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Original Research Article

Prevalence, underlying factors and consequences of mobile game addiction in school going children of six to twelve years in Kanyakumari district

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ABSTRACT

Background: Children nowadays are heavily engaged with their smartphones with high-quality gaming features. This addiction affects their health, causing physical and psychosocial disabilities. The objective of this study was to find the prevalence, underlying factors and consequences of mobile game addiction among school-going children.
Methods: This cross-sectional study, conducted between 1st July to 31st December 2021, enrolled 120 children aged 6 to 12 years old attending the outpatient department of Kanyakumari Government medical college hospital.
Results: We found out that male students displayed more addictive behaviour. The primary cause of mobile game addiction was loneliness, length of time spent playing mobile games and using it as their primary source of entertainment. This addiction resulted in headaches, eye and ear discomfort, insomnia, anxiety, depression, and disputes with family members.
Conclusions: We found a correlation between video game addiction and psychosocial and physical disabilities. Extensive research is needed to identify gaming patterns leading to addictions and health consequences.

Keyword: Mobile game addiction, Smartphone, School going children

INTRODUCTION

Smartphone games are one of the most popular forms of entertainment in today's world among all age groups. Smartphone gaming technology has advanced gradually with high-quality graphics and gaming features. In the previous two decades, mobile gaming has advanced tremendously, making it a popular form of entertainment for children.[1] During the COVID-19 pandemic, more than ever, technology has played a critical role in simplifying our lives. The pandemic led to schools' closure, which resulted in complete reliance on online classes for formal education. Apart from education, children tend to spend more time online for socialisation and entertainment, especially mobile phones. The phenomena of video game addiction appear to be a real and likely pervasive problem that defies simple explanation that requires prevention strategies, guidelines, and more extensive research, particularly among children.

Although video gaming is a delightful form of recreation, it can be detrimental for children, especially during adolescence. Gaming addiction often manifests itself as losing control and giving precedence over daily activities and other life interests. In the fifth edition of the diagnostic and statistical manual of mental disorders (DSM-5), video game addiction was identified as a form of internet gaming disorder (IGD) which leads to a

number of psychological and health problems, including depression, social anxiety, fatigue, loneliness, negative self-esteem, and impulsivity that warrants further supplementary studies. In addition, the 11th revision of the international classification of diseases (ICD-11) defined gaming disorder as a recurrent gaming behavior pattern that carries offline and online gaming.[2] Adolescence is when children try to figure out who they are. Still, the epidemic has made it more difficult for them due to limited socio-physical interactions leading to mobile game addiction, which inturn causes depression, anxiety, insomnia, poor academic performance and dispute with family members. In addition, children have gradually become more dependent on their mobile phones in every aspect of their lives, whether social or educational. Cumulatively these factors have taken an unexpected toll on the physical and mental well-being of the child. Researchers have been studying much about video game addiction and how it affects children's health. Despite all of the endeavours, there is still insufficient research on the subject in the literature. Hence, this study explores the prevalence, underlying factors, and relative consequences of mobile game addiction in school-going children between 6 to 12 years of age.

Aim and objectives

Aim and objective of current study were, to find the prevalence of mobile game addiction in school going children between the age of 6 to 12 years and to find out underlying factors playing a role in using the smartphone for playing mobile games and their health consequences.

METHODS

This hospital-based cross-sectional study was conducted among 120 children aged between 6 to 12 years old attending paediatric OPD in Kanyakumari Government medical college hospital, Asaripallam, Tamil Nadu. The study was conducted from 1st July 2021 to 31st December 2021. Informed written consent was obtained from all parents of the children enrolled in the study.

The study population was children aged 6 to 12 years old attending the Paediatric OPD whose parents owned a smartphone and gave verbal and written consent for research. Children who were above the age of 12 or were less than 6 years old, parents of children who did not own a smartphone or refused to give verbal and written consent, children previously diagnosed with mood disorders, anxiety disorders and on treatment or psychiatric follow up were excluded from this study.

