

Smartphone Apps for College Mental Health: A Concern for Privacy and Quality of Current Offerings

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Objective: The expanding need for mental health services on college campuses has increased interest in smartphone apps for mental health. Although apps can be effective tools, they can also present risks regarding privacy and lack of efficacy, and little is known about the nature or quality of mental health apps that colleges are recommending to students. This study sought to fill that knowledge gap.

Methods: Sixty college counseling center Web sites were examined for suggested mobile apps offered as resources for students. The features of each app were assessed, including date of last update, privacy policy, and whether any research had been published in peer-reviewed journals.

Results: Twenty-six college counseling centers suggested a total of 218 unique apps. Of these, 28% were no longer available for download. Of the 158 remaining apps, only 44%

had been updated in the past 6 months, and 39% had no privacy policy. Of the 97 existing apps with privacy policies, 88% collected user's data and 49% shared users' data with third parties. Efficacy studies had been published in peer-reviewed journals for only 16% of existing apps.

Conclusions: College counseling centers are not suggesting safe or up-to-date mobile apps. There is an urgent need to help centers identify, curate, and recommend more appropriate apps. The authors suggest that centers use the American Psychiatric Association's app evaluation framework; develop an app review process, with input from clinicians and students; or employ a digital navigator to select apps and help connect students to the appropriate app.

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Colleges continue to see a dramatic surge in mental health needs among students in the past few years (1, 2). The percentage of students with diagnosed mental health conditions increased from 22% to 36% between 2007 to 2017, although there has not been a concomitant increase in services offered (2). The 2019 American College Health Association National College Health Assessment found that in the past year, 13% of college students had seriously considered suicide and 2% of college students had attempted suicide (3). Students are increasingly visiting college counseling centers for help, and the centers are expected to absorb the expanding load. Between the beginning of the 2009 academic year and the end of the 2015 academic year, counseling center utilization by college students increased on average by 30%–40% per school while the enrollment for these schools increased by only 5% (4). That is, a greater percentage of college students are seeking help at counseling centers than in the past. Previous research suggests that one reason for the increased use of college counseling centers is a reduction in stigma associated with mental illness and mental health treatment (2, 3).

College mental health centers are trying to meet the increasing demand for their services, but the rising rates of

utilization strain their resources and lead to long waitlists for students seeking treatment (5). This situation leads to poorer outcomes, because students who visit centers where clinical staff have limited availability see fewer improvements in their levels of distress, compared with students who visit centers where staff have more time and availability (5).

This crisis in college mental health occurs at a time when students are particularly vulnerable to mental illness. Most college students are in a major developmental stage of their

HIGHLIGHTS

- College counseling centers are suggesting mobile apps to students as self-help resources, but these apps present risks around privacy and lack evidence of efficacy.
- Of 218 unique mental health apps suggested on counseling center Web sites of 60 top U.S. colleges and universities, 28% were no longer available for download.
- Of 158 apps still available, only 44% had been recently updated, 39% had no privacy policy, and for only 16% was any efficacy evidence published in peer-reviewed journals.

lives and face a variety of stressors (6, 7). The onset of many serious mental health problems, particularly substance use disorders and psychosis, coincide with this period of development (8). Therefore, early identification and intervention are necessary to potentially prevent and mitigate the onset and course of mental illnesses (3).

On campus, counselors and college administrators alike are concerned about student mental health and are seeking solutions. A survey from the American Council on Education found that 81% of college presidents who responded agreed that in the past 3 years, student mental health has become more of a priority (9). Counseling center staff and administrators are working together to find cost-effective options that will help students. However, many centers have limited funding and limited physical space to employ more counselors. For this reason, counseling centers are increasingly turning toward digital solutions to reduce the burden of their counseling staff (5).

Digital solutions are relatively cheap and easy to implement across an entire campus. These solutions can decrease the number of students who need to seek out in-person counseling, and they can also be used as an addition to care (10). The 2018 Association of University and College Counseling Center Directors survey indicated that colleges were already implementing some digital solutions; 59% of colleges reported offering one or more forms of telehealth services. Mental health screening and telephone counseling sessions were the most popular digital options, but mobile apps also appeared to be widely accepted (5). Mobile applications show potential to improve student mental health through teaching mental health interventions or providing skill-building instructions for struggling students and may be cheaper than traditional face-to-face counseling (11–13, 14).

