

Exploring the Impact of Excessive Use of Smartphone on Teenagers' Well-being in Dhaka City: A Sociological Study

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Abstract: This research investigates the impacts the use of smartphones on the mental and physical health of 120 teenagers attending school in Dhaka, Bangladesh. The research employs a mixed methods approach utilizing qualitative data from 5 Key Informant Interviews (KIIs) with parents, teachers and psychologists, and 120 quantitative survey data. The results point out that more than half of the respondents suffer from smartphones dependency withdrawal symptom with respect to overuse of smartphones it has psychological effects of anxiety and depression and jealousy caused by social media, as well as very poor physical wellbeing such as headaches, fatigue and problems relating to digestion. In order to reduce these adverse effects, informants stress the importance of structured program, parental engagement and educational activities. The research underlines the urgent President Commissions of areas that will promote ready use of smartphones while protecting the health of the teenagers in the society where there is wide access of the technology.

Keywords: Smartphone, Teenagers, Mental Health, Physical health.

Introduction

Research conducted in global contexts patterns, particularly among teenagers². Bangladesh has experienced a digital revolution, with a significant portion of its population, including the age group of 11 to 17, using smartphones. Teenagers, marked by rapid physical, social, and emotional changes, comprises a substantial portion of Bangladesh's population. This examining smartphone use within the framework of their development and environmental influence.³ With approximately 25.5 million school-going teenagers in the country⁴, smartphones have become a central feature of their lives, offering instant access to educational resources, social media platforms, and entertainment. However, the convenience provided by these devices has given rise to concerns regarding their impact on adolescent mental, psychological, and physical health⁵. More recently, research has shown that excessive phone usage among teenagers has

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² Miller, G. 2012, The Smartphone Psychology Manifesto, *Perspectives on Psychological Science*, 7(3), p. 221–237.

³ Islam, J. 2018, Digital Bangladesh: a decade of technological transformation, *Journal of Early Childhood*, 16(7) p. 27.

⁴ Moonajilin, M. S., Kamal, M. K. I., Mamun, F. A., Safiq, M. B., Hosen, I., Manzar, M. D., & Mamun, M. A., 2021, Substance use behavior and its lifestyle-related risk factors in Bangladeshi high school-going adolescents: An exploratory study, *PloS one*, 16(7), p.11-12.

⁵ Reichenbach, L., Ainul, S., Bajracharya, A., & Gilles, K., 2017, Adolescents in Bangladesh: A situation analysis of programmatic approaches to sexual and reproductive health education and services, *The Population Council*. 7(2), p.8-9.

serious unintended consequences. Research conducted in global contexts reveals correlation between excessive phone usage and issues such as sleep problems, anxiety, and depression as well as physical problems which include head and eye strain. In South Asia, particularly in urban areas like Dhaka, studies have begun to explore these issues, but there remains a paucity of research specifically examining the interplay of smartphone usage and teenagers' health in the unique sociocultural and environmental context of Bangladesh⁶.

This study addresses this gap by focusing on teenagers aged 10 to 17, located in Dhaka. It aims to investigate the patterns of smartphone use among this demographic and its implications for their physical, psychological, and social health. Additionally, the study examines how developmental and environmental factors interact with smartphone habits to influence overall well-being. By identifying the specific health risks associated with smartphone use among adolescents in Dhaka, this research seeks to inform targeted interventions that promote healthier usage habits and mitigate potential harm.

Methodology

This study explores the impact of smartphone addiction on the physical and psychological well-being of teenagers in Dhaka, Bangladesh, using a mixed-methods approach. It combines quantitative surveys and qualitative in-depth interviews to provide a comprehensive understanding of the issue. The study focuses on adolescents aged 10–17 years, capturing diverse perspectives across socioeconomic backgrounds and academic grades. A structured survey was administered to 120 participants to gather data on smartphone usage patterns and health impacts. In-depth interviews with 5 key informants, including psychologists, educators, and parents, explored addiction symptoms, behavioral changes, and mitigation strategies. Purposive sampling ensured relevant perspectives, with psychologists selected for their expertise in adolescent mental health. Quantitative data were analyzed using SPSS, identifying correlations between excessive smartphone use and health outcomes. Thematic analysis of qualitative data revealed key themes such as addiction symptoms, social media influence, and the role of parents. Findings indicate that smartphone addiction leads to physical issues like headaches and eye strain, as well as psychological problems such as depression, mood swings, and sleep disturbances. Social media exacerbates feelings of jealousy and inadequacy. The study emphasizes the need for targeted interventions to protect adolescent well-being.

