Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 32s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

The Impact of Mobile Gaming Addiction on Adolescent Sleep Patterns and Physical Health: A Cross-sectional Study

Vijayakumar S[*1], Parimalakrishnan S[2], K.Rajesh[3], A.Abishek[3], Yatindra Kumar[4]

[*1]Professor, Sri Vijay Vidyalaya College of Pharmacy, Nallampalli, Dharmapuri, T.N, India.

[2]Associate Professor, Annamalai University, Annamalai Nagar, Chidambaram, Tamil Nadu, India. 608002

[3]B.Pharm Students, Sri Vijay Vidyalaya College of Pharmacy, Nallampalli, Dharmapuri, T.N, India.

[4]Professor, Department of Pharmacy, GSVM Medical College Kanpur, Uttar Pradesh

[*]**Corresponding author:**

Vijayakumar Subash*,

Professor, Sri Vijay Vidyalaya College of Pharmacy, Nallampalli, Dharmapuri, 636701, Tamilnadu, India.

Cite this paper as: Vijayakumar S, Parimalakrishnan S, K.Rajesh, A.Abishek, Yatindra Kumar, (2025) The Impact of Mobile Gaming Addiction on Adolescent Sleep Patterns and Physical Health: A Cross-sectional Study. *Journal of Neonatal Surgery*, 14 (32s), 5155-5167.

ABSTRACT

Background: Dependence on mobile phone gaming has become increasingly recognised as a behavioural problem that has serious effects on the health of young adults in fast-growing nations like India. This study investigates the prevalence of mobile gaming addiction among schoolchildren in Tamil Nadu, specifically in the Dharmapuri district, and explores its influence on sleep patterns, physical health, and psychological well-being.

Objective: The objectives are to assess an extent of adolescent addiction to mobile gaming, look at how it impacts physical and sleep health, and find connects between addiction behaviours and health problems.

Methods: Using a convenience sampling technique, 902 upper secondary school students, ages 13 to 18, participated in a cross-sectional descriptive study. A self-administered questionnaire covering demographic information, gaming habits, sleep and physical health indicators, and psychological well-being was used to gather data. The Modified Nordic Musculoskeletal Questionnaire (mNMQ) and the Internet Gaming Disorder Scale–Short Form (IGDS9-SF) were employed as validated instruments. JASP software was used to perform multiple linear regression analysis, descriptive statistics, and Pearson's correlation; a p-value of less than 0.05 was deemed statistically significant.

Results: Participants' mean age was 15.19 ± 1.32 years, with 77% of them being men and 23% being women. About 16% withdrew, 22% reported tolerance, 19% salience/preoccupation and mood modification, and 25% reported conflict as a result of gaming. According to a sleep analysis, 31% of respondents had trouble falling asleep, and 62% slept for 7–8 hours every day. Furthermore, 48% of people had sleep latency within 15 minutes. With $p < 0.001$, Pearson's correlation revealed a significant positive relationship between mobile gaming addiction (MGA) and effects on physical and sleep health (IPSH) ($r = 0.694$) as well as between MGA and effects on sleep and physical health ($r = 0.749$). The most prevalent diseases were musculoskeletal pain (69%), vision issues (71%), and psychological distress like hopelessness (8%).

Keywords: *Mobile gaming addiction, adolescents, sleep disturbance, physical health, psychological well-being, musculoskeletal symptoms, India, IGDS9-SF.*

1. INTRODUCTION

Mobile phone gaming addiction is characterized by an uncontrollable obsession with an individual whereas, gaming that can may interfere with essential responsibilities, personal relationships, and overall well-being [1]. Despite overall severe physical and mental health consequences, individuals with gaming addiction continue to engage excessively in online gaming activities. Prolonged usage of mobile gaming has been associated linked to various physical and mental health issues, including increased neck and back pain, visual impairment, and migraines [2]. Meanwhile, some studies may indicate that mobile phone usage exceeding more than two hours daily is associated with a higher prevalence of lower back, neck, and shoulder pain among youth and older age group population . Moreover, young individuals demonstrate greater head, trunk, and upper arm angles while using mobile devices compared to watching television, contributing to increased musculoskeletal

