

# Behavior Addiction in Adolescents Post COVID 19: A Systematic Mental Health Review

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## Abstract:

### ➤ Introduction

Adolescence is a critical period for behavioral changes. The adolescent phase represents a crucial period with a heightened risk for the emergence of addictive behaviors. Behavioral addictions represent clinical conditions that, although not categorized in the DSM-IV-TR, involve recurring impulsive behaviors. These behaviors have detrimental effects on both the individuals experiencing them and their families. Approximately 60% of individuals who commence drug use and 80% of those who initiate alcohol consumption (Johnston et al., 2005), as well as cigarette smoking (Department of Health and Human Services, 1994), do so prior to reaching the age of 18. Moreover, problematic and pathological gambling behaviors are notably prevalent among adolescent populations (Shaffer et al., 1999).

### ➤ Aim

The aim of the present review is to assess the behaviour addiction among adolescents Post COVID 19 in India.

### ➤ Methodology

A systematic search was undertaken for the original research published from the starting of the COVID to 2024, using multiple electronic databases, using the keywords i.e., Behavior Addiction; Non substance addiction; Adolescents; India; COVID 19, following PRISMA guidelines. The studies pertaining the participants as adolescents of India, with availability of full articles were considered.

### ➤ Results

The total of 3689 studies were identified initially, 3680 from the google scholar and 9 from PubMed. The studies were examined according to the inclusion and exclusion criteria. The results will be presented in the presentation and discussed further.

**Keywords:** Behavior Addiction, Non-Substance Addiction, Adolescents, India, COVID 19.

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## I. INTRODUCTION

Addiction has been a very crucial and controversial topic while defining its categorization in any diagnostic manual. However, with time major classification has been introduced with time that has highlighted a broad range of psychotic and compulsive addictive behaviors that were related to substance use which has severe impacts on human life such as elevated impulsive behavior, cognitive impairment and withdrawal symptoms. However, a new range of addiction has been mapped by multiple clinical

trials and researchers which has similar impact to substance use addiction. In 2013, a significant step was taken and such addictions which were non-substance based & were majorly related to different addictive behaviors got a recognition by Diagnostic and Statistical Manual of Mental Disorders (DSM-5) of the American Psychiatric Association (APA, 2013). The pathological gambling was renamed as Gambling Disorder and were categorized under other addictive behaviors in fifth edition of DSM, thus leading the recognition of Behavior Addiction.



Behavior addiction is a broader term that cover all such addiction that are significantly related to repeated behaviors which has similar impact-like substance use addictions. Such as Gambling, Online Gaming, internet, Shopping, shop-lifting and dysfunctional conducts that are often described as behavioral addictions include (but are not limited to) hypersexuality, compulsive buying, binge eating, excessive work involvement ("workaholism"), or excessive physical exercise (Demetrovics & Griffiths, 2012).

COVID-19 has impacted a life of everyone but it left a severe impact on adolescent mindset as they have become very prone to behavior addictions. Free or low-cost access to internet has made it more severe. A lot of individuals have become addicted to internet and the world this internet takes them to such as constant use of social medias, online gaming, online gambling, nudity, porn access and such more activities that is severely impacting on their thought process and enhancing the traits that is aligned with the diagnostic classifications of the addictive behavior.

Phenomenological similarities also exist between behavioral and substance addictions. Many individuals with behavioral addictions report an urge or craving state before initiating the behavior, mirroring the experience of individuals with substance use disorders before substance consumption. Moreover, these behaviors frequently alleviate anxiety and induce a positive mood state or "high," akin to substance intoxication. Emotional dysregulation may contribute to cravings in both behavioral and substance use disorders. Furthermore, people with pathological gambling, kleptomania, compulsive sexual behavior, and compulsive buying often report a decrease in the positive mood effects with repeated behaviors or the need to intensify the behavior to achieve the same emotional effect, akin to tolerance. Some individuals with these behavioral addictions also report a dysphoric state during periods of abstinence, similar to withdrawal symptoms experienced with substance use. However, unlike substance withdrawal, there are no reports of significant physiological or medically serious withdrawal states associated with behavioral addictions.

