Experimental trial on the effectiveness of IQOS compared to e-cigarettes and regular tobacco cigarettes

Effects on acute craving, withdrawal, positive and negative experiences

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Declaration of interest

• I have received no funding, nor have competing financial interests
• I have no ties with the e-cigarette industry, nor with the tobacco industry, nor with pharma companies
• My PhD research focuses on Tobacco Harm Reduction (THR) in general and e-cigarette based THR in particular
Introduction

• Proportion of **current smokers** in the EU remains stable since 2014: 26% (European Commission, 2017)

• **E-cigarettes** can be used as a THR tool

  “Although it is not possible to precisely quantify the long-term health risks associated with e-cigarettes, the available data suggest that they are unlikely to exceed 5% of those associated with smoked tobacco products, and may well be substantially lower than this figure”

  (Royal College of Physicians, 2016, p. 87)
Introduction

• In the EU, **prevalence** of e-cigarette **users** remains stable over the last years (European Commission, 2017):
  • 15% at least tried e-cigarettes
  • 2% are current vapers

⇒ **uptake** remains relatively low
Introduction

• Not all smokers benefit from the use of e-cigarettes (McKeganey & Dickson, 2017):
  • Among confirmed smokers, 59% has ever tried e-cigarettes
  • Elements least liked about e-cigarettes were:
    • Vaping experience
    • Technology
    • “Chemical nature” of liquids
    • Complex technology
Introduction

• Recently, the tobacco industry developed alternative Reduced-Risk Products ⇒ **Tobacco Heating System** (THS) (PMI, 2017)
  • Heating instead of combustion
  • Aerosol contains substantially reduced levels of toxicants
  • Similar results regarding behavioral experiences compared to regular cigarettes

• However, little independent research, especially regarding behavioral experiences of THS use!
Methods – Research questions

• What is the effect of using IQOS on …
  • exhaled carbon monoxide (eCO)
  • acute craving
  • withdrawal symptoms
  • subjective positive and negative experiences

after smoking abstinence in regular smokers compared to using an e-cigarette or their regular tobacco cigarette?

• Which product (e-cigarette or IQOS) will be preferred by first-time users?
Methods – Participants

<table>
<thead>
<tr>
<th>INCLUSION CRITERIA</th>
<th>EXCLUSION CRITERIA</th>
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<tbody>
<tr>
<td>- Established, regular smoker for at least 3 years</td>
<td>- Current use of any kind of smoking cessation therapy</td>
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<tr>
<td>- Smoking 8 cigarettes per day or more</td>
<td>- Being a vaper now or in the past 6 months</td>
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<tr>
<td>- No intention to quit smoking within the following month</td>
<td>- Being a THS user now or in the past 6 months</td>
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<td>- Willing / accepting to try out several less unhealthy alternatives</td>
<td>- Several medical conditions (e.g., diabetes, asthma, …)</td>
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Intake Day 1 Day 2 Day 3

Questionnaire:
• Demographics
• Smoking history
• FTCD
• eCO measurement

VAS cigarette + eCO + QSU + MNWS
12 hours smoking abstinence

VAS cigarette + eCO + QSU + MNWS + mCEQ
5 min smoking / vaping / using IQOS

VAS cigarette + eCO

VAS cigarette + eCO

VAS cigarette + eCO

VAS cigarette + eCO + QSU + MNWS
Add. Day 3: VAS product preference

N = 30
Results

- **Participants** ($n = 30$) were:
  - On average 22 years old
  - Mostly male (67%)
  - Almost all students (93%)

- Smoking on average 4 years
- Smoking currently on average 13 cigarettes per day (CPD)
- Low to moderate cigarette dependent ($M_{FTCD} = 3.50$)
Results – eCO levels

![Graph showing eCO levels over time for different smoking methods: CIG, E-CIG, and IQOS. The y-axis represents ppm (parts per million) of eCO, and the x-axis represents time in minutes from intake to 55 minutes. Each method's data is represented by distinct markers and lines.](image-url)
Results – acute cigarette craving

![Graph showing results of acute cigarette craving over time for different methods: CIG, E-CIG, IQOS.](image)

- **CIG**
- **E-CIG**
- **IQOS**

Time points: 0 min, 5 min, 10 min, 20 min, 35 min, 55 min.

Faculty of Psychology and Educational Sciences
Centre for the Psychology of Learning and Experimental Psychopathology
Results – product evaluation

Smoking satisfaction
- Satisfying
- Taste good
- Enjoy smoking

Psychological reward
- Calm down
- More awake
- Less irritable
- Help concentrate
- Reduce hunger

Aversion
- Dizziness
- Nauseous
Results – product preference

Trying out another 5 minutes

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<tr>
<th></th>
<th>IQOS</th>
<th>E-CIG</th>
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<td>Percentage</td>
<td>60</td>
<td>40</td>
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Wanting to experiment

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<tbody>
<tr>
<td>Percentage</td>
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Willing to buy

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Using to quit smoking

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Conclusion

• **In first-time users:**
  - No increase in eCO level when vaping
  - Significant increase in eCO level when smoking and using IQOS, however, increase when using IQOS is minor, and comparable with previous research (PMI, 2017)
  - Clear craving reduction for using IQOS, vaping and smoking, most pronounced for smoking
  - Cigarette showed the best product evaluation, followed by IQOS and e-cigarette
  - Relative low product preference for both IQOS and e-cigarette
Conclusion

• Results need to be seen in light of sample/products used
  ⇒ First-time users
  ⇒ One type of e-cigarette/liquid

• Main results in line with previous research
  ⇒ Although similarities between using IQOS and smoking not that pronounced

⇒ Long-term studies are needed to investigate the behavioral and psychological effects of long-term IQOS use compared to smoking and vaping
Thank you for your attention!

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