Previous research on counselor-suggested mental health apps has highlighted risks that must also be considered. Primarily, clinicians have concerns regarding the privacy and security of their clients' data when using apps (11, 12, 15). Mobile apps often lack privacy policies or have incomprehensible policies that do not secure or protect user data. An assessment of privacy practices of top-rated apps for depression and smoking cessation indicated that almost all of the apps shared data with third parties and that many failed to disclose when and how they shared users' information (16). Often, privacy concerns discourage people from using apps, and a recent survey found that 81% of Americans felt that the risks of data collection by for-profit companies outweigh the benefits of using those companies' products (17). Even when apps appear to be secure, evidence is often lacking to support them or their methods. An analysis of mental health apps found that most had no scientific evidence about their efficacy (18). Research on app usage showed that users want apps that were credible and backed by evidence, but few are (19). Finally, apps disseminating health information are likely to be of higher quality if updated in the past 6 months, according to prior research from our team (20).

Nevertheless, student counseling centers are currently providing mobile apps as resources, and college students appear receptive. Research shows that mobile technology as mental health support may serve college students particularly well, because they are already comfortable with technology and are accustomed to using mobile devices as tools (11). For example, 96% of U.S. adults between the ages of 18 and 29 own a smartphone, which encompasses the typical age range of college students (21). Mental health clinicians have also demonstrated openness to introducing technology into their practice. One survey of community mental health care providers showed that 50% had recommended apps to their clients (12). These clinicians cited convenience, speed, and low cost of apps as the primary advantages of introducing apps into their approach to care. Mobile apps are emerging as a popular resource for mental health clinicians to provide to clients, particularly in the context of college counseling centers. However, little is known about what apps specifically are being offered and how they are serving college students.

The goal of this study was to understand the current landscape of mental health app recommendations from college counseling centers. Examining what mobile apps are being offered to students, with a focus on their privacy and efficacy, can help inform whether current app suggestions are aligned with emerging knowledge and best practices and what steps can be taken to improve on current app suggestions.

METHODS

A sample of colleges was chosen for descriptive analysis by referencing *U.S. News & World Report's* college and university rankings in the United States. The top 30 schools were taken from the "2020 best national university rankings" and the "national liberal arts colleges" lists (22). For the 60 schools in the sample, each college counseling center's Web site was searched between January 24 and 31, 2020, for any reference to self-help apps or apps as resources for students. Some schools offer free premium subscriptions to apps for all students. These apps were classified as school sponsored and were excluded from this analysis because very few schools offered this option. All apps that did not have a school-sponsored subscription option were included as suggested apps. Suggested apps were included only if they were mentioned in relation to the college's counseling center. Only externally facing information was available, and thus any apps or resources protected behind a student log-in were not included. Each app was searched for on the U.S. version of the Apple App Store or the Google Play store. If an app had an ambiguous name or a shortened name on the counseling center's Web site, it was searched for in Google to ensure that the correct app was being evaluated before it was located in the app store. We conferred and agreed on the correct app. Information about each app was found on the apps overview page in its respective app store.

BOX 1. Questions for coding each app in the study

1. Available on Apple App Store? (yes/no)
2. Available on Google Play store? (yes/no)
3. When was the last update? (MM/DD/YYYY)
4. What category does the app belong to?
5. Is there a privacy policy? (yes/no)
6. Are personal data collected? (yes/no)
7. Can you delete personal data? (yes/no)
8. Are personal data shared with outside parties or groups? (yes/no)
9. How many efficacy studies does this app have? (#)
10. Is the app free? (yes/no)
11. Is the app paid? (yes/no)
12. Are there in-app purchases? (yes/no)

