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Need to promote healthy lifestyle as primary prevention to the COVID-19 and to improve the immune response to vaccines

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To the editor,

By 11 October 2020, the ongoing acute respiratory syndrome coronavirus 2 (SARS-CoV-2) has infected more than 37.2 million people across 188 countries and killed more than 1 million.

Currently, although there are 585 therapeutics and 178 vaccines in development, there is no authorized medication or vaccine to treat or prevent SARS-CoV-2, estimating that a vaccine could arrive in at least 3 to 18 months. However, it should be taken into account that is important consider the time required for vaccine production and that it might not be physically possible to make enough vaccines for everyone, and that availability, production and accessibility would not be equal in all countries (1). In addition, the effectiveness of the vaccine could be limited by several unhealthy lifestyles. Unhealthy lifestyle is a way of living that increase the risk of being seriously ill or dying early. Some of them such as smoking, unhealthy diets, stress and physical inactivity have been associated with poor health and poor immune response to vaccination that should be mentioned and taking to account in this framework.

Recent studies showed that smoking could be a risk factor for SARS-CoV-2 by affecting ACE2 expression, due that it has been reported that SARS-CoV-2 may use ACE2 as a receptor to gain entry into human cells, and being an independent risk factor associated with pneumonia exacerbation after treatment in patients with SARS-CoV2 (2). In addition, smoking is known to diminish the efficacy of the immune response to vaccinations. It has been observed that the exposition to nicotine may produce an inadequate effector/memory T cell population and natural antibodies as IgG or IgM, which could due in part to the adverse effects of nicotine on dendritic cells function and polarization (3).

Western-type diets evoke a state of chronic metabolic inflammation and can disturb immuno-metabolic homeostasis, leading to chronic metabolic disorders like obesity. It has been observed that obesity impairs the immune response to influenza and influenza vaccination through alterations of the cellular immune system and may impair the ability to mount a protective immune response. Also, stress management could help in the COVID-19 era, because the stress can increase susceptibility to infectious and can also inhibit antibody and virus-specific T-cell responses that affect a lower response to vaccination (4). Furthermore, it has been observed a higher likelihood of depression and health-related quality of life in people with suspected SARS-CoV-2. Finally, it has also been noted that physical inactivity and sedentary behavior contribute to at least 35 unhealthy conditions, and they also lead to visceral adipose tissue accumulation, activating inflammatory pathways which can elicit immune system suppression. Many studies show the positive effect of exercise on the immune system such as elevation in T-cell proliferative capacity, increasing neutrophil function, and especially natural killer cell cytotoxic activity (these cells are a class of cytotoxic lymphocytes that control several microbial infections and tumor cells by limiting their spread and removing damaged tissue). Evidence shows that both chronic and acute exercise are adjuvant to improve vaccine response.

The vaccine for COVID-19 is coming, meanwhile, primary prevention strategies to reduce the risk for

SARS-COV-2 should include the adoption of lifestyle practices consistent with good immune health before and after vaccination. This virus presents a major risk to our aging, unfit, corpulent and immunodeficient society (5). People of all ages with underlying health conditions (e.g., obesity, diabetes mellitus, hypertension, chronic obstructive pulmonary disease, coronary artery disease, cerebrovascular disease, chronic renal or lung disease, and smoking) appear to be a higher risk for more severe SARS-CoV-2. Given the prevalence of these conditions among the population, an important proportion of individuals may be at an elevated risk for symptom complications following a positive SARS-CoV-2 diagnosis. In addition, many persons could respond poorly to vaccines, putting them at increased risk for infection, despite being vaccinated.

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