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Behavioural Interventions for Mental Health Problems in Adolescents: A Systematic Review

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Abstract. Adolescents are increasingly affected by mental health challenges, especially anxiety and depression, which require early behavioural interventions. This paper reviews four main types of behavioural interventions, i.g., Cognitive Behavioural Therapy (CBT), Mindfulness-based Interventions (MBIs), family and school-based interventions and digital interventions, and summarises their impacts and limitations. While each demonstrates positive effects on improving adolescent mental health, current research lacks standardised evaluation tools, longitudinal data and under-representative populations. Comparative insights indicate that existing interventions often operate in isolated domains, such as treatment, family, school, or digital domains, leading to reduced overall effectiveness. To address this, Dynamic Ecosystem Adaptation through Allostasis (DEA-A), an ecosystem approach, is proposed to integrate multiple interventions. The paper concludes with recommendations for future research focusing on developing a multi-level, personalised intervention system grounded in standardised and long-term assessment. Such a holistic approach may enhance both the effectiveness and sustainability of adolescent mental health therapy.

Keywords: adolescent mental health, behavioural interventions, ecosystemic approach

1. Introduction

Adolescence is a critical developmental period characterized by rapid physical, cognitive, and emotional changes. During this stage, individuals are particularly vulnerable to mental health issues, which can impair academic performance, strain relationships, and increase the risk of long-term mental illness. Currently, about 15% of adolescents are affected by mental disorders [1]. This underscores the urgent need for effective interventions as a core component of mental health care. Behavioural therapies are widely recognized as highly effective, non-invasive methods for alleviating mental health symptoms in adolescents, whereas medications often carry side effects and show limited long-term efficacy.

Despite this, research on adolescent mental health remains limited in comparing or integrating different types of interventions and settings, in addition to the lack of standardised evaluation methods. Over the past several decades, various interventions have been developed, including Cognitive Behavioural Therapy (CBT), Mindfulness-based Interventions (MBIs), family and school-

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based interventions, and digital interventions. While these approaches have demonstrated effectiveness in reducing symptoms and promoting well-being, they are mainly researched and applied separately.

Given the rising prevalence of adolescent mental health issues and the critical importance of early interventions, current research faces several challenges: the absence of standardised evaluation tools, insufficient long-term follow-up data, and the underrepresentation of minority populations. Furthermore, limited integration across therapists, families, schools, and digital platforms diminishes the overall effectiveness and sustainability of interventions. This paper reviews the four main types of behavioural interventions for adolescent mental health, summarising their benefits, limitations, and comparative insights, and proposes integrated, ecosystemic approaches to strengthen future research and practice.

2. Types of behavioural interventions

2.1. Cognitive Behavioural Therapy (CBT)

Behavioural intervention is a commonly used therapy for the treatment of mental disorders, focusing on behaviour modification to address negative thoughts, stress and dysfunctional behaviours [2]. There are various types of behavioural interventions, each differing in effectiveness when addressing specific mental health problems.

Cognitive Behavioural Therapy (CBT) is a widely applied psychotherapeutic approach primarily used to alleviate symptoms of depression and anxiety. It has demonstrated relatively long-term effectiveness across diverse populations. CBT works by challenging and transforming cognitive distortions as well as maladaptive behavioural patterns, with the aim of enhancing emotional regulation and strengthening personal coping methods to address mental health challenges.

Compared to medication, CBT has been shown to be more effective in treating mental health problems, particularly anxiety and mood disorders. Ibadin and Ernest-Okonofua [2] reported significant reductions in depressive symptoms among participants after treatment, with effectiveness increasing alongside treatment duration. However, CBT is often criticized for being time-consuming, and some argue that while it effectively addresses current symptoms, it may not resolve the underlying causes of mental disorders [3].

2.2. Mindfulness-Based Interventions (MBIs)

Mindfulness-Based Interventions (MBIs) are techniques that use meditation, breathing exercises, and body awareness to help individuals develop a non-judgmental attitude toward the present moment, enhance emotional regulation, and reduce psychological distress. They have become an important component in improving mental health across various populations. Dawson et al. [4] through a meta-analysis of university students, demonstrated that MBIs can significantly reduce anxiety, psychological distress, and depression. Moreover, several of these benefits have been observed to persist for up to three months following the initiation of mindfulness-based therapies.

However, MBIs require regular and sustained practice, which may not be suitable for everyone, especially individuals with low motivation or limited time. Despite these limitations, MBIs are an inexpensive treatment modality that is accessible to all population groups and effective in enhancing emotional resilience and self-control.

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2.3. Family and school-based behavioural interventions

Family and school-based interventions are primarily designed to enhance children's well-being within both family and school environments during their development. Some programs, such as Families and Schools Together (FAST), a six-week intervention, aim to support children who struggle with social relationships [5]. These interventions focus on educating children on managing their mental well-being within the context of their relationships with family and school.

Research has found that school-based interventions are effective in addressing both individual behavioural and emotional problems as well as broader school issues, such as bullying, with the later often showing greater improvements [6]. Additionally, programs like Triple P and Family Check-Up have demonstrated effectiveness in reducing parental stress and improving children's behaviours, including antisocial behaviours [7].

