

Does psychoeducation module-based community intervention address Internet addiction among school-going adolescents? A quasi-experimental study from Mangalore, India

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ABSTRACT

Excessive and uncontrolled use of the Internet leads to Internet addiction and negatively affects the physical and mental health of adolescents. Normalization of the Internet and electronic gadgets during the COVID-19 pandemic increased the vulnerability of adolescents to developing behavioral dependency on Internet use. Intervention is needed to protect the formative years and to grow as responsible net users. **Aim:** To study the effectiveness of psychoeducational module-based community intervention on Internet addiction in adolescents. **Method:** This was a quasiexperimental study with pre- and post-test design. The study subjects were homogeneous and purposively selected single group from a secondary school in a city in southern India. Group intervention was executed for 5 to 6 hours with a prevalidated psychoeducation module on Internet addiction. The intervention focused on the prevention and control of Internet addiction. The level of Internet addiction was measured by using Kimberly Young's Internet Addiction Test-20. **Results:** Of the total of 144 subjects, 72% were males and 28% were females. All were 14–16 years of age and were well versed with Internet gadgets and smartphone use and self-reported the use of the Internet/gadgets for at least 2 hours a day for recreational purposes. Descriptive analysis and RMANOVA show interventions were significantly effective ($P < 0.001$). Among total participants, the Internet addiction found at preintervention was 44.75 ± 19.69 , with a postintervention at first month of 34.73 ± 16.14 and a postintervention at second month of 28.84 ± 13.98 ; reduced duration of Internet use was significant ($P < 0.001$) at postintervention. **Conclusion:** The psychoeducation module-based group intervention in community school settings is well accepted and effective on Internet addiction in adolescents.

Keywords: Adolescents, group intervention, Internet addiction, psychoeducation module

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Introduction

The worldwide rise in the prevalence of Internet addiction in adolescents is a crucial matter to consider. Overpouring digital technologies and appliances may lead to addiction behaviors

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in roughly around 20% to 40% of adolescents.^[1,2] Followed by unprepared exposure to online/virtual modes of education, during COVID-19, nearly 28% to 35% of adolescents were found to have network abuse behavior, reflecting the exaggerated screen time.^[3] Salience, restricted socialization, reflexive browsing, affected work, and mental health are observed in Internet addiction. A study reported that 8% of pathological Internet users were found with psychiatric comorbidities.^[4,5] Problematic Internet use is predicted when adolescents have cohesion of personality traits, wrong child-rearing styles, social acceptance of alcohol, and uneasiness in social involvement.^[4,6-8] Social factors like nonconcordance families and poor relationships with family members and friends will be predictive of unhealthy lifestyle behaviors in adolescents and thus potential to develop Internet addiction.^[9]

Cognitive behavioral therapy and group educational countermeasures showed a good effect size, which is larger in the experimental group (Cohen's $d = 1.08, 1.35$) than in the control group (Cohen's $d = 0.66, 0.67$) at initial intervention and follow-up of 6 months, showing Internet addiction can be effectively treated through psychosocial therapeutic approaches.^[10] Such interventions will improve positive emotions, regulate Internet use, and improve gadget/online management skills in adolescents against Internet addiction.^[11] Adolescents can get larger benefits like learning to manage their time, improving cognition, and improving soft skills with such modules.^[10-12] The context of the school environment can efficiently mold the individual characteristics of adolescents. Well-being at school can strongly configure the later personality changes in life.^[12-14] Educational settings can effectively graft adaptive behaviors to promote positive values of empathy, self-esteem, and satisfaction with life in adolescents.^[15]

Programs on Internet addiction in school settings were justified since all such interventional protocols are highly economical, well focused, and easy to reach adolescent students. Schools can reach the target population to bring desirable changes such as a reduction of Internet use time, life skill enhancement, and the use of protective and harm-reducing factors with Internet use.^[16] A wide umbrella of health-promoting interventions can cover multiple risk behaviors in adolescents to make the prevention of Internet addiction more vigorous.^[17] Peer interactions improve mutual motivations to practice good behaviors at school. Adolescents will be favorably accepting the corrections when they do not target them directly. Group psychoeducation at schools has a panoramic orientation on topics and is imparted in general to all, but the effect can be seen at the individual student level.^[18] Internet healthy use programs at educational institutions can robustly navigate public policy and education departments.^[17,19,20] Systematic use of group counseling techniques is pivotal for the effective implementation of the intervention.^[10,20-23]

