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Tobacco Smoking Cessation and Quitline Use Among Adults Aged 15 Years in 31 Countries: Findings From the Global Adult Tobacco Survey

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Abstract

Introduction: About 80% of the 1.1 billion people who smoke tobacco worldwide reside in low- and middle-income countries. Evidence-based approaches to promote cessation include brief advice from health professionals and referrals through quitlines. This study assesses cessation behaviors and the use of cessation services in the past 12 months among current tobacco smokers in 31 countries who attempted to quit.

Methods: Data came from the Global Adult Tobacco Survey, a household-based survey of non-institutionalized adults aged 15 years. Surveys were conducted in 31 countries during 2008–2018; sample sizes ranged from 4,250 (Malaysia) to 74,037 (India), and response rates ranged from 64.4% (Ukraine) to 98.5% (Qatar). In 2019, data from the 31 countries were assessed in June 2019, and indicators included self-reported current (daily or less than daily) tobacco smoking, past-year quit attempts, and cessation methods used in the past 12 months.

Results: Current tobacco smoking prevalence ranged from 3.7% (Ethiopia) to 38.2% (Greece). Overall, an estimated 176.8 million adults from the 31 countries made a quit attempt in the past 12 months, with country-level prevalence ranging from 16.4% (Greece) to 54.7% (Botswana). Most individuals who made a quit attempt did so without assistance (median=74.4%). Other methods were less prevalent, including quitlines (median=0.2%) and counseling (median=7.2%).

Conclusions: In the assessed countries, the majority of those who currently smoked tobacco and made a quit attempt did so without assistance; very few reported using quitlines, partly because

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SUPPLEMENT NOTE

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of the lack of quitlines in some countries. In resource-limited settings, quitlines can play a greater role in helping people quit smoking as part of a comprehensive approach.

INTRODUCTION

An estimated 80% of the world's 1.1 billion people who smoke tobacco reside in low- and middle-income countries (LMICs).¹ Tobacco products contain nicotine, which is highly addictive and makes quitting difficult.²⁻⁴ Predictors for successful quitting include motivation to quit, addiction level, smoking frequency, past quit attempts, and length of abstinence during past attempts.⁵ Quitting is beneficial at any age, and evidence shows that people who obtain assistance when trying to quit smoking have a better chance of successfully quitting.⁶⁻⁹ The provision of evidence-based cessation services is particularly important in LMICs, which have limited resources and a high burden of tobacco use.

The ability to address the tobacco epidemic globally is complicated further by the constantly changing landscape of tobacco products, with new products such as e-cigarettes and heated tobacco products becoming available over time. For example, e-cigarettes can expose users to several chemicals besides nicotine, including carbonyl compounds and volatile organic compounds.¹⁰ Perceptions of new products also present challenges to cessation services; for example, products such as e-cigarettes are often perceived as less harmful than combustible or smoked tobacco products.¹¹⁻¹³ Therefore, a strategy sometimes used by people who want to quit smoking tobacco is to switch from combustible to smokeless tobacco products or e-cigarettes; however, the effectiveness of these products for tobacco smoking cessation is uncertain.¹⁴⁻¹⁹

The WHO's Framework Convention on Tobacco Control (FCTC) calls for measures to reduce tobacco dependence, including increasing accessibility to cessation services. Evidence-based cessation services include brief advice in healthcare settings, access to free or low-cost pharmacotherapy (cessation medication or nicotine-replacement therapy [NRT]), behavioral counseling, and telephone-based quitlines.²⁰ The use of pharmaco-therapies and counseling increases the chance that a person who smokes will quit, and the effect increases when both interventions are used together.²¹ Quitlines offer a convenient, population-based, and cost effective cessation strategy.^{22,23} In addition, the increasing availability of mobile phones and telecommunication infrastructure in LMICs²⁴ holds promise for the provision of cessation support through quitlines, which may be made widely accessible at relatively modest cost.^{22,23} In 2017, about 5 billion people were connected to mobile phone services globally.²⁴ This figure is projected to grow to 5.9 billion by 2025, with most of the growth to occur in LMICs.²⁵ Studies have shown that certain interventions, including tobacco cessation assistance, are increasingly being offered through mobile technology, especially in countries where the healthcare infrastructure may not be able to respond to population-level health information needs.²⁶⁻²⁹

