**Advancing psychosocial measures for COVID-19 affected populations: Perspectives on
digital health interventions promoting health equity**

Author:

Rajaei Rukn al-Din

Affiliation:

Angel Medical Complex Mercy Psychiatric Clinic, Al-Quway'iyah, Riyadh 19257, KSA.

Corresponding author:

Rajaei Rukn al-Din M.D., Consultant Psychiatrist, Al-Quway'iyah, Riyadh 19257, KSA.

Email: rraldin@yahoo.com

Abstract

Health equity is a persistent issue discussed in academic disciplines. During the COVID-19 pandemic, it has become more prominent as inequities emerge across the globe, impacting the health status of individuals and millions. Mortality remains a central question, whereas psychosocial challenges may leave deep trauma in communities. In the digital world, many of those issues could be solved using existing technologies, which are briefly discussed in this paper. Lastly, specific issues related to such measures are discussed to inform local research and how they can inform practices to micro to macro levels of healthcare decision-making.

The psychological impacts of the coronavirus disease (COVID-19) pandemic has become a matter of global concern (Serafini et al., 2020; Vindegaard & Eriksen Benros, 2020). With ever-increasing social challenges in different contexts, people may have different levels of psychological responses, which may depend on various factors including but not limited into the previous mental state, current psychosocial challenges, psychological resilience, social support, and access to mental health care (M. M. Hossain, Purohit, et al., 2020; M. Hossain et al., 2020; Vindegaard & Eriksen Benros, 2020). As COVID-19 has impacted personal, social, and systemic transactions that influence the psychopathological processes and outcomes, developing effective interventions for those problems can be profoundly challenging (Mazumder, Hossain, & Das, 2020; Sultana, Sharma, Hossain, Bhattacharya, & Purohit, 2020).

Global leaders and academicians in the mHealth industry and health systems often attempt to promote consensus on implementing different standards and principles for assessing mental health apps such as a) data safety, b) users privacy, c) effectiveness, d) users adherence, e) data management (Price et al., 2014; Schellong, Lorenz, & Weidner, 2019). These issues are discussed here in the context of the COVID-19 pandemic.

Data safety and privacy are critical concern in the era of misuse of online data from sources such as email and social media (Agboola, Bates, & Kvedar, 2016; M. M. Hossain & Hong, 2019; Tasnim, Hossain, & Mazumder, 2020). It is arguable that mental health apps should ensure that data management practices fulfill industry standards for handling patient health information. It is necessary that all sensitive health data, smartphones-based data, such as global positioning system (GPS) data, voice,

multimedia data, and overall digital behavior are examined within the scope of digital mental health in COVID-19. Novel technologies such as AI and blockchain should be leveraged for advancing digital mental health interventions during this pandemic (Bhattacharya, Singh, & Hossain, 2019; M. M. Hossain, Sarwar, McKyer, & Ma, 2020; M. M. Hossain, Sharma, Sultana, Tasnim, & Faizah, 2019; Shi et al., 2020; Vaishya, Javaid, Khan, & Haleem, 2020).

For COVID-19 affected populations, key decision-makers should agree upon the current standards for data storage, use, and sharing in domains such as data storage and sharing policies. These must be made transparent to the users of those platforms. Also, data shared with external partners, such activities should be clearly discussed so that the use and sharing plans comply with ethical standards ("Official 2020 HIPAA Compliance Checklist," n.d.). The users must have the option to "opt-out" if they do not feel comfortable, and security reviews and data audits should be conducted to guarantee that new vulnerabilities are quickly assessed and resolved.

It is widely accepted that mental health problems are very common in a global context. Generally, they impose a tremendous social burden. A global consideration is needed to assess the morbidity, quality of life, and mortality associated with those problems that may exceed our current epidemiological evidence base. There are barriers that prevent access to mental care treatment. For many people, such a lack of access is aggravated by the paucity of resources. Vulnerable populations such as immigrants, refugees, victims of gender-based violence, people with psychiatric comorbidity, or those who are highly vulnerable to mental health problems should be brought under mental health

interventions (M. M. Hossain, Hasan, Sultana, & Faizah, 2019; M. M. Hossain & Purohit, 2018; M. M. Hossain, Sultana, & Das, 2018; M. M. Hossain, Sultana, et al., 2020; Vindegaard & Eriksen Benros, 2020). During COVID-19, the scope of mHealth and eHealth interventions should be carefully examined for better mental health and wellbeing (Brian & Ben-Zeev, 2014; Cavazos-Rehg et al., 2020; Price et al., 2014).