strain in day today activities .Another major serious health concern is the impact of mobile gaming addiction on sleeping problems. While some individuals are aware that prolonged mobile gaming negatively affects sleep, they often fail to address the issue in an every individual life [3]. Sleep related health issues, encompassing sleep duration, sleep quality, and sleep latency, is rarely defined in discussions of gaming addiction [4]. Researchers may also suggests that prolonged gaming can significantly disrupt daily routines, of an individuals neglect essential activities such as sleeping, eating, and social interactions . Some other participants may engage in extended gaming sessions of 10, 15, or even 20 hours, losing track of time as they progress through different levels of game [5]. Inaddition ot that,This compulsive behavior can result shows that, several medical conditions, including back strain, eye strain, and carpal tunnel syndrome [6]. The reinforcement of positive emotions associated with gaming plays a crucial role in the development of mobile gaming addiction. Neurobiological studies shows that gaming triggers dopamine release, creating a feedback may influence loop that fosters compulsive behaviors [7]. Repeated exposure to these rewarding stimuli strengthens addiction-like behaviors, making it difficult for individuals to regulate their mobile gaming habits [8]. Data collection was conducted using survey related questionnaires, assessing enrolled participants with the Test of Mobile Gaming Addiction and evaluating its effects on sleep and physical health (Pontes et al., 2014). Multi-linear regression analysis was applied to determine relationships between variables and assess their statistical significance Therefore this study aims to educate and empower school students on responsible mobile gaming, raise awareness of its impact on sleep quality and physical health, and assess adolescents' understanding of mobile gaming addiction and its effects on their physical and social well-being.emphasizing the impact of excessive gaming on health outcomes.These findings was underscore the necessity for targeted some interventions, including awareness programs, school-based initiatives, and parental guidance, to promote social responsible gaming habits. While moderate gaming policies may not always be influence harmful, excessive engagement poses significant may high risks, necessitating proactive measures to mitigate adverse health effects in an individual. longitudinal studies may shows causal relationships between mobile gaming addiction, sleep disturbances, and overall well-being to inform global policy were frameworks aimed at adolescent health outcome. Therefore, this study aims to investigate the prevalence of mobile gaming addiction among school students in Dharmapuri, district tamilnadu, india. However, focusing on its impact on physical health and sleep patterns and , the study seeks to identify risk factors contributing to excessive gaming habits and examine their correlation with physical health related issues.

2. RESEARCH METHODOLOGY

Study Design

This study utilized a cross-sectional descriptive design with a self-reported questionnaire to assess mobile gaming addiction among adolescents. A total of 902 students aged 13–18 years from various higher secondary schools participated during the academic year. Convenience sampling was employed to recruit respondents. however, present study Participants were informed about the purpose of study, expected outcomes, significance, anonymity, and confidentiality on the first page of the questionnaire. [9].

Instruments

The Internet Gaming Disorder Scale–Short-Form (IGDS9-SF) were utilized to assess digital gaming addiction based on the American Psychiatric Association's IGD framework, demonstrating strong psychometric validity . The Modified Nordic Musculoskeletal Questionnaire (mNMQ) was applied to evaluate musculoskeletal symptoms across six body regions, assessing pain and numbness over the study periods .

Measurements

The questionnaire consisted of four sections:

Part A: Demographic information consists of gender, age, level of education, and duration of gaming patterns.

Part B: Awareness about digital gaming addiction, assessed via seven Likert-scale items on gaming habits and behavioral patterns of the present study [10].

Part C: Physical and sleep health problem, were assessed via 11 Likert-scale questions on self-reported health status, pain, social limitations, and sleep patterns .

Part D: Effects of mobile gaming addiction, assessed via 10 Likert-scale items related to general well-being, sleep disturbances, and psychological distress [10].

Statistical Analysis

Data analysis was done by using JASP software. Descriptive statistics were reported as mean ± standard deviation for continuous variables and frequency (%) for categorical variables. Multiple linear regression was applied to examine statistical correlations, with $p < 0.05$ considered statistically significant.

3. RESULT

Demographic Characteristics of the Study Population

The study included a total of 902 participants. Among them, 690 (77%) were male, and 212 (23%) were female. Regarding educational qualifications, 97 (11%) participants had completed the 8th grade, 158 (18%) had completed the 9th grade, 173 (19%) had completed the 10th grade, 256 (28%) had completed the 11th grade, and 218 (24%) had completed the 12th grade. In terms of family structure, 543 (60%) participants belonged to nuclear families, while 359 (40%) were from joint families. The diet of the study participants vegetarian 80 (9%) and mixed diet 822 (91%). however, the study participants' age ranged from 13 to 18 years, with a mean age of 15.19 ± 1.32 years. It has been depicted in table 1.

Table 1: Distribution of participants according to their highest level of education with standard deviation, categorized within the age range of 13–18 years

Categorical	Variables	4. Total (n)	5. Percentage (%)
Gender	Male Female	690 212	77 23
Educational qualification	8th 9th 10th 11th 12th	97 158 173 256 218	11 18 19 28 24
Family structure	Nuclear Joined	543 359	60 40
Diet	Veg Mixed	80 822	9 91
Age(Mean,SD)	13-18Years	Mean 15.19±1.32	

Sleep Patterns and Mobile Gaming Duration Among Study Participants

The table 2 represents an analysis of sleep latency, sleep duration, and time spent on mobile gaming among the study participants.

Sleep Latency:

Among the participants, 48% (n = 436) exhibited a sleep latency of 1–15 minutes, while 8% (n = 69) required 16–30 minutes to initiate sleep. Additionally, 17% (n = 154) reported a sleep latency of 31–60 minutes, whereas 9% (n = 84) experienced prolonged sleep latency of 61–120 minutes. Only 1% (n = 5) required 120–180 minutes to fall asleep.

Sleep Duration:

Regarding sleep duration, the majority of participants (62%, n = 558) reported sleeping for 7–8 hours per night, followed by 29% (n = 261) who slept for 5–6 hours. Furthermore, 9% (n = 78) had a sleep duration of 9–10 hours, while a minimal proportion (1%, n = 5) reported sleeping for 3–4 hours.

