

Use of electronic cigarettes and self-reported COPD diagnosis in adults

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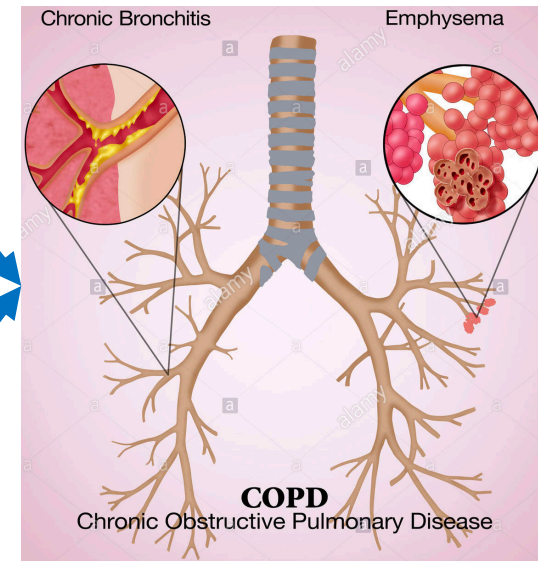
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Introduction

- Chronic obstructive pulmonary disease (COPD) is the third leading cause of death according to world health organization (WHO)
- Cigarette smoking is the primary cause of COPD
- It is unknown how e-cigarette use is related to COPD



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Introduction

- E-cigarette use can cause oxidative stress and inflammation in mice and human bronchial and lung epithelial cells.
- E-cigarette exposure can induce pathogenic response in mice that is similar to what occurs in human COPD.
- A recent study showed association between vaping and respiratory disorders (including COPD and asthma) among non-smokers in Hawaii adults.

- Cross-sectional association of vaping with self-reported COPD diagnosis among never smokers, past smokers and current smokers in US adults.
- Data: Combined 2016 and 2017 Behavior Risk Factor Surveillance System (BRFSS) national survey data with 936,319 adult participants.
- Model: Weighted logistic regression models.
- Outcome variable: (Ever told) you have chronic obstructive pulmonary disease, COPD, emphysema or chronic bronchitis?
- Covariates: age group, sex, race/ethnicity, marital status, employment status, education level, income level, BMI categories, general health categories.



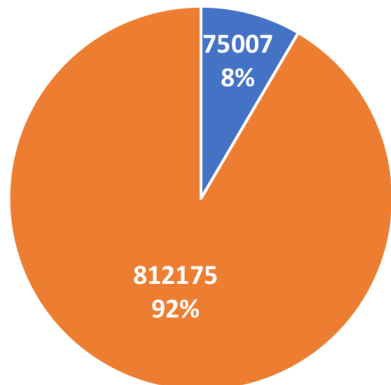
•Vaping and Smoking Status

- Current smokers: at least 100 cigarettes, now smoke everyday or some days, not currently use e-cigs
- Dual users: at least 100 cigarettes in entire life, now smoke everyday or some days, currently use e-cigs everyday or some days.
- Ex-smokers: at least 100 cigarettes in entire life, now do not smoke at all, not currently use e-cigs
- Current vapers who were ex-smokers: less than 100 cigarettes, not smoke at all, currently use e-cigs every day or some days
- Current vapers who never smoked: less than 100 cigarettes, not smoke, currently use e-cigs.
- Never users: less than 100 cigarettes, not smoke, not currently use e-cigs. 6

•Results

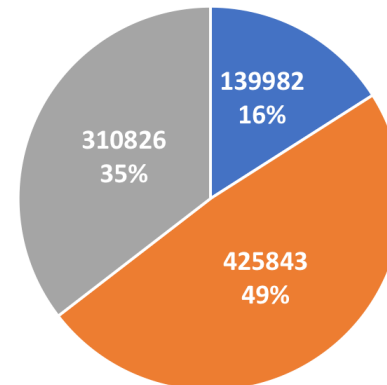
Vaping and smoking status	Frequency	Percentage
Dual Users	15,986	1.80%
Current smokers	115,189	12.90%
Ex-smokers	245,973	27.60%
Current vapers who were ex-smokers	8,876	1.00%
Current vapers who never smoked	3,912	0.40%
Never users	501,306	56.20%

