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Review Article

Psycho-Therapeutic Management of Internet Gaming Disorder: A Systematic Review

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ABSTRACT

The Diagnostic and Statistical Manual of Mental Disorders (DSM 5) has now included Internet Gaming disorder in section III as the condition that warrants more clinical research. Internet or Online gaming has become one of the most popular sources of entertainment among children and adolescents. It represents the fastest growing segment leading to hazards as well. In this study, existing literature on Internet Gaming Addiction and, intervention-based studies were reviewed in an attempt to systematically analyze existing psychological management. A total of 14 full-text papers were strategically chosen for review using PRISMA, adhering to the inclusion and exclusion criteria. It was observed that the majority of studies included prevention-based, CBT-based intervention, mindfulness, and targeted family-focused treatments as well. Furthermore, the majority of the studies shed light on the wise utilization of gaming rather than abstinence from the act.

Keywords: *Internet gaming disorder, systematic review, psychological management, psychotherapy, Intervention.*

INTRODUCTION

The problematic gaming was introduced in the late 1980s with the successful treatment through the promotion of self-control and interpersonal skills by "endorsing compulsive video games" (Kuczmierczyk, Walley, & Calhoun, 1987). Online gaming is becoming the most popular pastime for children and adolescents worldwide. Clinicians and empirical research suggest that some adolescents play a substantial amount of online gaming, which leads to functional impairments in daily life (Gentile, 2009; King, Delfabbro, Doh, et al., 2018; Kuss & Griffiths, 2012). In 2013, the Diagnostic and Statistical Manual of Mental Disorders (American Psychiatric Association, 2013) included Internet Gaming Disorder (IGD) under Section III, and the same was added to the 11th World Health Organization's classification as Gaming Disorder (WHO, 2018).

Problematic gaming has been included in the cognitive-behavioural model's application (Haagsma, Caplan, et al., 2013), which initially attempted to explain pathological Internet use (Caplan, 2010). It makes the case that problematic gaming is caused by a strong propensity for online interaction, a reliance on video games to control moods, and a lack of self-regulation, which includes a high preoccupation with gaming and obsessive use of video games. Multiple psycho-social factors thus play a vital role in its prognosis.

The increased acknowledgment of this clinical condition shifts the focus to prevention and intervention. Nonetheless, one of the most popular models for psychological treatments for internet addiction is cognitive behavioural therapy (CBT). The mentioned model has been successfully used to treat internet addiction in various trials (Young, 2013). According to this paradigm, treatment begins by concentrating on the patient's behavior before progressively altering the focus to the formation of positive cognitive assumptions (Przepiorka et al., 2014). The CBT approach also advises patients to keep a close eye on their thoughts to spot affective and environmental triggers linked to their addictive online behaviour (Khazaal et al., 2014).

METHOD

A systematic review of intervention and repulsion for Internet gaming disorder (IGD) was performed to identify what methods of treatment exist for this behavioral addiction. The Preferred Reporting Items for Systematic Reviews (PRISMA; Liberati et al. 2009) reporting checklist was followed when conducting the current systematic review. A thorough literature search was conducted for this investigation to find intervention studies. For systematic review papers, all articles published in behavioural addiction journals up until April 2023 were specifically searched. A protocol was pre-developed to document analytical methods and inclusion criteria. We utilized Scopus, which also included journals from Springer, PubMed, Elsevier, BioMed Central Ltd, Wiley, Mosby, Sage Publications, Blackwell Publishing, Emerald, Frontiers Media SA, Routledge, the American Psychological Association, Oxford University Press, Cambridge University Press, Taylor and Francis, and in some cases, it searched the journal's website for articles published in the selected journal that contained that term. (Internet gam*) OR (Behavioural Addict*) OR (Gaming Psychopathology*) OR (Gaming Psychopathology) OR (Online gam* addict*) OR (Internet gam* disorder*) OR (Gaming Addiction*) OR (Problematic Internet Gaming) OR (Video gam* addict*) OR(Problematic Gaming) OR (Problematic Online Gaming) OR (Internet Gaming

