011; Lemola et al., 2015).

6. Limitations

There is lack of longitudinal follow-up.

There is lack of assessment of the effect of other lifestyle factors, physical activity, dietary factors all of which can confound quality of sleep. Baseline assessment was not matched.

7. Conclusion

- Late night mobile phone use by individuals was associated with poorer sleep quality.
- As a part of healthy life style recommendations, avoidance of late night mobile use should be encouraged.

Further studies needs to be done to substantiate the role late night mobile phone use as a danger to normal sleep cycle.

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