



Topic Brief: Digital Health Applications for Mental Health Disorders

Date: 10/29/2020

Nomination Number: 0938

Purpose: This document summarizes the information addressing a nomination submitted on July 17, 2020 through the Effective Health Care Website. This information was used to inform the Evidence-based Practice Center (EPC) Program decisions about whether to produce an evidence report on the topic, and if so, what type of evidence report would be most suitable.

Issue: Americans suffering from behavioral health conditions, especially mild behavioral or chronic medical conditions, may not seek or receive care due to stigma, provider shortages, or other accessibility issues. Digital health applications (apps) may provide an avenue to address this gap, and tools that aid consumers in evaluating apps for mental health may aid consumers in choosing appropriate apps.

Program Decision:

The EPC Program will develop a new technical brief based on this nomination. To sign up for notification when this and other Effective Health Care (EHC) Program topics are posted for public comment, please go to <https://effectivehealthcare.ahrq.gov/email-updates>.

Key Findings

In our search for tools to aid in the evaluation of mental health apps we found eight tools that met our inclusion criteria: six were directed to individual consumers, one was directed to health system leaders, and one was directed to health-care providers.

We also found resources that identify characteristics of apps that are evaluated by tools that evaluate apps. None of these covered the entirety of the scope of mental health and mental wellness apps.

Background

Mental health disorders (MHD) are both widespread and under-addressed. As of 2018, one in five American adults experienced mental illness.¹ In 2020, 40.9 percent of a representative cohort sample of adults in the United States (adjusted for gender, employment status, and essential worker status) reported at least one adverse mental or behavioral health condition, including symptoms of a trauma- and stressor-related disorder associated with the coronavirus (COVID-19) pandemic (26.3%), and having started or increased substance use to cope with stress or emotions related to COVID-19 (13.3%).² Though effective treatments exist, patients with MHD face numerous structural barriers to accessing care, including stigma and cost.³ The average delay between symptom onset and mental health treatment is 11 years, and in 2018 only 43 percent of Americans with mental illness received treatment.¹ While the global median of government health expenditure for mental health is small,⁴ MHDs have been linked to an

increase in chronic disease and early death, and a decrease in productivity and economic participation.^{1,5}

One proposed method of addressing barriers and expanding access to care for MHD is the provision of adjunctive treatment via mobile smartphone applications (apps). As of 2017, there were an estimated 350,000 health apps available, with 10,000 focused on mental health.⁶ This delivery system is affordable, offers a way to reach rural and other traditionally hard-to-reach groups, and can reduce patients' feelings of stigmatization or discomfort with traditional face-to-face treatment.⁷ However, current literature shows that effectiveness of most available mental health apps is not supported by evidence-based research, and thus such apps are not clinically verified. This lack of evidence, combined with uncertainty surrounding oversight, privacy, and transparency, causes providers to be hesitant about recommending apps as a tool to support treatment mechanism.^{6,8} Further, patients/app users need guidance in choosing the most appropriate app for their needs.

Nomination Summary

The nominator, Connected Health Initiative, is interested in tools to assist consumers in selecting apps focused on mental health. After discussion, they indicated that they were interested in apps for people with a diagnosed mental health condition as well as mental health wellness more broadly.

Scope

1. What characteristics and minimal standards of available behavioral health mobile applications need to be analyzed in existing tools to assess the appropriateness (to various stakeholders) and effectiveness of available apps to include, but not limited to:
 - Accessibility including ease of use, health literacy, 508 compliance, digital equity, cost
 - App Background including funding source, purpose
 - Security features and privacy policy such as data ownership/usage
 - Clinical Foundation and Linkage to current evidence-base
 - Usability, including interoperability across platforms, stability
 - Therapeutic Goals, linkage to the provider, crisis warning notification/alert system
2. Identify or develop an assessment framework for evaluation/scoring tools (e.g., websites). Apply this framework to existing tools that help consumers, family members and peer supports, providers and health systems select behavioral health mobile applications.

Applications reviewed by the tools are intended to be used for screening, monitoring and management of mental health symptoms or disorders, response to treatment and to assist with general mental wellness. They can be intended for use by individuals of any age with any mental health condition (e.g., depression, anxiety, substance use disorders, post-traumatic stress disorder, bipolar disorder, PTSD, psychosis, opioid use disorder), and mental wellness (e.g. mindfulness, meditation) for the general population.

Apps that do not address mental health are considered out of scope. For example, MyFitnessPal is aimed at exercise and nutrition and is out of scope. Calm is aimed at mental health, claiming that it “tackles some of the biggest mental health challenges of today: stress, anxiety, insomnia, and depression” so may be considered to be in scope.

Assessment Methods

See Appendix A.