Focus of current study

The interventional study is focused to test the effectiveness of the psychoeducation module-based group intervention on

Internet addiction in adolescents. There is a high need for such interventions since the prevalence of Internet addiction among the adolescent population in the Indian community is booming.^[16]

Materials and Methods

The 'Single session Counselling model' Philosophy (SSCM),^[24,25] theory of use and gratification^[2,26] and the transtheoretical framework were used as bases for the psychoeducation module and group intervention in the current study.^[27,28]

Development of psychoeducation module

The psychoeducation module used in the study was developed based on rich field experience during the sequel study conducted by the researchers and by doing an elaborative literature survey on community-level management of Internet addiction. The psychoeducation module was validated by experts for its appropriateness, consistency, and relevancy. Detailed lecturing, dynamic interactions, hands-on skills, and demonstrations were an integral part of the module. The module contains four chapters. The first chapter provides scientific knowledge of Internet addiction through brief notes that illustrate what, why, when, and how Internet addiction occurs. The second chapter deals with self-assessment of problematic Internet addiction behavior, techniques for managing Internet craving, identifying relapse, and avoiding triggers of Internet use. The third chapter is on replacing Internet addiction behavior through mindful use and stress management with deep breathing techniques. The fourth chapter is to provide the framework for regular net-fasting and an action plan for net-free relaxation and digital recreation.

The group intervention process

The current group intervention contains the orientation phase, preparation, and working phase. The initial two phases were carried out side-by-side to prepare and orient the subjects on the intervention program. In their entry, the researchers introduced themselves and explained the purpose of the intervention study. Subjects were asked to do a self-assessment of Internet addiction by using Young's IAT-20, which is a self-rating questionnaire, at both pre- and postintervention and asked to identify the daily average duration of net/gadget use. Taking the test also could have prepared the participants to identify problematic Internet use and to further prepare themselves for active participation in the group intervention. The working phase was scheduled for 5 continuous days with a dedicated class period of 1 hour a day. The intervention was administered to a single group of 144 subjects at a mini auditorium of the school with comfortable seating arrangements and facilities such as floor mats and a sound system for relaxation techniques. On day 1, researchers used the first chapter of the module to elaborate and illustrate the concepts of net addiction. On day 2, the second chapter of the module illustrated how to identify Internet addiction behavior in self, manage Internet craving, identify relapse, and avoid triggers of Internet use. Net safety use links which were developed by school boards and government authorities were

demonstrated along with blocking the pop-ups, controlling the autoplay, and identifying the fake websites and fishy messages. The third chapter of the module was used on day 3, which was a practice session on relaxation and deep breathing exercises and mindful use techniques of Internet/gadget use. Students were encouraged to practice this session with simple-case vignettes. On day 4, the fourth chapter of the module was used to discuss the healthy use of the Internet and the dos and donots of the Internet use. The subjects participated in a minidebate on the topic. Day 5 was a concluding day. Participants voluntarily planned no-gadget daily routine activities for themselves and read them out for the group to strengthen the collective peer influence. Class divisionwise poster competitions on the impact of Internet addiction in society were held. Creative ideas were appreciated. In the end, the group intervention program was concluded by thanking and getting feedback from participants. Copies of the brief psychoeducation module were given to each participant for reference along with handouts.

On all 5 days of the working phase, researchers observed all participants were present. They were very eager to raise questions and paid full attention to discussions. They were allowed to ask questions at each point of doubt, to encourage interactive debating, to express their concerns, and to suggest remedies.