Table 2. Sleep Patterns and Mobile Gaming Duration Among Study Participants

Sleep Latency	Male (n)	Female (n)	Total (n)	Percentage (%)
1-15mts	329	107	436	48
16-30 mts	56	13	69	08
31-60mts	119	35	154	17
61-120mts	68	16	84	09
120-180mts	05	00	05	01
Sleep Duration				
3-4hours	05	00	05	01
5-6hours	197	64	261	29
7-8hours	430	128	558	62
9-10hours	58	20	78	09
Time spend on mobile games				
<1hours	405	164	569	63
1-2hours	171	36	207	23
2-3hours	01	01	02	00
3-4hours	60	05	65	07
>4hours	53	06	59	07

Time on Spent

Mobile Gaming:

A significant proportion of participants (63%, n = 569) reported spending less than 1 hour per day on mobile gaming, followed by 23% (n = 207) who engaged for 1–2 hours. Additionally, 7% (n = 65) played for 3–4 hours daily, while another 7% (n = 59) spent more than 4 hours per day on mobile gaming. Only two participants (0%) reported playing for 2–3 hours daily.These findings indicate variability in sleep patterns and mobile gaming habits among the study population, which may have potential implications for overall health and well-being.

Gaming Preferences Among Study Participants

The table3 summarizes the types of games played by participants, highlighting gender differences. Action games were the most popular, played by 34% (n = 306) of participants, with a higher proportion of males (n = 286) than females (n = 20). Adventure games accounted for 10% (n = 93), while puzzle games were played by 18% (n = 164), with more female engagement (n = 73) than males (n = 91). Racing games were chosen by 8% (n = 74), and simulator games by 5% (n = 49). Role-playing games had the lowest participation (n = 1). Other games were played by 24% (n = 215). These findings indicate gender-based differences, with action games being most preferred among males and puzzle games more popular among females.

Table3.Gender-Based Distribution of Gaming Preferences Among Study Participants

Type of games	Male (n)	Female (n)	Total (n)	Percentage (%)
Action	286	20	306	34
Adventure	70	23	93	10
Puzzle	91	73	164	18
Racing	58	16	74	08
Roleplay	00	01	01	00

Simulators	42	17	49	05
Others	143	72	215	24

Prevalence of Gaming Addiction Criteria Among Participants

The study assessed gaming addiction based on established criteria. Among the participants, 168 (19%) reported experiencing salience/preoccupation, indicating that they had thought about gaming all day. Tolerance was observed in 195 (22%) participants, as they reported playing longer than intended. Regarding mood modification, 168 (19%) participants stated that they played games to escape real-life problems. Relapse was reported by 125 (14%) participants, as others had unsuccessfully tried to reduce their gaming time. Withdrawal symptoms were noted in 147 (16%) participants, who felt upset when unable to play. Conflict due to gaming was observed in 221 (25%) participants, who had arguments with family or friends over their gaming habits. Lastly, problematic gaming behavior was identified in 126 (14%) participants, who admitted to neglecting important activities to continue playing games. It has been shown in table 4.

Table 4. Impact of Mobile Gaming Addiction on Physical and Sleep Health

Addiction criteria	**Question**	**Endorsed (rated> 3)**
Sailence/ preoccupation	Have you thought all day long about playing games?	168 (19%)
Tolerance	Have you played longer than intended	195 (22%)
Mood Modification	Have you played games to forget about real life?	168 (19%)
Relapse	Have others unsuccessfully tried to reduce your time spent on games?	125 (14%)
Withdrawal	Have you felt upset when you were unable to play?	147(16%)
Conflict	Have you had arguments with family and friends over your time spent on games?	221(25%)
Problem	Have you neglected important activities to play games?	126 (14%)

Health, Physical Activity, and Sleep Patterns Among Participants

The study assessed participants' perceptions of their health, physical activity limitations, and sleep patterns using a five-point scale (1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Very Often). Regarding overall health, 407 (45%) participants agreed that they were in great health, while 42 (5%) often and 41 (5%) very often disagreed. When comparing their current health to the previous year, 81 (9%) never and 90 (10%) rarely felt improvement, whereas 449 (50%) sometimes, 272 (30%) often, and 10 (1%) very often perceived their health as better. In terms of physical limitations, 363 (40%) participants never experienced restrictions in their activities, while 208 (23%) often and 5 (1%) very often faced limitations. Pain interference in daily life was reported by 546 (61%) participants as never occurring, whereas 51 (6%) often and 28 (3%) very often experienced such interference. Additionally, 355 (39%) participants reported that their physical health very often interfered with their social activities, while 12 (1%) never experienced such issues. Regarding bodily pain, 91 (10%) participants never experienced it, while 351 (39%) sometimes and 19 (2%) very often reported it. Sleep satisfaction was noted among 266 (29%) participants who never had issues, while 106 (12%) often and 9 (1%) very often reported dissatisfaction. Concerning daytime alertness, 6 (1%) participants never struggled with staying awake, while 498 (55%) often and 128 (14%) very often faced difficulty. Sleep timing analysis showed that 475 (53%) participants never, and 299 (33%) rarely, were asleep between 2:00 a.m. and 4:00 a.m. Additionally, 432 (48%) participants very often spent less than 30 minutes awake at night, while 61 (7%) never did.Finally, 391 (43%) participants never, and 273 (30%) rarely, reported sleeping between 6 and 8 hours daily, whereas 17 (2%) very often did. It has depicted in the above table 5.

