Electronic cigarette use as an aid to quit smoking in the representative Italian population PASSI survey

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ABSTRACT

This study explored electronic cigarette (e-cigarette) use as an aid to quit smoking and compared abstinence rates for different quitting methods in a representative sample of the Italian population.

In the 2014–2015 PASSI survey, the ongoing Italian behavioural risk factor surveillance system, 6112 adults who smoked and made at least one quit attempt in the previous 12 months, were categorized into three groups according to the method used in their most recent quit attempt: e-cigarette only, no aid, other quitting methods (medications; programmes delivered in smoking cessation services; other unspecified methods). The primary outcome was self-reported abstinence for a period ≥6 months, adjusted for potential confounders.

Eleven percent used e-cigarettes only, 86% no aid, 3% other quitting methods. Smoking abstinence was reported among 9% of those using no aid; 8% of e-cigarette users; 15% of those using other methods. No significant differences in abstinence were observed for e-cigarette users compared with those reporting no aid (adjusted Prevalence Ratio [aPR] = 0.81; 95%Confidence Interval (CI) = 0.58–1.14). Changing the reference group to e-cigarette users, those using other quitting methods were significantly more likely to report abstinence than e-cigarette users (aPR = 1.76; 95%CI = 1.07–2.88).

One out of ten smokers who attempted to quit in 2014–2015 in Italy used e-cigarettes. E-cigarettes users were as likely to report abstinence as those using no aid, but were less likely to report abstinence than users of established quitting methods. Further studies are needed to understand the relationship between e-cigarette types used to quit and abstinence rates.

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1. Introduction

Smoking is estimated to kill each year 5.8 million people world-wide (GBD 2013 Risk Factors Collaborators et al., 2015), and about 71,000 people in Italy (Gallus et al., 2011). E-cigarettes are devices that vaporise a chemical liquid mixture, in most cases including nicotine, which is inhaled by users. A few years after e-cigarette entrance in the market, its popularity and use substantially grew worldwide (Green et al., 2016). In 2014 prevalence of ever and current e-cigarette users was among US adults 12.6% and 3.7%, respectively (Schoenborn and Gindi, 2015). Among Europeans prevalence of ever users was 7.2% in 2012 and 11.6% in 2014, whereas prevalence of current users was 1.8% in 2014 (Filippidis et al., 2017). In Italy in 2013 ever e-cigarettes use was 6.8% (about 3.5 million Italians aged ≥15 years), and current e-cigarette use was 1.2% (about 600,000 Italians) (Gallus et al., 2014).

The scientific community has sparked a huge debate to understand whether e-cigarettes should be considered a disruptive technology that increase quitting smoking and provide a safe alternative to cigarettes, or a threat to tobacco control that will allow the tobacco industry

to subvert policies, renormalize smoking, recruit new smokers, and promote smoking in young people (Green et al., 2016; Yeh et al., 2016). One Cochrane review suggested that there is evidence from two randomized controlled trials (RCTs), that e-cigarettes may help smokers to quit in the long term compared with placebo e-cigarettes, even though under the GRADE system the overall quality of the evidence was judged as 'low' or 'very low', because of imprecision due to the small number of trials (Hartmann-Boyce et al., 2016). Two recent reviews that included not only RCTs but also cross-sectional and cohort studies, concluded that the evidence in support of e-cigarettes' effectiveness in helping smokers quit is inconclusive or even negative (Kalkhoran and Glantz, 2016; Malas et al., 2016). Importantly, the quality of the evidence in support of e-cigarettes' effectiveness in helping smokers quit, according to the GRADE system, was again assessed as very low to low (Malas et al., 2016). Considering only studies with a moderate or strong quality score (Malas et al., 2016), 10 studies other than RCTs examined the relationship between e-cigarette use and smoking status in the real world by surveying regular e-cigarette users (Tackett et al., 2015; Lechner et al., 2015; Goniewicz et al., 2013; Dawkins et al., 2013; Polosa et al., 2014; Adriaens et al., 2014; Adkison et al., 2013; Christensen et al., 2014; Brown et al., 2014; Biener and Hargraves, 2015). Samples in 5 studies were not representative, and results have to be interpreted with caution (Tackett et al., 2015; Lechner et al., 2015; Goniewicz et al., 2013; Dawkins et al., 2013; Polosa et al., 2014). In studies with representative samples, evidence was mixed. In a longitudinal study, e-cigarette users at baseline were no more likely to report abstinence, even though they reduced their cigarette consumption (Adkison et al., 2013). One cross-sectional study on a representative sample of Kansas adults found that use of e-cigarettes was negatively associated with quitting after adjusting for socio-demographic and smoking characteristics (Christensen et al., 2014). This study, however, evaluated the association between quitting and the use of e-cigarettes for any purpose, not as an aid to quit. Another study assessed the effectiveness of e-cigarettes to quit in a representative sample of the English population, and found that e-cigarette users were 60% more likely to report abstinence in comparison to those using no aid or nicotine products over the counter (Brown et al., 2014). The most recent study, a cohort study on a representative sample of adults in 2 US metropolitan areas, found that daily e-cigarette users were 6 times more likely than non-users or triers to report abstinence, whereas non-daily users were 70% less likely to quit compared to non users or triers (Biener and Hargraves, 2015). It is important to highlight that in the sensitivity analysis conducted in one of the two reviews on e-cigarettes' effectiveness, none of differences in study design (longitudinal, cross-sectional) were associated with significantly different results (Kalkhoran and Glantz, 2016).