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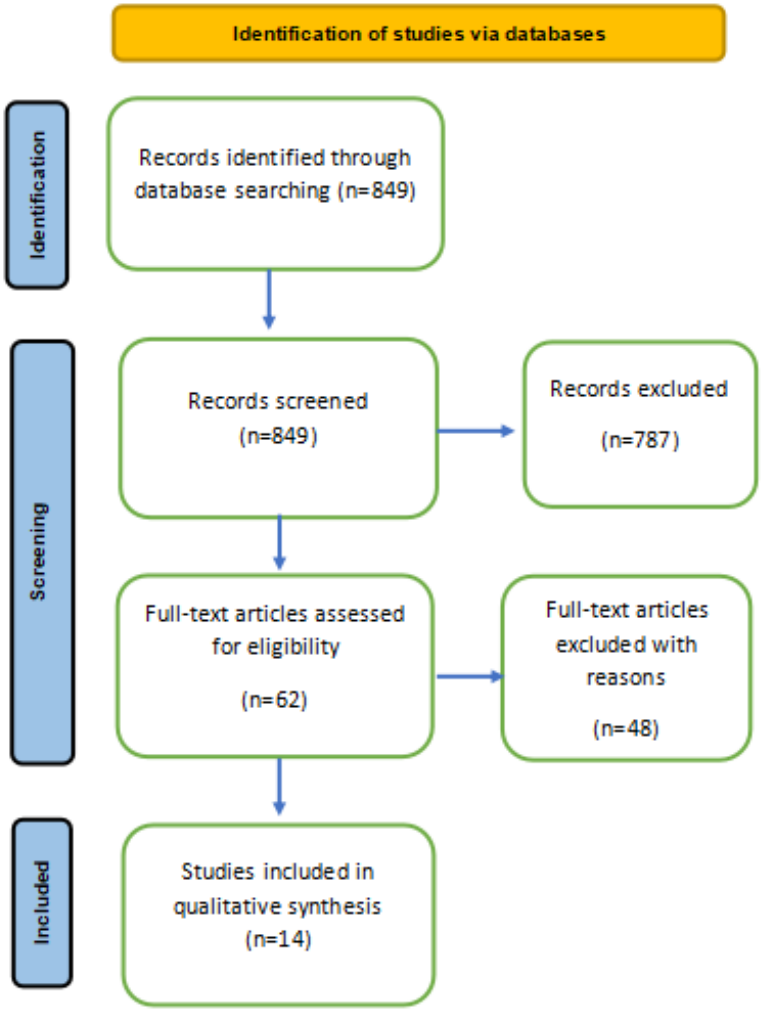
Addict*) OR (Online gaming addict*) OR (Excessive Internet Gaming) AND (Intervention*) OR (Psychotherapy*) OR (Therapy*) OR (Therapeutic Module*) OR (Therapy* Model*) OR (Eclectic Treatment*) OR (Management*) OR (Treatment*) OR (Psychological Management*) OR (Prevention*) OR (Psychological Prevention*) OR (Psychological Intervention*) OR (Behavioural Intervention*) OR (Behavioural Addiction* Intervention*) OR (Therapy Program*) OR (Clinical Intervention*)in their titles, abstracts, and/or keywords. The last search was run on April 30, 2023. From 10 years of identified records, titles, abstracts, keywords, author names and affiliations, journal names, and publications were exported to an MS Excel spreadsheet. Papers that were not related to intervention and prevention, were discarded. All review articles that at least partially highlighted psychotherapy or preventative strategies were included. For data management, data elements have been added to the MS Excel spreadsheet. The data management spreadsheet also includes the bibliographic data for the studies, the required PRISMA checklist items with some additions, and a section for reporting the PRISMA flowchart.

Figure 1: The PRISMA flow diagram for the systematic review detailing the database searches, the number of abstracts screened, and the full texts retrieve



The present study reviewed 14 papers. The study selection process has been summarized in figure 1. While the literature search using databases and search engines produced 849 items, 787 of them were disregarded because they did not focus on interventions. 48 papers were eliminated after rigorously screening the full texts of the remaining reviews because they did not match the eligibility criteria. Thus a composite of 14 full-text papers was further reviewed to understand the types of psycho-therapeutic interventions being covered and analysed.

RESULT

Table 1: Details of the reviewed research papers

Author	Publisher	Source Title	Keywords	Title
Li W., Garland E.L., Howard M.O. (2018)	Routledge	Journal of Addictive Diseases	cognitive reappraisal; Internet gaming disorder, maladaptive cognitions; mindfulness treatment	"Therapeutic mechanisms of Mindfulness-Oriented Recovery Enhancement for internet gaming disorder: Reducing craving and addictive behaviorby targeting cognitive processes"
Krossbakken E., Torsheim T., Mentzoni R.A., King D.L., Bjorvatn B., Lorvik I.M., Pallesen S. (2018)	Akademiai Kiado Rt.	Journal Behavioral Addictions	of Parental guide; Problematic video gaming; Video game addiction	"The effectiveness of a parental guide for the prevention of problematic video gaming in children: A public health randomized" controlled intervention study
Chau, C. L., Tsui, Y. Y., & Cheng, C. (2019)		Journal Frontiers psychology	of Internet gaming disorder, gaming in addiction, problematic internet use, prevention program evaluation, universal strategy, social impact, risky online behavior	"Gamification for Internet Gaming disorder prevention: Evaluation of a Wise IT-Use (WIT) program for Hong Kong primary students"
Han J., Seo Y., Hwang H., Kim S.M., Han D.H. (2020)	John Wiley and Sons Ltd	Clinical Psychology and Psychotherapy	anxiety; cognitive behavioural therapy; impulsivity; internet gaming disorder; social avoidance	"Efficacy of cognitive behavioral therapy for internet gaming disorder"
Torres-Rodriguez A., Griffiths M.D., Carbonell X., Oberst U. (2020)	Akademiai Kiado Rt.	Journal Behavioral Addictions	ofAdolescence; Cognitive-behavioral therapy; Gaming disorder treatment; Internet Gaming Disorder; Video game	"Treatment efficacy of a specialized psychotherapy program for Internet Gaming Disorder."

