



Published in final edited form as:

Nicotine Tob Res. 2016 April ; 18(4): 501–507. doi:10.1093/ntr/ntv081.

Awareness and Current Use of Electronic Cigarettes in Indonesia, Malaysia, Qatar, and Greece: Findings From 2011–2013 Global Adult Tobacco Surveys

Krishna Mohan Palipudi, PhD¹, Lazarous Mbulo, PhD¹, Jeremy Morton, MS¹, Lazarous Mbulo, PhD¹, Rebecca Bunnell, ScD², Glenda Blutchter-Nelson, BS¹, Soewarta Kosen, PhD³, Guat Hiong Tee, MPH⁴, Amani Mohamed Elkhathim Abdalla, PhD⁵, Kholood Ateeq Al Mutawa, MD⁵, Anastasia Barbouni, PhD⁶, Eleni Antoniadou, PhD⁶, Heba Fouad, MD⁷, Rula N. Khoury, MPH⁸, James Rarick, MPH⁹, Dharendra N. Sinha, MD¹⁰, and Samira Asma, DDS¹ on behalf of GATS Collaborative Group

¹Global Tobacco Control Branch, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC, Atlanta, GA

²Office of Smoking and Health, NCCDPHP, CDC, Atlanta, GA

³National Institute of Health Research and Development, Ministry of Health, Republic of Indonesia, Jakarta, Indonesia

⁴Institute for Public Health, Ministry of Health, Malaysia, Kuala Lumpur, Malaysia

⁵Public Health Department, Supreme Council of Health, Doha, Qatar

⁶Department of Public Health, National School of Public Health, Athens, Greece

⁷Regional Office for the Eastern Mediterranean, World Health Organization, Cairo, Egypt

⁸Regional Office for Europe, World Health Organization, Copenhagen, Denmark

⁹Western Pacific Regional Office, World Health Organization, Manila, Philippines

¹⁰South-East Asia Regional Office, World Health Organization, New Delhi, India

Abstract

Introduction—Increases in electronic cigarette (e-cigarette) awareness and current use have been documented in high income countries but less is known about middle and low income countries.

Methods—Nationally representative household survey data from the first four Global Adult Tobacco Surveys to assess e-cigarettes were analyzed, including Indonesia (2011), Malaysia (2011), Qatar (2013), and Greece (2013). Correlates of e-cigarette awareness and current use were calculated. Sample sizes for Greece and Qatar allowed for further analysis of e-cigarette users.

For permissions, please e-mail: journals.permissions@oup.com.

Corresponding Author: Krishna Mohan Palipudi, PhD, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 4770 Buford Highway, MS F-79, Atlanta, GA 30341, USA. Telephone: 770-488-5648; Fax: 770-488-8488; gou8@cdc.gov.

Declaration of Interests

None declared.

Results—Awareness of e-cigarettes was 10.9% in Indonesia, 21.0% in Malaysia, 49.0% in Qatar, and 88.5% in Greece. In all four countries, awareness was higher among male, younger, more educated, and wealthier respondents. Current e-cigarette use among those aware of e-cigarettes was 3.9% in Malaysia, 2.5% in Indonesia, 2.2% in Greece and 1.8% in Qatar. Across these four countries, an estimated 818 500 people are currently using e-cigarettes. Among current e-cigarette users, 64.4% in Greece and 84.1% in Qatar also smoked cigarettes, and, 10.6% in Greece and 6.0% in Qatar were never-smokers.

Conclusions—E-cigarette awareness and use was evident in all four countries. Ongoing surveillance and monitoring of awareness and use of e-cigarettes in these and other countries could help inform tobacco control policies and public health interventions. Future surveillance should monitor use of e-cigarettes among current smokers and uptake among never-smokers and relapsing former smokers.

Introduction

Electronic cigarettes (e-cigarettes) and other electronic nicotine delivery systems are part of a changing tobacco control landscape. E-cigarettes are battery powered devices that deliver nicotine and other constituents.¹ Debate is widespread about the possible individual and public health impact of e-cigarettes, including whether they support cessation or whether they fuel nicotine addiction and combustible product use among current and former smokers.^{2–5} For never-smokers, particularly for youth, e-cigarette use could lead to nicotine exposure and nicotine addiction, which is harmful for adolescent brain development.^{6–9} Country-specific e-cigarettes surveillance data, while still limited, are central to understanding evolving patterns of use and to informing public health interventions and policies.

