A Computerized Platform for Screening and Management of Psychological Characteristics of Healthcare Providers during Novel Coronavirus Infection

Dear Editor

The recent coronavirus infection (COVID-19) raised a global concern regarding the mental health of health care providers.[1] Health care providers are at risk of developing mental health problems as same as the general population. In certain countries, this group of people is experiencing considerable work overload, dealing with overcrowded health centers.[2] Such overwhelmed situations have a considerable impact on medical staff's psychological health.[2] Medical staff experience excitability, irritability, and psychological distress during the COVID-19 outbreak.[1] Even though maintaining the medical staff's mental health could be conducive to controlling the infectious disease, the best approach to maintaining their mental health is still unclear and varies across different medical settings.[1] Nowadays, computer and mobile-based programs have found their ways through different fields of medicine and can provide effective psychiatric interventions. It has been demonstrated that using computer-based medical applications could be helpful during the COVID-19 outbreak. Employing computer-based platforms, we could ensure delivering the desired medical information or consultation to any specific population group, even the medical staff. In our previous experience, we demonstrated that computer-based platforms could contribute to managing COVID-19 outbreak.[3] According to notable effect of the COVID-19 pandemic on medical staff's psychiatric well-being, in the present article, we described our effort to build up a free web-based platform for health care providers to evaluate their psychological conditions and job burnout status and receive individualized educations.

Due to the effect of COVID-19 infection on mental health of medical staff, we developed a Persian language web-based platform (Registered name: Psycovid, Mashhad University of Medical Sciences under the Ethics Committee approval code: IR.MUMS.REC.1398.311). The program provides desirable questionnaires and programmed educational multimedia materials (figure 1). During the early days of
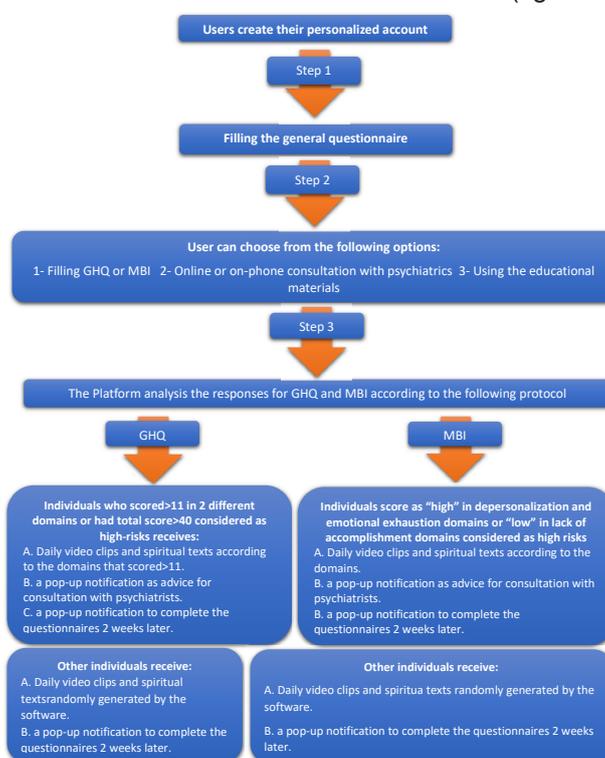
Figure 1: This figure illustrates the overall algorithm used in the web-based platform. The interpretation of the questionnaire results and the interventions were provided to each individual based on their scores.

the outbreak in our country, the platform was launched for Mashhad University of Medical Sciences employees. Every individual could freely sign up for a free account and access the platform from any mobile or computer device after completing an online Terms and Conditions agreement form. After activating a personal account, the programmed questionnaires were provided on a new screen. After filling the questionnaires, the platform automatically interprets the responses and provides individualized results in a separate pop-up window. Each individual was then categorized based on the results and received an individualized intervention (figure 1). Every user was provided with a list of phone numbers that they could freely call whenever they felt they need to talk about their mental health or seek psychiatric interventions. Moreover, an anonymous offline chat on the platform was designed for those, who hesitate to make phone calls. A group of psychologists were educated to answer phone calls and off-line chats whenever the platform sends them notifications.

