

The Protective effect of warmer colour display of smartphone screen on sleep quality of adults: an experimental feasibility study

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Abstract

Statement of the Problem: The use of electronic media, with the emitting light in the blue spectrum, suppresses the secretion of melatonin which in turn decreases sleepiness. This study investigated the effects of bedtime mobile phone use of adults on sleep quality measured by commercially available sleep tracker, Fitbit Charge 3. Thirty healthy adults (n=30), 30-45 years old (Mean age, $M=33.27\pm3.58$), 23 females and 7 males, were recruited to take part in this study. Within-subject approach was adopted. The experiment procedures lasted for three nights. Day 1 is the 'adapting night' for subjects to get used to wearing the tracker to sleep. On Day 2, subjects had needed to switch on the "Night Shift" mode to the "warmer" end from 6pm to 6am the next morning with full brightness. On Day 3, the "Night Shift" function was switched off while the screening was kept at full brightness for the whole day. During Day 2 and Day 3, subjects were asked to watch a 20-25-minute-long video and then finish an online sleep diary (5-10 minutes long) after light out in their own bed. Subjects reported statistically significant higher level of sleepiness before sleep ($p=0.0035$), had shorter duration of light sleep ($p=0.0157$), longer duration of Deep sleep ($p=0.0308$), higher percentage of REM sleep ($p=0.0398$), higher percentage of Deep sleep ($p=0.0055$), and lower percentage of Light sleep ($p=0.0012$) during the night using the Night Shift mode (Day 2) than the night without Night Shift mode (Day 3).

Conclusion & Significance: Better sleep quality can be resulted from turning the screen colour temperature to the warmer side using the Night Shift mode in iOS platform.

Biography

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