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# Ramadan Intermittent Fasting, Physical Activity, and COVID-19 Pandemic in Patients with Chronic Diseases

Ramadan 2021 began on April 12, 2021, following the sighting of the moon. The practice of Ramadan entails refraining from eating food, drinking liquids, and other activities, such as smoking and sexual intercourse. From a medical standpoint, Ramadan intermittent fasting can be considered as a dietary intervention through which people intermittently fast, with the potential benefit of improving overall health. Importantly, the 2021 Ramadan has been one of the most challenging fasting periods for Muslims, given the Coronavirus disease 2019 (COVID-19) pandemic; the discovery of new coronavirus mutations and persistent outbreaks around the globe continue to be of significant concern. In particular, coronavirus variants might be associated with increased mortality and have an impact on the individual's immune response and the effectiveness of newly developed coronavirus vaccines.<sup>1</sup> It is important to note that there is currently a lack of information on reasons for vaccination hesitancy, in particular the reluctance to receive the vaccination during this Islamic month of fasting over concern the vaccination invalidates the fast.<sup>2</sup>

In the present commentary, we focus on: 1) the potential impact of the COVID-19 pandemic on individuals planning to fast during Ramadan 2021; 2) possible solutions in managing chronic disease risk factors and diagnoses; and 3) how physical activity can positively impact immune health, reduce common side effects of fasting, and mitigate the risk of infection.

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The COVID-19 pandemic poses different challenges for both healthy individuals and patient populations during the month of Ramadan; lockdown and stay-at-home mandates may induce feelings of isolation from Ramadan activities, increase the feeling of social distance and isolation, and adversely affect cardiopulmonary function. While older people and those with chronic diseases or immunodeficiency are more likely to have a poor outcome if infected with COVID-19,<sup>3-6</sup> the effects of Ramadan intermittent fasting on patients' health status during COVID-19 confinement being still unclear.

The holy month of Ramadan is a special time for the Muslim community; however, religious gathering and social parties in Arab and Muslim communities can constitute a risk for COVID-19 infection. In this context, Muslims may doubt whether they can or should fast, especially for those at higher risks for adverse health events. Although Ramadan intermittent fasting is obligatory, exceptions are made for persons in particular circumstances who would not qualify to continue to fast. Individuals with an acute medical illness or considered frail; pregnant, nursing, lactating, or menstruating women; prepubescent children; and people at high risk for medical complications are exempt from fasting. These vulnerable populations should consult their physicians to discuss the possible side effects of Ramadan intermittent fasting and follow scientific recommendations.<sup>7</sup>

While preventive health measures aim to hinder the spread of COVID-19, there is a serious concern for the health status of vulnerable patient populations.<sup>8</sup> Despite the alteration in their dietary habits, the amount and pattern of physical activity, and the duration of sleep during Ramadan,<sup>9</sup> Ramadan intermittent fasting is safe and recommended for patients with cardiovascular,<sup>9</sup> respiratory,<sup>10</sup> and autoimmune diseases,<sup>7</sup> as well as patients with metabolic syndrome and certain neurologic conditions including schizophrenia and bipolar disorder.<sup>11</sup> Ramadan intermittent fasting can also confer cardiopulmonary benefits, which may subsequently result in resiliency against COVID-19 and expedite the recovery process for patients infected with COVID-19.

Ramadan intermittent fasting remains challenging in patients diagnosed with chronic diseases, particularly during the COVID-19 pandemic era, which raises questions about the safety of Ramadan intermittent fasting in certain patient populations. Some individuals diagnosed with one or more chronic diseases do observe fasting without medical advice. Therefore, caution should be taken while fasting. In this context, there are some preventive approaches for individuals who want to fast, such as telemedicine, telepsychology, and participating in regular physical activity. Such strategies are essential to address the challenges associated with the COVID-19 pandemic by strengthening individual immunity and maintaining a healthy state of mind.

Home quarantine imposed by COVID-19 and Ramadan intermittent fasting may act synergistically to further reduce physical activity levels and increase both sedentary time and unhealthy eating habits. Over the long term, these behavioral alterations may result in an increased risk for chronic disease risk factors and actual diagnoses, including stress, anxiety, depression, obesity, cardiovascular and respiratory diseases, cancer, and diabetes. Planned physical activity during the month of Ramadan is generally reduced and may induce a reversal of positive physiologic and psychologic adaptations associated with physical activity. Thus, unless medically contraindicated, maintaining adequate levels of physical activity is recommended during Ramadan. It is advisable that individuals participating in Ramadan intermittent fasting participate in physical activity at home in the morning or after breaking the fast, for example, 1 hour after *Iftar*, when a light meal is taken. It is important to note that individuals with certain medical diagnoses avoid intense physical activity during Ramadan, especially a few hours prior to the *Iftar* to avoid certain physiologic phenomena, such as hypoglycemia. Physical activity can be performed safely at home in a number of ways, including brisk walks, stretching, yoga, and gardening. Technology, including web-based apps and virtual exercise classes, may help to enhance the experience during, and adherence to, physical activity. Interrupting prolonged periods of sitting is helpful to avoid physical inactivity and sedentary time. Moreover, prayers during Ramadan, including spiritual meditation and a series of posture and physical movements such as bending, kneeling, bowing, and rising, can be considered low-intensity physical activity. Patients may face unique challenges in adhering to exercise routines during the month of Ramadan. Due to the direct relationship between Ramadan intermittent fasting and physical activity, there is a need for specific support to overcome perceived barriers so that fasting individuals can continue to be physically active during the COVID-19 pandemic. In parallel to physical activity, vaccination is vital to prevent infection and return the world to a more normal status.<sup>2,12</sup> However the combined effects of Ramadan intermittent fasting, vaccination, and physical activity during the pandemic are unknown at this time, requiring further investigation.

In conclusion, the practice of fasting can improve the immune system and the body's resistance to bacterial infections. An individual's decision on whether to fast or not is influenced by several factors, such as knowledge, beliefs, attitudes, and physicians' recommendations, as well as hesitancy surrounding safety concerns. Participating in regular physical activity while fasting and receiving a COVID-19 vaccination are important strategies to reduce risk of infection and improve general health. At this time, guidelines specifically tailored to patient populations engaged in fasting on how to perform physical activity during a pandemic are lacking, a knowledge gap that should be addressed in the future. In addition, health professionals must exercise sound judgment in providing physical activity recommendations to patients with medical conditions who choose to fast.

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