Effectiveness of Internet Addiction Interventions in Adolescents: Systematic Review
Heni Aguspita Dewi1*, Novianti Rizki Amalia2, Royani Chairiyah3
1,2Universitas Bhakti Kencana
3Universitas Binawan
Corresponding Author: Heni Agspita Dewi henidew06@gmail.com

ARTICLE INFO
Keywords: Intervention, Internet Addiction, Teenagers

Received: 3 January
Revised: 19 January
Accepted: 22 February

©2024 Dewi, Amalia, Chairiyah: This is an open-access article distributed under the terms of the Creative Commons Atribusi 4.0 Internasional.

ABSTRACT
Internet users are increasing and making the internet an important part of life, especially among teenagers, so that teenagers are more vulnerable to experiencing internet addiction. Internet addiction in adolescents can affect school success, social activities, and the student's interaction with the family. Programs to overcome internet addiction problems need to be developed and evaluated. The development of evidence-based programs will have an impact on increasing efficiency, so that it can contribute to the formation of health-improving behavior in adolescents. To evaluate the effectiveness of internet addiction interventions in adolescents, researchers conducted a systematic search of published research articles. Three databases, including PubMed, Science Direct, and Scopus were used to select relevant articles. These articles were selected based on criteria. Then 10 RCT articles were selected for analysis. The results show that the cognitive therapy program intervention is effective in reducing internet addiction.
INTRODUCTION

Internet use is a common problem among teenagers. Internet addiction among teenagers is a problem resulting from increasing users. Internet addiction in adolescents has a negative impact and influences school achievement, social activities, and the process of student interaction with their families (Uysal & Balci, 2018). Adolescents are more susceptible to internet addiction (Liu et al., 2015). According to Dewi et al., (2020) internet addiction in teenagers is one of the factors that can influence the occurrence of cyberbullying among teenagers, both as perpetrators and victims. In the case of internet addiction, changes in behavior occur due to excessive use of the internet and use of it for things that are not useful (Du et al., 2010; Zhong et al., 2011). For this reason, it is necessary to develop effective strategies such as scheduling Internet use, changing the duration of Internet use, supporting students to create Internet use record sheets, encouraging students to spend more time with friends, engaging in direct activities, limiting Internet time, providing time with parents, choice of friends, school attendance in healthy internet use (Uysal & Balci, 2018).

Programs to overcome internet addiction problems need to be developed and evaluated. The development of evidence-based programs will have an impact on increasing efficiency so that it can contribute to the formation of health-improving behavior in adolescents. Education and consultation should be provided to adolescents and parents regarding healthy internet use (Uysal & Balci, 2018). According to several studies, social cognitive theory is the most widely used theoretical framework for behavior-based programs designed to change individual behavior (Du et al., 2010; Zhong et al., 2011).

To be able to overcome the problem of internet addiction, appropriate intervention is needed (Liu et al., 2015). Therefore, a review is needed to assess the effectiveness of interventions used to reduce the level of internet addiction in adolescents and to describe and discuss research regarding internet addiction interventions in adolescents, so that we can find out what interventions can be used in cases of internet addiction in adolescents. teenagers and what interventions are appropriate for internet addiction problems based on several studies. This literature study aims to examine and research the impact of internet addiction interventions on adolescents and evaluate the effectiveness of internet addiction intervention programs on adolescents through a systematic review.

METHODOLOGY

Three databases, including PubMed, Science Direct, and Scopus were used to obtain relevant articles as data sources. These articles were selected based on the inclusion criteria for systematic reviews and meta-analyses (PRISMA) framework for critical appraisal of each article. Systematic search by searching the EBSCO, science direct and PubMed databases in May 2021 and ending on June 28 2021. Then carry out a further search to find relevant articles using the keywords: 'Intervention' OR 'Treatment' OR 'Therapy' AND 'Internet Addiction' OR 'Excessive Internet Use' OR 'Problematic Internet Use' AND 'Adolescents' OR 'Teenagers' OR 'young adults' AND 'Randomized Controlled Trials' OR 'RCT' OR 'Randomised Control Trials. To obtain articles relevant to internet interventions
in adolescents, the publication period was limited to 13 years from 2008 to 2021. The (PICO) format was used to design the article criteria as follows;

**PICO components**
- **P**: Teenager
- **I**: Internet addiction intervention
- **C**: Control group
- **O**: Decreased level of internet addiction

**Criteria for including articles in research**

We selected RCT research articles, conducting interventions for internet addiction in English-speaking adolescents. We excluded reviews, literature reviews, meta-analyses, systematic reviews of articles, books or book chapters, dissertations and theses.