Researchers gave a weekly informal visit to the school to observe the adolescents during water breaks, sports, and leisure periods. Teachers were encouraged to discuss and reinforce the Internet safety use measures in the classrooms. Relevant pluck cards, newspaper cuttings, and posters on Internet addiction, which were collaged by students, were displayed on notice boards at the entrance of the meeting hall and classrooms. In parent–teacher meetings, authorities encouraged parents to discuss Internet addiction as an agenda and to practice mindful use of Internet smart phones at home and not to model relaxation with gadgets.

Implementers of intervention programs

Researchers were qualified Nursing and Medical educationists and certified health care practitioners at the Indian Nursing Council, Indian Medical Council, and deaddiction consultants who work for young students at graduate levels and work for adolescents at community schools. Researchers possessed the required knowledge and skills of student counseling in the field of life skills training, mindfulness, Yoga and meditation, deaddiction programs, guidance-counseling training, and student mentorship programs by government and nongovernment organizations. The head of the school, six graduate teachers, and one certified school counselor assisted in the proceedings of the intervention.

Study method

2. 2.1. Study Design: Quasiexperimental, pre- and post-test design.
2. 2.2: Sample Size: 144.
2. 2.3: Setting and subjects: A feasible and purposively selected secondary school in urban Mangalore was the setting, and subjects were selected by convenient sampling, with one

single group of male and female adolescent students of 14 to 16 years from English medium classes.

2. 2.3.1 Rationale for selecting the setting and sample size: The current study is a sequel study carried out by researchers to develop the psychoeducation module-based group intervention based on the findings of Internet addiction prevalence and the perception of adolescents, parents, teachers, and stakeholders. The researchers aimed to include 10% of the adolescent samples among 1199 from the sequel study setting.

2. 2.4 Preparation for recruiting the study subjects.

The program was advertised on the notice board of the school. Teachers and the principal spoke about the program at a school assembly. The researchers first identified the probable class sections which comprised participants of 14–16 years to get the determined sample size and debriefed the process of the entire study. After addressing the students in the classroom, participant information sheets and assent forms were distributed to all potential participants to take them home to give to their parents. If students wanted to participate in the study, they were asked to bring back the signed assent forms as parental approval for their participation. Finally, researchers decided to recruit all students in the classroom as participants by considering the high response rate for the intervention program.

2. 2.5 Permissions and Ethics Committee: The Institutional Ethics Committee (IEC) and school administration approved the study. Permission to use Kimberly Young's Internet addiction test was obtained.

2. 2.6 (a) Inclusion Criteria: Adolescent students (both male and female gender) of the English medium high-school grade of selected private educational institution and adolescents who use the Internet and gadgets for recreation purposes.

(b) Exclusion Criteria: Participants who are not able to read, write, and understand English.

(c) Dropdown Criteria: Subject can withdraw in between the program through he/she has given assent and can come out of the group on personal request or when finding difficulty to continue in the group intervention because of adverse effects on participants' well-being and absence for 50% of the group sessions.

Measurements

Baseline data of the participants and Internet nonacademic activity were recorded in the study. Internet addiction test (IAT-20) was used to screen Internet addiction during pre- and postintervention at two points in the timeline. The tool demonstrated a good fit with Cronbach's alpha 0.905 for Indian adolescents.^[29,30] The IAT contains questions that are responded to, understood, and rated in the context of nonpurposeful/recreational Internet or gadget activity. Participants filled out the questionnaire with pen and paper by self-assessing their past Internet activities. Filling the questionnaire took nearly 10–15 minutes. The questionnaire was in English language, and researchers helped those participants on request to understand the context and meaning of the question. The total score of the Internet addiction test is 100. All 20 questions are equally awarded

a rate of 0 to 5, the score 1 for response rarely, 2 for ‘occasionally’, 3 for ‘frequently’ and ‘often’ rated as 4, and response ‘always’ scores 5. The final scores show the type of Internet use by participants. Internet use is considered safe and normal with 0–30 scores, 31–49 is mild type, and 50–79 is moderate Internet addiction. Scores of 80 to 100 reflect a high level, and near 100 scores indicate severe Internet addiction. Thus, the maximum the score is, the thicker will be the Internet addiction.

