

Editorial

Advancing Our Understanding of Tobacco Use in Vulnerable Populations

While the prevalence of tobacco use in the general population has decreased significantly over the past four decades, there has been considerably less decline among people with socioeconomic disadvantages, mental health conditions, and other vulnerable populations.¹ This issue of *Nicotine and Tobacco Research* includes innovative studies of biological, social, and environmental factors influencing tobacco use in vulnerable populations.

One approach that may help reduce smoking among vulnerable populations is to mandate a reduction in the nicotine content of cigarettes to a minimally addictive level, as has been proposed by the US Food and Drug Administration (FDA). However, women might be less likely to benefit from this policy than men, given that females have been found to be less sensitive to changes in nicotine dose than males.² Two studies in the current issue examined the potential effects of a reduced-nicotine standard in males versus females. Streck et al.³ conducted a secondary analysis of an experimental study that examined responses to research cigarettes varying in nicotine content in 169 smokers from several vulnerable populations, to investigate whether gender moderated responses to the reduced-nicotine cigarettes. The team found that reductions in nicotine content decreased measures of cigarette addictiveness to a similar extent in men and women. Chellian and colleagues⁴ compared elasticity of demand for nicotine in male and female rats. There was no effect of sex on nicotine self-administration when the response requirement for nicotine was very low. At the standard nicotine dose, when the price of nicotine was increased by increasing the response requirement per infusion, males were more persistent in responding for nicotine than females. However, at a reduced nicotine dose, as price increased, females were more persistent than males. The persistent responding of females for the lower dose may suggest that if a reduced-nicotine standard for cigarettes were adopted, females may be more resistant than males to the effects of a price increase on cigarette purchasing.

Youth are a vulnerable population, given that the vast majority of smoking uptake occurs in adolescence and young adulthood. Kowitt et al.⁵ used Geographic Ecological Momentary Assessment to investigate, among youth ages 16–20, associations between exposure to tobacco outlets and use of tobacco or e-cigarettes. While the investigators did not find a direct association between outlet exposure and use, they found that having more tobacco outlets in one's environment was associated with increased likelihood of seeing peers use tobacco or e-cigarettes, which was positively associated with own use that day. These findings provide support for the idea of regulating retailer density as a way to curb use of these products among youth.

Use of tobacco products with characterizing flavors is a risk factor for continued use.⁶ Odani and colleagues⁷ used a cross-sectional household-based survey of US adults to examine associations between flavored product use and dependence. They found a higher proportion of daily use among users of menthol cigarettes, flavored cigars, and flavored e-cigarettes than among users of non-flavored products, and a higher proportion of use within 30 minutes of awakening among menthol cigarette and flavored cigar users than among non-flavored tobacco users. These findings add to the evidence that preference for flavored products is associated with dependence, and suggest that restricting access to flavored products may help reduce dependence.

Roll-your-own (RYO) cigarette use is associated with numerous measures of socioeconomic disadvantage.⁸ Jackson et al.⁹ examined recent trends in the use of factory-made (FM) and RYO cigarette use in England, and compared sociodemographic characteristics of RYO and FM cigarette users. Over 2008–2017, use of FM cigarettes declined, whereas use of RYO cigarettes increased. The sociodemographic profile of predominant RYO users has been fairly stable over time, characterized by younger, male, socio-economically disadvantaged, more addicted, and less motivated to quit than FM users. These findings indicate the necessity for consistent application of tax to reduce the likelihood that socioeconomically disadvantaged smokers will switch to cheaper combustible products rather than quit.

Finally, two commentaries assert that the human right to access accurate information about the relative risks of tobacco products should not be ignored in the attempt to reduce product uptake.^{10,11} The increase in perceived risks of e-cigarettes relative to cigarettes¹² is concerning, and misperceptions may dissuade tobacco users from switching to less risky products. While reducing e-cigarette uptake among non-tobacco users is vital, consumers and policy makers should be provided with accurate information about the relative risks of various tobacco and nicotine products.

Reducing tobacco use among vulnerable populations is extremely challenging and requires an in-depth understanding of biological, social, and environmental factors contributing to its use. This issue of *Nicotine and Tobacco Research* demonstrates the impressive breadth of research underway in this area, but we still have a long way to go.

