LETTER TO THE EDITOR

Nationwide reduction in COVID-19 mortality among patients with asthma and other chronic diseases in Mexican adults according to epidemic wave

Reducción nacional en la letalidad por COVID-19 en pacientes con asma y otras enfermedades crónicas en adultos mexicanos según la ola epidémica

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At the beginning of the pandemic, the available information suggested that asthma did not appear to increase lethality from COVID-19;[1] instead, chronic conditions such as chronic obstructive pulmonary disease (COPD), diabetes, and hypertension, among others, were associated with a higher risk of death[1]. The differences in mitigation and containment strategies adopted by each country may have contributed to the variations observed in COVID-19 lethality. Therefore, we conducted a study aimed at analyzing the trend in COVID-19 lethality in patients with asthma and comparing its behavior with that observed in other chronic diseases.

By analyzing data from the COVID-19 Epidemiological Surveillance System in Mexico (February 2021 to August 2022), we compared COVID-19 lethality in patients with asthma and other chronic diseases at each peak point of the five epidemic waves. Our research adhered to the ethical principles for using health databases proposed by the Declaration of Helsinki.

The highest overall COVID-19 lethality was observed in chronic kidney disease (6,953/22,613; 30.7%), followed by COPD (3,974/15,660; 25.4%), cardiovascular disease (4,515/22,937; 19.7%), diabetes (33,996/220,161; 15.4%), hypertension (41,279/303,602; 13.6%), and obesity (17,721/238,806; 7.4%), with the lowest lethality being observed in asthma (1,501/46,155; 3.3%).

Overall, all the chronic diseases analyzed showed a trend toward decreasing lethality (Table 1). In the case of asthma, during the peak of the 1st wave, lethality rate was 9.3%, and then showed a sustained trend toward reduction, which became noticeable from the 2nd to the 5th wave. In contrast, the other diseases showed a slight increase in lethality during the 2nd wave, followed by a significant decrease from the 4th wave onward.

During the 5 epidemic waves in Mexico, asthma clearly showed lower lethality from COVID-19 vs the other diseases analyzed. This event puts into perspective that patients with asthma may have a lower risk of acquiring SARS-CoV-2[2] infection, but they may have a higher risk of dying from COVID-19 or of dying vs other chronic diseases[1]. Therefore, deaths in this group may have primarily occurred in patients with more severe or uncontrolled asthma[3]. The inflammatory profile of asthma patients, the use of inhaled steroids for asthma control, or the use of COVID-19 vaccines are some of the limitations that should be considered when interpreting these findings.

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Table 1. Reduction in COVID-19 lethality in patients with asthma and other chronic diseases in Mexican adults (February 2021 to August 2022)

Disease	Pandemic wave					p*
	I (n/N) % (95%CI)	II (n/N) % (95%CI)	III (n/N) % (95%CI)	IV (n/N) % (95%CI)	V (n/N) % (95%CI)	
Respiratory						
Asthma	431/4649 9.3% (8.4 to 10.1%)	536/6683 8.0% (7.4 to 8.7%)	317/5508 5.8% (5.1 to 6.4%)	200/21,597 0.9% (0.8 to 1.1%)	17/7,718 0.2% (0.1 to 0.3%)	< 0.0001
COPD	973/2659 36.6% (34.8 to 38.4%)	1,320/3468 38.1% (36.5 to 39.7%)	740/2292 32.3% (30.4 to 34.2%)	831/5128 16.2% (15.2 to 17.2%)	110/2113 5.2% (4.3 to 6.2%)	< 0.0001
Metabolic						
Obesity	4955/33,745 14.7% (14.3 to 15.1%)	7106/46,766 15.2% (14.9 to 15.5%)	3741/36,227 10.3% (10.0 to 10.6%)	1780/88,261 2.0% (1.9 to 2.1%)	139/33,807 0.4% (0.3 to 0.5%)	< 0.0001
Diabetes	8121/29,820 27.2% (26.7 to 27.7%)	12,756/46,803 27.3% (26.9 to 27.7%)	7119/33,769 21.1% (20.7 to 21.5%)	5418/75,774 7.2% (7.0 to 7.3%)	582/33,995 1.7% (1.6 to 1.8%)	< 0.0001
Cardiovascular						
Hypertension	9569/37,381 25.6% (25.2 to 26.0%)	16,082/61,952 26.0% (25.6 to 26.3%)	8,162/42,358 19.3% (18.9 to 19.6%)	6,737/112,026 6.0% (5.9 to 6.2%)	729/49,885 1.5% (1.4 to 1.6%)	< 0.0001
CVD	1085/3,459 31.4% (29.8 to 32.9%)	1497/4695 31.9% (30.6 to 33.2%)	822/2920 28.2% (26.5 to 29.8%)	976/8314 11.7% (11.0 to 12.4%)	135/3549 3.8% (3.2 to 4.4%)	< 0.0001
Renal						
CKD	1439/3403 42.3% (40.6 to 43.9%)	2112/4666 45.3% (43.8 to 46.7%)	1391/3553 39.2% (37.5 to 40.8%)	1781/8078 22.0% (21.1 to 23.0%)	230/2913 7.9% (6.9 to 8.9%)	< 0.0001

CVD: cardiovascular disease; COPD: chronic obstructive pulmonary disease; 95%CI: 95% confidence interval for proportions calculated by the Wald method; CKD: chronic kidney disease; n: subjects who died from COVID-19; N: total subjects with the specified comorbidity.

*Mantel-Haenszel chi-square test for trend.

Source: Open data from the General Directorate of Epidemiology of the Government of Mexico. Available at: https://www.gob.mx/salud/documentos/datos-abiertos-152127. Consulted on August 12, 2022.

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Conflicts of interest

None declared.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed their workplace protocols regarding the publication of patient data.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

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