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Brain, Behavior, and Immunity 87 (2020) 51–52

Contents lists available at ScienceDirect

Brain, Behavior, and Immunity

journal homepage: www.elsevier.com/locate/ybrbi

Mental wellness system for COVID-19

COVID-19 burdened in Wuhan, Hubei Province of China in Dec 2019, and infected more than 1,230,0000 subjects worldwide, including 83,000 in China (By Apr 12, 2020). Within China, COVID-19 leads to more than 3000 deaths, medical isolation of million population, and affected daily life of billion people. In addition, it causes severe psychological anxiety (e.g. afraid of being infected) and social isolation stress widely in not only China, but also North America and Europe (e.g. racial discrimination of Asian faces).

Here we describe the recent systemic efforts being developed in our center to maintain mental wellness in public population, isolated patients and first-line medical workers. We are setting up a comprehensive system including population level monitoring of mental states, online emergency psychological intervention based on artificial intelligence, community based scientific dissemination and social bond enhancement, virtual reality and neuromodulation based intervention, and human resources training for emergency psychological interventions. The details are described below:

1. Mental state measurement for public infectious diseases

The inventories are online based, self-evaluation scales covering basic demographic information, personal and family infection status in this epidemic, major stress events in past 12 months, perceived stress scale, acute stress measurement, depression scale, anxiety scale, sleep quality scale, media reading status, social support status, attitude towards life and death, and trust of others. These cross-sectional measurements aim to understand the general psychological reactions to this public emergency event for both community and medical staff involved in epidemic conditions (Joob and Wiwanitkit, 2020, Li et al., 2020). After few weeks, some subjects are asked to finish the inventories for follow-up measurements to obtain longitudinal trajectory of mental state in the population. In addition, understanding the neuroimmune responses in COVID-19 might facilitate the clinical treatment strategies (Kim and Su, 2020) for patients with confirmed infections.

2. Online emergency psychological intervention based on artificial intelligence

The provided services include hot line service, online consulting, social media online account, online guidance for emotion self-regulation, relax therapy and meditation. An artificial intelligence based interface is currently being developed to answer most of the questions online, and provide targeted responses for intervention guidance. Subjects with high risks of mental illness are assigned for online consulting and diagnosis by psychiatrist.

3. Community based scientific dissemination and social bond enhancement

Scientific knowledge relate to COVID-19 (e.g. the infection mechanism, the population transmission model, the proper prevention method, and the treatment approaches) are provided as online content and social media based dissemination, as well as through community management system to the public population. For each community, the information dissemination is delivered to each family, notified by mobile messages, posters, and security guards at entrance. Online social interaction is encouraged to promote the social bond during isolation period, and the importance of social bond is emphasized in scientific dissemination.

4. Virtual reality and neuromodulation based intervention

The scientific dissemination and cartoons introducing self-intervention approaches are installed into the virtual reality (VR) system for community use, with 10–20 helmets supported by each computer and allows for intervention of multiple subjects simultaneously.

In addition, repetitive transcranial magnetic stimulation (rTMS) and transcranial direct current stimulation (tDCS) are available at community hospital services for intervention of mood and sleep disorders.

5. Human resources training for emergency psychological interventions

It is critical to organize timely training course for psychologists, psychiatrists, social workers and CDC workers for mental wellness service upon these public emergency events. Online training courses on these topics for COVID-19 are provided. In future, these courses are scheduled as annual prevention medicine strategy against emergency infectious diseases.

Taken together, we here describe the mental wellness system for COVID-19 being developed in our center. We expect to elaborate and refine the system in ongoing practices within China. It is hoped that worldwide efforts would empower the battle for COVID-19.

Author contribution

JYQ, DSZ, JL and TFY designed the study, performed the study, and wrote the manuscript together.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

https://doi.org/10.1016/j.bbi.2020.04.032
Received 25 March 2020; Received in revised form 12 April 2020; Accepted 12 April 2020
Available online 13 April 2020
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Funding

The study is supported by Medicine and Engineering Interdisciplinary Research Fund of Shanghai Jiaotong University (YG2020YQ21).

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