

An Integrated Yoga and Cognitive Behavioral Therapy Intervention for Managing Excessive Use of Internet among the Youth: A Case Series

Abstract

Background: Internet addiction is a behavioral problem that is managed by pharmacological and nonpharmacological methods. The nonpharmacological methods focus on enhancing skills for healthy use of technology and promoting mindfulness and mental relaxation. Yoga therapy is an effective tool to reduce psychological stress and promote self-regulation and mindfulness. Thus, present work focused on developing an integrated yoga and cognitive behavioral therapy intervention (Y-CBT) for the management of excessive use of technology amongst adolescents and young adult students.

Methods: Feasibility of the Y-CBT program was tested by implementing 10 sessions of yoga and 6 sessions of CBT program for 2 weeks by certified Yoga therapist and psychologist, respectively. This was followed by online booster sessions once a week, and post assessments were conducted at 12 weeks. A total of 4 college-going students with the excessive use of technology were recruited from tertiary specialty service for promotion of healthy use of technology. Each participant was assessed using short-version of internet addiction test (s-IAT), Smartphone Addiction Scale-Short Version, Kessler's Psychological distress scale for baseline, and follow-up assessment after completion of the program. **Results:** The Y-CBT program was found feasible and useful in reducing internet use, smart phone use, and psychological distress. There were no reported side-effects. A trend was observed for increase compliance toward treatment at follow-up. Future studies should explore this further with robust methodology.

Keywords: Addiction, cognitive behavior therapy, distress, internet, yoga

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Introduction

Internet use has become an integral part of students' daily lives.^[1,2] The global pooled prevalence according to the recent systematic review and meta-analysis estimates was 26.99% for smartphone addiction, 17.41% for social media addiction, 14.22% for Internet addiction, and 8.23% for gaming disorder.^[3] Recent systematic review and meta-analysis with pooled prevalence studies in South-east Asia shown 20% of population associated with internet addiction.^[4] A meta-analysis conducted on digital addiction on adolescents suggested the effect size of the Internet addiction is $Z = 26.04$; $P = 0.001$ with a 95% confidence interval (3.164–4.045).^[5] This suggests that majority of the population affected and taken for treatment are young adults. A recent systematic and meta-analysis depicted the prevalence of IA in moderate category was 19.9% whereas for severe adults 12.7%.^[6] Internet use

has become a component of compulsive activity, commonly associated with the symptoms of loss of control and impairment of psychological states (both mental and emotional).^[7] A systematic review including studies outside of Europe pointed out the association of internet addiction with psychological distress, mood disorder, suicidality, impulsivity, aggression, and sleep problems. The major problems with excessive use of internet are the withdrawals such as, inability to control the craving for use, sleep deprivation, increased feeling of boredom without internet, and impairments in academic activities and socio-occupational functions which result in acute relapse.^[8]

Hence, the need to provide the management for excessive internet use along with its underlying psychosocial factors especially in young adults. Conventional management for the IA consists of pharmacological and nonpharmacological approaches to target

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Access this article online

Website: <https://journals.iwwo.com/IJOY>

DOI: 10.4103/ijoy.ijoy_47_23

Quick Response Code:



How to cite this article: Tadpatrikar A, Sharma S, Sharma MK, Bhargav H, Anand N, Mishra P. An integrated yoga and cognitive behavioral therapy intervention for managing excessive use of internet among the youth: A case series. *Int J Yoga* 2023;16:56-60.

Submitted: 25-Mar-2023

Revised: 22-May-2023

Accepted: 25-May-2023

Published: 10-Jul-2023

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the withdrawal symptoms. Pharmacological approaches are anti-depressants, glutamate receptor antagonists, and valproic acid,^[9] whereas, cognitive behavioral therapy (CBT), multilevel counseling, reality therapy, acceptance and commitment therapy are the frontline treatment in the nonpharmacological management.^[10] The major limitation for the pharmacological approach is the side effects which impair individuals' cognitive abilities.^[9] Psychological counseling, though helpful and impactful for the perceivable, is manpower intensive, costly, and requires long-term adherence.^[11] In a recent single arm study, 10 sessions of multimodal counseling intervention were delivered to 33 subjects with excessive internet use and Internet gaming disorder. It was observed that although there was a significant favorable difference in Internet usage and gameplay in pre-post assessment,^[12] demand for continued engagement of trained manpower and difficulty in maintaining adherence of the patients beyond the initial session was a major challenge.^[13] Yoga therapy is another popular mind-body based nonpharmacological discipline which can be massively scalable, cost effective (can be offered in groups together), and self-empowering, especially as a treatment option (adjuvant or stand-alone) for common psychiatric conditions such as psychological stress, depression, anxiety, and substance use disorders.^[14-16]