Author	Publisher	Source Title	Keywords	Title
Kim, S. M., Han, D. H., Lee, Y. S., & Renshaw, P. F. (2012).	Elsevier Ltd	Computers in Human Behavior	Cognitive behavioral therapy, Online game addiction, Major depressive disorder	Combined cognitive behavioral therapy and bupropion for the treatment of problematic online game play in adolescents with the major depressive disorder"
Yao Y.-W., Chen P.-R., Li C.-S.R., Hare T.A., Li S., Zhang J.-T., Liu L., Ma S.-S., Fang X.-Y. (2017)	Elsevier Ltd	Computers in Human Behavior	Balloon analogue risk task; Delay discounting; Impulsivity; Internet gaming disorder; Intervention	"Combined reality therapy and mindfulness meditation decrease intertemporal decisional impulsivity in young adults with Internet gaming disorder"
Li W., Garland E.L., Mcgovern P., O'brien J.E., Tronnier C., Howard M.O. (2017)	Educational Publishing Foundation	Psychology of Addictive Behaviors	Internet gaming disorder; mindfulness intervention; randomized controlled trial; support group; video game addiction	"Mindfulness-oriented recovery enhancement for internet gaming disorder in US adults: A stage 1 randomized controlled trial"
Sakuma H., Mihara S., Nakayama H., Miura K., Kitayuguchi T., Maezono M., Hashimoto T., Higuchi (2017)	Elsevier Ltd	Addictive Behaviors	Behavioral addiction; Cognitive behavioral therapy; Internet; Onset; Video game	"Treatment with the Self-Discovery Camp (SDLC) improves Internet gaming disorder"

Study	Sample			Treatment Type	Number of sessions/therapy duration	Outcome
	N	Mean Age	Diagnostic criteria			
Kim et. al., (2012)	15	14.2	DSM-4	family therapy intervention	3 Weeks	Improvement in perceived family cohesion
Yao et. al., (2017)	25	22.28	DSM-5	Reality therapy and mindfulness meditation	6 weeks, group therapy	decreased in delay discounting rate
Li W et. al. (2017)	35	25.0	DSM-5	Mindfulness-Oriented Recovery Enhancement	8 weeks 2 hours group session	MORE is a promising treatment approach
Sakuma et. al., (2017)	10	18.2	DSM-5	Personal counseling and a workshop	14 sessions for 8 nights and 9 days, Group	Internet use per day and week in hours was significantly reduced
Li et. al., (2018)	30	25.0	DSM-5	Mindfulness-Oriented Recovery Enhancement (MORE	8-weekly, 2-hour group sessions	Decrease in maladaptive gaming-related cognitions

Author	Publisher	Source Title	Keywords	Title
Maden C., Bayanalar K., Ancak O.T., Yagli N.V. (2022)	Elsevier Ltd	Mental Health and Physical Activity	Health Aerobic exercise; Physical Exergame; Physical activity; fitness	Anxiety, Effects of virtual Reality-Based Training and disorder; aerobic training on gaming disorder, physical activity, physical fitness, and anxiety: A randomized, controlled trial
Sharma M.K., Anand N., Tadpatrikar A., Mamindla P., Narayanan G.(2022)	Elsevier Ltd	Psychiatry Research	Cognitive behaviour therapy; Internet addiction; Intervention gaming disorder; program; Motivational enhancement therapy; Psychotherapy	Effectiveness of multimodal psychotherapeutic Internet intervention for internet gaming disorder
Männikkö N., Ruotsalainen M., Miettunen J., Pontes H.M., Kääriäinen M. (2022)	Springer	International Journal of Mental Health and Addiction	Gaming disorder treatment; gaming disorder; Therapy; Video games	Effectiveness of a Brief Group Intervention Program for Young Adults with Gaming-Related Problems
Nielsen P., Rigter H., Wolfling K., Weber N., Favez N., Liddle H.A. (2023)	Wiley	Family Process	adolescents; gaming disorder; multidimensional family therapy; treatment intervention	In-session gaming as a tool in treating adolescent problematic gaming
Balhara Y.P.S., Sarkar S., Parmar N., Bhargava R., Yadav Z.(2023)	Elsevier Ltd	Asian Journal of Psychiatry	Gaming, Gaming disorder, Self-help, Prevention	A randomized controlled trial to assess effectiveness of GameF- an e-Health intervention to self-manage gaming with an aim to prevent gaming disorder

Note: It reports the journal's author, publisher, source title keywords, and title of the publication of included reviews.