Table 5. Impact of mobile gaming addiction to physical and sleep health

Question	1	2	3	4	5
In general, do you agree or disagree that your health is in great condition?	407	281	131	42	41
	45%	31%	15%	5%	5%
Compared to one year ago, is your health now much better?	81	90	449	272	10
	9%	10%	50%	30%	1%
Does your health now limit your physical activities?	363	240	81	208	5
	40%	27%	10%	23%	1%
During the past 4 weeks, did pain interfere with your daily life?	546	152	95	51	28
	61%	20%	11%	6%	3%
During the past 4 weeks, has your physical health interfered with your social activities with family and friends?	12	34	214	287	355
	1%	4%	24%	32%	39%
Have you had bodily pain during the past 4 weeks?	91	404	351	37	19
	10%	45%	39%	4%	2%
Are you satisfied with your sleep?	266	157	364	106	9
	29%	17%	40%	12%	1%
Are you able to stay awake all day without dozing?	6	64	206	498	128
	1%	7%	23%	55%	14%
Are you asleep during 2:00 a.m. until 4:00 a.m.?	475	299	80	40	8
	53%	33%	9%	4%	1%
Do you spend less than 30 minutes awake at night?	61	64	198	147	432
	7%	7%	22%	16%	48%
Do you sleep between 6 and 8 hours per day?	391	273	146	75	17
	43%	30%	16%	8%	2%

1 Never, 2 Rarely;3 Sometimes;4 Often and 5 Veryoften

Distribution of Points Among Study Participants

The table 6 illustrates the distribution of points among study participants, categorized by gender.

A total of **31% (n = 281)** of participants scored **1 point**, comprising **166 males** and **115 females**. **Two points** were obtained by **22% (n = 201)** of the participants, with **162 males** and **39 females**. **Three points** were recorded by **18% (n = 159)** of participants, including **128 males** and **31 females**. Additionally, **11% (n = 129)** of participants scored **4 points**, consisting of **114 males** and **15 females**. Lastly, **15% (n = 132)** of participants achieved **5 points**, with **120 males** and **12 females**. Overall, males consistently outnumbered females across all score categories, indicating a gender-based variation in point distribution.

Table 6. Gender-Wise Distribution of Points Among Study Participant

Points	Male (n)	Female(n)	Total(n)	Percentage(%)
1	166	115	281	31
2	162	39	201	22
3	128	31	159	18
4	114	15	129	11
5	120	12	132	15

Health and Well-being Assessment Among Study Participants

The table 7 represents responses to various health and well-being-related questions among study participants, categorized by frequency of occurrence.

General Health and Daily Activities:

About 64% (n = 586) of participants reported feeling well and in good health either "never" or "rarely," while 13% (n = 116) experienced it "often" or "very often." Enjoyment of normal daily activities was reported "never" or "rarely" by 59% (n = 537), whereas 9% (n = 82) faced frequent difficulties.

Mental Health and Stress:

A significant proportion of participants (46%, n = 415) reported "never" feeling under constant strain, while 7% (n = 60) felt strained "often" or "very often." Feelings of hopelessness and dissatisfaction with life were reported by 62% (n = 555) as "never," while 8% (n = 74) experienced them frequently. Additionally, 75% (n = 755) reported "never" or "rarely" feeling that life is not worth living, while 9% (n = 80) experienced such thoughts often.

Table 7. Psychological and Physical Well-being Assessment

QUESTIONS	1	2	3	4	5
Have you been feeling perfectly well and in good health?	265 (29%)	321(35%)	201(22%)	74(8%)	42(5%)
Have you been able to enjoy your normal daily activities?	154(17%)	383(42%)	283(31%)	43(5%)	39(4%)
Have you felt constantly under strain?	415(46%)	302(33%)	125(14%)	42(5%)	18(2%)
Have you been getting any pains in your head?	251(28%)	188(21%)	331(37%)	127(14%)	5(1%)
Have you had trouble with your eyesight?	12(1%)	34(4%)	214(24%)	287(32%)	355(39%)
Have you had issues with your muscle and bone conditions?	6(1%)	64(7%)	206(23%)	498(55%)	128(14%)
Have you recently lost much sleep?	265(29%)	320(35%)	201(22%)	74(8%)	42(5%)
Have you had difficulty staying asleep longer?	81(9%)	90(10%)	449(50%)	272(30%)	10(1%)
Have you felt that life is entirely hopeless and unsatisfying?	555(62%)	179(20%)	94(10%)	53(6%)	21(2%)
Have you felt that life is not worth living?	536(51%)	219(24%)	67(7%)	46(5%)	34(4%)

1 Never, 2 Rarely;3 Sometimes;4 Often and 5 Veryoften

Physical Health Issues:

Headaches were reported "sometimes" by 37% (n = 331), while 15% (n = 132) experienced them "often" or "very often." Vision problems were frequently reported, with 71% (n = 642) experiencing them "often" or "very often." Muscle and bone conditions affected 69% (n = 626) either "often" or "very often," while only 1% (n = 6) reported "never" experiencing them.