Article 14 of the WHO FCTC specifically calls for member countries to offer quitline services that provide callers with advice from trained cessation specialists. The FCTC specifically recommends that the quitlines be widely promoted as sources of credible information, have quitline access information on tobacco product packaging, and have

adequately trained staff.³⁰ Although quitlines are an effective population-based strategy to help people who smoke quit, their existence remains limited worldwide, especially in LMICs, despite the increased availability and use of mobile telephones around the world.^{31,32} As of 2018, only 70 of 181 WHO FCTC member countries reported the implementation of quitlines. Among those countries with quitlines, 60% were high-income countries, 32% were middle-income, and only 8% were low-income countries.^{1,33} In addition, there is substantial variation in the structure of quitlines globally, including population coverage and services offered. Population coverage of quitlines (national versus subnational) within countries varies substantially, which influences access to and use of quitline services.³⁴ Although quitlines should include both proactive (calling out) and reactive (receiving calls) service models, implementation of both these models were reported by only 30% of middle-income countries and no low-income countries.³³

As of now, research on cessation behaviors and the use of cessation services in LMICs, including quitlines, has been limited. Therefore, the objective of this study is to assess cessation behaviors and the use of cessation services among adults who currently smoke tobacco, including the use of quitlines, in 31 countries that have implemented the Global Adult Tobacco Survey (GATS).

METHODS

Study Sample

Nationally representative data were analyzed from 31 countries that conducted the GATS between 2008 and 2018. GATS is a nationally representative household survey of non-institutionalized individuals aged 15 years that is administered electronically using handheld tablets to a randomly selected individual in the household, uses a standard core questionnaire that covers key tobacco control indicators (including cessation questions), and has a 2-stage complex survey design.^{35,36} The overall sample sizes ranged from 4,250 (Malaysia) to 74,037 (India), and response rates ranged from 64.4% (Ukraine) to 98.5% (Qatar). All the 31 countries included in the analysis are signatories to the WHO FCTC.

Measures

Quitting behavior and the use of cessation methods were assessed among respondents who self-reported currently smoking tobacco and who made a quit attempt in the past 12 months. People who currently smoked tobacco were defined as adults who currently smoked tobacco either daily or less than daily.

Self-reported cessation behaviors assessed in this study included quit attempts and use of cessation services in the past 12 months. Quit attempts were assessed using the question: *During the past 12 months, have you tried to stop smoking?* Response options were *yes*, *no*, and *refused*. Those responding *yes* were classified as having made a quit attempt.

Self-reported cessation services used were assessed using the question: *During the past 12 months, did you use any of the following to try to stop smoking tobacco?* This question included several response options; respondents could select multiple responses. The response options included the following: *counseling*, *NRT*, *prescription medications*,

traditional medication (i.e., any country-specific medications that are not considered an NRT or prescription medications), *quitline or smoking telephone support line*, *switching to smokeless tobacco use*, and *other* (additional options included by some countries).

Statistical Analysis

Analyses were conducted in June 2019 using SUDAAN, version 11, to account for the multistage sample design of GATS, adjusting for nonresponse, and weighting of the results to the population of each country. For countries with multiple rounds of GATS data available, the most recent survey year was used in the analysis. Analyses were done individually for each of the 31 countries, and no pooled data analyses were performed. Investigators estimated the prevalence estimates and 95% CIs for current smoking, quit attempts, and cessation methods used. SUDAAN computes asymmetric CIs for proportions (and percentages) using logit transformation to ensure that the confidence limits are between 0 and 1 (or 0% and 100%).³⁷

RESULTS

Among adults aged 15 years in the 31 countries, the prevalence of self-reported current tobacco smoking ranged from 3.7% in Ethiopia (2016) to 38.2% in Greece (2013) (Figure 1).