Jennifer W. Tidey PhD

*Department of Behavioral and Social Sciences, Brown University
School of Public Health, Providence, RI*

Corresponding Author: Jennifer W. Tidey, PhD, 121 South Main St., 5th floor, Providence, RI 02912, USA. Telephone: 401-863-6418; Fax: 401-863-6697; E-mail: Jennifer_Tidey@brown.edu

Funding

This work was Supported by National Institute of Health (NIH) grants U54DA031659, U54DA036114 and P20GM130414. The content is solely the responsibility of the author and does not represent the official views of the NIH or the Food and Drug Administration.

Declaration of Interests

None declared.

References

1. Drope J, Liber AC, Cahn Z, Stoklosa M, Kennedy R, Douglas CE, Henson R, Drope J. Who's still smoking? Disparities in adult cigarette smoking prevalence in the United States. *CA Cancer J Clin.* 2018;68(2):106–115.
2. Perkins KA. Sex Differences in nicotine reinforcement and reward: Influences on the persistence of tobacco smoking. In: Caggiula A, Bevins R, eds. *The Motivational Impact of Nicotine and its Role in Tobacco Use. Nebraska Symposium on Motivation*, vol 55. New York, NY: Springer; 2008.
3. Streck JM, Davis DR, Pang RD, et al. Potential moderating effects of sex/gender on the acute relative reinforcing and subjective effects of reduced nicotine content cigarettes in vulnerable populations [published online ahead of print June 19, 2019]. *Nicotine Tob Res.* doi: [10.1093/ntr/ntz098](https://doi.org/10.1093/ntr/ntz098)
4. Chellian R, Wilson R, Polmann M, Knight P, Behnood-Rod A, Buijnzeel AW. Evaluation of sex differences in the elasticity of demand for nicotine and food in rats [published online ahead of print September 6, 2019]. *Nicotine Tob Res.* doi: [10.1093/ntr/ntz171](https://doi.org/10.1093/ntr/ntz171)
5. Kowitz SD, Lipperman-Kreda S. How is exposure to tobacco outlets within activity spaces associated with daily tobacco use among youth? A mediation analysis [published online ahead of print May 23, 2019]. *Nicotine Tob Res.* doi: [10.1093/ntr/ntz088](https://doi.org/10.1093/ntr/ntz088)
6. Villanti AC, Johnson AL, Glasser AM, et al. Association of flavored tobacco use with tobacco initiation and subsequent use among US youth and adults, 2013–2015. *JAMA Netw Open.* 2019;2(10):e1913804.
7. Odani S, Armour B, Agaku IT. Flavored tobacco product use and its association with indicators of tobacco dependence among U.S. adults, 2014–2015 [published online ahead of print June 10, 2019]. *Nicotine Tob Res.* doi: [10.1093/ntr/ntz092](https://doi.org/10.1093/ntr/ntz092)
8. Gilmore AB, Tavakoly B, Hiscock R, Taylor G. Smoking patterns in Great Britain: the rise of cheap cigarette brands and roll your own (RYO) tobacco. *J Public Health (Oxf).* 2015;37(1):78–88.
9. Jackson SE, Shahab L, Garnett C, Brown J. Trends in and correlates of use of roll-your-own cigarettes: a population study in England 2008–2017 [published online ahead of print May 16, 2019]. *Nicotine Tob Res.* doi: [10.1093/ntr/ntz082](https://doi.org/10.1093/ntr/ntz082).
10. Kozlowski LT. Younger individuals and their human right to harm reduction information should be considered in determining ethically appropriate public health actions [published online ahead of print April 3, 2019]. *Nicotine Tob Res.* 2019. doi: [10.1093/ntr/ntz049](https://doi.org/10.1093/ntr/ntz049).
11. Kozlowski LT. Policy makers and consumers should prioritize human rights to being smoke-free over either tobacco- or nicotine-free: accurate terms and relevant evidence [published online ahead of print July 10, 2019]. *Nicotine Tob Res.* 2019. doi: [10.1093/ntr/ntz113](https://doi.org/10.1093/ntr/ntz113).
12. Huang J, Feng B, Weaver SR, Pechacek TF, Slovic P, Eriksen MP. Changing perceptions of harm of e-cigarette vs cigarette use among adults in 2 US national surveys from 2012 to 2017. *JAMA Netw Open.* 2019;2(3):e191047.