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A Pilot Study on Mindfulness-Based Intervention in Treating Adolescents with Internet Gaming Disorder

Jim Varghese[1*], Vandana Pandey[2]

[1]*Research Scholar, Department of Psychology, Eklavya University, Damoh, Madhya Pradesh, India*
[2]*Assistant Professor and Guide, Department of Psychology, Eklavya University, Damoh, Madhya Pradesh, India*

Abstract

Mindfulness-based intervention has been effectively used in both substance-related addiction and non-substance-related addiction. The aim of the study is to find out the effectiveness of mindfulness-based interventions on internet gaming disorder among adolescents. Adolescence with internet gaming disorder was divided into a control group (n = 10) and an intervention group (n = 10). The intervention group received eight sessions of a mindfulness module for a period of two months. A base-level assessment was done in the first week by making use of the internet gaming disorder scale, the visual analog scale, the mindfulness attention awareness scale (MAAS), the emotion regulation questionnaire (ERQ), and the post-intervention assessment (8th week). After two weeks following the intervention, a follow-up assessment was completed. Ten adolescents from each group completed the intervention and follow-up. The overall addiction score decreased significantly when compared to the base-level assessment. The results also indicated a reduction in the craving for internet use, an improvement in emotion regulation, especially in the form of reappraisal, and an improvement in mindful attention awareness. This pilot study demonstrated that mindfulness-based interventions could bring about significant changes in the internet game-related problem among adolescents.

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Correspondence:
Jim Varghese
jalackal@gmail.com
Research Scholar, Department of Psychology, Eklavya University, Damoh, Madhya Pradesh, India

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Introduction

The outbreak of COVID-19 necessitated an overdependence on online activities that increased access to the internet all over the world. However, vulnerable populations like schoolchildren, especially adolescents, are at high risk of developing gaming-related disorders. Moreover, individuals who are prone to Internet addiction suffer from a variety of psychosocial problems in their daily lives, such as psychological health problems, emotional and behavioral problems, and problems attending to social situations.

Internet gaming disorder (IGD) is a recurrent and compulsive pattern of video game playing (on computers, game consoles, or mobile devices, online and offline) associated with adverse psychosocial consequences (American Psychiatric Association, 2022). IGD is characterized by signs and symptoms similar to substance use and gambling disorders and is evidenced by a) a preoccupation with playing video games on the internet and offline, b) a need to

increase the amount of time they engage in video gaming in order to achieve the desired level of excitement; c) psychological withdrawal symptoms (e.g., feeling restless, irritable, or sad when attempting to reduce or stop playing video games); d) repeated unsuccessful attempts to stop or reduce gaming; e) failure to engage in other hobbies or activities due to gaming; f) playing video games to escape or relieve negative moods; g) lying to others about the extent of gaming; h) continued video game playing despite negative consequences; and i) mental distress and impairments in social functioning (APA, 2022; Petry *et al.*, 2014).

In Asia, early studies reported that around 20% of adolescents perceived themselves to be addicted to the Internet (Fontalba-Navas *et al.*, 2015). Despite the lack of precise prevalence estimates, Kuss and Griffiths (2012) estimated that 4 to 12% of adolescents and adults who play video games engage in problematic gaming behaviors.

A number of psychosocial problems have been identified as an impact of overuse of the internet for mere entertainment purposes, such as driving while playing video games (Li, O'Brien, Snyder, & Howard, 2015), suicidal ideation and hostility and violence, psychiatric conditions including depressive and somatic symptoms, social anxiety, and attention-deficit hyperactivity disorder (ADHD) (Dong, Lu, Zhou, & Zhao, 2011). Behavioral problems such as substance misuse, loss of relationships and employment (Jackson, von Eye, Witt, Zhao, & Fitzgerald, 2011), and impaired physical health, including sleep disorders (Ferrie, De Marco, Grünewald, Giannakodimos, & Panayiotopoulos, 1994).

Mindfulness is a form of meditation that derives from Buddhist practice. Mindfulness is the process of engaging a full, direct, and active awareness of experienced phenomena that are spiritual in aspect and that are maintained from one moment to the next. As part of the practice of mindfulness, observing the breath is typically used to aid concentration and to help maintain an open awareness of the present moment.

