

Table 1

Comparison of characteristics and in-hospital complications between children with and without cardiomyopathy over the 5 years studied

Variable	Presence of cardiomyopathy	
	No	Yes
Total influenza cases	171,442	491
Age, years (median, IQR)	2.0 (0-8)	8.0 (2-16)*
Female	76,325 (44.7%)	200 (41.0%)
Race		
White	63,682 (44.9%)	185 (42.1%)
Black	28,101 (19.8%)	91 (20.7%)
Hispanic	36,001 (25.4%)	119 (27.0%)
Others	14,087 (9.9%)	45 (10.3%)
Discharge quarter		
Jan-Mar	52,314 (30.5%)	148 (30.3%)
Apr-Jun	21,548 (12.6%)	103 (21.0%)
Jul-Sep	13,221 (7.7%)	37 (7.4%)
Oct-Dec	84,279 (49.2%)	202 (41.3%)
Comorbid conditions		
Asthma	37,946 (22.1%)	76 (15.5%)*
Congenital heart diseases	4,561 (2.7%)	82 (16.7%)*
Complications		
Respiratory failure	8,469 (4.9%)	137 (28.0%)*
Acute kidney injury	1,586 (0.9%)	37 (7.5%)*
Invasive mechanical ventilation(IMV)	7,647 (4.5%)	122 (24.9%)*
Noninvasive mechanical ventilation(NIMV)	2,336 (1.4%)	35 (7.2%)*
Tachyarrhythmias	546 (0.3%)	50 (10.2%)*
Heart block/conduction disorders	336 (0.2%)	28 (5.7%)*
Sudden cardiac arrest	290 (0.2%)	29 (5.9%)*
ECMO [#]	239 (0.14%)	11 (2.2%)*
In-hospital mortality	785 (0.5%)	32 (6.5%)*
Length of stay, days(median, IQR)	2(2-4)	6 (3-15)*

[#] Extracorporeal membrane oxygenation.

CHD = congenital heart disease.

* p value is <0.001 for these comparisons.

Regarding limitations of this report, data in the KID database were not collected for research, but were for medical coding and billing. KID captures only inpatient records, so the findings may not be extrapolatable to the outpatient settings.

In conclusion, our findings indicate that children with influenza infection and a concomitant cardiomyopathy are at dramatically increased risk of in-hospital mortality and adverse clinical outcomes. Our findings support increased efforts of medical teams, parents, and health officials working together to increase influenza vaccination rates in all children, especially in those with chronic medical conditions, to prevent morbidity and mortality.

Disclosures

All authors declare they have not conflict of interests to declare.

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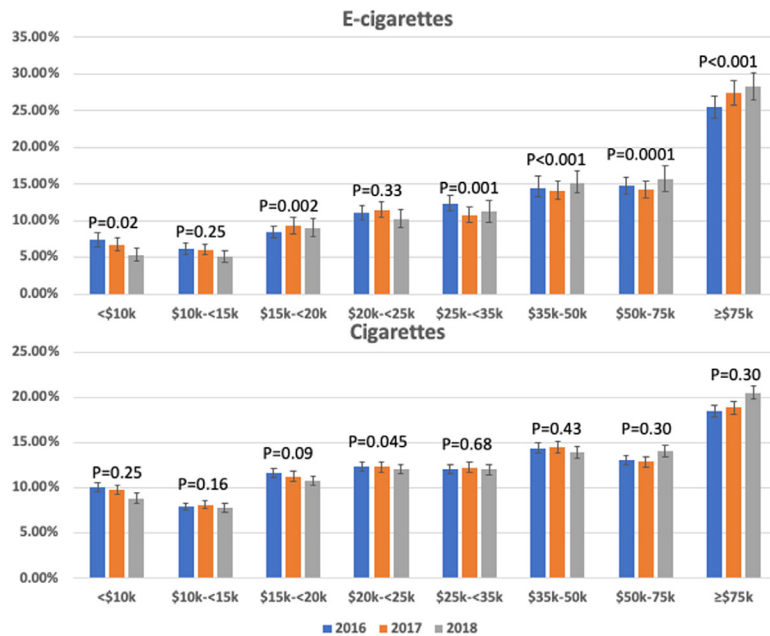
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Temporal Trends in the Prevalence of Current E-Cigarette and Cigarette Use by Annual Household Income from 2016 to 2018 (from the Behavioral Risk Factor Surveillance System [BRFSS] Survey)