Result and Discussion

Socio-Demographic Profile of the Respondents

The study was conducted among 120 teenagers (66 males and 54 females) aged 12 to 18 years old, all attending school in Dhaka, Bangladesh, during 2023. Table-1 demonstrates the demographic information of the adolescents. The age groups of the respondents where it is clearly evident that a large number of respondents (51.7%) belong to the age group (14-15). It was found that a major portion of the respondents (33.3%) are in the reading class of 10th grade. Analysis of the question related to monthly family income reveals that most of the respondents (33%) come from higher income level families (Monthly income 80000 and

⁶ World Health Organization, 2012, "*Making health services adolescent friendly: Developing national quality standards for adolescent friendly health services.*" (Report No. ISBN 978 92 4 150359 4). Retrieved from <https://apps.who.int/iris/bitstream/handle/10665/75217/9789241503594eng.pdf?sequence=1>

above). This is because our study has been carried out in the prominent school of Dhaka city where teenagers' parenteral level of education is moderate as most of them completed higher secondary level education and most of them live in nuclear family (57.5%) with siblings (71.7%). This background characteristic is almost similar to the recent findings.⁷

Overuse of Smartphone: Navigating the Hazards of Excessive Screen Time

People around the world spend an average of 3.25 hours on their phones every day, with young teenagers (11-17 years old) smartphone users spending upwards of 4.5 hours in a day⁸. Table 1 reveals that most of the sample is between the age bracket of 16 and 17 in this study and that age group used smartphone most of the time compared to other age groups. When teenagers spend many hours or days using the Internet, they reduce the time they have to spend with the family and on school work and physical activities. This teenager who goes online for two or more hours three or more times a week faces a higher risk of falling prey to online sexual exploitation⁹. A higher frequency of using a smartphone in the age group of 16-17 years (35.9%) and a higher frequency of daily usage of 4-5 hours per day, which is longer than healthy users of smartphone as recognized by WHO¹⁰, that 4 hours of daily use can lead to obesity and cancer and a higher habitual use have all been found to be related to that problematic usage. Similarly, more time spent online and a higher amount of risk were found to be associated with addiction¹¹. One of the respondents, Taj (14) narrated the following way: “I used a smartphone around 6 to 7 hours per day, it's like my best friend, living without a smartphone and without oxygen is the same thing for me”.

Exploring Popular Apps and Excessive Usage Patterns

You Tube, Instagram and Facebook are the most popular online platforms among teens of today's¹². In this study shows 95% of teens have access to a smartphone, and 45% are online almost constantly the findings indicates also that most of the respondents (95.3%) use YouTube app for their entertainment. There are many purposes of using smartphone also in young adolescents. Table no. 1 represents that most of the 73.3 % respondents use smartphone for entertainment purpose such as listening music and watching videos. The table 1 demonstrate that suggest that a significant number 59.2% of the participants think that they are addicted to the smartphone. Excess use of smartphone can lead to many physiological and psychological

⁷ Sharmin, S., & Islam, B. (2022). Smartphone usage and its impact on interpersonal relationships of the school-going adolescents of Dhaka city. *Jagannath University Journal of Arts*, 12(2), 438–450.

⁸ Mackay, J. (2019, March 21). Screen time stats 2019: Here's how much you use your phone during the workday [Blog post]. Retrieved from <https://blog.rescuetime.com/screen-time-stats-2018/>.

⁹ World Health Organization, 2010, *Towards 2030: the challenge for adolescent health and development*. (Report No. ISBN 478 66 240359 78). Geneva, Switzerland. Retrieved from <https://apps.who.int/iris/bitstream/handle/10665/752177>.

¹⁰ Christina M. Sanzari, Sasha Gorrell, Lisa M. Anderson, Erin E. Reilly, Martha A. Niemiec, Natalia C. Orloff, Drew A. Anderson, Julia M. Hormes, 2023, The impact of social media use on body image and disordered eating behaviors, *Eating Behaviors*, 4(9), P.89-95.

¹¹ Anderson, M., Favirio, M., Gottfried, J., 2024, Teens, Social Media and Technology: 2023, *Pew research Centre*. 5(8), P.12-16.