The ongoing behavioural risk factor surveillance system PASSI (Progressi delle Aziende Sanitarie per la Salute in Italia) is a cross-sectional survey conducted each year since 2008 on representative samples of the Italian population aged 18–69 years. The PASSI survey has been tracking smoking cessation methods used in the most recent quit attempt made within 12 months before the interview (Baldissera et al., 2011; The Italian behavioral risk factor surveillance system, n.d.; Baldissera et al., 2014; D'Argenzio et al., 2011). Main objectives of the current study were: a) to explore the use of electronic cigarette (e-cigarette) as an aid to quit smoking in 2014–2015; b) to estimate the abstinence rate among those who used e-cigarettes to quit; c) to compare abstinence rates for different smoking cessation methods (e-cigarette, other quitting methods, no aid).

2. Methods

2.1. Population data source

The protocol of the annual PASSI survey was approved in 2007 by the Ethics Committee of the Italian National Institute of Public Health (Baldissera et al., 2011). The sample for the annual PASSI survey is extracted from the Italian adult population aged 18–69 years (>41 million at the beginning of 2015). Each of the 20 Italian regions comprises 1 to 22 Local Health Units (LHUs), which provide preventive and curative services for populations ranging from 40,000 to over 1 million people; LHUs are the data collection units for the PASSI survey. The target population includes all people aged 18–69 years residing in the LHU area. Eligible subjects are residents with an available telephone number and capable of being interviewed. In each LHU, a random sample is drawn monthly from the enrolment list of residents, stratified by sex and age (18–34, 35–49, and 50–69 years) proportionally to the size of the respective stratum in the general population. Both landline and cellular telephones are used for the interviews (Baldissera et al., 2011; The Italian behavioral risk factor surveillance system, n.d.; Baldissera et al., 2014; D'Argenzio et al., 2011).

2.2. Data collection

Specially trained personnel from the public health departments of each LHU administered telephone interviews through a standardized questionnaire, gathering information on a wide variety of health-related behavioural and preventive topics along with socio-demographic data. Informed consent was obtained from all participants. The data were anonymized and electronically recorded in a national database. Interviews collected during a calendar year were aggregated in an annual dataset. The LHU data are merged and analysed to obtain regional and national estimates. More details on methodological issues related to PASSI data collection have been described elsewhere (Baldissera et al., 2011; The Italian behavioral risk factor surveillance system, n.d.; Baldissera et al., 2014; D'Argenzio et al., 2011). In 2014–2015, 131 out of 139 (94%) Italian LHUs participated in the PASSI survey. The population aged 18–69 years resident in the participating LHUs corresponded to 90% of the Italian population of the same age. The total number of interviews collected was 71,608 in 2014–2015. Response rate, calculated according to the American Association for Public Opinion Research RR4 standard (American Association for Public Opinion Research, 2008), was 83% in 2014 and 82% in 2015.

For the current study, we used aggregated data from 6847 respondents in 2014–2015, who smoked cigarettes (including hand-rolled) daily or occasionally at the time of the survey or during the preceding 12 months, and had made at least one quit attempt in the preceding 12 months. Interviewers asked to them which method they used to quit in their last quit attempt. Possible answers were: (a) no aid; (b) e-cigarettes (collected since 2014 onwards); (c) medications (prescription drugs or Nicotine Replacement Therapy (NRT) over the counter); (d) smoking cessation programmes delivered in National Health System [NHS] Smoking Cessation Services (SSSs) that usually combine pharmacotherapy with behavioural support; (e) smoking cessation programmes not delivered in NHS-SSSs; (f) other unspecified methods, (g) does not remember. Response options were mutually exclusive. Seventy-one respondents were excluded: 36 respondents did not answer to the question on quitting methods and 35 respondents answered they did not remember the quitting method used in the last attempt. We merged the answers on methods used to quit into three groups: those who used no aid; those who used e-cigarettes, and those who used "other methods", i.e., items (c), (d), (e), and (f).

The primary outcome was self-reported abstinence for a period greater than or equal to six months at the time of the interview. All the people reporting an attempt to quit smoking in the 12 months preceding the interview were asked "When did you stop smoking?", those who answered "six months or more" at the time of the interview were classified in the group "successful attempt" (N = 583); those reporting being current smokers were classified in the group "failed attempt" (N = 5529); those responding "less than six months" were excluded from the analysis (N = 664). Thus, the overall population under study is represented by 6112 individuals.