In a previous pilot study we used a specific yoga program as-an add-on to the standard care in subjects with excessive internet use and found it to be feasible.^[17] Similarly, another study demonstrated efficacy of specific yoga technique (yoga nidra) as standalone treatment in adolescent students with Internet Gaming Disorder.^[18] This suggests a need for exploring the clinical utility of yoga therapy further in the management of excessive use of internet.

Hence, the present article aimed at testing feasibility of integrated yoga and CBT (Y-CBT) intervention through a case series on four young subjects with excessive internet use. This is a unique effort where conventional and traditional approaches of managing the mind have been combined and explored to address a major health concern of the youth in current times.

Methodology

All subjects were screened with Mini-International Neuropsychiatric Interview (M. I. N. I.)^[19] to exclude those with other co-morbid psychiatric conditions such as Schizophrenia, Attention Deficit Hypersensitivity Disorder, Obsessive Compulsive Disorder and Major Depression Disorders. Young adults with severe to moderate internet user (as per Young's Internet Addiction Test-12 items^[20] [s-IAT] cut off score >36)^[21] by a psychiatrist. The participants who agreed to consent for both the interventions (Y-CBT) were included. Consent form was obtained from patients as per Institutional ethical committee norms.

Assessments included Young's Internet Addiction Test-12 items (s-IAT), Kessler's Psychological distress scale (K6),^[22] and Smartphone Addiction Scale-Short version (SAS-SV).^[23] Assessments of the above tools were done at baseline and after 2 weeks. The percentage of change was calculated using the formula pre-post/pre ×100.^[24] In addition, a telephonic clinical follow-up regarding number of hours of internet use was undertaken after 12 weeks of Integrated Y-CBT intervention. Adherence to therapy was assessed at 12 weeks by a diary of practice attendance maintained by the patient.

Integrated yoga and cognitive behavioral therapy intervention

The yoga therapy module that was used in the study was specifically developed and content validated by us through obtaining opinion of 21 field experts, content validity ratio score.^[25] (*Manuscript under review*). The yoga intervention was given for 45 min daily for 2 weeks and included physical postures (Asana), breathing practices (Pranayama), and meditation (Nadanusandhana). A multi-modal CBT intervention program was also developed and assessed for its utility in management of excessive use of technology.^[12] The interventions included motivational enhancement strategies, cognitive restructuring, behavioral strategies and relapse prevention. It was given in 4 sessions each for 1 h for 2 weeks. After 2 weeks of supervised treatment, subjects were asked to continue yoga practices with help of shared video of the yoga practice and practice the advised CBT techniques in day-today life. An online live yoga session was conducted once a week in group for all the subjects together as a booster session. Subjects were motivated during this session to hold on to the techniques of Y-CBT. Follow-up was obtained after 12 weeks.

Case Series

Case 1

Presenting complaints

Mr. A, a 21-year boy, a medical student visited the special clinic dedicated for treating technology addiction with the complaints of online betting addiction and excessive smartphone use.

Clinical findings

The patient had started online betting after the completion of higher secondary (12th standard) education as an entertainment to test his logic and luck. Initially, patient reported success in online gambling and betting. He used to be secretive and defensive about his online activity with parents. Later, he started losing the amount and during this phase increased the betting more to cover the loss. Patient continued betting despite of its harmful consequences on his studies and social life and was preoccupied most of time with fantasy of betting in other activities. Over 2 years, he lost massive amount of money, and reported that he could

not control the urge of betting. He reported significant psychological distress and inter-personal issues with parents at the time of first consultation.

Diagnostic assessments

He was screened with M. I. N. I.^[19] to exclude those with other co-morbid psychiatric conditions. He was assessed using Young's Internet Addiction Test-12 items (s-IAT), K6,^[22] and SAS-SV^[23] [Table 1].

