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Editorial

Cardiovascular Disease as a Leading Cause of Death Before and During COVID-19 Pandemic: Where We are Standing and How We Can Change the Scenario Moving Forward

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Received: November 23, 2021; **Published:** January 27, 2022

Cardiovascular diseases (CVDs) are the most prevalent health disorders in occidental/industrial countries, and they have been on the rise in both developing (low- and middle-income countries) and high-income nations for the past century. Cardiovascular diseases are also the most common causes of death worldwide, approximately 35% of all deaths (~ 1 million deaths yearly). The World Health Organization (WHO) identifies 3 categories of causes of death: communicable (infectious and parasitic diseases and maternal, perinatal and nutritional disorders), noncommunicable (chronic) and injuries [1]. At a global level, 7 out of 10 leading causes of death in 2019 still were noncommunicable [1]. From all noncommunicable causes of death, cardiovascular diseases (CVD) (and from all of them, coronary artery disease and ischemic cardiomyopathy) remain as the leading causes of death worldwide. The American Society for Preventive Cardiology (ASPC) has recently compiled and stated the top 10 risk factors for cardiovascular diseases for 2021 [2]. CVD risk factors are classically divided into 2 major groups: modifiable and non-modifiable risk factors. Among all modifiable risk factors, unhealthy nutrition, physical inactivity and obesity remain as the most prevalent modifiable risk factors.

In 2019, a novel coronavirus (SARS-CoV-2) was identified in Wuhan, China. The initial presentation of the virus was originally described in a cluster of patients with bilateral pneumonia of unknown origin/cause that frequently evolved into a severe acute respiratory distress syndrome (SARS) [3]. The original report of these cases was published in February 2020, where the group of investigators reported the clinical presentation of this rapid spreading disease and isolated the virus that provoked it [3]. The new coronavirus linked to the airborne disease was named as SARS-CoV-2 and the critical respiratory syndrome that is produced by it was identified as Coronavirus Disease 2019 (COVID-19). Because of the fast propagation and transmission of the disease across the globe, in March 2020 the WHO declared the state of global pandemic, that is still ongoing.

The National Center for Health Statistics (NCHS) and National Vital Statistics System (NVSS) have released provisional estimates of causes of death for 2020 (the final numbers will be available 11 months after the end of the data year). According to the released report, the provisional estimates indicate a 17.7 % increase in the number of deaths in 2020 (the increase in the age-adjusted rate was 15.9 %) compared to 2019 [4]. The ranking of the leading causes of death for 2020 indicate that cardiovascular diseases remained as the leading causes of death, followed by cancer and in third place COVID-19. Ahmad et al. pointed out that, although COVID-19 was responsible for the significant increase in total deaths from 2019 to 2020, other causes of death might also have contributed significantly to this increment. Heart disease deaths increased by 4.8 % during this period. The authors speculate that this increase in heart disease deaths could reflect at least in part disruptions in health care that compromised early detection and disease management [5]. Furthermore, and based on the latest reports, SARS-CoV-2 can compromise the

cardiovascular system directly via myocardial infection (direct viral-mediated acute myocarditis) and indirectly, where the suggested mechanism for myocardial injury is immune dysregulation and cytokine storm in the setting of systemic viremia [6]. In addition, it has been reported that the presence of baseline cardiovascular disease is a major comorbidity that increases the mortality rate in patients diagnosed with COVID-19. This factor could have also contributed to the increase of cardiovascular death in the context of SARS-CoV-2 infection referred previously. Although increasing number of articles have been published on this regard during the past 10 months, we still lack a systematic approach for collecting data and comparing data across heterogeneous groups affected with COVID-19 and cardiovascular disease. The genetic background, lifestyle differences, cardiovascular risk factors and therapeutic management of patients should also be considered before making comparisons across highly heterogeneous groups. For example, Brizneda., et al. stated that the initial reports of cardiac injury came from 2 studies from China. While these reports aid in understanding the cardiovascular disease burden in COVID-19 patients, the lack of validation of this data in other groups must be considered since Asian population has a lower prevalence of cardiovascular risk factors (and therefore, cardiovascular disease) compared to the western population. A similar situation should be considered when comparing data from US and Europe [6].

As a concluding remark, cardiovascular disease remains as the leading cause of death even in the context of the current Sars-CoV-2 pandemic. Due to the speed and unpredictability of its spread, COVID-19 disease has had an enormous impact on the health care system globally which ended up compromising the management of patients, ultimately exacerbating the prevalence of co-morbidities and their systemic consequences. Lastly, the spectrum of organ systems compromised by SARS-CoV-2 includes the cardiovascular system, which can be directly and indirectly affected by the virus. Our understanding of these interactions and how to better manage them is currently in progress.

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Volume 9 Issue 1 January 2022