Table 2: Treatment outcome of the research

Study	Sample			Treatment Type	Outcome
	N	Mean Age	Diagnostic Criteria		
Krossbakken et. al., (2018)	831	10	DSM-5	A brief parental guide on "how to regulate video game behavior in children"	no evidence for the effectiveness of the psycho-educational parental guide in preventing problematic video gaming in children
Chau. et. al., (2019)	248	10.16	KIAPS	Wise IT-use (WIT) program	The risk of the disorder was reduced after the program
Han et. al., (2020)	205	25.9	DSM-5	CBT or supportive psychotherapy.	Improvement in IGD symptoms
Torres et. al., (2020)	31	15.9	DSM-5	Individualized psychotherapy treatment for IGD (PIPATIC program) and TAU	Positive effects regarding the treatment of the IGD
Maiken et. al., (2022)	44	23.8 & 22.1	DSM-5 & ICD 11 Revised	Aerobic training & Virtual Reality Training	30 min, 3 days a week for 6 weeks	VRT training & AT program in reducing the level of gaming disorder and anxiety.
M.K. Sharma et al. (2022)	33	20.25	DSM-5	Motivational enhancement strategies, cognitive restructuring, behavioral strategies and relapse prevention	ten 60-minutes sessions	Substantial change in the IGD scores
Männikkö et al., (2022)	37	23.8	Non clinical sample	Brief group intervention program	10 weekly sessions of 3 hours	Effective at reducing the severity of GD symptoms
Nielsen et al., (2022)	42	14.9	DSM-5	Multidimensional family therapy & Family therapy as usual	6 months	MDFT (with game demonstration sessions) decreased problematic gaming
Balhara et al., (2023)	30	20.8	Non clinical sample	GameE (Gaming disorder prevention & health intervention)- A digital intervention	4 sessions	Successful strategy to prevent gaming disorder

Note: The current report is on the sample (i.e., number of participants, mean age, diagnostic criteria), treatment type, number of sessions, and duration of treatment and outcomes. The outcome has indicated that conducting intervention systematically is growing over time. highlights forteen treatment studies; one is individual session based whereas the rest are group-based interventions. one study is primarily family-based and another in combination.

DISCUSSION

The young minds were born and made their way to adolescents in a world of IT devices, to the extent that they became natives of this era (Teo, 2013). But this rapidly evolving era is creating room for dysfunction and pathologies with the addition of co-morbidities. The need of the hour demands evidence-based treatment, and multiple pieces of research support the importance of psychotherapeutic treatments.

The upward graph of cases due to excessive use of the internet and online games has researchers' and clinicians' eyes on it. The rapid growth of cases of IGD worldwide automatically fuels the need for various treatment services to deal with this, and Young's Model is one of the oldest and most widely used treatment procedures in this genre. Young in 2009 proposed strategies for the treatment of online addiction (including video gaming). Several reports show the effectiveness of group CBT as a treatment for internet addiction (Du et al., 2010; Young, 2011). Hence, it concluded the efficacy and effectiveness of CBT as a treatment for online gaming addiction. Though it has been argued by a few researchers that abstinence from the internet shouldn't be the ultimate goal of the intervention, it should focus on abstinence from problematic online uses and regulate the users' internet activity (Cash et al., 2012; Khazaal et al., 2014).

Details of existing treatment studies

Existing research suggests that individuals who endorse the internet at a relatively young age are at higher risk for common internet addictions and are susceptible to the disorder once they enter adolescence. For the current research, five existing papers have mentioned psycho-therapeutic treatment for adolescents, whereas eight papers have young adults as their participants.

Most studies have indicated that males are more vulnerable and prone to developing internet addiction (IA) than females. A meta-analysis quantified the gender-relation equation wherein a random-effects model provided evidence that supports the gender-specific distinctions in IGD, where males are more prone to Internet gaming disorder than females (g = 0.479) (Su et al., 2020). An intervention study by Chau et al. (2019) included 248 primary school students from four different schools, and 56% of the participants were boys. Similarly, other studies that included both genders indicated the same. As per a recent Indian population-based intervention, the participants comprised 39 (95.89%) males and 1 (2.34%) females, indicating that males made up the majority of the study's participants. (Sharma, et. al., 2022).

The DSM-5 and ICD-11 both included and defined IGD as being presented as a repetitive pattern of persistent

gaming behavior. Clinicians and professionals both use the manuals for diagnosis. In existing studies, ten of them have used DSM-5 and one has used DSM-4, another has used DSM and ICD-11 revised, and the last has used a self-report questionnaire of the Korean Internet Addiction Proneness Scale for the diagnosis.

