Short Communication

Prevalence of e-cigarette use among adolescents in 13 Eastern European towns and cities

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Introduction

Electronic cigarettes (ECs) are now commonly used among youth in Western Europe and North America.1,2 Although rates of adolescent tobacco use are known to be high in Eastern Europe,3 little is known about EC use in that part of the world. As might be expected, there are also limited data related to the convergence between EC and conventional cigarette (CC) use in this part of the world.

Understanding both the prevalence of EC use and the patterns of EC-CC use is important for two main reasons. The first concerns whether EC use among adolescents is primarily initiated by those already smoking CC or using other forms of tobacco. Several studies have reported on the commonality of dual use of EC and CC among both young and older adolescents.4–6 The second issue concerns whether experimentation with EC among non-smokers is likely to escalate into habitual CC use or other forms of tobacco use. Recent longitudinal studies have suggested that this is a common scenario.7,8

However, an important step toward better understanding these relationships includes determining the current prevalence of EC use among CC smokers and non-smokers among diverse groups. As such, this study provides data on the prevalence of EC use among adolescents in Eastern Europe. In this short report, we present findings on the prevalence of EC use among girls and boys in 13 Eastern European urban areas and the associations between EC use and CC smoking in that geographic region.

Data for this study were collected as part of the Youth in Europe (YIE) program.9 YIE is a town- and city-based prevention program endorsed by European Cities Against Drugs (see www.ECAD.net) in Stockholm, Sweden, and operationally overseen by the Icelandic Center for Social Research and Analysis (ICSRA) at Reykjavik University in Iceland, in cooperation with the Reykjavik City Council and participating town and city authorities throughout Europe.

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Prevalence of e-cigarette use

Among all participants, 60.2% (95% confidence intervals [CI]: 59.5%–60.9%) had used CC at least once in their lifetime and 32.7% (95% CI: 32.0%–33.3%) had used EC. Boys were significantly more likely than girls to have tried both CC and EC (P < 0.01). The within-city lifetime prevalence of ever using CC ranged from 47.7% (95% CI: 44.1%–51.3%) in Sofia, Bulgaria, to 83.5% (95% CI: 74.9%–89.6%) in Sigulda, Latvia, among boys, and from 41.6% (95% CI: 31.2%–52.7%) in Otelu Rosu in Romania, to 75.4% (95% CI: 66.8%–82.4%) in Sigulda, Latvia, for girls. Corresponding rates for EC among boys ranged from 13.3% (95% CI: 10.0%–17.4%) in Resita in Romania, to 55.3% (95% CI: 45.3%–65.0%) in Sigulda in Latvia, and from 3.8% (95% CI: 1.3%–10.7%) in Otelu Rosu in Romania, to 45.5% (95% CI: 42.6%–48.4%) in Kaunas in Lithuania, among girls.

Table 1 shows the prevalence rates of EC use 3+ times or more often among girls, boys, and total by lifetime CC use. For all participants, 19.9% had used ‘EC 3× times or more’ in their lifetime (95% CI: 19.4%–20.5%). Boys were significantly more likely than girls to have used ‘EC 3× times or more’ (P < 0.01). Among never CC users, 2.6% (95% CI: 2.3%–3.0%) reported using ‘EC 3× times or more in their lifetime,’ but corresponding EC rate among ever CC users was 31.4% (95% CI: 30.6%–32.2%). In both groups, boys were significantly more likely than girls to have used EC (P < 0.001). Among ‘never CC users,’ the within-city prevalence of ‘EC use 3× times or more’ for girls ranged from 0.0% in Otelu Rosu in Romania, to 5.1% (95% CI: 3.5%–6.7%) in Tallinn in Estonia. Corresponding rates for boys ranged from 0.0% in Resita, Otelu Rosu, and Petrosani, all in Romania, to 6.3% (95% CI: 5.6%–18.1%) in Sigulda in Latvia. Among ‘ever CC users’ rates among girls ranged from 3.1% (95% CI: 2.9%–9.2%) in Otelu Rosu in Romania, to 42.4% (95% CI: 39.2%–45.7%) in Tallinn in Estonia, whereas rates among boys ranged from 13.9% (95% CI: 7.6%–20.2%) in Petrosani in Romania, to 50.1% (95% CI: 45.6%–54.6%) in Klaipeda in Lithuania, as shown in Table 1.

Conclusions and suggestions for future research

This study reports on the prevalence of EC use among ‘never’ and ‘ever’ CC smokers in 13 Eastern European urban areas. As expected, given the rates of substance use described among these populations in previous research, the prevalence of both CC and EC use was comparatively high in this study. We found that one-third of 15–17-year-old participants in the study had experimented with EC at least once in their lifetime and approximately 20% had used EC ‘3× times or more.’ Among those who had smoked CCs at least once in their lifetime, 31.4% had used EC 3× times or more, whereas 2.6% of young people who had never used CC had used EC 3× times or more in their lifetime.

The large observed difference in prevalence of EC use between ‘ever’ and ‘never’ CC smokers may suggest that EC use among ‘never’ CC smokers rarely goes beyond experimentation. However, it may also indicate that either habitual EC users in our sample had already initiated CC smoking before initiating EC use or that those who had gone beyond experimenting with EC had escalated into CC use and therefore count as CC smokers in our sample. The temporal order of these events cannot be answered with the cross-sectional data analyzed for this report but the most recent literature suggests that both scenarios are widespread. Clarifying these relationships has important implications for prevention and suggests the need for further research.

Ultimately, a key research question concerning adolescent EC use is whether EC represents a new means of initiating smoking among risk-prone youth. Current evidence appears to support the feasibility of that position, especially since recent studies have indicated that adolescents who initiate EC use share a similar social risk profile with those who initiate CC use, but longitudinal research among diverse populations is needed to fully examine this question.

Finally, in addition to the use of a cross-sectional design, another study limitation is our measurement of EC use. In this study, we did not differentiate between ECs that do and do not contain nicotine, which is an increasing practice in youth.
tobacco use surveys. Future research should emphasize understanding the trajectories to nicotine dependence through both forms of EC use.

**Author statements**

**Ethical approval**

The Youth in Europe school survey data collection is anonymous and confidential. No responses can be traced to individual participants. Data was, therefore, collected with passive consent which is in accordance with the ethical considerations of the National Bioethics Committee of Iceland.

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**Competing interests**

None declared.

**REFERENCES**