¹² Mustafaoglu, R., Yasaci, Z., Zirek, E., Griffiths, M. D., & Ozdincler, A. R., 2021, The relationship between smartphone addiction and musculoskeletal pain prevalence among young population: a cross-sectional study, *The Korean journal of pain*, 34(1), p.72–81.

problems of adolescents like pain in the hands, back and neck due to poor posture. It can also lead to impaired vision and even arthritis down the line¹³.

Mr. Khairuzzan Tapu (55) is a psychologist by profession through KII gave opinion about of addiction of using smartphone in school going adolescents.

“Smartphone addiction, sometimes colloquially known as “nomophobia” (fear of being without a mobile phone), is often fueled by an Internet overuse problem or Internet addiction disorder. After all, it’s rarely the phone or tablet itself that creates the compulsion, but rather the games, apps, and online worlds it connects us to”.

Table No.1 Socioeconomic and Behavioral Patterns, Smartphone Usage, Addiction, and Health Effects among Adolescent Respondents.

Category	Data (In Percentage)	Category	Data (In Percentage)
Socioeconomic Profile of Respondents		Popular Apps used by Respondents	
Age (Years)		YouTube*	95.3
10-11	10.8	Facebook*	90
12-13	25	Messenger*	89
14-15	51.7	TikTok*	84.4
16-17	12.5	Instagram*	59.7
Sex		WhatsApp*	51
Male	55	Dictionary*	45.8
Female	45	Snapchat*	66.7
Academic Level		CandyCam*	11.6
6 th Grade	9.2	FM Radio *	6.8
7 th Grade	10.8	Respondents’ views on Smartphone Addiction	
8 th Grade	16.7	Yes	59.2
9 th Grade	30.0	No	40.8
10 th Grade	33	Health effects associates with smartphone usage	
Usage Patterns (Hours Used per Day)		Psychological Effects	
Less than 1 hour	10	Categories of mental disturbance	
1-3 hours	33.3	Feeling Depressed *	29.4
4-6 hours	40	Mood is Itchy*	22.9
7-10 hours	13.3	Unnecessary Arguments with Elders*	45.9
More than 10 hours	3.4	Increased Instability of thinking*	17.9
Reason of using Smartphone		Impact of Smartphone on Sleep	
For Entertainment*	73.3	Yes	58.3
For Gaming*	13.6		
For using social media*	12.6		
For Study purpose*	8.9		

¹³ Heilig, M., MacKillop, J., Martinez, D., Rehm, J., Leggio, L., & Vanderschuren, L. J. M. J., 2021, Addiction as a brain disease revised: why it still matters, and the need for consilience, *Neuropsychopharmacology: official publication of the American College of Neuropsychopharmacology*, **46**(10), p.1715–1723.

For Online Shopping*	3.0	No	46.7	
Instant Information*	11.6	Physical Well-being		
To see Motivational Videos*	10.1		Headache*	49.7
For Outdoor Security*	15.9		Eye Problem*	39.1
Reduce Loneliness and Depression*	25.0		Digestive Problem*	15.6
Watch Satisfactory Videos*	4.7		Hearing Problem*	21.1
Getting instant Fame*	5.7		Insomnia*	19.5
No Reason*	7.8			

(*n=120* More than one response counted)

Source: Field Survey, 2023.

Understanding the Psychological Well-being: Impacts of Teenagers Smartphone Addiction

Today, where addiction is more than a single-dimensional concept, it is substantially difficult to define addiction¹⁴. Addiction Smartphone addiction is considered the inability to control smartphone use despite negative effects on users¹⁵. This study shows that majority 47.5% of the respondents agree that they receive calls on their smartphone when they are on road. Using a mobile phone or other device, like a Smartwatch, while walking or riding a bicycle can be distracting, increasing adolescents' chances of being involved in a crash or near a crash. It indicates the major risk of their digital life¹⁶.

