

A Detailed Study on the Effectiveness of Internet-based Self-help Interventions for Adolescents' Mental Health

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Abstract

This study aims to evaluate the effectiveness of internet-based self-help interventions for adolescents' mental health. An investigation of internet-based self-help interventions aimed at reducing mental health symptoms such as anxiety and depression, as well as managing high levels of stress, in adolescents was conducted. In literature, self-help readers elicit polarized views. Even though little research has been conducted specifically on self-help readers who suffer from mental illnesses, existing commentary indicates there is a particular tension: clinical researchers report good outcomes for depressed readers who participate in bibliotherapy programs that employ self-help books, which are comparable or superior to medication or talk therapy. On the other hand, media and culture scholars' express reservations regarding the quality of self-help texts and emphasize the negative effects of therapeutic discourse on readers and audiences in general. In our review, however, we investigated how real readers interact with self-help books, particularly as they navigate mental illness experiences. Based on a reader-response heuristic we used to review different articles, this paper examines some of the ways habitual readers of self-help books describe their own interpretive activities, challenging previous research that either understates or understates the significance of vernacular audiences.

Keywords: Internet-based, Self-help, Mental health disorders, Adolescents

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Introduction

An investigation of internet-based self-help interventions aimed at reducing mental health symptoms such as anxiety and depression, as well as managing high levels of stress, in adolescents was studied [1, 2]. The search covered databases such as Web of Science, PubMed, Cochrane Library, and Embase till December, 2023. Rather than diagnosing specific mental disorders, our focus was on the evaluation of symptoms. The study included different comparisons involving 4620 participants and 89 published articles. Compared to the control group, participants receiving interventions reported significant reductions in anxiety, depression, and stress symptoms, as well as improved quality of life [3]. Depression was treated moderately, and quality of life was treated moderately as well. Anxiety and stress showed small effects from intervention. Considering sample type, intervention method, and intervention duration, we conducted subgroup analyses for anxiety and depression. A significant difference between Those in college and adolescents was observed in anxiety and depression alleviation. The reduction of anxiety and depression was most effective with longer interventions [4, 5]. Moreover, third-wave cognitive-behavioral therapy showed pronounced intervention effects in both outcomes, whereas guidance did not have a significant impact. The authors conclude, among adolescents, internet-based self-help programs help alleviate the symptoms of psychological disorders. In spite of this, the available evidence exhibits inconsistencies and limitations. The findings of this study must therefore be verified and expanded through further research utilizing rigorous methodologies [6].

The Approaches

PRISMA statement criteria were followed in conducting this study. A predefined set of inclusion and exclusion criteria was presented prior to literature screening. The Eligibility criteria included a randomized controlled trial (RCT) was included if it met the following requirements: Intervention type: internet-based self-help interventions (considered eligible if they utilized internet-based platforms such as computers, apps, tablets, or mobile devices, and included therapist-guided or coach-guided self-help, automated feedback, or chatbots; Student participants were adolescent students; measurable continuous outcomes were calculated using established mental health scales, such as the depression anxiety stress scale; English was the primary language of the studies. Internet-based self-help interventions were compared with a control group (waitlist, no treatment, or treatment as usual) [7-11]. An acceptable outcome is one that involves anxiety, depression, or stress as either a primary or secondary outcome. Uncontrolled repeated measures (open trials) and case series designs were excluded from our study. Also excluded were studies that used technology-based treatments without using the internet. Studies without symptomatology testing for mental health were not considered. Regarding the data extraction, the literature search utilized text words, medical subheading terms, and headings indicating psychological therapies in secondary and postsecondary education settings based on RCT inclusion criteria on PubMed, Embase, Cochrane, and Web of Science, publications were identified by searching databases. In order to determine key terms, the authors referred to prior studies of online self-help treatments [8].