Approximately 176.8 million adults who self-reported currently smoking tobacco in the 31 assessed countries self-reported making a quit attempt in the past 12 months. Among adults who currently smoked tobacco, the proportion who made a quit attempt ranged from 16.4% in Greece (2013) to 54.7% in Botswana (2017) (Figure 2), with a median of 39.6% across 31 countries.

Among people who self-reported smoking tobacco and making a quit attempt, the cessation methods used varied by country (Table 1). The vast majority of adults who smoked tobacco reported trying to quit without any type of assistance, with a median of 74.4% across countries (ranging from 52.7% in Pakistan [2014] to 92.4% in Greece [2013]). The next most common method was counseling, with a median of 7.2% across countries (ranging from 1.3% in Romania [2011] to 23.7% in the Republic of Tanzania [2018]). NRT use had a median of 6.2% (ranging from 0.02% in Bangladesh [2017] to 26.7% in Indonesia [2011]). Prescription medication use had a median of 2.3% (ranging from 0.5% in Indonesia [2011] to 14.3% in Kazakhstan [2014]). Traditional medication use had a median of 1.6% (ranging from 0.1% in Bangladesh [2017] to 11.4% in Senegal [2015]). The use of quitlines had a median of 0.2% (ranging from 0% in Cameroon [2013] and Egypt [2009] to 4.4% in the Philippines [2015]). Adults who tried to quit smoking tobacco by switching to smokeless tobacco products had a median of 1.2% (ranging from 0.2% in Vietnam [2015] to 13.5% in Greece [2013]). A total of 3 countries collected data on switching to e-cigarettes in an attempt to quit smoking tobacco: prevalence was 0.2% in Vietnam (2015), 2.3% in the Philippines (2015), and 18.2% in the Russian Federation (2016).

DISCUSSION

In the 31 countries assessed in this study, the majority of adults who self-reported smoking tobacco and attempting to quit did so without assistance. Although quitting without assistance was the most prevalent quit attempt method, some adults used evidence-based cessation strategies, including counseling, NRT, prescription medications, and additional strategies such as traditional medications. Some adults attempted to quit smoking by switching from combustible tobacco to smokeless tobacco, which is not a proven cessation method.^{9,10,15–19,38} Quitlines were the least reported cessation method across countries. These findings along with existing evidence suggest that smoking cessation is a process that involves personal decisions to seek or not seek assistance, the type of assistance available and sought (medications, advice, and behavioral interventions), motivations, self-efficacy, and perhaps a host of factors including precipitating health conditions. A qualitative study by Smith et al.³⁹ elucidated that although most people start out quitting on their own without assistance, they may go through a complex decision-making process before they finally quit. It is possible that attempting to quit with or without assistance is the first and perhaps essential step in ultimate cessation and that process may be assisted by evidence-based advice and services. Specifically, opportunities exist for quitlines to serve a greater role in helping them quit as part of a comprehensive cessation strategy.

Population-based cessation services and resources, including quitlines, have been shown to assist persons using tobacco to quit.^{20,21} Using evidence-based cessation assistance can help people who smoke to quit and stay quit,²¹ and country-level public health professionals and healthcare providers can play an important role in increasing the awareness and utilization of these services. Guidelines from Article 14 of the WHO FCTC state that evidence-based cessation strategies should be made accessible and affordable.²⁰ As of 2016, the majority of countries (26 of 31) assessed in this analysis have moderate-level tobacco dependence treatment available, defined as having NRT or some cessation services available, with at least 1 of these services having costs covered.¹ A total of 6 of those countries (Brazil, India, Mexico, Panama, Senegal, and Turkey) have complete-level tobacco dependence treatment available, defined as having a national quitline, and both NRT and some cessation services available with their costs covered.¹

Quitlines also present an opportunity to provide practical information and individualized support to individuals who are trying to quit smoking, which are services that some healthcare systems may not be able to provide, especially in LMICs. Only about half (16 of 31) of the countries assessed in this analysis had a toll-free national quitline service available before 2016. In 2017, the Philippines launched its national quitline, which offers phone support and real-time counseling to people who smoke and wish to quit.^{1,40} Similarly, India implemented its mCessation program in 2012, which allows people who smoke to register using a cellular phone, make a quit plan, and obtain evidence-based cessation assistance.⁴¹ The growth in mobile phone ownership, which is projected to reach 5.9 billion worldwide by 2025 with most of this growth projected to take place in LMICs,²⁵ presents an opportunity for countries to consider similar approaches to those taken by the Philippines and India.