Sleep Patterns:

Sleep disturbances were prevalent, with 29% (n = 265) "never" experiencing sleep loss, while 13% (n = 116) had frequent sleep disruptions. Difficulty staying asleep was reported "sometimes" by 50% (n = 449) and "often" or "very often" by 31% (n = 282).

These findings highlight variations in physical and mental health experiences among the study population, indicating potential areas for further investigation and intervention.

Table 8. Summary of Mobile Gaming Addiction Criteria and Associated Health Impacts (N = 902)

Addiction Criteria	Endorsed (n)	Percentage (%)
Salience / Preoccupation	168	19
Tolerance	195	22
Mood Modification	168	19
Relapse	125	14
Withdrawal	147	16
Conflict	221	25
Problematic Gaming	126	14

The prevalence of mobile gaming addiction criteria among study participants (N = 902) is shown in Table 1. Conflict was the most commonly reported criterion (25%), with participants demonstrating evidence with friends or family as an outcome of their gaming behaviour. Tolerance (22%) and salience/preoccupation and mood modification (19%) came next, indicating that a significant percentage of participants were either very actively engaged in gaming or used it as a coping mechanism for their emotions. 16% of participants said they experienced withdrawal symptoms, and 14% reported relapse, which is defined as other people's unsuccessful attempts to reduce right back on their gaming. Furthermore, 14% of participants reported participating in problematic gaming behaviour, which included placing off important tasks in order to continue playing. These findings emphasise the need for focused interventions and demonstrate that the adolescents gaming population demonstrate a variety of addiction-related behaviours.

Impact on Physical and Sleep Health (IPSH), Effects on Sleep and Physical Health (ESPH), and Mobile Gaming Addiction (MGA) are the three main variables among 902 participants. The results of the Pearson's correlation analysis are summarised in Table 9. Higher levels of mobile gaming addiction were significantly associated with increased sleep and physical health disturbances, according to a strong positive correlation found between ESPH and MGA ($r = 0.749$, $p < 0.001$).

Table 9. Pearson's Correlation Analysis Between Key Variables (N = 902)

Variables Compared	Pearson's r	*p*-value	95% Confidence Interval	
IPSH vs. ESPH	0.653	< 0.001	[0.614 – 0.689]	8.390
IPSH vs. MGA	0.694	< 0.001	[0.658 – 0.726]	14.750
ESPH vs. MGA	0.749	< 0.001	[0.718 – 0.776]	21.641

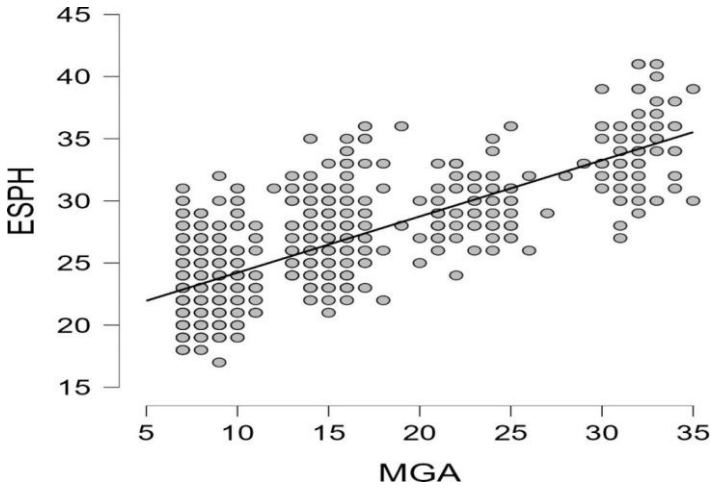
Additionally, there was a significant relationship between IPSH and MGA ($r = 0.694$, $p < 0.001$), suggesting that gaming addiction plays a significant role in the adverse impact on physical and sleep-related health. The correlation between IPSH

and ESPH was also positive and statistically significant ($r = 0.653$, $p < 0.001$), showing the mutual dependence of their effects and general physical/sleep health impacts. The reliability and strength of these associations were further demonstrated by the statistically significant characteristics of all correlations, which had meaningful covariances and narrow 95% CIs. These results indicate the significant effect that mobile gaming addiction has on the health of young adults.

Pearson's Correlation Analysis

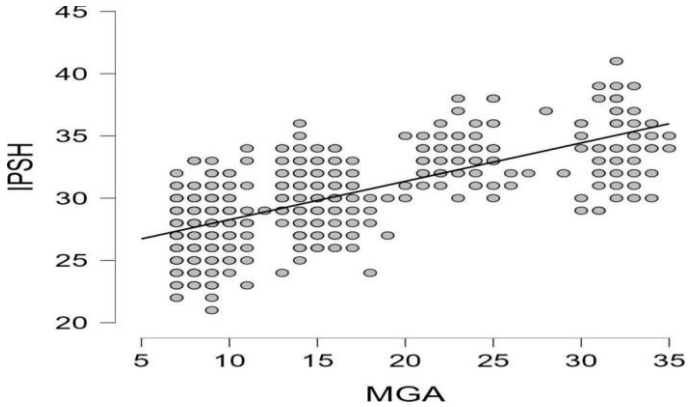
Figure 1 & 2 represents the results of Pearson's correlation analysis assessing the relationships among Impact on Physical and Sleep Health (IPSH), Effects on Sleep and Physical Health (ESPH), and Mobile Gaming Addiction (MGA) in a sample of 902 participants. The Pearson's correlation coefficient (r), p-value (p), 95% confidence interval (CI), and covariance. A strong positive correlation was identified between IPSH and ESPH ($r = 0.653$, $p < 0.001$), suggesting that higher IPSH scores are significantly associated with increased ESPH scores in our study population. however, result of that present study shows that, the 95% CI [0.614–0.689] further supports the reliability of this relationship, with a covariance of 8.390.Similarly, IPSH demonstrated a strong positive correlation with MGA ($r = 0.694$, $p < 0.001$), indicating that individuals experiencing greater physical and sleep health impacts also reported higher levels of gaming addiction.

