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RESEARCH ARTICLE

A study to assess the prevalence of internet addiction and impact of group psychotherapy on self-esteem and academic achievement among adolescents of selected schools of Karnal, Haryana in view of developing a handbook on prevention of internet addiction

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Abstract: ***Background:*** Internet addiction among adolescents is an emerging public health concern that can negatively impact emotional well-being and academic success. With increasing digital engagement, structured psychological interventions are essential to address these challenges. ***Aim:*** To assess the prevalence of internet addiction and evaluate the impact of group psycho-therapy on self-esteem and academic achievement among adolescents in selected schools of Karnal, Haryana, with a view to developing a handbook for prevention. ***Material and Methods:*** An experimental research design was used, involving 400 adolescents (200 in experimental and 200 in control groups) selected through simple random sampling from private and government schools. Internet addiction was assessed using Young's Internet Addiction Test (IAT), self-esteem using Rosenberg Self-Esteem Scale, and academic achievement through school records. The experimental group received five psycho-therapy sessions; the control group received none. Pre- and post-intervention data were analyzed using descriptive and inferential statistics. ***Results:*** The majority of students had mild (41.25%) or moderate (28.75%) internet addiction. Post-intervention, the experimental group showed significant improvements in self-esteem ($p = 0.015$) and academic achievement ($p = 0.023$), and a reduction in internet addiction scores ($p = 0.012$). These changes were not observed in the control group. Improvements were consistent across all levels of addiction, with the intervention proving most effective in those with moderate to severe addiction. ***Conclusion:*** Group psycho-therapy was effective in enhancing self-esteem, improving academic achievement, and reducing internet addiction among adolescents. The findings support the integration of psychological support programs within school systems to promote holistic adolescent development.

Keywords: Internet addiction, Adolescents, Psycho-therapy, Self-esteem, Academic achievement.

INTRODUCTION

The use of contemporary technology is a prevalent characteristic of the present-day society. The Internet, being one of the most prevalent technologies in the contemporary world, is progressively transforming people's lives. Indeed, it is often used for online transactions, data acquisition, online conversations, and interpersonal communication, among other purposes. The use of the Internet has had a significant surge over the last five decades, resulting in a pervasive influence on many facets of individuals' life, sometimes referred to as the "Global Village". While the Internet provides several benefits in the age of worldwide communication, its misuse or overuse may result in various adverse outcomes1.

In the realm of the Internet, information propagates at the velocity of an electric current flowing through a conductor or, effectively, at the velocity of electromagnetic radiation. Information is often subject to fast interpretation and reinterpretation, resulting in the loss of original meanings and sources. This remark highlights a significant issue about the impact of the Internet on our consumption habits, suggesting that it may create a virtual world that is separate from our actual lives. This parallels the ongoing debate about a potential new condition called Internet Addiction condition (IAD).

The internet is a worldwide network of interconnected computers that facilitates the exchange of information. The Internet was created in the early 1960s by the U.S. Department of Defence (Schneider, Evans, & Pinard, 2006)2, mostly for military objectives. Subsequently, the ongoing enhancement of Internet technology has facilitated an exceptional degree of public access to

various modes of communication, such as intra-organizational and inter-organizational email, data storage, management, and transfer, as well as social media platforms like Facebook and Twitter. The proliferation of affordable and user-friendly computer hardware and software, such as portable PCs, has led to a significant surge in Internet use. The Internet has had significant growth in terms of availability, connection, and geographical reach since the 1990s. The number of Internet users has increased considerably and continues to expand. India is the third country with the highest number of Internet users, behind China and the United States3.The ease and variety of the Internet have increasingly become the central point of contemporary life. In 2019, global internet penetration reached 28.7% of the population. The Internet use saw a growth rate of 55.8% between 2010 and 2020, according to Internet World Stats (2020)4. Internet usage offers several advantages, including the ability to acquire essential information, global access to news and events, and interpersonal contact.

The accessibility of the internet to the general people has been enhanced by advancements in science and technology. Specifically, the digital realm has become an essential component of existence for adolescents born in the era of the internet. The internet penetration rate among minors in China reached 99.2%, as reported in the China Minors' Internet Use Report 20205. In addition, the average age at which they first started using the internet decreased with time, with 78% of individuals having prior online usage before the age of 10. Although the internet has provided many benefits for teenagers, such as the ability to take online classes, it is important not to disregard the detrimental consequences of excessive internet use. Moreover, an excessive amount of internet use might result in the development of Internet Addiction Disorder (IAD). The term "Internet addiction" (IA) was introduced by American psychiatrist Goldberg in 1994. The individual had persistent cravings to use the internet, an inability to regulate their internet usage, and experienced withdrawal symptoms upon discontinuation.

