THE IMPACT OF SMARTPHONE ADDICTION ON SOCIAL ADJUSTMENT IN ADOLESCENTS OF SOUTHERN KERALA: A CORRELATIONAL STUDY

Regeena Chacko
PhD scholar at Arunodaya University, itanagar, Arunachal Pradesh.

ABSTRACT

This study investigates the relationship between smartphone addiction and social adjustment among adolescents in Southern Kerala. Utilizing a correlational research design, the study examines the extent to which excessive smartphone use influences the social behaviors, interactions, and overall social adjustment of adolescents. Data were collected from 802 adolescents using standardized questionnaires on smartphone addiction and social adjustment. The Pearson's correlation test and t-test were used to analyze the data. The findings reveal a significant negative correlation between smartphone addiction
and social adjustment, indicating that higher levels of smartphone addiction are associated with poorer social adjustment. The implications of these findings for parents, educators, and policymakers are discussed, along with recommendations for future research.

KEYWORDS : *smartphone addiction, social adjustment, adolescents, southern Kerala.*

INTRODUCTION

Recent advancement in technologies have proliferated the smartphone use in modern society. Nowadays, smartphones have become an essential part of day to day life, especially among adolescents (Massimini and Peterson 2009; Shambare, Rugimbana, and Zhowa 2012). Factors like reducing phone price, shifting classes to online mode, and sophisticated features of social media apps have leveraged the smartphone use in teenagers. India has the highest predicted annual growth rate of 16% among all countries, with 291.6 million smartphone users by the end of 2017. It has been projected that by 2022, there would be 490.9 million smart phone users in India itself (Tripathi, 2018). For adolescents, who are at a critical stage of social and psychological development, smartphones serve as primary gateways to their social world. The latest features in smartphone offer unparalleled access to information, social networks, and entertainment, making them indispensable tools for communication and interaction. However, the pervasive use of smartphones has led to growing concerns about potential negative effects, particularly the emergence of smartphone addiction (Yu & Sussman, 2020). Smartphone addiction refers to a behavioral addiction which is characterized by excessive use, preoccupation with the device, and an inability to control usage, and significant impairment in daily functioning (Wang et al., 2016).Adolescents, due to their developmental stage and the high value they place on social connections, are particularly susceptible to developing this addiction (Chambers et al., 2003).

Smartphone addiction has profound and complex effects on the mental health of adolescents. The constant connectivity and need for social media validation can lead to heightened anxiety and depression (Dhir et al., (2018). Adolescents often feel pressured to present a perfect image online, which can result in feelings of inadequacy and low self-esteem (Hawi & Samaha, 2017) when their real

_____
Journal for all Subjects : www.lbp.world

1

lives don't measure up to the curated images they see on social media. This can create a vicious cycle of seeking validation through likes and comments, further exacerbating their emotional distress. The impact on sleep is another significant concern. Excessive screen time, especially before bed, disrupts the production of melatonin, the hormone responsible for regulating sleep (Nakshine et al., 2022). This can lead to insomnia (Liu et al., 2022) and poor sleep quality (Acikgoz et al., 2022), which adversely affects mood, cognitive function, and overall mental health. Lack of sleep can make adolescents more irritable, less able to concentrate, and more susceptible to stress (Dahl & Lewin, 2002). Academically, smartphone addiction can be detrimental. The constant notifications and the allure of social media can distract adolescents from their studies, leading to poor academic performance (Chaudhury & Tripathy, 2018). Their ability to focus and retain information diminishes as their brains become accustomed to the rapid switching between tasks that smartphone use encourages. Over-reliance on digital communication can impede the development of essential face-to-face social skills (Gupta, 2024). Adolescents may find it challenging to engage in real-life interactions and develop empathy. This can strain relationships with family and friends as they become more isolated and less engaged in their immediate environment.

