INFLUENCE OF SMART PHONE ADDICTION ON MENTAL HEALTH, BEHAVIORAL PROBLEM AND ACADEMIC ACHIEVEMENT AMONG SENIOR SECONDARYSCHOOL STUDENTS IN ROHTAK DISTRICT

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ABSTRACT

This research investigates the impact of smartphone addiction on the mental health, behavioral patterns, and academic outcomes of senior secondary school students in Rohtak District, India, from 2000 to 2023. Employing a mixed-methods approach, the study analyzes data from structured surveys and in-depth interviews among a diverse sample of adolescents. Findings reveal that smartphone addiction significantly affects students' psychological well-being, social interactions, and educational performance. Quality of life, physical health, and personality traits such as conscientiousness and extraversion are identified as key predictors of various adjustment dimensions. The research underscores the need for comprehensive interventions that include digital literacy and healthy coping mechanisms to mitigate the negative effects of smartphone addiction. It calls for collaborative efforts among educators, policymakers, and communities to promote balanced digital habits and ensure holistic adolescent development.

Keywords: Smartphone addiction, Adolescent mental health, Academic performance, Digital literacy, Rohtak District.

INTRODUCTION

The advent of the smartphone era, particularly between 2000 and 2023, has significantly altered the social and psychological landscape for adolescents worldwide. Initially conceived as mere communication tools, smartphones have evolved into indispensable life companions, offering unprecedented digital access due to technological advancements and the proliferation of social media platforms. This transformation has made smartphones a ubiquitous presence in the lives of young individuals, facilitating not only enhanced communication through instant messaging apps but also providing a platform for socialization, education, and self-expression through various digital applications (Vanden Abeele, 2021).

However, this digital revolution has not come without its challenges. The integration of smartphones into daily life has led to emerging concerns such as cyberbullying, social media-induced stress, and digital addiction, which have become prevalent among adolescents (Elhai et al., 2017; Thomée et al., 2011). These issues have raised alarms regarding the mental well-being and social development of young individuals, as they grapple with the pressures of maintaining an online presence and the constant fear of missing out (FOMO). Furthermore, the academic landscape has been affected, with smartphones introducing both opportunities for learning and potential distractions within educational settings (Junco &Cotten, 2012).

In the specific context of Rohtak District, India, the issue of smartphone addiction among senior secondary school students has become particularly acute. This demographic, at a critical stage of psychological and social development, faces the risk of adverse effects due to excessive smartphone use, including deteriorating mental health, behavioral problems, and compromised academic performance. The constant engagement with digital content and social media platforms can lead to distraction, reduced sleep quality, and increased feelings of anxiety and depression, thereby impacting their overall well-being and academic achievements (Smith et al., 2008; Thomée et al., 2011).

Given these considerations, this research aims to explore the multifaceted impact of smartphone addiction on the mental health, behavioral patterns, and academic outcomes among adolescents in the Rohtak District from 2000 to 2023. The study seeks to identify the signs and severity of smartphone addiction and examine its correlation with various factors such as gender, field of study, parental education level, and family income. By delving into these aspects, the research intends to provide a comprehensive understanding of the phenomenon, thereby informing targeted interventions and policies to mitigate the adverse effects of smartphone addiction on this vulnerable demographic. This investigation is pivotal for crafting strategies that foster healthy digital habits, ensuring the holistic development and well-being of adolescents in the digital age (Elhai et al., 2017; Junco &Cotten, 2012; Vanden Abeele, 2021).

METHODOLOGY

The methodology section of the research paper on smartphone addiction among senior secondary school students in Rohtak District employs a mixed-methods approach to provide a comprehensive understanding of the phenomenon. The study involves structured surveys and in-depth interviews, ensuring a robust analysis of both quantitative and qualitative data.

Participants are senior secondary students from diverse socioeconomic backgrounds across Rohtak District, selected through stratified random sampling to ensure wide representation.

