

Introduction

Previous studies have shown that nicotine delivery after a single use of an e-cigarette device in a controlled laboratory setting depends on the specific device characteristics and flavor type. The aim of this study was to examine whether e-cigarette characteristics and flavor types are associated with nicotine exposure, under users' typical patterns of usage, outside of a laboratory setting.

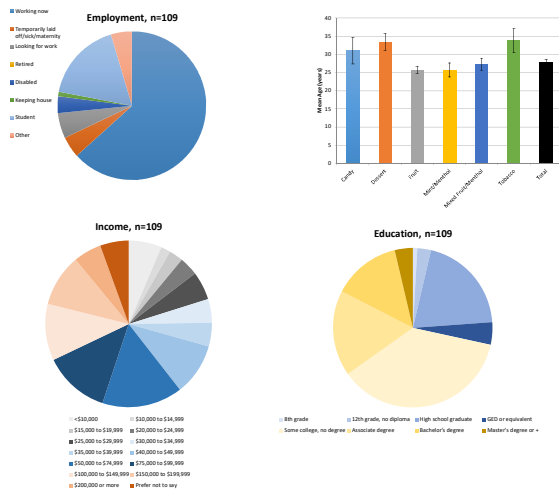
Methods

Study Design: participants completed visits once per month, for 12 months. Consent was collected at initial visit, and several questionnaires were completed at first and last visit only; all other visits followed the same protocol of bio-specimen collection, computer surveys, and respiratory testing. Computer surveys included questionnaires about recent flavors used and subjective respiratory symptoms.

Participants: questionnaires provided demographic information (figures below) as well as information about history of previous tobacco product use, switching from combustible cigarettes to ENDS, and product preferences. Participants self-identified as 94.5% Caucasian, 11.9% Hispanic, 5.5% Asian, 1.8% African American, 0.9% Native American, with 3.7% reporting more than one ethnicity.

Bio-specimen Collection: urine, saliva, blood plasma, nasal epithelial swab cells, and exhaled breath condensate were collected at each visit; samples were stored in a -80C freezer until analysis could be performed.

Respiratory Testing: participants performed exhaled CO breath test, forced exhaled nitric oxide, spirometry, maximal inspiratory pressure, maximal expiratory pressure, and sniff nasal inspiratory pressure.



Preliminary Results (Visit 1 Data)

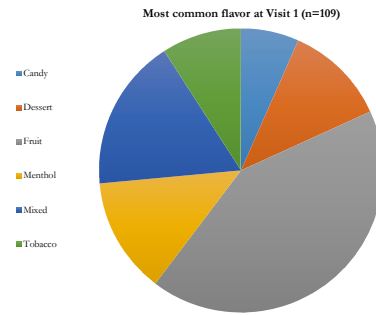


FIGURE 1. Distribution of most commonly used flavor in the prior 30 days at first visit.

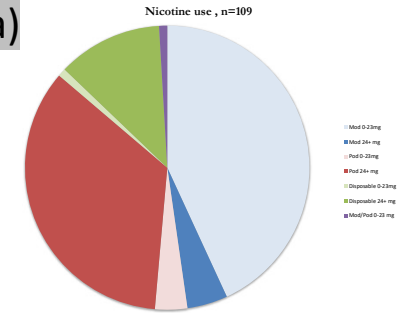


FIGURE 2. Product device type was associated with higher or lower nicotine concentration.

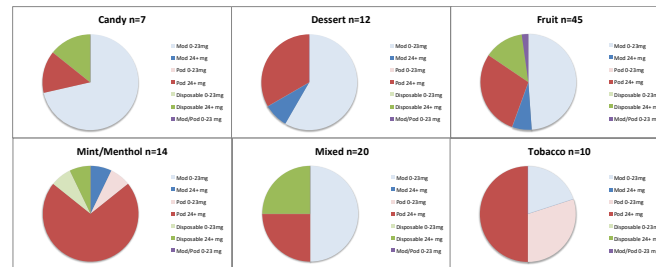


FIGURE 3. Flavor was associated with device type and nicotine concentration.

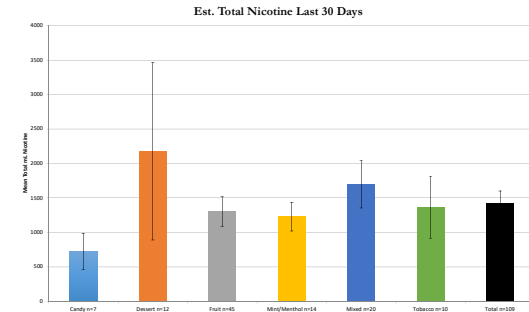


FIGURE 4. Estimated nicotine consumption during prior 30 days, calculated using estimated amount purchased, nicotine level used, and estimation of amount of purchased product used.

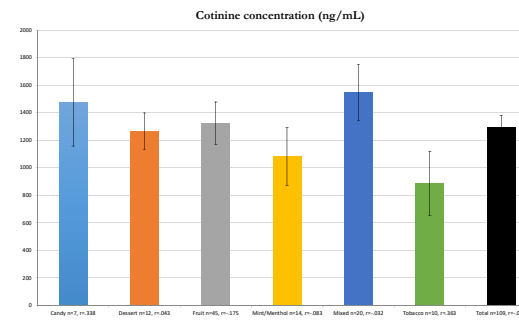


FIGURE 5. No significant differences in cotinine concentrations across users of various types of flavors.

Conclusions

The data revealed an association between nicotine content, flavor type, and type of e-cigarette device used by adult daily vapers; higher nicotine e-juice was associated with disposables and pod devices while lower nicotine was used with mod-box devices. However, estimated nicotine intake appears to be similar among adult daily vapers regardless of device type or flavor, with self-reported nicotine consumption and urinary cotinine levels being in agreement.

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