EDITORIAL

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A Case for Enhancing Coverage of Influenza Vaccination in Gulf Cooperation Council Countries in Patients with Diabetes Mellitus during COVID-19

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The World Health Organization (WHO) declared that diabetes mellitus (DM) is the third-highest cause of premature mortality, and about 5 million deaths were attributed to DM among those aged 20–99 years old in 2017 worldwide.[1] The burden of DM both in terms of morbidity and mortality is projected to increase globally. The incidence of new cases is projected to increase from 22.9 million in 2017 to 26.6 million in 2030, while mortality is expected to increase from 1.37 million in 2017 to 1.59 million in 2025.[1]

The prevalence of DM in the Gulf Cooperation Council (GCC) countries has increased over the past two decades, reaching 33.6% in Bahrain, 29.1% in Saudi Arabia, 18.0% in Qatar, 25.4% in Kuwait, 25.8% in the UAE, and 13.1% in Oman.[2] The prevalence of DM is projected to be 37.4% and 51.8% in GCC countries in 2030 and 2050, respectively.[3]

Influenza has been a major cause of vaccine-preventable disease over the past decades. The positive correlation of severe outcomes of influenza with mean plasma glucose levels in patients with DM may in part reflect immunosuppressive effects of hyperglycemia, such as reduced neutrophil degranulation, impaired phagocytosis, and reduced complement activation. Hyperglycemia can directly increase glucose levels in airway secretions,[4] which can result in increased influenza virus replication and worsening infection, as has been proved upon in vitro exposure of pulmonary epithelial cells to elevated glucose concentrations.[5] Elevated airway glucose concentrations may also facilitate the replication of respiratory bacterial pathogens,[6] and it can be inferred that patients with DM may have increased bacterial outgrowth after an influenza virus infection.

Clinical outcomes of infections among patients with DM can be severe, resulting in hospitalization and sometimes even death. Nearly 30% of adult patients hospitalized for influenza have underlying diabetes.[7] The presence of diabetes tripled the risk of hospitalization after infection, quadrupled the risk of admission to the intensive care unit,[8] and doubled the risk of a fatal outcome due to influenza infection.[9]

Influenza vaccination prevents or decreases the risk of acquiring influenza infection among patients with diabetes and reduces the risk of severe complications, such as influenza-related pneumonia and cardiovascular events, reducing mortality.[10,11] It has been shown that the seasonal influenza vaccination was associated with a 50% reduction in all-cause mortality during influenza seasons over a seven-year study period in adult patients with type

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2 DM.[12] All GCC countries have a free vaccination policy for all high-risk groups, including the patients with DM. However, no information on influenza coverage rates has been published so far.

Despite all the non-pharmaceutical measures taken, SARS-CoV-2 continues to spread quickly worldwide and cause death, with GCC countries currently grappling with the second or third wave of the pandemic.

Individuals with DM have a two to three times increased risk of severe COVID-19, including death when compared with individuals without diabetes. This risk is exacerbated by poor glycemic control, diabetes-related complications, and social conditions in disadvantaged communities that lead to lower access to care and higher rates of comorbidities and thus are more likely to be infected and hence are at a higher risk for complications and death from COVID-19.[13]

The prevalences of DM and prediabetes in the GCC countries varied between 7.6% to 66.4% among hospitalized COVID-19 patients in Saudi Arabia[14] and the UAE,[15] respectively. The coexistence of DM and COVID-19 was associated with worse outcomes and higher mortality rates.

Although the recent influenza season (2020/2021) has demonstrated an insignificant influenza activity in the Northern Hemisphere, including GCC countries, influenza is a virus with unexpected behavior which requires continuous preparedness for pandemics and high vaccination coverage rates. Therefore, we should continue to place a particular emphasis on seasonal influenza vaccination during the 2021/2022 influenza season; indeed, the collision with SARS-CoV-2 would have devastating clinical results. Additionally, symptoms of influenza and SARS-CoV-2 cannot be distinguished without specific testing for both viruses. Vaccination against influenza should reduce the need for outpatient visits associated with influenza and diminish the unclear risk of simultaneous coinfection with both viruses. Alleviating preventable stress with influenza vaccination on the current health system in the midst of COVID-19 thus seems necessary.

Given the high prevalence of DM in GCC countries, the impact of a co-circulation of influenza and COVID-19 in these high-risk populations would have devastating results. To this end, we recommend that GCC countries should attempt to aggressively prevent and control seasonal influenza during the coming 2021/2022 season. The following actions are recommended: (1) to increase influenza vaccine coverage amongst patients with DM by engaging with stakeholders in the region, assessing the factors responsible for poor uptake, and developing evidence-based and realistic policies; (2) to evaluate potential hesitation and factors associated with influenza immunization among patients with diabetes to develop targeted interventions to increase vaccine confidence and use; (3) to undertake regular public education campaigns using innovative social marketing techniques; (4) to review vaccine timing and availability, on-site vaccination for people with diabetes, and develop customized approaches for different parts of the community; (5) to enhance efforts to procure or sustainably produce influenza vaccines; and (6) to have regular year-wide surveillance in the region so that the seasonality is documented for timing the vaccination as well as identify the circulating strains, which could help contribute to the WHO's selection of the influenza virus strains for inclusion in the vaccines and result in a better match between the circulating strain and the vaccine strain of the viruses in a particular defined season.

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