

Digital health management during and beyond the COVID-19 pandemic: Opportunities, barriers, and recommendations

Becky Inkster, Ross O'Brien, Emma Selby, Smriti Joshi, Vinod Subramanian, Madhura Kadaba, Knut Schroeder, Suzi Godson, Kerstyn Comley, Sebastian J. Volmer, Bilal A. Mateen

Submitted to: JMIR Mental Health
on: April 09, 2020

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Abstract

During the COVID-19 crisis, digital technologies have become a major route for accessing remote care. Therefore, the need to ensure that these tools are safe and effective has never been greater. We raise five calls to action to ensure the safety, availability and long-term sustainability of these technologies: (1) Remove harmful health apps from app stores; (2) Use relevant health data insights from high-quality digital tools to inform the greater response to COVID-19; (3) Make high-quality digital health tools available without charge, where possible and for as long as possible, especially to those who are most vulnerable; (4) Transform conventional offline mental health services to make them digitally available; and (5) Encourage governments and insurers to work with developers to look at how digital health management could be subsidised or funded. We believe this should be carried out at the population level, rather than at a prescription level.

(JMIR Preprints 09/04/2020:19246)

DOI: <https://doi.org/10.2196/preprints.19246>

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Title: Digital health management during and beyond the COVID-19 pandemic: Opportunities, barriers, and recommendations

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Contributors Statement: Dr Inkster formulated the notion to write about this topic and invited all co-authors to join, all of whom have made important contributions, in the form of literature searches, idea generation, writing and editing.

Word Limit: 1095 / 1200

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While we maintain behaviours that limit the spread of coronavirus disease 2019 (COVID-19), we must also ensure that measures are in place to prevent, or at least mitigate, the risks of individuals being harmed in other ways.

Before COVID-19, mental health and social services were already stretched. Depression is the second leading cause of disability worldwide, and by 2030, it is expected to be the leading contributor to the global burden of disease.¹ Efforts to contain the spread of COVID-19, including prolonged social distancing and self-isolation, may trigger and/or exacerbate social, mental and physical health problems, such as anxiety, relationship breakdowns, domestic violence, substance abuse or withdrawal, obesity etc.^{2,3,4} This could be especially serious for those with co-morbid medical and psychological conditions.⁵

During the COVID-19 crisis, digital technologies have become a major route for accessing remote care. Therefore, the need to ensure that these tools are safe and effective has never been greater. We raise five calls to action to ensure the safety, availability and long-term sustainability of these technologies: (1) Remove harmful health apps from app stores; (2) Use relevant health data insights from high-quality digital tools to inform the greater response to COVID-19; (3) Make high-quality digital health tools available without charge, where possible and for as long as possible, especially to those who are most vulnerable; (4) Transform conventional offline mental health services to make them digitally available; and (5) Encourage governments and insurers to work with developers to look at how digital health management could be subsidised or funded. We believe this should be carried out at the population level, rather than at a prescription level.

Action 1 - Due diligence: During this time of heightened health anxiety, poorly designed (or novelty) apps that give inaccurate or misleading information can do more harm than good, such as nudging inappropriate health-related behaviours, compromising access to necessary care, or having other negative unforeseen consequences. We call on app stores to take expert advice on which apps might undermine standard clinical practices, and subsequently remove apps posing health risks. For example, there are 'prank' blood pressure apps that give inaccurate, randomly generated readings to millions of users⁶, and there are suicide and depression apps, which have been downloaded over 2 million times, that provide wrong or non-existent information about suicide crisis helpline support.⁷

Action 2 - Data insights: We must consider data insights from high-quality digital health tools wherever possible to support the greater response to COVID-19. For example, this urgent call for support to is an international effort to document the scale and nature of the mental health impact of COVID-19 (<https://www.beckyinkster.com/covid19>). We briefly highlight some changes in user interactions have already been observed by Wysa (<https://www.wysa.io>) and MeeTwo (<https://www.meetwo.co.uk>) (Table 1). Wysa is an AI-enabled chat-based self-management resource that has been downloaded almost 2 million times globally, and is the current top recommendation of the NHS and ORCHA (<https://www.orchha.co.uk>) for mental health and wellness. MeeTwo is a fully-moderated, anonymous peer support app currently supporting 25,000 young people aged 11-25 throughout the UK, and is part of the NHS Apps Library. Another more specialised app called distrACT (<https://www.expertselfcare.com/health-apps/distract/>), which offers information and support to people who self-harm and may feel suicidal that is also included in the NHS Apps Library, has not observed substantial changes in patterns of user interactions at the time of writing.

Action 3 - Freely available resources: The physical and mental demands on frontline care professionals puts them at increased risk of illnesses and death.⁸ At this crucial time, we call for digital service providers to offer free tools and open access to services wherever possible. Some digital health providers have already made tools and resources freely available for healthcare

workers, and some providers are offering certain resources freely for all of their users. This comes with a note of caution, however, as NHSX has received over 400 free platform offers, but many offerings are only for a short duration. A sudden removal of digital support can pose risks, such as creating dependency for patients, unclear expectations for care providers, financial uncertainty etc. Therefore, we call on companies to strive to offer support for the full duration of need, which may extend beyond the immediate public health crisis. Furthermore, future approval of apps for healthcare use might take into consideration whether the digital tool could be made freely available during public health crises, and beyond, as needed.