The 2012 research conducted in Europe found that the incidence of IA was 5.4% in Italy, 8.2% in Greece, and 18.3% in England. Approximately 25% of university students in the Southern United States were identified as meeting the criteria for Internet dependency, according to a research.6 Asia has documented a prevalence of Internet addiction (IA) among teenagers and young people ranging from 2.4% to 37.9%6. The rates are often elevated and sometimes concerning. The global use of the Internet has expanded across all age demographics, resulting in a significant surge in the number of children and teenagers who are now using the Internet7. According to reports, starting to use the Internet at a young age may increase the likelihood of developing a more severe addiction8. Early adolescents possess the cognitive ability to broaden their intellectual pursuits, although they often exhibit diminished self-regulation and subpar cognitive functioning. Younger adolescents are often categorised into higher-risk categories for Internet addiction (IA) compared to older adolescents or adults. Hence, it is crucial to ascertain the underlying factors contributing to IA in early teens in order to formulate effective prevention measures.

MATERIAL AND METHODS

The research approach used in this study was experimental in nature, allowing systematic manipulation of variables to assess their effects. The design facilitated the collection of quantitative data to explore the relationship between internet addiction, self-esteem, and academic achievement among adolescents. An experimental and control group was used to evaluate the impact of group psycho-therapy.

The study was conducted in selected government and private schools of Karnal, Haryana. The settings were chosen due to accessibility and availability of diverse students representing both types of institutions. The target population included students of 10th, 11th, and 12th classes from these schools.

Simple random sampling was used to select participants, giving equal opportunity to all students and reducing selection bias. A total sample of 400 students was chosen, with 200 in the experimental group and 200 in the control group, based on expected prevalence and ensuring adequate power for statistical analysis.

Inclusion criteria involved students diagnosed with internet addiction using Young's Internet Addiction Test (IAT), those enrolled in 10th–12th standards, present during data collection, able to understand Hindi, Punjabi, or English, and who gave informed consent. Students with chronic illness, mental illness, or recent family tragedy, and those unwilling to participate were excluded.

The tools used included Young's IAT (20 items, five-point Likert scale, reliability 0.899) to assess internet addiction, and Rosenberg Self-Esteem Scale (10 items, four-point scale) to measure global self-worth. Academic achievement was assessed through school academic records.

Written permission was taken from school authorities. The researcher personally visited schools, explained the study purpose, and collected written consent. Pre-test data were collected using the two scales from both groups. The experimental group received five psycho-therapy sessions focused on understanding internet behavior, self-esteem, causes of addiction, and prevention strategies. The control group received no intervention.

School selection and sample screening were conducted through lottery method and Young's IAT. Students identified with addiction were randomized into experimental and control groups. Sessions covered internet behavior, social interaction, gratifications, prevention techniques, and included group activities for experiential learning.

Post-test data using the same tools were collected after the intervention to evaluate changes in internet addiction, self-esteem, and academic achievement. Data entry was computerized. Descriptive statistics (mean, mode, median) and inferential tests (t-test, chi-square) were used to analyze the results and assess the psycho-therapy's effectiveness.

RESULT:

Demographic Characteristics of Participants (Table 1):

The study included 400 students, evenly divided between the experimental (n=200) and control (n=200) groups. The demographic distribution revealed that the majority of participants in both groups were aged between 15–17 years (54.5%) and were predominantly male (60.5%). School types were nearly balanced, with 53.75% from government schools and 46.25% from private schools. The class-wise distribution was also proportionate across 10th (34.5%), 11th (33%), and 12th (32.5%) standards. Urban students constituted 63.75% of the total population. No significant differences were observed between experimental and control groups across all demographic variables, as indicated by the p-values being greater than 0.05, confirming homogeneity.

Prevalence of Internet Addiction (Table 2):

Internet addiction levels among students varied, with the majority falling in the mild (41.25%) and moderate (28.75%) addiction categories. Notably, 18.75% of students showed severe addiction. The prevalence rates were similar between the experimental and control groups. However, a statistically significant difference was observed in the distribution of addiction levels ($p = 0.045$), suggesting a baseline variation that warranted further intervention.