Another major concern is sedentary lifestyle induced by prolonged smartphone use which can lead to health issues such as obesity (Park et al., 2020). Additionally, excessive screen time can cause eye strain and headaches, further contributing to physical discomfort (Nakshine et al., 2022). The risk of exposure to cyberbullying and inappropriate content is another serious concern. Adolescents are particularly vulnerable to the emotional and psychological harm caused by cyberbullying (Bottino et al., 2015), which can lead to severe anxiety, depression, and even suicidal thoughts. Behaviorally, smartphone addiction can result in irritability, restlessness, and aggression when access to the phone is restricted (Faundez, 2018). Adolescents may also struggle with emotional regulation, relying on their phones for distraction and comfort rather than developing healthy coping mechanisms.

Social adjustment refers to the process by which individuals adapt to social norms, establish and maintain relationships, and perform roles effectively within their social environment (China, 2015). For adolescents, social adjustment is crucial as it affects their overall well-being, academic success, and future social competence. Poor social adjustment may lead to social isolation, behavioral issues, and mental health problems such as anxiety and depression. Effective social adjustment during adolescence involves the development of social skills, emotional regulation, and the ability to form and maintain healthy relationships. These skills are typically honed through face-to-face interactions, participation in group activities, and adherence to social norms. However, excessive smartphone use can interfere with these developmental processes, potentially leading to difficulties in social adjustment.

The region of Southern Kerala, known for its high literacy rate and rapid technological adoption, provides a unique context for examining the impact of smartphone addiction. Adolescents in this region are exposed to the benefits and challenges of advanced technology, making it imperative to understand how smartphone addiction affects their social adjustment. Given the significant role of social adjustment in adolescent development, it is crucial to investigate whether excessive smartphone use hinders adolescents' ability to interact socially and adhere to social norms. This study aims to fill the gap in existing literature by focusing on adolescents in Southern Kerala, exploring the correlation between smartphone addiction and social adjustment. Understanding this relationship can provide insights into the extent to which smartphone addiction impacts social behaviors and interactions among adolescents in this region.

THEORETICAL BACKGROUND AND HYPOTHESES

Several models have elucidated the underlying mechanisms of addiction, as well as its causes and effects. One of the primary theoretical frameworks is the biological model of addiction, which focuses on the physiological and genetic factors contributing to the development and maintenance of addictive behaviors. Central to these theories is the concept of genetic predisposition, with research indicating that addiction often runs in families, suggesting a genetic component. Specific genes, such as those involved in the brain's reward system like the DRD2 gene, have been associated with increased

_____
Journal for all Subjects : www.lbp.world

2

addiction risk (Noble, 2000). Neurochemical changes also play a significant role; dopamine, a key neurotransmitter in the brain's reward pathway, increases with addictive behaviors, reinforcing the behavior and creating a cycle of craving and reward (Koob, 2006). Other neurotransmitters like serotonin, GABA, and glutamate are also involved, affecting mood, impulse control, and stress responses (Koob, 2006).

Addiction impacts brain structure and function, particularly the mesolimbic dopamine system, including the ventral tegmental area (VTA), nucleus accumbens, and prefrontal cortex (Noble, 2000). Repeated exposure to addictive substances or behaviors leads to long-lasting changes in this circuitry, making the brain more sensitive to addiction-related cues. The prefrontal cortex, crucial for decision-making and impulse control, is impaired by chronic substance use, leading to poor decision-making and increased impulsivity (Bechara, 2005). The amygdala, involved in processing emotions and stress, can become dysregulated, driving individuals to seek relief through addictive behaviors (Murphy, Taylor, & Elliott, 2012). Neuroadaptation is another critical aspect, where the brain adapts to addictive substances or behaviors by reducing dopamine receptor sensitivity, leading to tolerance and the need for greater amounts to achieve the same effect (Koob, 2006). Dependence and withdrawal occur as neuroadaptations result in physical and psychological dependence, with symptoms manifesting when the addictive behavior stops. Neuroplasticity, the brain's ability to change its structure and function, is also altered by addiction, resulting in reduced gray matter volume in decision-making regions and changes in synaptic connections, perpetuating addiction (Koob et al., 2023).

