

## Recognition, use and perceptions of JUUL among youth and young adults

### BACKGROUND

In recent years, use of electronic nicotine delivery systems (ENDS) has drastically increased, exceeding the prevalence of combustible tobacco use among youth in the USA.<sup>1</sup> ENDS products are heavily marketed on television, radio and the internet, in print and at the point-of-sale,<sup>2-5</sup> using strategies that may appeal to youth.<sup>6</sup> Recent national data suggest exposure to ENDS marketing may be associated with increased use of the products among young people.<sup>5,7</sup> Of public health concern are the findings suggesting negative health consequences associated with ENDS use and associations between ENDS use and future combustible tobacco use. Additionally, ENDS use is substantially higher among youth, a group for whom nicotine exposure is particularly harmful, compared with adults.<sup>1</sup>

A novel ENDS product, JUUL, was developed by PAX Labs and represents one of the latest efforts to innovate within the ENDS market. The slim, high-tech devices are charged through USB ports and use nicotine cartridges, or 'pods', that come in a variety of flavours. Through novel product design and use of organic nicotine

salts extracted from tobacco leaves, rather than the 'freebase formulations'<sup>8</sup> of nicotine used in other ENDS, PAX Labs claims JUUL provides a nicotine concentration comparable with a traditional cigarette and delivers nicotine 1.25–2.7 times faster than competing ENDS. Since its introduction in early 2015, JUUL has experienced tremendous growth in market share. As of 24 February 2018, JUUL represented an astonishing 49.6% dollar share and 31.1% unit share of the ENDS market.<sup>9</sup> With such rapid emergence into the ENDS market, data regarding youth and young adults' knowledge, attitudes and use of JUUL are limited.

### METHODS

In November 2017, the Schroeder Institute at Truth Initiative conducted a national, online survey among people aged 15–24 years to examine product perceptions and use of JUUL. A convenience sample (n=1012) was recruited from an existing online panel (www.qualtrics.com) and paid an incentive based on existing panel incentive structures. The sample was evenly distributed across gender and age; more than half were Caucasian (65%), 13% African-American, 19% Hispanic and 3% reported other racial/ethnic subgroup.

Respondents were shown two photographs of a JUUL device with the brand name removed: one image displayed the device and a variety of flavour pods and the other included the JUUL and USB charging device (similar images included as figures 1 and 2). Respondents were asked if they recognised the device and,

for those who responded affirmatively, asked what people their age call the device and how they describe the use of the device. Respondents who recognised JUUL were also asked about their ever and past 30-day use. Survey items also assessed respondents' perceptions regarding the nicotine content of JUUL. The following demographic characteristics were also measured: age, gender, race/ethnicity and perceived financial situation (live comfortably, meet needs with a little left over, just meet basic expenses, don't meet basic expenses).

Descriptive and  $\chi^2$  analyses assessed prevalence of JUUL recognition, use and nicotine perceptions, and differences by demographic characteristics. Analyses were weighted to be nationally representative of age, gender and race/ethnicity based on the US Census, 2016.<sup>10</sup>

### RESULTS

#### Recognition and use

One quarter (25%) of respondents reported recognition of the device, 10% reported both recognising and having ever used a JUUL, and 8% reported recognition and past 30-day use of JUUL. Compared with those aged 15–17 years, those aged 18–24 were more likely to recognise JUUL (29% vs 21%) and report ever using a JUUL (12% vs 7%) ( $p<0.01$ ). Compared with females, males were more likely to recognise JUUL (30% vs 21%), and report ever (13% vs 7%) and past 30-day use (10% vs 6%) ( $p<0.05$ ). A significantly higher proportion of those who reported living comfortably with respect to their financial situation reported recognition (34%) and past 30-day use of JUUL (11%) compared with those reporting other financial situations ( $p<0.01$ ).

#### Brand identification

JUUL terminology response categories were established based on an earlier, unpublished study that asked similarly aged respondents open-ended questions regarding the terminology used for JUUL and other ENDS. Product name categories included: JUUL, e-cigarette, vape, vape pen and vape tank. Product use categories included vaping, blowing smoke, swishing, JUULing and puffing air. Among those who recognised JUUL, 34% reported people their age call the product 'JUUL', while 63% reported 'e-cigarette' or a vaping device. One quarter (25%) of those who reported product recognition also reported people their age refer to use as 'JUULing', while 51% reported 'vaping'.



Figure 1 JUUL device.



Figure 2 JUUL device and flavor pods.

## Nicotine perceptions

While every JUUL flavour cartridge currently sold includes nicotine, and the product is marketed with claims of enhanced nicotine delivery, awareness of nicotine content was limited. Only 25% of individuals who recognised the product and 37% of past 30-day users reported that JUUL always contains nicotine.

## STUDY IMPLICATIONS

The finding that many young people use JUUL-specific terminology suggests existing tobacco surveillance systems may under-report the use of JUUL unless response categories include JUUL-specific language. Federal, state and other health organisations should ensure that rapid response surveillance changes can be made to accommodate the quickly evolving ENDS market. The use of the product brand name in describing use also suggests strong brand identification may be quickly emerging for this product (eg, the use of ‘Xeroxing’ to describe photocopying). Additional research regarding the perception of the JUUL brand among youth is necessary to inform efforts to reduce youth use of this product.

Of note, almost 80% of respondents in the current study who reported ever use of JUUL were also past 30-day users of the device. This differs from national patterns of any ENDS use, whereby smaller proportions of ever users are also current users.<sup>11</sup> This finding suggests the majority of ever JUUL users may not be experimenting with the device, but using it regularly.

The study also raises concerns regarding the lack of awareness that JUUL products contain nicotine, an addictive drug known to negatively impact brain development among young people.<sup>12</sup> While designed specifically to yield faster delivery of nicotine than other ENDS, and marketed accordingly, the current study found that only 4-in-10 (37%) past 30-day JUUL users knew the product always contains nicotine. Public education efforts that

raise awareness of the ubiquity of nicotine in ENDS<sup>13</sup> and the addictive nature of nicotine are essential.

The rapid growth in ENDS market share following the introduction of JUUL highlights the need for rigorous regulation of novel ENDS products. The delay in the US Food and Drug Administration’s release of the ‘deeming’ rule created an opportunity for this novel device, with potential for vast appeal among youth and nicotine addiction, to enter and dominate the ENDS market.

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**Contributors** JGW, ECH, JC and DV contributed to the design of the study. HX and MB performed the analyses. MB, EH and JC contributed to the implementation of the study. JGW, MB and MSG wrote the manuscript. All authors contributed to revising the manuscript.

**Funding** The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

**Competing interests** None declared.

**Patient consent** Obtained.

**Ethics approval** Chesapeake IRB, Protocol Number: Pro00023668.

**Provenance and peer review** Not commissioned; externally peer reviewed.

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**To cite** Willett JG, Bennett M, Hair EC, *et al.* *Tob Control* Epub ahead of print: [please include Day Month Year]. doi:10.1136/tobaccocontrol-2018-054273

Received 26 January 2018

Revised 22 March 2018

Accepted 26 March 2018

*Tob Control* 2018;0:1–2.

doi:10.1136/tobaccocontrol-2018-054273

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