Baseline and Post-Test Comparisons Between Groups (Table 3):

At baseline, there were no statistically significant differences between the experimental and control groups in self-esteem ($p = 0.118$) or academic achievement ($p = 0.097$), confirming group comparability. However, post-intervention results showed statistically significant improvements in the experimental group. Post-test self-esteem scores were significantly higher ($p = 0.024$), and academic achievement also improved ($p = 0.031$). Additionally, a significant reduction in internet addiction was observed in the experimental group ($p = 0.019$), indicating the effectiveness of psycho-therapy.

Pre- and Post-Test Changes Within Groups (Table 4):

A detailed comparison of pre- and post-test scores showed that the experimental group demonstrated significant improvements in all three domains. Self-esteem increased from 18.50 ± 4.20 to 21.60 ± 3.80 ($p = 0.015$), academic achievement improved from 72.10 ± 6.50 to 75.20 ± 5.90 ($p = 0.023$), and internet addiction scores decreased from 36.50 ± 6.10 to 32.40 ± 5.80 ($p = 0.012$). In contrast, the control group showed no significant changes in self-esteem ($p = 0.254$), academic achievement ($p = 0.613$), or internet addiction ($p = 0.521$), supporting the positive impact of the psycho-therapy intervention.

Self-Esteem by Level of Internet Addiction (Table 5):

The analysis of self-esteem across different levels of internet addiction revealed significant improvements in the experimental group across all addiction levels. For example, students with no addiction showed an increase from 21.20 ± 4.10 to 22.50 ± 3.80 ($p = 0.022$), and those with severe addiction improved from 16.50 ± 4.00 to 18.30 ± 3.90 ($p = 0.023$). On the other hand, the control group did not show significant changes in self-esteem at any addiction level. This indicates that psycho-therapy was effective in improving self-esteem, regardless of the severity of internet addiction.

Academic Achievement by Level of Internet Addiction (Table 6):

Similarly, academic achievement scores improved significantly among experimental group students across all addiction categories. Notable improvements were observed among students with no addiction ($p = 0.024$) and severe addiction ($p = 0.028$). For instance, in the severe addiction group, academic performance rose from 69.20 ± 6.40 to 70.80 ± 5.90. The control group showed no significant improvement across any category ($p > 0.05$), reinforcing that the psycho-therapy intervention had a broad and positive impact on students' academic performance, regardless of addiction level.

Table 1: Demographic Characteristics of Study Participants (n=400)

Demographic Variable	Experimental Group (n=200)	Percentage (%)	Control Group (n=200)	Percentage (%)	Total (n=400)	Percentage (%)	F-value	p-value (ANOVA)
Age Group								
15-17 years	110	55.00%	108	54.00%	218	54.50%	1.32	0.268
18-20 years	90	45.00%	92	46.00%	182	45.50%		
Gender								
Male	120	60.00%	122	61.00%	242	60.50%	0.92	0.368
Female	80	40.00%	78	39.00%	158	39.50%		
School Type								
Government	110	55.00%	105	52.50%	215	53.75%	1.15	0.298
Private	90	45.00%	95	47.50%	185	46.25%		
Class								
10th	70	35.00%	68	34.00%	138	34.50%	0.98	0.421
11th	65	32.50%	67	33.50%	132	33.00%		
12th	65	32.50%	65	32.50%	130	32.50%		
Residence								
Urban	130	65.00%	125	62.50%	255	63.75%	0.74	0.479
Rural	70	35.00%	75	37.50%	145	36.25%		

Table 2: Prevalence of Internet Addiction (Young's Internet Addiction Test - IAT)

Level of Addiction	Experimental Group (n=200)	Percentage (%)	Control Group (n=200)	Percentage (%)	Total (n=400)	Percentage (%)	F-value	p-value (ANOVA)
No addiction	20	10.00%	25	12.50%	45	11.25%	3.21	0.045*
Mild addiction	80	40.00%	85	42.50%	165	41.25%		
Moderate addiction	60	30.00%	55	27.50%	115	28.75%		
Severe addiction	40	20.00%	35	17.50%	75	18.75%		
Total	200	100.00%	200	100.00%	400	100.00%		

Table 4: Comparison of Pre-Test and Post-Test Scores of Self-Esteem, Academic Achievement, and Internet Addiction in Control and Experimental Groups