As per a meta-analysis using a random-effect model, it was indicated that the population has a 3.05% prevalence rate of gaming disorder worldwide (Stevens et al., 2021). The rate of IGD and co-morbid psychological pathologies is quite high; 92% of pieces of research work suggested that there's a significant correlation between anxiety, depression (89%), attention deficit hyperactivity disorder (87%), social phobia (75%), and obsessive-compulsive symptoms (Gonzalez et al., 2018). The research by Sakuma et al. in 2016 showed that six participants had psychiatric comorbidities that did not interfere with the SDLC program they were in. Six participants had ADHD, which triggered them to concentrate on stimulating phenomena, and those cases required a special amount of time for treatment (Sakuma, et. al., 2016). The research by Han, et. al. (2020), on IGD, focused on assessing IQ, attention deficit hyperactivity disorder, major depressive disorder, anxiety, and impulsivity before kick-starting the treatment procedure. For measuring the IQ, the Korean Wechsler Adult Intelligence Scale was used, and after giving supportive therapy (CBT), the symptoms of IGD and co-morbid symptoms such as attention deficit hyperactivity disorder, major depressive disorder, anxiety, and impulsivity were measured again. In Korean adolescents with problematic Internet use MDD was the most prevalent co-morbid psychiatric disorder (Kim et al., 2012). In another study using the Beck Depression Inventory and the Beck Anxiety Inventory (BAI), both clinical conditions of depression and anxiety were measured. The IGD group showed significantly lower scores after the intervention compared to the baseline (Yao et al., 2017). Anxiety is a major disorder highlighted in research by Maden et. al. (2022), assessed using the BAI. A reduction in anxiety levels was found after training.

METHOD OF TREATMENT

Various researchers applied treatment plans that best suited their samples under certain conditions. In a very recent work by Chau et al. (2019), they designed a universal prevention program called Wise IT-use, aimed to alleviate the symptoms of internet gaming disorder and risky internet behaviour in children. This was based on a psycho-educational program that encouraged the young participants to tackle societal problems and, co-morbid symptoms (e.g., depression), which developed from various problematic IT uses. Similarly, by improving students' knowledge, skills, and attitudes and equipping them with self-help strategies to monitor and regulate their gaming behaviour with the goal of preventing gaming disorder, Students were the target audience for an e-Health intervention designed to aid in the early detection and prevention of gaming disorder. The intervention was designed to last for around an hour. There were four modules in all which sought to alter abnormal cognitive processes and addictive reward processing. The symptoms of unidentified internet use problems and gaming disorders were successfully alleviated by the treatments over the course of a year. (Balhara et al. 2023)

For adolescents with IGD and co-morbid disorders, CBT is effective as a treatment procedure, and multiple pieces of research support the same. Rodriguez et. al., (2018) designed a treatment plan (PIPATIC) for adolescents with IGD and co-morbid disorders. The plan was for 6 months with 22 sessions, 45 minutes each, which comprised six modules to evaluate the changes in IGD symptoms and "psychopathology, co-morbid symptoms, emotional intelligence, self-esteem, social skills, family environment, therapeutic alliances, and change in perception". The result indicated that the PIPATIC group reported a reduction in co-morbid symptoms compared to the control group, and there was an improvement in ''identity diffusion, self-devaluation, emotional intelligence, social abilities, and reduced familial conflict''. A similar multimodal psychotherapy program makes an effort to concentrate on six major therapeutic intervention domains. This multimodal treatment approach was developed using a number of elements from evidence-based psychotherapy intervention programmes for IGD, including motivational enhancement therapy, cognitive behaviour therapy, and family therapy. (Sharma et al. 2022)

Another study by Han et al. (2020) focused on the CBT approach for the treatment of ''stress management, anxiety control, impulse control, and environmental control, including family'', where non-use of medication predicted a good prognosis and was regarded as having "no comorbidity," and people with comorbidities took the required medication. Hans's CBT program was focused on anxiety control, which could help highly anxious and introverted IGD patients improve their Internet gaming disorder symptoms. The CBT program mainly made the patients face their emotions, especially loneliness so that they could realise that loneliness may be one of the factors fueling the development of problematic internet gaming. The program also focused on developing interpersonal relationships, and better control over internet usage, which can eventually lead to life satisfaction and better

impulse control. Han's research indicated that CBT is comparatively more effective than supportive therapy, as the revised CBT program highlighted the improvement in YIAS, BAI, BIS/BAS, and SADS scores. Kim et al., (2012) conducted a study focused on CBT as the treatment plan for problematic online game play in adolescents with major depressive disorder (MDD). An experiment was conducted on two groups, one with medicines and one with a combination of medicine and CBT, the result indicated that the Med-CBT group had an improvement in the level of anxiety of the Med group participants.

Research conducted by Sakuma et al. (2016) indicated that a self-discovery camp consisting of 14 sessions of CBT with clinical psychologists and professionals was an effective treatment plan for IGD. The camp involved outdoor activities such as trekking, woodworking, cooking, and rally walking to foster a well-regulated healthy life where participants could enhance communication without the presence of the internet and digital mediums. This treatment plan led to the improvement of addictive behaviors and beneficial effects that lasted for a long time. The SDiC was a non-pharmacotherapeutic treatment with an activity program that improved the motivation of participants and improved IGD symptoms by strengthening their self-awareness and providing confidence to deal with conflicts and solve them (Sakuma et al., 2016).