This study shows that evidence-based cessation service use is quite low, and there appears to be a potential gap between the access to services and their use by those who wish to quit smoking. The findings indicate that some adults report switching to smokeless tobacco or using e-cigarettes as a method to attempt to quit smoking. In the literature, there is much debate on the use of these strategies, and existing evidence is inconclusive about the effectiveness of smokeless tobacco products for successful smoking cessation. By contrast, there is extensive evidence demonstrating the effectiveness of population-based cessation strategies, which are not commonly used in LMICs. These findings reinforce that there are opportunities to make evidence-based cessation strategies more accessible and more widely used.

Limitations

This study is subject to some limitations. First, data were self-reported, which increases the potential for reporting bias in reporting tobacco smoking, quit attempts, and cessation service-seeking behaviors. It is unknown whether reporting bias differs among countries. Second, the time point when data were collected across countries ranged from 2008 to 2018, which limits comparability across countries. Third, the approaches implemented by tobacco control programs across countries also varied, and the data collection period may not coincide with the timing of implementing a specific cessation service such as a quitline. Fourth, questions and response options used to assess cessation service utilization may vary by country. For example, 4 countries did not include an option of quitting without assistance. In addition, because each cessation item was asked as an independent question, it is likely that some respondents tried more than 1 cessation method when trying to quit smoking; however, the use of multiple cessation methods during a quit attempt was not explored in this analysis. Fifth, the survey instrument does not capture detailed information on the type of counseling and quitline structure that each country had available during data collection. Finally, this analysis did not capture information on the cessation methods used by adults who successfully quit smoking tobacco for more than 12 months. Quitting behaviors could only be assessed among respondents who currently smoked tobacco and had made a quit attempt in the past 12 months and who therefore could not be classified as successful quitters.

CONCLUSIONS

This study found that 176.8 million people who currently smoke tobacco across 31 countries attempted to quit. However, most of these individuals used no assistance when trying to quit smoking, and some used nonevidence-based methods, such as switching to smokeless tobacco or e-cigarettes. The use of quitlines was especially low. The existing literature indicates that most persons who smoke tobacco want to quit and that evidence-based cessation interventions increase their chances of quitting successfully. Even though quitlines are a cost effective strategy to help people who smoke quit, about half of the countries in this analysis did not provide quitline services at the time of the survey. Therefore, efforts to expand the availability, accessibility, and promotion of tobacco cessation services, including quitlines, can play an important role in helping people to quit smoking for good; this may be especially true in LMICs where resources are limited.

