Is the EU-18mg/mL JUUL as Satisfying as the US-59mg/mL JUUL? A Mixed Method Study to Explore the Effects of JUUL and Trajectories of Use

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Intro

- The surge in popularity of JUUL in the US has not materialised in the UK. A key difference is the nicotine strength; in the US, it is typically 59mg/mL, and is capped at 20mg/mL in the UK and EU. This may limit the ability of JUUL to deliver satisfaction. The aims were to:
- Compare the EU-JUUL (18mg/mL nicotine strength) vs. the US-JUUL (59mg/mL) on daily smokers' subjective experiences and blood nicotine levels

Methods

- Mixed method, double-blind, counter-balanced within-participants design with 2 conditions: 18mg/mL vs. 59mg/mL
- N=19 UK smokers provided blood samples at baseline 5, 15, 30 and 60 mins and subjective effects measures whilst vaping ad lib for 60 mins on 2 separate occasions
- Semi-structured interviews were conducted at 2-week follow-up

Results

The EU-18mg/mL was found to be as satisfying, pleasant and effective at alleviating craving and withdrawal symptoms as the US-59mg/mL JUUL.

For Nicotine Hit, means increased from 10 to 60 mins for the US-59mg/mL and decreased under the EU-18mg/mL (p=.045).A significant reduction in smoking and cigarette dependence was reported at the 2-week follow-up (p < .001). Qualitative data suggested that users were aware of increased vaping behaviour when using the 18mg/mL JUUL. Both conditions were perceived positively.





Figure 1. Mean (SEM) ratings on craving for the US and the EU-JUUL in the lab



liked the JUUL regardless of the nicotine strength

Specific vaping/smoking contexts Participants dual used but reduced smoking. Most people described different sets of rules around juuling vs smoking

Fear of swapping one addiction for another Participants feared being more addicted to the JUUL as they felt they could not put it down due to the unconstrained nature of use compared to cigarette smoking.

really liked it, I liked the feel of it. I loved the fact how it just sticks up when charging, into the side of a USB. The colour of it and everything, yeah, I actually really liked the device, it like fit in my pocket quite nice, it didn't leak." (P19)

Like, when you're walking, I don't know, from home to the train station, I would want a tobacco cigarette, whereas, when I'm at work in the staff room I would much rather stay there and smoke my Juul than go out and have a cigarette. But, no, because I've been home most of the time, I've smoked my Juul quite a lot. Then also, the cigarettes that I smoke are also with my mum, so after work, dinner, after we eat, we like a cigarette, and I love to smoke a cigarette after a meal. But my tobacco cravings have decreased a lot from the Dual and I really like the Juul" (P12)

'I feel like the JUUL is just more addictive because I've had times in the past where I've kind of managed to – I feel like I could quit smoking if I had to, it just takes me a while, but I feel like the JUUL is not a way to quit because I'm just going to be really addicted to it." (p5)

easy to use actually." (p13)

"today I have a lot of paperwork to do and stuff, I'm sure I have been - this (the Juul) will be satisfy me and I will be happy with it. I think it has to do with special occasions or because I'm anxious with something, or because in my mind this is not as strong as what I need, and that's why I need a real cigarette." (p13)

'I stopped smoking but I was just using it constantly so it was almost kind of like my addiction to nicotine was stronger because I could just use it all the time kind of thing. And I really enjoyed it, the flavour so much so I got really addicted to the flavour, all those kind of stuff." (P16)

Figure 2. Mean satisfaction ratings for the US-59mg/mL and the EU-18mg/mL JUUL in the lab



vaping session under the US-JUUL (59) and the EU-JUUL (18mg/mL) in the lab





Discussion

- Differences in lab liquid consumption suggest attempts to compensate for lower nicotine which, although did not raise blood nicotine to equal levels, was successful in providing satisfaction.
- Lab findings could suggest that high nicotine available in the US may not be necessary for satisfaction to UK smokers, but, with the caveat of consuming more liquid. Although, reports outside of the lab describe specific contexts wherein the EU-JUUL is not always satisfying.
- * Participants could not always discern the nicotine strengths they had in the lab, this may indicate an expectancy effect and explain the lack of differences between the nicotine strengths in subjective effects.
- Concerns over the perceived potential addictiveness of JUUL due to the lack of constraints in use compared to smoking seems a significant barrier to continued JUUL use which could undermine quit attempts.