Within the first week of launching the program in mid-April 2020, a total number of 220 individuals registered on the platform. Among them, 93 filled the questionnaires, and others only downloaded daily educational packages. The general health questionnaire (GHQ) and Maslach burnout inventory (MBI) results are summarized in figures 2 and 3.[4, 5] Among the responders, 50 reported that they did not have direct contact with confirmed cases of COVID-19. Among those with a history of direct contact and those without that, the Mann-Whitney U test did not reveal any significant relationships in somatic symptoms (P=0.631), anxiety symptoms (P=0.347), social dysfunction (P=0.141), depression symptoms (P=0.952), and the total score (P=0.681) of GHQ. Additionally, the Mann-Whitney U test did not reveal any significant relationships between emotional exhaustion (P=0.453), depersonalization (P=0.999), and lack of accomplishment (P=0.312) of MBI.

Various silent features of the COVID-19 pandemic threaten the psychological well-being of the
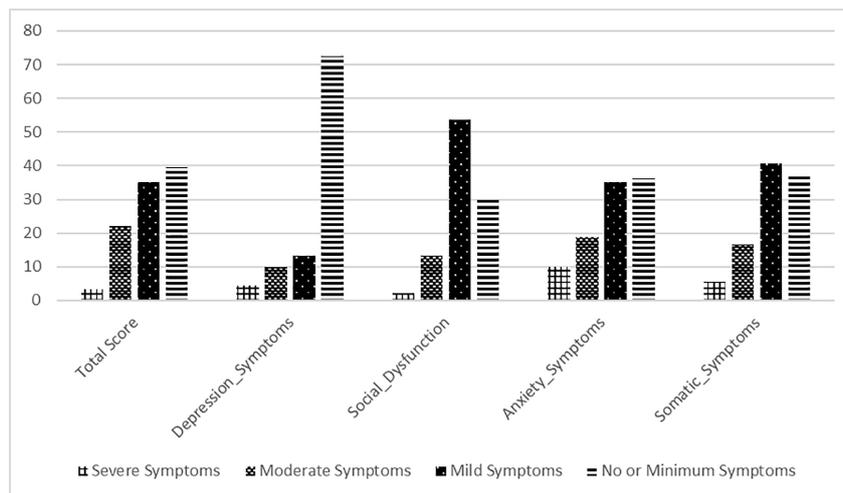
Figure 2: The figure illustrates the general health questionnaire results among the medical staff exposed or unexposed to COVID-19 patients.
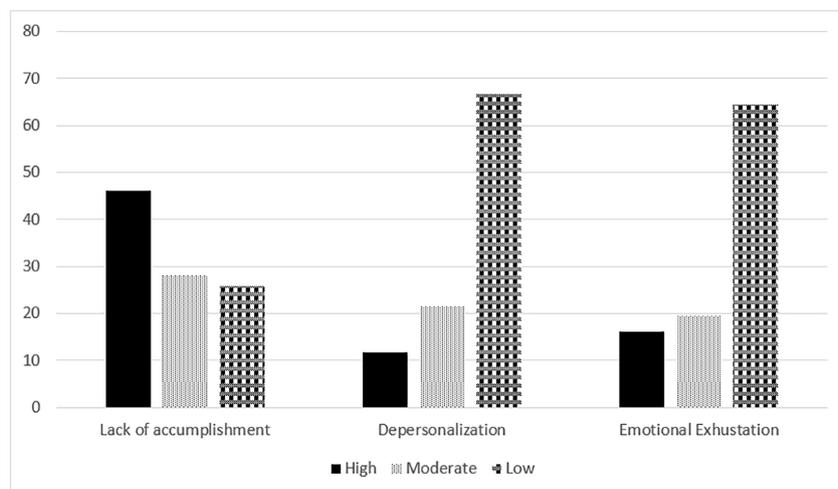

Figure 3: The figure exhibits job burnout domains among the medical staff exposed or unexposed to COVID-19 patients.

general population, specifically the medical staff and healthcare workers.[6] The medical team in hospitals seems to be a complicated small population with unique psychological characteristics in every city. During the COVID-19 pandemic, hospitals faced various difficulties and their workers experienced different forms of psychological distresse. Our primary results demonstrated that the medical staffs at Mashhad University of Medical Sciences have acceptable burnout and general health during the COVID-19 outbreak. Our study were similar to the findings of a previous study regarding the acceptable burnout rate in those who are working in the front line.[7] We believe that other researchers could adapt our algorithm and provide timely and appropriate interventions for medical health care providers during the COVID-19 outbreak.

In conclusion, we revealed that our algorithm can provide further individualized psychoeducational materials for healthcare workers, who do not have enough free time to choose the most appropriate educational materials for themselves. Furthermore, this population could be routinely screened and receive timely follow-up of their psychological report according to their responses to any specific questionnaire provided by the administrator and receive individualized educational materials.

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