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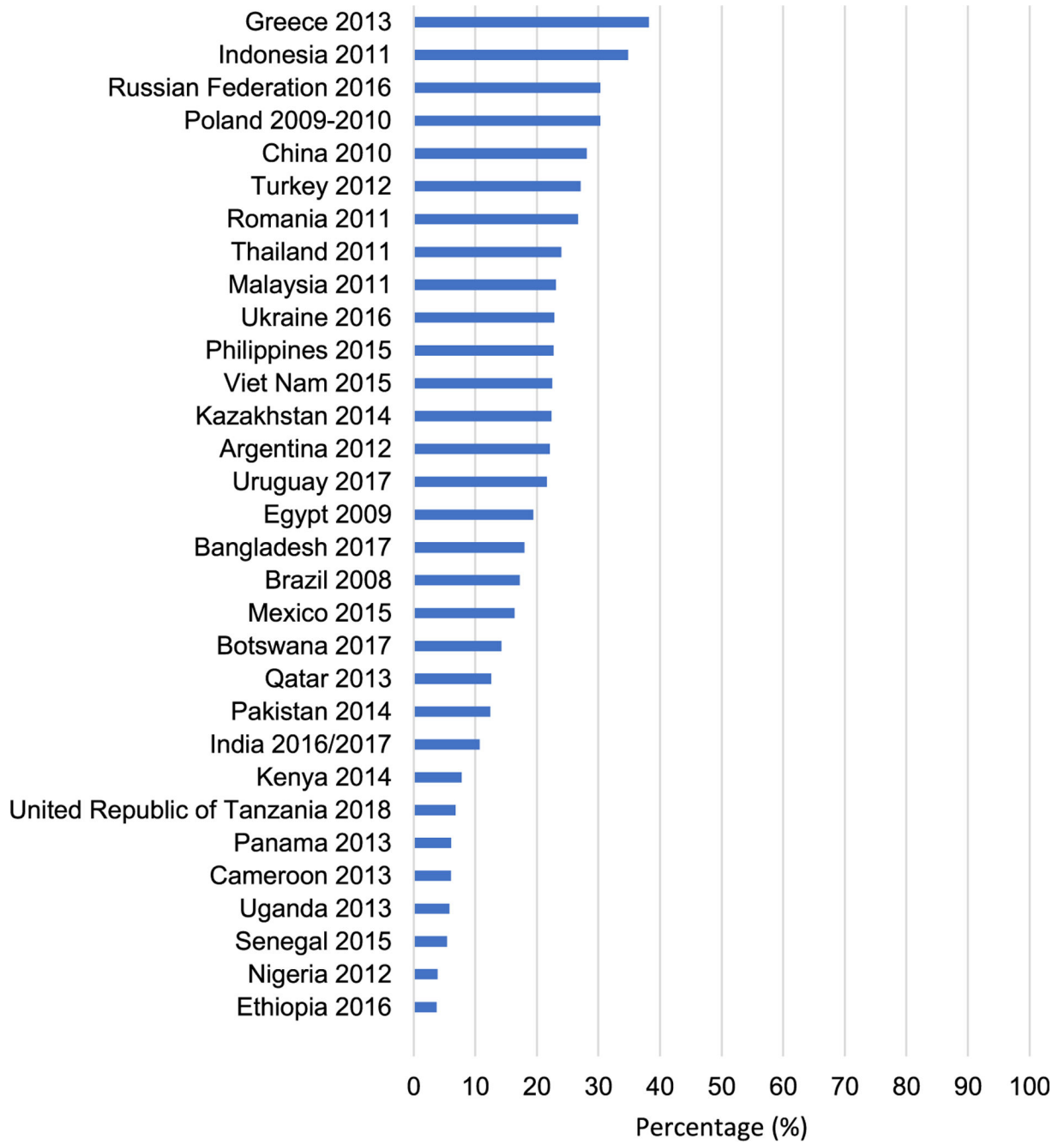


Figure 1. Prevalence of adults aged 15 years who currently smoke tobacco in 31 countries, GATS, 2008–2018. GATS, Global Adult Tobacco Survey.