On the other hand, Psychological theories of addiction emphasize the role of mental processes, emotional states, and learned behaviors in the development and persistence of addiction. Central to these theories is the cognitive-behavioral model, which posits that addictive behaviors are maintained by maladaptive thought patterns and coping mechanisms. Individuals may develop irrational beliefs, such as viewing the addictive behavior as necessary for happiness or relief from stress. These cognitive distortions reinforce the behavior, creating a cycle of addiction. Operant conditioning also plays a significant role, where behaviors that are rewarded (positive reinforcement) or that remove an unpleasant state (negative reinforcement) are more likely to be repeated. For example, an individual might drink alcohol to feel pleasure (positive reinforcement) or to alleviate anxiety (negative reinforcement), reinforcing the addiction (Miguel et al., 2015).

Classical conditioning is another crucial component, where certain cues or environments become associated with the addictive behavior, triggering cravings and urges. Over time, these conditioned responses can become automatic, making it difficult for individuals to resist the behavior when exposed to these cues (Wanigaratne, 2006). The incentive-sensitization theory further explains how repeated exposure to an addictive behavior sensitizes the brain's reward system, making individuals more responsive to addiction-related cues and increasing cravings (Robinson et al., 2022). According to self-regulation and ego depletion theory self-control is a finite resource. When this resource is depleted by stress, fatigue, or other factors, individuals are more likely to engage in addictive behaviors as a means of coping. This theory highlights the importance of developing strong self-regulation skills and healthy coping mechanisms to prevent addiction (Baumeister, 2003). Similarly, the self-determination theory emphasizes the role of intrinsic and extrinsic motivations in behavior. When intrinsic motivations, such as personal growth or social connections, are thwarted, individuals may turn to addictive behaviors to fulfill unmet psychological needs (Schlimme, 2010). Based on information from theoretical background and insights from previous researches (Volungis et al., 2020; Heo & Lee, 2018; Al-hillaly & Hussein, 2021; Cilligol Karabey , Palanci & Turan, 2024) in this area, the study put forward the following hypotheses:

H1: There is a significant correlation between smartphone addiction and social adjustment among adolescents of southern Kerala.

H2: There is significant gender difference in smartphone addiction among adolescents of southern Kerala.

H3: There is a significant difference in smartphone addictive behavior between rural and urban adolescents of southern Kerala.

_____
Journal for all Subjects : www.lbp.world

3

METHODOLOGY

This study employs a correlational research design to explore the relationship between smartphone addiction and social adjustment. The correlational design is appropriate for identifying and quantifying the strength and direction of relationships between variables without manipulating them. The targeted population included adolescents aged 16-24 years residing in southern Kerala including districts of Thiruvananthapuram, Alappuzha, Kottayam, and Trissur. This age group is particularly relevant as it is a critical period for social development and increased smartphone usage. To ensure a representative sample, the study adopted a stratified random sampling method to select participants based on factors such as age, gender, and geographical area. 802 adolescents were selected as sample size of the study which might give a statistical valid and reliable result.

The data collection procedure began with obtaining approval from the Ethics Committee of Arunodaya University, Arunachal Pradesh. Additionally, permissions were secured from school authorities and parents or guardians. The questionnaires for data collection were distributed through online platforms such as WhatsApp, Gmail, and Messenger, with instructions for participants to complete the forms sincerely. Informed consent forms were also sent to participants alongside the questionnaires. The study ensured the confidentiality and anonymity of participants' data. A pilot study involving 50 adolescents was conducted to test the validity and reliability of the instruments, and adjustments were made based on the feedback received. The data collection process involved administering the following scales.

1. **Smartphone Addiction Scale (SAS):** this scale was developed by Kwon et al. (2013), and it is a standardized tool to measure the level of smartphone addiction among adolescents. The SAS consists of 33 items rated on a 6-point Likert scale, assessing dimensions such as daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance. This scale has been validated with high reliability (Cronbach's alpha - 0.967) and validity (Kwon et al., 2013).

