Chapter 2

Global Prevalence of Smokeless Tobacco Use Among Youth and Adults

Chapter Contents

Tables, Figures, and Maps

Introduction

Smokeless tobacco (ST) is used in a wide variety of forms in many countries of the world. Used orally, tobacco can be chewed, sucked, applied to the teeth or gums (e.g., topical toothpaste or powder), dissolved in the mouth, gargled, or inserted in betel quid. It can also be applied directly to the skin. These products may be intentionally swallowed or the juices alone may be swallowed. Nasal use consists of inhaling a mixture of a small quantity of very fine tobacco powder and aromatic substances, called dry snuff.[1]

Oral use of ST is widely prevalent in South-East Asia.[2] Orally, ST may be used alone or in combination with products such as areca nut, ash, and slaked lime. In India, the most common ST products taken orally are betel quid with tobacco (a combination of betel leaf, areca nut, and slaked lime [calcium hydroxide]), khaini (sun-dried or fermented, coarsely crushed tobacco leaves), gutka (sun-dried finely chopped tobacco, areca nut, slaked lime, catechu, flavorings, and sweeteners), and products that are applied to teeth and gums such as gul (powdered tobacco, molasses, and other ingredients) and mishri (roasted, powdered tobacco).[3] In Bangladesh, the most prevalent forms of ST are betel quid with tobacco, gul, khoini (similar to khaini in India), and sada pata (powdered or dried tobacco leaves).[4] In Myanmar, oral or nasal snuff, chewing tobacco, and betel quid are most common.[5] All three of these countries have high rates of consumption of oral products.

In Europe and North America, chewing tobacco and snuff are the two major oral ST products. In North America, moist snuff is the most widely used product. In Scandinavia, Swedish snus, a particular type of moist snuff product, dominates.[1] Since the mid-1990s, ST use has increased in Scandinavia and the United States,[6–9] particularly among teenagers and young adults. Smokeless tobacco is also widely used in parts of Central and South-East Asia.[10] Nass (also called naswar or niswar), a form of oral tobacco, is common in some countries of Central Asia,[11] whereas nasal snuff is used among some specific populations in Nigeria,[12] South Africa,[13] and other African nations.

This chapter attempts to delineate the magnitude of the problem of ST use among youth and adults globally by drawing on national or subnational data available for various countries. The chapter describes usage patterns taken from the available literature to delineate the burden of ST use and to characterize the prevalence of use among youth and adults in countries where usage rates are high.

Sources of Data

In this chapter, most of the estimates of ST use among youth come from a single survey, the school-based Global Youth Tobacco Survey (GYTS), conducted during 2007−2010. This chapter also draws on the Youth Smoking Survey (YSS) (2008−2009) for Canada and the 2009 National Youth Tobacco Survey (NYTS) for the United States. (Information about these surveys and surveys of adults is shown in Table 2-1.) To report prevalence of ST use among adults, data from the Global Adult Tobacco Survey (GATS), conducted in 13 low- and middle-income countries during 2008−2010, were used. In countries where GATS was not implemented—mostly in Africa, Latin America, and Asia—national-level data from the 2005–2010 Demographic and Health Surveys (DHS) of adults were used. In addition, this chapter presents data from the following surveys in individual countries: for Australia, the 2004 National Drug Strategy Household Survey (NDSHS); for Canada, the 2010 Canadian Tobacco Use Monitoring Survey (CTUMS); and for the United States, the 2012 National Survey on Drug Use and Health (NSDUH). These surveys are designed to be nationally representative for the countries in which they are implemented, but there may be differences across surveys in how smokeless tobacco use is measured (Table 2-1). Therefore, caution should be exercised in making comparisons among the different survey estimates.

The World Health Organization (WHO) *Report on the Global Tobacco Epidemic, 2011* was referred to for estimates on ST use from the WHO STEPwise Approach to Surveillance (WHO STEPS) survey and other national or subnational surveys in various countries (referred to in this report as individual country surveys, or ICS). Brief descriptions of the methodologies of these surveys are given below; they are described in detail elsewhere.[6,14–22] Data on ST are available for some additional countries but were not reported in this chapter due to major differences in comparability resulting from the methodology of surveys.

Table 2-1. Data sources on prevalence of smokeless tobacco use and related indicators among youth and adults

Survey/year	Type of survey	Method of administration	Sample characteristics	List of countries	No. of countries	Questions asked on smokeless tobacco use
Youth						
Global Youth Tobacco Survey (GYTS), 2007–2010	Cross-sectional, nationally representative, or subnational	Self-administered	School-going children aged 13–15	Albania, 2009; Argentina, 2007; Bahamas, 2009; Bangladesh, 2007; Barbados, 2007; Botswana, 2008; Brazil, 2009; Bhutan, 2009; Burkina Faso, 2009; Cameroon, 2008; Central Africa, 2008; Congo, 2009; Cook Island, 2008; Côte d'Ivoire, 2009; Croatia, 2007; Democratic Republic of the Congo, 2008; Djibouti, 2009; Dominica, 2009; El Salvador, 2009; Estonia, 2007; Gambia, 2008; Grenada, 2009; Guyana, 2010; Hungary, 2008; India, 2009; Indonesia, 2009; Iran, 2007; Iraq, 2008; Jamaica, 2010; Kyrgyzstan, 2008; Lebanon, 2008; Lesotho, 2008; Liberia, 2008; Libya, 2010; Macau, 2010; Macedonia, 2008; Madagascar, 2008; Malawi, 2009; Malaysia, 2009; Mexico, 2008; Moldova, 2008; Montenegro, 2008;	73	During the past 30 days (one month), did you use any form of smokeless tobacco products (e.g., chewing tobacco, snuff, dip)? (or) During the past 30 days (one month), on how many days did you use smokeless tobacco? (or) During the past 30 days (one month), how often have you used chew, snuff, or dip? (or) How often in the past month did you chew tobacco, use snuff or dip? (or) During the past 30 days (one month), on how many days did you try chewing tobacco? (or) During the past 30 days (one month), on how many days did you use chewing or applying or snuff tobacco? (or) During the past 30 days (one month) did you use any form of smokeless tobacco products (e.g., chewing tobacco, chewing betel with tobacco)? (or) During the past 30 days (one month), did you use any form of smokeless tobacco (chewing or applying or snuff) even once or twice? (or) During the last 30 days (1 month), have you ever used any form of tobacco products

Survey/year	Type of survey	Method of administration	Sample characteristics	List of countries	No. of countries	Questions asked on smokeless tobacco use
				Myanmar, 2007; Namibia, 2008; Nepal, 2007; Oman, 2010; Pakistan, 2008; Palestine, 2008; Panama, 2008; Peru, 2007; Poland, 2009; Qatar, 2007; Rwanda, 2008; South Korea, 2008; Saudi Arabia, 2010; Serbia, 2008; Seychelles, 2007; Sierra Leone, 2008; Slovenia, 2007; Sri Lanka, 2007; Srpska, 2008; Swaziland, 2009; Syrian Arab Republic, 2010; Tanzania, 2008; Thailand, 2009; Togo, 2007; Trinidad and Tobago, 2007; Tunisia, 2010; Uganda, 2007; Venezuela, 2010; Yemen, 2008; Zambia, 2007; Zimbabwe, 2008		other than cigarettes (such as chewing, snuff or quid tobacco)?
Youth Smoking Survey (YSS), Canada, 2008–2009	Cross-sectional, nationally representative	Classroom-based, self-administered, 30-minute questionnaire	School-aged children in grades 6–12 in most provinces; this volume reports data only from grades 6–9.	Canada, 2008–2009	1	In the last 30 days, did you use any of the following: smokeless tobacco (chewing tobacco, pinch, snuff, or snus)?

Survey/year	Type of survey	Method of administration	Sample characteristics	List of countries	No. of countries	Questions asked on smokeless tobacco use
National Youth Tobacco Survey (NYTS), United States, 2009	Cross-sectional, nationally representative	Self-administered survey via pencil and paper	Middle school students in grades 6–8 and high school students in grades 9–12; this volume reports data from grades 6–8 only.	United States, 2009	1	During the past 30 days, on how many days did you use chewing tobacco, snuff, or dip?
Adults						
Global Adult Tobacco Survey (GATS), 2008–2010	Cross-sectional, nationally representative	Face-to-face personal interviews	All adults aged 15 years and over	Bangladesh, 2010; Brazil, 2009–10; China, 2009; Egypt, 2009; India, 2009–10; Mexico, 2009; Philippines, 2009; Poland, 2010; Russian Federation, 2009; Thailand, 2009; Ukraine, 2008; Uruguay, 2009; Vietnam, 2009	13	Do you currently use smokeless tobacco on a daily basis, less than daily, or not at all? On an average, how many times a day do you use the following products: betel quid with tobacco, gul, khoinee, gutka, khaini, pan masala with tobacco, etc.?

Survey/year	Type of survey	Method of administration	Sample characteristics	List of countries	No. of countries	Questions asked on smokeless tobacco use
Demographic and Health Surveys (DHS), 2005–2010	Cross-sectional, nationally representative	Face-to-face interviews	Males aged 15–49 years (in some countries, 15–54 or 15–59) and females aged 15–49 years	Armenia, 2005; Azerbaijan, 2006; Dominican Republic, 2007; Ethiopia, 2005; Ghana, 2008; Haiti, 2005–06; Kenya, 2008–09; Lesotho, 2009; Liberia, 2007; Madagascar, 2008–09; Maldives, 2009; Moldova, 2005; Namibia, 2006–07; Nigeria, 2008; Sierra Leone, 2008; Timor-Leste, 2009–10; Uganda, 2006; Zambia, 2007; Zimbabwe, 2005–06	19	Do you currently smoke or use any other type of tobacco? What (other) type of tobacco do you currently smoke or use?
World Health Organization STEPwise Approach to Surveillance (WHO STEPS), 2002–2010	Cross-sectional, nationally representative, or subnational	Face-to-face interviews	All adults aged 15–64, or 25–64, or 25–74, or 25 years and above	Barbados, 2007; Benin, 2008; Bhutan, 2007; Gambia, 2010; Georgia, 2010; Guinea, 2009; Libya, 2009; Malawi, 2009; Mali, 2007; Mauritania, 2006; Micronesia (Federated States of), 2002; Mongolia, 2009; Myanmar, 2009; Saint Kitts and Nevis, 2007; Sao Tome and Principe, 2009; Saudi Arabia, 2004; Sri Lanka, 2006; Swaziland, 2007	18	Do you currently use any smokeless tobacco such as [snuff, chewing tobacco, betel]? Do you currently use smokeless tobacco products daily?

Survey/year	Type of survey	Method of administration	Sample characteristics	List of countries	No. of countries	Questions asked on smokeless tobacco use
Individual country surveys (ICS) (various years; from *WHO Report on the Global Tobacco Epidemic, 2011*)	Cross-sectional, nationally representative	Face-to-face interviews	All adults aged 25–64, or 15–64, or 15 years and above	Algeria, 2010; Cambodia, 2010; Cape Verde, 2007; Chad, 2008; Denmark, 2010; Finland, 2009; Iceland, 2008; Kyrgyzstan, 2005; Latvia, 2008; Malaysia, 2006; Nepal, 2008; Norway, 2009; South Africa, 2003; Sweden, 2010; Switzerland, 2009; Tunisia, 2005–06; Uzbekistan, 2006; Yemen, 2003	18	Not available
National Drug Strategy Household Survey (NDSHS), Australia, 2004	Cross-sectional, nationally representative	Telephone survey	All people aged 12 years and older	Australia, 2004	1	Which, if any, of the following tobacco products have you ever used, and which have you used in the last 12 months? (Chewing tobacco, snuff/snus, hookah/nargila)
Canadian Tobacco Use Monitoring Survey (CTUMS), 2010	Cross-sectional, nationally representative	Telephone survey	All adults aged 15 years and over	Canada, 2010	1	Current use of any chewing tobacco, pinch, or snuff in the last 30 days?
National Survey on Drug Use and Health (NSDUH), United States, 2012	Cross-sectional, nationally representative	Face-to-face interviews	All people 18 years of age and over; for adults	United States, 2012	1	Now think about the past 30 days -- that is, from [fill in date] up to and including today. During the past 30 days, have you used chewing tobacco, even once? Which of these two brands [sic] did you use most often during the past 30 days? (Chewing tobacco, snuff)

Youth Data

Global Youth Tobacco Survey, 2007–2010

The Global Youth Tobacco Survey (GYTS) is a school-based survey designed to provide primarily cross-sectional, nationally representative estimates on tobacco use among youth, along with key tobacco control measures. The survey collects information on schoolchildren aged 13 to 15 years; however, in some countries the average level of education is below this age bracket so the data may not always be representative of all youth. In the GYTS, the area covered can be a country, a province, a city, or any other geographic entity. The methodology of the GYTS is standardized with respect to sample design, questionnaires, field procedures, and processing of data and analysis.[14] Questions are included on tobacco use, knowledge and attitudes regarding tobacco, exposure to secondhand smoke, exposure to pro-tobacco and anti-tobacco media messages and advertising, interest in cessation, access to tobacco products, and having been taught in school about the harmful effects of tobacco use. As of 2012, the GYTS is active in more than 180 countries and has yielded data on ST use in 73 countries. The GYTS was this chapter's primary source of data on the prevalence of ST use among youth, providing national estimates for 55 countries and 46 subnational estimates for 18 countries.

Youth Smoking Survey, 2008–2009

The Youth Smoking Survey (YSS)[15] provides timely and accurate monitoring of tobacco use by Canadian school-aged children; its main objective is to collect data that will serve as a basis for sound, effective tobacco control policies and programs. The YSS is a classroom-based survey of a representative sample of schools in the 10 Canadian provinces, which reports current information on tobacco use behavior as well as correlates of smoking behavior and other policy-related initiatives for Canadian youth. Students in grades 6−12 are surveyed. (In the province of Quebec, students in primary/elementary grades 5 and 6 or secondary school grades 1–3 [U.S. school grades 7–9] are surveyed.) This report presents data on Canadian children only in grades 6–9.

