

App-based psychological interventions: friend or foe?

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THE NEED

In a time of increasing demand for psychological services and continually decreasing resources, unmet need with respect to National Health Service (NHS) mental health services is reaching an unprecedented level.¹ While monthly referrals to community mental health teams increased 13% in 2013, and 16% in the case of crisis services, investment in mental health services has fallen in real terms for three successive years,² not helped by the government's £22 billion target for efficiency savings. As such, the resulting loss of over 200 full-time mental health doctors and 3600 nurses¹ has meant that despite a £450 million investment in reducing waiting times³ and increasing access to psychological therapies (IAPT), 1 in 10 patients experience waiting lists of over a year before receiving any form of treatment, with 1 in 2 waiting over 3 months.⁴

One in 6 of those on waiting lists for mental health services are expected to attempt suicide, 4 in 10 are expected to self-harm and two-thirds are likely to see their condition deteriorate before having the opportunity to see a mental health professional.^{1, 5} As such, approximately 70 million sick days⁶ and 170 000 self-harm related accident and emergency attendances⁷ can be attributed to underlying mental health issues in the UK every year; with these individuals also exhibiting double the rate of both inpatient and outpatient hospital attendances compared to the UK general population.⁸ Unfortunately long-term prospects for those with mental health issues are not much better. Those suffering from serious mental illness face twice the risk of diabetes and death from heart disease,⁹ three times the risk of hypertension and a fourfold increase in all-cause premature mortality when compared with the UK general population; all of which contributing to the £105 billion that mental distress costs the English economy each year.¹⁰

THE POTENTIAL

Given the documented limited success of IAPT in stemming the rising tide of unmet need within mental health,⁴ an alternative approach may be necessary, that can extend care to those with the greatest need, without imposing substantial pressures on already scarce mental health-care funding.¹¹ Online and app-based self-delivered treatments for mental health disorders are a novel and increasingly popular method^{12–14} of service delivery, and as such, may be the solution the NHS is looking for. To date, a number of mental health apps have demonstrated effect sizes comparable to the conventional standard of care,^{13, 14} while circumventing financial barriers to treatment including a lack of available trained professionals, waiting lists and the indirect costs of seeking treatment.^{13, 15, 16}

Research has shown that user engagement, rather than the modality of therapy is the key to achieving successful outcomes,^{17, 18} and given that just 50% and 13% of patients currently have a choice of when and where they receive therapy,⁵ apps may not only be equally effective as some forms of traditional psychotherapy,¹⁹ but also provide a flexible and pragmatic means of increasing patient access, through removing barriers to treatment that do not respond to financial impetus. Such barriers may include a negative perception of psychological treatments, impaired access to health services and personal difficulties such as low mental health literacy^{13, 15, 16} and stigma, commonly observed within

the armed forces²⁰ and adolescents,² and all of which impacting the effective reach of the current standard of psychological care.

THE REALITY

However, apps are by no means a perfect solution to our nation's mounting mental health requirements, and are characterised by numerous shortfalls. These often stem from the frequent lack of an underlying evidence base, a lack of scientific credibility and subsequent limited clinical effectiveness, but also from issues including an over-reliance on apps, equity in access and increased anxiety resulting from self-diagnosis.²¹ In order to become an asset to be included in the mental health practitioners and patient's arsenal, mental health applications must at the very least, be well-informed, scientifically credible, peer-reviewed and evidence-based. However, these conditions in themselves are not sufficient to ensure quality and equally important is the inclusion of validated performance metrics designed to assess the effectiveness of other NHS accredited activities. Such metrics may include the Generalised Anxiety Disorder 7 (GAD-7), Patient Health Questionnaire-9 (PHQ-9) and Warwick-Edinburgh Mental Well-being Scale, such that the value of such apps as a complementary or stand-alone treatment, can be determined.

In 2013, there were only 32 published articles regarding depression apps, compared with a total of 1536 available for download.²² This finding of a high availability but low evidence base is synonymous with results observed for apps dedicated to the treatment of other psychological disorders, including bipolar disorder,²³ bulimia nervosa²⁴ and post-traumatic stress disorder (PTSD),²⁵ bringing into question the scientific credibility, validity and efficacy of the majority of electronic psychological interventions currently available to consumers.

Unfortunately the situation seems to be much the same with respect to apps accredited by the NHS. Of the 27 mental health apps currently listed in the NHS apps library,²⁶ 14 are dedicated to the management of depression and anxiety, yet just 4/14 provide any evidence of patient-reported outcomes to substantiate claims of effectiveness, as shown in [table 1](#). While this clear lack of evidence is concerning, equally so is the finding that just 2/14 currently apply validated metrics, including the GAD-7 and PHQ-9, to assess clinical performance. As such, confidence in, and the validity of the claims made by apps that fail to apply such metrics must be considered as low at best, suggesting that the true clinical value of over 85% of NHS accredited mental health apps is at present impossible to determine.

