

Custom and non-custom e-cigarette liquid users' device/liquid characteristics and health outcomes: implications for e-cigarette regulations

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Background

Some e-cigarette (e-cig) users mix/order custom liquids for their devices. Regulatory actions (e.g., banning flavored liquids) may result in increased use of custom liquids. Understanding device/liquid characteristics and health outcomes of custom and non-custom e-cigarette liquid users can inform product regulation, including potential unintended consequences. We examined differences in demographics, e-cig device/liquid characteristics, and self-reported health outcomes of custom (CLUs) vs non-custom (NCLUs) liquid users.

Methods

- Participants were recruited from 125 US cities using social media and Craigslist from May-October 2020.
- 1209 adult (21+) regular e-cig users (5+ days of use/week) completed an online survey and submitted photos of their most used e-cig device/liquid.
- Chi-squared and Mann Whitney U tests were conducted.

Custom e-cigarette liquid users were less likely to be 21-29 years old and female, and more likely to use devices with adjustable settings, freebase liquids, and lower nicotine concentrations compared to non-custom liquid users.

	Custom liquid users (n=294)	Non-custom liquid users (n=915)
Socio-demographics		
Age 21-29 (%)*	22.1	38.3
Female gender (%)*	45.2	56.1
Non-White race (%)	22.5	21.2
Income <\$60,000 (%)	68.0	73.2
Smoked at least one day in the past 30 days (%)	38.8	42.0
Device/liquid characteristics		
Adjustable wattage/voltage (%)*	67.6	37.1
Adjustable airflow (%)*	58.5	33.6
Customizable adaptive power (%)*	27.9	14.0
Liquid nicotine concentration (mg/mL)*	14.3	30.1
Freebase nicotine formulation (%)*	72.8	39.6
Self-reported health outcomes		
E-cig dependence (adapted from PROMIS; max 16)	8.5	8.9
Shortness of breath at least several days/week (%)	10.2	9.7

*Statistically significant difference between custom and non-custom liquid users at $p < 0.05$

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Results

- 24.3% (n=294) of the sample used custom liquids and 75.7% (n=915) used non-custom liquids.
- CLUs and NCLUs varied on several key socio-demographic, device/liquid, and health-related variables but not in e-cig dependence or shortness of breath.

Discussion

- Regulations may differentially impact CLUs and NCLUs and therefore different demographic groups (e.g., nicotine concentration limits may lead to more compensatory vaping behavior changes among NCLUs, which are more often female than CLUs).
- Future research is needed to understand other potential health outcomes from custom liquids (e.g., accidental skin/eye exposure).
- These results can inform product regulation, including potential unintended consequences.

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