Identification the Individual Vulnerability to COVID-19

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Dear Editor,

COVID-19 is an epidemic caused by an acute respiratory syndrome resulting from coronavirus, dramatically affecting health systems worldwide. Therefore, the World Health Organization (WHO) announced its outbreak as a global public health emergency. Therefore, business owners worldwide are trying to set various guidelines to organize their activities in a way that enables them to minimize the incidence of disease among their employees. In the early stages of the pandemic, strategies that included suspending and telecommuting activities were proposed, which led to economic and social crises. As a result, providing the best possible facilities and taking the required preventive measures to reduce the virus spread rate and protect employees in work environments became necessary. In this regard, Nadarajan et al. (1) The study stressed that vulnerability assessment and hygiene instructions should be considered in implementing preventive programs to protect the workforce. The assessment can be done by considering people's demographic characteristics and medical history to identify people vulnerable to COVID-19 and taking suitable measures to reduce the risk level, which improves awareness of vulnerability and management of hygiene measures and personal recommendations.

In this regard, the COVID-19 Vulnerability Assessment Tool was proposed to determine the vulnerability of employees (2). The level of vulnerability to COVID-19 depends on individual characteristics such as age, gender, overweight (body mass index; BMI), and underlying diseases. In this method, age is considered the critical factor in assessing vulnerability, and scoring is done based on six age groups. Next, based on individuals' age, considering underlying diseases, and the effect of each factor, the population's vulnerability to COVID is specified.

The study by Basu et al. (3) showed that older people

are more sensitive, and the severity and mortality among these age groups are more. In addition, BMI has been considered an influential factor in increasing the risk of COVID-19. The study by de Lusignan et al. (4) on 587 COVID-19 patients showed that 366 patients had a high BMI, indicating the effect of being overweight on the incidence of the disease. In addition, underlying diseases are an influential factor in increasing vulnerability to COVID-19 due to the weakened innate immune system response and disruptions in the immune system. The study by Yang et al. (5) indicated that having chronic diseases, including cardiovascular diseases, high blood pressure, and diabetes, increases vulnerability to COVID-19. Moreover, Huang et al. (6) demonstrated that 13 of the 41 patients had a history of underlying diseases, including cancer, neurological disorders, organ transplants, and immunosuppressive diseases. However, according to the Chinese Center for Disease Control and Prevention report, women are less vulnerable due to their innate immune responses (5). The study by Richardson et al. (7) showed that 39.7% of the hospitalized patients were female, and 60.3% were male. However, the male workforce is more than females, and further research is required to achieve more reliable results.

The researchers also indicated a significant relationship between the vulnerability levels consisting of the two variables of age and underlying diseases and the incidence of COVID-19. The study by Yang et al. (5) indicated elderly patients with severe outcomes had underlying diseases such as high blood pressure and cardiovascular and respiratory diseases. In this regard, Sun et al. (8) revealed that age and underlying diseases are significant factors in increasing the risk of COVID-19. These results were also confirmed by Docherty et al. (9) that older people with underlying diseases are at higher risk of COVID-19. Moreover, the findings indicated a significant relationship between indi-

viduals' hygiene behaviors and disease incidence. Disease incidence was lower in employees who adhered to hygiene principles. The findings showed the importance and effectiveness of preventive measures, such as hand washing, to protect people against the virus and reduce the incidence of the disease (10). Furthermore, health experts recommend using face masks correctly, washing their hands, and maintaining a safe distance to reduce disease incidence and protect people against COVID-19 (11). In this regard, Eikenberry et al. (12) showed that using face masks and social distancing can significantly reduce the virus's transmission, the number of hospitalized patients, and mortality.

This manuscript aimed to present the COVID-19 vulnerability assessment to identify susceptible people and reduce the risk of COVID-19 in work environments, which would be helpful to identify interventions that can be implemented to decline the risk. Moreover, hygiene behaviors such as using face masks, social distancing, and hand hygiene according to WHO protocols are essential to reduce the risk of COVID-19.

Footnotes

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