E-Cigarettes

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The emergence of electronic cigarettes, known as e-cigarettes, has generated regulatory interest throughout the world. Should regulatory policies encourage use of e-cigarettes or discourage their use? What role, if any, do warnings have to play? Compared to conventional cigarettes, e-cigarettes are several orders of magnitude safer since they do not involve the burning of tobacco. Instead, they are lithium-ion battery-powered devices that generate a nicotine vapor by vaporizing a propylene glycol/nicotine fluid. Although e-cigarettes generate starkly lower levels of nitrosamines and toxic chemicals than conventional cigarettes, they do serve as a delivery device for nicotine. How economists and policymakers should conceptualize the appropriate role of governmental regulation of e-cigarettes depends in part on the existence and nature of any market failure.

To explore these issues, my article, “Risk Beliefs and Preferences for E-Cigarettes,” surveyed a nationally representative sample of over 1,000 adults to elicit estimates of the public’s risk beliefs for e-cigarettes. The baseline risk beliefs were similar to those in my previous studies (Viscusi 1992, 2002), with the average lifetime mortality risk belief for lung cancer being 0.41 and the total lifetime smoking-related mortality risk belief being 0.50. Each of these levels of risk belief is somewhat higher than the estimated risk levels based on government smoking statistics. Setting aside differences in taste and the smoking experience, the choice between e-cigarettes and conventional cigarettes should be driven by their relative risk levels. For consumer decisions to be rational in terms of the pairwise choice between cigarettes and e-cigarettes, people should have dramatically lower risk beliefs for e-cigarettes than conventional cigarettes.

Unfortunately, the risk beliefs for these products are remarkably similar. The level of e-cigarette risk beliefs for the full sample is 0.27 for lung cancer mortality risks over the smoker’s lifetime and 0.33 for total smoking-related mortality risks over the smoker’s lifetime. These risk beliefs vary across the population in predictable ways. One would expect that smokers would be more knowledgeable about the comparative safety of e-cigarettes because they would have an incentive to be better informed about the risk characteristics of e-cigarettes. Smokers do have lower risk beliefs, but these e-cigarette risk beliefs remain quite high, with lung cancer risk beliefs of 0.21 and total mortality risk beliefs of 0.23. Younger respondents also tend to have lower, more accurate risk beliefs, as they are better informed about novel products.

Analysis of the determinants of risk beliefs is consistent with individuals using their risk beliefs for conventional cigarettes as their prior risk beliefs for the risks associated with e-cigarettes. Controlling for other factors, the average weight that people place on their risk beliefs for conventional cigarettes when forming their risk belief for e-cigarettes is 0.70. Qualitative questions yield similar results that suggest a strong impact of risk beliefs for cigarettes on risk perceptions for e-cigarettes. Compared to conventional cigarettes, 44% of respondents believe that e-cigarettes are just as risky, 38% believe that they are less risky, and only 14% believe that they are much less risky, with 4% believing that they are more risky or much more risky. The principal reason people try e-cigarettes is because they consider them to be less risky, not because they provide better flavor or generate less exposures to others. So long as e-cigarette risk perceptions are anchored in the risk assessments for conventional cigarettes, there will be a tendency to overestimate the risks associated with e-cigarettes and suboptimal switching from conventional cigarettes to e-cigarettes.

This article also addresses perceptions with respect to nicotine and the risks of addiction from e-cigarettes, which tend to have somewhat lower levels of nicotine than conventional cigarettes. These beliefs are more in line with the actual characteristics of e-cigarettes than the lung cancer mortality risk beliefs and total mortality risk beliefs. Over half of all respondents believe that e-cigarettes have just as much nicotine, with beliefs that they have less nicotine being next in prominence. Almost two-thirds of respondents believe that e-cigarettes are just as difficult to quit as conventional cigarettes. Moreover, there is a correspondence between perceptions of nicotine levels in e-cigarettes and the perceived difficulty of quitting these products that is broadly consistent with people understanding the potential addictiveness of e-cigarettes.
The observed pattern of risk beliefs highlights the challenges to introducing safer alternative products. If people assess the riskiness of the new product based on their previous perceptions of an existing risky product, that aspect of the formation of risk judgments will be a deterrent to using market forces to foster safer consumer decisions. Smokers consequently will be discouraged from adopting e-cigarettes as a form of nicotine replacement. Warnings for e-cigarettes that are patterned after the existing warnings for conventional cigarettes are likely to reinforce the widespread tendency to equate the risks of e-cigarettes and the risks posed by conventional cigarettes.

These results highlight a potential barrier to inroads by new safer product alternatives. The principal market failure in this situation is overestimation of the new product’s riskiness. This market failure hinders consumers from switching to the safer product alternative. Informational policies could potentially play a constructive role by fostering risk beliefs that are more in line with scientific evidence regarding the level of hazards posed by e-cigarettes.

References


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