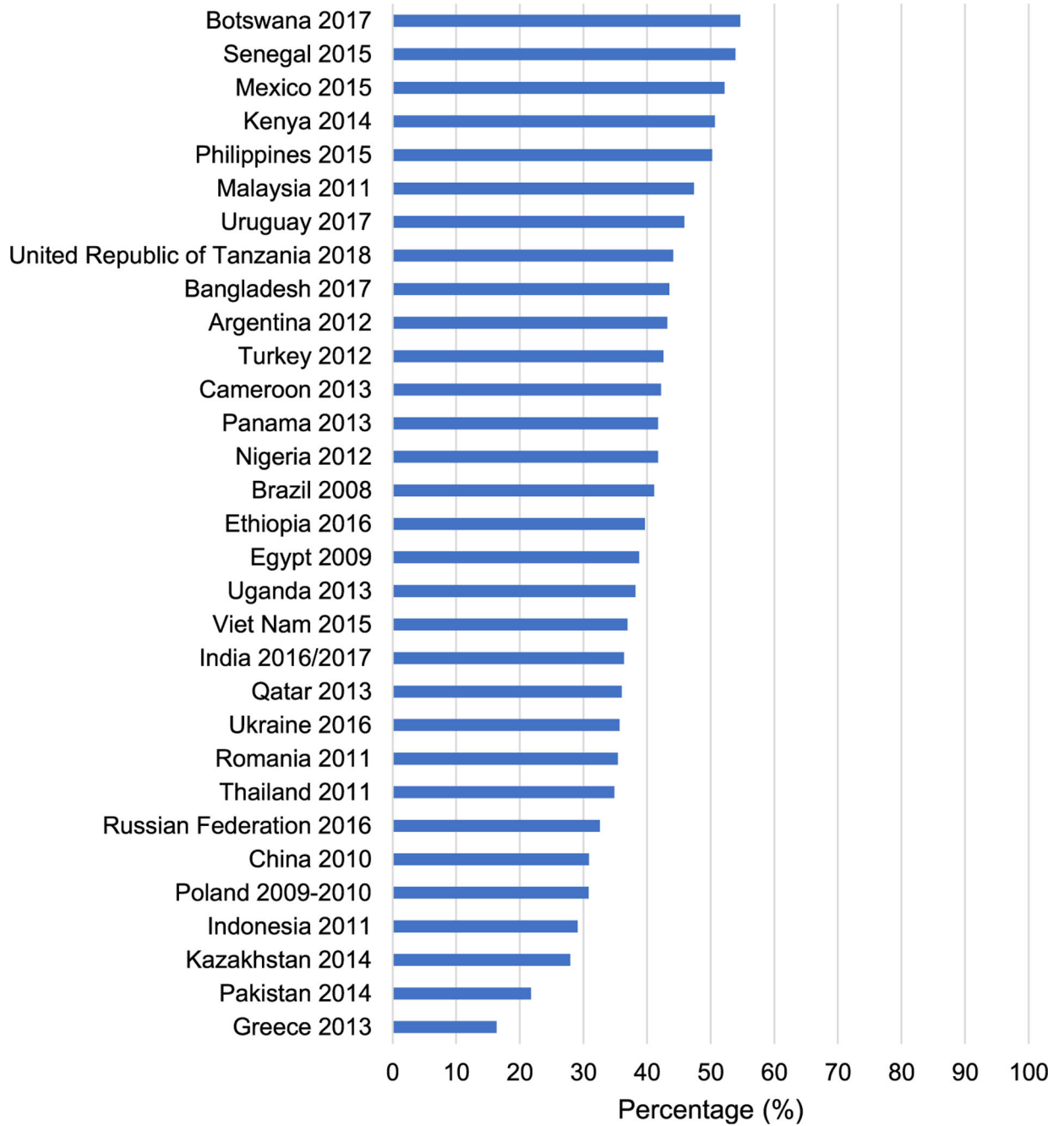


Figure 2. Prevalence of adults aged 15 years who currently smoke tobacco and made a quit attempt in the past 12 months in 31 countries, GATS, 2008–2018. GATS, Global Adult Tobacco Survey.

Table 1.

Quit Methods Used by Adults Aged 15 Years Who Currently Smoke Tobacco and Made a Quit Attempt in the Past 12 Months, GATS, 2008–2018