Apart from CBT, other intervention techniques are proven to be effective in treating IGD symptoms, Mindfulness therapy is one of them. Li et al. (2017), in their experimental research with IGD adults, applied mindfulness intervention (MORE), and the results indicated that within 8 weeks of post-treatment, the signs of IGD symptoms got reduced visibly. Mindfulness intervention was effective with the maladaptive cognition and cravings related to internet gaming, including depressive thoughts and loneliness. In an attempt to determine if improvements in maladaptive cognitions and positive reappraisal influenced the clinical effects of mindfulness-based intervention, the researchers conducted another study in 2018 using the same data on mindfulness intervention (MORE) as a treatment for IGD symptoms. Previously, mindfulness intervention was effective in reducing the maladaptive cognitive process and acted as a craving reductive treatment by enhancing awareness but the new mediation effect in the mindfulness intervention (MORE) suggested more effectiveness in decreasing addictive tendencies toward video game playing by targeting maladaptive cognitive processes (Li et al., 2018). Mindful meditation, including body relaxation and mindful training with soothing music, encouraged participants to concentrate on their emotional awareness and adjust their mind and body in sync. The group behavioural intervention based on the WDEP model of reality therapy helped the participants with IGD symptoms control their impulsivity and decrease anxiety and severe depressive symptoms. and behavioural therapy combining reality therapy and mindfulness is even more effective in IGD severity, and this research work also highlighted the cognitive enhancement intervention as an effective treatment for IGD (Yao et al., 2017).

The biopsychosocial theory of addiction is incorporated into the IGD intervention. In a nonclinical population, the study outlined the effects of a unique group intervention for fostering mindful gaming behaviour. Measurements of gaming time, gaming-related issues, time spent on other popular leisure activities, and subjective well-being were used to evaluate the intervention's impact. Measurements were made at three different time points: baseline, right after the intervention, and six months afterward. The severity of IGD symptoms among the study participants significantly decreased (Männikkö et al., 2022). Parental and family characteristics as well as other social variables have been linked to problem gaming in adolescents (Paulus et al., 2018; Richard et al., 2020; Sugaya et al., 2019). In order to determine whether multidimensional family therapy (MDFT) reduces problem gaming, Nielsen et al. (2023) conducted a study as a randomised controlled trial contrasting MDFT with Family Therapy as Usual (FTAU). In MDFT, the therapeutic process is meticulously planned out in terms of protective and risk factors, treatment objectives, and processes for each youth and family. A proactive posture was adopted by the therapists. The therapists at FTAU are more responsive, adjusting to the family's pace, and reacting to situations as they arise. FTAU treatment frequently focuses on forming alliances and enhancing relationships and communication within the family. Sessions are held with the adolescent alone, the parents alone, and the entire family, like those in MDFT. Additionally, they concentrated on two benefits of in-session gaming: improving treatment motivation and addressing issues with family functioning. Because it enables the therapist to enter the young person's world, show interest and curiosity, and explore the reasons for gaming without passing judgment, in-session gaming may present a powerful opportunity to engage the young person in treatment. The game demonstration technique gives pertinent topical issues immediacy. Instead of focusing on past disputes there and then, this approach puts more emphasis on the present and makes it easier to examine and change faulty assumptions and attributions as well as family interactions.

Krossbakken et al. (2018) did research on children endorsing internet gaming and developed a parental

guide with clinical and professional guidance focused on "how to regulate video game behaviour in children". Self-acceptance can be viewed as one of the key factors influencing frustration tolerance, with a significant impact on performance and emotion (Tyagi, et. al., 2022). The main aim of this study was to examine the effectiveness of parenting roles in reducing gaming activity in a random sampling of children ages 8 to 12 years old. The limitation of this study was the lack of pre-tests, which precluded further investigation to determine the difference in the condition of the child's gaming activity. (Krossbakken, et. al., 2018).

In a study by Maden et al. (2022), the researchers explored the therapeutic benefits of virtual reality training and aerobics training treatments on physical activity, physical fitness, and anxiety among gamers and the differences between the treatment group and the control group. Exercise and physical activity are proven to improve psychological well-being by relieving tension and reducing anxiety. In this study, the amount of anxiety and gaming disorder was reduced by VRT training and by AT programme, which uses a routine exercise strategy. The VRT programme was also found to enhance physical fitness.

Limitations

Multiple pieces of work indicated the effectiveness of various treatment and intervention plans, but they also had some limitations. Rodriguez, et al. (2018) and Li et. al., (2017) both had small samples and control groups, which became a limitation in standardizing the outcome. Similar results were found in a research by Sharma et al. (2022), which used a single-group, open-label intervention programme involving participants that were aware of the intervention's existence and the control group was absent. Han (2019) was unable to demonstrate the actual effect of CBT without medication, and the treatment design has some selection biases. Kim et al.'s (2012) study had unavoidable gender bias as all the participants were male, so it was unclear whether the treatment plan could be effective on female gamers. Yao et al. (2017) and Chau et al. (2019) discussed the short period as a limitation of their study. Krossbakken et al. (2018) mentioned how the unavailability of the pre-test data made it sketchy to conclude the effectiveness of the treatment and intervention plans. Sakuma et al., (2016) mentioned how the participation in the self-discovering camp was voluntary and selection bias was difficult; also, the participants went through psychiatric treatment before the camping, so there was no clear evidence of pre and post-effect of the SDiC on the participants; hence, they were unable to provide sufficient statistical data-based evidence, whereas in the intervention by Männikkö et al. (2022), the post-intervention (follow-up) outcome data were gathered using a traditional mail response form, which makes it undependable.

