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Asthma prevalence trends by sex and mortality rates in the US

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To the editors

Background

This paper analyzes trends in asthma prevalence by gender and mortality rates in the US, utilizing a Centers for Disease Control and Prevention (CDC) dataset with 1,048,576 instances and 30 variables [1]. The results reveal a rising prevalence of asthma, especially among women, and a notable increase in mortality rates in 2021. These findings highlight the need for targeted public health interventions.

Asthma affects 8.7% of the US population, with higher prevalence in females (64%) than males (36%) [2]. Individuals aged 60+ and non-Hispanic whites have the highest prevalence. Obesity and smoking are significant risk factors. They analyzed National Health and Nutrition Examination Survey (NHANES) data (1999–2020) from 64,222 participants aged 20+. Public health policies should target high-risk groups for effective asthma prevention [2].

Methods

The Python code, asthma.py, was developed and is available on GitHub for reproducibility [3]. To use it, install Python, download the CDC dataset, rename it to data.csv, and run the code. The program interactively guides users to generate three graphs: asthma prevalence in the US from 2011 to 2022. When visualizing asthma prevalence trends by sex, asthma mortality rates, and asthma prevalence trends among women aged 18–44 years, it is essential to identify key variables in the CDC dataset.

Results

Figure 1 illustrates that the peak of the asthma mortality rate occurred in 2014, followed by a decline until 2019, and then a sudden rise in 2021. Figure 2 shows that asthma prevalence among women aged 18–44 years hovered around 12.0 but suddenly rose to nearly 13.5 in 2022.

Discussion

The findings highlight the need to focus public health policies on high-risk groups, such as females, older adults, and individuals with obesity or smoking habits. While previous studies noted the higher prevalence of asthma among females, they did not address the sharp increase in asthma mortality rate in 2021, which rose from below 11.0 in 2020 to over 12.5 in 2021. From 2011 to 2022, asthma prevalence in the US has steadily risen, with rates among females nearly double those of males. Additionally, there was a notable rise in asthma prevalence among women aged 18–44, increasing from 12.5 in 2021 to 13.5 in 2022.

Swed et al. highlighted the higher prevalence of asthma among females but did not discuss the recent asthma mortality rate [2]. Kilpatrick et al. reported asthma mortality trends between 2000 and 2019, showing a 32% decline in asthma mortality rates in the US [4], but stable at-home asthma mortality rates. Over the 20-year period, 67,695 asthma deaths were registered, with the proportion of at-home asthma deaths increasing from 23 to 36%.

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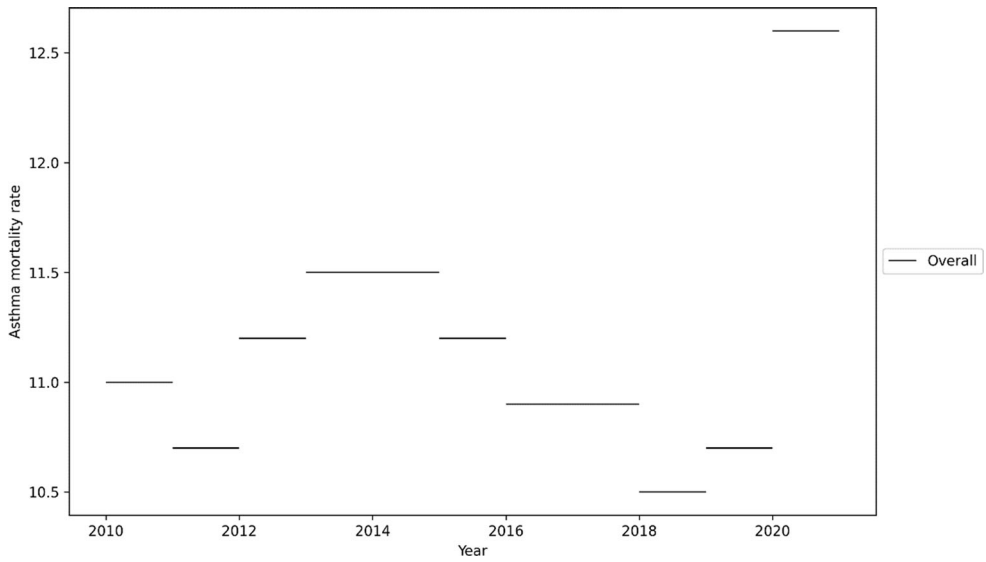

Fig. 1 Asthma mortality rate

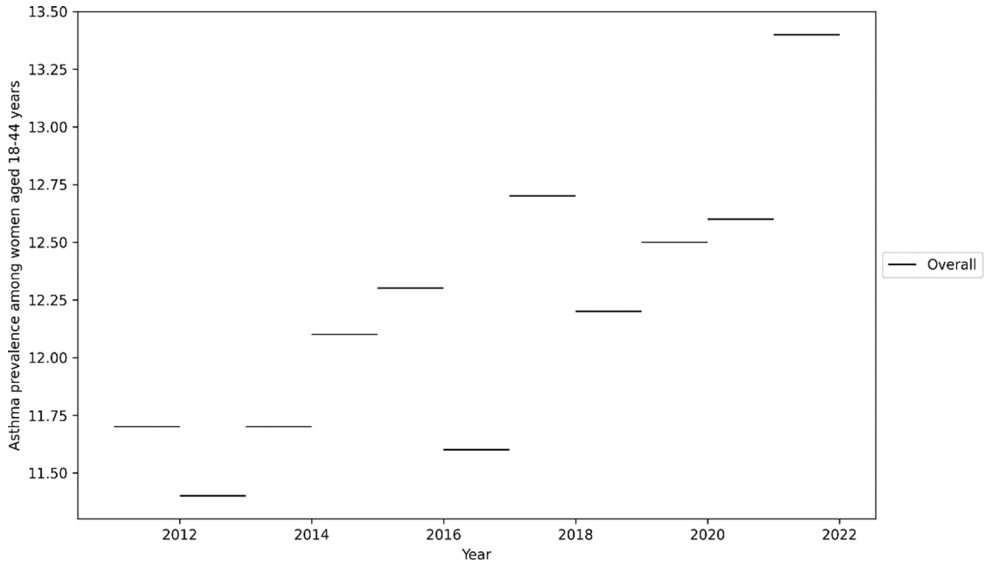

Fig. 2 Asthma prevalence among women aged 18–44 years

This study reveals a significant increase in asthma prevalence, rising from below 11.0 in 2020 to over 12.5 in 2021. Notably, asthma prevalence among women aged 18–44 surged from 12.5 in 2021 to 13.5 in 2022. Despite the findings of stable asthma mortality rates by Kilpatrick et al., the US saw a sudden rise in 2021. The prevalence of asthma is increasing more rapidly among females compared to males in the US.

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Conflict of interest Y. Takefuji declares that he has no competing interests.

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