This paper shed light on the multiple factors that are playing an important role in the rising cases of behavior addiction among adolescents to identify the causes and its implications on their day-to-day life. This will also entail the varied area of behavior addiction and the interconnectivity of different addictive behaviors that propels a problematic situation for the young minds.

#### ➤ *Aim*

The aim of the present review is to evaluate the behavior addiction among adolescents Post COVID 19 in India.

## II. SEARCH STRATEGY

The systematic review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines (Mohar D, 2009). We conducted independent searches on Google Scholar and PUBMED independently with the following search terms: "Behavior Addiction; Non substance addiction; addictive behaviors, maladaptive behavior patterns, Adolescents; India; COVID 19", between the time of March 2020 to 2024.

The Mesh Term used for the PubMed were "Behavior, Addictive,"[Mesh] AND "Adolescent"[Mesh] AND "India"[Mesh] AND "COVID-19"[Mesh].

#### ➤ *Inclusion & Exclusion Criteria:*

The authors employed a specific screening strategy to select relevant publications written in English, pertaining to COVID 19 impact on behaviour addiction in adolescents, and with Adolescents population and access to the full text and included the Indian population and the articles which are published until 2024. Studies that presented duplication of publications, lacked full-text availability, commentaries, case studies, not providing input on psychological effects were excluded from the review process.

#### ➤ *Data extraction & Qualitative Assessment:*

The data extraction was extracted by the authors independently. Initially, titles and abstracts were assessed to determine their relevance to the research objectives, and subsequently, all pertinent publications were thoroughly examined. The parameters which were explored are based on inclusion and exclusion criteria. Each author's compilation was compared and discussed, and any differences were resolved through mutual consensus, followed by summarizing the findings. However, the meta-analysis was not carried out as a part of the review.

## III. RESULTS

#### ➤ *Study Characteristics:*

The overall 12 studies have been included in the review, on the basis of the inclusion and exclusion criteria. These studies primarily employed cross-sectional designs to assess the prevalence, behavioral patterns, and psychological impacts of behavior addiction—including internet addiction, gaming, smartphone, and social media use—among adolescents during and after the COVID-19 pandemic. The age of participants ranged from 10 to 21 years. All of the studies are conducted in the different region of India, two studies are from Lucknow, 2 are from Delhi, 2 from Karnataka, 1 from Chennai and rest across the whole India. The studies are presented in the Table 1. Google scholar: 3680, PUBMED – 9