A number of therapeutic approaches have been used to treat addictive behavior, such as pharmacotherapy, cognitive behavioral therapy, and family therapy. Mindfulness interventions are effective in treating substance use and gambling disorders (e.g., Chiesa & Serretti, 2014). Only a few studies have been conducted to determine the effectiveness of mindfulness on internet gaming disorders. Penberthy (2012), who contributed much to the intervention known as mindfulness-based relapse prevention [MBRP], argued that MBRP appears to be an effective treatment for reducing substance use relapse. Although most of the studies on mindfulness were conducted on depression, only a few studies were conducted on emotion regulation impairment and difficulties in controlling one's behavior. Baer, Smith, Hopkins, Krietemeyer, and Toney (2006) examined the mindfulness structure and opined about five facets of mindfulness, such as observing, describing, acting with awareness, non-evaluation of thought and feelings, and non-reactivity.

Nazlıgül *et al.* (2018) conducted a study on internet gaming disorder and treatment approaches, a systematic review to investigate the phenomenology of the psychiatric diagnosis of internet gaming disorder through a comprehensive database search. The results indicated that various modalities show successful results in reducing IGD symptoms and opined about the possibility of developing psychiatric problems. Unlike drug addiction or substance abuse, no chemical or substance intake is involved in Internet gaming disorder, although excessive Internet use may lead to physical dependence, similar to other addictions (Alavi *et al.*, 2012). Since the symptoms demonstrated in the internet gaming disorder are similar to those of other substance use disorders, a similar intervention strategy could be utilized to determine the effectiveness of the intervention approaches dealing with internet addictive behaviors. In the current study, an attempt is made to understand a possible effective intervention for internet gaming disorder.

Method

Aim

To understand the effectiveness of mindfulness-based interventions in treating adolescents with internet gaming disorders

Objectives

- To identify the vulnerable group of adolescents

susceptible to internet addiction in terms of gender, age, birth order, and education.
- To understand the effectiveness of a mindfulness-based technique in dealing with internet gaming addiction.
- To understand the effectiveness of mindfulness in reducing cravings to use the internet
- To explore the effectiveness of mindfulness techniques in emotion regulation skills.

Operational Definition

Mindfulness-based intervention

An interventional strategy based on mindfulness skills such as observing, describing, acting with awareness, nonjudging inner experience, and non-reactivity to inner experience.

Internet gaming addiction

Internet gaming disorder (IGD) is a recurrent and compulsive pattern of video game playing with signs and symptoms of preoccupation, tolerance, and psychological withdrawal.

Mindful attention awareness

The ability to be attentive to the present moment

Adolescence

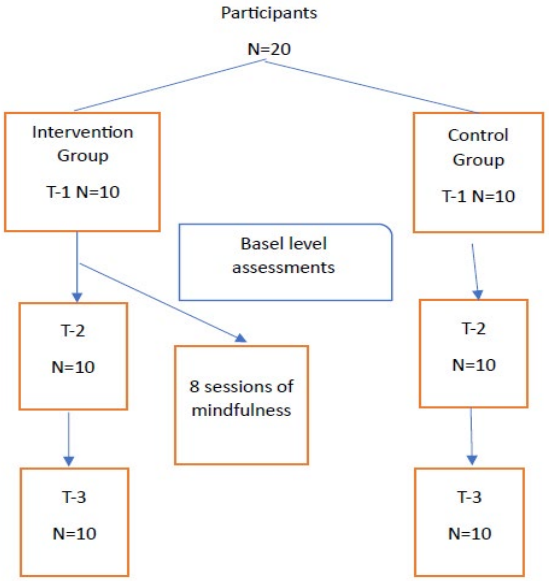
Male or female, with an age group ranging from 12 to 19. However, in order to reduce discrepancies, the age is restricted to 15 to 19.

Participants

Samples are obtained from a clinical population mostly referred by parents or school councilors who visited Max Mind Rehabilitation Centre, Aravanchal, situated in the district of Kannur, Kerala, on an outpatient (OP) or inpatient (IP) basis. Though the immediate reason for visiting the hospital might be poor academic performance or school refusal, the genuine reason for such behavior problems could be the result of over-dependence on internet-related use.