Unlike MBIs, family- and school-based interventions require active participation from parents, teachers, and professional therapists. However, teachers in educational institutions may have limited training in implementing these interventions, which can reduce the support available to children within both schools and family contexts.

2.4. Digital and online interventions

Digital and online interventions provide solutions and treatments for mental health issues through technological platforms, such as mobile devices and the internet. Compared to other types of behavioural interventions, digital interventions are considerably more cost-effective. Some therapists have delivered mindfulness-based interventions (MBIs) online, and the results have shown that online MBIs are effective in reducing depression and anxiety [8]. In 2024, Buric et al. [9] reported that online MBIs can also enhance emotional regulation and mental well-being. However, low engagement in online interventions may limit their effectiveness in improving mental health.

3. Comparative insights and limitations in current literature

3.1. Lack of standardised evaluation tools

As previously stated, different types of behavioural interventions for adolescent mental health each have their respective limitations.

Although several behavioural interventions have been developed to address mental health issues, a primary challenge remains the lack of consistent evaluation tools in the current literature, which restricts meaningful comparison and assessment of these interventions. For example, researchers found no significant difference between the control group and the process-based CBT group, potentially due to the unstandardised outcome measurement tools, resulting in no significant findings [10]. Similar challenges have been observed in other interventions. In educational settings, Paulus et al. [6] highlighted the need for consistent tools across settings to evaluate emotional and behavioural changes in children and adolescents, as reports from parents may vary from those from teachers.

3.2. Lack of long-term follow-up data

Behavioural interventions have been shown to be effective in addressing adolescent mental health issues. However, most students have not provided longitudinal data to show whether these effects are sustained over time. A large UK study on adolescent depression compared CBT with

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psychoanalytical and psychosocial approaches, demonstrating effectiveness within 30 weeks [11]. Similarly, Nagamitsu et al. [12] examined a digital cognitive-behavioural therapy (CBT) intervention and found that improvements in depression symptoms were observed at one month, but these effects diminished after four months. This may be due to the follow-up period being too short to capture long-term effects. Such limitations can affect the generalisability of the findings and limit conclusions on the sustained effectiveness of interventions.

3.3. Underrepresentation of minority populations

Current research lacks representation from racial, ethnic, and sexual minority groups, which limits its generalisability. CBT studies rarely account for cultural and socioeconomic factors, and the samples used are often not diverse. Similarly, MBIs have predominantly been evaluated in Western, educated populations [13]. The same pattern is observed in family- and school-based interventions. Furthermore, online intervention platforms rarely disaggregate findings by demographic groups, though data from these platforms could be used to tailor digital mental health treatments for diverse populations. This underrepresentation of populations makes existing research findings less useful, as they cannot fully represent the effects of the intervention on everyone.

4. Discussion

Nowadays, various interventions for adolescent mental health have been developed across families, schools, and digital spaces. Cognitive Behavioural Therapy (CBT) was originally designed to be highly therapist-dependent, whereas other interventions, such as Mindfulness-Based Interventions (MBIs), are more accessible and rely more on the patients themselves. School- and family-based interventions, along with digital interventions, address factors related to schools, families, and technology. However, these interventions lack proper integration and reinforcement, which limits their potential effectiveness.

To address these limitations, further research should focus on developing holistic interventions across multiple settings. Broc et al. [14] introduced an ecosystemic approach called Dynamic Ecosystem Adaptation through Allostasis (DEA-A). This multi-level model is suitable for adolescence, for example, MBIs could be enhanced when reinforced at school, supported at home, and implemented through digital tools.

Interaction and cooperation among schools, families and therapies is also important. These domains have traditionally operated independently, resulting in duplicated resources and low effectiveness. Therapists, teachers, and parents should collaborate to provide tailored interventions for adolescents. With technological advances, digital interventions are becoming more common, enabling real-time monitoring, but they often lack the personalisation of offline services. Their effectiveness may improve if integrated with school monitoring and family communication.

Future research should aim to develop more integrative and holistic interventions that address multiple domains (e.g., CBT with family and school monitoring). Standardised evaluation tools are necessary to compare interventions and identify the most effective approaches. Additionally, longitudinal studies are needed to assess the long-term effectiveness of the interventions.

5. Conclusion

This paper reviewed four main types of behavioural interventions for adolescent mental health: Cognitive Behavioural Therapy (CBT), Mindfulness-Based Interventions (MBIs), family and

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school-based interventions, and digital interventions, indicating their benefits, limitations, and implications.

CBT is effective for most mental health issues and has relatively lasting effects, but it is time-consuming and may not address underlying causes. MBIs are accessible and cost-effective, however, they may not be suitable for individuals with low motivation. Family- and school- based interventions help build support in key settings, but their success depends heavily on the training and involvement of parents and teachers. Digital interventions increase accessibility and provide real-time monitoring, but they often lack personalization.

These interventions alone cannot fully meet the diverse needs of adolescents. Furthermore, current research is limited by the lack of standardised assessment tools, long-term follow-up data, and diversity in study populations. Future research should combine the respective strength of interventions across different levels to improve effectiveness, while also improving their sustainability through standardised assessment and longitudinal studies.

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