Summary of Search Findings

We found eight tools that evaluate mental health apps. Developers of a technical brief would evaluate these, and other tools identified through broader searches.

Six online tools focused on aiding the individual consumer in evaluating mental health apps:

- [One Mind PsyberGuide](#): Allows the user to filter apps by mental health condition and sort based on specified metrics.⁹
- [VeryWell Mind](#): Rates online therapy and mental health apps based on 15 features.¹⁰
- [Health Navigator New Zealand](#): Rates and evaluates apps.¹¹
- [UK National Health Service](#): Rates and evaluates apps.¹²
- [MyHealthApps](#): Evaluates apps for a range of health conditions and includes a category for mental health.¹³
- [Health Living App Guide, Vic Health](#): Evaluates apps for range of health conditions, with category for mental well-being.¹⁴

We found one tool to assist health system leaders in choosing apps for workplace wellness programs:

- [Kaiser Permanente Business](#): Provides five tips directed toward health systems on how to choose apps.¹⁵

We found one tool for psychiatrists on methods to evaluate and choose mental health apps for patients:

- [American Psychiatric Association App Advisor](#)¹⁶

We also found resources that indicate which characteristics of apps are evaluated by tools. These covered only a portion of the scope of all tools for all mental health and wellness apps: one evaluated only apps for anxiety and depression;¹⁷ another evaluated depression, anxiety, and schizophrenia, but not mental health wellness;¹⁸ and another that evaluates apps for a range of mental health conditions as well for general wellness domains such as stress and sleep, but, since the search ends May, 2019, we feel that a more up-to-date resource is important in the quickly-evolving domain of apps.¹⁹

Summary of Selection Criteria Assessment

An assessment of available consumer-directed tools has the potential to inform decision-making by clinicians and patients around selection of mental health apps and improve health outcomes. In turn, this may be valuable in expanding access to mental health care. We found several such tools to be evaluated in a technical brief.

The proposed technical brief may be most useful if it focuses on identifying or developing a framework for consumers and providers to evaluate apps, with less emphasis on identifying the existing characteristics of apps evaluated by current tools given the rapidly changing nature of the app industry. An example of how a technical brief might be organized to be most relevant is the “Compendia for Coverage of Off-label Uses of Drugs and Biologics in an Anticancer Chemotherapeutic Regimen” (<https://www.ncbi.nlm.nih.gov/books/NBK299168/>). This report evaluated the compendia on transparency of methods, consistency in level of detail of evidence evaluated, whether the compendia complied with their own stated methods, and comparison of compendia findings with independent review of a sample of topics and with each other.

The proposed technical brief could also consider feasibility of evaluating apps based on the stated criteria and important missing criteria from the frameworks. The assessment framework could include elements such as conflict of interest, frequency of and basis updates (e.g. user feedback or new evidence), and criteria for inclusion in tool listings/websites. The methods section should also include a discussion of what sources or platforms were used to search for apps, which types of apps are included (proprietary versus public domain), and whether the app pays search platforms for prominence in search results or for download from their platform or site.

Please see Appendix B for detailed assessments of individual EPC Program selection criteria.

References

1. National Alliance on Mental Illness. Mental Health By the Numbers. 2019. <https://www.nami.org/mhstats>. Accessed on October 28, 2020.
2. Czeisler M, Lane RI, Petrosky E, et al. Mental Health, Substance Use, and Suicidal Ideation During the COVID-19 Pandemic - United States, June 24-30, 2020. *MMWR Morb Mortal Wkly Rep.* 2020 Aug 14;69(32):1049-57. doi: 10.15585/mmwr.mm6932a1. PMID: 32790653.
3. Carbonell A, Navarro-Pérez JJ, Mestre MV. Challenges and barriers in mental healthcare systems and their impact on the family: A systematic integrative review. *Health Soc Care Community.* 2020. doi: <https://dx.doi.org/10.1111/hsc.12968>. PMID: 32115797.
4. World Health Organization. Mental Health. https://www.who.int/health-topics/mental-health#tab=tab_2. Accessed on October 28, 2020.
5. World Health Organization. World Health Organization Information Sheet. https://www.who.int/mental_health/management/info_sheet.pdf?ua=1. Accessed on October 28, 2020.
6. Lagan S, Aquino P, Emerson MR, et al. Actionable health app evaluation: translating expert frameworks into objective metrics. *NPJ digital medicine.* 2020;3(1):1-8. doi: <https://dx.doi.org/10.1038/s41746-020-00312-4>. PMID: 32821855.
7. Wang K, Varma DS, Prosperi M. A systematic review of the effectiveness of mobile apps for monitoring and management of mental health symptoms or disorders. *Journal of psychiatric research.* 2018;107:73-8. doi: <https://dx.doi.org/10.1016/j.jpsychires.2018.10.006>. PMID: 30347316.
8. Bates DW, Landman A, Levine DM. Health apps and health policy: what is needed? *JAMA.* 2018;320(19):1975-6. doi: <https://dx.doi.org/10.1001/jama.2018.14378>. PMID: 30326025.
9. One Mind PsyberGuide. <https://onemindpsyberguide.org/> Accessed on October 28, 2020.
10. VeryWell Mind. Online Therapy Review Methodology. <https://www.verywellmind.com/online-therapy-review-methodology-4777996>. Accessed on October 28, 2020.