2. **Social Adjustment Scale (SAS):** This scale was developed by Weissman and Bothwell (1976). It is employed to measure social adjustment among adolescents. This scale is self-report measure which consists of 45 items rated on a 5-point Likert scale (1: not at all, 5: all the time). The questionnaire asks about how participants have been during the last two weeks at work, spare time activities and in family life. The scale covers aspects like work, social and leisure activities, relationships with extended family, role as a marital partner, parental role, and role within the family unit. These broad aspects provide a comprehensive measure of an adolescent's social adaptation and functioning.

The data analysis process commenced with data cleaning, which addressed missing values and outliers. All statistical tests were done using IBM SPSS software. Descriptive statistics, including mean and standard deviation have been calculated for demographic variables, smartphone addiction scores, and social adjustment scores, providing a demographic profile of the sample. For Inferential statistics, Pearson's correlation coefficient has been performed to examine the relationship between smartphone addiction and social adjustment. Additionally, an independent sample T-tests has been done to explore differences across demographic variables such as gender and area of living (urban and rural).

RESULT

The result of descriptive statistics shows that the mean age of participant is 19.77 and standard deviation is 1.99 (see table.1). The mean score of smartphone addiction scale (SMA) is 154.63 and standard deviation is 23.38. On the other hand the social adjustment variable got a mean score of 96.11 and standard deviation of 11.24.

_____
Journal for all Subjects : www.lbp.world

4
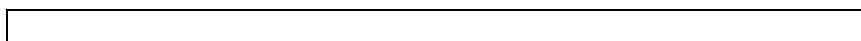
	N	Minimum	Maximum	Mean	Std. Deviation
AGE	802	16	24	19.77	1.993
SMA	802	37	196	154.63	23.384
SCA	802	74	141	96.11	11.248

Table 1: Descriptive statistics of different variables

The analysis of Pearson's correlation provided the direction and relation between variables of smartphone addiction and social adjustment. The study got a correlation coefficient of r -598 which are significant at the 0.01 level (P ≤ 0.01) where the value is .000 (see table.2). This result indicates that there is a significant correlation between smartphone addiction and social adjustment and therefore the first hypothesis of the study is accepted. The analysis revealed a negative correlation, indicating that adolescents with smartphone addiction exhibit lower levels of social adjustment. This finding supports the fundamental premise of the study.

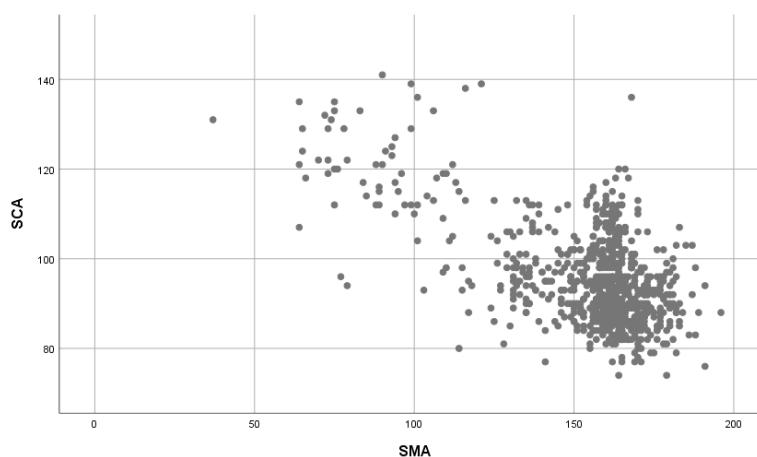|		SMA	SCA
SMA	Pearson Correlation	1	-.598**
	Sig. (2-tailed)		.000
	N	802	802
SCA	Pearson Correlation	-.598**	1
	Sig. (2-tailed)	.000	
	N	802	802
**. Correlation is significant at the 0.01 level (2-tailed).			

Table.2 correlation matrix

Figure.1: scatter plot of correlation. (SMA means social media addiction and SCA means social adjustment)

To test the second hypothesis of the study, an independent samples t-test was conducted. The group statistics indicate that male participants scored a mean of 157.22 (SD = 20.51) on the smartphone addiction scale, while female participants scored a mean of 152.07 (SD = 25.68) (see Table 3). The results of the t-test indicate a significant gender difference in the level of smartphone addiction, with t (765.8) = 3.137, p = 0.02. This suggests that male participants exhibit higher levels of smartphone addiction compared to female participants. Therefore, the second hypothesis of the study, which posits that there is a significant gender difference in smartphone addiction, is accepted.