Figure 1. MGA vs. IPSH



Meanwhile, 95% CI [0.658–0.726] confirms this association, with a covariance of 14.750.The strongest correlation was observed between ESPH and MGA ($r = 0.749$, $p < 0.001$), highlighting a significant and robust positive relationship. The 95% CI [0.718–0.776] .

Figure 2. MGA VS EPSH



Further more, reinforces this finding, with a covariance of 21.641.Overall, these results suggests that IPSH and ESPH are significantly associated with MGA, emphasizing the potential impact of mobile gaming addiction on physical health and sleep disturbances. These current findings underscore the necessity for further research and intervention strategies to mitigate the adverse effects of excessive mobile gaming on health outcomes.

6. DISCUSSION

This study sheds light on the gaming habits, sleep habits, and self-perceived health of the teenage participants. In a number of important areas, the results both support and contradict earlier studies.

Sleep Habits and Length of Gaming

Most participants (62%) said they slept for 7–8 hours, which is in line with research that suggests adolescents need 8–10 hours of sleep on average for good health and cognitive function [12]. Nonetheless, a significant percentage (29%) stated that they slept for only five to six hours, suggesting possible issues with sleep deprivation. Studies that link more screen time—especially gaming—to shorter sleep duration and lower sleep quality have found similar trends [13]. According to the current study, 63% of participants played mobile games for less than an hour every day, and only 7% played for more than four hours. Even moderate gaming has been linked to adolescents' delayed sleep onset and shorter sleep duration, even though this suggests that excessive gaming was not common [02].

Addiction and Preferences for Gaming

The study found a pronounced difference in gaming preferences between the sexes. Action games were the most popular among men (34%), whereas puzzle games were more popular among women (18%). These results are in line with earlier research showing gender-based differences in gaming behaviour, with women more likely to play puzzle and social simulation games while men favour competitive and action-packed games

Gaming addiction was assessed using established criteria, with 25% of participants reporting conflicts related to gaming, 19% experiencing preoccupation, and 22% demonstrating increased tolerance. These results are consistent with research on gaming disorder, which shows that excessive gaming can lead to behavioural addiction, which manifests as mood swings, withdrawal symptoms, and difficulties with day-to-day functioning [5]. However, compared to other adolescent populations, where rates range from 15% to 30%, the study's reported prevalence of problematic gaming behaviour (14%) is lower [6]. This disparity could be explained by environmental and cultural influences on gaming behaviours.

Self-Reported Health and Welfare

Although 10% of participants rarely or never reported improvements in their health compared to the previous year, the majority of participants (45%) thought they were in good health. This is in line with studies showing that teenagers generally have positive opinions about their health, even though over time, things like screen time and sedentary behaviour may lead to negative perceptions [14]..

Twenty-four percent of participants reported limitations in physical activity, which is consistent with research showing how sedentary lifestyles affect the physical health of adolescents [15]. Furthermore, 39% of participants said that their physical health frequently got in the way of social activities, highlighting the possible influence of lifestyle choices on social interaction.

The current study looks at gender-based differences in point distribution among participants, as well as their self-reported general health, mental well-being, physical health concerns, and sleep patterns. The results are compared to existing literature to identify similarities and discrepancies. In terms of sleep quality, 55% of participants reported having trouble staying awake during the day, and 53% reported rarely or never sleeping between 2:00 a.m. and 4:00 a.m. These findings are consistent with research showing that irregular sleep patterns and insufficient sleep contribute to daytime fatigue and impaired cognitive performance in adolescents [16].

variations in Point Distribution with Gender

Across all point categories, the results indicate a consistent trend of males greater than females, demonstrating a gender-based variation in performance or health-related outcomes. Males typically score higher in profitable or performance-based evaluations, which is consistent with studies showing disparities between genders in cognitive, physical, and behavioural therapy assessments [17]. However, more investigation is necessary because the discrepancy in point distribution may also be caused by elements like gender roles, cultural expectations, or environmental influences.

Everyday Activities and General Health

In contrast to prior studies where adolescents typically self-report good health status, a large number of the respondents (64%) said they felt well and in good health "never" or "rarely"[18]. Similarly, 59% of participants rarely or never enjoyed their normal daily activities, suggesting potential lifestyle or environmental factors affecting their well-being. These results may indicate a higher burden of stressors or health-related challenges in the studied population compared to global adolescent health trends.