Current e-cigarettes use is increasing in many higher income countries.^{3,4,6,10–13} Data for low and middle income countries are limited but needed. The majority of emerging and developing countries are party to the Conference of the Parties to WHO Framework Convention on Tobacco Control which has discussed the rise of e-cigarettes and their regulation.⁵ Among its recommendations, the sixth Conference of the Parties invited parties to consider prohibiting or regulating e-cigarettes and urging them to comprehensively monitor their use.⁵ Many countries are considering or have implemented e-cigarettes-related policies. Such policy decisions can be informed by surveillance data on awareness and use of e-cigarettes and other tobacco products. In addition, countries that have put in place regulatory measures will need surveillance data to track e-cigarette and conventional cigarette use and monitor the effectiveness of existing policies. To address the need in many countries for nationally representative surveillance data on e-cigarettes use, the Global Tobacco Surveillance System incorporated questions on e-cigarettes into the Global Adult Tobacco Survey (GATS) beginning in 2011.^{14,15}

E-cigarette questions were introduced to the GATS questionnaire in 2011. Several countries incorporated these questions and data are now available for the first four countries (Indonesia, Malaysia, Qatar, and Greece) that included questions on e-cigarettes in GATS. This article reports nationally representative findings on awareness and current use of e-

cigarettes in the first four countries (Indonesia, Malaysia, Qatar, and Greece) that included questions on e-cigarettes in GATS.

Methods

GATS is a nationally representative household survey with comparable methods to collect relevant information from noninstitutionalized adults aged 15 years or older in low and middle income countries.¹⁶ The survey uses a consistent multistage cluster sampling design in all countries to produce nationally representative estimates on key tobacco control indicators to generate comparable data within and across countries. The survey contains a standard core questionnaire and with optional additions. Indonesia (2011), Malaysia (2011), Qatar (2013), and Greece (2013) were the first countries to include questions on e-cigarettes awareness and current use of e-cigarette; data from these countries were used for this study.

Sample sizes and overall response rates in each country were: 8305 (Indonesia, 94.3%), 4250 (Malaysia, 85.3%), 8389 (Qatar, 98.5%), and 4357 (Greece, 69.6%). Further details of the study methods are described elsewhere.^{14,16–19}

Measures

Awareness of E-cigarettes

Respondents were asked: “Have you ever heard of e-cigarettes?” Those responding “yes” were considered to be aware of e-cigarettes.

Current E-cigarettes Users

Those who responded “daily or less than daily” to the question “Do you currently use e-cigarettes on a daily basis, less than daily, or not at all?” were considered to be current e-cigarettes users.

Current Tobacco Smokers/Nonsmokers

Tobacco use status was assessed by the question, “Do you currently smoke tobacco on a daily basis, less than daily, or not at all?” Respondents who selected “daily or less than daily” were considered to be current tobacco smokers. Those who selected “not at all” were considered as “nonsmokers.” Smoked tobacco products include manufactured cigarettes, cigars, pipes, hand-rolled cigarettes, kreteks, and water pipe (Shisha/Nargile).

Former Smokers/Never-smokers

Former smoker/never-smoker was assessed within current nonsmokers by the question “In the past, have you smoked tobacco on a daily basis, less than daily, or not at all?” Those who answered “daily basis” or “less than daily” were considered as former smokers. Those who selected “not at all” were considered as “never-smokers.”

Interest in Quitting Smoking

Interest in quitting smoking was assessed by the question “Which of the following best describe your thinking about quitting smoking?” The response options included: (1) Quit

within the next month, (2) Thinking about quitting within the next 12 months, (3) Quit someday, but not within the next 12 months, (4) Not interested in quitting. Respondents who selected “quit within the next month,” “thinking about quitting within the next 12 months” and “quit someday, but not within the next 12 months” were considered to be interested in quitting.²⁰

Exposure to Cigarette Advertisements in Stores

In store advertisement exposure was assessed by the yes/no question “In the past 30 days, have you noticed any advertisements or signs promoting cigarettes in stores where cigarettes are sold?”

Exposure to Cigarette Advertisements on the Internet

Internet advertisement exposure was assessed by the yes/no question “In the past 30 days, have you noticed any advertisements or signs promoting cigarettes on the internet?”