Apps that were available in the United States, either in the Apple App Store or the Google Play store or both, were coded as existing apps. Questions for coding each app were derived from prior research (Box 1) (20, 23, 24). The overview page of each app in its respective store was checked for a date of last update. If the app had no update since its creation, the date of creation was used for the last date updated. Apps were coded as having a privacy policy if there was a working link to the app's privacy policy. Apps were coded as collecting users' data if privacy policies explicitly stated that they collected users' information. Apps that were coded as not collecting users' data explicitly stated that they did not collect or store users' information. If privacy policies explicitly offered users an option to delete their personal information, the apps were coded as allowing users to delete their data. Apps that did not mention erasure of data were coded as not allowing users to delete their data. Apps that explicitly stated that they shared users' data with third parties that were advertisers or other companies were coded as sharing personal data with third parties. If apps shared only aggregated and depersonalized data with analytic platforms (such as Google Analytics), they were not coded as sharing personal data with third parties.

Scientific publications about each app were searched for through Google Scholar and PubMed, and any apps for which efficacy research had been published were identified.

RESULTS

Results from this analysis indicated that 26 (43%) of the 60 schools suggested apps on their Web site. A total of 218 unique apps were suggested across the schools. Counseling centers suggested between 1 and 85 apps, with a mean \pm SD of 19 ± 20 apps suggested per school. Most schools had some overlap in their suggestions, with the most popular app suggested by 21 (81%) of the 26 schools with app suggestions. Of the 218 suggested apps, 60 (28%) were discontinued. That is, these apps were no longer available in either the Apple App Store or the Google Play store.

The 158 existing suggested apps—that is, those that had not been discontinued—represented eight app categories:

health and fitness, lifestyle, medical, productivity, games, education, utilities, and entertainment. Of the 158 existing apps, 61 (39%) had no privacy policy accessible to the user (Figure 1). That is, these apps had no accessible explanation of how personal data were collected or used by the app and the app developer. Of the 97 apps that did have privacy policies, 85 (88%) collected users' data. Only 48 (50%) of the 97 apps with privacy policies allowed users to delete their data from the app. Finally, 47 (49%) of the 97 apps with privacy policies explicitly disclosed that they shared users' data with third parties. Of the 158 apps available through the Apple App Store or the Google Play store, only 70 (44%) had been updated within the past 6 months, and only 86 (54%) of the 158 had been updated within the past year (Figure 2). Efficacy research in peer-reviewed journals was found for only 25 (16%) of the 158 suggested existing apps.

DISCUSSION

Counseling centers are seeking solutions to help serve the increasing number of students who need mental health services on campus. Mobile apps can serve as a helpful tool for counseling centers dealing with large clinical loads. However, this study found that centers are not suggesting current or safe tools for students and that centers are struggling to maintain up-to-date information and suggestions.

The sheer number of apps suggested by counseling centers may be a barrier for students. With 26 schools suggesting a total of 218 unique apps, students are left to sort through all the suggested apps to find one for themselves without clinical input. Although offering a variety of apps may be beneficial because students seek a variety of services, no college Web site reviewed in the study offered guidance as to which might be a better fit for a student.

Furthermore, the number of apps that no longer existed and that continued to be suggested by college counseling centers is concerning. Of the suggested apps, 28% were no longer available for download, which suggests that counseling centers are not staying up to date on changes in technology. Although apps are relatively cheap and fast to implement, monitoring and upkeep are needed. Technology changes rapidly, and the landscape of what is available for health and wellness apps is constantly shifting (25). A study of the dynamics of app marketplaces (Apple App Store and Google Play store) indicated that these marketplaces are extremely volatile. The same study also revealed that 50% of search results for mental health-related apps changed within the 4 months of the study (25).