Digital mental health can be useful in meeting the treatment needs of large populations. A growing number of clinical trials have shown good outcomes for digital mental health interventions (Angrish et al., 2020; Cavazos-Rehg et al., 2020; Hong, Hossain, & Chou, 2020; M. M. Hossain, Tasnim, et al., 2019; Price et al., 2014). However, there are a few examples of implementations that can be seen as failures. These should be assessed to know how this intervention works and how they can be used in mental health development in populations. Future research should focus on these issues.

It is recognized that the research-to-practice gap is common in digital mental health as the inclusion of multiple technologies may create unique issues. It is possible to draw an outline of some of the reasons for this gap and deploy methods that may result in sustainable development in the field of digital mental health interventions (Cavazos-Rehg et al., 2020; Vaishya et al., 2020). However, such knowledge should be investigated from an evidence-based mental health perspective that includes heterogeneous evidence from unique population-level sources emphasizing on how multiple stressors or interventions may mitigate each other.

These methods can be drawn from studies on human-computer interaction that include artificial intelligence, blockchain, and other technologies. Another issue pertinent to

implementation science is how such technologies are integrated into an Accelerated Creation-to-Sustainment (ACTS) model (LaMonica et al., 2019; Mohr, Lyon, Lattie, Reddy, & Schueller, 2017). The ACTS model often leverages an iterative process that includes 2 basic functions that focus on design and evaluation across 3 general phases starting from trials to sustainable adoption. The goal of the ACTS model is to produce a functioning technology-enabled service (TES) for mental health services that is sustainable even in the context of the real-world treatment setting (Mohr et al., 2017).

In COVID-19, the researchers may need to identify what evidence can guide intervention planning. The initial phases, such as the creation phase can result in at least a minimally viable TES and a blueprint for implementation. In contrast, the Trial phase may require further evaluation of effectiveness and safety. Research on implementation allowing optimization and continuous quality improvement of the TES, as well as an implementation plan, can be profoundly helpful.

Finally, the Sustainment phase involves the withdrawal of research or donor support while leaving a functioning, continuously improving TES in place (Mohr et al., 2017).

The public mental health impacts in people, such as those with the comorbid condition can be enormous, which needs to be examined in this pandemic. Innovative models such as the Tthe ACTS model can be a step toward bringing implementation and sustainability into the design and evaluation of TESs (LaMonica et al., 2019; Mohr et al., 2017). Nonetheless, they will impact psychosocial health and broader public health, facilitate future clinical research, and inform future practices in different unique contexts.

These interventions should be designed from an equity perspective that allows scholars to identify: what are the factors that may impact the development of psychosocial interventions in the digital age? Why are some groups more vulnerable, and some are more privileged? Why technological gaps exist, and how can we solve them in national and global contexts?

Some of these interventions will take a longer time but those actions are necessary for advancing psychosocial health in this pandemic. This short article invites more discussions from the academic community to think what works best in diverse populations, why the existing technologies are not used to the fullest, how consensus can be made on reducing psychosocial inequities, and how the collective measures can mitigate the impacts of the COVID-19 pandemic.

Acknowledgment: None.

Funding: No funding was received for this work.

Conflicts of interest: None.