Data Analysis

E-cigarette awareness and current use were examined by socioeconomic characteristics including gender, age, education, and wealth index, and current tobacco smoking, interest in quitting smoking, advertisement exposure in stores and on internet. For each country, current e-cigarette use was calculated among respondents reporting e-cigarette awareness as well as among all respondents. Greece and Qatar had sufficient sample sizes for further analysis, including assessment of smoking status (ie, current smokers, former smokers, and never-smokers) among current e-cigarette users. SPSS software version 17 for complex samples was used to obtain weighted estimates of prevalence, number of current users and 95% confidence intervals. Differences in estimates were considered statistically significant if the confidence intervals did not overlap.²¹

Results

Awareness of E-cigarettes

Awareness of e-cigarettes was 10.9% in Indonesia, 21.0% in Malaysia, 49.0% in Qatar, and 88.5% in Greece. Awareness was higher among males than females and among younger people in all four countries. In all countries, e-cigarette awareness was higher among those with higher education, higher wealth index scores, advertisement exposure, and current tobacco smokers. In Greece, although the level of awareness among smokers (95.8%) was higher than among nonsmokers (83.9%), both groups were highly aware of e-cigarettes. Current smokers who indicated interest in quitting in Indonesia (23.3%) were more aware of e-cigarettes than were those who were not interested in quitting (10.8%). However, results for Malaysia, Qatar, and Greece showed no significant differences in awareness of e-cigarettes between smokers interested in quitting and those not interested in quitting. (Table 1).

Prevalence of E-Cigarette Use

Overall, among those aware of e-cigarettes, 2.5% of adults in Indonesia, 3.9% of adults in Malaysia, 1.8% of adults in Qatar, and 2.2% of adults in Greece were current users of e-cigarettes (Table 2). These findings extrapolate to approximately a total of 818 500 current users across these four countries at the time of their surveys. When prevalence of current e-cigarette use was assessed among the whole population, including those unaware of e-cigarettes, usage rates were lower in all four countries (0.3% in Indonesia, 0.8% in Malaysia, 0.9% in Qatar, and 1.9% in Greece).

Prevalence of current e-cigarette use among those aware of e-cigarettes was significantly higher among males than females in Indonesia (males 3.2% vs. females 0%), Malaysia (males 5.5% vs. females 0%) and Qatar (males 2.5% vs. females 0.5%). There were no significant gender differences observed in Greece. Similarly no significant differences were observed in current e-cigarette use across the age groups in all four countries among those aware of the device (Table 2).

In Indonesia, Malaysia, and Qatar, the prevalence of current e-cigarette use among those aware of e-cigarettes was higher for current smokers than for nonsmokers (Indonesia: smokers 4.2%, nonsmokers 0.4%; Malaysia: smokers 10.4%, nonsmokers 0.4%; Qatar: smokers 7.6%, nonsmokers 0.4%). No significant differences in current e-cigarette use were observed between current smokers (3.4%) and nonsmokers (1.3%) in Greece. Current smokers interested in quitting were more likely to use e-cigarette than those who were not interested in quitting in Malaysia (13.1% vs. 1.2%) and in Greece (5.3% vs. 1.2%) (Table 2).

Among current e-cigarette users in Greece and Qatar, the majority also smoked tobacco (Greece, 64.4%; Qatar, 84.1%). In addition, never-smokers and former smokers accounted for 35.6% and 15.9% of current e-cigarette users in Greece and Qatar. Among all current e-cigarette users, about a tenth in Greece (10.6%) and 6% in Qatar had never smoked tobacco.

Discussion

Our findings demonstrate that e-cigarette awareness and current use is evident in all four countries. Overall awareness was higher among persons who were current smokers, younger, higher educated, wealthier, and, except for Qatar, exposed to advertisement. Although current use may have increased since data collection in each country, our findings showed that there are over 818 500 current users in the four countries. Given that current e-cigarette use is occurring in all four countries, on-going e-cigarette surveillance will be important to inform prevention and policy formulation efforts.

Respondents who noticed cigarette advertisements in either stores or the internet were more likely to be aware of e-cigarettes. Awareness of e-cigarettes was particularly high in Greece which may reflect its proximity to European markets that have heavy advertisements.^{2,22–24} In Greece and Qatar, over 60.0% of current e-cigarette users were current tobacco smokers. These findings may also suggest that current smokers may be shifting towards using e-cigarettes concurrently with combustible tobacco products and has also been found in other studies.^{25,26} As GATS is cross-sectional, we cannot know whether these former smokers

successfully quit smoking using e-cigarettes or if they quit prior to using e-cigarettes and then reinitiated nicotine use through e-cigarettes. However, our results show that 35.6% of current e-cigarette users in Greece and 15.9% in Qatar were nonsmokers. Our sample was too small to generate separate stable estimates of the proportion of never-smokers and former smokers who may have been initiating or reinitiating the use of nicotine through e-cigarettes. However, future monitoring of this group will be important to verify potential outcomes of using e-cigarette such as experimental, sustained, transition to combustible tobacco products, dual use with other tobacco products, a shift toward exclusive e-cigarette use or quit attempt.