Keeping resources updated is important not only to remove discontinued apps but also to monitor which suggested apps are updated and regularly maintained. Research shows that apps generally decline in quality after 6 months without an update (20). Information may become out of date, developers may not be maintaining the app, or mobile phones may no longer support the app. Generally, a 6-month cutoff is an easy criterion to eliminate potentially harmful

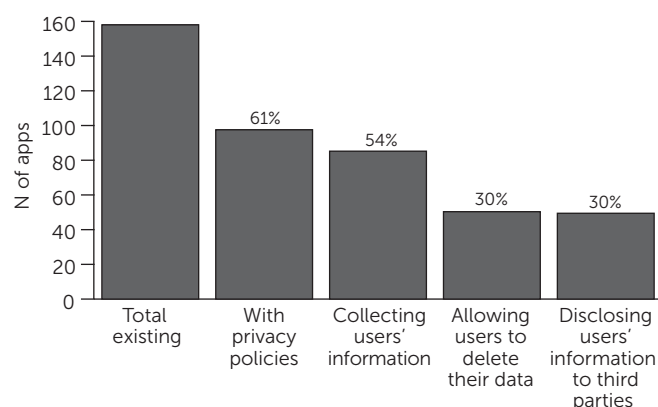
apps (20). Only 44% of the existing apps suggested by the counseling centers had been updated within the past 6 months at the time of this study, and only 54% had been updated within the past 12 months.

Furthermore, this study found that only 16% of suggested apps had peer-reviewed efficacy studies about the app itself. Although some reliable apps may lack research evidence, apps without any clinical evidence may not be the types of resources to which students should be directed. The results and quality of each efficacy study were not assessed, and although an efficacy study does not guarantee that an app will be useful or even engaging, some commitment to research by app developers offers counseling centers the ability to judge the potential utility of an app (26, 27). Because more than 80% of the suggested apps had no research foundation, concern for low quality and lack of efficacy is warranted. A study published in 2014 provides a relevant example of negative outcomes that are possible when apps are offered without careful assessment (28). That study found that an app designed to reduce problematic drinking actually increased rates of alcohol consumption among young men.

Beyond clinical effectiveness, ensuring that apps offer users privacy protections is also important. Of the 218 suggested apps, 39% had no privacy policy. For apps with privacy policies, 88% explicitly stated that they collected users' data. Of apps with privacy policies, 50% did not allow users to delete their personal data from the app, and 49% stated that they shared users' data with third parties. Such arrangements may entail selling the data to advertisers or other companies. Requiring an app to have a privacy policy is a simple criterion to eliminate the most harmful apps. Because students may disclose personal medical information without knowing that the app developers may be sharing their data with third parties, the findings about privacy are especially concerning and would likely decrease user interest in these apps (17, 29).

There is room for improvement in the quality of apps being suggested to students. Counseling center staff cannot spend time to sift through all 10,000 apps available today

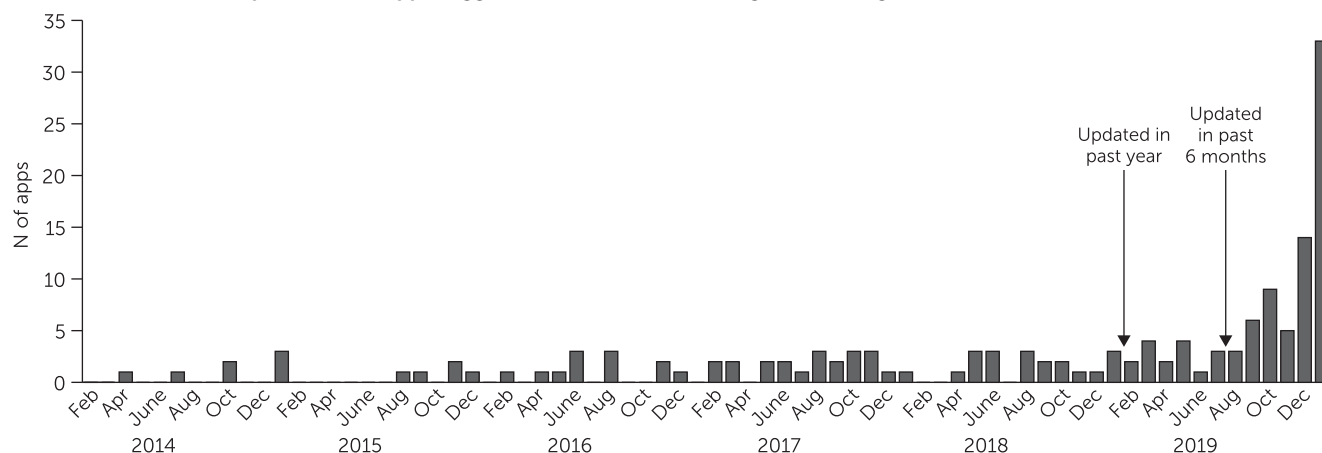
FIGURE 1. Privacy policies of 158 apps suggested to students on college counseling center Web sites