Therapeutic intervention

Patient reported significant reduction in psychological distress and improvement in quality of sleep with 2 weeks of IYCBT intervention, whereas as per the patient CBT techniques helped him to control the urge for betting. Patient continued to practice yoga and CBT techniques for next 12 weeks with good adherence (as measured by a diary of practice maintained by the patient and counter-signed by the parents, attendance at 12 weeks was 81%).

Follow up and outcomes

Informant (patients' mother) reported significant reduction in internet use hours (from 11 h per day to 4 h per day) and positive behavioral changes (better sleep wake cycle, reduced anger outbursts, better commitment towards avoiding betting and gambling, and improved appetite) at 12-week follow-up. Patient or informant did not report any engagement in online gambling or losing money in betting at the 12th week follow-up.

Case 2

Presenting complaints

Mr. B, a 21-year-old engineering student, staying in college hostel, visited our special clinic dedicated for treating technology addiction with complaints of overuse of internet and smartphone use since last 1 year. His parents had reported decline in the academic performance and

behavioral changes such as irritability, anger outbursts, neglecting daily chores.

Clinical findings

Mr. B used to involve in the compulsive checking of the phone and online gaming for 8–9 h on an average daily. The patient continued using the phone despite of knowledge that it was interfering with his academic performance. Frequent late-night log-ins disturbed his quality of sleep and made him miss his coaching classes in the morning.

Diagnostic assessments

He was screened with M. I. N. I.^[19] to exclude those with other co-morbid psychiatric conditions. He was assessed using Young's Internet Addiction Test-12 items (s-IAT), K6,^[22] and SAS-SV^[23] [Table 1].

Therapeutic intervention

Patient reported gain of control over compulsive use of internet, reduced irritability, increased concentration and sustained attention after 2 weeks of IYCBT intervention.

Follow up and outcomes

At 12-week follow-up patient (and his father) reported continued adherence to Y-CBT techniques with 80% attendance. The internet use hours reduced from average 8.5 h to 4 h.

Case 3

Presenting complaints

Mr. C, a 24-year-old, commerce student visited special clinic dedicated for treating technology addiction with his father and the complained of academic decline, excessive backlogs in studies due to disinterest in the studies and increase amount of internet usage (average 9.5 h per day).

Clinical findings

He indulged in internet use excessively despite knowing the harmful impacts on his academics. Patient had a habit of locking himself up in his room and was interacting with the family only when hungry or on some urgent specific circumstances. Binge watching, and gaming were the main pleasurable activities. Patient would not sleep till 4 am in the morning His interaction with all family members and friends significantly reduced over past 6 months.

Diagnostic assessments

He was screened with M. I. N. I.^[19] to exclude those with other co-morbid psychiatric conditions. He was assessed using Young's Internet Addiction Test-12 items (s-IAT), K6,^[22] and SAS-SV^[23] [Table 1].

Therapeutic intervention

Patient was able to become more aware of his behavior, he felt more relaxed, his sleep quality improved after the yoga

Table 1: Percentage change for all the cases including pre- and post-assessment

Case	Variable	Prescore	Postscore	Percentage change
Case 1	IAT	43	20	53.48
	K6	11	4	63.63
	SAS-SV	42	25	40.47
Case 2	IAT	37	26	29.72
	K6	13	9	30.76
	SAS-SV	34	32	5.88
Case 3	IAT	55	29	47.27
	K6	10	9	10
	SAS-SV	51	32	37.25
Case 4	IAT	45	44	2.22
	K6	17	17	0
	SAS-SV	48	42	12.5

IAT: Internet addiction test, SAS-VS: Smartphone Addiction Scale-short version, K6: Kessler's Psychological Distress Scale

session and patient felt that he is better control of himself due to IYCBT techniques.

Follow up and outcomes

At 12 weeks of follow-up patient continued to join weekly online yoga sessions and incorporate CBT techniques He felt more confident of completing the academic backlogs as he was able to concentrate better. Father said patient still needs more motivation and insisted on sleeping even more earlier (at 12 weeks patients' internet use was slightly better, reduced to 7 h from 9.5 h) and he was sleeping 2 h earlier than his usual schedule.