On a Likert scale, 51.7% of the respondents are strongly agree that a smartphone in hand, teenagers spend more time than desired. Similar results were found in the research of Yoon, M., and Yun, H.¹⁷. Majority portion 26.7% of the respondents agree with that after every single moment while they check if there is anything new in smartphones. 42.5% of the respondents agree with it looks like the end of the world is not near when adolescents don't find their smartphone. Teenagers need to use the smartphone more and more often in order to achieve the same desired effect. Excessive use is characterized by a loss of sense of time¹⁸. Also, a study was conducted that 67% of respondents said they are addicted to smartphones, and the use of a smartphone not only produces pleasure and reduces feelings of pain and stress but also leads to failure to control the extent of use despite significant harmful consequences in

¹⁴ Rokonuzzaman, M., 2018, Smart phones from necessity to addiction. *The Financial Express*. Retrieved from <https://thefinancialexpress.com.bd/views/smart-phones-from-necessity-to-addiction-1516548688>

¹⁵ Yeo, J.; Park, S.H., 2021, Effect of Smartphone Dependency on Smartphone Use While Driving. *Sustainability*, **13**(10), p. 56-58.

¹⁶ Yoon, M., & Yun, H., 2023. Relationships between adolescent smartphone usage patterns, achievement goals, and academic achievement, *Asia Pacific Education Review*, **24**(1), 13–23.

¹⁷ Toh, S.H., Howie, E.K., Coenen, 2019, From the moment I wake up I will use it...every day, very hour: a qualitative study on the patterns of adolescents' mobile touch screen device uses from adolescent and parent perspectives. *BMC Pediatr*, **19**(30), P.90-99.

¹⁸ Atta Mimi, A., 2011, *The reasons for the prevalence of BlackBerry cellphones and the resulting educational effects from the perspective of secondary school students in Abo-Dhabi*. 9th Conference on the negative effects of cellphones on secondary school students, (pp. 104-116). Abo-Dhabi, UAE.

financial, physical, psychological, and social aspects of life¹⁹. This research shows that the majority 45.8% of the respondents strongly agree that they get more support online than directly from depression. 5.0% of the respondents strongly disagreed with that statement. Majority 29.2% of the respondents strongly agree that Facebook reduces loneliness and depression more than anyone or anything. Also, 44.2% of the respondents strongly disagreed that, because of using the smartphone, anxiety is felt when their smartphone is shuttled down. 25.0% of the respondents strongly agree, they are feeling that the phone is going to be lost, which called nomophobia. These finding are consistent with research examining the negative effects of excessive phone use on adolescent's psychological health outcomes and the risk of anxiety and depression independently contributing to smartphone addiction²⁰. Association between overuse or dysfunctional usage of smartphones and psychological health. They indicated that low emotional stability, chronic stress, and depression have a correlation with phone usage²¹.

Changing Behaviors and Depression Triggered by Social Media

Teenagers' behaviors and tendencies towards things is powerful patterns. Which also creates and builds their personality. So, it's no surprise that their personalities play a vital part in their social relationships²². This study shows that 65% of the respondents noticed their problematic behavior after using of smartphone. And also, 17.9% of the respondents said they found increased instability in their thinking. The effect of smartphones on the behavior of adolescents is highly affected by this device. Because of each and every task (from the morning to night, at home, road to room, coaching class to home.) in their daily lives they use the smartphone in various dimension²³. Most teenagers want to show off to the world when posting online, so they will only highlight their best moments²⁴. Even though they have problems, people don't like to post the negative events of their lives online. When another adolescent's teenagers scroll through their newsfeed, it's easy for them to think that all of their friends and classmates are perfect, making them feel left out²⁵. This study shows that 53.4% of the respondents feel depressed when they see the post or pictures on social media of other people. In this research, this study demonstrates that the majority (30.2%) of the respondents said they feel depressed when they see pictures of someone going to a get-together or party, and people's lives seem

¹⁹ Boumosleh, J. M., & Jaalouk, D., 2017, Depression, anxiety, and smartphone addiction in university students- a cross-sectional. *PLoS ON*,12(8), p.18-22

²⁰ Augner, C., and Hacker, G. W., 2012, Associations between problematic mobile phone use and psychological parameters in young adults, *Journal Public Health*, 57(7), p.47-41.

²¹ Orben, A., Tomova, L., & Blakemore, S. J., 2020, The effects of social deprivation on adolescent development and mental health, *The Lancet. Child & adolescent health*, 4(8), 634–640.

²² Mudasir, R. & Ahmad, S., 2019, Smartphone Use and Its Addiction among Adolescents in the Age Group of 16-19 Years, *Indian Journal of Community Medicine*, 46 (10), P.9-8.

