Reducing smartphone screen time can improve sleep and overall well-being

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Review & Commentary for a randomised controlled trial to explore if smartphone screen time reduction can improve mental health

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Commentary

Implications for practice and research

- While reducing smartphone screen time improved the quality of sleep and overall well-being, the impact was transient suggesting on-going support to reduce screen time is needed.
- A reduction in smartphone screen time did not increase physical activity, which is a contributing factor to overall well-being; future research on the value of physical activity in exchange for screen time is needed.

Context

Smartphone screen time has risen sharply in recent years, with research findings suggesting a correlation between increased smartphone use and an increased in mental health symptoms and poor overall well-being. What remains unknown is if this correlation is evidence of a direct relationship (causality) between smartphone use and an increase in mental health symptoms. Pieh et al's study aimed to investigate the effects of reducing smartphone use on mental health symptoms.[1]

Methods

A parallel non-blinded randomised controlled trial (RCT) was undertaken. Healthy students were recruited from one university and via social media platforms, and were eligible to participate if they were between 18-29 years of age, used their smartphone for at least 3 hours per day, and

were not diagnosed or being treated for a mental health disorder. The intervention group were asked to reduce their screen time over a 3-week period to less than 2 hours per day, the control group continued as usual. Validated questionnaires that measured stress (PSQ), well-being (WHO-5), depressive symptoms (PHQ-9), and sleep quality (ISI) were completed at baseline, immediately post-intervention, and at follow-up 6 weeks later by both groups. Data analysis was based on intention to treat, repeated measures, ANOVA and post-hoc tests.

Findings

One hundred and eleven healthy students (mean age 22.68; mean screen time 276 min/day) were randomly assigned to an intervention group (n=58 students) who reduced their screen time over a 3-week period to less than 2 hours per day or the control group (n = 53). There were no differences between the analysis of the questionnaires recorded at baseline (at start of the study). A small to medium size positive effects on well-being, depressive symptoms, sleep quality, and stress were found at the end of the 3 week reduction in smartphone use in the intervention group. However, screen time increased rapidly after the intervention period with questionnaire results at follow-up (6weeks) similar to baseline scores. The study found 3 weeks of screen time reduction had a small reduction of depressive symptoms, stress and a small increase in sleep quality, and well-being. Findings suggest a causal relationship, rather than mere correlation, *may* exist between daily smart-phone screen time and mental health symptoms and sleep quality.

Commentary

The exponential use of smartphones over the past decade, with parallel increases in poor mental health among young people and young adults, has resulted in a growing body of research exploring whether this correlation is causative of poor mental health.[2,3] Pieh et al's study adds to this evidence base and suggests a causal relationship, rather than mere correlation *may* exist between daily smart-phone use and mental health symptoms and sleep quality.[1] While Pieh et al's study had a reasonable sample size, the intervention was for a 3week period, which is unlikely to effect long-term behaviour change. While accounted for in the analysis, many participants in the intervention group did not achieve the required less than 2 hours per day screen time. An additional limitation included that while physical activity was estimated from all participants at baseline only the intervention group used fitness trackers during the intervention, therefore compassion with the control group was not possible.

As reported in our previous commentaries,[4,5] we have highlighted that while there is a potential link between smartphone use and poor mental health in young people, it is unlikely that smartphone use per-se is causative factor but smartphone-related patterns of behaviour may be (how, when, what and why). Furthermore, while alluded to in their discussion, Pieh et al[1] did not record the reasons the students used their smart phones, highlighting benefits include accessing educational resources, searching for information and socializing. Smart phone use often has negative connotations. This made us reflect on our smartphone use which related to work, information gathering, managing home accounts and finances, and staying connected with family and friends, leading us to conclude smartphone for many have become an indispensible part of daily life. While there is ongoing debate about restricting smartphone use, particularly for school children, this is akin to 'shutting the stable door after the horse has bolted', rather that considering what can be done to ensure healthy smartphone use.

Future research exploring association between smart phone use and mental health symptoms could consider: 1) Capturing smartphone related patterns of behaviour; 2) Developing objective measures of social media use rather than relying primarily on single device use or self-reported use; 3) Capturing other factors that may contribute to mental health symptoms such as socioeconomic factors; 3) Smart phone use and impact across the lifespan; 4) Longitudinal designs that capture mental health symptoms over time.

References

[1]Pieh, C., Humer, E., Hoenigl, A. et al. Smartphone screen time reduction improves mental health: a randomized controlled trial. *BMC Med,* 2025; 23, 107. https://doi.org/10.1186/s12916-025-03944-z

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Competing interests - None