**Study inclusion criteria**

The inclusion criteria for this study consist of:
1. English language articles published between 2008 and 2021
2. Using design (RCT)
3. Using interventions for the purpose of reducing levels of internet addiction

**Exclusion criteria**

The exclusion criteria used in this study are:
1. The article does not display the full text
2. Articles in the form of literature reviews, meta-analysis, systematic reviews

Details of the search strategy for eligible articles are reviewed and analyzed in the following diagram:

**RESULTS**

Based on a literature review, 10 RCT articles were found related to internet addiction interventions in adolescents, namely:
<table>
<thead>
<tr>
<th>Study</th>
<th>Designs &amp; samples</th>
<th>Intervention</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet-Based Intervention for the Treatment of Online Addiction for College Students in China: A Pilot Study of the Healthy Online Self-Helping Center. Su, Fang, Miller, &amp; Wang, (2011). Beijing, Cina</td>
<td>Design: RCT Sample: 65, consisting of 4 groups followed until the end of the session LE (n = 17), NE (n = 12), NI (n = 14)</td>
<td>▪ LE: HOSC laboratory conditions/ 1 session ▪ NE : HOSC in their own setting (e.g., home or dormitory); online within 1 week. ▪ NI: interactive system labor conditions/ 1 session modified version of HOSC interactive.</td>
<td>The YDQ scores of the three intervention groups at follow-up significantly decreased, and online satisfaction significantly increased. There was no significant difference for the control group.</td>
</tr>
<tr>
<td>Long term effect of randomized, controlled group cognitive behavioural therapy for Internet addiction in adolescent students in Shanghai. Du et al.(2010). Cina</td>
<td>Design: RCT Sample: 56 teenagers with internet addiction, 80.4% boys; aged 12 - 17 years. active treatment group (n=32) and clinical control group (n=24)</td>
<td>multimodal school-based intervention (group CBT for 6 – 10 adolescents, cognitive behavioral parent training group, and psychoeducation for teachers) / 8 sessions / two child and adolescent psychiatrists</td>
<td>There were no significant differences between the 2 groups at the start of therapy. After the intervention and 6 months of follow-up there was a significant reduction in the level of internet addiction in the active group.</td>
</tr>
</tbody>
</table>
The Effect of a R / T Group Counseling Program on The Internet Addiction Level and Self-Esteem of Internet Addiction University Students. Kim (2008). Korea

Design: RCT
Sample: 25 students with an average age of 24.2 with internet addiction.
Intervention group (n=13) and control group (n=12).

Intervention group: reality therapy counseling 10 sessions for 5 weeks lasting 60-90 minutes. The control group did not undergo any action.

There was a significant decrease in the level of internet addiction and an increase in self-esteem in the intervention group after following the counseling program for the K-IAS score and CSEI score.

Combined cognitive behavioral therapy and bupropion for the treatment of problematic online game play in adolescents with major depressive disorder. Mi, Hyun, Sik, & Renshaw (2012). Korea

Design: RCT
Sample: 65 male adolescents aged 13-18 years with problems playing online games and major depressive disorder.
Sample: CBT Med group (n=32) and Med group (n=33)

CBT Med group: CBT 8 sessions for 8 weeks / multidisciplinary team including psychiatrist, nurse, psychologist, social worker plus bupropion medication 150mg/day for 1 week followed by 300mg/day for 7 weeks. Med group: bupropion drug therapy and 10-minute basic counseling

There were no significant differences at the start of therapy. At week 8 of the CBT Med group there was a significant reduction in online gaming addiction and anxiety as well as an increase in the average score for life satisfaction & school adaptation.

The role of cognitive distortion in online game addiction among Chinese adolescents. Huanhuan & Su, (2013). Cina

Design: RCT
Sample: 28 teenage boys with online game addiction aged 12 - 19 years. The sample was divided into 2 groups, namely the intervention group (n = 14) and the control group (n = 14)

Intervention group: 12 CBT sessions for 6 weeks (2 times per week) for 45 minutes by a trained clinical psychologist. The control group received basic counseling

There were no significant differences between the 2 groups at the start of therapy. After 6 weeks of therapy, both groups experienced a significant decrease in IAS and OGCAS scores.

<table>
<thead>
<tr>
<th>Design: RCT</th>
<th>Sample: 192 patients</th>
<th>STICA intervention group: 23 sessions of psychotherapy over 4 months. 15 sessions/once a week for 100 minutes &amp; 8 sessions/2 times a week for 50 minutes and receive treatment. WCL control group: received medication only, psychotherapy was carried out after 4 months. Initial and follow-up examinations were carried out 4 and 6 months after therapy.</th>
<th>STICA intervention is effective in reducing the level of online gaming addiction in adolescents. AICA-S score &lt;7, AICA-C ≤ 13</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>STICA intervention group</td>
<td>WCL group (n = 96)</td>
<td>WCL (n = 96)</td>
</tr>
<tr>
<td>Jäger et al., (2012).</td>
<td></td>
<td>therapy 16 people randomized to STICA (n = 8) &amp; WCL (n = 96)</td>
<td></td>
</tr>
</tbody>
</table>