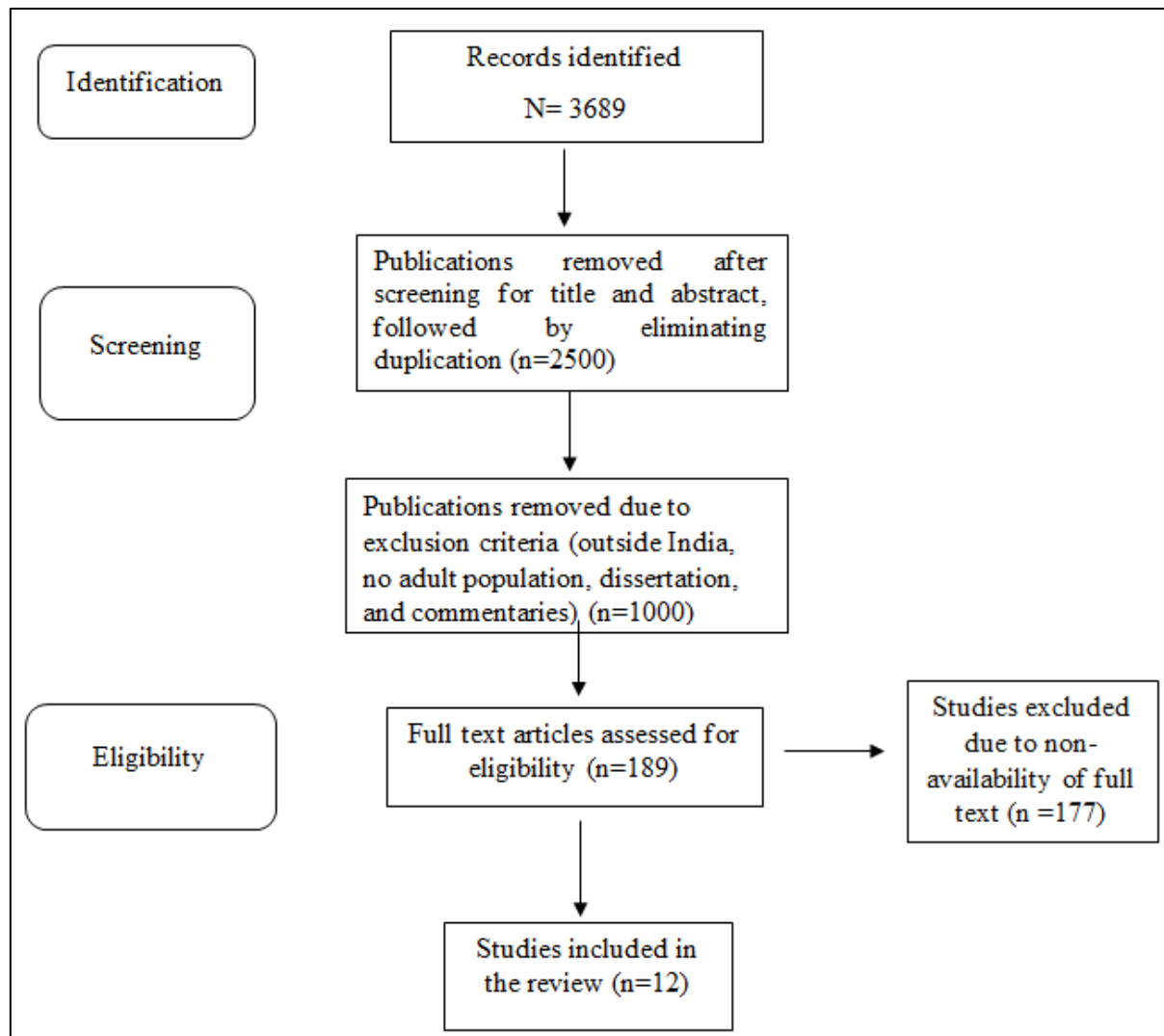


Fig 1 Flow Diagram for the Review Process

Table 1 Representing the Studies Included in the Review:

Author, Year	Place of the Study	Aim	Study Type	Study Characteristics	Study Tools	Outcome Findings
Balhara et.al., 2020	Delhi	To assess the gaming behavior of college students during the lockdown following COVID-19.	Cross sectional study	393 college students	Patient Health Questionnaire, Generalized Anxiety Disorder, Internet Gaming Disorder Short Form-9	About half (50.8%) of the participants reported that their gaming behavior had increased
Poornima et. al., 2024	Karnataka	To measure the prevalence & psychosocial predictors of internet addiction among adolescents before the first wave of the COVID-19	Cross sectional study	1199 adolescents of both genders, aged 11 to 19 years,	Young's Internet addiction test (IAT)-20	all the participants (100%) were using the internet in a day and the highest number of subjects started using the internet during their 6th standard of education (13%)



		lockdown in India.				
Chanchal Sehwat et. al., 2023	India	To study the Internet Addiction and Social Anxiety among adolescents after COVID-19 in the digital world.	Cross sectional study	120 adolescents (60 males and 60 females)	Chen Internet Addiction Scale (CIAS), Liebowitz Social Anxiety Scale (LSAS)	Internet addiction increases, social anxiety also tends to increase among adolescents.
Samir R Shah et. al., 2023	India	To understand the effect of lockdown on lifestyle, internet addiction and media usage in adolescents.	Cross sectional study	318 Adolescents aged 10 to 21 years.	Semi structured questionnaire	60.6% of respondents used electronic gadgets for more than four hours every day, 80% felt that the internet is a must, 69.2% accepted screen overuse, and 28.9% felt that they were addicted to the internet.
Saksh Jain et. al., 2023	India	To explore the social media addiction and FOMO after second wave of COVID-19 in early and late adolescents (school and undergraduate going students)	cross sectional observational study	228 students enrolled in student out of which, 112 male students and 116 female students	Social Media Addiction scale (SMAS), Smartphone Addiction Scale (SAS), Fear of Missing Out Scale, Bergan scale, Social Media Addiction scale students form (SMAS SF)	Approximately 38.2% of the study subjects watched the device screen for an uninterrupted period of 2 hours or less, 32.5% of them watched it for an extended period of more than 4 hours, and 29.4% watched it for an extended period of 2 to 4 hours. The majority of them (90.8%) used smartphones to access the internet, 7.9% used laptops, and 1.3% of the study subjects browsed on iPad.
Navya Gangadharan, Amod L. Borle, Saurav Basu; 2022	Delhi	To determine the prevalence of mobile phone addiction among adolescents and its associated risk factors among adolescents.	Cross sectional study	264 adolescents (10-19 years)	Mobile Phone Addiction Scale (MPAS),	The prevalence of mobile phone addiction was found to be 33% in the present study among adolescents



