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### Background

- E-cigarette use has been related with various metabolic abnormalities, such as insulin resistance and impaired glucose metabolism.<sup>1</sup>
- Individuals with family incomes of less than 200% federal poverty level (FPL), younger individuals, and men have been found to be more likely to use ecigarettes.<sup>2-3.</sup>
- Given the risks factors and sociodemographic differential patterns associated with e-cigarette, disparities in e-cigarette use among patients with diabetes should be addressed.

## Objective

To examine socioeconomic disparities in ecigarette use among non-institutionalized U.S. adults with diabetes, prediabetes, or at risk of diabetes.

## Methods

- This cross-sectional study used the National Health and Nutrition Examination Survey (NHANES) data from 2017 to 2018.
- Multinomial logistic regression was employed to identify factors associated with e-cigarette use.



Figure 1. Study Variables Used for Statistical Analysis

# Sociodemographic Factors Associated with E-cigarette Use Among US Adults with Diabetes, Pre-diabetes, or Risk of Diabetes

### Results

	E-cigarette use status N (%)				
Predictors	Overall	Never	Ever user	Current	
	N (%)	2075 (75.9%)	415 (21.9%)	42 (2.2%)	
Age, mean	51.1	37.4	41.4	54.3	
Gender					
Male	1205 (48.3%)	961 (35.4%)	215 (11.4%)	29 (1.5%)	
Female	1327 (51.7%)	1114 (40.5%)	200 (10.5%)	13 (0.72%)	
Race*					
Non-Hispanic Whites	855 (62.0%)	644 (45.4%)	188 (15.0%)	23 (1.6%)	
Non-Hispanic Blacks	576 (10.6%)	480 (8.6%)	90 (1.8%)	6 (0.2%)	
Hispanic	614 (16.2%)	528 (13.0%)	81 (3.0%)	5 (0.2%)	
Asian	350 (5.5%)	322 (5.0%)	23 (0.4%)	5 (0.07%)	
Other	137 (5.5%)	101 (3.9%)	33 (1.6%)	3 (0.1%)	
Education*					
Less than or equal to high school degree	1386 (43.8%)	1105 (32.1%)	251 (10.2%)	30 (1.6%)	
Some college	555 (26.5%)	444 (19.4%)	102 (6.6%)	9 (0.5%)	
Greater than or equal to college degree	591 (29.6%)	526 (24.4%)	62 (5.1%)	3 (0.1%)	
Income*					
> Federal poverty level	1090 (34.5%)	859 (24.8%)	208 (8.7%)	23 (1.0%)	
≤ Federal poverty level	1168 (65.5%)	982 (51.3%)	170 (12.9%)	15 (1.3%)	
Health Insurance					
No	333 (11.6%)	248 (7.6%)	76 (3.7%)	9 (0.3%)	
Yes	2187 (88.3%)	1817 (68.3%)	337 (18.1%)	33 (1.9%)	
Smoking Status*					
Never User	1413 (54.1%)	1305 (48.5%)	102 (5.5%)	6 (0.2%)	
Ever User	707 (29.3%)	589 (22.2%)	103 (6.3%)	15 (0.8%)	
Current User	412 (16.5%)	181 (5.3%)	210 (10.0%)	21 (1.2%)	
Alcohol use*					
Never	541 (21.2%)	481 (17.4%)	55 (3.5%)	5 (0.2%)	
Mild	777 (37.6%)	621 (27.8%)	143 (8.9%)	13 (0.8%)	
Moderate	527 (30.5%)	381 (20.5%)	128 (8.7%)	18 (1.3%)	
Неаvy	199 (10.7%)	147 (8.0%)	48 (2.5%)	4 (0.2%)	
Hypertension*					
No	1267 (55.0%)	994 (40.1%)	246 (13.5%)	27 (1.4%)	
Yes	1259 (44.9%)	1076 (35.7%)	168 (8.3%)	15 (0.8%)	
Cholesterol*					
No	1353 (55.3%)	1066 (40.3%)	256 (13.3%)	31 (1.7)	
Yes	1151 (44.7%)	984 (35.5%)	156 (8.7%)	11 (0.5%)	
Note. These demographic descriptives were obt	ained from the Rao-Sco	ott modified chi-squar	e tests		

\*indicates p-value < 0.05



### **Figure 2. Forest Plot of Associated Disparities for Ever Users**

	Cholesterol, Yes
	Hypertension, Yes
-	Alcohol Use, Heavy
	Alcohol Use, Moderate
	Alcohol Use, Mild
	Income, ≤ Federal poverty level
••	Education, Greater than or equal to college degree
•	Education, Some college
-	Race, Other
-	Race, Asian
•••	Race, Hispanic
-	Race, Non-Hispanic Blacks
	Gender, Female

Figure 3. Forest Plot of Associated Disparities for Current Users

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### Results

Compared to White individuals, Blacks (aOR=0.38, 95% CI: 0.20-0.73), Hispanics (aOR=0.54, 95% CI: 0.32-0.91), Asians (aOR=0.42, 95% CI: 0.22-0.81), and other racial groups (aOR=0.57, 95% CI:0.36-0.90) had lower odds of being a never user relative to being a current e-cigarette user.

Compared to White individuals, Hispanics had lower odds of being ever users relative to being a current e-cigarette user (aOR=0.16, 95% CI: 0.04-

As compared to those with a high school degree or less, individuals with a college degree or higher had lower odds of being ever users relative to being current e-cigarette users (aOR=0.16, 95% CI: 0.03-

### Conclusion

This study identified sociodemographic factors associated with e-cigarette use using population level data for U.S. adults with diabetes, prediabetes, or risk of diabetes.

Future research needs to further investigate these relationships in order to develop targeted public health interventions for individuals with diabetes who are more susceptible to using e-cigarettes.

The inclusion of covariates used for analysis may not have accounted for other relevant factors that are associated with diabetes and e-cigarette use in which there may have been unobserved covariates that should have been included.

### References

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