

# Acceptability of E-cigarettes and Heat-not-burn Products Relative to Cigarettes among African American Smokers

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## BACKGROUND

Use of electronic cigarettes (ECs) and heat-not-burn (HNB) products is continuing to proliferate in the US. ECs are battery powered devices that heat e-liquid that often contains nicotine and delivers it to the user in the form of an aerosol. Alternatively, HNB products are battery powered devices that heat cigarettes without combustion and deliver nicotine-containing vapor to the user. ECs and HNB products present less short-term harm compared to combustible cigarette smoking. For adult smokers who are unable or unwilling to quit, substituting combustible cigarettes for these EC and HNB products results in reduced harm. The greatest benefit is seen in smokers who are able to completely substitute. However, long-term studies of ECs and HNB products are ongoing. Little is known about acceptability of ECs and HNB products among smokers, particularly African American (AA) smokers who bear a disproportionate burden of smoking-related morbidity and mortality.



Heat Not Burn



E-Cigarette

## METHODS

Six AA current cigarette smokers completed three in-laboratory smoking/vaping sessions in a randomized crossover design. Smokers were naïve to ECs and HNB products. During each session, participants completed a standardized 10-puff bout followed by a 60-minute session with each product (cigarette, EC, HNB). During the 60-minute session participants used the product as much or as little as they wanted. Puff topography was collected passively throughout each session to measure puffing patterns. At the end of each session, participants completed self-report measures of behavioral intentions and subjective effects. These are preliminary findings from an ongoing study that will include a total of 20 smokers.

## RESULTS

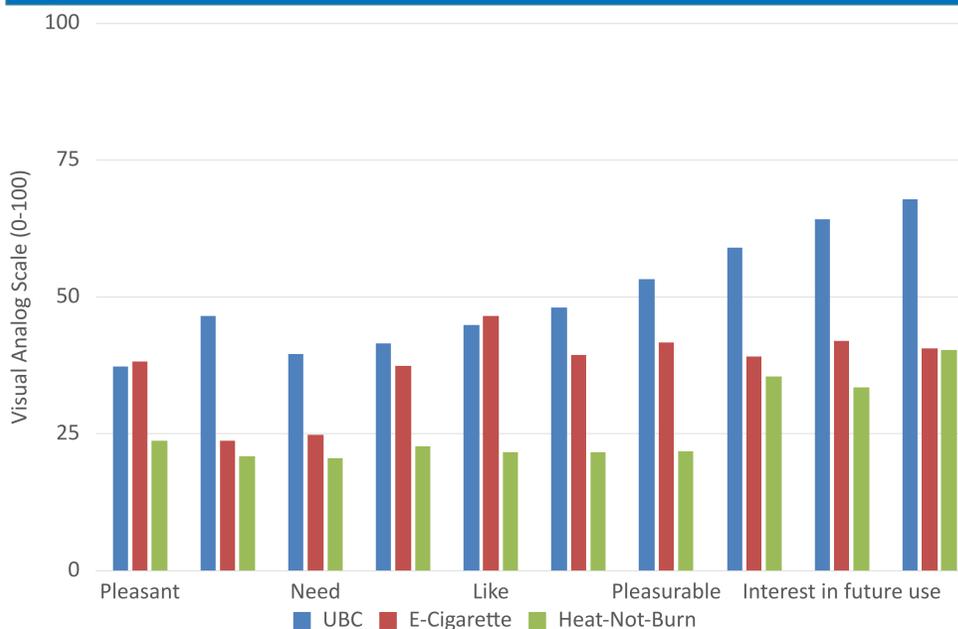
During the 60-minute session, participants spent the most time using their cigarette followed by HNB then EC. Participants puffed most frequently when using HNB followed by their cigarette and EC. The number of puffs was highest for cigarettes followed by HNB, then EC (Table 1). In terms of subjective effects, ratings were most positive for cigarettes followed by EC, then HNB (Figure 1). For behavioral intentions, ratings were highest for cigarettes, and slightly higher for HNB compared to ECs (Figure 2).

**Table 1. Puff Patterns**

|                            | Cigarette |       | EC    |       | HNB   |       |
|----------------------------|-----------|-------|-------|-------|-------|-------|
|                            | M         | SD    | M     | SD    | M     | SD    |
| Cumulative puffing time, s | 31.8      | 23.0  | 5.5   | 5.3   | 17.8  | 11.6  |
| Average puff duration, s   | 1.1       | 0.2   | 1.1   | 0.4   | 0.9   | 0.5   |
| Average IPI, s             | 87.9      | 108.7 | 100.1 | 92.0  | 19.7  | 18.0  |
| Total number of puffs      | 26.5      | 15.2  | 6.0   | 7.4   | 22.8  | 23.8  |
| Total inhaled volume, mL   | 562.3     | 395.4 | 118.5 | 112.2 | 442.8 | 307.6 |

Note. IPI = interpuff interval, EC = Electronic Cigarette, HNB = Heat-Not-Burn

**Figure 1. Subjective Effects**

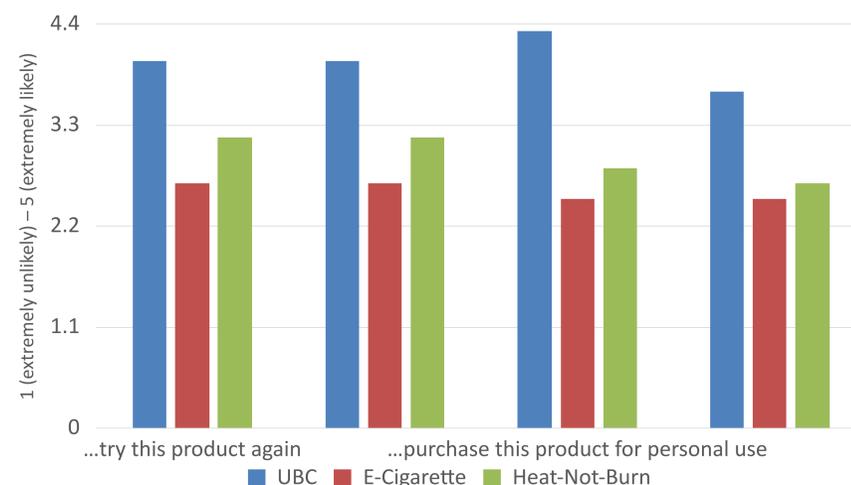


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**Figure 2. Behavioral Intentions**



## DISCUSSION

As expected, cigarettes were preferred; however both HNB and ECs were acceptable and appeared comparable to each other in terms of puff patterns, subjective effects, and behavioral intentions. ECs outperformed HNB on all subjective effects except willingness for future use, while HNB marginally outperformed ECs on all measures of behavioral intention. For adult smokers who can't or won't quit cigarettes, these products are a viable alternative. Future studies are needed to examine real-world use of these products, short- and long-term changes in health outcomes in continued cigarette smokers relative to EC and HNB users, and to identify the ideal smoker-product match (i.e., who will succeed on HNB versus who will succeed on EC). A limitation of this study is that participants only had to be willing to try the products in the lab. The findings may be more pronounced among adult smokers looking to make a switch to reduce their harms from smoking. Findings provide the first evidence of the relative acceptability of these products, that are lower risk in comparison to cigarettes, the most harmful tobacco product. These data will help to inform the FDA about meaningful and effective regulations on these products that will maximize public health.

Co → 10 Puff & Topography → Nicotine, CO → Ad Lib & Topography →  
Nicotine, CO → Self Report, Behavioral Intentions, Subjective Effects