Statistical analysis and results

Descriptive analysis and Repeated Measures Analysis of Variance (RMANOVA) are performed with the SPSS 28.0 version to find the effectiveness of group intervention on Internet addiction in adolescents. Effectiveness was tested at a significance level of $P < 0.001$ for 3 measures of Internet addiction, that is, at baseline and two postintervention periods.

Results

Demographic details

Among the single group (N = 144) of subjects, the majority were aged 14–16 years (97%), boys were 103 (72%), and girls were 41 (28%). 96 (67%) were from nuclear families, 48 (33%) were from joint families, 109 (76%) subjects had siblings about one-fifth of the subjects, 35 (24%) were single children, 78 (56%) had nonstop Internet facility available at home, and 66 (56%) had limited Internet facility at home.

Total Internet addiction scores found in participants at pre- and post-1 and 2 assessment later to intervention

Analysis of data yielded Internet addiction (IA) scores on Young’s Internet addiction test (20 points) among the total participants, which changed significantly across the time points. In the preintervention, an IA score mean of 44.75 (± 19.69) was found, In the first month after intervention (post-1), the mean score was 34.73 (± 16.14), and in the second month (post-2), the mean IA score was 28.84 (± 13.98) in participants. Thus, a reduction in the total scores on the Internet addiction scale shows the significant effectiveness of the intervention ($P < 0.001$) [Table 1].

Levels of Internet addiction at pre- and postintervention

The assessment of levels of addiction on Young’s Internet addiction test (IAT-20) yielded the results for the preintervention

assessment; 56 (38.9%) subjects had high-level Internet addiction, and 5 (3.5%) had a very high level of Internet addiction; for post-1 assessment, 25 (17.4%) had a high level. For the post-2 assessment, 12 (8.3%) still had a high level of Internet addiction, but the very high level was reduced in 1 (0.7%) subject [Table 2].

Effect of intervention on duration of Internet use in subjects

Gradual change in a reduction in the duration of Internet use for nonacademic purposes from the first month to the second month showed the psychoeducation module-based intervention is effective and significant ($P < 0.001$) [Table 3].

Duration of Internet use in a day

Pretest data depict that more than half of the subjects used the Internet for 1 to 2 hours per day, 15% used the Internet for more than 2 hours, and 33% used less than 1 hour a day. The duration has reduced to less than 1 hour in 60% of subjects after psychoeducational intervention [Table 4] and [Figure 1].

Span of Internet use in subjects during the intervention

About 46% of the subjects had reduced the duration of use of the Internet for nonacademic purposes in the first month and 57% in the second month. The gradual change in the duration of Internet use for nonacademic purposes from 1 month to the second month showed the effect of psychoeducation is strengthened day by day and may be long-lasting [Figure 2].

Discussion

Internet addiction

The current research examined the effects of psychoeducation module-based group intervention on Internet addiction in adolescents at urban schools in India. Researchers recognized

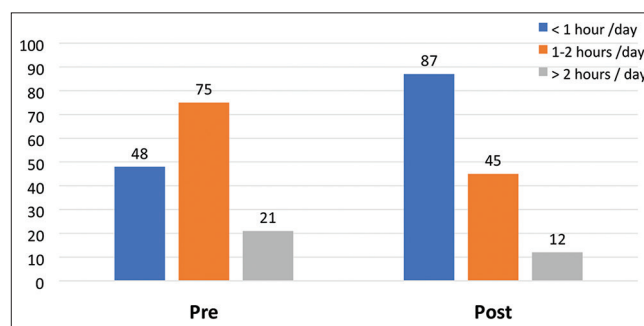


Figure 1: Duration of Internet use for nonacademic purposes

Table 1: Internet addiction scores in participants across time line of preintervention, first month and second month after intervention

Variables	Pre	Post 1	Post 2	F	P	Post-hoc
		Mean \pm SD				
Total Addiction	44.75 \pm 19.69	34.73 \pm 16.14	28.84 \pm 13.98	38.085	0.001	Pre vs Post 1 Post 1 vs Post 2 Pre vs Post 2