National Youth Tobacco Survey, 2009

The National Youth Tobacco Survey (NYTS)[16] provides estimates of the prevalence of tobacco use among a nationally representative sample of U.S. students in middle school (grades 6–8) and high school (grades 9–12). The survey obtains data on the use of various tobacco products (cigarettes, cigars, ST, tobacco pipes, bidis, and kreteks); exposure to secondhand smoke; smoking cessation; school curriculum on tobacco prevention; minors' ability to purchase or obtain tobacco products; and knowledge and attitudes about tobacco and familiarity with pro-tobacco and anti-tobacco media messages. The NYTS provides data on tobacco use among students in grades 6–12, but this volume reports data for grades 6–8 only.

Adult Data

Global Adult Tobacco Survey, 2008–2010

The Global Adult Tobacco Survey (GATS)[17,18,23] is the global standard for systematically monitoring tobacco use (smoking and smokeless) among adults and tracking key indicators of tobacco control. The GATS is a nationally representative face-to-face household survey of people aged 15 years and older (termed "adults" for this report). Using a globally standardized methodology, the survey elicits information on respondents' background characteristics, tobacco use (smoking and smokeless), cessation, exposure to secondhand smoke, economic status, awareness of media related to smokeless tobacco, knowledge about tobacco, and attitudes toward and perceptions about tobacco use. In its first phase, the GATS was conducted in 14 low- and middle-income countries, which accounted for more than 60% of the world population during 2008−2010.The survey was designed to provide estimates at the national level and by residence (urban or rural) and gender. Survey information was collected using handheld devices. This chapter reports GATS data on ST use from 13 countries (one country, Turkey, did not include questions on ST use).

Demographic and Health Surveys, 2005–2010

The Demographic and Health Surveys (DHS)[24] are nationally representative household surveys that provide data for a wide range of monitoring and impact evaluation indicators in the areas of population, health, and nutrition. Most DHS surveys also provide information on tobacco use behavior. The DHS surveys include a questionnaire for households, a questionnaire for women, and one for men. The household questionnaire is used to identify all usual household members and visitors in the selected households and to determine the members' eligibility for the individual women's and men's surveys. For almost all of the countries, the estimates of tobacco use presented in this report are based on data collected from the individual women's and men's questionnaires. This chapter presents data on ST use from 19 countries that conducted DHS surveys between 2005 and 2010, representing both males and females aged 15–49 years. (In some countries, however, estimates on males were provided for ages 15–54 or 15–59 years.) In countries where multiple DHS surveys have been conducted, the most recent data were used in order to ensure the most up-to-date estimates of tobacco use.

WHO STEPwise Approach to Surveillance, 2002–2010

The WHO STEPS assessments of risk factors for chronic disease provide an entry point for low- and middle-income countries to undertake public health surveillance.[19] The WHO STEPS instrument covers three levels of "steps" for assessing risk factors: questionnaires, physical measurements, and biochemical measurements. The target population is, at minimum, all adults aged 25–64 years residing in the survey area; this age range may be expanded to include additional age groups if desired. WHO STEPS survey data reported in the *WHO Report on the Global Tobacco Epidemic, 2011*[6] were used here for reporting the prevalence of adult use of ST in 18 countries (13 national and 5 subnational estimates).

WHO Report on the Global Tobacco Epidemic, 2011

The *WHO Report on the Global Tobacco Epidemic, 2011,*[6] known as the GTCR, provided information on ST use among adults. This information was compiled from various surveys (national or subnational), with GATS (13 countries) and WHO STEPS (17 countries) being the predominant sources. This chapter reports data on adult ST use taken from 18 additional surveys presented in the GTCR (16 national and 2 subnational estimates), including the National Health and Morbidity Survey in Malaysia, Cambodia's National Adult Tobacco Survey, the Family Health Survey in Yemen, Sweden's National Survey on Public Health, the National Epidemiological Study of Tobacco Use Prevalence in Kyrgyzstan, and the Monitoring of Danish Smoking Habits in Denmark.

National Drug Strategy Household Survey, 2004

Data from the 2004 National Drug Strategy Household Survey (NDSHS),[20] conducted by the Australian Institute of Health and Welfare, were used to report the prevalence of ST use in Australia. The NDSHS surveyed almost 30,000 Australians about their tobacco use, including any lifetime use and use of snuff and chewing tobacco within the last 12 months. The survey methodology has been reported in detail by the Australian Institute of Health and Welfare.[20]

Canadian Tobacco Use Monitoring Survey, 2010

The 2010 Canadian Tobacco Use Monitoring Survey (CTUMS)[21] was developed to provide Health Canada, a national health agency located in Ottawa, and its partners with timely, reliable, and continuous data on tobacco use and related issues. The CTUMS is a telephone survey of all people aged 15 years and above living in Canada, the primary objective of which is to track changes in smoking status and amount smoked, especially for 15- to 24-year-olds, who are most at risk for taking up smoking.

National Survey on Drug Use and Health, 2012

The National Survey on Drug Use and Health (NSDUH)[22] provides information on the use of illegal drugs, alcohol, and tobacco by the U.S. civilian, non-institutionalized population aged 18 years and older. Conducted by the U.S. federal government since 1971, the survey collects data by administering questionnaires to a representative sample of the population through face-to-face interviews at respondents' homes. The 2012 NSDUH employed a state-based design to provide estimates for each of the 50 states and the District of Columbia.

Smokeless Tobacco Use Prevalence

Current ST use is the primary indicator used in this report for most countries, with the exception of data on adults in Canada and South Africa, where ever use of ST is reported, and data on Iceland and Saudi Arabia, where prevalence of daily use of ST is reported. For this chapter, *current users* of ST are defined as people who used any ST product either daily or occasionally in the 30 days preceding the survey. *Ever users* of ST are those who have tried ST at least once in their lifetimes, and *daily users* are those who use ST products on a daily basis. Table 2-1 displays the questions that define ST use in each survey system for youth and adults.

As of 2013, WHO includes 194 member states. This chapter reports the prevalence of ST use among youth in 75 countries and adults in 70 countries. Prevalence data are reported by WHO regions.

In only 16 countries were overall estimates—that is, for male and female respondents combined—available for both youth and adults (the "Total" column in Tables 2-2 and 2-4). For the remaining countries, estimates were only available either for adults or youth, but not for both. For countries with national estimates, ST use was considered high if the prevalence in a country exceeded 10%, medium if the prevalence was between 5% and 10%, low if the prevalence was between 1% and 5%, and very low if the prevalence was below 1%. Using these categories, Maps 2-1–2-3 show the prevalence of ST use among youth, and Maps 2-4–2-6 show prevalence among adults in countries around the world.

Smokeless Tobacco Use Among Youth

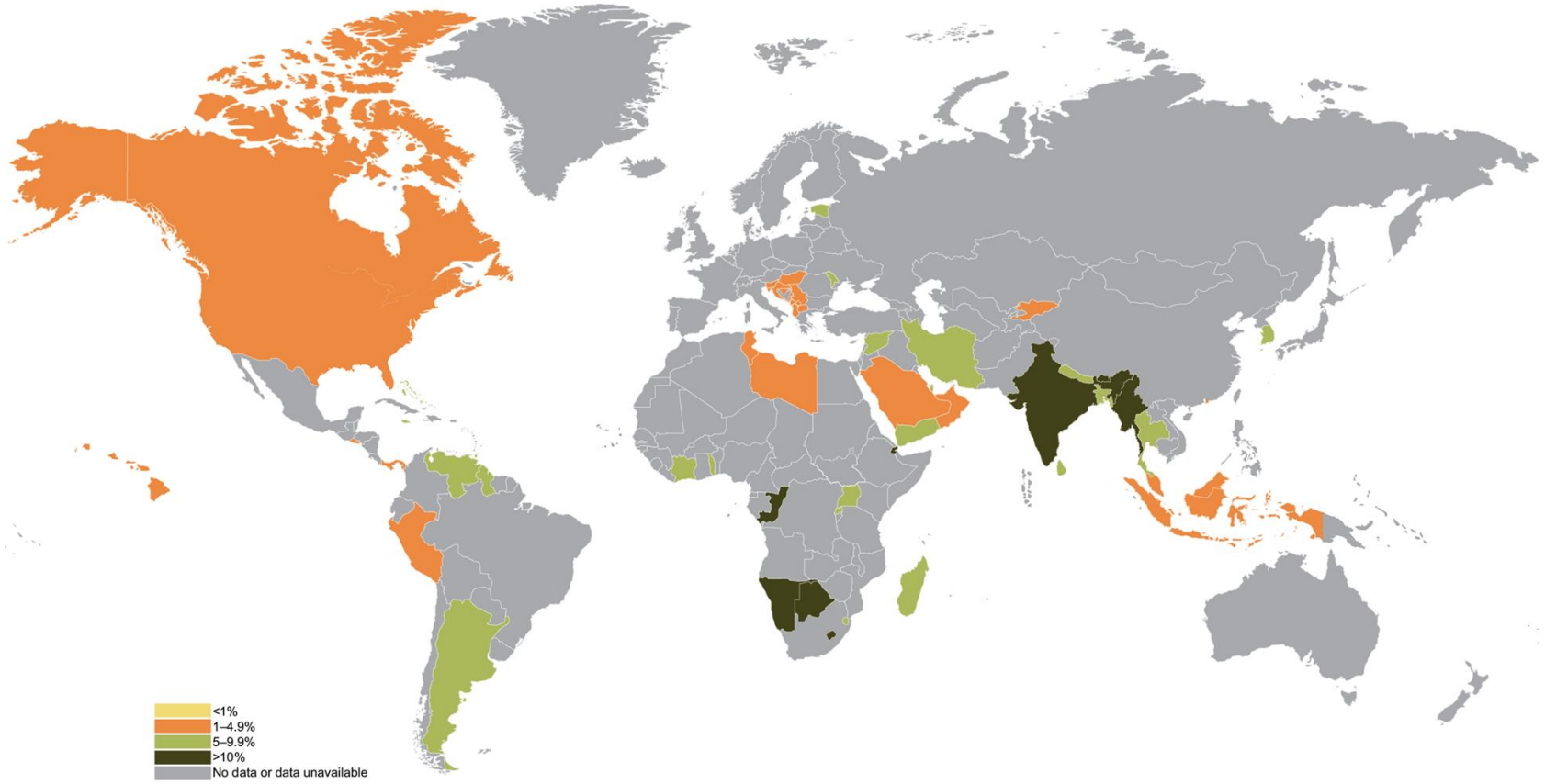
Table 2-2 provides nationally representative prevalence data by gender. Table 2-3 displays subnational data within various countries, also by gender. These estimates were taken from different sources that together spanned the years 2007–2010. Of the countries with national youth estimates, 11 were in the African Region, 9 in the Eastern Mediterranean Region, 11 in the European Region, 14 in the Americas Region, 8 in the South-East Asia Region, and 4 in the Western Pacific Region.

Of the 75 countries for which youth ST use prevalence was reported (Table 2-2), national-level estimates were available for 57 countries, and a total of 46 subnational estimates were reported for 18 countries. Among the 57 national estimates, the prevalence of current use of ST ranged from 16.4% in Congo to 1.1% in Montenegro (Figure 2-1). For boys, national prevalence was highest at 18.3% in Congo and lowest at 1.1% in Montenegro (Figure 2-2); for girls, prevalence ranged from 15.8% in Namibia to 0.7% in Serbia (Figure 2-3). Total ST use prevalence was high (greater than 10%) in 5 countries (Botswana, Djibouti, Lesotho, Namibia, and Congo). The prevalence exceeded 10% among boys in 12 countries and among girls in 4 countries (Table 2-2).

In the 18 countries where subnational estimates were reported (Table 2-3), the prevalence among youth ranged from 22.7% in rural western Sierra Leone to 1.4% in the Mazovia province of Poland. Among boys, use ranged from 21.9% in Bangui in the Central Africa Republic to 1.3% in Warsaw, Poland. Among girls, the prevalence of use ranged from 24.5% in rural western Sierra Leone to 1.0% in the Mazovia province in Poland.

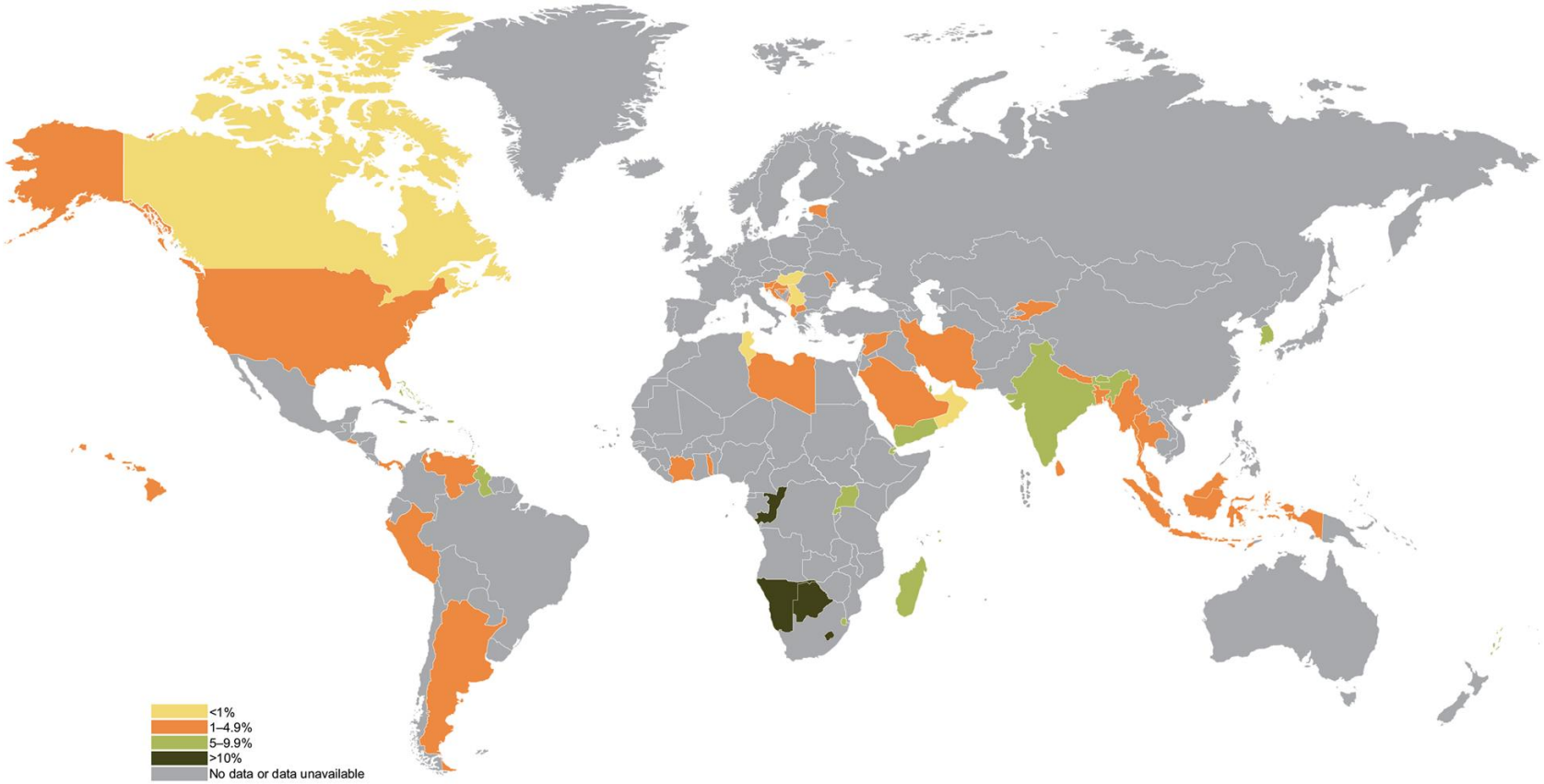
Table 2-2 indicates that, among countries assessed in the African Region, overall prevalence ranged from 16.4% in Congo to 5.4% in Swaziland. Among countries assessed in the Eastern Mediterranean Region, overall prevalence ranged from 12.6% in Djibouti to 1.6% in Oman. In the European Region, the highest prevalence was reported in Estonia (6.9%) and the lowest in Montenegro (1.1%). In the Americas Region, the highest prevalence was in Barbados (9.8%) and the lowest in Canada (1.8%). In the South-East Asia Region, prevalence was highest in Bhutan (9.4%) and lowest in Indonesia (2.8%). In the Western Pacific Region, Cook Island had the highest prevalence (8.7%) and Macau the lowest (2.1%) (Table 2-2).