²³ Falcón-Linares C, González-Yubero S, Mauri-Medrano M, Cardoso-Moreno MJ., 2023, Impact of social media on Adolescence: Mapping Emerging Needs to Build Resilient Skills. *Societies*, 13(11), P.238-246.

²⁴ Selnes, F. N., 2024, Fake news on social media: Understanding teens' (Dis)engagement with news, *Media, Culture & Society*, 46(2), P.376-392.

²⁵ Werner, G. K., Eaton, K., Ohan, L. J., Patrick, L., Stves, C. & Corrigan, W., 2016, Failing to meet the good parent ideal: Self-stigma in parents of children with mental health disorders, *Journal of Child and Family Studiess*, 25(7), p. 3109–3123.

more enjoyable on social networking sites than themselves. On average, 15.1% of the respondents feel jealous when they see more like and comments on others posts. And also, 2.2% of the respondents said that when their friends bully on them through memes or posts, it makes them depressed. Similar findings were also found in the research conducted by Werner. et. al.²⁶.

Smartphone Use and Teenagers Sleeping Pattern: The Hidden Risks

Sleep disturbance is an important risk factor for the development of depression during teenagers. Excessive electronic media use at night is a risk factor for both teenagers 'sleep disturbance and depression'²⁷. Using a smartphone can harm sleep patterns and the effects of sleep deprivation on these young people create adverse risk on their physical and mental health. current trends in technology use among teenagers, found the associations sleeping disturbance and its problematic patterns²⁸. In this study, Table 1 shows that 58.3% of respondents said that they have a sleeping problem because of using their smartphones. Excessive smartphone use can disrupt young people's sleeping quality and time, which can have a serious impact on their overall mental and physical health. It can impact their memory, affect their ability to think clearly, and reduce their cognitive and learning skills²⁹. Bhattacharya et al.³⁰ found disturbed sleep among teenagers to be a growing problem in their behavioral pattern, and several reports suggest that negative effects can harm their interpersonal relationship. Also, some study explore that the potential adverse health effects of smartphone is come from radiofrequency (RF) electromagnetic radiation (EMR radiation, which can affect the sleeping patter specially on young age. Such as study found that is the b-trace protein (lipocalin type prostaglandins synthase), which is a key enzyme in the synthesis of prostaglandin D2, an endogenous sleep-promoting neurohormone can effect by the radiation from smartphone³¹.

Tahsina Akhter, 15 years old, is a student in the 8th grade. *"At night, I struggle to sleep because every time a text pops up on my phone, it wakes me up. Even when my phone is off, I can still hear the vibrations. It's like my mind is constantly waiting for something*

²⁶ Lemola S, Perkinson-Gloor N, Brand S, Dewald-Kaufmann JF, Grob A., 2014, Adolescents' electronic media use at night, sleep disturbance, and depressive symptoms in the smartphone, *Journal Public Health*, **44**(2), p.405-18.

²⁷ de Sá, S., Baião, A., Marques, H., Marques, M. D. C., Reis, M. J., Dias, S., & Catarino, M., 2023, The Influence of Smartphones on Adolescent Sleep: A Systematic Literature Review, *Nursing reports*, **13**(2), p.612–621.

²⁸ de Sá, S., Baião, A., Marques, H., Marques, M. D. C., Reis, M. J., Dias, S., & Catarino, M., 2023, The Influence of Smartphones on Adolescent Sleep: A Systematic Literature Review, *Nursing reports*, **13**(2), p.612–621.

²⁹ Bijlsma, N., Conduit, R., Kennedy, G., & Cohen, M. (2024). Does radiofrequency radiation impact sleep? A double-blind, randomised, placebo-controlled, crossover pilot study. *Frontiers in Public Health*, **12**, 1481537. <https://doi.org/10.3389/fpubh.2024.1481537>

³⁰ Wang, P., Zhao, M., Wang, X., Xie, X., Wang, Y., & Lei, L., 2017, Peer relationship and adolescent smartphone addiction: The mediating role of self-esteem and the moderating role of the need to belong the risk, *Journal of Behavioral Addictions*, **6**(4), p. 708–717.

³¹ Tyagi, A., Prasad, A. K., & Bhatia, D., 2021, Effects of excessive use of mobile phone technology in India on human health during COVID-19 lockdown. *Technology in society*, **6**(7), p.101-112.

important, and if I turn off my phone even for a short while, it feels like I might miss out on something crucial."

