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Cognitive Retraining Attention Module among Students with Internet Addiction

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ABSTRACT

Background: Excessive internet use is a one of the important concerns for students now days. internet use is a part of the life and the global population using the internet has grown to almost 3.8 billion i.e., online shopping, what's app chatting, face book, carrying out banking operation and so on. Excessive internet use effects on individual's cognitive functions. Cognitive deficits which are major concern for students because college students are a group particularly vulnerable to internet addiction.
Objective: This study attempts to address sustained attention deficits among college going male students and treatment with attention module of cognitive retraining for improve sustained attention level.
Materials & Methods: The sample size was 20 male students are included at Raj Narayan College (R.N. College), Hajipur, Bihar. The Inclusion criteria were male students those who were college going students, age was 18-36, dependency on Internet, attention deficits. Students excluded who was taking substance, past psychiatric and neurologic history and below 12th class.
Tools and procedure: Consent form has been taken from students, took socio demographic details and clinical history. Then administered young internet addiction test to see internet severity and digit vigilance test for sustained attention deficits. Purposive sampling technique was used.
Result: On comparing both the groups in term of pretest & post test. Test conditions, it was found that however, both the groups did not differ in terms of time taken (in s) in terms total number of errors during pretest, but in post test condition significant difference was seen of the time taken (in sec) & total number of errors among both the groups.
Conclusion: It needs to educate to the students uses of internet and consequences and improve their cognitive abilities. The present study helps to enhance student's cognitive ability which associated them with enhance academic performance, remembering, focus in classroom activities and awareness of internet use.

Keywords: Internet addiction, Cognitive deficits, Cognitive functions, Sustained attention, Cognitive retraining

INTRODUCTION

Excessive internet use is one of the important concerns for students now days. It is hard to understand internet addiction because internet use is part of life and the global population using the internet has grown to almost 3.8 billion i.e., online shopping, WhatsApp chatting, Facebook, carrying out banking operation and so on [1]. Young first introduced the term internet addiction (IA) and defined it as an impulse control disorder which does not involve an intoxicant [2]. Thus, IA is a psychological dependence on the internet regardless of the type of activities pursued after logging in [3]. IA leads to an impairment of various life functions such as mental health, physical health, dysfunction, emotional and behavioral symptoms, social adaptation problems and cognitive deficits [4,5]. Cognitive deficit is one of the major issues of IA because excessive internet uses effect on

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individual's cognitive functions. Cognition is mental of acquiring knowledge and ability to understanding through thinking, experiencing. Many aspects come under cognitive functions i.e., memory, executive functions, attention, information processing and visual processing. Internet addiction plays a vital role in cognitive functions. IA effects higher-order processes linked to cognitive control are clearly of primary importance. Cognitive control is the ability to regulate and organize one's own behavior [6,7]. IA also impact on attention level, memory as well. Cognitive deficits which are major concern for students because college going students are a group particularly vulnerable to internet addiction. A number of studies have shown that students spend a major proportion of their time in accessing the internet for both academic and extracurricular purposes various factors like large unconstructed time, being away from parental control, problems of adapting to university life and desire to escape stress like exam stress often lead to emergence of pathological internet use [8,9]. Due to cognitive deficits the students unable to give proper attention in study, unable to think appropriate way, difficulty to remember topic or lesion, poor performance in academic and so on. It needs to address the problems areas of the student's cognitive functions and prevention to enhance their cognitive functions.

There are many psychological interventions available to improve cognitive functions such as cognitive behavior therapy, dialectical behavior therapy, cognitive retraining and so on. Cognitive retraining is a one of the important techniques to improve cognitive functions directly [10]. It is paper-pencil and computerized techniques as per requiring cognitive ability like attention, memory, executive functions and other part of the brain. It is like a teaching process that targets areas of neuropsychological functioning involved in learning and basic day to day functioning. Many studies support cognitive retraining attention module effective to enhance attention level including sustained attention, dividing attention, focused attention, selective attention and alternating attention [11-15].

The prevalence of internet addiction varies from 1.5% to 25% in different populations [16]. Surveys have shown a prevalence of 0.3-0.7% in the general population. A recent study reported a prevalence of 0.7% among Indian adolescents. Young individuals (i.e., between 18 and 24 years old) were more vulnerable to become internet addicts than old individuals [17,18].

This study attempt to address sustained attention deficits among college going male students and treatment with attention module of cognitive retraining for improve sustained attention level.