Map 2-1. Prevalence (%) of current use of smokeless tobacco—boys



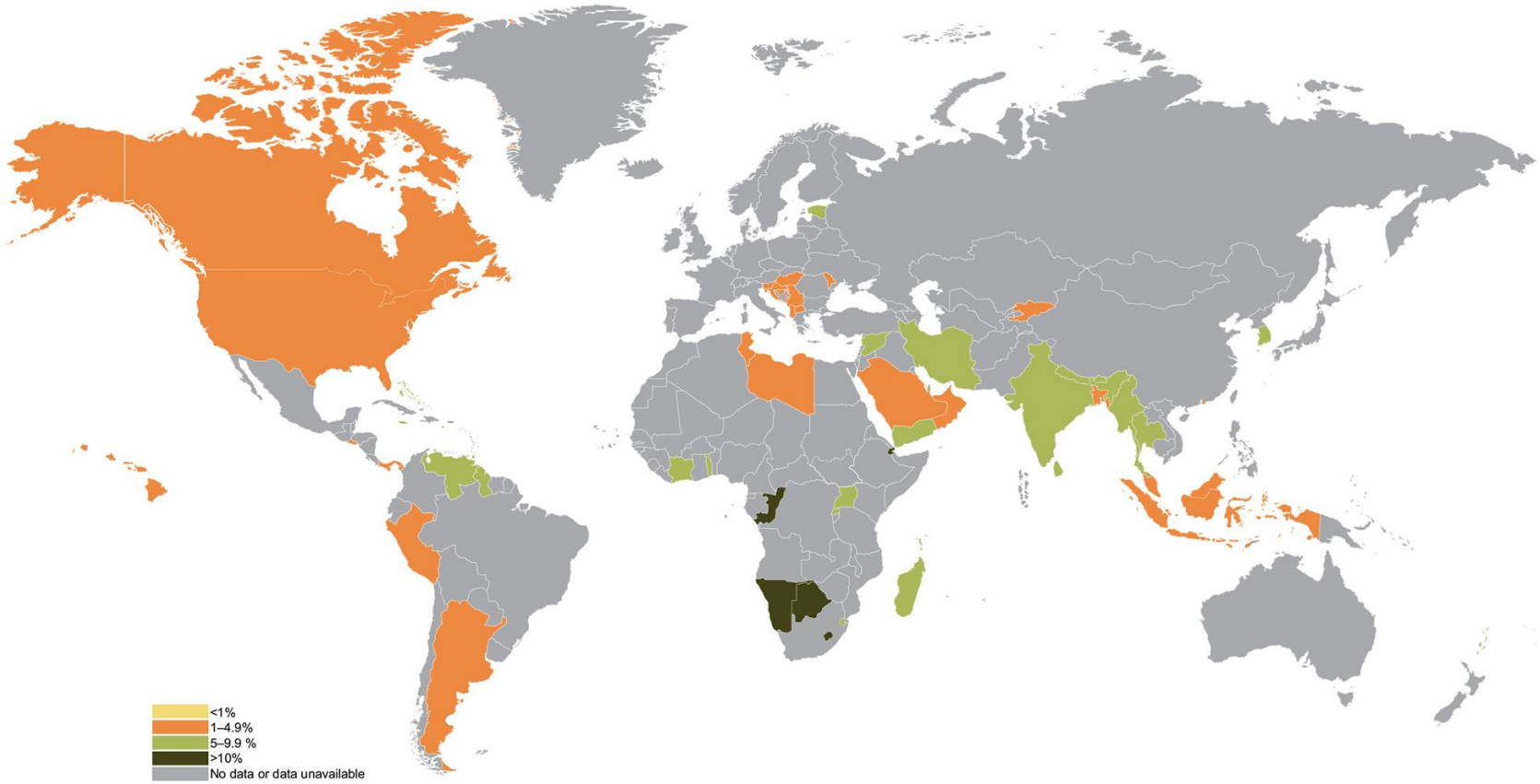
Note: Prevalence shown for countries with national-level data.
Sources: Global Youth Tobacco Survey, 2007–2010 (25); National Youth Tobacco Survey, United States, 2009 (16); Youth Smoking Survey, Canada, 2008–2009 (15).

Map 2-2. Prevalence (%) of current use of smokeless tobacco—girls



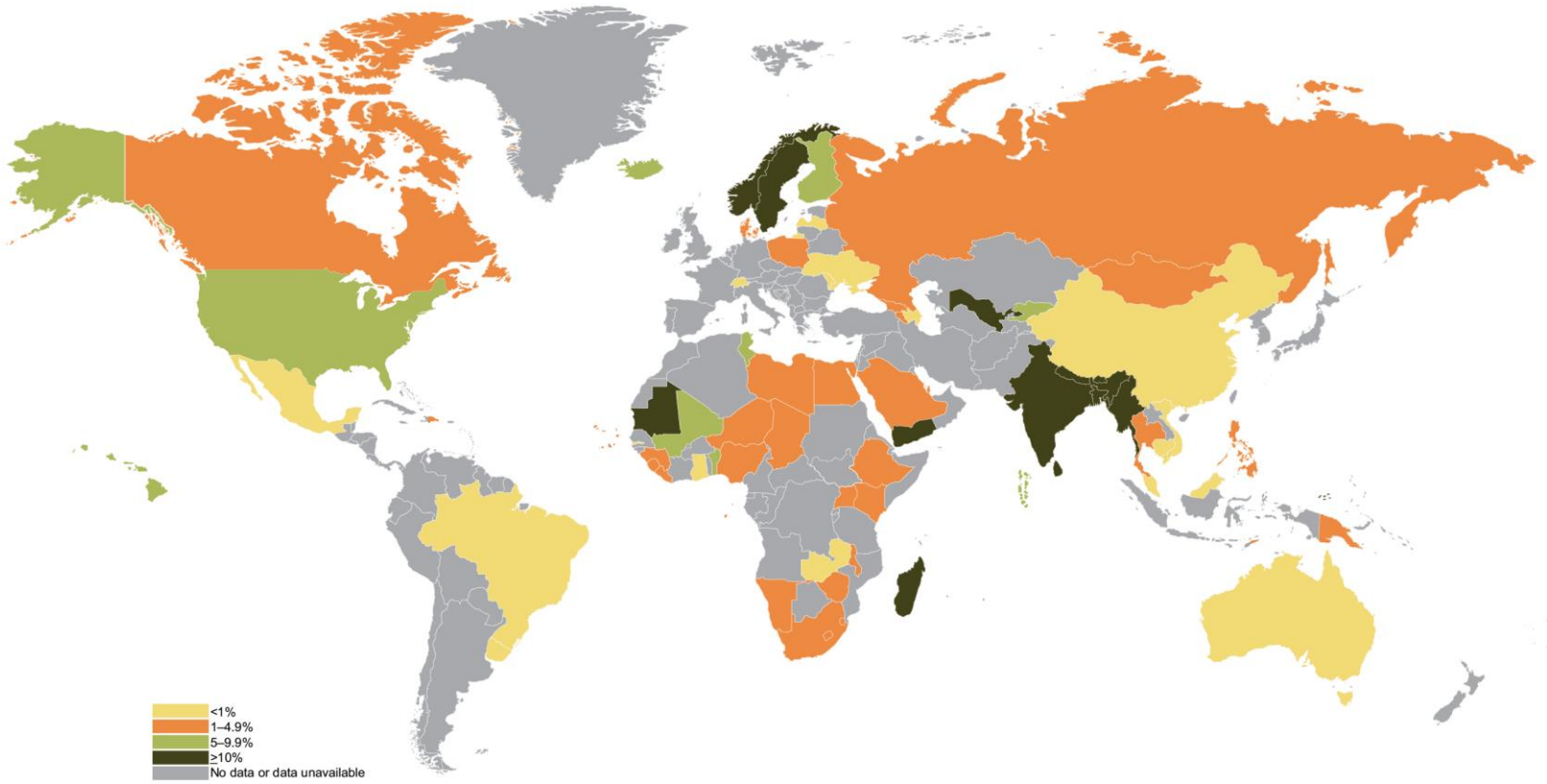
Note: Prevalence shown for countries with national-level data.
Sources: Global Youth Tobacco Survey, 2007–2010 (25); National Youth Tobacco Survey, United States, 2009 (16); Youth Smoking Survey, Canada, 2008–2009 (15).

Map 2-3. Prevalence (%) of current use of smokeless tobacco—boys and girls



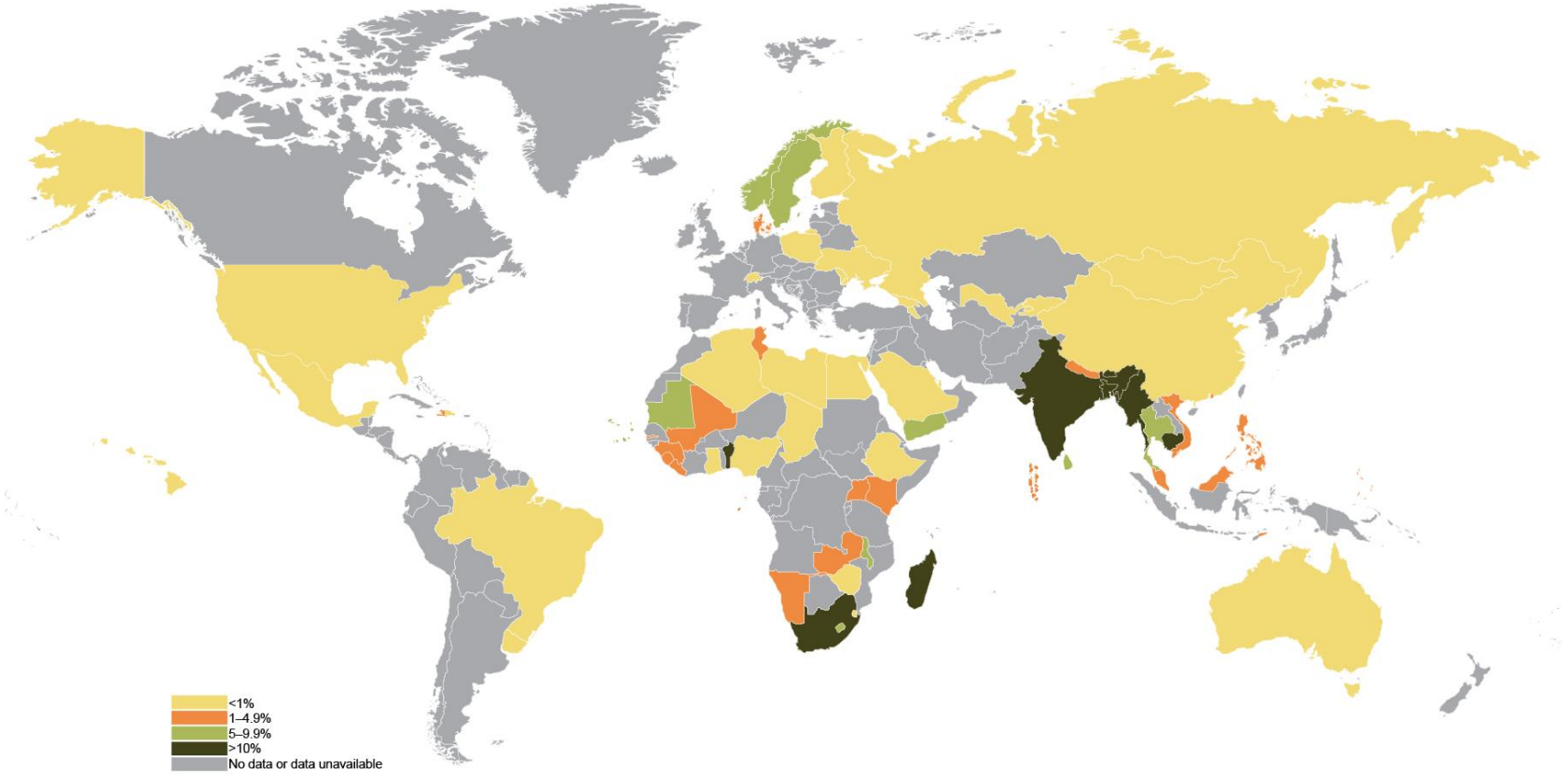
Note: Prevalence shown for countries with national-level data.
Sources: Global Youth Tobacco Survey, 2007–2010 (25); National Youth Tobacco Survey, United States, 2009 (16); Youth Smoking Survey, Canada, 2008–2009 (15).