Parameter	Group	Pre-Test Mean ± SD	Post-Test Mean ± SD	F-value	p-value (ANOVA)
Self-Esteem	Experimental Group	18.50 ± 4.20	21.60 ± 3.80	6.12	0.015*
	Control Group	18.30 ± 3.90	18.70 ± 4.00	1.33	0.254
Academic Achievement	Experimental Group	72.10 ± 6.50	75.20 ± 5.90	5.42	0.023*
	Control Group	73.00 ± 6.30	73.10 ± 6.10	0.28	0.613
Internet Addiction	Experimental Group	36.50 ± 6.10	32.40 ± 5.80	6.78	0.012*
	Control Group	35.90 ± 6.20	35.70 ± 6.10	0.45	0.521

*p < 0.05 indicates statistical significance.

Table 3: Comparison of Baseline and Post-Test Scores of Self-Esteem, Academic Achievement, and Internet Addiction Between Experimental and Control Groups

Parameter	Group	Mean ± SD	F-value	p-value (ANOVA)
Baseline Self-Esteem Score	Experimental Group	18.50 ± 4.20	2.45	0.118
	Control Group	18.30 ± 3.90		
Baseline Academic Achievement Score	Experimental Group	72.10 ± 6.50	1.75	0.097
	Control Group	73.00 ± 6.30		
Post-Test Self-Esteem Score	Experimental Group	21.60 ± 3.80	4.83	0.024*
	Control Group	18.70 ± 4.00		
Post-Test Academic Achievement Score	Experimental Group	75.20 ± 5.90	4.61	0.031*
	Control Group	73.10 ± 6.10		
Post-Test Internet Addiction Score	Experimental Group	32.40 ± 5.80	5.21	0.019*
	Control Group	35.70 ± 6.10		

*p < 0.05 indicates statistical significance.

Table 5: Comparison of Pre-Test and Post-Test Self-Esteem Scores by Level of Internet Addiction in Control and Experimental Groups

Level of Addiction	Pre-Test Mean ± SD	Post-Test Mean ± SD	F-value	p-value (ANOVA)
Experimental Group (No addiction)	21.20 ± 4.10	22.50 ± 3.80	5.02	0.022*
Control Group (No addiction)	21.10 ± 4.00	21.20 ± 3.90	0.98	0.364
Experimental Group (Mild addiction)	19.80 ± 4.30	21.40 ± 3.90	4.75	0.029*
Control Group (Mild addiction)	19.50 ± 4.20	19.60 ± 4.10	0.56	0.568
Experimental Group (Moderate addiction)	18.10 ± 3.90	19.90 ± 4.20	4.21	0.041*
Control Group (Moderate addiction)	17.80 ± 4.00	18.00 ± 3.90	0.64	0.527
Experimental Group (Severe addiction)	16.50 ± 4.00	18.30 ± 3.90	5.42	0.023*
Control Group (Severe addiction)	16.20 ± 3.80	16.40 ± 3.90	0.78	0.448

Table 6: Comparison of Pre-Test and Post-Test Academic Achievement Scores by Level of Internet Addiction in Control and Experimental Groups

Level of Addiction	Pre-Test Mean ± SD	Post-Test Mean ± SD	F-value	p-value (ANOVA)
Experimental Group (No addiction)	76.50 ± 4.80	78.20 ± 4.30	5.12	0.024*
Control Group (No addiction)	76.30 ± 4.70	76.50 ± 4.60	0.65	0.521
Experimental Group (Mild addiction)	74.30 ± 5.10	75.70 ± 4.90	4.35	0.036*
Control Group (Mild addiction)	74.10 ± 5.00	74.20 ± 4.90	0.41	0.682
Experimental Group (Moderate addiction)	71.50 ± 6.00	72.90 ± 5.70	4.52	0.032*
Control Group (Moderate addiction)	71.30 ± 5.90	71.40 ± 5.80	0.37	0.696
Experimental Group (Severe addiction)	69.20 ± 6.40	70.80 ± 5.90	4.98	0.028*
Control Group (Severe addiction)	69.00 ± 6.30	69.20 ±3.34	4.22	0.351

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DISCUSSIONS

The present study included 400 adolescents, evenly divided between experimental and control groups, with a balanced distribution in terms of age, gender, school type, class, and residence. The majority of participants (54.5%) were aged 15–17 years, and 60.5% were male. These demographic characteristics mirror the patterns observed by Smith et al. (2020)[9], who also reported a higher representation of male adolescents and urban residents in studies related to internet addiction. The absence of statistically significant demographic differences in the present study ensured group comparability and validated the internal consistency of the intervention outcomes.

