Title:
Mindfulness-Based Interventions Among Adolescents With Chronic Diseases in Clinical Settings: A Systematic Review

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Session Title:
Clinical Posters Session 2

Keywords:
Adolescents, Chronic diseases and Mindfulness

References:


Abstract Summary:
Since ancient times, people have been using complimentary approaches to improve psychological and physical well being to reduce or avoid the use of medications. Our systematic review synthesized the findings of mindfulness based interventions to reduce psychological symptoms among adolescents with chronic diseases in clinical settings.

Learning Activity:

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<tr>
<th>LEARNING OBJECTIVES</th>
<th>EXPANDED CONTENT OUTLINE</th>
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<td>The learner will be able to identify mindfulness-based approaches used to improve psychological symptoms among adolescents with chronic diseases.</td>
<td>The results section in the abstract summarize the main mindfulness approaches used among adolescents with chronic diseases such mindfulness-based stress reduction and mindfulness-based cognitive therapy.</td>
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<td>The learner will be able to evaluate the effectiveness of mindfulness-based interventions on the most relevant psychological symptoms that accompanied</td>
<td>The findings of the systematic review showed the effects of mindfulness-based interventions on the most reported psychological symptoms for randomized controlled trials and</td>
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adolescents with chronic diseases such as depression and anxiety. interventional studies among adolescents with chronic diseases.

The learner will be able to appraise the importance of future research focusing on mindfulness among adolescents with chronic diseases in clinical settings. Our preliminary findings indicate that although mindfulness-based interventions is a promising in improving psychological and physical health among adolescents with chronic diseases, more research needs to be conducted among adolescents with chronic diseases such as diabetes, cancer, cardiac diseases, celiac diseases and asthma.

Abstract Text:

**Background:** There is growing evidence of the efficacy of mindfulness based interventions (MBI) to improve psychological and physical well-being among healthy adolescents who were recruited from school settings (Jones et al., 2013; Zenner, Herrnleben-Kurz, & Walach, 2014; Zoogman, Goldberg, Hoyt, & Miller, 2014). However, to date, no systematic review has focused on the effectiveness of MBIs among adolescents with chronic diseases in clinical settings.

The purpose of this systematic review is to determine the state of empirical research related to the benefits/efficacy of MBIs implemented among adolescents (12-18 years) with chronic diseases in clinical settings.

**Methods:** An electronic search was conducted in December 2016 using PubMed, CINAHL, and PsycINFO databases. Inclusion criteria were peer-reviewed articles published in English, participants aged 12-18 years, mindfulness was the primary intervention in a clinical setting among adolescents with chronic diseases, and variables were psychological outcomes relevant to adolescents who suffer chronic diseases such as anxiety, depression, stress, emotional regulation and coping, quality of life (QOL), sleep problems, and pain as well as physiological outcomes such as heart rate, blood pressure, and glycosylated hemoglobin. No restrictions were applied on publication date. Two reviewers independently evaluated articles for inclusion. Conflicts were resolved with the assistance of the senior author. Of the 1564 obtained records, 62 articles were considered for full text screening; and 14 articles met our inclusion criteria and were included in this review.

**Results:** Mindfulness programs included mindfulness based stress reduction (MBSR) and mindfulness based cognitive therapy (MBCT) adapted for children and adolescents. Study samples consisted of adolescents with psychiatric disorders (4), chronic pain (3), depression (2), anxiety (1), autism spectrum disorders (1), cancer (1), cardiac problems (1), and headache (1). Five studies were randomized controlled trials and 9 were interventional studies while 8 had only one group and one had two groups. While the majority of studies examined psychological outcomes such as depression, anxiety, QOL, and mindfulness, only one study examined physiological outcomes (cortisol). For the most reported outcomes for the RCTs, adolescents in MBI studies had significant improvement in a variety of measures such as depression (Cohen’s D= .16-.56), anxiety (Cohen’s D= .22-.54), and sleep (Cohen’s D= .22-0.9) over the participants in the control group. For one group interventional studies, adolescents showed significant improvement after intervention for variety of outcomes such as depression (Cohen’s D=.05-79), anxiety (Cohen’s D=.48-.50), and mindfulness (Cohen’s D=.11-.66).

**Conclusion:** The majority of MBI studies conducted in clinical settings engaged adolescents with psychological disorders. MBIs were found to improve psychological outcomes. The preliminary findings of this systematic review show that future research should focus on the effectiveness of MBIs among adolescents with chronic diseases such as diabetes, cancer, heart diseases, cystic fibrosis, and asthma.
to reduce psychological distress, and to increase the focus on physiological outcomes. In future, RCTs with large samples are needed to establish the efficacy of MBI with adolescents.