Map 2-4. Prevalence (%) of current use of smokeless tobacco—men



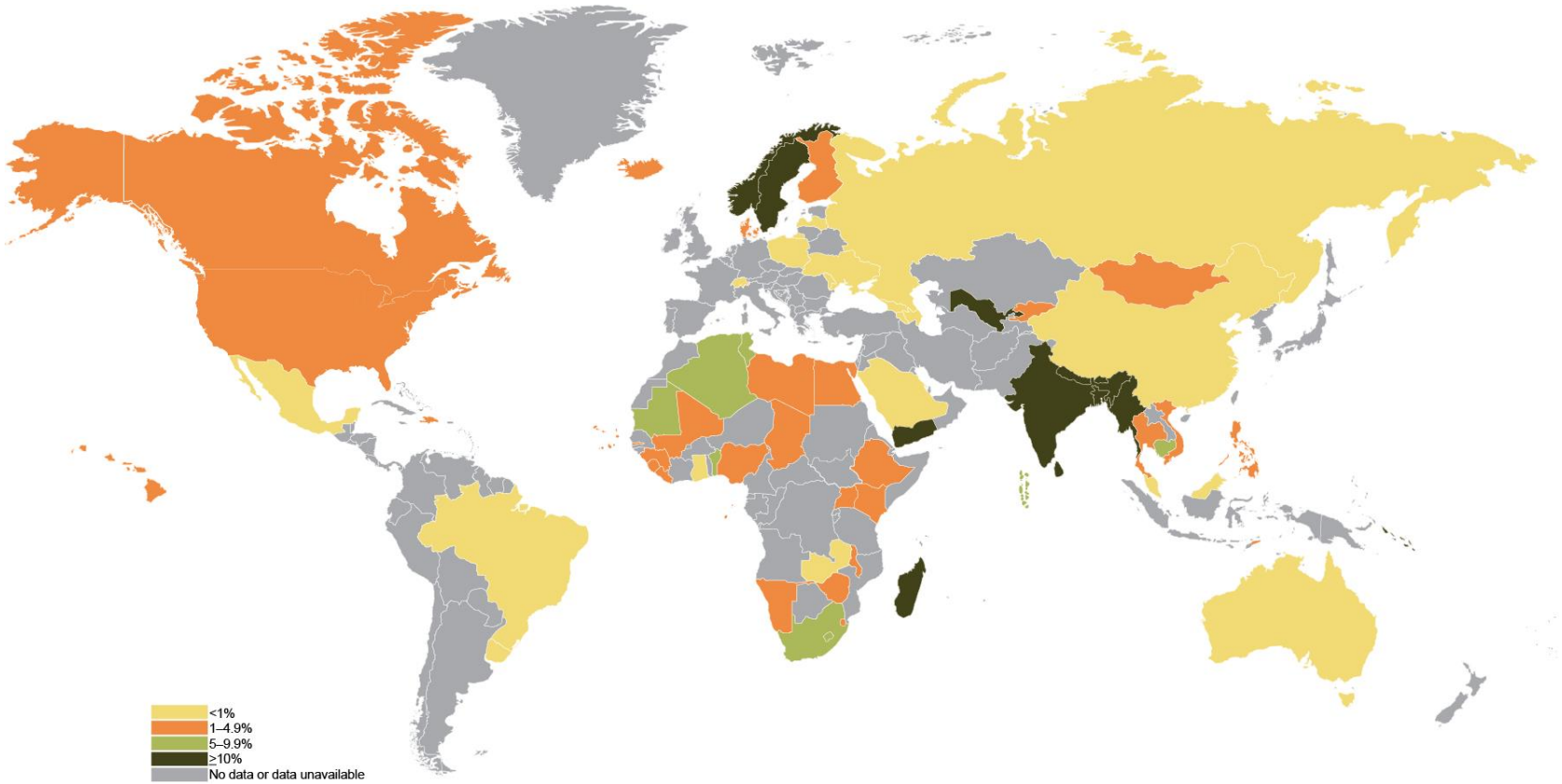
Notes: Prevalence shown for countries with national-level data. Ever use of smokeless tobacco was reported in South Africa. Daily use of smokeless tobacco was reported in Iceland and Saudi Arabia.
Sources: Global Adult Tobacco Survey, 2008–2010 (23); Demographic and Health Surveys, 2005–2010 (24); WHO STEPS, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); National Drug Strategy Household Survey, Australia, 2004 (20); Canadian Tobacco Use Monitoring Survey, 2010 (21); National Survey on Drug Use and Health, United States, 2012 (22); Individual country surveys from: *WHO Report on the Global Tobacco* Epidemic, *2011* (6).

Map 2-5. Prevalence (%) of current use of smokeless tobacco—women



Notes: Prevalence shown for countries with national-level data. Ever use of smokeless tobacco was reported in South Africa. Daily use of smokeless tobacco was reported in Saudi Arabia.
Sources: Global Adult Tobacco Survey, 2008–2010 (23); Demographic and Health Surveys, 2005–2010 (24); WHO STEPS, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); National Drug Strategy Household Survey, Australia, 2004 (20); Canadian Tobacco Use Monitoring Survey, 2010 (21); National Survey on Drug Use and Health, United States, 2012 (22); Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (6).

Map 2-6. Prevalence (%) of current use of smokeless tobacco—men and women



Notes: Prevalence shown for countries with national-level data. A rate for males and females combined was not available for Ethiopia, Ghana, Kenya, Lesotho, Liberia, Madagascar, Namibia, Nigeria, Sierra Leone, South Africa, Uganda, Zambia, Zimbabwe, Saudi Arabia, Armenia, Azerbaijan, Finland, Moldova, Dominican Republic, Haiti, Maldives, Timor-Leste. For each of these countries, a total figure was calculated by averaging the available male and female rates. Daily use of smokeless tobacco was reported in Iceland.
Sources: Global Adult Tobacco Survey (GATS), 2008–2010 (23); Demographic and Health Surveys, 2005–2010 (24); WHO STEPS, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); National Drug Strategy Household Survey, Australia, 2004 (20); Canadian Tobacco Use Monitoring Survey, 2010 (21); National Survey on Drug Use and Health, United States, 2012 (22); Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (6).

Table 2-2. Prevalence (national level, %) of current use of any form of smokeless tobacco among boys and girls, by World Health Organization region, 2007–2010

Region*	Country/year	Source†	Age group (years)	Prevalence (%)		
				Total	Boys	Girls
AFR	Botswana, 2008	GYTS	13–15	11.3	11.3	11.4
	Congo, 2009	GYTS	13–15	16.4	18.3	14.1
	Côte d'Ivoire, 2009	GYTS	13–15	5.6	6.2	4.9
	Lesotho, 2008	GYTS	13–15	14.4	14.7	13.6
	Madagascar, 2008	GYTS	13–15	5.7	6.2	5.4
	Namibia, 2008	GYTS	13–15	16.0	15.6	15.8
	Rwanda, 2008	GYTS	13–15	7.4	8.3	6.0
	Seychelles, 2007	GYTS	13–15	5.5	5.2	5.4
	Swaziland, 2009	GYTS	13–15	5.4	6.0	5.0
	Togo, 2007	GYTS	13–15	6.2	6.9	4.8
	Uganda, 2007	GYTS	13–15	9.4	8.6	9.6
EMR	Djibouti, 2009	GYTS	13–15	12.6	15.2	9.0
	Iran, 2007	GYTS	13–15	5.1	5.4	4.8
	Libya, 2010	GYTS	13–15	2.3	2.0	2.3
	Oman, 2010	GYTS	13–15	1.6	2.5	0.9
	Qatar, 2007	GYTS	13–15	7.0	7.6	6.1
	Saudi Arabia, 2010	GYTS	13–15	3.4	4.8	1.8
	Syrian Arab Republic, 2010	GYTS	13–15	5.7	7.9	3.5
	Tunisia, 2010	GYTS	13–15	2.3	3.9	0.9
	Yemen, 2008	GYTS	13–15	8.6	8.2	8.4
EUR	Albania, 2009	GYTS	13–15	2.0	2.3	1.7
	Croatia, 2007	GYTS	13–15	1.9	2.7	1.1
	Estonia, 2007	GYTS	13–15	6.9	9.4	4.5
	Hungary, 2008	GYTS	13–15	1.7	2.1	0.9
	Kyrgyzstan, 2008	GYTS	13–15	2.5	3.3	1.8
	Macedonia, 2008	GYTS	13–15	3.0	3.2	2.8
	Moldova, 2008	GYTS	13–15	3.8	5.2	2.6
	Montenegro, 2008	GYTS	13–15	1.1	1.1	0.9
	Serbia, 2008	GYTS	13–15	1.2	1.6	0.7
	Slovenia, 2007	GYTS	13–15	2.2	2.0	1.8
	Srpska, 2008	GYTS	13–15	1.4	1.8	1.1

Region*	Country/year	Source†	Age group (years)	Prevalence (%)		
				Total	Boys	Girls
AMR	Argentina, 2007	GYTS	13–15	4.3	5.5	3.2
	Bahamas, 2009	GYTS	13–15	6.6	7.5	5.5
	Barbados, 2007	GYTS	13–15	9.8	11.5	8.2
	Canada, 2009	YSS	Grades 6–9	1.8	2.6	0.8
	Dominica, 2009	GYTS	13–15	8.4	10.2	6.4
	El Salvador, 2009	GYTS	13–15	3.7	4.5	2.8
	Grenada, 2009	GYTS	13–15	8.4	10.1	6.9
	Guyana, 2010	GYTS	13–15	7.5	7.9	6.6
	Jamaica, 2010	GYTS	13–15	8.5	8.5	8.5
	Panama, 2008	GYTS	13–15	3.5	3.8	3.2
	Peru, 2007	GYTS	13–15	4.7	4.3	4.8
	Trinidad and Tobago, 2007	GYTS	13–15	5.5	5.4	5.5
	United States, 2009	NYTS	Grades 6–8	2.6	4.1	1.2
	Venezuela, 2010	GYTS	13–15	5.1	6.9	2.6
SEAR	Bangladesh, 2007	GYTS	13–15	4.9	5.8	4.2
	Bhutan, 2009	GYTS	13–15	9.4	14.1	5.3
	India, 2009	GYTS	13–15	9.0	11.1	6.0
	Indonesia, 2009	GYTS	13–16	2.8	3.3	2.3
	Myanmar, 2007	GYTS	13–15	6.5	10.3	2.7
	Nepal, 2007	GYTS	13–15	6.1	8.8	2.9
	Sri Lanka, 2007	GYTS	13–15	6.8	9.6	3.9
	Thailand, 2009	GYTS	13–15	5.7	7.3	4.1
WPR	Cook Island, 2008	GYTS	13–15	8.7	10.5	7.3
	Macau, 2010	GYTS	13–15	2.1	2.2	2.1
	Malaysia, 2009	GYTS	13–15	4.0	4.5	3.2
	South Korea, 2008	GYTS	13–15	6.2	7.2	5.0

*Regions: AFR = African Region; EMR = Eastern Mediterranean Region; EUR = European Region; AMR = Region of the Americas; SEAR = South-East Asia Region; WPR = Western Pacific Region.
†GYTS = Global Youth Tobacco Survey, 2007–2010 (25); NYTS = National Youth Tobacco Survey, United States, 2009 (16); YSS = Youth Smoking Survey, Canada, 2008–2009 (15).

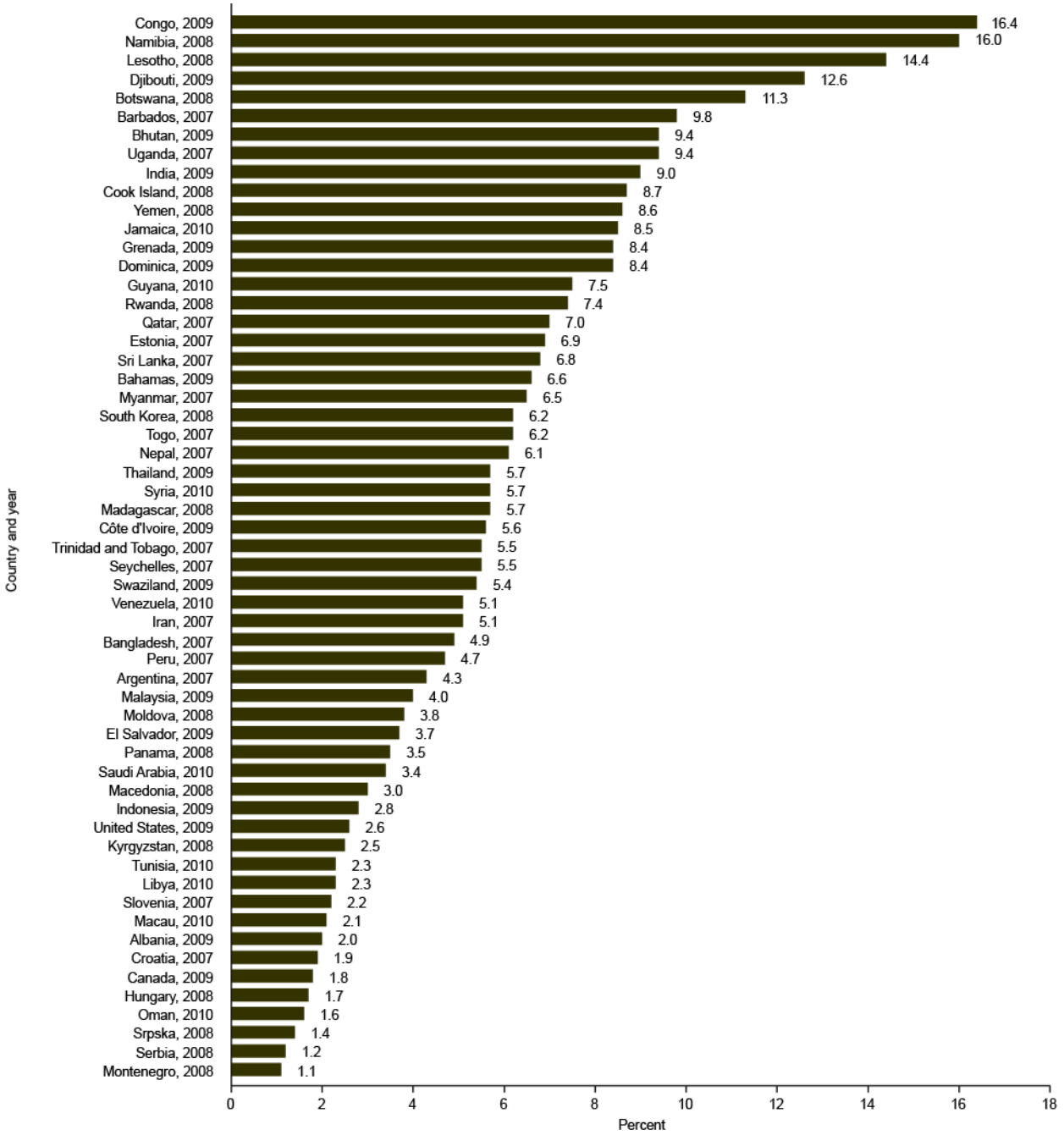
Table 2-3. Prevalence (subnational level, %) of current use of any form of smokeless tobacco among youth, by World Health Organization region, GYTS, 2007–2009