Pummy Sheoran; 2021	Across India	To explore the correlation between psychological distress and internet addiction among adolescents.	Descriptive exploratory survey	300 adolescents in the age range of 13 to 18 years	Internet Addiction Test, Mental Health Inventory	The total number of uncontrolled users of internet (moderately and severely addicted combined) constituted about two thirds (66.7%) of the sample population.
K. PERIYAKANNA N, Dr. Arulchelvan Sriram, 2022	Chennai	To explore children's internet usage patterns and online behavior, especially on social media and gaming	Survey method	300 participants male 145, and females 155, school children aged 14 to 17 years only	questionnaire on the usage of social media and online gaming	Most of the children playing online games and accessing the internet for long hours
Avita Rose Johnson, Pooja R. Sridhar and Merlyn Joseph, 2022	South Karnataka	To estimate SA and its associated factors among school-going adolescents residing in a rural area in South Karnataka.	Cross sectional study	335 adolescent aged 10 to 19 years	Tao's Diagnostic Criteria for Internet Addiction, Patient Health Questionnaire-9 (PHQ-9)	46% of the sample was found to be occupied with screens
Rathi et.al., 2022	India	To examine the differences in family functioning, temperament, character and psychopathology in adolescents with and without internet addiction.	Cross-Sectional study	500 participants, with age group of 14-17 yrs	Internet Addiction Test, Temperament and Character Inventory, Devereux Scale of Mental Disorders and McMaster Family Assessment	Adolescents with internet addiction had high novelty seeking and low persistence. Internet addiction was also associated with conduct problems and depression. Family of adolescents with internet addiction had increased difficulty in problem solving, communication, affective responsiveness, affective involvement and behavior control.
Shweta Singh, Nisha Mani Pandey, Manjistha Datta, Saakshi Batra; 2021	Lucknow	To compare the stress, internet use, substance use, and coping among adolescents, young adults, and middle-	Cross sectional study	1027 participants (456 adolescents; 347 young adults, and 224 middle age-adults)	Perceived Stress Scale, Internet Gaming Disorders-9, DSM-5 Self-Rated Level-1, and Brief-COPE scale.	Adolescents are found to have high internet use



		aged adults amid India's 'new normal' era.				
Shweta Singh, Manjitha Datta, Pawan Gupta, Saakshi Batra; 2022	Lucknow	To study age, gender, mental health, coping strategies and lifestyle indicators as predictors for PIU in adolescents, young adults and middle-aged adults.	Cross sectional study	1027 participants with 456 adolescents (Male 200; Female 256); 347 young adults (Male 124; Female 223) and 224 middle-aged adults (Male 103; Female 121)	Internet Gaming Disorder Scale (IGDS-9), Brief COPE, Perceived Stress Scale (PSS), DSM-5 Self-Rated Level 1 Cross-Cutting Symptom Measure – 9, Semi-Structures proforma for lifestyle indicators	Adolescents are susceptible to problematic internet use.

#### IV. DISCUSSION

The findings of this systematic review illuminate a deep and growing concern in adolescent mental health: the escalation of behavioral addictions in the wake of the COVID-19 pandemic. The pandemic created a near-perfect storm for such disorders to thrive—through prolonged isolation, increased screen exposure, reduced physical activity, disrupted academic routines, and social disconnection. Across the reviewed studies, there is overwhelming consistency in reporting high rates of internet addiction, problematic smartphone usage, social media dependence, and gaming behavior among adolescents.