Experience in other countries suggests that e-cigarette awareness and use increases in tandem with heavy marketing.²⁷ Rates of e-cigarette awareness and use found in the four countries in this study resemble rates observed elsewhere several years ago.^{28,29} These data suggest that these countries, particularly Greece and Qatar, may be in an early stage of e-cigarette promotion where awareness is high, but use is low. Thus, these surveillance data may be highlighting a window of opportunity for early intervention to prevent any potential harm from e-cigarettes at the individual and population level.⁹

Study limitations include use of self-reported data and possible recall or social desirability biases. Small sample sizes restricted further analysis and likely limited our ability to identify associations. In addition, differences in awareness and current use across countries reflect not only country-specific differences but also differences in survey timing with Indonesia and Malaysia in 2011 and Qatar and Greece in 2013. Variations in data collection times across the four countries restricted cross-country comparisons, especially given that e-cigarettes, their marketing, and associated scientific evidence are all evolving rapidly.⁴ In addition, the GATS questionnaire did not include an ever use question on e-cigarettes in all countries, so we were not able to assess overall ever use of e-cigarettes. GATS also did not include other terminology for e-cigarettes (e-hookah, etc.), although new product names are rapidly emerging,³⁰ so we may have underestimated overall electronic nicotine delivery systems product use.

Our findings have important research and public health practice implications. Although usage rates are low in the four countries, the study also shows that e-cigarette awareness is high, particularly among smokers. Questions on patterns and duration of e-cigarette and concurrent use with combustible tobacco products could be useful for future GATS surveys. In the meantime, enhanced cessation efforts with counseling and nicotine replacement therapies that have proven effectiveness should³¹ be promoted and made available to smokers. On-going surveillance of awareness and patterns of use of e-cigarettes and other tobacco products in these and other countries could help inform policy and other tobacco interventions particularly with increasing availability of new products.

Acknowledgments

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of CDC or GATS partner organizations.

Funding

GATS was supported by the Bloomberg Philanthropies' Initiative to Reduce Tobacco Use, the Bill and Melinda Gates Foundation, and the Ministries of Health in Greece, Qatar and Malaysia.

References

1. World Health Organization Study Group on Tobacco Product Regulation. Report on the Scientific Basis of Tobacco Product Regulation: Third Report of a WHO Study Group. Geneva, Switzerland: WHO; 2009.
2. European Commission. Commission staff working document impact assessment: accompanying the document proposal for a directive of the European Parliament and of the Council. Brussels: 2012. http://ec.europa.eu/health/tobacco/docs/com_2012_788_ia_en.pdf. Accessed May 17, 2014
3. Grana R, Benowitz N, Glantz SA. E-cigarettes: a scientific review. *Circulation*. 2014; 129(19):1972–1986. [PubMed: 24821826]
4. World Health Organization. Electronic nicotine delivery systems. Conference of the Parties to the WHO Framework Convention on Tobacco Control 6th Session; October 13–18, 2013; 18, 2014; Moscow, Russian Federation.
5. Conference of the Parties to the WHO Framework Convention on Tobacco Control. Report of the sixth session of the Conference of the Parties to the WHO Framework Convention on Tobacco Control; October 13–18, 2014; Moscow, Russian Federation.
6. McMillen RC, Gottlieb MA, Shaefer RM, Winickoff JP, Klein JD. Trends in electronic cigarettes use among U.S. Adults. Use is increasing in both smokers and nonsmokers. *Nicotine Tob Res*. 2014; :1–8. DOI: 10.1093/ntr/ntu213 [PubMed: 23873981]
7. Chapman SLC, Wu LT. E-cigarettes prevalence and correlates of use among adolescents versus adults: a review and comparison. *J Psychiatric Res*. 2014 Jul;54:43–54.
8. Christensen T, Welsh E, Faseru B. Profile of e-cigarette use and its relationship with cigarette quit attempts and abstinence in Kansas adults. *Prev Med*. 2014; 69:90–94. [PubMed: 25230365]
9. U.S. Department of Health and Human Services. The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General, 2014. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2014.
10. Brown J, West R, Beard E, Michie S, Shahab L, McNeill A. Prevalence and characteristics of e-cigarette users in Great Britain: findings from a general population survey of smokers. *Addict Behav*. 2014; 55(5):1120–1125.
11. King BA, Patel R, Nguyen KH, Dube SR. Trends in awareness and use of electronic cigarettes among US adults, 2010–2013. *Nicotine Tob Res*. 2015; 17(2):219–227. [PubMed: 25239961]
12. Goniewicz ML, Gawron M, Nadolska J, Balwicki L, Sobczak A. Rise in electronic cigarette use among adolescents in Poland. *J Adolesc Health*. 2014; 55:713–715. [PubMed: 25344033]
13. Gravely S, Fong GT, Cummings KM, et al. Awareness, trial, and current use of electronic cigarettes in 10 countries: findings from the ITC project. *Int J Environ Res Public Health*. 2014; 11(11):11691–11704. DOI: 10.3390/ijerph111111691 [PubMed: 25421063]
14. Institute for Public Health (IPH). Report of the Global Adult Tobacco Survey (GATS) Malaysia, 2011. Kuala Lumpur, Malaysia: Ministry of Health Malaysia; 2012.
15. World Health Organization, Regional Office for South Asia. Global Adult Tobacco Survey: Indonesia Report 2011. Jakarta, Indonesia: Ministry of Health; 2012.
16. Palipudi KM, Morton J, Hsia J, et al. on behalf of the GATS Collaborative Group. Methodology of the Global Adult Tobacco Survey: 2008–2010. *Glob Health Promot*. 2013; :1–21. DOI: 10.1177/1757975913499800
17. Ministry of Health and Social Solidarity—Greece. Global Adult Tobacco Survey Fact Sheet Greece 2013. 2014. www.who.int/tobacco/surveillance/survey/gats/grc.pdf?ua=1. Accessed June 6, 2014
18. Ministry of Development Planning and Statistics—Qatar. Global Adult Tobacco Survey Fact Sheet Qatar 2013. 2014. www.emro.who.int/images/stories/tfi/documents/FACT_SHEETS/FS_GATS_Qatar_2013.pdf?ua=1. Accessed June 6, 2014