Region*	Country/year	Location	Age group (years)	Prevalence (%)		
				Total	Boys	Girls
AFR	Burkina Faso, 2009	Bobo Dioulasso	13–15	13.2	12.1	14.0
		Ouagadougou	13–15	10.2	11.2	9.2
	Cameroon, 2008	Yaounde	13–15	5.1	5.4	4.4
		Outside Yaounde	13–15	10.9	12.0	9.4
	Central African Republic, 2008	Bangui	13–15	15.4	21.9	8.0
	Democratic Republic of the Congo, 2008	Kinshasa	13–15	20.8	20.6	20.1
		Lubumbashi	13–15	17.8	18.3	16.4
	Gambia, 2008	Banjul	13–15	21.9	20.1	23.3
	Liberia, 2008	Monrovia	13–15	8.3	9.0	6.6
	Malawi, 2009	Lilongwe	13–15	11.0	10.3	11.7
		Rest of country	13–15	8.9	11.3	6.7
	Sierra Leone, 2008	West urban	13–15	17.3	13.6	18.8
		West rural	13–15	22.7	18.9	24.5
	Tanzania, 2008	Arusha	13–15	6.2	6.9	5.5
		Dar es Salaam	13–15	4.6	4.6	4.3
		Kilimanjaro	13–15	5.7	5.6	5.7
	Zambia, 2007	Lusaka	13–15	15.6	15.9	15.4
		Kafue	13–15	16.7	17.0	16.5
		Chongwe and Luangwa	13–15	14.1	15.3	13.2
	Zimbabwe, 2008	Bulawayo	13–15	5.4	7.5	3.5
		Harare	13–15	5.7	6.4	5.0
		Manicarland	13–15	7.6	8.3	6.3
EMR	Iraq, 2008	Baghdad	13–15	6.9	7.2	5.8
	Lebanon, 2008	UNRWA	13–15	6.5	6.5	6.4
	Pakistan, 2008	Karachi	13–15	10.8	13.8	7.4
		Quetta	13–15	7.5	6.8	7.9
		Lahore	13–15	4.2	5.8	3.1
		Peshawar	13–15	6.0	8.0	2.6
	Palestine, 2008	UNRWA Gaza	13–15	8.9	9.2	8.3
		UNRWA West Bank	13–15	9.1	7.7	9.2

Region*	Country/year	Location	Age group (years)	Prevalence (%)		
				Total	Boys	Girls
EUR	Poland, 2009	Warsaw	13–15	1.8	1.3	2.2
		Mazovia Province	13–15	1.4	1.5	1.0
AMR	Brazil, 2009	Campo Grande	13–15	8.2	9.1	7.5
		Vitoria	13–15	3.6	5.0	2.4
		São Paulo	13–15	5.5	6.3	4.6
	Mexico, 2008	Pachuca	13–15	5.3	6.6	4.1
		Tlaxcala	13–15	5.3	7.9	3.0
		Saltillo	13–15	4.5	4.9	3.9
		Campeche	13–15	6.3	5.1	7.2
		Villahermosa	13–15	5.0	5.8	4.4
		Aguascalientes	13–15	2.8	3.3	2.2
		Colima	13–15	8.4	8.7	8.0
		Morelia	13–15	4.4	5.6	3.3
		Queretaro	13–15	4.1	4.6	3.5
		La Paz	13–15	7.3	7.7	5.3
		San Luis Potosi	13–15	4.1	5.3	3.1

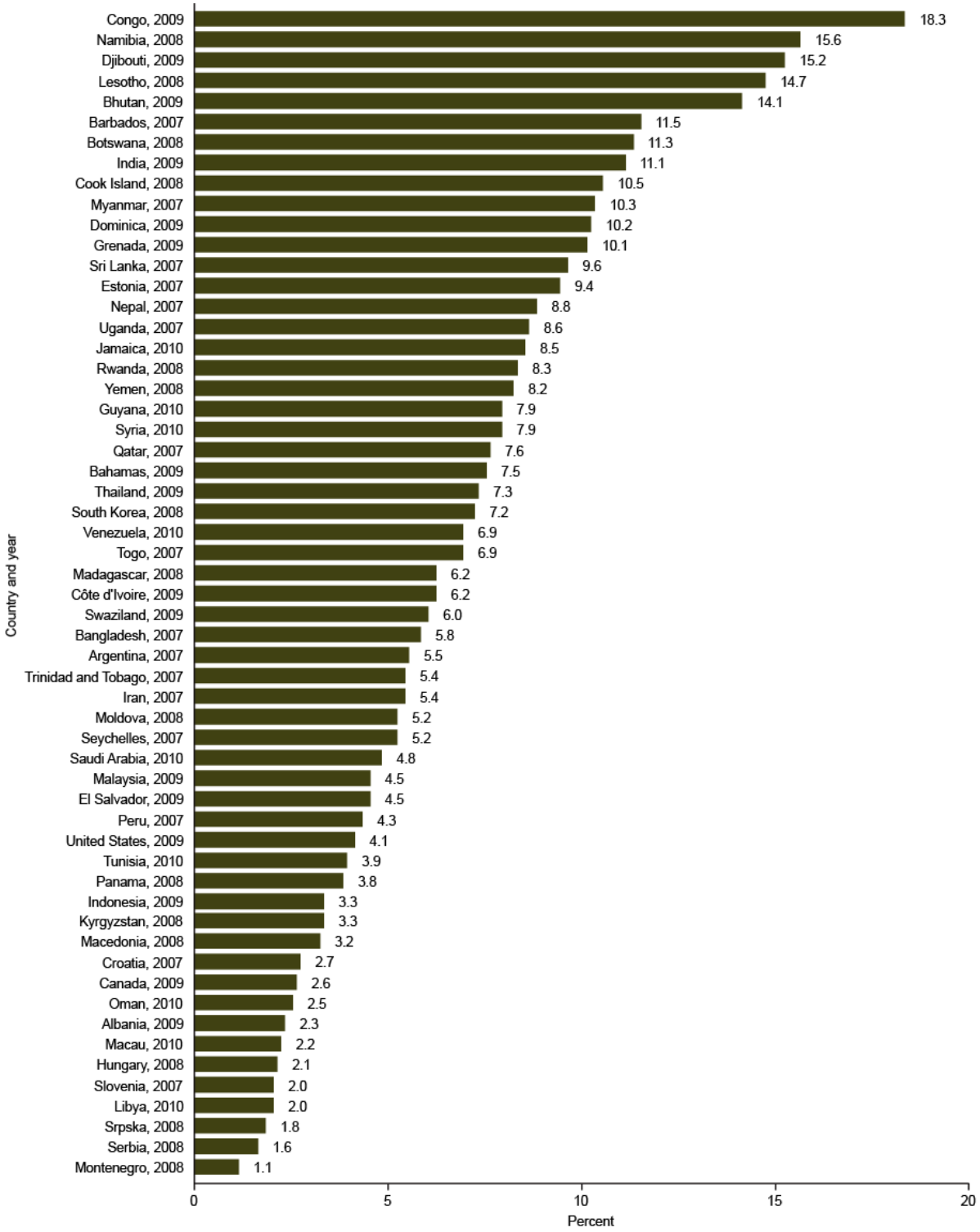
*Regions: AFR = African Region; EMR = Eastern Mediterranean Region; EUR = European Region; AMR = Region of the Americas.
Source: GYTS = Global Youth Tobacco Survey, 2007–2010 (25).

Figure 2-1. Current smokeless tobacco use (%) among boys and girls, 2007–2010



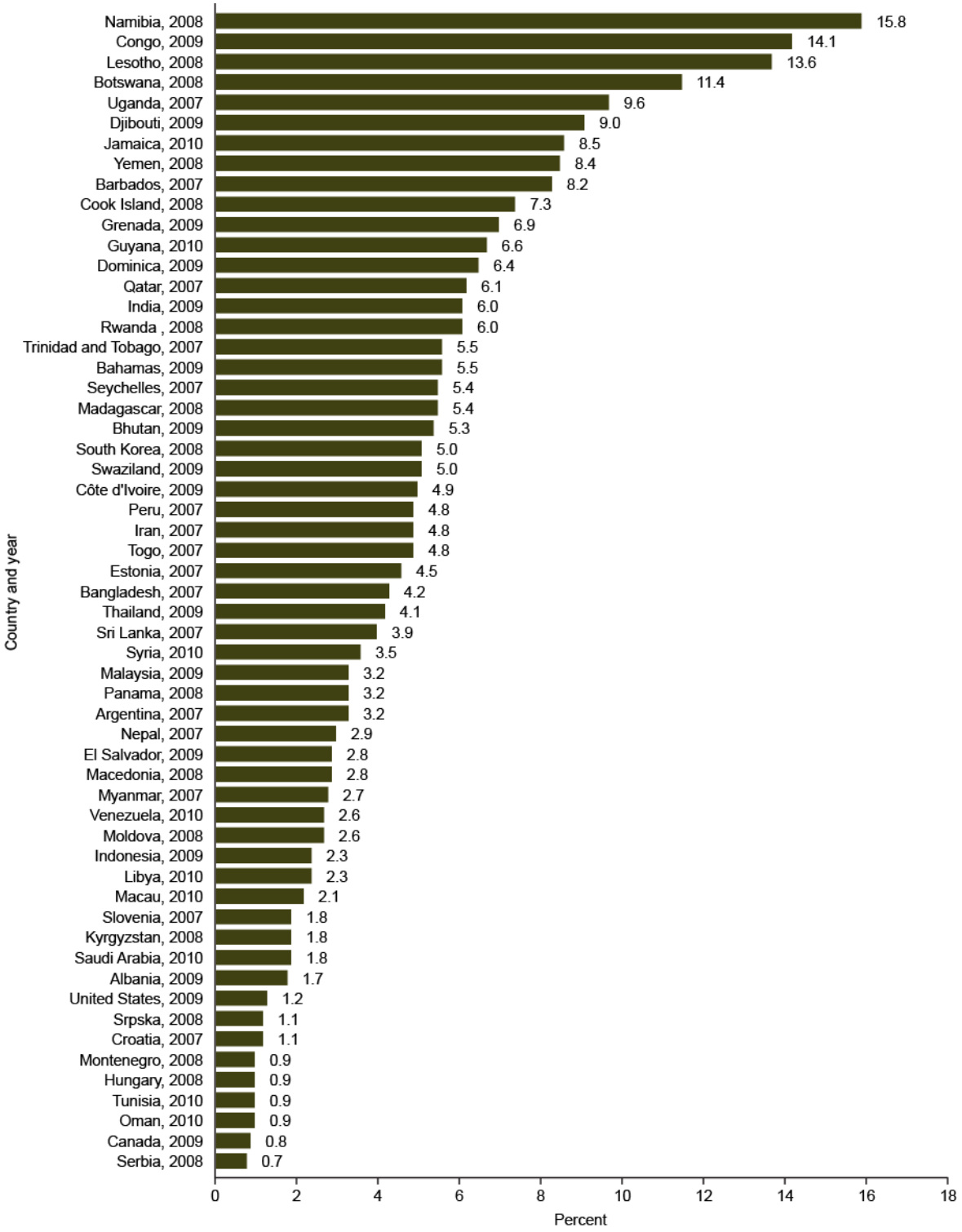
Sources: Global Youth Tobacco Survey, 2007–2010 (25); National Youth Tobacco Survey, United States, 2009 (16); Youth Smoking Survey, Canada, 2008–2009 (15).

Figure 2-2. Current smokeless tobacco use (%) among boys, 2007–2010



Sources: Global Youth Tobacco Survey, 2007–2010 (25); National Youth Tobacco Survey, United States, 2009 (16); Youth Smoking Survey, Canada, 2008–2009 (15).

Figure 2-3. Current smokeless tobacco use (%) among girls, 2007–2010



Sources: Global Youth Tobacco Survey, 2007–2010 (25); National Youth Tobacco Survey, United States, 2009 (16); Youth Smoking Survey, Canada, 2008–2009 (15).

Smokeless Tobacco Use Among Adults

Table 2-4 provides nationally representative estimates of ST use for 64 countries and subnational estimates for 7 countries, for various age groups and in most cases by gender. Countries are grouped by WHO region, and surveys span the years 2002 through 2010. Countries in the South-East Asia Region generally appear to have higher rates than those in other regions. Of the 64 countries with national estimates, 20 were in the African Region, 5 in the Eastern Mediterranean Region, 16 in the European Region, 8 in the Americas Region, 8 in the South-East Asia Region, and 7 in the Western Pacific Region.