Readers who suffer from depression choose and utilize self-help books selectively and strategically, typically looking for insights, inspiration, and practical advice they can add to their repertoire of coping techniques. Participants from different studies described a confident approach to reading self-help material that was guided not only by the development of a kind of self-help reading 'competency', but also by an acute awareness of themselves [9]. While most of these readers described themselves as avid readers of self-help books - one even shifted her computer during an interview, so the author could see a shelf full of self-help books behind her - they also described a reality in which, perhaps counterintuitively, lowering their expectations had resulted in a more satisfying reading experience over time [10-12]. They explained that uninitiated readers may not approach self-help reading fully equipped with either the assurance or arsenal of reading strategies, particularly if they begin reading in a vulnerable state. Most readers had first sought or encountered self-help books during a period of significant illness, upheaval or distress, despite an ongoing interest in self-help reading [13] (Figure 1).

A systematic study of studies that met all the criteria for inclusion was conducted in accordance with the Cochrane Library's instructions. A standardized coding sheet was used to facilitate this process. A data extraction process was conducted by the first author and subsequently cross-verified by the second author. The initial screening was preceded by the removal of duplicate publications. The first authors independently studied the titles and abstracts of the remaining articles based on the aforementioned eligibility criteria. Using a randomly selected database, each author independently assessed articles. An assessment of the level of agreement between raters was conducted using Kappa values [15, 16]. The majority of studies were in agreement with each other, indicating substantial interrater agreement. Discussion among the authors resolved disagreements. Upon initial screening, all full-text publications were evaluated. The reasons for discarding full-text publications that didn't meet eligibility criteria were documented. Disagreements over assessment results were discussed. In the end, three authors independently identified good publications that were potentially eligible for study [17]. The majority of the results were in agreement, showing robust inter-rater reliability. The sample was classified as adolescent students. Intervention types included cognitive behavioral therapy (CBT), third-wave CBT, and problem-solving therapy (PST). It is based on the premise that mental disorders and psychological distress can be attributed to cognitive factors. In PST, problems are solved through the development of problem-solving attitudes and skills, particularly in dealing with daily life challenges [2, 18-22]. After the

intervention, during the statistical analysis, the differences in mean change scores in mental health outcomes were compared between the intervention and control groups. The researchers chose to use the standardized mean difference to enable integration and comparison of results across studies because the included studies used different scales and measurement techniques. Statistically significant differences were calculated for each continuous outcome, along with the corresponding 95 % confidence intervals. As a result of the small sample sizes and different measurement units used among the studies, The researchers calculated Hedgen's to adjust for small sample bias [23-29].

Results

During the process of identifying and integrating relevant studies, the titles and abstracts of good number of articles were studied after duplicate publications were removed to generate 89 articles that were generally included and underwent full-text study. Inclusion criteria included both adolescent students and students with mental illnesses. The different research papers examined four different outcomes associated with mental health disorders: anxiety, depression, stress, and quality of life [30-35]. The studies were conducted in various countries. There was a notable gender imbalance in most studies, with participant counts. Since there were limited data on ethnicity or race among participants, they were not summarized. In addition to mindfulness virtual communities, online mindfulness interventions, internet-based self-help programs, and internet-based acceptance and commitment therapy programs, several intervention approaches were identified. A total of five criteria were included in the quality assessment tool [36]. In total, studies were rated as having a low risk of bias. These studies were therefore classified as being of higher quality. There were half of the studies that raised "some concerns" about overall bias, indicating a moderately high level of quality. The results of less than fifteen percent are classified as having a high risk of bias in at least one domain. 25% of studies had bias in the reported outcome measurement, and ten percent of papers had a risk of bias arising from randomization [37]. The missing outcome data in two studies contributed to bias. There was a risk of bias in ten studies in relation to the selection of the results reported. In psychotherapy outcome research, it can be especially challenging to achieve blinding of participants and personnel.

Study Outcomes

Stress

Good number of participants were involved in different studies that evaluated the effects of treatment on participants' stress symptoms [38]. The data analyzed has utilized a random effects model because of moderate significant heterogeneity between studies. Using data from the study, it revealed that participants in the intervention group experienced significantly fewer stress symptoms than participants in the control group. Using the prediction interval, the effect sizes of future studies will fall within the range [39].