The Effects of Peer-Training about Secure Internet Use on Adolescents. (Korkmaz & Kiran-esen, 2012)

<table>
<thead>
<tr>
<th>Design: quasi-experimental</th>
<th>Sample: 825 students aged 13-15 years. Intervention group (n=410) 212 male students &amp; 198 female students. Control group (n=410) 202 male students &amp; 213 female students</th>
<th>The intervention was carried out in 10 sessions lasting 90 minutes/peer therapy sessions. The assessment was carried out 2 times at baseline and</th>
<th>Peer training interventions are effective in reducing Internet use. before peer training (U = 42586.5, p &gt; 0.05). after intervention (U = 40350.5, p &lt; 0.05)</th>
</tr>
</thead>
</table>


<table>
<thead>
<tr>
<th>Design: RCT</th>
<th>Sample: 30 male teenagers, average age 14.2 years.</th>
<th>The assessment was carried out 3 times, namely at the beginning of therapy, post-test and 1 week after the post-test</th>
<th>Changes in the video effect value, f² from 1 to 0.15, which is a fairly high moderate effect. Instructional videos can be more educational in improving users’ attitudes</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Study</th>
<th>Design</th>
<th>Sample</th>
<th>Intervention Details</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhong et al., (2011)</td>
<td>RCT design</td>
<td>Sample: 57 inpatient internet addiction patients at Beijing military general hospital aged 14-25 years. Consisting of an intervention group (n = 28) divided into 3 groups (1st &amp; 2nd group 10 people, 3rd group 8 people) and a control group (n = 29)</td>
<td>Family-based group intervention for 14 sessions (7 sessions for internet addiction patients, 4 sessions for parents &amp; 3 sessions for both), the control group only received conventional group therapy. Initial assessments were carried out after the intervention and follow-up at 1 month and 3 months.</td>
<td>The research results showed that, in the experimental group FAD increased significantly. OCS and total score for OCS improved significantly. Family-based group interventions are effective in reducing Internet use and improving family functioning.</td>
</tr>
<tr>
<td>Evaluation of a School-Based Program for Internet Addiction of Adolescents in Turkey. Uysal &amp; Balci (2018). Turki</td>
<td>Design: RCT</td>
<td>Sample: 84 high school students with internet addiction in Turkey with IAS scores &lt; 90 consisting of 41 intervention groups &amp; 43 control groups</td>
<td>School-based healthy internet use program. 8 session training program for 3 months, each session lasting 40-80 minutes with parental assistance in monitoring children's activities (interview &amp; telephone). IAS evaluation in both groups before the program, 3 months after the program, and 9 months after the program.</td>
<td>There are significant differences between the intervention group and the control group. - IAS Score After the third month (p &lt; 0.05) - IAS Score After ninth month (p &lt; 0.001) Use of the Healthy Internet Use Program reduces the rate of internet addiction among teenagers</td>
</tr>
</tbody>
</table>
DISCUSSION
Internet use in Adolescents

Factors that influence internet addiction include gender, age, class, financial situation, parental education (Uysal & Balci, 2018). Several studies reveal that gender influences internet addiction. Adolescent boys experience internet addiction more often than girls, this is because internet use in boys is higher than in girls according to (Uysal & Balci, 2018; Durkee et al., 2012). One of the reasons why teenagers are at risk when doing online activities is related to their parents, such as living separately from their biological parents, low parental involvement and parents who are not working (Durkee et al., 2012). Internet users are grouped into three categories: adaptive, maladaptive and pathological (Durkee et al., 2012). Some activities carried out by teenagers online include watching TV, visiting chatrooms and social networks (Durkee et al., 2012).

Efforts to Prevent Internet Addiction in Adolescents

To be able to prevent the problem of internet addiction in teenagers, support and cooperation from various roles are needed, including family, friends and teachers. In their research, Korkmaz & Kiran-esen, (2012) used peers in implementing a "perr training" intervention program for teenagers in Turkey, where friends who had successfully completed the training could become trainers for their friends. This program discusses the topic of internet addiction by getting to know friends better, group rules, responsibility towards colleagues, ethics, psychological support processes, developing communicative skills, self-knowledge, developing presentation skills, and obtaining information about safe internet use. The most frequently used online activity is playing games. Findings show that the use of the Healthy Internet Use Program reduces the level of internet addiction among adolescents (Uysal & Balci, 2018).

The family has an important role in preventing internet addiction in teenagers. Families, especially parents together with health workers, are needed to prevent and overcome the psychological impacts experienced by teenagers due to internet use (Dewi et al., 2023). The family plays an important role, especially parents, in supervising children's activities and carrying out good communication, so that children do not transfer their problems to the internet (Zhong et al., (2011). Teachers also have an important role in forming the character of their students, for this reason cooperation is needed with with teachers in providing information about healthy internet use. This is in line with research conducted by Uysal & Balci, (2018), which used intervention with school-based programs to be effective in reducing the level of internet addiction among Turkish teenagers.

