

## **Epidemiology and potential public health benefits and harms of vaping – Implication to tobacco control policies**

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**Aim:** *Vaping and e-cigarette use is a double-edge sword for tobacco control. It could be used as an effective cessation aids for tobacco smoking, thus accelerating the decline in smoking. However, its rapid uptake among young people is a concern. Parents, public health advocates and policy makers worry that it will be a gateway to smoking and negate decades of effort in tobacco control. Further, since its introduction as a consumer product in several countries, there is an emerging trend of using vaporisers to consume other drugs such as cannabis. The aims of this symposium are to disseminate the epidemiology of youth vaping among young people, and examine the potential public health benefits and harms of vaping.*

## **PRESENTATION 1: The effect of tobacco policies implementation on youth vaping in 49 countries**

### **Presenting Authors:**

GARY C. K. CHAN

**Introduction and Aims:** *Global tobacco policies are guided by the WHO Framework Convention on Tobacco Control (FCTC). The WHO MPOWER is a package of 6 evidence-based demand reduction measures recommended in the FCTC. The six measures were monitoring, smoke-free policy, cessation programs, warning messages, advertising ban and taxation. This study examined the implementation of MPOWER on youth vaping in 49 countries.*

**Design and Methods:** *Data were from the Global Youth Tobacco Survey, a WHO initiative that used standard methodology to collect data from school aged students (typically age 13-15) to monitor youth tobacco use. The key measure was past-30-day vaping (Yes/No) and past-30-day frequent vaping (>30 days; Yes/No). Data collected between 2015 and 2018 from 49 countries were used ( $N_{total} > 120,000$ ). Measures on the implementation level of MPOWER were sourced from the WHO report on the global tobacco epidemic.*

**Results:** *The overall prevalence of past-30-days vaping was 8.6% (ranged from 2.4% in Cooks Island to 26.5% in Poland). Most of the current implementation demand reduction measures (e.g. advertising ban, cessation service, etc) was not associated with vaping. High tobacco tax was associated with higher past-30-day vaping and past-30-day frequent vaping (OR = 2.7, 99.5% CI = (1.3, 5.7) and OR = 6.6, 99.5% CI = (2.1, 20.2)).*

**Discussions and Conclusions:** *Most MPOWER measures were not effective in discouraging youth vaping uptake. Higher tobacco tax was associated with higher odds of vaping.*

**Implications for Practice or Policy:** *To discourage youth vaping, the current MPOWER measures will need to specifically include vaping. Tax will need to be applied to vaping products to deter youth uptake.*

**PRESENTATION 2: Changing patterns and correlates of polytobacco use among nationally representative samples of US adolescents over 6 years: a latent class analysis.**

**Presenting Authors:**

TIANZE SUN

**Introduction and Aims:** *Youth polytobacco use of multiple product types is associated with increased risks of adverse health effects and nicotine dependence. We identified changes in patterns of polytobacco use among US youth between 2014 and 2020.*

**Design and Methods:** *Repeated cross-sectional data of the National Youth Tobacco Survey from 2014-2020 ( $N_{total} > 100,000$ ) were used. Latent class models identified classes based on past-month use of nine tobacco products (e.g. cigarettes, cigars, chewing tobacco/snuff, hookah, e-cigarettes, pipe, snus, dissolvable and bidis). We tested if patterns of polytobacco use changed over time. The demographic and tobacco-related characteristics of each class were examined using multinomial logistic regression.*

**Results:** *We identified three distinct classes of polytobacco use: 'Non-use' (NU, ~90.17 %), 'occasional e-cigarette, cigarette, cigar, and hookah use' (ECCCH: ~ 8.8 %), and 'Extended range polytobacco use' (POLY, ~1.04 %). There was a decrease in combustible cigarette use in all classes ( $p < 0.05$ ), while e-cigarette use increased in all classes ( $p < 0.05$ ). Factors associated with both ECCCH, and POLY included being male, difficulties in concentrating, remembering, or making decisions, and exposure to tobacco advertising.*