Subnational estimates were reported for 4 countries in the African Region and 1 each in the Americas, South-East Asia, and Western Pacific Regions. In the 49 countries included in Table 2-4 that had a total estimate, current use of ST among adults ranged from a high of 29.6% in Myanmar to 0.0% in Uruguay (Figure 2-4). Among men, prevalence ranged from 51.4% in Myanmar to 0.0% in Barbados and Uruguay (Figure 2-5), whereas among women the prevalence ranged from 28.3% in Mauritania to 0.0% in six countries (Armenia, China, Moldova, Switzerland, Ukraine, and Uruguay) (Figure 2-6).

Overall prevalence among adults was high—10.0% or greater—in 11 countries (Bangladesh, Bhutan, India, Micronesia, Myanmar, Nepal, Norway, Sri Lanka, Sweden, Yemen, and Uzbekistan). Six of these were located in the South-East Asia Region (only 7 countries in that region had reports on overall prevalence). Prevalence exceeded 10.0% among men in 15 countries and among women in 7 countries. A review of the prevalence of ST use among adults, by WHO region (Table 2-4), indicates that in the African Region the rate was highest in Benin (9.2%) and lowest in Gambia (1.1%). In the Eastern Mediterranean Region, it was highest in Yemen (10.7%) and lowest in Libya (1.2%). In the European Region, the highest prevalence was in Sweden (17.0%) and the lowest in Latvia and Switzerland (both 0.1%). In the Americas Region, the highest prevalence of use among adults was in the United States (3.2%) and the lowest in Uruguay (0.0%), in contrast to findings for youth, where prevalence was lowest in Canada. In the South-East Asia Region, prevalence was highest in Myanmar (29.6%) and lowest in Thailand (3.9%). In the Western Pacific Region, Micronesia had the highest prevalence (11.4%) and China the lowest (0.4%).

Table 2-4. Prevalence (%) of use of smokeless tobacco among men and women, by World Health Organization region, 2002–2012

Region*	Country/year	Source†	Age group (years)	Coverage	Prevalence (percent)			Description of indicator
					Total	Men	Women	
AFR	Algeria, 2010	ICS	15+	Subnational	5.7	10.4	0.8	Current users of ST
	Benin, 2008	WHO STEPS	25–64	National	9.2	12.7	5.7	Current users of ST
	Cape Verde, 2007	ICS	25–64	National	4.6	3.5	5.8	Current users of ST
	Chad, 2008	ICS	25–64	Subnational	1.2	1.9	0.4	Current users of ST
	Ethiopia, 2005	DHS	Men, 15–59; Women, 15–49	National	—	3.0	0.6	Current users of ST
	Gambia, 2010	WHO STEPS	25–64	National	1.1	0.8	1.4	Current users of ST
	Ghana, 2008	DHS	Men, 15–59; Women, 15–49	National	—	0.9	0.2	Current users of ST
	Guinea, 2009	WHO STEPS	15–64	Subnational	1.4	1.4	1.5	Current users of ST
	Kenya, 2008–09	DHS	Men, 15–54; Women, 15–49	National	—	1.8	1.3	Current users of ST
	Lesotho, 2009	DHS	Men, 15–59; Women, 15–49	National	—	1.3	9.1	Current users of ST
	Liberia, 2007	DHS	15–49	National	—	2.3	2.4	Current users of ST
	Madagascar, 2008–09	DHS	Men, 15–59; Women, 15–49	National	—	22.6	19.6	Current users of ST
	Malawi, 2009	WHO STEPS	25–64	National	3.5	1.9	5.0	Current users of ST
	Mali, 2007	WHO STEPS	15–64	Subnational	2.7	5.0	1.2	Current users of ST
	Mauritania, 2006	WHO STEPS	15–64	National	9.0	5.7	28.3	Current users of ST
	Namibia, 2006–07	DHS	15–49	National	—	1.8	2.3	Current users of ST
	Nigeria, 2008	DHS	Men, 15–59; Women, 15–49	National	—	3.2	0.5	Current users of ST
	Sao Tome and Principe, 2009	WHO STEPS	25–64	National	2.8	3.8	1.9	Current users of ST
	Sierra Leone, 2008	DHS	Men, 15–59; Women, 15–49	National	—	1.3	4.7	Current users of ST
	South Africa, 2003	ICS	15+	National	—	2.4	10.9	Ever users of ST daily

Region*	Country/year	Source†	Age group (years)	Coverage	Prevalence (percent)			Description of indicator
					Total	Men	Women	
	Swaziland, 2007	WHO STEPS	25–64	National	1.6	2.6	0.8	Current users of ST
	Uganda, 2006	DHS	Men, 15–54; Women, 15–49	National	—	3.9	2.6	Current users of ST
	Zambia, 2007	DHS	Men, 15–59; Women, 15–49	National	—	0.2	1.2	Current users of ST
	Zimbabwe, 2005–06	DHS	Men, 15–54; Women, 15–49	National	—	1.9	0.5	Current users of ST
EMR	Egypt, 2009	GATS	15+	National	2.2	4.1	0.3	Current users of ST
	Libya, 2009	WHO STEPS	25–64	National	1.2	2.2	0.1	Current users of ST
	Saudi Arabia, 2004	WHO STEPS	15–64	National	—	1.3	0.5	Daily users of ST
	Tunisia, 2005–06	ICS	35–70	National	5.4	8.6	2.2	Current users of snuff
	Yemen, 2003	ICS	15+	National	10.7	15.1	6.2	Current users of El–shama
EUR	Armenia, 2005	DHS	15–49	National	—	1.8	0.0	Current users of ST
	Azerbaijan, 2006	DHS	Men, 15–49	National	—	0.3	—	Current users of ST
	Denmark, 2010	ICS	15+	National	2.0	3.0	1.0	Current users of ST
	Finland, 2009	ICS	15–64	National	—	5.5	0.4	Current snuff users
	Georgia, 2010	WHO STEPS	18–64	National	0.6	1.0	0.2	Current users of ST
	Iceland, 2008	ICS	15–89	National	2.9	6.0	—	Daily users of ST
	Kyrgyzstan, 2005	ICS	15+	National	3.4	7.0	0.3	Current users of ST (nasvay users)
	Latvia, 2008	ICS	15–64	National	0.1	0.2	—	Current users of chewing tobacco
	Moldova, 2005	DHS	Men, 15–59; Women, 15–49	National	—	0.1	0.0	Current users of ST
	Norway, 2009	ICS	16–74	National	10.0	17.0	5.0	Current users of ST
	Poland, 2009	GATS	15+	National	0.5	1.0	0.1	Current users of ST
	Russian Federation, 2009	GATS	15+	National	0.6	1.0	0.2	Current users of ST
	Sweden, 2010	ICS	16–84	National	17.0	26.0	7.0	Current snuff users

Region*	Country/year	Source†	Age group (years)	Coverage	Prevalence (percent)			Description of indicator
					Total	Men	Women	
	Switzerland, 2009	ICS	14–65	National	0.1	0.2	0.0	Current users of chewing tobacco
	Ukraine, 2009	GATS	15+	National	0.2	0.5	0.0	Current users of ST
	Uzbekistan, 2006	ICS	15+	National	11.3	22.5	0.4	Current users of ST
AMR	Barbados, 2007	WHO STEPS	25+	National	0.3	0.0	0.6	Current users of ST
	Brazil, 2008	GATS	15+	National	0.4	0.6	0.3	Current users of ST
	Canada, 2010	CTUMS	15+	National	1.0	1.0	—	Current users of ST
	Dominican Republic, 2007	DHS	Men, 15–59; Women, 15–49	National	—	1.9	0.3	Current users of ST
	Haiti, 2005–06	DHS	Men, 15–59; Women, 15–49	National	—	—	2.5	Current users of ST
	Mexico, 2009	GATS	15+	National	0.3	0.3	0.3	Current users of ST
	Saint Kitts and Nevis, 2007	WHO STEPS	25–64	Subnational	0.1	0.3	0.1	Current users of ST
	United States, 2012	NSDUH	18+	National	3.6	7.1	0.4	Current users of ST
	Uruguay, 2009	GATS	15+	National	0.0	0.0	0.0	Current users of ST
SEAR	Bangladesh, 2009	GATS	15+	National	27.2	26.4	27.9	Current users of ST
	Bhutan, 2007	WHO STEPS	25–74	Subnational	19.4	21.1	17.3	Current users of ST
	India, 2009–10	GATS	15+	National	25.9	32.9	18.4	Current users of ST
	Maldives, 2009	DHS	Men, 15–64; Women, 15–49	National	—	6.0	4.2	Current users of ST
	Myanmar, 2009	WHO STEPS	15–64	National	29.6	51.4	16.1	Current users of ST
	Nepal, 2008	ICS	15–64	National	18.6	31.2	4.6	Current users of ST
	Sri Lanka, 2006	WHO STEPS	15–64	National	15.8	24.9	6.9	Current users of ST
	Thailand, 2009	GATS	15+	National	3.9	1.3	6.3	Current users of ST
	Timor-Leste, 2009–10	DHS	15–49	National	—	2.5	1.9	Current users of ST
WPR	Australia, 2004	NDSHS	12+	National	0.6	0.8	0.4	Current users of ST
	Cambodia, 2010	ICS	15+	National	7.3	0.7	12.7	Current users of ST
	China, 2009	GATS	15+	National	0.4	0.7	0.0	Current users of ST

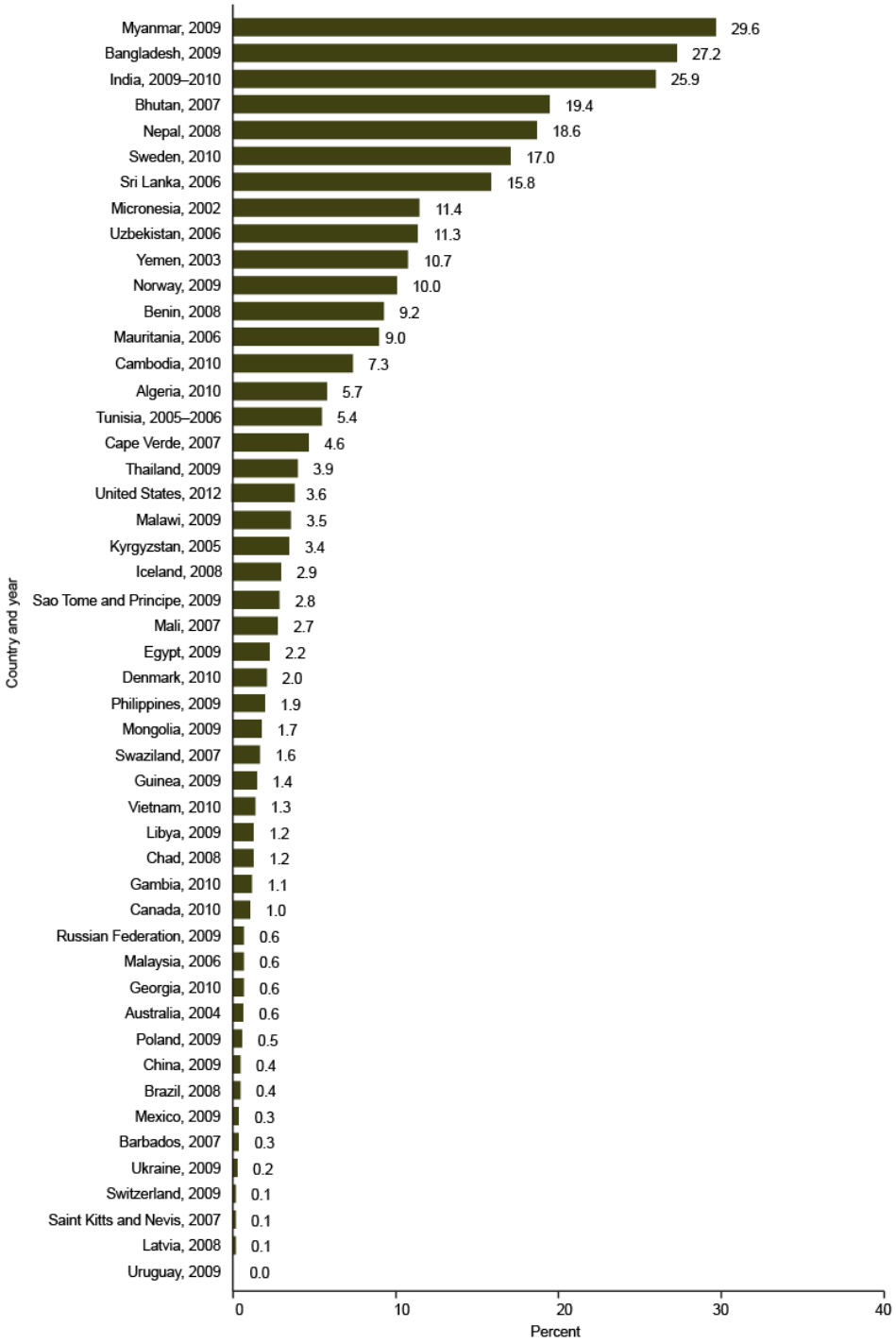
Region*	Country/year	Source†	Age group (years)	Coverage	Prevalence (percent)			Description of indicator
					Total	Men	Women	
	Malaysia, 2006	ICS	18+	National	0.6	0.5	3.1	Current tobacco chewers
	Micronesia (Federated States of), 2002	WHO STEPS	25–64	Subnational	11.4	22.4	3.0	Current users of ST
	Mongolia, 2009	WHO STEPS	15–64	National	1.7	2.8	0.5	Current users of ST
	Philippines, 2009	GATS	15+	National	1.9	2.7	1.2	Current users of ST
	Vietnam, 2010	GATS	15+	National	1.3	0.3	2.3	Current users of ST

*Regions: AFR = African Region; EMR = Eastern Mediterranean Region; EUR = European Region; AMR = Region of the Americas; SEAR = South-East Asia Region; WPR = Western Pacific Region.

†GATS = Global Adult Tobacco Survey, 2008–2010 (23); DHS = Demographic and Health Surveys, 2005–2010 (24); WHO STEPS = World Health Organization STEPwise Approach to Surveillance, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); NDSHS = National Drug Strategy Household Survey, Australia, 2004 (20); CTUMS = Canadian Tobacco Use Monitoring Survey, 2010 (21); NSDUH = National Survey on Drug Use and Health, United States, 2012 (22); ICS = individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (6).