Each participant was asked questions according to a duly prepared questionnaire comprised of 3 sections: Socio-demographic features, Lemmen's game addiction scale, and Health consequences. The socio-demographic characteristics consisted of name, age, sex, way of getting a smartphone, duration of usage, involvement in indoor or outdoor games, influence, source of entertainment, duration, and time of playing video games. Game addiction scale (GAS) by Lemmens et al was used to evaluate the addiction level.[3] GAS was created to measure the following 7 criteria: salience, tolerance, mood modification, relapse, withdrawal, conflict, and problems described in (Table 1). The data was collected and analysed. The data were entered in Microsoft Excel 2019 and analysed in SPSS software version 20.0. For analysis, descriptive statistics used were percentage, mean, and standard deviation (SD).

Table1: Seven criteria for the scale of mobile game addiction.

Criteria	Description
Salience	Playing mobile games becoming most important and dominant on thoughts, affection and attitude
Tolerance	Play mobile games for satisfaction
Mood modification	Game is used as transforming mechanism of bad mood to a good mood
Relapse	While reducing playtime, tendency to restore earlier excessive playing pattern
Withdrawal	Psychological discomfort or unpleasant when playtime is decreased or discontinued
Conflict	Interpersonal conflict due to excessive gaming or playtime
Problems	Problems in workplace, schools or social places due to excessive gaming

RESULTS

Current study revealed that the highest percentage (45.83%) of male students were moderately addicted to mobile games while 17.5% of male students were severely addicted, as seen in (Table 2). Female students showed a diminished level of mobile game addiction compared to their male counterparts in moderate and severe levels. However, the female students exhibited higher levels of mild addiction than male students. The age of the respondent was found to be a significant factor in mobile gaming addiction. Results indicated an increasing level of mobile game addiction with the increasing age of school children. The 11-12 years age group showed a maximum level of moderate level of addiction to mobile games. Mobile game addiction, in this study, predominantly leads to an average performance in school which was significant. Parents were the main sources for the school children for getting mobile phones as seen in (Table 3). The majority of children have been using mobile phones for the past 4-6 years. 50.8% of school children with mobile gaming addiction showed no indoor or outdoor games involvement. In this study, 74.16 % of schoolchildren were influenced by family members regarding addiction. For 57.5% of children, mobile games were the only

source of entertainment in this study. 60 % of school children spent 2 to 4 hours playing mobile games as their primary source of entertainment. Daytime playing (53.33%) was more common amongst the participants of this study. With varying levels of mobile game addiction, various health implications were seen (Table 4). However, moderate gaming addiction was seen to cause most health and mental health issues while affecting the general well-being of the children.

Table 2: Distribution of the level of mobile game addiction based on selected characteristics.

Characteristics		Total	Level of mobile game addiction (%)			P value
			Mild	Moderate	Severe	
Sex	Male	64	24	55	21	0.777
	Female	56	27	50	23	
Age (years)	6-8	29	21	57	22	0.642
	9 to 10	36	24	50	26	
	11 to 12	55	29	49	22	
Performance in school	Good	27	23	59	18	0.166
	Average	54	33	50	17	
	Below average	39	27	46	27	

Table 3: Distribution of the level of mobile game addiction based on selected characteristics.

Characteristics		Total	Level of mobile game addiction (%)			P value
			Mild	Moderate	Severe	
Way of getting a smartphone	From family	97	25	49	26	0.221
	From relatives	23	29	55	16	
Duration of smart phone usage (years)	<1	18	29	49	22	0.590
	2 to 3	49	39	40	21	
	4 to 6	53	35	41	24	
Involvement in outdoor/ Indoor games	Yes	59	37	41	22	0.481
	No	61	30	49	21	
Influence by	Family members	89	24	49	27	0.626
	Friends	31	30	46	24	
Main source of entertainment	Yes	69	27	54	19	0.607
	No	51	21	59	20	
Duration of play mobile games (hours)	<2	29	24	52	24	0.253
	2-4	72	36	43	21	
	>4	19	25	46	29	
Time of playing a mobile game	Day time	64	29	43	28	0.090
	Night time	14	36	47	17	
	Both day and night time	42	21	50	29	