_____
Journal for all Subjects : www.lbp.world

5

Group Statistics					
	GENDER	N	Mean	Std. Deviation	Std. Error Mean
SMA	MALE	399	157.22	20.516	1.027
	FEMALE	403	152.07	25.683	1.279

Table 3: descriptive statistics of smartphone addiction score based on gender

The third hypothesis of the study proposed that there is a significant difference in smartphone addictive behavior between rural and urban adolescents in southern Kerala. Group statistics revealed that participants from rural areas scored a mean of 156.28 (SD = 21.30) on the smartphone addiction scale, whereas participants from urban areas had a mean score of 152.99 (SD = 25.21) (refer to Table 4). The results of the t-test indicate a significant difference in smartphone addiction based on the area of residence, with t (778.38) = 1.99, p = 0.46. Therefore, the third hypothesis is accepted, confirming the presence of a significant difference in smartphone addiction between rural and urban adolescents.

Group Statistics					
	AREA	N	Mean	Std. Deviation	Std. Error Mean
SMA	RURAL	401	156.28	21.307	1.064
	URBAN	401	152.99	25.210	1.259

Table 4: descriptive statistics of smartphone addiction score based on area of living

DISCUSSION

The present study aimed to investigate the relationship between smartphone addiction and social adjustment among adolescents of southern Kerala. Additionally, the study examined the differences in smartphone addiction among adolescents based on their demographic variables, specifically focusing on the area of residence (rural vs. urban) and gender. The descriptive statistics revealed that the mean age of the participants was 19.77 years (SD = 1.99). The mean score on the Smartphone Addiction Scale (SMA) was 154.63 (SD = 23.38), while the mean score for social adjustment was 96.11 (SD = 11.24). These findings provide a baseline understanding of the general tendencies and variation within the sample. The Pearson correlation analysis demonstrated a significant negative correlation between smartphone addiction and social adjustment (r = -0.598, p ≤ 0.01). This indicates that higher levels of smartphone addiction are associated with lower levels of social adjustment. This result supports the first hypothesis of the study. The negative correlation suggests that adolescents who are more addicted to their smartphones are likely to struggle with social adjustment issues. This could be due to the fact that excessive smartphone use can lead to reduced face-to-face interactions, impairing the development of social skills and relationships. The findings are consistent with previous research (Al-hillaly & Hussein, 2021) indicating that high smartphone usage can interfere with social activities, leading to social isolation and poorer social adjustment.

The results of the independent samples t-test showed a significant gender difference in smartphone addiction, with male participants scoring higher (M = 157.22, SD = 20.51) compared to female participants (M = 152.07, SD = 25.68), t (765.8) = 3.137, p = 0.02. This finding supports the second hypothesis of the study, indicating that male adolescents exhibit higher levels of smartphone addiction than their female counterparts. The higher levels of smartphone addiction observed among male participants could be attributed to several factors. Previous studies have suggested that males are more likely to engage in gaming activities that promote prolonged smartphone use (Leonhardt & Overå, 2021). In contrast to Cilligol Karabey, Palanci, & Turan (2024), this study found that males may be more inclined to use smartphones for entertainment and information-seeking purposes, which could

contribute to higher addiction levels. It is essential to consider cultural and social influences that may shape these gender differences in smartphone use and addiction.

The third hypothesis, which posited a significant difference in smartphone addiction between rural and urban adolescents, was also supported. The group statistics revealed that participants from rural areas scored higher on the smartphone addiction scale (M = 156.28, SD = 21.30) compared to participants from urban areas (M = 152.99, SD = 25.21), with a t-test result of t (778.38) = 1.99, p = 0.46. One possible explanation for this observed difference is the limited availability of recreational activities and social opportunities in rural areas, leading adolescents to rely more heavily on smartphones for entertainment and social interaction. In contrast, urban adolescents may have access to a broader range of activities and social networks, reducing their reliance on smartphones.