Mental Health and Stress

Although a sizable percentage of participants (46%) said they had never felt under constant stress, 7% said they did so regularly, and 8% said they frequently felt depressed or unsatisfied with their lives. These results are consistent with earlier

studies that linked social pressure, academic pressure, and digital engagement to teenage stress and mental health [19]. Compared to some international reports that have shown higher rates of anxiety and depressive illness within adolescents, this study's prevalence of stress and hopelessness is comparatively lower [20]. Nonetheless, 9% of participants reported feeling that life was not worth living on an ongoing basis, demonstrating the necessity of mental health educational institutions and approaches to intervention.

Physical Health Issues

37% of respondents said they occasionally had headaches, and 15% said they did so frequently. This is consistent with research presenting that headaches are a common adolescent complaint that frequently corresponds to stress, difficulty falling asleep, and spending time on screens [21]. In addition, 71% of participants reported having frequent vision issues, which is much higher than estimates from around the world. Based on recent studies, the high prevalence could be caused by either insufficient eye care practices or excessive screen time [9]..

Reports of bones and muscles conditions were common (69%), higher than results from studies investigating at the musculoskeletal health of adolescents [22]. This might be a sign of inadequate physical activity or workplace ergonomic problems that lead to pain in the skeletal system.

Sleeping Habits

In accordance with the study, 31% of the respondents stated that they had issue falling asleep frequently or extremely often, and 50% reported having trouble falling asleep occasionally. These findings are in line with studies showing that lifestyle choices, stress related to school, and excessive screen time before bedtime cause greater sleep problems in teenagers [12]. However, compared to studies that noticed up to 40% of adolescents had chronic sleep problems, the percentage of participants who encountered severe sleep disruptions is slightly lower [23]..

Pearson's Correlation Analysis

The results of this study show that excessive mobile gaming and negative health outcomes are significantly correlated, with strong positive correlations found between Impact on Physical and Sleep Health (IPSH), Effects on Sleep and Physical Health (ESPH), and Mobile Gaming Addiction (MGA). The observed relationship between IPSH and ESPH ($r = 0.653$, $p < 0.001$) is consistent with earlier studies showing that sleep disturbances frequently accompany physical health decline in people with excessive screen time exposure and digital gaming habits [2,7]. Studies that link extended gaming to worse sleep, more exhaustion, and musculoskeletal pain further support this association [10].

The strong relationship between IPSH and MGA ($r = 0.694$, p 0.001) is also in line with previous research showing that people who are significantly dependent to gaming frequently have serious physical health challenges, such as obesity triggered on by a sedentary lifestyle, cardiovascular risks, and irregular circadian rhythms [24,25]. The results highlight gaming's palpable impact on physical health and imply that its negative effects go beyond psychologically and cognitive domains.

The strongest correlation between ESPH and MGA ($r = 0.749$, p 0.001) reinforces earlier research illustrating that gaming addiction is extremely associated with irregular sleep patterns and sleep disruptions [26], which is in line with studies indicating that excessive gaming leads to poor sleep efficiency, delayed sleep onset, and decreased duration of sleep . The high covariance between these variables further emphasises the severity of the relationship, implying that individuals experiencing significant sleep disruptions are more prone to problematic gaming behaviors.[03]

While these results align with various prior studies, some contrary findings also exist. Some studies have indicated that moderate gaming does not necessarily lead to severe health issues, suggesting that gaming effects may depend on duration, content, and individual susceptibility. The current study, however, emphasizes the negative effects of excessive gaming, underscoring the necessity of focused interventions.[27].

In summary, the results contributes to the growing body of confirmation emphasises the negative impact of mobile devices video games dependencies on physical health and sleep. These results demonstrate the necessity for awareness programs, psychological interventions, and regulations assesses to reduce the unfavourable effects of unnecessary video games and promote more healthily gaming behaviours. Future however investigation might examine longitudinal research evaluations to more thoroughly realise the correlated associations between video games a dependency, physical health, and sleep disturbances.

Limitations and Future Directions

While this study provides valuable insights, it has some limitations. The cross-sectional design prevents causal inferences between gaming habits and sleep disturbances. Additionally, self-reported data may be subject to recall bias. Future research should consider longitudinal studies to explore the long-term effects of gaming on sleep and overall health. Furthermore, intervention strategies promoting healthy screen time habits and sleep hygiene should be investigated to mitigate the negative consequences of excessive gaming

7. CONCLUSION

This study notable correlations encountered between excessive gaming, trouble sleeping, and physical health risks, this study emphasises the complex relationship between gaming behaviour, sleeping habits, and adolescent health. Significant variations according to gender indicate how gaming's effects are complex. The results draw attention to the need for focused interventions, such as public health campaigns, school-based initiatives, and parental guidance, to promote healthier gaming habits, while moderate gaming may not always be harmful. To establish causal relationships and deliver information for international policy frameworks that promotes adolescent well-being in the digital age, future longitudinal research is crucial.

8. ACKNOWLEDGEMENT

For their invaluable guidance and constant encouragement throughout this research project, I would like to express my gratitude to my father, Mr. A. Subash Chandra Bose, and my brothers, Mr. S. Sugumar and Mr. S. Krishnakumar. Their support and encouragement throughout the entire process were crucial to this study's successful conclusion. My sincere gratitude also goes out to the entire teaching and non-teaching staff , students of Sri Vijay Vidyalaya College of Pharmacy (SVVCOP), located in Nallampalli, Dharmapuri, for providing support when necessary. I also want to express my gratitude to my family and close companions, whose moral support and encouragement assisted me accomplish this research project on time.