19. World Health Organization, Regional Office for South-East Asia. Global Adult Tobacco Survey Fact Sheet-Indonesia 2011. 2012. http://www.who.int/tobacco/surveillance/survey/gats/indonesia_factsheet_8_february_2012.pdf. Accessed April 20, 2015
20. Global Adult Tobacco Survey Collaborative Group Global Adult Tobacco Surveys (GATS). Sample Design Manual. Atlanta, GA: Centers for Disease Control and Prevention; 2010. www.cdc.gov/tobacco/global/gats. Accessed April 20, 2015
21. Mulla ZD, Cole SR. RE: Epidemiology of Salmonellosis in California, 1990–1999: morbidity, mortality, and hospitalization costs. Letter. *Am J Epidemiol*. 2004; 159(1):104–105. [PubMed: 14693666]
22. Erbach, G. Electronic cigarettes. Library Briefing; Library of the European Parliament. 2013. www.europarl.europa.eu/eplibrary/Electronic-cigarettes.pdf. Accessed May 18, 2014
23. Schnichels, D. Regulating E-Cigarettes in the EU. ASTHO Webinar. 2014. <http://www.astho.org/Programs/Prevention/Tobacco/Tobacco-Webinars/Webinar-Slides-E-Cigarettes-European-Union/>. Accessed April 20, 2015
24. The European Parliament and the Council of the European Union. Directive 2014/40/eu of the European Parliament and of the Council of 3 April. Official Journal of the European Union; 2014. L 127/1. http://ec.europa.eu/health/tobacco/docs/dir_201440_en.pdf. Accessed April 20, 2015
25. Dutra L, Glantz SA. Electronic cigarettes and conventional cigarette use among US adolescents: a cross-sectional study. *JAMA Pediatr*. 2014; 168(7):610–617. DOI: 10.1001/jamapediatrics.2013.5488 [PubMed: 24604023]
26. Lee S, Grana RA, Glantz SA. Electronic cigarette use among Korean adolescents: a cross-sectional study of market penetration, dual use, and relationship to quit attempts and former smoking. *J Adolesc Health*. 2014; 54(6):684–690. DOI: 10.1016/j.jadohealth.2013.11.003 [PubMed: 24274973]
27. King BA, Alam S, Promoff G, Arrazola R, Dube SR. Awareness and ever-use of electronic cigarettes among U.S. adults, 2010–2011. *Nicotine Tob Res*. 2013; 15(9):1623–1627. Epub 2013 Feb. DOI: 10.1093/ntr/ntt013 [PubMed: 23449421]
28. Adkison S, O'Connor R, Bansal-Travers M, et al. Electronic nicotine delivery systems: international tobacco control four-country survey. *Am J Prev Med*. 2013; 44(3):207–215. doi: <http://dx.doi.org/10.1016/j.amepre.2012.10.018>. [PubMed: 23415116]
29. Regan AK, Promoff G, Dube SR, Arrazola R. Electronic nicotine delivery systems: adult use and awareness of the 'e-cigarette' in the USA. *Tob Control*. 2013; 22(1):19–23. DOI: 10.1136/tobaccocontrol-2011-050044 [PubMed: 22034071]
30. Richtel, M. E-cigarettes, by other names, lure young and worry experts. The New York Times. 2014. www.nytimes.com/2014/03/05/business/e-cigarettes-under-aliases-elude-the-authorities.html?_r=0. Accessed June 5, 2014
31. Public Health Service (PHS). Treating Tobacco Use and Dependence: 2008 Update Clinical Practice Guideline. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service; 2008. www.ahrq.gov/path/tobacco.htm. Accessed June 5, 2014