11. Health Navigator New Zealand. Mental health and wellbeing apps. <https://www.healthnavigator.org.nz/apps/m/mental-health-and-wellbeing-apps/>. Accessed on October 28, 2020.
 12. UK National Health Service. Mental health apps. <https://www.nhs.uk/apps-library/category/mental-health/>. Accessed on October 28, 2020.
 13. MyHealthApps. <http://myhealthapps.net/>. Accessed on October 28, 2020.
 14. VicHealth. Healthy Living Apps Guide. <https://www.vichealth.vic.gov.au/media-and-resources/vichealth-apps/healthy-living-apps#>. Accessed on October 28, 2020.
 15. Histon T. How to pick a mental health app for your workforce wellness program. 2020. <https://business.kaiserpermanente.org/insights/mental-health-workplace/mental-health-apps-workforce-wellness>. Accessed on October 28, 2020.
 16. American Psychiatric Association. American Psychiatric Association App Advisor. <https://www.psychiatry.org/psychiatrists/practice/mental-health-apps>. Accessed on October 28, 2020.
 17. Marshall JM, Dunstan DA, Bartik W. The Digital Psychiatrist: In Search of Evidence-Based Apps for Anxiety and Depression. *Front Psychiatry*. 2019;10:831-. doi: 10.3389/fpsy.2019.00831. PMID: 31803083.
 18. Wisniewski H, Liu G, Henson P, et al. Understanding the quality, effectiveness and attributes of top-rated smartphone health apps. *Evidence Based Mental Health*. 2019;22(1):4-9. doi: 10.1136/ebmental-2018-300069.
 19. Addiction and Mental Health Mobile Application Directory 2019. Alberta Addiction & Mental Health Research Partnership Program. 2019.
 20. Singh K, Drouin K, Newmark LP, et al. Developing a Framework for Evaluating the Patient Engagement, Quality, and Safety of Mobile Health Applications. *Issue Brief (Commonw Fund)*. 2016 Feb;5:1-11. PMID: 26934758.
 21. Henson P, David G, Albright K, et al. Deriving a practical framework for the evaluation of health apps. *The Lancet Digital Health*. 2019;1(2):e52-e4. doi: 10.1016/S2589-7500(19)30013-5.
 22. Lagan S, Aquino P, Emerson MR, et al. Actionable health app evaluation: translating expert frameworks into objective metrics. *NPJ Digit Med*. 2020;3:100. doi: 10.1038/s41746-020-00312-4. PMID: 32821855.
-

Author

Rose Relevo
Emily Gean
Charlotte Armstrong
Mark Helfand
Kelly Vander Ley
Christine Chang

Conflict of Interest: None of the investigators have any affiliations or financial involvement that conflicts with the material presented in this report.

Acknowledgements

Irina Jenkins
Lisa Winterbottom

This report was developed by the Scientific Resource Center under contract to the Agency for Healthcare Research and Quality (AHRQ), Rockville, MD (Contract No. HHS 290-2017-00003C). The findings and conclusions in this document are those of

the author(s) who are responsible for its contents; the findings and conclusions do not necessarily represent the views of AHRQ. No statement in this article should be construed as an official position of the Agency for Healthcare Research and Quality or of the U.S. Department of Health and Human Services.

Persons using assistive technology may not be able to fully access information in this report. For assistance contact EPC@ahrq.hhs.gov.

Appendix A: Methods

We assessed nomination for priority for a systematic review or other AHRQ Effective Health Care report with a hierarchical process using established selection criteria. Assessment of each criteria determined the need to evaluate the next one. See Appendix B for detailed description of the criteria.

Appropriateness and Importance

We assessed the nomination for appropriateness and importance.

Impact of a New Evidence Review

The impact of a new evidence review was qualitatively assessed by analyzing the current standard of care, the existence of potential knowledge gaps, and practice variation. We considered whether it was possible for this review to influence the current state of practice through various dissemination pathways (practice recommendation, clinical guidelines, etc.).

Desirability of New Review/Absence of Duplication

We did not find any existing technical briefs, evidence maps, or other reviews evaluating tools for evaluating mental health apps.

