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Letter to the Editor: Acute Coronary Syndrome Trends and COVID-19 Waves (Response to the Letter of Čulić et al.)



Keywords COVID-19 * Acute coronary syndrome

To the Editor,

We would like to thank Professor Culić and colleagues for their interest in our paper [1] and for their comments [2]. We agree that multiple factors contributed to both a reduction in acute coronary syndrome (ACS) presentations during the first and second waves of the COVID-19 pandemic in Melbourne, as well as for the rebound in presentations when restrictions were eased.

In their letter, Professor Culić et al. identify reduced air pollution and physical activity as causes for reduced ACS presentations. Public health restrictions resulted in reduced air and noise pollution levels in Melbourne during the first and second waves of the pandemic in 2020 [3]. However, when pandemic restrictions eased pollution levels returned to average which does not plausibly explain the rebound 20% increase in ACS presentations that occurred in our cohort. Similarly, restrictions reduced opportunity to participate in team sport and exercise, but possibly increased time to participate in regular physical activity. This is reflected by an Australian survey of 272 adults which reported 44% of adults reduced exertion during the pandemic, but 23% increased their physical activity [4].

The contribution of psychological stressors to ACS presentations in our cohort is difficult to ascertain. Psychological stressors were highly prevalent throughout the pandemic with a high prevalence of depression, anxiety and insomnia noted in multiple studies. Psychological distress was enhanced by isolation and unemployment [5,6]. However, our study noted a reduction in presentations when psychological stressors were high. As restrictions eased, social isolation was reduced and people returned to work, yet we found a rebound increase in ACS presentations.

There are multiple possible triggers for the rebound in ACS presentations. The degree to which they contribute to the increased presentations requires further research. Increased

population vulnerability during the pandemic has been well established with higher rates of snacking, smoking and alcohol consumption reported in the Australian population [7,8]. However, it is unlikely that less than one year of unhealthy lifestyles would result in a 20% increase in presentations that coincided with the easing of restrictions. In our anecdotal experience, some patients delayed presentation due to fear of contracting COVID-19 as well as a desire to avoid burdening the health care system.

Identification of mechanisms that increase population cardiovascular vulnerability and trigger ACS, which can be addressed by population health measures should be a focus of further research. Campaigns have been developed to address the reduced cardiac presentations such as the American Heart Association's 'Don't Die of Doubt' campaign and the European Society of Cardiology 'You can't pause a heart' effectiveness should be evaluated and adapted to improve access to cardiovascular health care [9,10].

Respectfully

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References

- [1] Sutherland N, Dayawansa NH, Filipopoulos B, Vasanthakamur S, Narayan O, Ponnuthurai FA, et al. Acute coronary syndrome in the COVID-19 pandemic: reduced cases and increased ischaemic time. *Heart Lung Circ.* 2021. <https://doi.org/10.1016/j.hlc.2021.07.023>.
- [2] Čulić V, Alturki A, Proietti R. Letter to the Editor regarding: acute coronary syndromes in the COVID-19 pandemic: reduced cases and increased ischaemic time by Sutherland et al. *Heart Lung Circ.* 2022;31(1):69–76. *Heart Lung Circ.* 2022;31(3):e32-3.
- [3] Boroujeni M, Saberian M, Li J. Environmental impacts of COVID-19 on Victoria, Australia, witnessed two waves of Coronavirus. *Environ Sci Pollut Res Int.* 2021;28(11):14182–91.
- [4] Gemba. Physical activity during COVID-19 lock-down. Insights into Australians' physical activity and fitness during the covid-19 shut-down. 2020. Available from: http://thegembagroup.com/wp-content/uploads/2020/04/GEMBA_COVID-19_Insights_Sports-and-Physical-Activity-Participation__290420.pdf
- [5] Prata Ribeiro H, Ponte A, Raimundo M, Reis Marques T. Mental health risk factors during the first wave of the COVID-19 pandemic. *BJPsych Open.* 2021;7(6):e195.
- [6] Shi L, Lu ZA, Que JY, Huang XL, Liu L, Ran MS, et al. Prevalence of and risk factors associated with mental health symptoms among the general population in China during the Coronavirus disease 2019 pandemic. *JAMA Netw Open.* 2020;3(7):e2014053.
- [7] Bakaloudi DR, Jeyakumar DT, Jayawardena R, Chourdakis M. The impact of COVID-19 lockdown on snacking habits, fast-food and alcohol consumption: a systematic review of the evidence. *Clin Nutr.* 2021.
- [8] Gravely S, Craig LV, Cummings KM, Ouimet J, Loewen R, Martin N, et al. Smokers' cognitive and behavioural reactions during the early phase of the COVID-19 pandemic: findings from the 2020 ITC four Country Smoking and Vaping Survey. *PLoS One.* 2021;16(6):e0252427.
- [9] American Heart Association. Don't Die of Doubt 2020. Available from: <https://www.heart.org/en/health-topics/dont-die-of-doubt>.
- [10] European Society of Cardiology. You can't pause a heart 2021. Available from: <https://www.cantpauseaheart.org/>.