Procedures

About 20 samples for the study were selected, meeting the inclusion and exclusion criteria and obtained a cut-off score as per the DSM 5 criteria using the internet gaming disorder scale (short



Note: T1 refers to baseline assessment on both group (First week). T2 refers to post intervention (8th week). T3 refers to first follow up (14th week).

Figure 1: Participants flow in the research design.

form) (IGDS9-SF) by Pontes and Griffiths (2015). Out of the 20 samples, 10 are kept in the experimental group, and 10 are kept in the control group by using randomization principles. Ethical consideration was addressed by giving proper attention to both the intervention and control groups (Figure 1). The control group was kept in the waiting list group and received treatment after a specified period of time. Only the experimental group received mindfulness-based interventions. A few sessions were done in groups, and some other sessions were done individually, depending on the convenience and availability of samples.

Mindfulness intervention protocol

The researcher developed a modified mindfulness-based intervention protocol based on the theoretical and available techniques in the existing literature (Garland, 2013). This protocol comprises eight sessions per week. The initial session comprises psychoeducation, and the second session is aimed at introducing mindfulness and its basic techniques, followed by body scan meditation and then skills to develop present-centeredness. The final sessions included helping them to make a cost-benefit analysis and developing healthy practices to address the problem behavior. Each session

Table 1: Showing the sociodemographic variables such as gender, education and birth order

Gender	*20*
Male	*14 (71.4)*
Female	*6 (28.6)*
Education	2 (9.5)
High School	8 (38.1)
Plus One	6 (33.3)
Plus Two	4 (19)
Degree	
Birth order	8 (38.1)
First Born	7(33.1)
Second Child	3 (13.3
Only Child	3(13.3)
Younger child	

Table 2: Results indicating pretest and post-test analysis of the variables under study in the experimental group

Variable	*Pretest*		*Post-test*		*t-value*	*Sig*
	Mean	*SD*	*Mean*	*SD*		
GD	37.50	4.14	27.70	5.12	3.353	.269
VAS	8.20	.78	4.40	1.838	6.042	.000**
ERQ	41.10	1.73	39.40	4.60	1.063	.315
MAAS	22.20	2.658	29.60	3.471		.000**

** Significant at 0.01 level

ends with assigning homework for developing more adaptive skills, including meditative practices on mindfulness.

Measures and tools

The researcher collected basic sociodemographic information through intake performa, in which information including age, name, sex education, birth order and type of game engaged are collected (Table 1). Information regarding gaming addiction is collected through internet gaming disorder scale short form (IGDS9-SF) by Pontes & Griffiths, 2015, which consists of nine items that cover wide areas of addictive behavior. The mindful attention awareness scale Brown and Ryan (2003) was also used to understand the extent of mindfulness skills the person initially possesses and whether there is any improvement in the acquisition of skills after the proper intervention procedure. The emotion regulation questionnaire (ERQ) by Gross and John (2003) also used to measure emotion regulation skills that mediate gaming disorder. The visual analog scale

Table 3: Results indicating pretest and post-test analysis of the variables under study in the control group

Variable	*Pretest*		*Post-test*		*t-value*	*Sig*
	Mean	*SD*	*Mean*	*SD*		
GD	38.60	1.506	37.00	1.944	2.516	.033*
VAS	7.10	1.197	6.70	.949	1.177	.269
ERQ	40.80	3.393	38.90	2.514	3.353	.269
MAAS	40.80	3.393	38.90	2.514	3.353	.008*

*Significant at 0.05 level

Table 4: Results indicating pretest analysis of the variables under study in Control & Experimental Group

Variable	*Control pretest*		*Experimental pretest*		*t-value*	*Sig*
	Mean	*SD*	*Mean*	*SD*		
GD	38.60	1.50	37.50	4.143	.818	.435
VAS	7.10	1.197	4.40	1.838	4.669	.001*
ERQ	40.80	3.393	41.10	1.729	-.284	.782
MAAS	23.60	2.413	23.40	1.174	.309	.764

*Significant at 0.05 level

(Wewers & Lowe, 1990) was used to quantify the craving for gaming behavior.