Feasibility of New Evidence Review

Websites were searched for tools for evaluating mental health apps on 10/27/2020.

Value

We assessed the nomination for value. We considered whether the clinical, consumer, or policymaking context had the potential to respond with evidence-based change; and if a partner organization would use this evidence review to influence practice.

Appendix B. Selection Criteria Assessment

Selection Criteria	Assessment
1. Appropriateness	
1a. Does the nomination represent a health care drug, intervention, device, technology, or health care system/setting available (or soon to be available) in the US?	Yes
1b. Is the nomination a request for an evidence report?	Yes, a Technical Brief
1c. Is the focus on effectiveness or comparative effectiveness?	No
1d. Is the nomination focus supported by a logic model or biologic plausibility? Is it consistent or coherent with what is known about the topic?	Yes
2. Importance	
2a. Represents a significant disease burden; large proportion of the population	In 2020, 40.9% of a representative cohort sample of adults in the US (adjusted for gender, employment status, and essential worker status) reported at least one adverse mental or behavioral health condition. ²
2b. Is of high public interest; affects health care decision making, outcomes, or costs for a large proportion of the US population or for a vulnerable population	The average delay between symptom onset and mental health treatment is 11 years, and in 2018 only 43% of Americans with mental illness received treatment. ¹
2c. Incorporates issues around both clinical benefits and potential clinical harms	Yes
2d. Represents high costs due to common use, high unit costs, or high associated costs to consumers, to patients, to health care systems, or to payers	Yes. In 2020, 40.9% of a representative cohort sample of adults in the US (adjusted for gender, employment status, and essential worker status) reported at least one adverse mental or behavioral health condition ²
3. Desirability of a New Evidence Review/Absence of Duplication	
3. A recent high-quality systematic review or other evidence review is not available on this topic	We found resources that partially address the scope of an evaluation of the characteristics along which apps are evaluated in tools. These covered only a portion of the scope of all tools for all mental health and wellness apps: one evaluated only apps for anxiety and depression; ¹⁷ another evaluated depression, anxiety, and schizophrenia, but not mental health wellness; ¹⁸ and another that evaluates apps for a range of mental health conditions as well for general wellness domains such as stress and sleep, but, since the search ends May, 2019, we feel that a more up-to-date resource is important in the quickly-evolving domain of apps. ¹⁹
4. Impact of a New Evidence Review	
4a. Is the standard of care unclear (guidelines not available or guidelines inconsistent, indicating an information gap that may be addressed by a new evidence review)?	Yes. It is unclear which tools are most appropriate for selecting mental health apps.
4b. Is there practice variation (guideline inconsistent with current practice, indicating a potential implementation gap and not best addressed by a new evidence review)?	Yes. There is limited guidance for consumers on appropriate tools to aid them in choosing appropriate mental health apps.

Selection Criteria	Assessment
5. Primary Research	
<p>5. Effectively utilizes existing research and knowledge by considering:</p> <ul style="list-style-type: none"> - Adequacy (type and volume) of research for conducting a systematic review - Newly available evidence (particularly for updates or new technologies) 	<p>We found 6 online tools directed toward individual consumers for aiding in choosing mental health apps.</p> <p>We found 1 online tool directed toward health systems for choosing employee wellness program apps.</p> <p>We found 1 online tool directed toward mental health providers (psychiatrists) to teach them methods for evaluating apps to then aid in choosing apps for patients.</p> <p>More tools may be identified in a formal literature search and in the gray literature.</p> <p>Though we did not do a formal search for evaluation frameworks, we identified several that might be used:</p> <ul style="list-style-type: none"> • <i>Singh et al. Developing a Framework for Evaluating the Patient Engagement, Quality, and Safety of Mobile Health Applications. 2016.</i>²⁰ • <i>Henson et al. Deriving a practical framework for the evaluation of health apps. 2019.</i>²¹ • <i>Lagan et al. Actionable health app evaluation: translating expert frameworks into objective metrics. 2020.</i>²² • “<i>Compendia for Coverage of Off-label Uses of Drugs and Biologics in an Anticancer Chemotherapeutic Regimen</i>” (https://www.ncbi.nlm.nih.gov/books/NBK299168/).
6. Value	
6a. The proposed topic exists within a clinical, consumer, or policy-making context that is amenable to evidence-based change	Yes. An evidence-based evaluation of tools for evaluating mental health apps could be useful for industry, patients, and clinicians.
6b. Identified partner who will use the systematic review to influence practice (such as a guideline or recommendation)	Yes. CHI plans to disseminate this report among its membership.

Abbreviations: AHRQ=Agency for Healthcare Research and Quality; US=United States