MOVING FORWARD

Fortunately not all apps are created equally, with some demonstrating significant patient benefits. One NHS accredited app boasts recovery rates of 58%, some 14% higher than the 44% average achieved by IAPT over the same period, and 8% higher the NHS national target of 50%,²⁷ with the average user reporting at least a five-point reduction in PHQ-9 and GAD-7 scores after 3 months. This of course is no new finding, numerous studies have demonstrated significantly improved outcomes for those using computer-based psychological treatments, with those supported by a practitioner and designed with clinical quality in mind, on average more than twice as effective.¹⁹

Table 1 Details of apps dedicated to depression and anxiety within the NHS health apps library

App name	Focus	Specific patient benefits reported?	Evidence to substantiate claims?	Use of NHS accredited performance metrics?
Hands up therapy	Dealing with emotions	<ul style="list-style-type: none"> ▶ Feeling more relaxed/at peace. ▶ Achieve a successful 'present moment' 	No	No
Ginsberg	Improving emotional well-being	<ul style="list-style-type: none"> ▶ Improve health and well-being. ▶ Identify triggers for stress, poor sleep and anxiety 	No	No
Mindfulness	Relieving stress via meditation	Reduce stress and increase well-being	No	No
Black rainbow	Relieving depression via relaxation, meditation, poems and recordings	Beat depression	No	No
Workguru	Reducing work-related stress via CBT, mindfulness, job coaching and positive psychology	<ul style="list-style-type: none"> ▶ Building resilience and managing stress ▶ Achieving a happier working life 	Yes	No
Mindlogr	Self-reflection to improve well-being	Learn, grow and create more meaning in your life	No	No
Five ways to well-being	Self-reflection to improve well-being	Improve well-being	No	No
SAM: self-help for anxiety management	Self-help, self-reflection exercises to manage anxiety	Understand and manage anxiety	No	No
Happy healthy	Self-reflection, mindfulness and activity logging	Increased mental well-being	Yes	No
Moodkit-Mood improvement tools	CBT	<ul style="list-style-type: none"> ▶ Manage stress, depression, anxiety. ▶ Improve mood and optimism 	No	No
Buddyapp	Digital support tool adjunct to therapy to reinforce positive behaviours	Support therapy services by reinforcing positive behaviours	No	No
Big white wall	Online community guided by medical health professionals to improve mental health	<ul style="list-style-type: none"> ▶ Improve well-being ▶ Manage psychological issues ▶ Reduction in depressive symptoms 	Yes	Yes
Moodscope	Mood-tracking system	Stabilise and improve mood	Yes	Yes

CBT, cognitive-behavioural therapy; NHS, National Health Service.

During a time of unprecedented NHS efficiency savings, this opportunity should be welcomed by NHS commissioners looking to extend the provision of high quality mental health services within existing budgets and without crowding out other services. Not only are high quality apps relatively inexpensive, but unlike alternative NHS activities they are also non-excludable and non-rival in consumption, meaning that the use of an app by one individual does not preclude another from using that same service at the same time, a condition rarely observed with respect to NHS services.

However, in order to ensure that apps don't do more harm than good, it is important that those presently recommended by the NHS apps library, that either fail to demonstrate evidence underlying the methodological approach taken, or evidence of effectiveness in use, are removed. Reputation and legitimacy of sources are highly correlated with app downloads,²⁸ and there is a perceived level of quality assurance that comes with accreditation by the NHS. Similar to the shortcomings of information found on the Internet, information provided by apps is of variable quality and given that 3 in 10 individuals with an untreated mental health issue now opt to pay for private treatment on account of limited NHS availability,⁵ the purchase and use of apps that are yet to demonstrate objective clinical benefit is not only a potential waste of money, but also likely to have a compounding effect on levels of anxiety in those with the greatest need and least access to effective treatment.

The widespread availability and use of smartphones, and the increasing uptake of tablet devices, suggests that apps clearly do have a place within a changing 21st century NHS. They may act as a bridge between treatment sessions, improve retention and adherence to therapy or simply promote patient autonomy, flexibility and increased accessibility. Given the ever increasing demands and limited supply of NHS mental health services, coupled with barriers to care including a desire for anonymity, indirect financial costs and impaired access to treatment centres, the use of apps not may not only promote health service efficiency, but also support the NHS in returning to its seminal promise of equal access for equal need.

However, if this is to be an effective venture, this space clearly requires more stringent regulation, vetting and quality control. While some have proposed quality assurance checklists²⁵ or the application of existing NICE systematic review methodology,²⁴ there exists a growing unmet need for the development of app-specific guidelines and certifications, such that only high quality and clinically-effective apps are offered to patients. With respect to the rest of the world, the Australian government and US Food and Drug Administration (FDA) have demonstrated some success in the regulation and enforcement of app quality and safety standards; despite the lack of clear guidance as to the difference between medical and well-being apps. The FDA now exercise enforcement discretion for any app designed to assist patients with diagnosed psychiatric conditions in maintaining their behavioural coping skills, in addition to those providing motivational guidance to reduce stress and promote a positive outlook. These advances, in addition to educating users to look for signals of quality before downloading, including the presence of industry self-regulating certifications such as the 'Happtique Health App Certification Standard' (HACP),²⁹ highlight some of the many potential opportunities for improvement in the overall standard of mental health apps. Commitment to the application of such standards should ensure that the apps patients download do not result in more harm than good, that they function as described and offer value and a means of complementing traditional therapy. However, probably most importantly, this should ensure that app-based psychological treatments are required to demonstrate evidence of real world clinical effectiveness prior to receiving a seal of approval from a world leading healthcare system and recommended for purchase by patients in need of high-quality psychological interventions.

Competing interests SF is a Director of MINEd ACCESS Ltd, a technology company delivering solution-focused brief therapy (SFBT).

▶ Additional material is published online only. To view please visit the journal online (<http://dx.doi.org/10.1136/eb-2015-102203>).

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