Self-reported COPD diagnosis



■ Yes ■ No

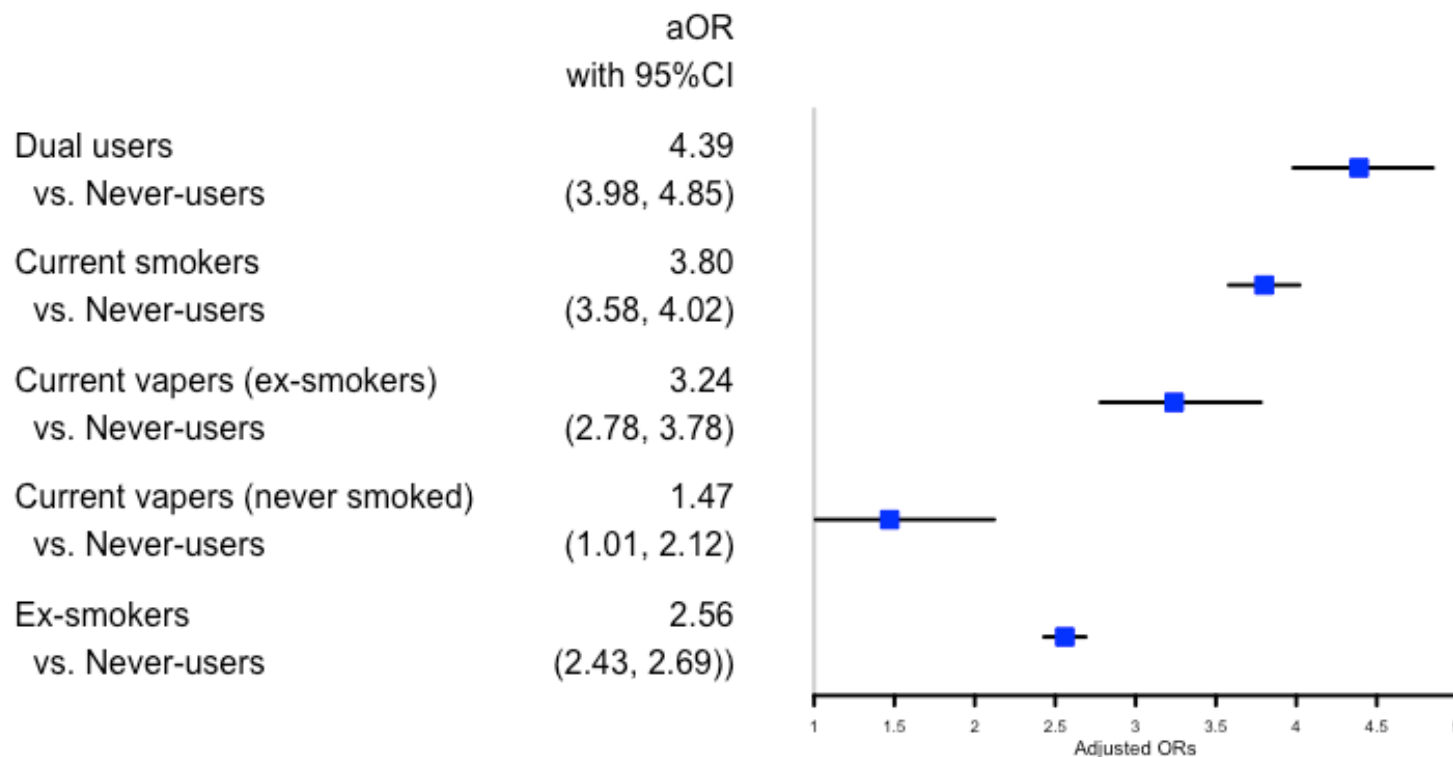
Age Group