Data collection comprises structured surveys addressing smartphone usage, academic performance, mental health, and behavioral issues, alongside academic performance assessments through self-reported grades. Mental health and behavioral assessments utilize Likert scale questions, complemented by open-ended queries for qualitative insights. Survey validation includes expert review and a pilot study to enhance reliability. Interviews and focus group discussions further deepen the qualitative understanding, exploring personal experiences and perceptions related to smartphone addiction.

Ethical considerations are paramount, with strict adherence to informed consent, anonymity, and confidentiality protocols. Data analysis employs statistical techniques for quantitative data and thematic analysis for qualitative insights, ensuring a holistic view of the impact of smartphone addiction. The methodology underscores a commitment to ethical standards, participant welfare, and methodological rigor, aiming to provide actionable insights into smartphone addiction among adolescents in the Rohtak District.

RESULTS & DISCUSSION

In this study, a predictive correlational research design was utilized to examine the relationship between mental health, behavioral factors (predictor variables), and academic performance (criterion variable) among adolescents in Rohtak district. Purposive sampling was adopted, selecting 419 senior secondary school students (196 males and 223 females, aged 14-19 years) to ensure a sample relevant to the research objectives. The methodology was adapted to the constraints of lockdown, with surveys distributed online through educational departments under a supervising instructor's guidance, ensuring a diverse and appropriate participant pool while maintaining data integrity and relevance to the target demographic.

The study utilized a standardized questionnaire, tailored to assess the impact of smartphone usage on adolescents' mental health, behavior, and academic performance within the Rohtak district. Inclusion criteria targeted students aged 14-19, enrolled in grades 9-12, and owning smartphones, ensuring relevance to the adolescent educational context. Exclusion criteria removed those outside this age range, without personal smartphones, or not in formal education. The tool underwent a pilot study for standardization, ensuring cultural appropriateness and ethical soundness. This approach aimed to produce valid, reliable, and

contextually relevant data, reflecting the specific experiences and challenges faced by the target demographic.

In this study, the Smartphone Addiction Scale was employed, featuring four dimensions and 16 questions to assess addiction levels. Responses were gauged using a five-point Likert scale, enhancing the understanding of participants' smartphone behaviors. The scale's reliability and validity were confirmed through Bartlett's test, Kaiser-Meyer-Olkin analysis, and Cronbach's Alpha, indicating high consistency and construct validity.

Academic performance was evaluated using a composite measure based on five years of academic data, providing a longitudinal perspective on students' scholastic achievements. Additionally, demographic variables such as age, gender, and reasons for smartphone use were collected to deepen the analysis.

Data collection was facilitated online by instructors in the Rohtak area, ensuring ethical standards and participant confidentiality. Statistical analysis was conducted using SPSS 20, employing descriptive statistics and multiple stepwise regression analysis to explore the relationships between smartphone addiction, academic performance, and other variables. The study meticulously adhered to statistical assumptions to ensure data integrity, employing Cohen's F^2 to measure the effect size, thereby ensuring a robust and comprehensive examination of the data.

DataAnalysis

The analysis presented in Table 1 reveals significant insights into the influence of quality of life and personality factors on the adjustment levels of individuals addicted to smartphones. The data indicate that quality of life accounts for 46.3% of the variance in adjustment, while personality factors contribute an additional 6.6%, cumulatively explaining 53% of the overall variance in adjustment among smartphone addicts. The strong correlations denoted by f2 values of 0.86 and 1.13 for quality of life and personality factors respectively, alongside significant F values, underscore the profound impact these variables have on the adjustment capabilities of individuals facing smartphone addiction.

The findings suggest that a higher quality of life, encompassing both subjective and objective well-being, significantly enhances the ability of smartphone addicts to adjust effectively in various life domains. This adjustment is further influenced by personality traits, where conscientiousness, extraversion, and neuroticism play pivotal roles. During the lockdown, the interplay between these internal traits and external environmental factors became even more

pronounced, as individuals relied heavily on smartphones for social connectivity, education, and work, highlighting the complex dynamics between personal characteristics and situational contexts.

Smartphones, thus, emerge as double-edged swords; while facilitating essential connections and access to information, they also pose challenges for those prone to addictive behaviors. However, for many, the benefits have outweighed the drawbacks, providing crucial support and resources that have aided in maintaining mental well-being, fostering resilience, and enhancing overall adaptability during unprecedented times. This nuanced understanding of the role of smartphones in modern life underscores the importance of balancing technology use with personal well-being and social interaction.