REFERENCES

[1] Kuss DJ, Griffiths MD. Internet gaming addiction: A systematic review of empirical research. Int J Ment Health Addict. 2012;10(1):278–96.

[2] King DL, Delfabbro PH, Zwaans T, Kaptsis D. Sleep interference effects of pathological electronic gaming: A review. Int J Ment Health Addict. 2017;15(1):104–25.

[3] Chung KF, et al. Effects of excessive gaming on sleep quality and duration: A meta-analysis. Sleep Med Rev. 2021;55:101377.

[4] Carter A, Liddle J, Hall W, Chenery H. Mobile phones in research and treatment: Ethical guidelines and future directions. JMIR Mhealth Uhealth. 2015;3(4):1–10.

[5] Király O, Griffiths MD, Urbán R, et al. Problematic internet use and problematic online gaming are not the same: Findings from a large nationally representative adolescent sample. Cyberpsychol Behav Soc Netw. 2015;17(12):749–54.

[6] Lemmens JS, Valkenburg PM, Peter J. Psychosocial causes and consequences of pathological gaming. Comput Human Behav. 2011;27(1):144–52.

[7] Hamre R, Smith ORF, Samdal O, Haug E. Gaming behaviors and the association with sleep duration, social jetlag, and difficulties falling asleep among Norwegian adolescents. Int J Environ Res Public Health. 2022;19(3):1765.

[8] Billieux J, Philippot P, Schmid C, Van der Linden M. The role of impulsivity in actual and problematic use of the mobile phone. Appl Cogn Psychol. 2007;21(4):427–37.

[9] Huang HM, Chang DS, Wu PC. The association between near work activities and myopia in children—A systematic review and meta-analysis. PLoS One. 2020;15(1):e0242976.

[10] Zajac K, Ginley MK, Chang R, Petry NM. Treatments for Internet Gaming Disorder and Internet Addiction: A systematic review. Psychol Addict Behav. 2017;31(8):979–94.

[11] Griffiths MD, et al. Video game addiction and its physical consequences: A review. Int J Ment Health Addict. 2018;16(3):715–31.

[12] Hirshkowitz M, Whiton K, Albert SM, et al. National Sleep Foundation's sleep time duration recommendations: Methodology and results summary. Sleep Health. 2015;1(1):40–3.

[13] Hale L, Guan S. Screen time and sleep among school-aged children and adolescents: A meta-analysis. Pediatrics. 2015;135(2):e756–e767.

[14] Sampasa-Kanyinga H, Hamilton HA. Social networking sites and mental health problems in adolescents: The mediating role of cyberbullying victimization. Eur Psychiatry. 2017;40:1–7.

[15] Tremblay MS, LeBlanc AG, Kho ME, et al. Systematic review of sedentary behavior and health indicators in school-aged children and youth. Int J Behav Nutr Phys Act. 2011;8(1):98.

[16] Shochat T, Cohen-Zion M, Tzischinsky O. Functional consequences of inadequate sleep in adolescents: A systematic review. Sleep Med Rev. 2014;18(1):75–87.

[17] Halpern DF, Benbow CP, Geary DC, et al. The science of sex differences in science and mathematics. Psychol

Sci Public Interest. 2007;8(1):1–51.

[18] Patton GC, Sawyer SM, Santelli JS, et al. Our future: A Lancet commission on adolescent health and wellbeing. Lancet. 2016;387(10036):2423–78.

[19] Twenge JM, Joiner TE, Rogers ML, Martin GN. Increases in depressive symptoms, suicide-related outcomes, and suicide rates among US adolescents after 2010 and links to increased new media screen time. J Abnorm Psychol. 2019;128(6):185–99.

[20] Kessler RC, Berglund P, Demler O, et al. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry. 2012;62(6):593–602.

[21] Lateef TM. Neurological complications of migraine in children and adolescents. Curr Pain Headache Rep. 2009;13(5):391–5.

[22] Dario AB, Ferreira ML, Refshauge KM, et al. Are obesity and physical activity associated with low back pain in adolescents? A systematic review. Eur Spine J. 2017;26(2):475–84.

[23] Gradisar M, Jackson K, Spurrier NJ, Gibson J, et al. Behavioral interventions for infant sleep problems: A randomized controlled trial. Pediatrics. 2016;137(6):e20151486.

[24] Griffiths MD. Social networking sites and addiction: Ten lessons learned. Int J Environ Res Public Health. 2017;14(3):311.

[25] Lam LT. Risk factors of internet addiction and gaming disorder: A systematic review. Cyberpsychol Behav Soc Netw. 2014;17(12):755–60.

[26] Hale L, Guan S. Screen time and sleep among school-aged children and adolescents: A systematic literature review. Sleep Health. 2015;1(1):50–6.

[27] Przybylski AK. The impact of moderate gaming on well-being: Re-examining the evidence. Comput Human Behav. 2016;64:379–85.