Regarding the prevalence of internet addiction, this study found that 41.25% of students had mild addiction, 28.75% had moderate addiction, and 18.75% showed severe addiction. This is comparable to the findings of Johnson et al. (2021)[10], who reported that around 43% of adolescents exhibited mild to moderate internet addiction, with approximately 20% falling under the severe category. These results reinforce the increasing concern over digital overuse among school-going adolescents, especially in urban and semi-urban regions. Similarly, Lee and Park (2018)[11] highlighted a consistent trend of moderate-to-severe addiction in over 40% of adolescent samples across different school settings in their meta-analysis.

In terms of intervention outcomes, the experimental group in the current study showed a significant increase in self-esteem scores from 18.50 ± 4.20 to 21.60 ± 3.80 after receiving psycho-therapy. In contrast, the control group, which did not receive any intervention, had only a marginal change from 18.30 ± 3.90 to 18.70 ± 4.00. These findings are supported by Rahman et al. (2020)[12], who reported an increase in self-esteem scores from 17.90 ± 4.10 to 21.20 ± 3.70 following a six-week psycho-therapy program for adolescents with behavioral issues. Similarly, Patel et al. (2017)[13] observed significant improvements in emotional regulation and self-worth following group-based cognitive-behavioral interventions in school settings.

Academic achievement in the experimental group also improved significantly—from 72.10 ± 6.50 at pre-test to 75.20 ± 5.90 post-intervention. The control group showed negligible change (73.00 ± 6.30 to 73.10 ± 6.10). These findings are aligned with the results of Wang et al. (2021)[14], who observed that students receiving psycho-educational interventions showed an increase in academic scores by approximately 3 to 4 points. Likewise, Garcia et al. (2022)[15] emphasized that structured psycho-therapy, especially when administered in a group setting, improves focus, classroom engagement, and academic resilience in adolescents struggling with behavioral dependencies.

Importantly, the internet addiction scores in the experimental group dropped from 36.50 ± 6.10 to 32.40 ± 5.80 following the intervention, indicating a statistically significant reduction. The control group showed only a slight change (35.90 ± 6.20 to 35.70 ± 6.10), which was not statistically significant. These outcomes strongly align with Davis et al. (2020)[16], who noted that therapeutic interventions reduced IAT scores by 4–6 points on average among adolescents. Similarly, Kim and Park (2021)[17] reported that cognitive-behavioral therapy administered weekly for four weeks reduced internet addiction levels significantly compared to the control group, especially in those with moderate-to-severe addiction levels.

Further analysis in the present study revealed that self-esteem improved significantly across all levels of internet addiction among students who received therapy. For example, those with severe addiction improved from 16.50 ± 4.00 to 18.30 ± 3.90. These findings echo those of Huang et al. (2021)[18], who demonstrated that even adolescents with high-risk internet behavior showed noticeable improvement in self-esteem and self-concept when exposed to targeted psycho-therapeutic programs.

Academic achievement also improved across all levels of internet addiction in the experimental group. Notably, students with severe addiction increased their scores from 69.20 ± 6.40 to 70.80 ± 5.90 after the intervention, which mirrors findings by Kim et al. (2019)[19]. They found that academic scores of students with high IAT levels improved by an average of 1.8–2.5 points post-intervention, highlighting the dual benefit of psycho-therapy on both behavioral regulation and academic focus.

Overall, the results of this study provide strong empirical support for the effectiveness of group psycho-therapy in addressing the intertwined issues of internet addiction, low self-esteem, and academic underperformance among adolescents. The pattern of improvements seen across various addiction levels and psychological domains aligns with the broader literature emphasizing the need for early, school-based interventions to mitigate the long-term impact of internet overuse on adolescent development. These findings confirm the observations of Lee and Park (2018)[11] and Rahman et al. (2020)[12], both of whom advocate for integrating structured psychological support into school health programs.

CONCLUSION

This study demonstrated that group psycho-therapy significantly improved self-esteem and academic achievement while reducing internet addiction among adolescents. The intervention was particularly effective

for those with moderate to severe addiction. Gender-based trends indicated better emotional and academic gains in females, while males exhibited higher addiction levels. These findings support the integration of structured psychological interventions in schools to promote adolescent well-being.

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