E-cigarettes have become more prevalent in the United States¹ and have been used for recreational purposes or for smoking cessation. E-cigarettes may be equal in cost or even more expensive than traditional cigarettes, and therefore, prevalence of e-cigarettes may differ by income.

Our study population consisted of individuals from the Behavioral Risk Factor Surveillance System (BRFSS) survey, a nationwide telephone-based questionnaire of a random sample of US adult residents in all 50 states as well as the District of Columbia and 3 US territories regarding chronic health conditions, health-related risk behaviors, and the use of preventive services. We utilized data from the 2016, 2017, and 2018 BRFSS datasets. All variables were self-reported and prevalence values were weighted to reflect the sampling methodology.² All



E-cigarette use was classified as never vs. ever based on how participants answered the question "Have you ever used an e-cigarette or other electronic vaping product, even just one time, in your entire life?". Ever users were then categorized as current if they answered "Yes" to the question: "Do you now use e-cigarettes or other vaping products every day, some days, or not at all?". Cigarette status was characterized as ever or never depending on how participants answered the question "Have you smoked at least 100 cigarettes in your entire life?". Ever smokers were then classified as current if they answered "Yes" to the question "Do you now smoke cigarettes every day, some days, or not at all?"

Figure 1. Temporal trends in the prevalence of current e-cigarette and cigarette use according to annual household income.

analyses were conducted using Stata version 13.1 (StataCorp, College Station, Texas).

The study population consisted of 1,329,129 individuals of whom 30% were between the ages of 18 to 34 years, 51% were women, 63% White, 12% Black, 17% Hispanic. The prevalence of current e-cigarette use was 6% whereas 16% were current smokers, and 3% were dual users. At baseline in the year 2016, there was a lower prevalence of current e-cigarette use in low-income categories and higher prevalence in high-income categories. Those earning <\$10,000 per year showed a decreasing prevalence over time (7% vs 5%; $p=0.02$) while those with an annual income \geq \$75,000 demonstrated an increasing prevalence over the same period (25% vs 28%; $p<0.001$). Similar trends were noted among current cigarette users but results were not significant (Figure 1).

In a nationally representative US survey, we found a decreasing prevalence of current e-cigarette use in lower income groups, and an increasing prevalence among higher income individuals.

In 2015, the average price of a pack of cigarettes in the US was \$7.26. In contrast, a single disposable e-cigarette

ranges in price from \$6.00 to \$12.00. It is important to note that while cigarettes generally have a limited price range (price mostly determined by frequency of use), there is more variability in the cost of e-cigarettes depending on the vaping device, vape juice/replacement cartridges, in addition to vaping frequency. More educated individuals who are aware of the health risks of cigarette smoking may resort to vaping as a potential safer alternative. Middle age former smokers may also use e-cigarettes as an aid for smoking cessation. These groups are typically employed and have higher purchasing power to afford e-cigarettes.

Our results should be interpreted in the context of important limitations. We could not evaluate reasons underlying use of e-cigarettes or cigarettes over time and could only assess general patterns. There was no information in the BRFSS survey on the price or type of e-cigarette used or other vaping products.

In conclusion, lower income earners demonstrate lower prevalence and a decrease in prevalence over time. Those with higher income demonstrate higher prevalence and an increasing prevalence in e-cigarette use over a relatively short time frame.

Disclosures

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