Table 1
Awareness of E-cigarettes Among Adults Aged 15 Years or Older in Indonesia, Malaysia, Qatar, and Greece, GATS 2011–2013^a

	Indonesia ^d (N = 8303)		Malaysia ^d (N = 4244)		Qatar ^d (N = 8389)		Greece ^d (N = 9357)	
	% aware ^b	95% CI	% aware ^b	95% CI	% aware ^b	95% CI	% aware ^b	95% CI
Overall	10.9	(9.3, 12.9)	21.0	(19.1, 22.9)	49.0	(46.8, 51.3)	88.5	(86.1, 90.5)
Gender								
Male	16.8	(14.2, 19.8)	29.0	(26.4, 31.8)	62.8	(59.4, 66.1)	93.4	(91.2, 95.1)
Female	5.1	(4.0, 6.5)	12.4	(10.4, 14.8)	33.8	(31.3, 36.5)	83.7	(80.4, 86.5)
Age (years)								
15–24	14.4	(11.7, 17.5)	24.6	(20.6, 29.0)	48.8	(44.8, 52.8)	93.7	(89.1, 96.5)
25–44	12.4	(10.3, 14.9)	25.4	(22.8, 28.3)	50.2	(47.5, 52.9)	95.2	(93.2, 96.6)
45–64	7.4	(5.7, 9.6)	13.1	(10.9, 15.8)	49.5	(45.5, 53.5)	95.2	(93.0, 96.7)
65 or older	1.6	(0.6, 4.1)	6.7	(3.1, 13.7)	25.8	(17.5, 36.3)	62.2	(55.7, 68.2)
Education								
No formal education/less than primary	1.4	(0.9, 2.1)	6.2	(3.5, 10.6)	15.2	(11.8, 19.5)	62.0	(55.3, 68.3)
Completed primary/less than secondary	5.7	(4.0, 8.2)	13.2	(10.7, 16.2)	43.8	(37.8, 50.0)	89.6	(85.5, 92.7)
Completed secondary/completed high school	16.1	(13.6, 18.9)	23.3	(20.8, 26.0)	46.5	(42.7, 50.4)	95.5	(93.5, 96.9)
Completed college/university or above	29.4	(24.0, 35.5)	43.3	(36.3, 50.5)	56.8	(53.7, 59.9)	96.2	(93.6, 97.7)
Wealth index								
Lowest	1.6	(1.0, 2.6)	6.1	(4.0, 9.1)	N/A	N/A	67.7	(61.8, 73.1)
Low	6.1	(4.8, 7.6)	11.7	(8.9, 15.3)	N/A	N/A	91.1	(88.7, 93.1)
Middle	7.8	(5.8, 10.5)	20.0	(16.7, 23.7)	N/A	N/A	0.0	–
High	12.2	(10.0, 14.8)	23.5	(20.0, 27.3)	N/A	N/A	0.0	–
Highest	24.7	(20.7, 29.1)	31.0	(27.2, 35.1)	N/A	N/A	95.1	(92.5, 96.8)
Current tobacco smokers								
Yes	16.9	(14.2, 20.0)	32.1	(28.1, 36.4)	82.7	(79.4, 85.5)	95.8	(93.9, 97.1)
No	7.7	(6.3, 9.5)	17.6	(15.6, 19.8)	44.4	(42.1, 46.8)	83.9	(80.6, 86.8)
Interest in quitting smoking								
Yes	23.3	(19.9, 27.2)	35.5	(30.7, 40.7)	82.5	(78.5, 85.8)	96.6	(94.4, 97.9)
No	10.8	(8.1, 14.3)	23.9	(18.2, 30.7)	82.7	(76.9, 87.4)	94.9	(92.2, 96.7)
Noticed cigarette advertisements: in stores								