Anxiety and Depression

In 18 studies, the effects of internet-based self-help programs on anxiety management were evaluated (1506 in the experimental group and 1803 in the control group). It was found that there was moderate heterogeneity across most of these studies. In order to analyze the data, a random-effects model was used, which revealed that the experimental group experienced significantly fewer symptoms of anxiety than the control group. Considering the prediction interval for the study, there will likely be a range of effect sizes in future studies, from a notable benefit to a slight or no effect [2, 40].



Figure 1: Self-help books [14].



As compared to control groups, we assessed how internet interventions affected depressive symptoms in 23 studies, which involved students above 5K. Several of these studies revealed significant heterogeneity. Based on the random-effects model, our study showed that online self-help therapy significantly reduced depression compared to the control group; the 95% confidence interval did not overlap zero) [41-45]. The prediction interval also suggested that future studies would have effect sizes within these ranges.

Quality of life

Different studies, involving 565 subjects, examined interventions' effects on quality of life. As these studies were not heterogeneous, a fixed-effects model was used. Results of the study showed that the experimental group's quality of life was significantly improved over the control groups [46]. In this prediction interval, the effect sizes of future studies are anticipated to fall within this range. A subgroup analysis of anxiety and depression outcomes with a sufficient number of studies was conducted to explore potential sources of heterogeneity. It was found that several significant differences existed between subgroups. Compared to adolescent students, those in college were more likely to benefit from intervention treatments for anxiety [47]. The CBT, CBT, and third-wave CBT showed significant effects when the therapy lasted longer than 8 weeks. Interventions lasting less than four weeks, however, failed to reach statistical significance. Compared to adolescent student groups, those in college showed more favorable depression outcomes. A higher level of significance was also found with therapies lasting longer than 8 weeks as compared with those lasting a medium duration [48] (Figure 2).

Discussion and Summary

Different comparisons involving 4620 participants and 89 published articles, this study investigated the impact of internet-based self-help interventions on mental health conditions among adolescents [3, 50]. Based on our analysis, participants who engaged in online self-help programs experienced notable decreases in anxiety, depression, and stress, along with improvements in quality of life compared to those who received no intervention. According to Harrer, these findings echo results from a study that demonstrated the effectiveness of internet-based interventions in treating depression, anxiety, and stress among Those in college [51-54]. These interventions are effective because they are accessible, scalable, and cost-effective. The effectiveness of these interventions was higher in those in college than in adolescents in our subgroup analysis. According to Hoek et al. [45], there are challenges to involving adolescents in internet-based self-help programs. Dropout rates and the efficacy of online self-help programs among adolescent participants may be negatively impacted by parental consent requirements, time commitment, (un)attractiveness of self-

help formats, and lack of support from parents and friends. The internet is typically more familiar to Those in college, who can access mental health information more easily and complete online programs with greater flexibility [56, 57]. In addition, these two age groups exhibit distinct developmental and experiential differences, which may affect the effectiveness of internet self-help treatments. When compared with adolescents, those in college may be more independent and mature regarding self-regulation and internet usage, making them more receptive to self-help interventions [58-63]. A significant difference was not found between guided online self-help interventions and unguided online self-help interventions, which is consistent with previous analyses. Studies also indicate that internet-based interventions are more effective when participants receive guidance on common mental disorders [64-67]. In light of this, the results need to be interpreted with caution, especially since there were relatively few unguided intervention groups in the trial. In some systematic studies, online interventions lasting 4 to 8 weeks showed notably stronger effects. Additionally, it contradicts the conclusions of other authors, who found no significant differences between shorter and longer interventions. Young people may be discouraged by ample time to engage with programs due to their unattractiveness, which could lead to higher dropout rates. Since intervention intensity and treatment techniques can significantly affect intervention outcomes, this finding is limited in its generalizability, necessitating further research to clarify these complex relationships. The studies published online also found that third-wave CBT was more effective in addressing anxiety among students, which is consistent with previous research suggesting that mindfulness-based interventions may be more helpful than CBT for depression symptoms, while CBT may be more effective in treating anxiety symptoms. A future study should examine specific intervention strategies for ACT or mindfulness as distinct forms of CBT. Hence, further research must be done to replicate the findings [68].