References

Agboola, S. O., Bates, D. W., & Kvedar, J. C. (2016, April 26). Digital health and patient safety. *JAMA - Journal of the American Medical Association*. American Medical Association. <https://doi.org/10.1001/jama.2016.2402>

- Angrish, S., Sharma, M., Bashar, M., Tripathi, S., Hossain, M., Bhattacharya, S., & Singh, A. (2020). How effective is the virtual primary healthcare centers? An experience from rural India. *Journal of Family Medicine and Primary Care*, 9(2), 465–465. Retrieved from <https://go.gale.com/ps/i.do?p=HRCA&sw=w&issn=22494863&v=2.1&it=r&id=GALE%7CA616273581&sid=googleScholar&linkaccess=fulltext>
- Bhattacharya, S., Singh, A., & Hossain, M. (2019). Strengthening public health surveillance through blockchain technology. *AIMS Public Health*, 4(3), 326–333. <https://doi.org/10.3934/publichealth.2019.3.326>
- Brian, R. M., & Ben-Zeev, D. (2014, August 1). Mobile health (mHealth) for mental health in Asia: Objectives, strategies, and limitations. *Asian Journal of Psychiatry*. Elsevier. <https://doi.org/10.1016/j.ajp.2014.04.006>
- Cavazos-Rehg, P., Min, C., Fitzsimmons-Craft, E. E., Savoy, B., Kaiser, N., Riordan, R., ... Wilfley, D. (2020). Parental consent: A potential barrier for underage teens' participation in an mHealth mental health intervention. *Internet Interventions*, 21, 100328. <https://doi.org/10.1016/j.invent.2020.100328>
- Hong, Y. A., Hossain, M. M., & Chou, W. S. (2020). Digital interventions to facilitate patient-provider communication in cancer care: A systematic review. *Psycho-Oncology*, 29(4), 591–603. <https://doi.org/10.1002/pon.5310>
- Hossain, M. M., Hasan, M. T., Sultana, A., & Faizah, F. (2019, January 1). New Mental Health Act in Bangladesh: unfinished agendas. *The Lancet Psychiatry*. Elsevier Ltd. [https://doi.org/10.1016/S2215-0366\(18\)30472-3](https://doi.org/10.1016/S2215-0366(18)30472-3)

- Hossain, M. M., & Hong, Y. A. (2019). Trends and characteristics of protected health information breaches in the United States. *AMIA ... Annual Symposium Proceedings. AMIA Symposium, 2019*, 1081–1090. Retrieved from [/pmc/articles/PMC7153056/?report=abstract](https://pubmed.ncbi.nlm.nih.gov/353056/)
- Hossain, M. M., & Purohit, N. (2018, February 10). Protecting Rohingya: lives, minds, and the future. *The Lancet*. Lancet Publishing Group. [https://doi.org/10.1016/S0140-6736\(18\)30209-5](https://doi.org/10.1016/S0140-6736(18)30209-5)
- Hossain, M. M., Purohit, N., Sharma, R., Bhattacharya, S., McKyer, E. L. J., & Ma, P. (2020). Suicide of a farmer amid COVID-19 in India: Perspectives on social determinants of suicidal behavior and prevention strategies. <https://doi.org/10.31235/osf.io/ekam3>
- Hossain, M. M., Sarwar, S. A., McKyer, E. L. J., & Ma, P. (2020). Applications of Artificial Intelligence Technologies in COVID-19 Research: A Bibliometric Study. *Preprints*. <https://doi.org/10.20944/PREPRINTS202006.0161.V1>
- Hossain, M. M., Sharma, R., Sultana, A., Tasnim, S., & Faizah, F. (2019). Globalising artificial intelligence for improved clinical practice. *Indian Journal of Medical Ethics*, 01–02. <https://doi.org/10.20529/ijme.2019.074>
- Hossain, M. M., Sultana, A., & Das, A. (2018). Gender-based violence among Rohingya refugees in Bangladesh: a public health challenge. *Indian Journal of Medical Ethics*, 1–2. <https://doi.org/10.20529/ijme.2018.045>
- Hossain, M. M., Sultana, A., Tasnim, S., Fan, Q., Ma, P., McKyer, E. L. J., & Purohit, N. (2020, September 1). Prevalence of mental disorders among people who are homeless: An umbrella review. *International Journal of Social Psychiatry*. SAGE Publications Ltd.