MATERIALS & METHODS

At present study total 45 male students are included at Raj Narayan College (R.N. College), Hajipur, Bihar. Out of 45 students 20 students matched the inclusion criteria. Inclusion criteria were male students those who were going college, age was 18-36, dependency on Internet, attention deficits. Students excluded who was taking substance, past psychiatric and neurologic history and below 12th class. After inclusion, consent has been taken from students then took socio demographic details and clinical history. Then administered young internet addiction test to see internet severity and digit vigilance test for sustained attention deficits. Purposive sampling technique was used.

Tools of assessment

Socio-Demographic and Clinical Data Sheet:
Young Internet addiction test
Digit vigilance Test (Lezak 1995)
Therapeutic Package: - Brainwave-R Module

Description of tools

The internet addiction tests (Dr. Kimberly Young): This scale is developed by Dr. Kimberly Young [19]. It has 20 items which measure internet addiction behavior includes compulsivity, escapism, and dependency. Items also assess problems related to personal, occupational, and social functioning stemming from Internet use. Subjects respond to each statement with a number between 1 and 5, representing a Liker scale continuum, indicating the extent to which they endorse that particular behavior.

Digit vigilance Test (Lezak 1995): This test consists of number 1-9 randomly ordered placed in rows on a page. There are 30 digits per row and 50 rows on sheet. The subjects has focus have targets on i.e., 6 and 9 among the other distract digits. There are two type of scoring methods, first on time to complete the test and another scoring method is error i.e., omission, commission.

Therapeutic Package: Brainwave-R Module: Brainwave-R module focuses on cognitive areas. It is paper pencil exercise. The module helps to subjects improve performance, prediction of self-rating. Exercises educate to the subjects about the problems areas and practice opportunities to develop deficits skills and apply to improve functional performance. The attention module aims to develop focused, sustain, selective and alternating attention skills in order to optimize arousal and alertness level **(Table 1)** [20].

On comparing both the groups in term of pretest and posttest. Test conditions, it was found that however, both the groups did not differ in terms of time taken (in s) in terms total number of errors during pretest, but in posttest condition significant difference was seen of the time taken (in sec) & total number of errors among both the groups.

Table 1. Cognitive Retraining Attention Module.

Session no.	Techniques	Description of Techniques
Session no.		
1.	Pre assessment	To screen the level of internet addiction of the students with internet addiction test. To assess the level of attention and concentration of the students with the digit vigilance test and
2.	Paced Random Number, Paced Random word, Paced Random letter	These techniques were five minutes exercise for every day. These techniques were helped to improve sustained attention. Allow 2 second between speaking each number, word and letter. Recall every day stop scoring point for improvement attention level.
3.	Category targeting word, Category targeting vowel, category targeting	These techniques were used 2nd week of the retraining session. These techniques were 10 minutes exercise. These techniques were used by therapist just have been taken either a book or magazine to read aloud to the students. After 10 minutes stop the reading and score the word every day.
4.	Time estimation	This technique was used in 3rd week. This technique was used for 10 minutes. In this technique stopwatch was used to students tell accurate immediately after each estimation.
5.	TV programs list	This technique was also used in 3rd week. Just students looked through this week's TV guide and write a list of all the comedy, sports and political current affairs programs.
6.	News name	This technique was used in 4th week. It was 30-minute exercise. The students look through the local newspaper and find out what movies are showing at all local movie theater. Write down movies names and times are showing.
7.	Yellow page dictionary	This technique was also used in 4th week. It was for 10 minutes exercise. Students looked in the yellow pages of telephone book and count the car rental agencies. Mark the number on worksheet.
8.	Card game	This technique was used in 3rd session of 4th week. It was for 10 minutes exercise. Give to the students a deck of playing cards. Shuffle the deck. The students hold the deck with the cards facing down.
9.	Post assessment	After completed cognitive retraining post assessment was done of both the groups.

RESULTS (TABLES 2-4)

Table 2. Comparison of socio demographic variables among experimental group and control group.

Variables		Groups		Chi square
		Experimental group N=10 (F %)	**Control group N=10 (F %)**	
Marital Status	Unmarried	8(80%)	7(70%)	0.267
	Married	2(20%)	3(30%)	
Education	Up to 12th	3(30%)	3(30%)	0.286
	Up to B. A	5(50%)	6(60%)	
	M.A & Others	2(20%)	1(10%)	
Occupation	employed	2(20%)	3(30%)	0.267
	Unemployed	8(80%)	7(70%)	
Residence	Rural	3(30%)	4(40%)	0.220
	Urban	7(70%)	6(60%)	
SES	Low status	3(30%)	2(20%)	0.267
	Middle	7(70%)	8(80%)	
	High	0	0	

Table 2 shows that there is no significant difference in terms of socio demographic details among both the groups.