Mumtahina Afroz (36) is a psychologist by profession. Through KII, she gave her opinion about the sleeping problems of adolescents because of using smartphones.

"Smartphones in the bedroom can bring about significantly less sleep, later bedtimes, and more fatigue. Adolescents need to get plenty of sleep and have their brains rested for the next day's activities. A smartphone certainly wouldn't help adolescents attain that problem."

To compare the school-going adolescents Sleeping time (per day) after the use of a smartphone "There is a significant difference between sleeping time and the use of smartphones. (M=-.91667, SD=1.46433) and sleeping time before the use of the internet (M=2.3250, SD =.83512; t (120) =-6.857, p =.000). The result suggests that there is a significant relationship between the use of a smartphone and going to bed for sleep. Similar consistency was found in other studies, where smartphone usage has become commonplace and has an impact on sleep quality among adolescents. Adolescent girls have a greater tendency toward sleep quality problems³². But this study conducts on teenagers' girls only.

Table No. 2 Comparison of sleeping times before and after using a smartphone in school for adolescents.

	Sleeping time before using a smartphone		Sleeping time before using a smartphone		95% Confidence Interval of the Difference			
Outcome	M	SD	M	SD	N	t	df	p
	2.3250	.72370	3.2417	1.10001	120	-1.18136, -.65198	-6.857	119 .000

SD: standard deviation.

M= Mean.

*P<0.5

Physical Health Hazards: Beyond the Screen

It has been frequently argued that smartphones could pose cancer and many physical risks due to the fact that they emit radio waves. In addition to the potential physical risks, it has been seen that smartphones pose emotional, social, and psychological risks³³. This study shows that 55% of the respondents' majority (49%) claimed that they have a headache. On average, 21.1% of the respondent's face hearing problems because of listening to music at high volume on

³² Ma, Z., Wang, J., Li, J., 2021, The association between obesity and problematic smartphone use among school-age children and adolescents: a cross-sectional study in Shanghai, *BMC Public Health* **21**(9), p.20-23

³³ Gao, Y., Li, A., Zhu, T, Liu, X., & Liu, X., 2016, How smartphone usage correlates with social anxiety and loneliness, *PeerJ Chemistry Journals*, **7** (8), p.12-13.

headphones, and 39.1% of the respondents have eye problems such as weak vision, watery eyes, etc.

Nubaira Mehjabin (33) is a psychologist by profession, and through KII, she gave an opinion about the health problems caused by using smartphones by adolescents.

“Parents should be replacing their adolescents’ smartphone use with healthier activities. If they are feeling bored and lonely, resisting the urge to use their smartphone can be very difficult. Parents should be creating a plan for other ways to fill their time, such as meditating, reading a book”.

According to a recent study,³⁴ excessive smartphone use can lead to physical health concerns such as brain hemorrhage, neuroglial illnesses, vision problems, immune system decline, eardrum issues, hand, neck, and joint pain, exhaustion, and sleep disruptions. For instance, smartphone addicts were reported to feel distressed when they stopped using their smartphones for some time; that time also increased the exhibited anxiety, depression, anger, and sleep disturbances in some cases.

Conclusion:

This study sheds light on the multifaceted impact of smartphone usage on the physical and mental health of school-going adolescents in Dhaka, Bangladesh. Findings reveal a concerning trend of smartphone addiction among adolescents, with a significant portion of respondents admitting to feeling addicted. Excessive smartphone use is associated with various physical health problems, including headaches, eye strain, digestive issues, and hearing problems, while sleep disturbances are prevalent among adolescents due to smartphone usage. Additionally, behavioral changes such as mood swings, increased irritability, and unnecessary arguments with family members are observed after smartphone use. Social media platforms exacerbate feelings of depression, jealousy, and inadequacy among adolescents, further impacting their mental well-being. These findings underscore the urgent need for interventions to mitigate the adverse effects of smartphone usage on adolescents' health. Strategies such as parental guidance, promoting healthier activities, and raising awareness about the risks associated with excessive smartphone use are crucial for safeguarding the physical and mental well-being of school-going adolescents in the digital age.

³⁴ Gottschalk, F., 2019, Impacts of technology use on children: exploring literature on their brain, cognition and well-being, *OECD library*, 34(3), p. 22-25.