DISCUSSION

This study aimed to determine the prevalence, underlying factors and consequences of mobile game addiction among schoolchildren in the Kanyakumari district. A similar study by Jones et al on "students' cell phone addiction and their opinions" showed that the majority (64.4%) of the students were addicted to their phones, and it was concluded that mobile phone addiction was real.[4] Investigations on the motivating factors for addiction and its negative consequences were studied. In the context of mobile gaming addiction, our findings revealed that male students were more prone to exhibit addicted behaviours than female students. It can be explained by the fact that female children received more parental supervision, making them less likely to become addicted to smartphone games. Gender has been suggested as a significant element affecting Internet use and related mental health implications. Males are drawn to explosive action and battle activities, while females are drawn to more social and communication-focused activities.[5] This study showed that adolescents had a greater predilection towards developing a moderate mobile game addiction. A few similar studies revealed that Internet and game addiction was more significant in the older age group than in the younger age group.[6] In this study, average school performance was mainly seen amongst the children with mobile gaming addiction. This

shows that distraction caused by this addiction leads to devoting less time to study and revise the subject matter. According to Park et al., participants with low academic performance were addicted to online games.[7]

Table 4: Effects of mobile game addiction on health and general well being.

Characteristics	Total	Level of mobile game addiction (%)			P value
		Mild	Moderate	Severe	
Blurry vision	22	24	58	18	
Eye discomfort	31	27	62	11	
Headache	28	21	59	20	
Ear discomfort	19	24	68	8	
Depression	23	29	59	12	0.102
Loneliness	29	31	47	22	
Insomnia	16	29	48	23	
Anxiety	22	23	55	22	
Dispute with family members	27	24	59	17	

On the contrary, Fabito et al studied that mobile game addiction among tertiary students does not have any relationship with their academic performance.[8] This study showed that children with this addiction had limited or no indoor or outdoor activity. This demonstrates the debilitating nature of this addiction which adversely affects the overall health and general wellbeing of the child, which impacts their physical and psychological growth. Furthermore, the length of time spent playing a mobile game is thought to significantly influence the severity of mobile game addiction. Eye discomfort was the most reported in this study among the health implications following ear discomfort. In a similar study conducted by Sayeed et al among university students, he reported that students who are addicted suffer from several physical problems such as headaches, eye discomfort, blurry vision and ear discomfort.[9] Another pressing issue amongst these children was anxiety, depression and loneliness. Studies have concentrated on social anxiety, depression, and loneliness as risk factors for internet-related addiction, but few studies have investigated from the opposite side of the equation. After controlling for potential confounding factors, a relevant study suggested that the relative risk of depression among students with Internet addiction was 1.5 times higher than that of non-Internet addiction participants after months.[10] This suggested that Internet-related addiction can result in depression and loneliness. Yeşilyurt et al demonstrated in a study that IGDS9 (internet gaming disorder scale) scores showed a gradual and significant increase with increased playtime.[11] Eye discomfort was the most reported in this study among the health implications. Another pressing issue amongst these children was loneliness. Studies by Spilkova et al and Van et al have also confirmed the connection between loneliness and online game addiction.[12-13]

Limitations

The findings of this study should be interpreted in the context of its limitations. This study attempts to find a causal relationship between video game addiction and its effects on physical and mental health. Even though research on school-going children is scarce, the association between mobile game addiction and health problems might be reciprocal with the available research. Whether the results of this study can be generalized to other age groups or populations is a question for future research.

CONCLUSION

Current study is a dialogue on a soon-to-be epidemic of mobile video game addiction. Factors like age, gender, family, duration, and usage time were critical in developing this kind of addictive behaviour. In this study, children addicted to smartphone games experienced physical disabilities and psychosocial problems, especially in the older age group. Therefore, limiting mobile usage and screen time from an early age should be encouraged in school-going children. In addition, parents must encourage their children to involve in indoor or outdoor games rather than mobile games as their primary source of entertainment.

Recommendations

Current study has investigated an association between mobile video game addiction, risk factors and associated health implications on the school-going age group. Therefore, psychologists and health educators should be aware of mobile game addiction's negative consequences as it is a very common mode of entertainment among children. Furthermore, more extensive research on identifying risk factors that could aid in the early detection of video gaming addiction in children is needed in the future.

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