	Indonesia ^a (N = 8303)			Malaysia ^a (N = 4244)			Qatar ^a (N = 8389)			Greece ^a (N = 9357)		
	% aware ^b	95% CI		% aware ^b	95% CI		% aware ^b	95% CI		% aware ^b	95% CI	
Yes	14.5	(12.0, 17.6)		27.0	(22.8, 31.7)		49.3	(43.8, 54.8)		96.3	(93.5, 97.9)	
No	7.9	(6.3, 9.9)		19.6	(17.6, 21.8)		49.0	(46.6, 51.3)		85.4	(82.6, 87.8)	
Noticed cigarette advertisements: on the Internet												
Yes	36.7	(26.8, 47.9)		35.8	(26.4, 46.5)		54.7	(49.8, 59.5)		99.0	(92.9, 99.9)	
No	10.5	(8.9, 12.3)		20.3	(18.4, 22.3)		48.2	(45.9, 50.5)		88.2	(85.7, 90.2)	

Note. CI = confidence interval; E-cigarette = electronic cigarette; GATS = Global Adult Tobacco Survey; N/A = data information not available.

^aData for Greece and Qatar are from the 2013 GATS, and data for Indonesia and Malaysia are from the 2011 GATS.

^bAware of the existence of e-cigarettes.

Table 2

Prevalence of Current E-cigarettes Use Among Adults Aged 15 Years or Older in Indonesia, Malaysia, Qatar, and Greece, GATS 2011–2013^a

	Indonesia		Malaysia		Qatar		Greece	
	All adults	Adults aware of e-cigarettes	All adults	Adults aware of e-cigarettes	All adults	Adults aware of e-cigarettes	All adults	Adults aware of e-cigarettes
	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI
Overall	0.3 (0.2, 0.5)	2.5 (1.4, 4.3)	0.8 (0.4, 1.6)	3.9 (2.0, 7.6)	0.9 (0.7, 1.2)	1.8 (1.4, 2.5)	1.9 (1.3, 2.8)	2.2 (1.5, 3.2)
Gender								
Male	0.5 (0.3, 1.0)	3.2 (1.8, 5.7)	1.6 (0.8, 3.2)	5.5 (2.8, 10.6)	1.6 (1.1, 2.2)	2.5 (1.8, 3.5)	1.7 (1.0, 2.8)	1.8 (1.1, 3.0)
Female	0.0 –	0.0 –	0.0 –	0.0 –	0.2 (0.1, 0.3)	0.5 (0.2, 0.9)	2.1 (1.3, 3.5)	2.5 (1.5, 4.2)
Age (years)								
15–24	0.2 (0.1, 0.5)	1.2 (0.4, 3.7)	1.1 (0.4, 2.8)	4.4 (1.7, 10.9)	0.5 (0.2, 1.1)	0.9 (0.4, 2.3)	0.0 –	0.0 –
25–44	0.3 (0.2, 0.7)	2.7 (1.3, 5.6)	1.3 (0.7, 2.5)	5 (2.6, 9.4)	1 (0.7, 1.5)	2 (1.4, 2.9)	2.8 (1.7, 4.8)	3 (1.8, 5.1)
45–64	0.3 (0.1, 1.2)	4.5 (1.3, 14.6)	0.0 –	0.0 –	1.3 (0.7, 2.4)	2.5 (1.3, 4.8)	2.7 (1.7, 4.3)	2.8 (1.7, 4.5)
65	0.0 –	0.0 –	0.0 –	0.0 –	0.0 –	0.0 –	0.8 (0.3, 1.9)	1.3 (0.5, 3.0)
Education								
No formal education/less than primary	0.0 –	0.0 –	0.1 (0.0, 0.8)	1.7 (0.2, 11.7)	0.2 (0.1, 0.9)	5.3 (1.1, 22.2)	0.8 (0.3, 2.3)	2.5 (0.7, 8.0)
Completed primary/less than secondary	0.2 (0.1, 0.7)	4.2 (1.3, 12.7)	0.6 (0.1, 2.6)	4.4 (1.0, 17.3)	0.9 (0.3, 2.4)	1.5 (0.7, 3.3)	1.7 (0.7, 3.9)	0.5 (0.1, 2.5)
Completed secondary/completed high school	0.3 (0.2, 0.7)	2.1 (1.0, 4.5)	1.1 (0.6, 2.2)	4.8 (2.4, 9.3)	1.1 (0.6, 2.1)	1.6 (0.9, 2.9)	2 (1.0, 3.8)	1.6 (0.9, 2.8)
Completed college/university or above	0.8 (0.4, 1.9)	2.9 (1.2, 6.6)	0.7 (0.2, 2.6)	1.6 (0.4, 6.0)	1.2 (0.8, 1.8)	1.9 (1.3, 2.9)	4.7 (2.9, 7.5)	4.5 (2.8, 7.0)
Wealth index								
Lowest	0.0 –	0.0 –	0.1 (0.0, 0.6)	1.5 (0.2, 9.8)	N/A	N/A	0.9 (0.2, 3.9)	1.3 (0.3, 5.6)
Low	0.2 (0.1, 0.6)	1.4 (0.2, 9.5)	0.4 (0.1, 2.1)	3.2 (0.6, 15.9)	N/A	N/A	1.9 (1.2, 2.9)	2.1 (1.3, 3.2)
Middle	0.3 (0.0, 2.0)	4.2 (1.5, 11.5)	1.5 (0.5, 4.1)	7.5 (2.7, 19.2)	N/A	N/A	0.0 –	0.0 –
High	0.2 (0.0, 0.5)	1.2 (0.4, 3.7)	0.3 (0.1, 0.9)	1.1 (0.3, 4.0)	N/A	N/A	0.0 –	0.0 –
Highest	0.7 (0.4, 1.2)	2.8 (1.5, 5.0)	1.3 (0.6, 2.9)	4.3 (2.0, 8.9)	N/A	N/A	2.6 (1.4, 4.9)	2.8 (1.4, 5.2)
Current tobacco smokers								
Yes	0.7 (0.4, 1.3)	4.2 (2.5, 7.2)	3.3 (1.6, 6.7)	10.4 (5.2, 19.7)	6.3 (4.6, 8.6)	7.6 (5.6, 10.3)	3.2 (2.1, 4.8)	3.4 (2.2, 5.0)
No	0 (0.0, 0.2)	0.4 (0.1, 2.1)	0.1 (0.0, 0.5)	0.4 (0.1, 2.7)	0.2 (0.1, 0.4)	0.4 (0.2, 0.8)	1.1 (0.5, 2.2)	1.3 (0.6, 2.7)