■ 18-34 ■ 35-64 ■ 65+

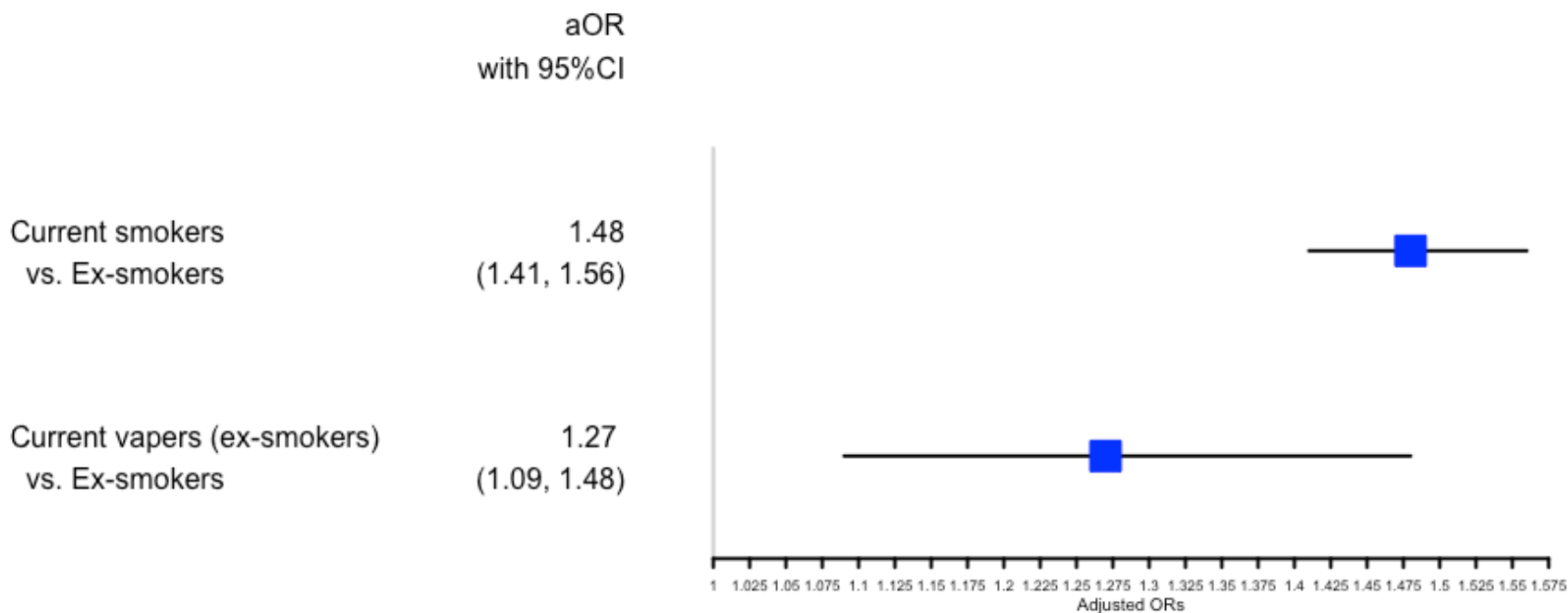
Results (Never-users as ref)

