

THE GRADUATE COLLEGE OF THE  
UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER  
ANNOUNCES THE FINAL EXAMINATION OF

SHIRLEY JAMES

FOR THE DEFENSE OF THE DOCTOR OF PHILOSOPHY DEGREE  
GRADUATE COLLEGE

DEPARTMENT OF BIostatISTICS AND EPIDEMIOLOGY

Thursday, August 11, 2016, 1:00 p.m.  
Room 307, College of Public Health, OUHSC

Electronic Nicotine Delivery Systems and Smoking Reduction,  
Substitution, and Cessation

COMMITTEE IN CHARGE: Laura A. Beebe, Ph.D, Chair, Barbara R. Neas, Ph.D.,  
Jennifer D. Peck, Ph.D., Deirdra R. Terrell, Ph.D., Marshall Cheney, Ph.D.



ABSTRACT: Electronic cigarettes (ECs) have become popular among smokers. Using a mixed methods approach, we analyzed their usefulness as a smoking cessation or reduction aid in a small experimental study, and a large population-based survey.

The first project used data from 525 smokers with a quit attempt, part of the 2013 Behavioral Risk Factor Surveillance System. We calculated weighted prevalence estimates of EC use, and examined the relationship between methods used and covariates of interest using multinomial logistic regression. Thirty-seven percent of smokers used ECs during their most recent quit attempt,

21% exclusively, and 16% in combination with another method. When compared to smokers who used only non-evidence based methods, respondents using ECs had an increased odds of a history of chronic disease (OR=2.79, 95% CI = 1.17, 6.67), and a lower odds of a household income less than \$25,000 (OR=0.44, 95% CI = 0.22, 0.86). We found no association between EC use and smoking cessation.

The second project involved 28 women with cervical dysplasia and associated conditions who attempted smoking reduction using ECs. We measured daily cigarette consumption at baseline, six, and 12 weeks, and analyzed differences using the Wilcoxon signed-rank test. At the 12-week follow-up, the seven day point prevalence abstinence from smoking was 28.6%, and the median number of cigarettes smoked daily decreased from 18.5 to 5.5 ( $p < 0.0001$ ). The median number of e-cigarette cartridges used dropped from 21 at the six-week follow-up, to 12.5 at the 12-week follow-up.

In the third project, 26 of these women participated in semi-structured interviews which were recorded, transcribed, coded, and analyzed for themes. When confronted with a new diagnosis, women were eager to try ECs to help them reduce smoking. Women reported positive aspects of EC use including physical cues, craving reduction, and security from having the device available. Other women reported negative experiences including lack of sufficient nicotine, weight of the device, and the need to charge it. Depression, nicotine addiction, and habit made decreased cigarette consumption difficult.

While ECs show promise for smoking reduction and cessation, continued surveillance and larger experimental studies are needed to establish their effectiveness.