	Indonesia				Malaysia				Qatar				Greece			
	All adults		Adults aware of e-cigarettes		All adults		Adults aware of e-cigarettes		All adults		Adults aware of e-cigarettes		All adults		Adults aware of e-cigarettes	
	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI	% CI
Interest in quitting smoking																
Yes	1.1 (0.6, 1.9)	4.5 (2.5, 8.0)	4.6 (2.3, 9.3)	13.1 (6.5, 24.4)	6.5 (4.5, 9.2)	7.8 (5.5, 11.1)	5.1 (3.3, 7.8)	5.3 (3.4, 8.1)								
No	0.4 (0.2, 1.0)	3.7 (1.4, 9.2)	0.3 (0.0, 2.0)	1.2 (0.2, 8.1)	6.1 (3.3, 11.2)	7.4 (4.0, 13.3)	1.1 (0.5, 2.5)	1.2 (0.5, 2.6)								
Noticed cigarette advertisements: in Stores																
Yes	0.4 (0.2, 0.7)	2.6 (1.3, 4.9)	1.3 (0.4, 4.0)	4.6 (1.4, 14.1)	1.5 (0.8, 2.9)	3.1 (1.7, 5.6)	3.1 (1.9, 5.0)	3.2 (2.0, 5.2)								
No	0.2 (0.1, 0.5)	2.3 (0.8, 6.5)	0.7 (0.4, 1.4)	3.7 (2.0, 6.8)	0.8 (0.6, 1.2)	1.7 (1.2, 2.4)	1.4 (0.9, 2.3)	1.7 (1.0, 2.7)								
Noticed cigarette advertisements: on the Internet																
Yes	0.0 –	0.0 –	1.8 (0.4, 7.3)	5.1 (1.2, 19.0)	1.1 (0.5, 2.5)	2 (0.8, 4.5)	3.6 (1.0, 12.3)	3.7 (1.0, 12.5)								
No	0.3 (0.2, 0.5)	2.7 (1.5, 4.6)	0.8 (0.4, 1.6)	3.9 (1.8, 7.9)	0.9 (0.6, 1.2)	1.8 (1.3, 2.5)	1.9 (1.3, 2.7)	2.1 (1.4, 3.1)								

Note. CI = confidence interval; E-cigarette = electronic cigarette; GATS = Global Adult Tobacco Survey; N/A = data information not available. – Indicator estimate are not presented as the point estimate is “zero.”

^aData for Greece and Qatar are from the 2013 GATS, and data for Indonesia and Malaysia are from the 2011 GATS.