Youth Perceptions of Juul in the United States

The use of e-cigarettes among youths has reached epidemic proportions in the United States.1 Juul is the most popular brand of e-cigarettes among youth, and it has been criticized for marketing that targets youths.2 Concerns of serious short-term and long-term health outcomes from e-cigarette use have led to actions from the US Food and Drug Administration, states, and municipalities to ban or restrict the sale of e-cigarettes.3,4 For policies to be effective in curtailing the use of Juul among youth, there must be a greater understanding of youths’ knowledge, beliefs, and motivations regarding this product. This study assesses the perspectives of a national sample of youths on the use of Juul (also known as juuling).

Methods | Respondents are part of the National MyVoice Cohort5 of youths aged 14 to 24 years. Youths were recruited on a rolling basis to match national demographic benchmarks, including age, sex, race/ethnicity, education, and region of the country, based on weighted samples from the American Community Survey. Online consent was obtained from participants prior to participation. This study was approved by the University of Michigan institutional review board, including a waiver of parental consent for minor participants. Demographic information was self-reported during online enrollment.

From January 25, 2019, to February 1, 2019, participants were sent 4 questions via text message about the e-cigarette brand Juul:
1. Have you ever heard of Juul?
2. Why do you think people your age juul?
3. Do you think juuling is dangerous? Why or why not?
4. Do you think juuling leads to using alcohol, cigarettes, or other drugs? Why or why not?

Open-ended responses were analyzed and coded independently by 2 investigators (G.G.W. and A.C.B.) using a modified grounded theory approach. Discrepancies were resolved by a third investigator (M.E.W.). Responses were coded in Excel version 16 (Microsoft), and SAS version 9.4 (SAS Institute) was used to calculate summary statistics.

Results | Among 1215 MyVoice participants, 1129 responded to the survey (a response rate of 92.9%). The demographic characteristics of these respondents are shown in Table 1. In brief, respondents were mostly female (n = 633 [56.3%]), with a mean (SD) age of 18.8 (2.9) years.

Table 2 summarizes major themes, with representative quotes by question and age group. Most youths in the sample (88%) had heard of Juul. Social reasons (eg, “Because it’s trendy and cool!”) were the most commonly reported reason for why youths juul (62%), while only 5% of youths mentioned flavors as a driver of use. A large proportion of youths (79%) believed that juuling is dangerous (eg, “It’s dangerous. You’re breathing chemicals into your lungs, addictive ones too”) and that it leads to other substance use (72%), with cigarette use cited most commonly.

Discussion | Our findings indicate that social influences, such as fitting into a peer group or experimentation, are an important factor in Juul use among youths. Policies designed to reduce e-cigarette use among youths will likely need to address these social drivers and youths’ age-appropriate interests in experimenting with substances that may give them a buzz or make them feel cool. Existing policies designed to limit use of e-cigarettes by youths that focus on restricting the sale of flavored products may be insufficient in overcoming these social influences.6

Despite a common belief among MyVoice youths that juuling may be dangerous and may serve as a gateway to other substances, rates of Juul use continue to rise.7 These beliefs suggest that campaigns and educational programs focused on the dangers of juuling alone may not be effective in reducing this health epidemic. This study was unable to examine differences in opinions among users and nonusers of Juul and purposefully did not ask participants to disclose personal Juul usage, to protect confidentiality and minimize social desirability.
bias. However, firsthand experience with Juul may influence a participant’s knowledge and beliefs of the product and bias their responses. Future campaigns should acknowledge and tackle the social realities of youths today to effectively address the underlying reasons why youths use e-cigarettes despite perceived risks.

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Author Contributions: Dr Chang and Ms Wasielewski had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: Wood, Sonneville, Chang.
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Second impact syndrome should always be acknowledged. As the authors of the published autopsy of 17-year-old rugby player Rowan Stringer stated clearly: “Everyone in sports should know about SIS because it is preventable.”

Such a mistake draws attention to the way that a more precautionary, patient-centered approach to protecting youths might, out of an abundance of caution, place high-quality evidence into the context of all of the evidence. Had the authors done so, they would have helped health care practitioners understand, as most certainly do already, that since at least 1975 there have been plenty of perfectly good reasons for warning any player of collision sports with a history of multiple concussions (or comorbidities that place them at heightened risk for slow recovery) that the benefits of collision sports for them may not be worth the risks of continued exposure.

The authors of this article1 should welcome, indeed strenuously demand, correction to their article to further promote the widespread consensus that exists about these facts in medicine, public policy, and common sense. Who, after all, disagrees: “When in doubt, sit them out?”

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Conflict of Interest Disclosures: Dr Casper is retained as an expert witness for his medical history expertise in concussion litigation pending in the United States and brought by law firms representing plaintiffs. He receives royalties from Manchester University Press and the University of Rochester Press. He has received honoraria for public lectures on the history of the mind and brain sciences.


In Reply Casper raises the question of why we excluded discussion of second impact syndrome in our consensus statement.2 Second impact syndrome is an important topic with differing opinions regarding its pathophysiology and risk factors. More research is needed to accurately estimate the risk of second impact syndrome and to learn best prevention strategies. For these reasons, our panel elected not to include second impact syndrome as one of the questions to address. In addition, current understanding is that this syndrome appears to occur when a person who is already symptomatic from a current brain injury sustains a second impact to the brain. Laws in all 50 states and the District of Columbia currently specifically say that symptomatic players are not to return to play until provided medical clearance.

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COMMENT & RESPONSE

Including Second Impact Syndrome in Sports-Related Concussions Evidence Review

To the Editor Rivara et al used such a highly restricted definition of evidence in their “Consensus Statement on Sports-Related Concussions in Youth Sports Using a Modified Delphi Approach,”4 they forgot to mention the well-recognized dangers of second impact syndrome (SIS). A correction should be issued.

As with those rare cases of incipient chronic traumatic encephalopathy that have been found in US high school football players,2 cases of SIS are few in the historical record and confusing especially in historical hindsight.3 But it is nevertheless a surprising error of omission to allow such highly restrictive definitions of medical evidence to conceal rare occurrences without even so much as a caveat.

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