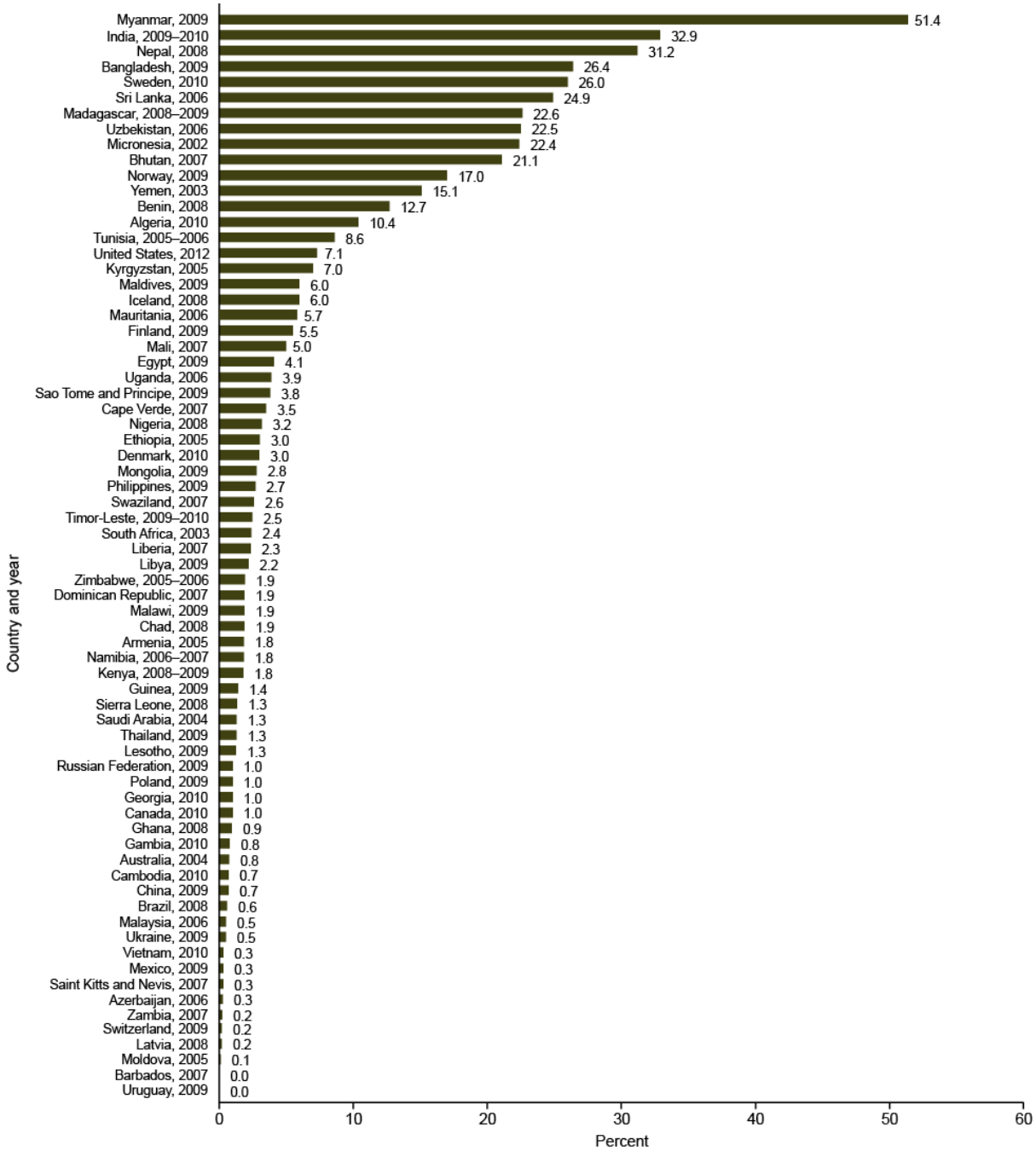
Abbreviation: ST = smokeless tobacco.

Figure 2-4. Current smokeless tobacco use (%) among men and women, 2002–2012



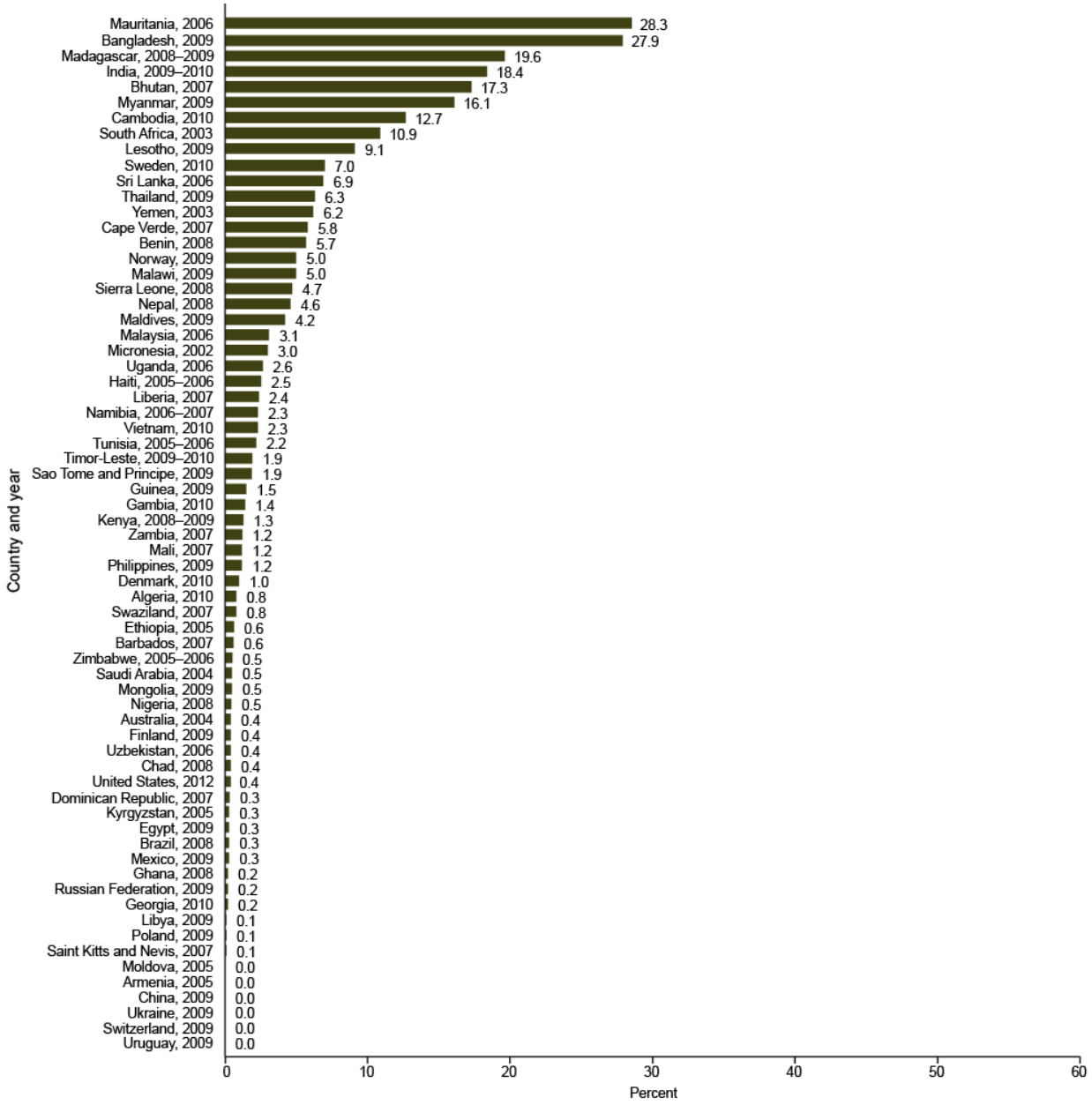
Note: Daily use of smokeless tobacco was reported in Iceland.
Sources: Global Adult Tobacco Survey, 2008–2010 (23); Demographic and Health Surveys, 2005–2010 (24); WHO STEPS, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); National Drug Strategy Household Survey, Australia, 2004 (20); Canadian Tobacco Use Monitoring Survey, 2010 (21); National Survey on Drug Use and Health, United States, 2012 (22); Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (6).

Figure 2-5. Current smokeless tobacco use (%) among men, 2002–2012



Note: Daily use of smokeless tobacco was reported in Iceland and Saudi Arabia, and ever use of smokeless tobacco was reported in South Africa.
Sources: Global Adult Tobacco Survey, 2008–2010 (23); Demographic and Health Surveys, 2005–2010 (24); WHO STEPS, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); National Drug Strategy Household Survey, Australia, 2004 (20); Canadian Tobacco Use Monitoring Survey, 2010 (21); National Survey on Drug Use and Health, United States, 2012 (22); Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (6).

Figure 2-6. Current smokeless tobacco use (%) among women, 2002–2012



Note: Ever use of smokeless tobacco was reported in South Africa, and daily use of smokeless tobacco was reported in Saudi Arabia.

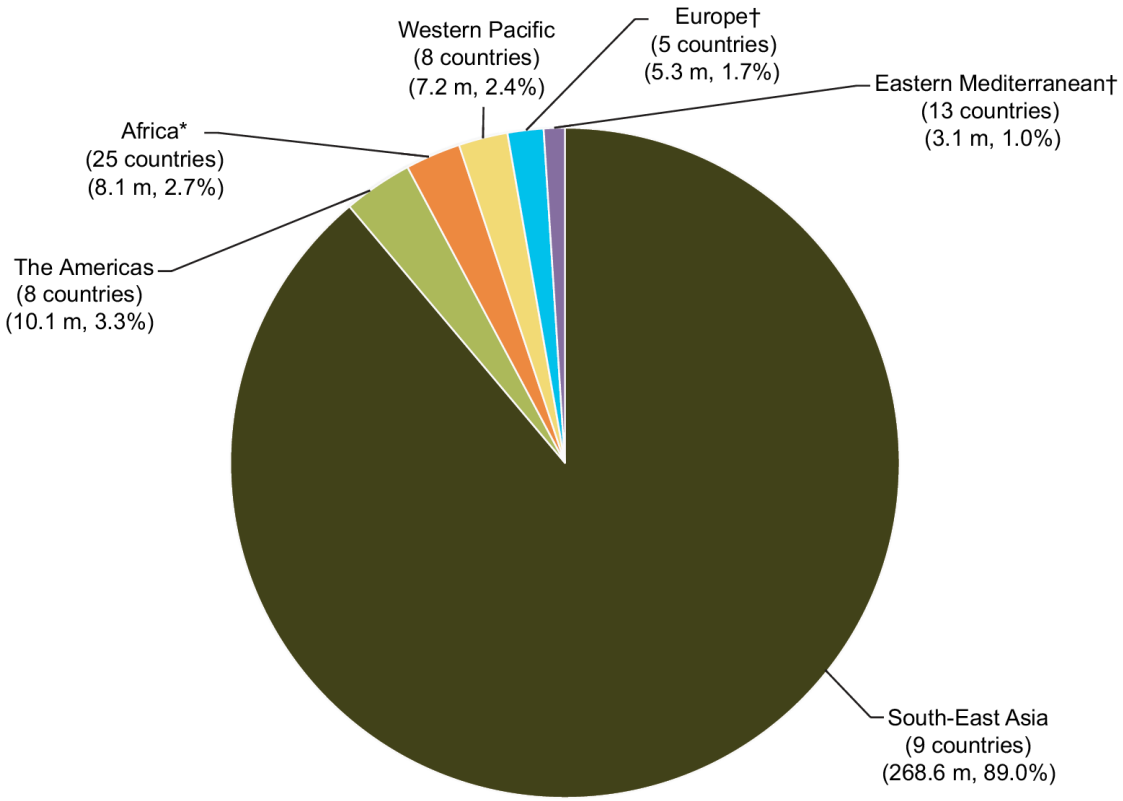
Sources: Global Adult Tobacco Survey, 2008–2010 (23); Demographic and Health Surveys, 2005–2010 (24); WHO STEPS, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); National Drug Strategy Household Survey, Australia, 2004 (20); Canadian Tobacco Use Monitoring Survey, 2010 (21); National Survey on Drug Use and Health, United States, 2012 (22); Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (6).

Number of Adult Smokeless Tobacco Users

To translate prevalence rates into an estimate of the number of ST users among adults, the adult prevalence rate was multiplied by the total adult population in the age group on which the survey was conducted. Although the prevalence of ST use (either national or subnational) was available for 71 countries across all WHO regions, South Africa was excluded from the calculations because only ever users of ST were available; thus, prevalence rates for 70 countries were used. Estimated prevalence rates for males and for females were added together to get an overall estimate. The world's total adult population was derived from the United Nations' *World Population Prospects,* 2010 revision.[26] In 2010, these 70 countries represented about 70% of the world's adult population, or more than 3.5 billion people.

These calculations indicate that these 70 countries contain more than 300 million ST users (302.4 million, specifically) (Figure 2-7), with the number of users varying across countries. The largest number of ST users, more than 220 million, was in India. Other countries where the number of ST users exceeded 10 million were Bangladesh (28 million) and Myanmar (11.1 million). It is important to note that these three countries are in the South-East Asia Region. The number of ST users was less than 5 million in each country except the United States, which has 8.2 million ST users. By WHO region, the number of ST users varied greatly (Africa, 8.1 million; Eastern Mediterranean, 3.1 million; Europe, 5.3 million; the Americas, 10.1 million; South-East Asia, 268.6 million; and the Western Pacific, 7.2 million) (Figure 2-7). According to these calculations, the South-East Asia Region alone accounts for almost 89% of the total users of ST in these 70 countries (Figure 2-7).[27]

Figure 2-7. Number (in millions) and proportion (%) of smokeless tobacco users among adults in 70 countries, by World Health Organization region



*Because only ever use of smokeless tobacco was reported for South Africa, it was excluded from the calculations.
†Daily use of smokeless tobacco was reported in Iceland and Saudi Arabia.
Note: Percentages do not equal 100% because of rounding.
Sources: Global Adult Tobacco Survey, 2008–2010 (23); Demographic and Health Surveys, 2005–2010 (24); WHO STEPS, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); National Drug Strategy Household Survey, Australia, 2004 (20); Canadian Tobacco Use Monitoring Survey, 2010 (21); National Survey on Drug Use and Health, United States, 2011 (22); Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (6).