Lastly, in all of the research, the samples were drawn from a single setting, and the findings may not be generalizable to other geographical regions. The intervention was in English and might have deterred students who were more conversant in the local language. (Balhara et al. 2023)

CONCLUSION

The Internet, or online gaming, has become one of the most popular sources of entertainment among children and adolescents. It represents the fastest-growing segment, leading to hazards as well. This study reviewed existing literature on internet gaming addiction and intervention-based studies to systematically analyze existing psychological management. A total of 62 full-text papers were chosen for review, adhering to the inclusion and exclusion criteria. Lastly, forteen intervention-based studies were reviewed, and it was observed that the majority of studies included prevention-based, CBT-based intervention, mindfulness, and targeted family-focused treatments as well. However, the existing limitations bring about an enormous and vast scope for more need-based and focused psychological interventions.

REFERENCES

American Psychiatric Association. (2013). Diagnostic and statistical manual of mental disorders: DSM-5 (5th ed.). Arlington, VA: American Psychiatric Assocation.

Balhara, Y. P. S., Sarkar, S., Laspal, N., Bhargava, R., & Yadav, Z. (2023). A randomized controlled trial to assess effectiveness of GamE-an e-Health intervention to self-manage gaming with an aim to prevent gaming disorder. *Asian Journal of Psychiatry*, *80*, 103389.

Caplan, S. E. (2010). Theory and measurement of generalized problematic Internet use: A two-step approach. *Computers in human behavior*, *26*(5), 1089-1097.

Cash, H., D Rae, C., H Steel, A., & Winkler, A. (2012). Internet addiction: A summary of research and practice. *Current psychiatry reviews*, *8*(4), 292-298.

Chau, C. L., Tsui, Y. Y. Y., & Cheng, C. (2019). Gamification for internet gaming disorder prevention: Evaluation of a Wise IT-Use (WIT) Program for Hong Kong primary students. *Frontiers in psychology*, *10*, 2468.

Du, Y. S., Jiang, W., & Vance, A. (2010). Longer term effect of randomized, controlled group cognitive behavioural therapy for Internet addiction in adolescent students in Shanghai. *Australian & New Zealand Journal of Psychiatry*, *44*(2), 129-134.

Gentile, D. (2009). Pathological video-game use among youth ages 8 to 18: A national study. *Psychological science*, *20*(5), 594-602.

González-Bueso, V., Santamaría, J. J., Fernández, D., Merino, L., Montero, E., & Ribas, J. (2018). Association between internet gaming disorder or pathological video-game use and comorbid psychopathology: a comprehensive review. *International journal of environmental research and public health*, *15*(4), 668.

Haagsma, M. C., Caplan, S. E., Peters, O., & Pieterse, M. E. (2013). A cognitive-behavioral model of problematic online gaming in adolescents aged 12–22 years. *Computers in human behavior*, *29*(1), 202-209.

Han, J., Seo, Y., Hwang, H., Kim, S. M., & Han, D. H. (2020). Efficacy of cognitive behavioural therapy for internet gaming disorder. *Clinical psychology & psychotherapy*, *27*(2), 203-213.

Khazaal, Y., Van Singer, M., Chatton, A., Achab, S., Zullino, D., Rothen, S., ... & Thorens, G. (2014). Does self-selection affect samples' representativeness in online surveys? An investigation in online video game research. *Journal of medical Internet research*, *16*(7), e2759.

Kim, S. M., Han, D. H., Lee, Y. S., & Renshaw, P. F. (2012). Combined cognitive behavioral therapy and bupropion for the treatment of problematic on-line game play in adolescents with major depressive disorder. *Computers in human behavior*, *28*(5), 1954-1959.

King, D. L., Delfabbro, P. H., Doh, Y. Y., Wu, A., Kuss, D. J., Pallesen, S., ... & Sakuma, H. (2018). Policy and prevention approaches for disordered and hazardous gaming and Internet use: An international perspective. *Prevention Science*, *19*(2), 233-249.

Krossbakken, E., Torsheim, T., Mentzoni, R. A., King, D. L., Bjorvatn, B., Lorvik, I. M., & Pallesen, S. (2018). The effectiveness of a parental guide for prevention of problematic video gaming in children: A public health randomized controlled intervention study. *Journal of behavioral addictions*, *7*(1), 52-61.

Kuczmierczyk, A. R., Walley, P. B., & Calhoun, K. S. (1987). Relaxation training, in vivo exposure and response-prevention in the treatment of compulsive video-game playing. *Cognitive Behaviour Therapy*, *16*(4), 185-190.

Li, W., Garland, E. L., McGovern, P., O'brien, J. E., Tronnier, C., & Howard, M. O. (2017). Mindfulness-oriented recovery enhancement for internet gaming disorder in US adults: A stage I randomized controlled trial. *Psychology of Addictive Behaviors*, *31*(4), 393.