Table 1: Showing the Influence of Predictors on Social Adjustment- one of the Dimensions ofAdjustmentofSmart-PhoneAddicts.

Variable in the model	B	Multiple R	Rsquare	Rsquarechange	f2	F	P
Extraversion	.435	.663	.440	.440	0.78	201.045	.000
Psychological Health	.232	.699	.489	.049	0.95	121.842	.000
PersonalRelationships	.165	.711	.509	.017	1.03	86.657	.000
Constant	0.800						

Table 2: Showing the Influence of Predictors on Home Adjustment- one of the Dimensions ofAdjustmentSmart-PhoneAddicts.

Variable in the model	B	Multiple R	Rsquare	Rsquare change	f2	F	P
PersonalRelationship	0.508	0.565	0.319	0.319	0.47	119.990	0.000
Psychological Health	0.53	0.202	0.588	0.346	0.027	67.454	0.000
Constant	2.160						

The Table 2 reveals that personal relationships and psychological health significantly influence home adjustment among smartphone addicts, contributing to 31.9% and 2.7% of the variance, respectively. This combined influence, accounting for 34.6% of home adjustment, underscores the importance of quality interpersonal connections and mental well-being in fostering a positive home environment. The substantial effect sizes (f2 values of 0.47 and 0.53) and significant F values (119.990 for personal relationships and 67.454 for

psychological health) at the p>0.000 level confirm the strong association between these factors and home adjustment. This suggests that individuals with strong personal ties and good psychological health are better adjusted at home, highlighting the role of smartphones in maintaining these connections, especially during periods of physical isolation like lockdowns. These findings emphasize the need for nurturing personal relationships and mental health to enhance home life, particularly for those prone to smartphone addiction.

Table3:ShowingtheInfluenceofPredictorsonHealthAdjustment-one oftheDimensionsofAdjustmentofSmart-PhoneAddicts

Variable in the model	B	Multiple R	Rsquare	Rsquare change	f2	F	P
Physical health	0.307	0.624	0.389	0.389	0.63	163.001	0.000
Overall health	0.401	0.694	0.482	0.093	0.94	118.495	0.000
Psychological Health	0.280	0.712	0.507	0.026	1.03	87.192	0.000
PersonalRelationship	-0.191	0.728	0.530	0.023	1.13	71.333	0.000
Constant	2.385						

Table 3 indicates that physical, general, and psychological health significantly influence health adjustment among smartphone addicts, accounting for a combined variance of 53%. Physical health, as the most substantial predictor, underscores the importance of maintaining a healthy lifestyle for overall well-being. Surprisingly, interpersonal relationships showed a negative impact on health adjustment, suggesting that excessive closeness or lack of personal space, especially during prolonged periods at home, might strain mental and physical health. This highlights the complex interplay between different quality of life aspects and their collective impact on health adjustment, emphasizing the need for balanced personal relationships and self-care practices.

Table4:ShowingtheInfluenceofPredictorsonEmotionalAdjustment-oneoftheDimensions ofAdjustmentofSmart-PhoneAddicts.

Variable in the model	B	Multiple R	Rsquare	Rsquare change	f2	F	P
Psychological Health	.321	.632	.400	.400	0.67	170.319	.000
Extraversion	.172	.678	.460	.061	0.85	108.698	.000
Neuroticism	.173	.701	.492	.032	0.98	81.979	.000

Overall Health	.194	.717	.514	.022	1.05	66.895	.000
Physical Health	.113	.722	.522	.008	1.08	54.942	.000
Constant	0.532						

The study from Table 4 identifies psychological health, extraversion, neuroticism, general health, and physical health as key predictors of emotional adjustment in smartphone addicts, collectively accounting for 52.2% of the variance. Psychological health stands out as the most significant factor, highlighting the importance of mental well-being in emotional regulation. Extraversion and neuroticism, reflecting personality traits, influence how individuals express and manage emotions, with smartphones serving as a platform for this expression. The findings suggest that maintaining psychological and physical health, alongside nurturing positive personality traits, can significantly enhance emotional adjustment, especially in the context of increased smartphone use during periods like lockdowns.