Table 1 depicts significant difference between the scores of Internet addiction at pre- and postinterventions. (p-value significant at 0.001)

Table 2: Levels of Internet addiction at pre- and postintervention		
Level of Internet addiction on IAT-20.		For number (n=144) of subjects and (%)
Preassessment	Low	31 (21.5%)
	Moderate	52 (36.1%)
	High	56 (38.9%)
	Very high	5 (3.5%)
Pre to Post 1	Low	63 (43.8%)
	Moderate	56 (38.9%)
	High	25 (17.4%)
Pre to Post 2	Low	77 (53.5%)
	Moderate	54 (37.5%)
	High	12 (8.3%)
	Very high	1 (0.7%)

Table 2 depicts the levels of addiction based on Kimberly Young's Internet addiction test (IAT-20)

Table 3: Effect of intervention on duration of Internet use				
Variable	Change across assessments		n	P
	No change (improvement)	Reduced (worsening)		
Duration of Internet use for nonacademic purposes	65 (45)	57 (40)	22 (15)	0.001

Table 3 depicts duration of Internet use for nonacademic purposes changed significantly across the assessments. P value significant at 0.001

Table 4: Duration of Internet use in a day		
Duration of Internet use for nonacademic purposes		Number (%)
Pre	<1 hour/day	48 (33)
	1-2 hours/day	75 (52)
	>2 hours/day	21 (15)
Post 2	<1 hour/day	87 (60)
	1-2 hours/day	45 (31)
	>2 hours/day	12 (9)

Table 4: Number of participants and Internet use duration in a day

the urge in the recipients for the intervention through a good response rate (100%) from adolescents, parents, and institutions which depicted such interventions are most needed in the community. Relevantly, the statistical outcome also sheds light on the success of the group intervention program in reducing Internet addiction in adolescents. The effect is sustained and long-lasting to control Internet addiction; duration of use of the Internet/gadget has reduced significantly. These results were similar to a study that found that strategic interventions have a long-lasting effect on adolescents to bring down the rate of Internet addiction.^[31,32]

The group intervention was effective in reducing the time length of Internet use by adolescents, thus effective in reducing Internet addiction. The study also finds that improvements were sustained even after 2 months later to intervention. Similar results were found in a study that was carried out in school settings, which used appropriately trained health personnel,

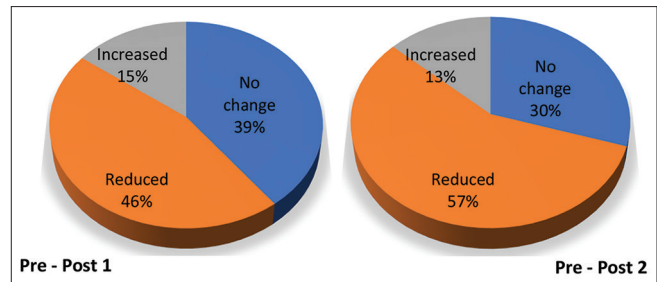


Figure 2: Number of subjects who were reduced with internet use across the time line

that is, the school health nurse, who led intervention programs successfully. These programs were effective and more promising with increasing self-control and self-efficacy against Internet addiction. Adolescents benefit by reducing draining time with the Internet, thus correcting problematic use and preventing Internet addiction.^[33] Another study carried out in educational settings found that group interventions for Internet addiction require less preparation and few resources, and the intervention can be easily blended with curricular and noncurricular activities. Adolescents with mild, moderate, and severe forms of Internet addictions can be addressed simultaneously, and the program gives the opportunity to self-recognize and come forward to take expert clinical assistance.^[17] These findings strongly approve and support the results of the current study. Simple measures like psychoeducation are effective with adolescents to bring favorable changes in Internet use behavior.^[34]

Internet use is common in all adolescents; thus, group intervention is a better approach to correct or prevent probable Internet addiction in vulnerable adolescents. School settings provide an opportunity to appraise and follow up on the program outcome most accurately.^[35] Similar to these, the current study found that all participants (100%) were well versed with the Internet/gadgets. No participant dropped out of the study. This is probably due to the reason that all these participants were very regular to school and all of them participated in all sessions of intervention without fail. Hence, researchers could follow up all the participants from preintervention to post-test 2 sessions accurately.