Country name	Unweighted <i>n</i>	Counseling % (95% CI)	NRT % (95% CI)	Prescription medication % (95% CI)	Traditional medicine % (95% CI)	Quitline % (95% CI)	Switch to smokeless tobacco % (95% CI)	Quit without assistance ^a % (95% CI)
Argentina 2012	718	2.3 (1.0, 5.6)	2.3 (1.3, 4.1)	3.1 (0.9, 10.5)	—	0.4 (0.1, 2.7)	0.3 (0.0, 1.5)	89.2 (80.1, 94.4)
Bangladesh 2017	1,069	9.7 (7.8, 12.2)	0.2 (0.1, 0.9)	N/A	0.1 (0.0, 0.4)	0.1 (0.0, 0.8)	1.8 (1.1, 2.9)	69.5 (63.7, 74.8)
Botswana 2017	340	11.6 (7.0, 18.5)	14.1 (9.5, 20.5)	2.9 (1.4, 5.7)	(0.2, 2.9)	0.1 (0.0, 0.8)	2.5 (1.1, 5.8)	67.5 (59.4, 74.7)
Brazil 2008	2,928	14.5 (13.0, 16.0)	4.6 (3.8, 5.7)	3.1 (2.4, 4.0)	—	0.9 (0.6, 1.4)	0.4 (0.2, 0.8)	N/A
Cameroon 2013	167	3.1 (1.2, 7.5)	2.1 (0.8, 5.0)	2.3 (0.4, 10.7)	2.7 (1.0, 6.6)	N/A	0.5 (0.1, 3.8)	86.4 (78.5, 91.7)
China 2010	489	2.0 (0.7, 5.7)	2.5 (1.2, 5.1)	1.1 (0.4, 3.1)	1.6 (0.6, 4.0)	0.1 (0.0, 0.5)	1.1 (0.3, 3.6)	N/A
Egypt 2009	1,580	4.2 (3.0, 5.8)	1.1 (0.7, 2.0)	1.2 (0.7, 2.0)	0.2 (0.1, 0.6)	0.1 (0.1, 0.4)	0.3 (0.1, 0.8)	N/A
Ethiopia 2016	225	14.5 (8.5, 23.9)	2.7 (0.7, 9.7)	0.7 (0.1, 3.7)	6.2 (2.7, 13.5)	0.0 (0.0, 0.0)	10.2 (3.7, 25.1)	74.4 (54.0, 87.8)
Greece 2013	260	3.0 (0.7, 11.9)	16.0 (9.9, 24.9)	1.1 (0.2, 4.5)	0.2 (0.0, 1.2)	0.2 (0.0, 1.7)	13.5 (6.4, 26.4)	92.4 (88.0, 95.2)
India 2016/2017	3,203	8.4 (6.8, 10.4)	1.7 (1.0, 2.7)	2.7 (2.0, 3.7)	2.5 (1.6, 3.9)	0.4 (0.2, 0.7)	4.0 (3.1, 5.3)	72.0 (68.9, 74.8)
Indonesia 2011	821	7.2 (4.2, 12.0)	26.7 (21.6, 32.5)	0.5 (0.1, 2.4)	3.4 (1.5, 7.4)	N/A	0.5 (0.2, 1.4)	69.9 (63.1, 76.0)
Kazakhstan 2014	270	10.3 (6.1, 16.8)	15.0 (9.6, 22.7)	14.3 (11.1, 18.4)	2.3 (0.9, 5.5)	N/A	8.1 (4.8, 13.3)	76.9 (69.5, 82.9)
Kenya 2014	247	9.3 (5.0, 16.7)	3.6 (1.5, 8.4)	1.5 (0.6, 4.0)	0.8 (0.3, 2.4)	0.1 (0.0, 0.6)	1.0 (0.2, 5.8)	68.8 (58.7, 77.4)
Malaysia 2011	406	4.1 (2.6, 6.6)	8.2 (5.0, 13.2)	1.4 (0.6, 3.1)	1.2 (0.6, 2.4)	0.5 (0.1, 2.4)	2.5 (0.9, 7.0)	79.2 (72.6, 84.6)
Mexico 2015	927	6.0 (4.0, 9.0)	2.8 (1.8, 4.4)	0.9 (0.4, 1.9)	1.3 (0.6, 2.8)	0.1 (0.0, 0.7)	1.0 (0.4, 2.4)	90.7 (87.6, 93.0)
Nigeria 2012	186	14.7 (8.6, 24.0)	2.7 (1.0, 6.9)	3.7 (1.7, 7.9)	5.4 (2.9, 9.9)	N/A	1.6 (0.3, 7.7)	57.6 (47.4, 67.2)
Pakistan 2014	224	12.8 (8.7, 18.5)	7.3 (4.3, 12.3)	4.4 (2.2, 8.7)	6.2 (3.2, 11.8)	2.0 (0.6, 6.5)	5.9 (2.9, 11.8)	52.7 (44.5, 60.8)