Interventions that Can Be Used in Internet Addiction

Interventions that can be used for internet addiction problems include psychotherapy. This is in line with several studies. Research conducted by Korkmaz & Kiran-esen, (2012), stated that there was a significant difference in post-test scores in the experimental group compared to the control group (U = 40350.5, p <0.05) in the use of "perr training" therapy. The research results show that peer training has a positive effect on reducing the rate of internet addiction among teenagers in Turkey. The intervention was carried out in 10 sessions lasting 90 minutes. Psychotherapy interventions have been widely used to
prevent and treat internet addiction in adolescents. The use of psychotherapy has been shown to be effective in internet addiction. The psychotherapy that is widely used is cognitive behavior therapy (CBT).

Several studies have been conducted on this therapy, including research by Du et al., (2010) who conducted a group-based CBT intervention of 8 sessions for 6-10 students by 2 child and adolescent psychiatrists, each session lasting 1.5-2 hours. There was a significant reduction in the level of internet addiction in the active group after the intervention and 6 months of follow-up. In line with that research, Mi et al., (2012), evaluated the effectiveness of CBT intervention in combination with mitragynine to reduce online game use and major depression in China, which showed a significant reduction in online game addiction and anxiety as well as an increase in mean satisfaction scores, life & school adaptation in the intervention group. Huanhuan & Su, (2013) examined the effectiveness of CBT intervention to reduce the level of online gaming addiction in adolescents in Guangzhou China CBT by providing 12 sessions of therapy with sessions 2 times per week lasting 45 minutes. Meanwhile, the control group received basic counseling twice a week by a psychiatrist. The results of the study stated that there was no significant difference between the group that received CBT therapy and basic counseling therapy. This shows that psychotherapy carried out with both CBT and basic counseling therapy is equally effective in reducing the level of internet addiction in adolescents.

The use of psychotherapy was also used by Zhong et al., (2011) stating the same thing, the results of the study showed that, in the experimental group FAD increased significantly, this can be seen from the increase in OCS scores and total scores for OCS, so that family-based group intervention is effective in reducing Internet use and improving family functioning. Likewise with research conducted by Uysal & Balci, (2018) which used intervention with a school-based program involving parents and teachers in the Healthy Internet Use Program. This research is effective in reducing the level of internet addiction among teenagers.

Online-based interventions can also be given to teenagers who experience internet addiction. This is in line with research conducted by Su et al., (2011b) that the Healthy Online Self-helping Center (HOSC) intervention can help students reduce online use in China. The intervention uses an online program developed based on motivational interviewing procedures. The results of this study suggest that online ES can act as an alternative to traditional intervention methods. Apart from psychotherapy interventions, video-based interventions can also be used as an alternative option in reducing internet addiction in adolescents. Turel et al., (2014), conducted an evaluation of a video-based intervention for students to improve users' attitudes towards reducing internet use, as a means of preventing excessive and dangerous internet use. The research results state that instructional videos can be more educational in improving users' attitudes towards Internet use with changes in the video effect value, f² from 1 to 0.15 which is a fairly high moderate effect.
CONCLUSIONS AND RECOMMENDATIONS

Internet addiction is a problem that often occurs as a result of the impact of increasingly rapid technological developments. The negative impact of internet use occurs in all age groups, especially teenagers. To be able to reduce or reduce the level of internet addiction, appropriate intervention is needed. From literature searches conducted by researchers, it was found that there are several alternative interventions that can be used to reduce internet addiction, especially in adolescents. Psychological interventions can be used and have effective results in reducing levels of internet addiction. This psychological therapy can be carried out using various methods including school programs, family-based, counseling reality therapy, school-based, psychosocial treatment. This psychological therapy can be used directly on individuals, groups or online, namely by using eHealth. Apart from that, psychological therapy such as CBT therapy can also be combined with administering the drug Bupoprion. The psychological interventions used, whether in the form of CBT or just basic counseling, have shown significant results in reducing levels of internet addiction. With this literature study, it is hoped that it can become a recommendation for intervention in overcoming the problem of internet addiction and its psychological impacts.

FURTHER STUDY

This literature study only assesses the effectiveness of interventions in overcoming Internet addiction problems in general from previous research, without knowing the causes of someone experiencing Internet addiction. So that the interventions carried out can be optimal and can avoid the occurrence of Internet addiction in teenagers, it is hoped that future researchers can examine the factors that can cause someone to experience Internet addiction.

ACKNOWLEDGMENT

Thank you to all parties who have provided suggestions and support to the author so that he was able to complete this literature study.

REFERENCES