The findings of this study have several practical implications. Given the negative correlation between smartphone addiction and social adjustment, it is crucial for educators, parents, and policymakers to develop strategies to mitigate excessive smartphone use among adolescents. Programs promoting digital literacy and healthy smartphone usage habits can help adolescents balance their screen time with other essential activities, such as face-to-face social interactions, physical activities, and academic pursuits. The significant gender differences in smartphone addiction highlight the need for tailored interventions that consider the distinct patterns of smartphone use among males and females. Gender-specific programs can address the unique factors contributing to smartphone addiction in each group, promoting healthier technology use. The observed differences between rural and urban adolescents suggest that interventions should also consider the specific context of the target population. For rural adolescents, providing alternative recreational and social opportunities could reduce their reliance on smartphones. Urban adolescents, on the other hand, may benefit from programs emphasizing balanced smartphone use amidst their diverse activities and social engagements.

CONCLUSION

In conclusion, this study provides valuable insights into the demographic factors influencing smartphone addiction among adolescents and its relationship with social adjustment. The findings underscore the importance of addressing smartphone addiction through targeted interventions that consider gender and area of residence. Future research should continue to explore these demographic differences and examine the underlying mechanisms driving smartphone addiction. By understanding these factors, stakeholders can develop more effective strategies to promote healthy technology use and enhance the well-being of adolescents in diverse contexts.

REFERENCES

1. Acikgoz, A., Acikgoz, B., & Acikgoz, O. (2022). The effect of internet addiction and smartphone addiction on sleep quality among Turkish adolescents. *PeerJ*, *10*, e12876.
2. Al-hillaly, Z. W., & Hussein, H. (2021). Adolescents' Internet Addiction and Its Relationship to Psychosocial Maladjustment among Secondary School Students in Al-Nasiriya City. *Kufa Journal for Nursing Sciences*, *11*(1), 114-121.
3. Baumeister, R. F. (2003). Ego depletion and self-regulation failure: A resource model of self-control. *Alcoholism: Clinical and Experimental Research*, *27*(2), 281-284.
4. Bechara, A. (2005). Decision making, impulse control and loss of willpower to resist drugs: a neurocognitive perspective. *Nature neuroscience*, *8*(11), 1458-1463.
5. Bottino, S. M. B., Bottino, C., Regina, C. G., Correia, A. V. L., & Ribeiro, W. S. (2015). Cyberbullying and adolescent mental health: systematic review. *Cadernos de saude publica*, *31*, 463-475.
6. Chambers, R. A., Taylor, J. R., & Potenza, M. N. (2003). Developmental neurocircuitry of motivation in adolescence: a critical period of addiction vulnerability. *American journal of psychiatry*, *160*(6), 1041-1052.
7. Chaudhury, P., & Tripathy, H. K. (2018). A study on impact of smartphone addiction on academic performance. *International Journal of Engineering & Technology*, *7*(2.6), 50-53.

_____
Journal for all Subjects : www.lbp.world

7

8. China, F. T. (2015). *The relationship between social support, social adjustment, academic adjustment, and academic performance among college students in Tanzania* (Doctoral dissertation, The Open University Of Tanzania).

9. Cilligol Karabey, S., Palanci, A., & Turan, Z. (2024). How does smartphone addiction affect the lives of adolescents socially and academically?: a systematic review study. *Psychology, Health & Medicine*, *29*(3), 631-654.

10. Dahl, R. E., & Lewin, D. S. (2002). Pathways to adolescent health sleep regulation and behavior. *Journal of adolescent health*, *31*(6), 175-184.

11. Dhir, A., Yossatorn, Y., Kaur, P., & Chen, S. (2018). Online social media fatigue and psychological wellbeing—A study of compulsive use, fear of missing out, fatigue, anxiety and depression. *International journal of information management*, *40*, 141-152.