Country name	Unweighted <i>n</i>	Counseling % (95% CI)	NRT % (95% CI)	Prescription medication % (95% CI)	Traditional medicine % (95% CI)	Quitline % (95% CI)	Switch to smokeless tobacco % (95% CI)	Quit without assistance ^a % (95% CI)
Panama 2013	491	11.2 (6.2, 19.5)	4.7 (1.9, 10.9)	1.1 (0.5, 2.7)	0.5 (0.2, 1.1)	3.0 (0.8, 11.2)	5.1 (1.2, 19.7)	69.4 (59.6, 77.7)
Philippines 2015	1,393	10.0 (8.0, 12.6)	11.7 (9.2, 14.8)	1.9 (1.2, 3.1)	1.5 (0.9, 2.4)	4.4 (3.1, 6.4)	1.5 (0.9, 2.6)	67.9 (63.6, 72.0)
Poland 2009–2010	734	3.1 (1.5, 6.1)	22.5 (19.1, 26.3)	5.5 (3.9, 7.7)	N/A	0.2 (0.0, 0.6)	1.2 (0.6, 2.6)	N/A
Qatar 2013	384	16.6 (12.4, 22.0)	21.8 (16.3, 28.6)	6.5 (3.4, 11.9)	0.6 (0.1, 2.7)	N/A	2.2 (1.0, 4.4)	56.3 (48.6, 63.7)
Romania 2011	375	1.3 (0.5, 3.3)	9.0 (6.2, 13.1)	1.5 (0.5, 4.1)	—	0.1 (0.0, 0.6)	—	79.5 (74.4, 83.8)
Russian Federation 2016	1,115	2.1 (1.3, 3.5)	20.0 (16.9, 23.6)	N/A	N/A	0.2 (0.1, 1.0)	1.0 (0.5, 2.0)	82.3 (78.8, 85.3)
Senegal 2015	150	5.3 (2.3, 12.1)	6.2 (5.8, 20.2)	1.6 (0.5, 5.5)	11.4 (6.4, 19.6)	0.7 (0.1, 4.8)	N/A	85.9 (77.2, 91.7)
Thailand 2011	1,503	4.2 (3.0, 5.8)	6.2 (4.4, 8.8)	2.2 (1.3, 3.7)	1.1 (0.6, 2.0)	1.3 (0.9, 2.1)	1.2 (0.6, 2.2)	90.8 (87.9, 93.1)
Turkey 2012	1,028	6.2 (4.8, 8.0)	8.8 (6.8, 11.4)	7.7 (6.0, 10.0)	5.1 (3.8, 6.9)	4.3 (3.1, 5.9)	—	70.3 (65.9, 74.4)
Uganda 2013	230	11.1 (6.9, 17.3)	4.4 (1.2, 9.8)	N/A	5.6 (2.3, 13.0)	N/A	0.5 (0.2, 1.4)	77.2 (69.8, 83.2)
Ukraine 2016	635	1.7 (0.9, 2.9)	6.8 (4.5, 10.1)	2.5 (1.3, 4.7)	N/A	N/A	N/A	84.3 (79.7, 88.0)
United Republic of Tanzania 2018	169	23.7 (17.1, 31.9)	2.8 (1.2, 6.3)	4.0 (1.6, 9.5)	1.3 (0.5, 3.5)	N/A	N/A	64.5 (55.8, 72.2)
Uruguay 2017	432	10.24 (7.64, 13.6)	13.23 (9.5, 18.1)	5.2 (3.3, 8.1)	1.9 (1.0, 3.6)	0.7 (0.3, 0.2)	—	91.6 (87.9, 94.2)
Viet Nam 2015	768	1.4 (0.6, 3.0)	3.0 (1.8, 4.8)	N/A	0.0 N/A	0.9 (0.3, 2.9)	0.2 (0.0, 0.7)	72.9 (68.5, 76.8)

Note: N/A indicates that these items were not included in the country-level survey; traditional medication was defined as any country-specific medication that was not considered an NRT or prescription medication.

^aQuit without assistance is a question included in most countries' surveys; for Mexico, this question was changed to mean the will power as the way to quit without assistance.

GATS, Global Adult Tobacco Survey; N/A, not applicable; NRT, nicotine-replacement therapy.