(30) to find the perfect fit for students. However, by introducing a more rigorous selection process for the apps they suggest, these centers can benefit their students and succeed in reducing their clinical load. The American Psychiatric Association (APA) released an app evaluation model to help providers make more informed decisions about what mental health apps they suggest to clients. This five-step model shows providers what information should be considered when choosing a mental health app for their patients (31). The framework gives clinicians directions on what information to seek about an app so that they can make an informed suggestion to clients. New York City successfully implemented the APA framework's criteria to review apps suggested to the public (32).

Furthermore, an app selection process using components of the APA framework was implemented in a network of 15 community hospitals and clinics in the Boston area to introduce app suggestions into the suite of behavioral health services offered (24). This process involved clinicians and patient volunteers working together to find a collection of appropriate apps. Finally, this process also entailed the

FIGURE 2. Date of last update of 154 apps suggested to students on college counseling center Web sites^a



^a Four apps were not included because their last update occurred before March 2014.

creation of an app tool kit for providers and patients to understand how each app functioned and for whom the app would be a suitable tool. Adding a digital navigator to the care team would help facilitate this process, and the person would also help maintain the app list and serve as an expert resource for clinicians and clients seeking help with implementation and use of mobile apps (24, 33). Future research should investigate whether this evaluation process and the addition of a digital navigator may be a successful solution for college counseling centers seeking to suggest mobile apps to students.

This study had some limitations. Not all schools included links to their suggested apps on their Web sites. Often, the counseling center had a typed list of names of apps, with a brief description of each. This analysis was also limited to the information that was externally facing on a college counseling center's Web site. Likewise, data on student uptake and adoption of these apps could not be accessed. Finally, this analysis examined only the top universities and liberal arts colleges in the United States. Community colleges were excluded because preliminary research indicated that these schools rarely included any publicly accessible information about mental health resources on their Web sites. Future research might investigate what resources are available for community colleges, as well as colleges internationally.

CONCLUSIONS

This study reviewed the current offering of suggested apps by college counseling centers throughout the United States. Primarily, the findings indicated that many counseling centers are suggesting apps that are inaccessible, outdated, potentially dangerous, and without research backing. Counseling centers should look to the APA's app evaluation framework to select mental health apps to suggest to students. In addition, counseling centers should develop an app review process, with input from both clinicians and students. Finally, a digital navigator employed by college counseling centers could devote time to the selection and maintenance of suggested apps and help connect students to the appropriate app for them.

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New Column: Controversies in *Psychiatric Services*

Psychiatric Services is pleased to welcome Matthew D. Erlich, M.D., Patrick Runnels, M.D., and Rachel M. Talley, M.D., as coeditors of the Controversies in *Psychiatric Services* column.

Controversies in *Psychiatric Services* highlights topical areas to the field of psychiatry where there may be debate, disagreements, or divisiveness. Submissions will focus on a specific topic and will feature two separate columns with differing viewpoints on that topic. The goal is to foster new perspectives, promote further discourse, and, hopefully, generate new conclusions while maintaining the civility and intellectual rigor appropriate to an academic journal. Topics will be chosen by the editors based on the timeliness and importance of the controversy. Interested authors may submit papers describing one viewpoint on the topic (limited to 1,200 words and 5 references that are core to the argument; no abstract, tables, or figures). The editors may also reach out to individuals to request column submissions based on specific topics.

Topic 1: A value-based system of payment for psychiatric services that places financial responsibility for behavioral health outcomes on the treating clinician is the best way to promote better outcomes and reduce unplanned care.

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