Association of vaping with self-reported COPD diagnosis in adults



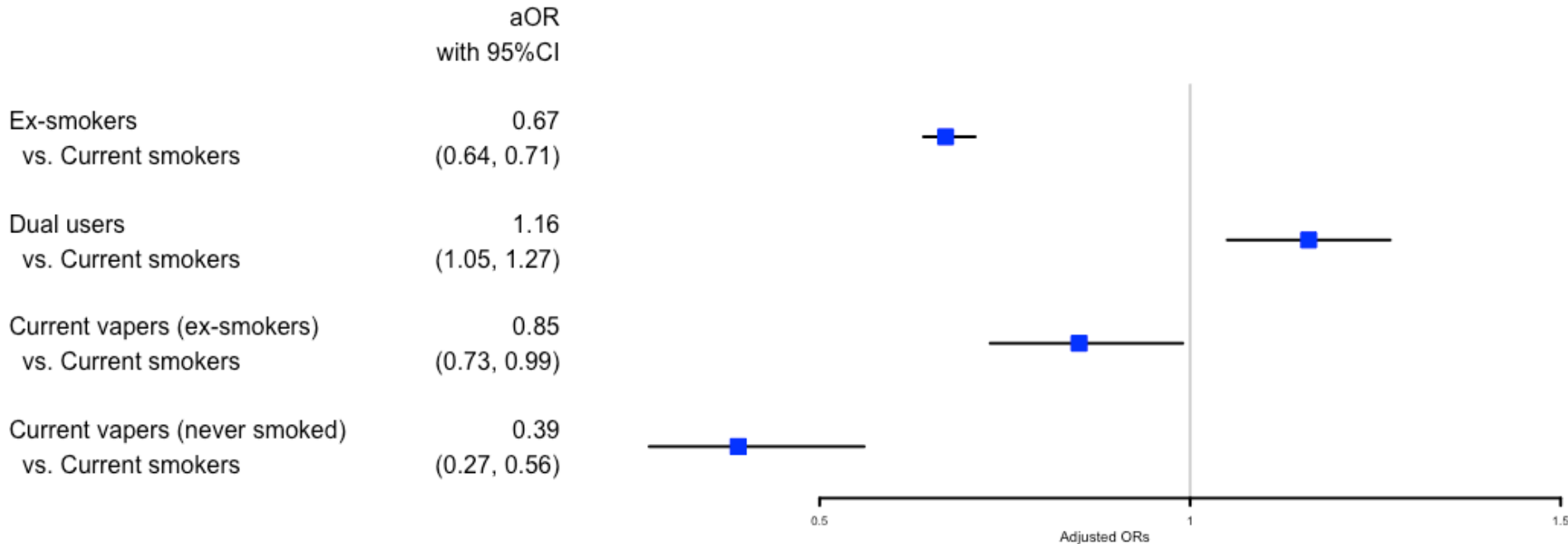
Results (Ex-smokers as ref)