Table 3. Comparison among both the cognitive retraining treatment as usual group & treatment as usual group on digit vigilance test pretest condition.

Variables		Groups						U value
		Control Group			Experimental Group -			
		Mean	SD	Mean rank	Mean	SD	Mean rank	
Pre LCT	Time (in sec)	5.00	137.99	1080	4.95	181.91	10.20	47.00
	Error	18.10	22.11	11.00	17.60	20.11	10.00	45.00

Table 4. Comparison among both the cognitive retraining treatment as usual group & treatment as usual group on digit vigilance test on posttest condition.

Variables		Groups						U value
		Control Group			Experimental Group -			
		Mean	SD	Mean rank	Mean	SD	Mean rank	
Post LCT	Time (in sec)	5.09	128.89	13.20	3.76	88.16	7.80	23.00*
	Error	21.00	24.34	13.55	1.50	4.74	7.45	19.50**

**p≤ 0.05level,*
***p≤ 0.01 level*

DISCUSSION

A total of 45 students screened out IAT fulfilling inclusion and exclusion criteria were selected for the present study. Out of 45 students 20 students matched the inclusion criteria. Then assess their sustained attention with the help of digit vigilance test. After found attention deficits 10 students were

taken for cognitive retraining treatment as usual group and 10 were taken for treatment as usual group using purposive sampling technique for the present study. Both groups of the students with IAT and digit vigilance test were administered first pre intervention and after the intervention by using test like Digit vigilance test to see effects of attention intervention module. After the completing the test administration, one group (i.e. 10) of students with and received the intervention in which Brainwave-R techniques were used to improve attention span. Intervention session consisted of one hour thrice a week for 8-10 sessions were given to each student. After completing intervention, post assessment was done with similar test (digit vigilance test).

Socio demographic details were collected to both the groups, which showed that 100% the entire samples were male internet addiction is more common in male than female previous studies finding supported it [21]. To see the above-mentioned purpose socio demographic details were collected of both the groups and compared which further showed that there was no significant difference among any of the variables, like in terms of marital status in CR treatment as usual group, 80% unmarried and 20% married, where as in treatment as usual group 70% were unmarried and 30% were married. In terms of their education, majority of the in-CR treatment as usual group were educated up to M. A (50%), 30% were up to B.Ath class, and 20% were up to 12th. Similarly, in treatment as usual group 60% did M.A, 30% studied up to B.A class and 10% did 12th regarding their occupation majority of in CR treatment as usual group were 80% were unemployed and only 20% were employed. Similarly, in treatment as usual group 80% were unemployed and 20% were employed. In both groups 100% sample was belonged to Hindu religion. In terms of residence majority of the 70% were from urban background and 30% from rural background in CR treatment as usual group. Whereas, in treatment as usual group majority 60% were from urban background and 40% belonged to rural background. In terms of the socio-economic status, majority of the samples (i.e. 70%) were from middle socio-economic status and 30% were from lower socio-economic status. For treatment as usual group, 80% were from middle socio-economic status and 20% from lower Socio-economic status.

Moving towards the task **(Tables 3 and 4)** result, digit vigilance test was performed on both the groups, i.e., CR treatment as usual group and treatment as usual group. Digit vigilance test was used to assess the ability to sustain and focus attention in the college going male students. It was that there was a significant difference at 0.05 levels between the CR treatments as usual group and treatment as usual group on post test scores on digit vigilance test. The mean for time taken in second was respectively CR treatment as usual group and treatment as usual group was on pre assessment 4.95 and 5.00. On post assessment the mean for time taken in second was respectively CR treatment as usual group and treatment as usual group mean was 3.76 and control group was 5.09. The significant difference on 0.5 ($p \leq 0.05$). This significant difference proves that cognitive retraining (Brainwave-R techniques) caused improvement in the CR treatment as usual group [22]. The CR treatment as usual group performed significantly better at the prospective digit vigilance test. Paper pencil tests have been also found effective for remediating the person with neuropsychological deficits in TBI cases [23-26]. Their reviews support the view that there in substantial evidence to support intervention for attention.

CONCLUSION

The presents study is attempt to see the effectiveness of cognitive retraining attention module on students have attention deficits due to internet addiction. It needs to educate to the students uses of internet and consequences and improve their cognitive abilities. The present study helps to enhance student's cognitive ability which associated them enhance academic performance, remembering, focus in classroom activities and awareness of internet use. The present study also helps to knowledge and understanding the nature of internet addiction, self-awareness of internet use, difficulty in academic due to attention distraction and improves attention functions with the help of cognitive retraining techniques.

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