Action 4 - Digital transitioning: COVID-19 has led to non-essential staff working from home. NHSX recently published guidance to relax the rules around using digital communication tools to maintain therapeutic connections with patients. We call for training in digital health support to be incorporated into the curriculum for health professionals. We also call for conventional supportive services to be made available digitally, for example, sustaining services like IAPT ('Improving Access to Psychological Therapies') given its reduced capacity partly due to the redeployment of staff to newly established crisis care lines. As an example of this digital transitioning process, the Central and North West London Mental Health NHS Trust is establishing a protocol of good practice to transition from face-to-face arts therapies to tele-arts psychotherapies ('TAP') that also monitors physical care as part of the therapy.⁹

Action 5 - Population self-management: We need more reimbursements and/or subsidisations for cost-effective preventive and self-management interventions for mental health at the population level rather than at a prescription level. A triage phone call to IAPT services costs approximately 100 GBP. Before COVID-19, two-thirds of callers were found to have been inappropriate referrals.¹⁰ Technologies that can support self-management and self-assessment could save governments money while directing expensive medical resources to those who need them most.

To summarise, we have identified some pressing issues, with actions that could address them; however, these are by no means comprehensive, and come with uncertainties and risk (e.g., gaining consensus as to what constitutes a list of acceptable apps, maintaining data security, and obtaining patient consent). Other effective and safe digital services could also be rapidly implemented (e.g., virtual visiting for loved ones, especially for end-of-life patients). We also encourage stakeholders to consider the importance of managing screen time (e.g., using voice recognition). Digital health is a priority area for widening reach and providing timely assistance. At a time of immense strain, we must supplement healthcare systems with digital health management support and we must strive to reduce the risks that create additional burdens. There is unprecedented good will with these calls to action and we are calling for everyone to make a difference now.

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Table 1: Quantitative and qualitative and observations provided by the anonymous AI-enabled chatbot, Wysa, and the anonymous moderated peer-to-peer support network, MeeTwo, which demonstrate a visible shift in demand and changes in usage patterns during COVID-19.

Quantitative Insights	
Wysa	<ul style="list-style-type: none"> Wysa witnessed a 77% increase in new users during February-to-March 2020, as compared to the same period in 2019. The proportion of users who referred to COVID-19 during therapist sessions increased week-on-week during March 2020, from 5% in the first week to 60% in the fourth week.
MeeTwo	<ul style="list-style-type: none"> There were 27 suicidal posts between 8.30am and 8pm on 22nd March 2020 (48 hours after schools were closed), as compared to 406 suicidal posts in all of 2019. There was a 95% increase in level 4 (severe risk) between 20th March and 4th April 2020, as compared to 20th December 2019 and 4th January 2020. 116% increase in level 3 (high risk) posts between 20th March and 4th April 2020, as compared to 20th December 2019 and 4th January 2020.
Qualitative Insights	
Wysa	<ul style="list-style-type: none"> Some of the causes of distress discussed in sessions include: 1) Loss of access to a client's therapists/medical support/social worker due to lockdowns/social distancing; 2) Job loss during Covid-19 and not having health insurance coverage; 3) Loss of a loved one due to Covid-19-induced infection; 4) Fear of contracting the illness and/or loved ones; 5) Loss of sense of safety and security; 6) Loss of physical human support for clients with physical disabilities leading to more anxiety and fatigue; 7) Anxiety, hypervigilance, and loneliness from quarantining; 8) Increase in reporting of domestic violence incidents/abusive behavior due to quarantining leading to less opportunities to access safe spaces/support; 9) Alcohol/nicotine withdrawals from lock down impacting availability of addictive substances; 10) Stigma around being a professional who comes in contact directly indirectly with a person who may have contracted Covid-19. (Wysa) Clients have shared that they are in long waiting lines to get tested, that their own therapists/psychiatrists suddenly pause any upcoming appointments and are not available for consultations, which can all lead to panic as well as feelings of being abandoned by the system.
MeeTwo	<ul style="list-style-type: none"> "My dad passed away due to the virus 2 days ago and honestly it just doesn't feel real yet" (2020-04-01) "camhs has passed me over to another service and because of covid-19 my counselling might have to be video calls at first and that makes me insanely uncomfortable. i hate calling people in my own family but a complete stranger??? no thank uuuuu" (2020-03-30) "I love this app but I wish I had someone to talk to in real life, I have no friends and my parents just don't understand and literally don't say anything

	so?? I was ALMOST gonna get a therapist but then corona virus happened and I bet the waiting list is going to be over a year long when everything goes back to normal ugh” (2020-04-02)
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Acknowledgements: We are grateful for comments made by Associate Professor Glenn Melvin, Faculty of Health, Deakin University, Australia; Jenny Edwards CBE, FFPH, United Kingdom; and Associate Professor Gerry Craigen, Department of Psychiatry, Faculty of Medicine, University of Toronto & Associate Attending Staff Psychiatrist, Department of Psychiatry, University Health Network, Toronto General Hospital.