Association of vaping with self-reported COPD diagnosis in adults



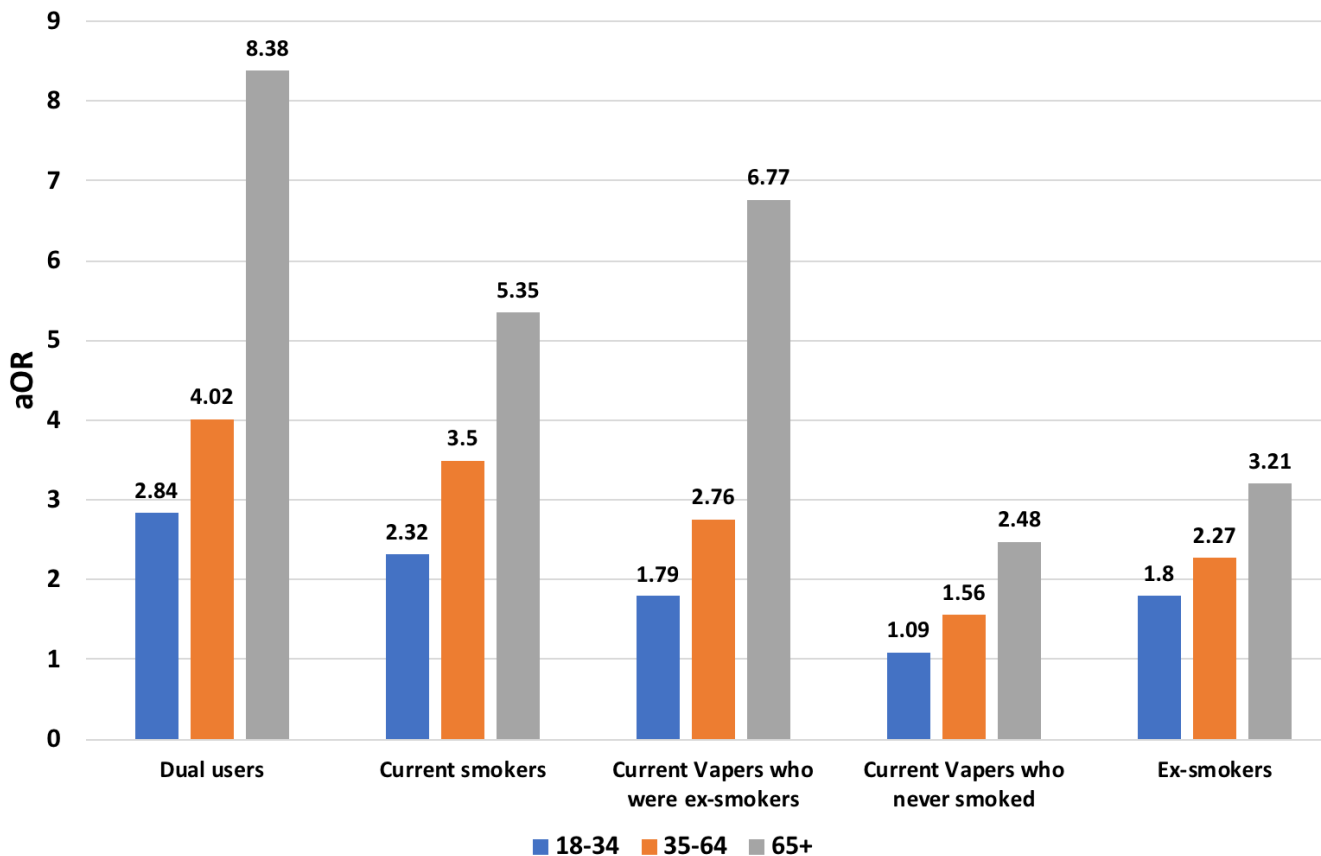
Results (Current smokers as ref)

Association of vaping with self-reported COPD diagnosis in adults



Results (Within each age group)

Adjusted ORs of self-reported COPD diagnosis using never-users as reference group



- We observed a significant cross-sectional association of vaping with self-reported COPD, after adjustment for covariates.
- The association is still significant even after removing the long-term health effect from past smoking.
- Dual users had a higher risk of self-reported COPD than current smokers.
- Current vapers who were ex-smokers had a slightly lower risk of self-reported COPD than current smokers.
- Current vapers who never smoked had a lower risk of self-reported COPD than current smokers.

Discussion

- The insignificant aORs for self-reported COPD across all age groups when comparing current vapers who never smoked vs. never-users might due to the small sample size.
- Age subgroup analysis showed the strongest association of vaping with self-reported COPD among older adults.
- A stronger association of vaping with self-reported COPD were shown in adults aged 35-64 than in adults aged 18-34 years old.
- Our study confirmed the long-term association of past smoking with self-reported COPD.
- Quitting smoking can significantly reduce the association with self-reported COPD.

Limitations

- Our cross-sectional study could not test the causal relationship between vaping and self-reported COPD.
- COPD is not measured directly as no measurement of FEV1:FVC used for COPD diagnosis were provided in the BRFSS data.
- Our current study could miss other important covariates such as the duration and frequency of e-cigarette use due to lack of information in the BRFSS data.
- The BRFSS data is self-reported and subject to recall error.
- Our current study does not evaluate the long-term health effect of vaping.

- Our current findings about the significant association between vaping and self-reported COPD diagnosis in adults raise concerns about respiratory risks associated with vaping.



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Thanks!
Questions?