Li, W., Garland, E. L., & Howard, M. O. (2018). Therapeutic mechanisms of Mindfulness-Oriented Recovery Enhancement for internet gaming disorder: Reducing craving and addictive behavior by targeting cognitive processes. *Journal of addictive diseases*, *37*(1-2), 5-13.

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P., ... & Moher, D. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions: explanation and elaboration. *Journal of clinical epidemiology*, *62*(10), e1-e34.

Kuss, D. J., & Griffiths, M. D. (2012). Online gaming addiction in children and adolescents: A review of empirical research. *Journal of behavioral addictions*, *1*(1), 3-22.

Maden, Ç., Bayramlar, K., Arıcak, O. T., & Yagli, N. V. (2022). Effects of virtual Reality-Based Training and aerobic training on gaming disorder, physical activity, physical fitness, and anxiety: A randomized, controlled trial. *Mental Health and Physical Activity*, *23*, 100465.

Männikkö, N., Mustonen, T., Tanner, N., Vähänikkilä, H., & Kääriäinen, M. (2022). Effectiveness of a brief group intervention program for young adults with gaming-related problems. *International Journal of Mental Health and Addiction*, *20*(5), 2956-2972.

Nielsen, P., Rigter, H., Weber, N., Favez, N., & Liddle, H. A. (2023). In-session gaming as a tool in treating adolescent problematic gaming. *Family process*, *62*(1), 108-123.

Paulus, F. W., Ohmann, S., Von Gontard, A., & Popow, C. (2018). Internet gaming disorder in children and adolescents: a systematic review. *Developmental Medicine & Child Neurology*, *60*(7), 645-659.

Przepiorka, A. M., Blachnio, A., Miziak, B., & Czuczwar, S. J. (2014). Clinical approaches to treatment of Internet addiction. *Pharmacological Reports*, *66*(2), 187-191.

Richard, J., Temcheff, C. E., & Derevensky, J. L. (2020). Gaming disorder across the lifespan: A scoping review of longitudinal studies. *Current Addiction Reports*, *7*, 561-587.

Sakuma, H., Mihara, S., Nakayama, H., Miura, K., Kitayuguchi, T., Maezono, M., ... & Higuchi, S. (2017). Treatment with the self-discovery camp (SDiC) improves internet gaming disorder. *Addictive Behaviors*, *64*, 357-362

Sharma, M. K., Anand, N., Tadpatrikar, A., Marimuthu, P., & Narayanan, G. (2022). Effectiveness of multimodal psychotherapeutic intervention for internet gaming disorder. *Psychiatry Research*, *314*, 114633.

Su, W., Han, X., Yu, H., Wu, Y., & Potenza, M. N. (2020). Do men become addicted to internet gaming and women to social media? A meta-analysis examining gender-related differences in specific internet addiction. *Computers in Human Behavior*, *113*, 106480.

Stevens, M. W., Dorstyn, D., Delfabbro, P. H., & King, D. L. (2021). Global prevalence of gaming disorder: A systematic review and meta-analysis. *Australian & New Zealand Journal of Psychiatry*, *55*(6), 553-568.

Sugaya, N., Shirasaka, T., Takahashi, K., & Kanda, H. (2019). Bio-psychosocial factors of children and adolescents with internet gaming disorder: a systematic review. *BioPsychoSocial medicine*, *13*(1), 1-16.

Teo, T. (2013). An initial development and validation of a Digital Natives Assessment Scale (DNAS). *Computers & Education*, *67*, 51-57.

Torres-Rodríguez, A., Griffiths, M. D., Carbonell, X., & Oberst, U. (2018). Treatment efficacy of a specialized psychotherapy program for Internet Gaming Disorder. *Journal of Behavioral Addictions*, *7*(4), 939-952.

Tyagi, K., and Rastogi, K. (2022). Frustration Tolerance among Indian Youth: Exploring its relationship with Gratitude and Self Awareness, Youth Voice Journal, ISSN (online): 2056-2969.

Yao, Y. W., Chen, P. R., Chiang-shan, R. L., Hare, T. A., Li, S., Zhang, J. T., ... & Fang, X. Y. (2017). Combined reality therapy and mindfulness meditation decrease intertemporal decisional impulsivity in young adults with Internet gaming disorder. *Computers in Human Behavior*, *68*, 210-216.

Young, K. (2009). Understanding online gaming addiction and treatment issues for adolescents. *The American journal of family therapy*, *37*(5), 355-372.

Young, K. S. (2011). CBT-IA: The first treatment model for internet addiction. *Journal of Cognitive Psychotherapy*, *25*(4), 304-312.

Young, K. S. (2013). Treatment outcomes using CBT-IA with Internet-addicted patients. *Journal of behavioral addictions*, *2*(4), 209-215.

World Health Organization [WHO]. (2017). ICD-11 Beta Draft. Mental, behavioural or neurodevelopmental disorders. Available at http://apps.who.int/classifications/icd11/browse/f/en#/http%3a%2f%2fid.who.int%2ficd%2fentity%2f499894965 (accessed on April 07, 2017).