<https://doi.org/10.1177/0020764020924689>

Hossain, M. M., Tasnim, S., Sharma, R., Sultana, A., Shaik, A. F., Faizah, F., ... Bhattacharya, S. (2019). Digital interventions for people living with non-communicable diseases in India: A systematic review of intervention studies and recommendations for future research and development. *DIGITAL HEALTH*, 5, 205520761989615.

<https://doi.org/10.1177/2055207619896153>

Hossain, M., Tasnim, S., Faizah, F., Sultana, A., Mazumder, H., Zou, L., ... Cox's Bazar, B. (2020). Epidemiology of mental health problems in COVID-19: a review, (July).

<https://doi.org/10.31234/osf.io/q8e5u>

LaMonica, H. M., Davenport, T. A., Braunstein, K., Ottavio, A., Piper, S., Martin, C., ... Cross, S. (2019). Technology-enabled person-centered mental health services reform: Strategy for implementation science. *Journal of Medical Internet Research*, 21(9).

<https://doi.org/10.2196/14719>

Mazumder, H., Hossain, M. M., & Das, A. (2020). Geriatric Care during Public Health Emergencies: Lessons Learned from Novel Corona Virus Disease (COVID-19) Pandemic. *Journal of Gerontological Social Work*, 63(4), 257–258.

<https://doi.org/10.1080/01634372.2020.1746723>

Mohr, D. C., Lyon, A. R., Lattie, E. G., Reddy, M., & Schueller, S. M. (2017, May 1). Accelerating digital mental health research from early design and creation to successful implementation and sustainment. *Journal of Medical Internet Research*. *Journal of Medical Internet Research*. <https://doi.org/10.2196/jmir.7725>

Official 2020 HIPAA Compliance Checklist. (n.d.). Retrieved September 10, 2020, from

<https://www.hipaajournal.com/hipaa-compliance-checklist/>

Price, M., Yuen, E. K., Goetter, E. M., Herbert, J. D., Forman, E. M., Acierno, R., & Ruggiero, K. J. (2014). mHealth: A mechanism to deliver more accessible, more effective mental health care. *Clinical Psychology and Psychotherapy*, 21(5), 427–436.
<https://doi.org/10.1002/cpp.1855>

Schellong, J., Lorenz, P., & Weidner, K. (2019). Proposing a standardized, step-by-step model for creating post-traumatic stress disorder (PTSD) related mobile mental health apps in a framework based on technical and medical norms. *European Journal of Psychotraumatology*, 10(1). <https://doi.org/10.1080/20008198.2019.1611090>

Serafini, G., Parmigiani, B., Amerio, A., Aguglia, A., Sher, L., & Amore, M. (2020). The psychological impact of COVID-19 on the mental health in the general population. *QJM: An International Journal of Medicine*, 113(8), 531–537.
<https://doi.org/10.1093/qjmed/hcaa201>

Shi, F., Wang, J., Shi, J., Wu, Z., Wang, Q., Tang, Z., ... Shen, D. (2020). Review of Artificial Intelligence Techniques in Imaging Data Acquisition, Segmentation and Diagnosis for COVID-19. *IEEE Reviews in Biomedical Engineering*.
<https://doi.org/10.1109/RBME.2020.2987975>

Sultana, A., Sharma, R., Hossain, M. M., Bhattacharya, S., & Purohit, N. (2020). Burnout Among Healthcare Providers During COVID-19 Pandemic: Challenges and Evidence-based Interventions. <https://doi.org/10.31235/osf.io/4hxga>

Tasnim, S., Hossain, M. M., & Mazumder, H. (2020). Impact of rumors or misinformation on coronavirus disease (COVID-19) in social media.

<https://doi.org/10.31235/osf.io/uf3zn>

- Vaishya, R., Javaid, M., Khan, I. H., & Haleem, A. (2020). Artificial Intelligence (AI) applications for COVID-19 pandemic. *Diabetes and Metabolic Syndrome: Clinical Research and Reviews*, 14(4), 337–339. <https://doi.org/10.1016/j.dsx.2020.04.012>
- Vindegaard, N., & Eriksen Benros, M. (2020). COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*. <https://doi.org/10.1016/j.bbi.2020.05.048>