##### ➤ *Behavior Addiction for Digital World: A Pandemic Within a Pandemic*

The review highlights that behavior addiction for digital world—most notably internet and mobile phone addiction—is no longer a marginal phenomenon but has entered mainstream adolescent experiences. For instance, Sheoran (2021) found that nearly two-thirds of adolescents showed moderate to severe internet addiction, while Gangadharan et al. (2022) reported mobile addiction in 33% of the surveyed adolescents. This widespread dependence on devices may reflect both a lack of alternative coping strategies and the normalization of screen-based leisure as the default mode of engagement during lockdowns.

##### ➤ *Psychosocial Vulnerabilities and Mental Health Impact*

The most concerning implication of these behavioral addictions is their link to psychosocial distress. Several studies, such as Sehrawat et al. (2023) and Rathi et al. (2022), clearly outline that increased screen use is positively correlated with anxiety, depression, and social withdrawal. These are not merely behavioral habits but psychological phenomena with deep emotional and developmental implications.

Adolescents with internet addiction were found to exhibit traits like high novelty-seeking, impulsivity, and reduced persistence—factors that predispose them to risky

behavior and reduced academic or social functioning. Moreover, Rathi et al. highlighted deteriorating family functioning, suggesting that the home environment may not only fail to buffer the effects of digital overuse but could actually compound them.

##### ➤ *Changes in Lifestyle and Coping Post-COVID*

COVID-19 fundamentally restructured adolescent lifestyles. School closures, curfews, and limitations on social interactions led to dramatic shifts in how adolescents coped with stress. According to Shweta Singh et al. (2021, 2022), adolescents reported higher levels of perceived stress and more maladaptive coping strategies than other age groups, resulting in a greater vulnerability to problematic internet use.

##### ➤ *What is Especially Noteworthy is the Age of Initiation*

Poornima et al. (2024) reported that many adolescents began internet use as early as their sixth standard. This early onset of digital exposure, coupled with lack of supervision and digital literacy, has likely laid the foundation for long-term behavior patterns that are difficult to reverse.

##### ➤ *Gender and Urban-Rural Considerations*

Although the studies did not consistently analyze gender-based differences, available data suggest that males may be more prone to gaming addiction, while females show higher susceptibility to social media addiction and FOMO (Fear of Missing Out), as noted in Jain et al. (2023). Moreover, rural-urban disparities, such as in Johnson et al. (2022), point toward an urgent need for targeted interventions in under-resourced settings, where awareness and mental health services remain scarce.

##### ➤ *From Behavioral Habit to Clinical Concern*

Behavioral addictions among adolescents are often mischaracterized as mere habits or 'phases' that will pass with age. However, the review shows that such behaviors have clinically significant consequences and meet criteria for disorders—ranging from impaired functioning and distress to co-occurring psychopathology and academic



decline. The presence of tools like the Internet Gaming Disorder Scale and the Patient Health Questionnaire across studies reflects a growing consensus in the scientific community to treat these issues with the seriousness they warrant.

## V. CONCLUSION

This review underscores that the post-pandemic digital landscape has reshaped adolescent behavior, often in maladaptive and harmful ways. Behavioral addiction is emerging as a hidden epidemic that silently undermines adolescent mental health. Without timely intervention, the long-term psychological and social costs could be profound. A proactive, multi-pronged strategy—integrating family, schools, policy, and clinical care—is vital to restore balance in adolescents' lives and protect the next generation from the fallout of unchecked digital immersion.

## DECLARATIONS

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### ➤ Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this research article.

### ➤ Data Availability Statement

Data will be made available, upon reasonable request.

### ➤ Authors Contribution-

- Vishal Anand- concept, literature review, data acquisition, manuscript preparation,
- Garima Ranga- concept, data acquisition, preparing results, manuscript editing.

### ➤ Ethics Approval

I would like to emphasize this is a systematic review and no human or animal have been studied separately. The already done studies have been analysed.

### ➤ Consent for publication

The manuscript submitted to the journal has been read and approved by both the authors. On behalf of all the contributors I will act as guarantor and will provide the consent for the publication.

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### ➤ Data Transparency

A part of the data reported in this manuscript was neither presented nor published anywhere by the authors.

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