Results with no significant improvement effect

Current interventions focus on the group and not on individual participants; thus, group interventions come with the benefit of not targeting one single victim in the group. This also provides more unanimity and secure feeling to victims, thus having better acceptability of suggestions by the needy. If the participants had predisposed comorbidities, then Internet addiction may be masking the comorbidities, thus getting worsened with Internet addiction. Our study depicted few adolescents were not reduced with Internet addiction and some began to use the Internet exaggeratedly. This might have resulted when the researcher did not assess personality traits or comorbidities which might have exaggerated the duration of Internet use or Internet addiction becomes severe. Such deviations require combinations of

clinical therapy to address comorbidities and Internet addiction, which may, in that case, be effectively treated. A study suggested that intervention for Internet addiction will be more effective when the intervention takes the account of personality traits in adolescents, which is an essential component to control premature termination of treatment and relapse.^[36]

Limitations and future directions

Our study did not measure the probable comorbidities or personality traits separately. Instead, we used the inbuilt questions of the Internet addiction tool to assess the self-perception of mental health issues in participants. Earlier studies showed the necessity for considering the mental health indicators that may influence the outcome of intervention in Internet addiction.^[28,36,37]

In the current, before approaching the school, we learned that teachers were regularly and routinely watching their students for quite a longer time and observed a large number of students begun to show unusual Internet use behavior later to online classes during the COVID pandemic but not the presence of comorbidities. Thus, we assume the adolescents at school were usually normal, except for newly found problematic Internet use, which was exaggerated and continued after online classes during the COVID pandemic, which may require a group intervention to stop Internet addiction. Thus, participants in the current study are free from or not found associated with complex psychiatric comorbidities and mass intervention will be effective in curing or empowering adolescents and preventing Internet addiction. However, considering the associated comorbidities in the study might have generated the strongest evidence of success of psychoeducation module-based group intervention. Researchers overcame this limitation by purposive selection of schools and following the convenience sampling to choose subjects in urban India in which most of the subjects had optimum good mental health.

The study could not track why some adolescents moved from less to worsened levels of Internet addiction or why few might have increased the duration of Internet use since these will fall apart from the purview of this investigation. Researchers are aware of this limitation and recommend the school authorities explore the genuine reason if in case any subjects demonstrate badly affected Internet behavior and threat to the integrity of a person, family, or society. Such adolescents may require a clinical reference or individual attention/behavioral therapy and group intervention by using a psychoeducation module may not be useful.

Implications

The outcome of the study strongly supports that psychoeducation is required to curb Internet addiction in adolescents. Such interventions will successfully sow the seed of a healthy living culture and motivate adolescents to use technology safely to build a digital addiction-free world and thereby strong foundations for prospective healthy adults.^[17,19] In India, most of the families initially reach the primary health care professionals before consulting therapists to help the adolescents to prevent or to correct the problematic Internet/gadget use. This model of group intervention,

psychoeducation, and the school can serve the purpose of primary care physicians, school health nurses, student counselors, and teacher mentors to empower adolescents at the community level.

Conclusions

Group intervention in the community by using the psychoeducation module is effective in reducing Internet addiction in school-going adolescents. The intervention is useful to cut down the time spent on Internet/gadget use. The study also depicts that group psychoeducation for adolescents is well accepted to bring favorable behavior changes with Internet use.

Preparation of psychoeducation module on Internet addiction

Researchers 1 and 4 equally contributed to preparing the psychoeducation module and implementation of the intervention.

Acknowledgement

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Key messages

In adolescents, prompt acknowledgment of Internet addiction invokes an effective plan of action, group intervention, and psychoeducation, which are powerful tools to empower adolescents to prevent or correct Internet addiction behavior. Schools serve as the best platforms to reach adolescents in the community and strengthen safe Internet use behavior.

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Conflicts of interest

There are no conflicts of interest.

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