Furthermore, this paper serves to reinvigorate ongoing research to achieve a more sophisticated level of granular data. Readers with a history of depression - or another common diagnosis - would be especially beneficial to engage, and it would be interesting to compare their responses at different stages of their reading journeys in light of more detailed demographic characteristics than age, gender and cultural background. Aside from their long-standing ties with American culture, self-help books are readily available in English-speaking countries around the world, and they encompass a wide variety of problems and approaches that are increasingly diverse yet universal [69-71].

Limitations

The results presented in this study were mixed, and more research is needed to reach definitive conclusions, but internet-based self-help interventions have the potential to effectively address mental health symptoms in young people. Because of their inherent benefits, it becomes imperative to enhance accessibility of online-based self-help interventions for this demographic, so that they can access healthcare directly, or as part of stepped-care programs [72-78]. As research in this area advances, online interventions could potentially be used as early steps in a therapeutic journey or to complement traditional interventions, especially for individuals who are experiencing mild symptoms or in the early stages of the symptom development process [2, 79]. According to researchers, evidence-based online interventions should be the primary accessible step for most people, and those who need intensive support should receive in-person services. To increase the reach of early and impactful interventions for young students, professionals such as school counselors, general practitioners, and youth workers, who act as gatekeepers to mental health services, should

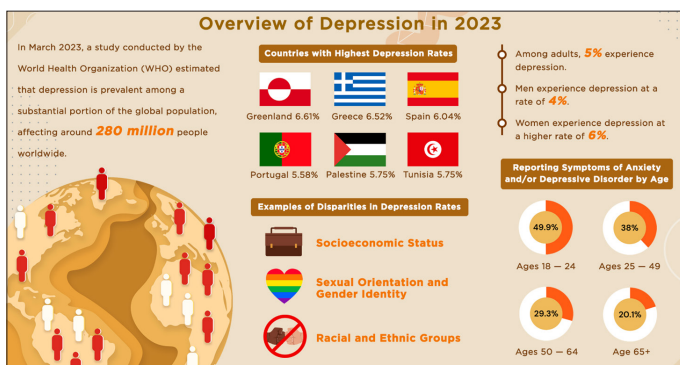


Figure 2: Depression statistics in 2023 (as per WHO) [49].



become familiar with these online self-help techniques [80, 81]. The importance of recognizing individual variability in psychotherapy outcomes has also been emphasized in different research papers. The researchers found similar findings, particularly in the subgroup analysis showing some in college responded more to internet interventions than adolescent students [82-84]. Based on this understanding, the researchers are exploring the development of artificial intelligence-based personalized treatment within online clinical settings. The use of such a method might help match students in need of treatment with the best internet interventions, thereby enhancing the therapeutic experience of those students [3, 85]. The researchers found limited insights into the effects of long-term interventions in our study. In the included studies, only a subset provided data on the long-term effects of interventions, and follow-up periods varied. Furthermore, the collective classification of middle and high school students as adolescents may obscure the differences in developmental characteristics among the three stages of adolescence. Most of the results do not necessarily have clinical significance. Although statistically significant reductions in symptoms were observed, no correlation was explored with clinical cut-off values in papers we analyzed. It is therefore prudent to interpret the practical clinical implications of this study with caution.

Future Research

The use of internet-based self-help interventions holds significant promise for addressing mental health conditions among adolescents. Further research is needed to further understand their efficacy. Research into internet-based self-help interventions across adolescence, including early, middle, and late adolescence, could benefit from more nuanced student classifications. In comparison to unguided interventions or traditional face-to-face treatments, comparative studies should evaluate the degree of guidance provided by internet-based self-help therapies, specifically with regards to anxiety, depression, and stress reduction, as well as improving overall well-being. It is also necessary to examine intervention duration and methodologies in order to identify factors associated with improved outcomes. Additionally, there is a critical need for more extensive research on the utilization of internet-based self-help interventions among young individuals who are currently underrepresented in the existing literature, including those with intellectual or developmental disabilities and those from low- and middle-income countries.

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Conflict of Interest

None.

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