**Discussions and Conclusions:** *Our findings are consistent with recent shifts in adolescent tobacco product use, demonstrating the decrease in combustible cigarette smoking, and the increase in e-cigarette use among all three groups, over time. Continuous monitoring of the patterns and correlates of tobacco use is warranted for interventions targeting youth tobacco control.*

**Implications for Practice or Policy:** *Public health interventions to discourage the uptake of e-cigarettes to consume nicotine in youth are warranted.*

### **PRESENTATION 3: Prevalence of adolescent cannabis vaping: a systematic review and meta-analysis of studies from the U.S and Canada**

#### **Presenting Authors:**

CARMEN C. W. LIM

**Introduction and Aims:** *Vaping products were initially designed to deliver nicotine as a tobacco cigarette substitute. Many individuals, including adolescents, however use vaping devices to deliver psychoactive substances such as cannabis and its derivatives. This work aimed to synthesise the findings of epidemiological studies reporting the prevalence of cannabis vaping in adolescents by survey year and age-group.*

**Method:** *PubMed, PsycINFO, Scopus and Web of Science were searched systematically in August 2020 for studies published globally between years 2003-2020. Study characteristics and prevalence were extracted from each article. Random effects meta-analyses were performed on lifetime, 12-month and 30-day prevalence estimates. Meta-regression was also conducted using survey year and age-group as moderators.*

**Results:** *Seventeen studies met the eligibility criteria (n=198,845 adolescents). All 17 studies were from the U.S. and Canada. Across all age-groups, the pooled prevalence increased both for lifetime use (6.1% in year 2013-16 to 13.6% in year 2019-20) and use in the past 12-months (7.2% in year 2017-18 to 13.2% in year 2019-20; 30-day: 1.6% in year 2013-16 to 8.4% in year 2019-20). Heterogeneity across studies was large. The limited evidence from studies using similar survey and study designs suggested that adolescents' preference for cannabis products other than dried herbs, which usually contain higher THC levels increased over time.*

**Discussion and Conclusions:** *Our findings indicate that the prevalence of cannabis vaping has increased among adolescents in the U.S. and Canada. Policy makers need to enact laws to better regulate cannabis vaping products in the market and ban advertising that targets young people.*

**PRESENTATION 4: A pragmatic randomised partial crossover clinical trial of nicotine vaporisers added to standard care for smoking cessation and relapse prevention (CARP) among priority populations with comorbidities**

**Presenting Authors:**

*KYLIE MORPHETT*

**Introduction and Aims:** *This study aimed to evaluate whether provision of Nicotine Vaping Products (NVPs) in conjunction with standard care is superior to provision of standard care alone.*

**Design and Methods:** *A pragmatic randomised partial crossover design was employed. Eligibility criteria included diagnosis with HIV or Hepatitis C (in the past 24 months) or receiving opioid substitution therapy (OST). Participants were recruited in 2018-2019 and randomised to one of two arms. Arm A participants received NVPs, nicotine patches, and referral to Quitline. Arm B participants received combination NRT (patch and choice of gum or lozenge) and referral to Quitline. Arm B participants who were smoking at 6 months were offered the NVP intervention.*

**Results:** *355 eligible participants (82% male) were enrolled in the trial and received their allocated intervention. 57% had been diagnosed with HIV, 20% had a previous diagnosis of HCV, and 41% were receiving OST. Participants smoked an average of 20 cigarettes per day at baseline. Intention to treat analysis showed that at 6 months, 36 of 181 (19.9%, 95% CI 14.1-25.7%) participants in Arm A reported continuous abstinence from smoking for the last three months, compared to 9 of 174 (5.2%, 95% CI 1.9-8.5%) in Arm B.*

**Discussion and Conclusions:** *Among populations of smokers with comorbid health conditions, provision of NVPs in conjunction with standard care was associated with higher rates of abstinence from smoking at 6 months compared to standard care only.*

**Implications for Practice or Policy:** *Health professionals working with these populations should consider prescribing NVPs to promote smoking cessation.*

**Discussant:** *The Chair Associate Professor Coral Gartner will lead the discussion section.*

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