Case 4

Presenting complaints

Mr. D, a 19-year-old higher secondary student, visited our special clinic dedicated for treating technology addiction along with his father with chief complaints of excessive internet use (10–12 h/daily) along with impairment in cognitive abilities resulting in academic decline, inability to control urge, and increased socio-occupation problems.

Clinical findings

He also reported decreased interest in the academic activities and household chores during the interview.

Diagnostic assessments

He was screened with M. I. N. I.^[19] to exclude those with other co-morbid psychiatric conditions. He was assessed using Young's Internet Addiction Test-12 items (s-IAT), K6,^[22] and SAS-SV^[23] [Table 1].

Therapeutic interventions

We have treated him with Y-CBT as an integrated program for the IA. After 2 weeks of IYCBT patient felt calmer and more relaxed. He felt that his ability to concentrate on his studies had improved. Patient was overweight and had difficulty in practicing and learning yoga in initial week but later was able to follow. Follow-up and Outcomes: Though patient did not report significant reduction in his internet use at 2 weeks, he was willing to adhere to the treatment and started liking the yoga practices. At 12 weeks follow-up he was continuing the Y-CBT techniques with attendance of 66%. Mother suggested that he is 10% better than before in terms of improved socialization with family and friends (started playing outdoor games), and ability to concentrate. But still, patient was unable to develop interest towards studies and internet use was average 7.5 h per day at 12 weeks follow-up.

The scoring of the rating scales mentioned above, have been depicted in the Table 1. along with % of change for all cases on pre-post assessment. The percentage of change was calculated using the formula $\frac{\text{pre-post}}{\text{pre}} \times 100$.^[25]

Discussion

Present case series is the first attempt to demonstrate possible integration of yoga with CBT in managing excessive internet use. We observed that integrating yoga with CBT could be a useful approach as it shows in the following table. Results of the study indicate that the percentage change for Case 1 was 53.48% for (s-IAT), 63.63% for (K6), and 40.47% for (SAS-VS) and Case 2 showed 29.72% change for (s-IAT), 30.76% for (K6), and for (SAS-VS) it is 5.88%. Case 3 showed changes in percentage 47.27% for (S-IAT), 10% for (K6) and 37.25% (SAS-VS). At last, 2.22% for (s-IAT), 0.0% for (K6), and 12.5% for (SAS-VS) Case 4 indicates integrative treatment module was helpful reducing usage of Smartphone. It not only reduced the clinical symptoms more drastically in these subjects, but also enhanced the adherence of the subjects to the overall intervention, As expected, though CBT helped subject improve their cognitive control, yoga, on the other hand, harmonized their biorhythms and improved sleep quality and appetite. Our results are in line with recent meta-analysis conducted which showed combined interventions had the highest probability of being the best interventions for IA (surface under the cumulative ranking curve [SUCRA] = 91.0% based on IAT; SUCRA = 89.0% based on revised chen internet addiction scale [CIAS-R]).^[26]

Although it is very preliminary step in this direction, we found that it was feasible follow the approach of integrating yoga with CBT in young adults with excessive internet use. Future studies should explore this further using robust methodology. A three-arm randomized controlled trial comparing the clinical efficacy of yoga only, CBT only and Yoga + CBT in this population would be ideal. Future studies should also explore the possible mechanisms by assessing biomarkers of stress such as serum cortisol, autonomic functions, and reward circuit activation patterns using neuro-imaging.

Conclusion

We found that it was feasible and useful to combine Yoga with CBT in managing excessive internet use among students. Subjects adhered to the treatment at the end of 12 weeks and reported sustained improvements without deterioration at any point of time. Although the study is not controlled study, it is premature to conclude on limited evidence but considering the potency shown in the case series, integrating Y-CBT can be a new dimension for future control trials in the area of excessive internet use.

Acknowledgment

Authors acknowledge DST-SATYAM (Department of Science and Technology - Science and Technology of Yoga and Meditation), Delhi, India for funding this research work.

Declaration of patient consent

The authors certify that they have obtained patient consent form. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

This research received received funding from Science and Technology of Yoga and Meditation (SATYAM), Department of Science and Technology, Delhi, India.

Conflicts of interest

There are no conflicts of interest.

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