12. Faundez, P. D. (2018). *The Effects of Internet Addiction and Concurrent Psychosocial Problems on the Daily Functioning and Wellness of Teenagers* (Master's thesis, Brenau University).

13. Gupta, H. (2024). Digital Era and the Dialectics of In-person Communication and Virtual Communication. *EMERGING PARADIGM: INNOVATIONS AND INSIGHT IN ENGLISH LITERATURE AND LANGUAGE RESEARCH IN THE DIGITAL AGE*, 59.

14. Hawi, N. S., & Samaha, M. (2017). The relations among social media addiction, self-esteem, and life satisfaction in university students. *Social Science Computer Review*, *35*(5), 576-586.

15. Heo, Y., & Lee, K. (2018). Smartphone addiction and school life adjustment among high school students: The mediating effect of self-control. *Journal of psychosocial nursing and mental health services*, *56*(11), 28-36.

16. Koob, G. F. (2006). The neurobiology of addiction: a neuroadaptational view relevant for diagnosis. *Addiction*, *101*, 23-30.

17. Koob, G. F., Kandel, D. B., Baler, R. D., & Volkow, N. D. (2023). Neurobiology of addiction. In *Tasman's Psychiatry* (pp. 1-51). Cham: Springer International Publishing.

18. Leonhardt, M., & Overå, S. (2021). Are there differences in video gaming and use of social media among boys and girls?—A mixed methods approach. *International journal of environmental research and public health*, *18*(11), 6085.

19. Liu, H., Zhou, Z., Huang, L., Zhu, E., Yu, L., & Zhang, M. (2022). Prevalence of smartphone addiction and its effects on subhealth and insomnia: a cross-sectional study among medical students. *BMC psychiatry*, *22*(1), 305.

20. Murphy, A., Taylor, E., & Elliott, R. (2012). The detrimental effects of emotional process dysregulation on decision-making in substance dependence. *Frontiers in integrative neuroscience*, *6*, 101.

21. Miguel, A. D. Q. C., Yamauchi, R., Simões, V., da Silva, C. J., & Laranjeira, R. R. (2015). From theory to treatment: Understanding addiction from an operant behavioral perspective. *Journal of Modern Education Review*, *5*(8), 778-787.

22. Nakshine, V. S., Thute, P., Khatib, M. N., & Sarkar, B. (2022). Increased screen time as a cause of declining physical, psychological health, and sleep patterns: a literary review. *Cureus*, *14*(10).

23. Noble, E. P. (2000). Addiction and its reward process through polymorphisms of the D2 dopamine receptor gene: a review. *European Psychiatry*, *15*(2), 79-89.

24. Park, J. H., Moon, J. H., Kim, H. J., Kong, M. H., & Oh, Y. H. (2020). Sedentary lifestyle: overview of updated evidence of potential health risks. *Korean journal of family medicine*, *41*(6), 365.

25. Robinson, M. J., Zumbusch, A. S., & Anselme, P. (2022). The incentive sensitization theory of addiction. In *Oxford Research Encyclopedia of Psychology*.

26. Schlimme, J. E. (2010). Addiction and self-determination: A phenomenological approach. *Theoretical Medicine and Bioethics*, *31*, 49-62.

27. Volungis, A. M., Kalpidou, M., Popores, C., & Joyce, M. (2020). Smartphone addiction and its relationship with indices of social-emotional distress and personality. *International Journal of Mental Health and Addiction*, *18*, 1209-1225.

_____
Journal for all Subjects : www.lbp.world

8

28. Wang, C., Lee, M. K., Yang, C., & Li, X. (2016). Understanding problematic smartphone use and its characteristics: A perspective on behavioral addiction. In *Transforming Healthcare Through Information Systems: Proceedings of the 24th International Conference on Information Systems Development* (pp. 215-225). Springer International Publishing.

29. Wanigaratne, S. (2006). Psychology of addiction. *Psychiatry*, *5*(12), 455-460.

30. Yu, S., & Sussman, S. (2020). Does smartphone addiction fall on a continuum of addictive behaviors?. *International journal of environmental research and public health*, *17*(2), 422.