Statistical analysis

Data analysis were conducted by using SPSS. Sociodemographic variables were analyzed by using descriptive statistics. A paired t-test was conducted to find a mean difference between different variables in the pretest and post-test and compared with the follow-up assessment.

Ethical consideration

The ethical committee clearance was obtained from the Ekalavya University, Damoh and informed consent from the candidates was obtained and information data sheets were given to the subjects concerning the study and its purposes were explained to them.

Results

Results indicating pretest and post-test analysis of the variables under study in the experimental group, control group as shown in Tables 2-3. Results indicating pretest analysis of the variables under study in Control & Experimental Group as shown in Table 4.

Discussion

In a systematic review by Zajac *et al.* (2020), they highlighted the paucity of well-designed treatment outcome studies and limited evidence for the effectiveness of any treatment modality and opined that methodological flaws, including small sample sizes, a lack of control groups, and little information on treatment adherence, among other problems limited such studies. It has been observed that limited studies are available to understand various therapeutic approaches aimed at reducing internet gaming-related problems (Young & Brand, 2017). Several studies have reported that face-to-face intervention reduces internet gaming-related addiction (Griffiths *et al.*, 2016). In the new context, especially in the emerging technological world where we are overly dependent on mobile-related devices, problematic or internet gaming is expected to increase. In this context, developing an adequate intervention strategy is a need of the hour. Addictive behavior change is also facilitated because of the changes in emotion regulation, cognitive reappraisal, and mindfulness attention awareness skills. A meta-analytic study demonstrated that emotion regulation strategies such as avoidance, rumination, and suppression are those that are positively associated with anxiety, depression, and eating disorders (Aldo, Nolen-Hoeksema, Schweizer, 2010). The present study also shows the mediational role of mindfulness in the reduction of emotion regulation, especially in the form of reappraisal.

There is an obvious difference in the proportion of male and female samples in both the control and experimental groups. From the total sample of 20, 71.4% of samples consisted of males, and only 28.6% of samples constituted females. Among the adolescents, one student is found to engage more with the internet when compared with another educational group. They occupy 38.1 percent when compared to other categories like high school or even degree, and the least users are observed to be high school students. As far as birth order is concerned, the firstborn tends to be more likely to use internet gaming-related activities; however, only a marginal difference is observed across other sections of siblings. In the control group, pretest and post-test do not make much difference, especially in carving to use the internet and emotion regulation (t = 1.177, p =.269, t = 3.353, p = .269), as there is no significant difference between the variables. However, in the case of gaming disorder and mindfulness attention awareness, there is a marginal difference observed within control. When comparing the base-level assessments of both the intervention and control groups, there was no statistically significant difference observed in gaming disorder, mindfulness attention awareness, and emotion regulation T1 and T2 (t = 818, p = 435), (t = 2.84, p = 782), and (t = 3.09, p = 769), indicating that the samples are homogenous in nature. In the experimental group, significant changes were observed in gaming disorder and emotion regulation using mindfulness interventions. In the case of craving and mindful attention and awareness, there are no significant changes observed that need further evaluation.

Conclusion

In most of the studies on substance use-related disorders and behavioral addictions such as workaholism, sex addiction, and gambling, it has been observed that mindfulness-based intervention is effectively used in such disorders (Van Gordon *et al.*, 2016; Shonin *et al.*, 2013; Lisle *et al.*, 2012; Son, 2011). However, not many studies have been conducted on internet gaming disorders using mindfulness-based interventions. Mindfulness-based intervention reduces relapse risk and withdrawal symptoms by replacing maladaptive addictive behaviors with mindfulness (Shonin *et al.*, 2013). In the eight sessions of mindfulness-based intervention, participants are encouraged to objectify their behavior, helping them develop cognitive reconstruction by dissociating affectivity towards internet gaming through teaching meditative practices. The present study revealed the effectiveness of mindfulness-based interventions in reducing internet game addiction and improving emotion regulation skills. The study is limited to a smaller number of samples, which makes it difficult to generalize.

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