RISK PERCEPTION AMONG SMOKERS: E-CIGARETTE AND SMOKING RELATIVE HARM

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Introduction

A congressionally mandated report from the National Academies of Sciences, Engineering, and Medicine (NASEM) on the health effects of e-cigarettes[1] and evidence reported by the Royal College of Physicians[2] concluded that while not without health risks, e-cigarettes are likely far less harmful than conventional cigarettes. Risk perception can impact future tobacco product use choices[3,4]. We investigated if adult cigarette smoker perception of e-cigarette and cigarette risk is consistent with the conclusions of these authoritative bodies. We also investigated the association between adult cigarette smoker risk perception and actual switching to e-cigarettes.

Research Design and Analysis

Two waves of the US nationally representative longitudinal Population Assessment of Tobacco and Health (PATH) study[5] were used to evaluate whether adult cigarette smokers, including FDA defined vulnerable populations (VPs), misperceive e-cigarette use as about the same or more harmful than smoking cigarettes and if this misperception is associated with switching behavior. FDA defines VPs as persons with low socio-economic status (SES), minority race/ethnicity, LGBTQ sexual orientation, or fair/poor mental health[6,7]. At wave 2, PATH expanded its e-cigarette classification to include other e-vapor products to reflect growth in the category that was occurring at that time. As a result, the term “e-vapor” is used to define the category for wave 2 analyses.

The following analyses were completed to address risk perception and switching behavior among smokers and VPs who smoke*:

Risk perception

- Percent of risk misperceptions at each wave and tests of differences in the percent of risk misperceptions across waves among smokers and VPs who smoke

Switching behavior

- Percent of smokers and VPs who smoked at wave 1 who switched from cigarettes to e-vapor products by wave 2
- Percent of smokers and VPs who smoked at wave 1 who switched from cigarettes to e-vapor products by wave 2 stratified by perception
- Odds of switching to e-vapor products by wave 2 between those with and without the misperception among all study groups (smokers and VPs who smoked at wave 1) while adjusting for age, gender, and education using logistic regression

The data were adjusted using population weights with variance estimates computed using Fay's balanced repeated replication (rho=0.3) using SAS 9.4[8].

*The smoker group consists of adults who use cigarettes every day or some days and have smoked 100 cigarettes in their life. The VPs who smoke group consists of adult smokers who have a characteristic that FDA has defined as vulnerable.

Conclusions

Our findings show there are growing misperceptions among adult smokers that e-vapor use is equal to or more harmful than smoking, a belief inconsistent with the NASEM and Royal College of Physicians conclusions. Actual switching was was more than twice as common among respondents without misperception. It is critical to provide smokers, including those identified as vulnerable by the FDA, with truthful and accurate information about relative risks of tobacco products to advance tobacco harm reduction.

References

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Results

Risk perception

- The percent of risk misperception increased from wave 1 to wave 2 for smokers and VP smokers (smokers: 44.9% to 59.0%, low SES: 48.1% to 62.4%, minority: 50.0% to 64.4%, LGBTQ: 47.4% to 60.6%, mental health: 44.6% to 59.6%, p_s<0.0001).

Switching behavior

- The percent of smokers and VP smokers who reported switching to e-vapor products by wave 2 was below 3% for each study group (smokers: 2.2%, low SES: 2.2%, minority: 1.7%, LGBTQ: 2.7%, mental health: 1.9%).
- The percent of smokers and VP smokers who reported switching to e-vapor products by wave 2 differed depending on the presence or absence of the misperception, respectively (smokers: 1.3% vs. 2.9%, p<0.0001; low SES: 0.9% vs 2.5%, p=0.0001; minority: 0.8% vs 2.4%, p=0.0002; LGBTQ: 0.5% vs 2.1%, p=0.011; mental health: 1.0% vs 2.6%, p=0.0071).
- Odds of switching to e-vapor products by wave 2 were significantly higher among respondents without the misperception at wave 1 relative to respondents with the misperception in each study group (smokers OR=2.1, p=0.0002; low SES OR=2.8, p=0.0006; minority OR=2.8, p=0.0067; LGBTQ OR=4.2, p=0.02; mental health OR=2.7, p= 0.01)[†]

[†]To achieve model convergence, the regression model for the LGBTQ group omitted age and education and the mental health group omitted education as a covariate. Age was a significant covariate for all groups except LGBTQ. Gender was a significant covariate for the smoker group. Education was a significant covariate for smokers, low SES, and minority groups.

PATH question analyzed to assess risk perception

R01_AE1099:	**Is using e-cigarettes less harmful, about the same, or more harmful than smoking cigarettes?**

Figure 1. Percent of smokers and VPs who smoke with the perception that e-cigarettes are about the same or more harmful than smoking cigarettes at wave 1 and wave 2

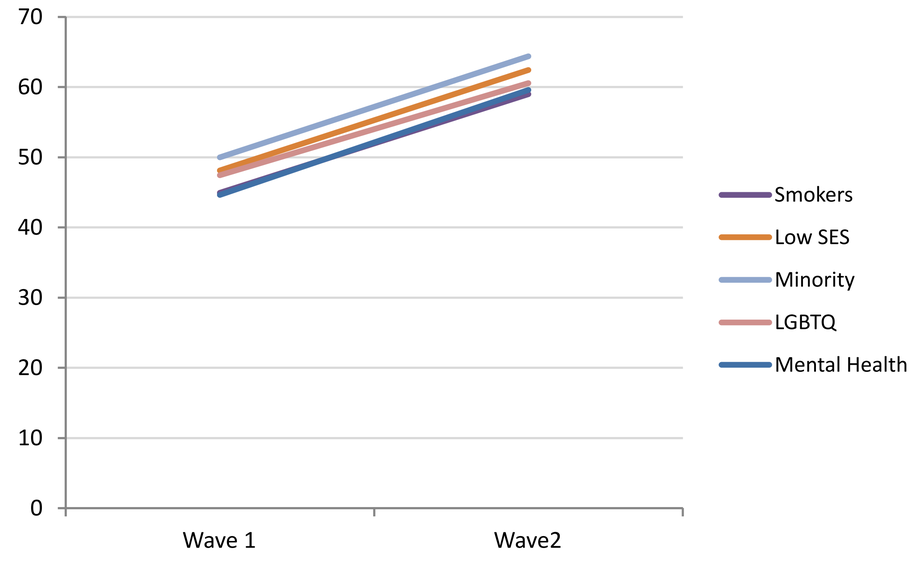

Figure 2. Percent of smokers and VPs who smoked at wave 1 who switched from cigarettes to e-vapor products by wave 2 stratified by perception