In adolescents, does e-cigarette use predict future cigarette use?

Jessnie Jose, MD; Robert Abell, MD
SSM Health St. Anthony Family Medicine Residency; Oklahoma City, OK

Clinical Question: In adolescents, does e-cigarette (e-cig) use predict future cigarette use?

Answer: Yes. In adolescents, the use of e-cigarettes is associated with the future use of conventional cigarettes. This review will examine relevant studies that outline this correlation. The correlation between e-cigarette use and cigarette use and the psychological and behavioral comparisons, such as hand to mouth motion, will be discussed as well.

Level of Evidence: Level B

Conclusions: The studies that were reviewed showed good evidence for e-cigarette use predicting future cigarette use in adolescents.

Search terms: e-cigarette, cigarette use, adolescents, systematic review, tobacco use

Date search was conducted: August 12, 2019; updated August 16, 2019

Inclusion Criteria: systematic reviews, cross-sectional studies, meta-analysis, adolescents younger than 18 years of age, e-cigarette use

Exclusion Criteria: studies older than 10 years, adults older than 18 years of age, current cigarette users.

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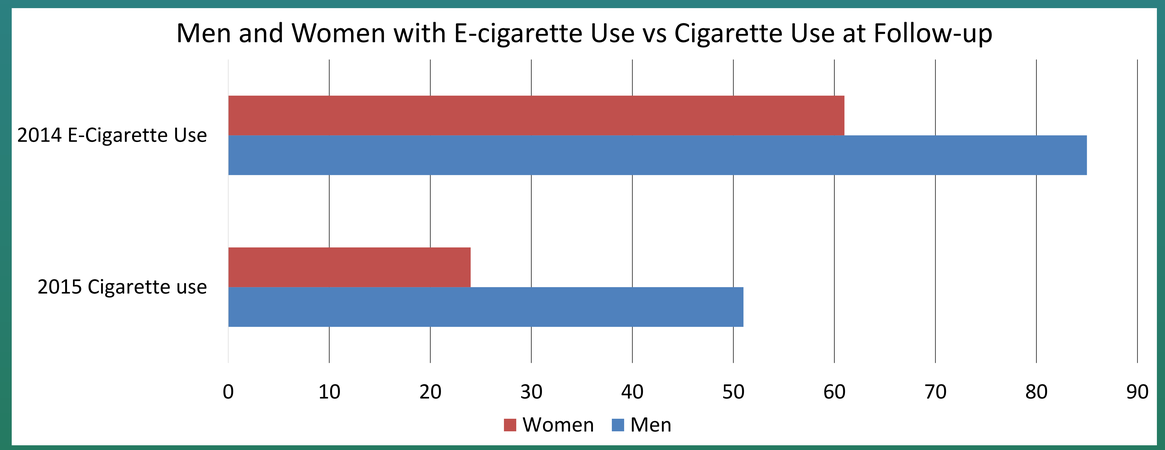

Figure 1
Comparison of men and women with use of e-cigarette in 2014 vs cigarette use at follow-up in 2015 according to a cohort study completed by Barrington-Trimis et al.

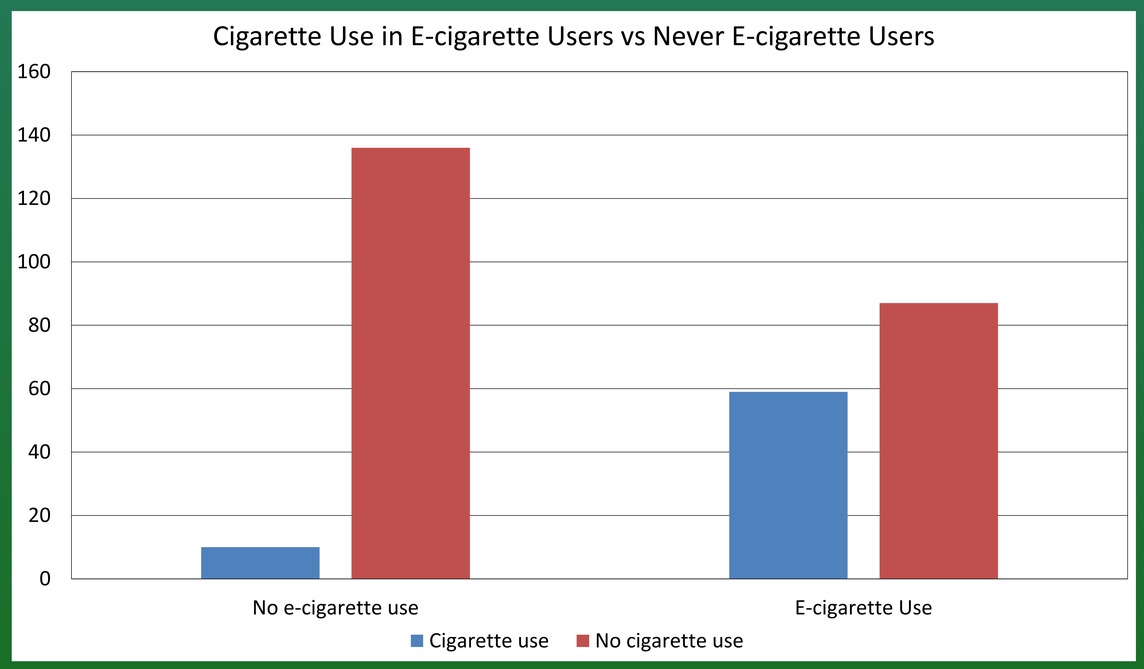

Figure 2
Adolescents who were ever e-cig users and never e-cig users at initial intake in 2014 versus those who had future cigarette use at follow-up in 2015 according to a cohort study completed by Barrington-Trimis et al.

Summary of Evidence

A systematic review and meta-analysis conducted by Soneji et. al, published in 2017, compared 6,959 unique longitudinal studies to assess cigarette smoking initiation with use of e-cig smoking. Among those who had never smoked e-cigs, the odds ratio (OR) for starting cigarette smoking ranged from 2.65 to 6.23 for those who had ever tried e-cigs compared to those who had not.[3] The probability of starting smoking was 23.2% for ever e-cig users compared to 7.2% for never e-cig users (adjusted OR 3.50 (95% CI, 2.38-5.16).

Barrington-Trimis et. al, published a cohort study in 2016 examining e-cig use and conventional cigarette use among 11th and 12th graders (mean age 17.4) in Southern California using the 2014 and 2015 National Youth Tobacco Survey. The odds ratio for association between e-cig use and subsequent cigarette use was 6.17 (95% CI, 3.30-11.6).[1] The P value of that study was <0.005.[1]

A longitudinal survey study that was conducted by Leventhal et. al, and published in 2015 examined the association of e-cig use with initiation of combustible tobacco products in ten public high schools in Los Angeles. In this study, 768 had used e-cigs and 2,558 had never used e-cigs. At 6 month follow-up 30.7% of ever e-cig users had used combustible tobacco products versus 8.1% never e-cig users.[2] The 12-month follow-up showed 25.2% of ever e-cig users versus 9.3% of never e-cig users had tried combustible tobacco products.[2]

References

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2. Leventhal, AM, Strong, DR, Kirkpatrick, MG, et al. Association of electronic cigarette use with initiation of combustible tobacco product smoking in early adolescence. JAMA 2015: 314(7): 700-707.
3. Soneji, S, Barrington-Trimis, JL, Wills, TA, et al. Association between initial use of e-cigarettes and subsequent cigarette smoking among adolescents and young adults. JAMA 2017: 171(8): 788-797.