

Mobile Health Interventions for Psychiatric Conditions in Children: A Scoping Review

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KEYWORDS

• Mobile health • mHealth • Child • Adolescent • Pediatric • Mental health

KEY POINTS

- Clinicians, entrepreneurs, and patients are considering mobile technology as a novel way to improve mental health care delivery, especially in children and adolescents who are using mobile phones at an increasingly young age.
- Commercial development of the technology seems to be outpacing the clinical research, leaving clinicians with the difficult task of understanding how to incorporate this technology into practice.
- This review of the literature identified 8 studies of mobile health (mHealth) interventions for children with mental disorders, all of which used technology designed to enhance or augment psychotherapy.
- Most studies assessed only for feasibility. Of the 2 studies that examined effectiveness using a randomized controlled trial design, there were no statistically significant differences in clinical outcomes, but sample sizes were small.
- Despite great enthusiasm and the availability of a multitude of mental health apps, few have been rigorously studied in a clinical pediatric population and none have shown reliable evidence for improved mental health outcomes.

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INTRODUCTION

The development and increasing affordability of smartphones have created new possibilities in integrating mental health interventions into users' everyday lives. As increasing numbers of adolescents¹ and even young children² start to have their own mobile devices, both application (app) developers and clinicians are realizing the potential of mobile technology to deliver care in a novel way for this younger population.

Over the past decade, mobile technology and its adaptation have progressed rapidly. Text messaging overtook phone calls as the most frequent form of communication in 2007,³ and that same year Apple released the first iPhone. A 2015 Pew research report shows that 64% of American adults own smartphones, up from 35% in 2011, and that 62% of smartphone owners have used them to look up information about a health condition in the last year.⁴ A 2015 Gallup poll reports that 81% of smartphone owners keep their phones near them almost all the time and 72% check them at least hourly.⁵

In addition, children and adolescents comprise a large proportion of frequent mobile phone users. According to recent Pew reports, the percentage of American teenagers who use smartphones has ranged between 73% and 77% since 2009.^{1,6} This technology also crosses socioeconomic lines: in 2014, 61% of adolescents from low-income (<\$30,000) families owned or used a smartphone, whereas 48% owned or used a tablet.¹ According to a national survey by Common Sense Media, the percentage of children 8 years old and younger who have ever used a smartphone or tablet increased from 38% in 2011 to 72% in 2013, with 17% of children using such a device daily and 28% using it weekly.⁷ Children are also starting to use mobile technology at a much younger age: in 2011, 10% of children less than 2 years old had at some point in their lives used a smartphone or tablet.⁷ By 2013, this number had increased to 38%, most of whom (22%) had used the device for educational games.⁷

The progression of mobile technology has spawned a novel domain of health care: mobile health (mHealth). Evidence supporting the effectiveness of mHealth interventions to change health-related behaviors among persons with chronic conditions is mixed. Positive results have been found for the use of mHealth technologies to improve smoking cessation,⁸ diabetes,⁹ and weight-loss.¹⁰ However, a Cochrane Review of mHealth interventions for asthma, one of the most studied conditions in mHealth, revealed mixed, inconclusive results.¹¹

Although there is some evidence for mHealth interventions for mental health conditions, such as depression¹² and bulimia,¹³ there seems to be an especially pronounced disconnect between the commercial development of mobile apps for mental health and the completion of research to validate their use. A 2013 review found more than 1500 apps for depression, but only 32 published research studies on those apps.¹⁴ In another review focused on depression apps, only 10% of the apps on the market incorporated evidence-based principles of cognitive behavior therapy (CBT) or behavioral activation.¹⁵ Researchers even found that only 4 of the 27 mental health apps endorsed by the UK National Health Service incorporated evidence-based interventions.¹⁶ In addition, most of the mobile apps for mental health care have been developed for and studied in adult populations.

Nevertheless, mobile technology and its adaptation to improve the care of child mental health conditions remains promising. This article thus reviews the evidence in support of mHealth interventions for use in childhood psychiatric disorders with the goal of informing clinicians regarding their potential application in practice.

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