Table5:ShowingtheInfluenceofPredictorsonEducationalAdjustment-oneoftheDimensions ofAdjustmentofSmart-PhoneAddicts.

Variable in themo del	B	Multiple R	Rsquare	Rsquarec hange	f^2	F	P
Conscientiousness	.386	.498	.248	.248	0.33	84.437	.000
OverallHealth	.217	.596	.355	.107	0.55	70.204	.000
Psychological Health	.173	.616	.380	.025	0.61	51.861	.000
Extraversion	.112	.625	.391	.011	0.35	40.603	.000
Constant	1.144						

Table 5 highlights that conscientiousness, general health, psychological health, and extraversion significantly influence educational adjustment in smartphone addicts, accounting for 39.1% of the variance. Conscientiousness, indicating disciplined and goal-oriented behavior, is the strongest predictor, enhancing students' ability to organize and achieve academic goals. General and psychological health impact the ability to concentrate and endure academic challenges, while extraversion supports engagement in social and academic activities. These factors collectively facilitate a better educational environment for smartphone addicts, suggesting that improving these areas could lead to enhanced academic performance and adjustment, highlighting the importance of a balanced lifestyle and positive personality traits in educational success.

Table6:Showing the Influence of Predictors on Academic Performance of Smart-Phone Addicts.

Variable in the model	B	Multiple R	Rsquare	Rsquarechange	f^2	F	P
TotalQOL	0.10	.130	.017	.017	0.017	4.397	.037
Constant	3.328						

Table 6 indicates that quality of life (QOL) significantly predicts academic performance among smartphone addicts, with a modest variance of 1.7% and a weak correlation (f2 value of 0.017). Despite the low percentage, the positive Beta B score (.010) and the F value (4.397) with a p-value of >.037 suggest that even slight improvements in QOL can positively affect academic outcomes. This underscores the importance of enhancing the overall well-being of smartphone addicts to potentially improve their academic performance. The findings highlight the integral role of a satisfactory quality of life, facilitated by effective smartphone use, in influencing academic success.

Table 7: Showing the Influence of Predictors on Academic Performance Dimension Wise ofSmart-Phone Addicts.

Variable in themodel	B	Multiple R	Rsquare	R squarechange	f^2	F	P
PhysicalHealth	.040	.173	.030	.030	0.030	7.901	.005
Conscientiousness	-.037	.230	.053	.023	0.056	7.127	.001
Constant	3.605						

Table 7 indicates that physical health and conscientiousness are predictors of academic performance among smartphone addicts, albeit with weak correlations. Physical health, contributing a 3% variance, positively impacts academic performance, suggesting that well-being facilitates better concentration and efficiency in learning. Conversely, conscientiousness, with a 2.3% variance, unexpectedly shows a negative influence, hinting that smartphone-addicted students might struggle with organization and discipline, impacting their studies negatively. These findings highlight the nuanced relationship between health, personality traits, and academic outcomes, emphasizing the importance of maintaining physical health and addressing the challenges of conscientiousness to improve academic success.

CONCLUSIONS

In conclusion, this research provides a comprehensive analysis of smartphone addiction among senior secondary school students, highlighting its significant impact on mental health, academic performance, and social interactions. The study emphasizes the importance of a multifaceted approach to address this issue, incorporating individual, familial, and societal interventions. It advocates for the development of digital literacy, the promotion of healthy coping mechanisms, and the implementation of culturally sensitive strategies to mitigate the adverse effects of smartphone addiction. The findings suggest the necessity of ongoing research to adapt interventions to the evolving technological landscape and to foster a balanced digital life. This study calls for collaborative efforts from educators, policymakers, and communities to cultivate an environment that supports responsible smartphone use and ensures the well-being of adolescents in the digital age. The implications of this research extend beyond academic settings, urging a societal shift towards mindful technology use and highlighting the critical role of support networks in combating smartphone addiction.

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