Gender Differences in Smokeless Tobacco Use Across Countries

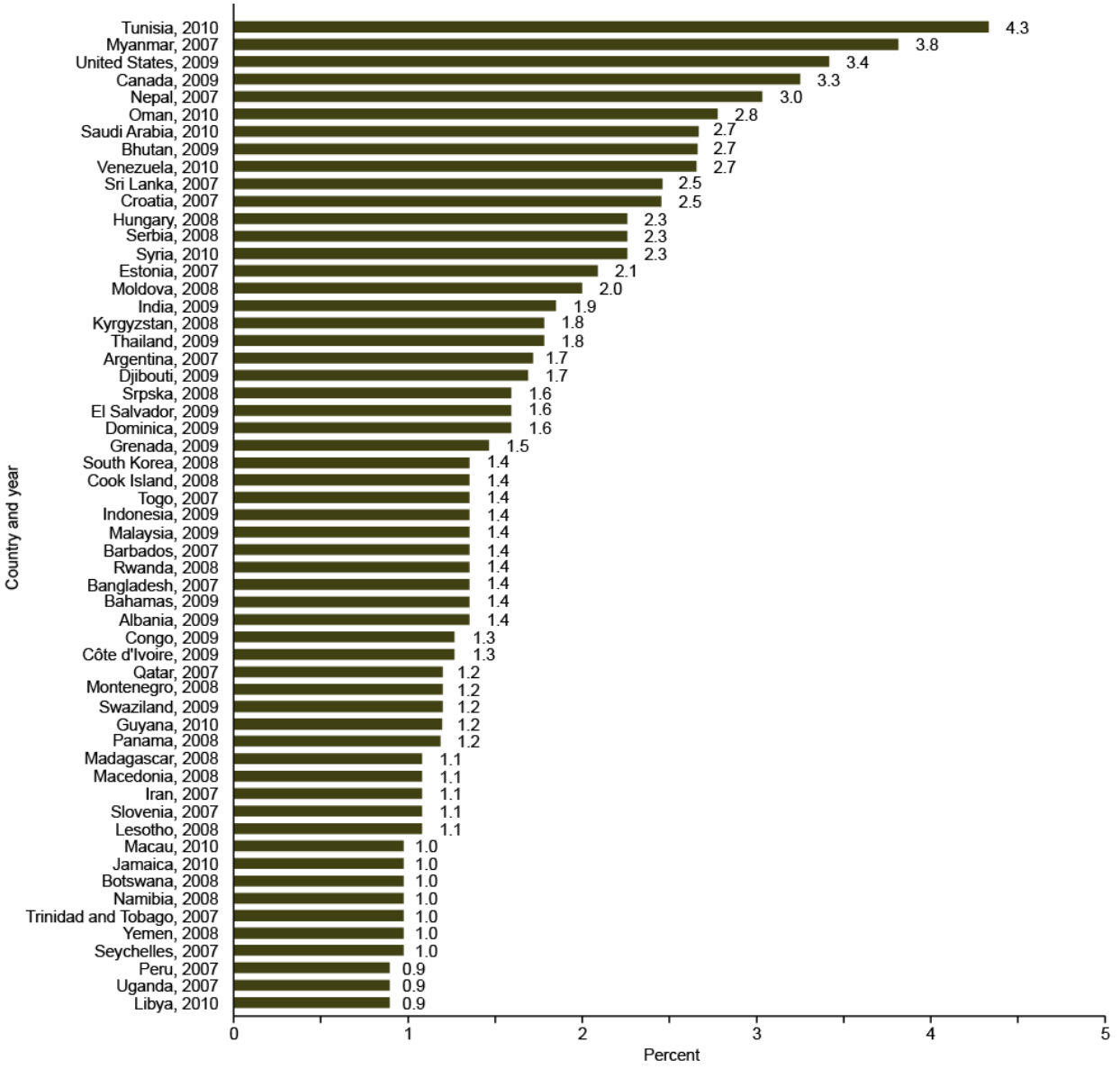
Gender Differences Among Youth

In several countries with available national data, the rate of ST use was more than 10.0% either among boys or girls (Table 2-2). Among boys, rates higher than 10.0% were found in: Botswana (11.3%), Congo (18.3%), Lesotho (14.7%), and Namibia (15.6%) in the African Region; Djibouti (15.2%) in the Eastern Mediterranean Region; Barbados (11.5%), Dominica (10.2%), and Grenada (10.1%) in the Americas Region; Bhutan (14.1%), India (11.1%), and Myanmar (10.3%) in the South-East Asia Region; and Cook Island (10.5%) in the Western Pacific Region. Among girls, the prevalence of ST exceeded 10.0% only in the African Region: Botswana (11.4%), Congo (14.1%), Lesotho (13.6%), and Namibia (15.8%).

In 36 (63%) of the 57 countries that measured use nationally among youth, at least 5.0% of boys aged 13−15 years were reported to be either daily or occasional users; use among girls of the same ages equaled or exceeded 5% in 23 (40%) of the 57 countries (Table 2-2). In general, prevalence among boys was higher in countries in the South-East Asia and African Regions than in other regions. In all 11 countries in the African Region, the prevalence of use by gender was 5.0% or greater except for girls in Côte d'Ivoire (4.9%) and Togo (4.8%). In the South-East Asia Region, 5.0% or more of boys in 7 countries were reported to be users, but among girls the prevalence reached 5.0% in only 2 countries (Bhutan and India). The sex ratio (boys to girls) of ST use (Figure 2-8) among youth in the countries with available national data ranged from 0.9 to 4.3; girls' use of ST approximately equaled or exceeded that of boys in 10 countries (Botswana, Jamaica, Libya, Macau, Namibia, Peru, Seychelles, Trinidad and Tobago, Uganda, and Yemen).

Subnational estimates showed a similar pattern (Table 2-3). Of 46 locations in 18 countries, the prevalence was 5.0% or greater among boys in 40 locations (87%) and among girls in 29 locations (63%). In the African Region, prevalence was 5.0% or higher among boys in every location except Dar es Salaam, Tanzania (4.6%). Prevalence among girls fell short of this threshold in the Yaounde section of Cameroon (4.4%), where data on ST use prevalence were available for the first time, and in Dar es Salaam (4.3%), and Bulawayo (3.5%) in Zimbabwe. In the Eastern Mediterranean Region, prevalence reached 5.0% in every location for boys and in most locations for girls (the two exceptions were both in Pakistan: 3.1% in Lahore, and 2.6% in Peshawar).

Figure 2-8. Sex ratio (boys to girls) of smokeless tobacco use among youth, 2007–2010



Sources: Global Youth Tobacco Survey, 2007–2010 (14); National Youth Tobacco Survey, United States, 2009 (16); Youth Smoking Survey, Canada, 2008–2009 (15).

Gender Differences Among Adults

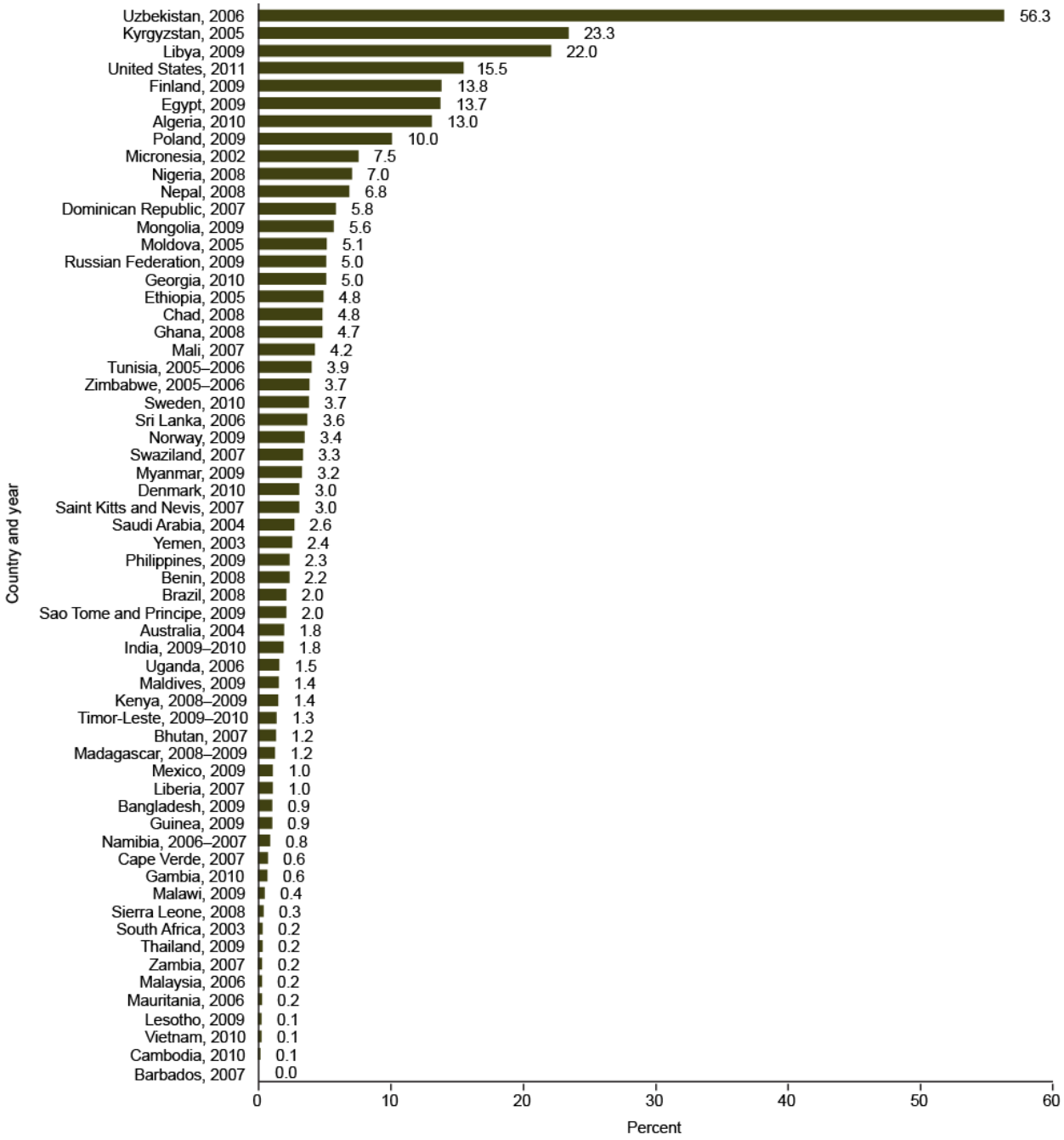
High prevalence rates among adults, as among youth, were found more often for males than females. For men, the available data reveal that ST use prevalence was above 10.0% in the following countries: Algeria (10.4%), Benin (12.7%), and Madagascar (22.6%), in the African Region; Yemen (15.1%) in the Eastern Mediterranean Region; Norway (17.0%), Sweden (26.0%), and Uzbekistan (22.5%) in the European Region; Bangladesh (26.4%), Bhutan (21.1%), India (32.9%), Myanmar (51.4%), Nepal (31.2%), and Sri Lanka (24.9%) in the South-East Asia Region; and Micronesia (22.4%) in the Western Pacific Region. Among women, prevalence exceeded 10.0% in 8 countries: Madagascar (19.6%), Mauritania (28.3%), and South Africa (10.9%) in the African Region; Bangladesh (27.9%), Bhutan (17.3%), India (18.4%), and Myanmar (16.1%) in the South-East Asia Region; and Cambodia (12.7%) in the Western Pacific Region. The estimate for men reached 5.0% in only 22 of the 70 countries with available national or subnational data; the estimate for women reached 5.0% in only 16 of the 67 countries with available data. The estimate was 1.0% or below for men in 22 countries (32%), and for women in 31 countries (47%).

The sex ratio (male to female) of ST use among adults (either national or subnational) ranges between 0 and 56.3 (Figure 2-9). In most of the countries with data available for both women and men, men were more likely to be current users of smokeless tobacco. However, ST use among females equals or exceeds that of males in 18 countries, and in 13 countries, women had an appreciably higher rate (prevalence for men shown first): Barbados (0.0%, 0.6%), Cape Verde (3.5%, 5.8%), Gambia (0.8%, 1.4%), Lesotho (1.3%, 9.1%), Malawi (1.9%, 5.0%), Mauritania (5.7%, 28.3%), Sierra Leone (1.3%, 4.7%), South Africa (2.4%, 10.9%), and Zambia (0.2%, 1.2%) in the African Region; Thailand (1.3%, 6.3%) in the South-East Asia Region; and Cambodia (0.7%, 12.7%), Malaysia (0.5%, 3.1%), and Vietnam (0.3%, 2.3%) in the Western Pacific Region. In three countries in the African Region, one country in the Americas Region, and one country in the South-East Asia Region, differences were quite modest, but women (shown second) had a slightly higher rate: Bangladesh (26.4%, 27.9%), Guinea (1.4%, 1.5%), Liberia (2.3%, 2.4%), Mexico (0.3%, 0.3%), and Namibia (1.8%, 2.3%).

Prevalence and Other Characteristics of Use

Examining several characteristics associated with the use of ST products could be informative in understanding public health impact, developing programs, and establishing policies. These characteristics include type of ST product used; pattern of use, including dual product use; age of initiation; and cessation rates.

Figure 2-9. Sex ratio (male to female) of smokeless tobacco use among adults, 2002–2011



Note: Ever use of smokeless tobacco was reported in South Africa, and daily use of smokeless tobacco was reported in Saudi Arabia.
Sources: Global Adult Tobacco Survey, 2008–2010 (23); Demographic and Health Surveys, 2005–2010 (24); WHO STEPS, 2002–2010, from: *WHO Report on the Global Tobacco Epidemic, 2011* (6); National Drug Strategy Household Survey, Australia, 2004 (20); Canadian Tobacco Use Monitoring Survey, 2010 (21); National Survey on Drug Use and Health, United States, 2012 (22); Individual country surveys from: *WHO Report on the Global Tobacco Epidemic, 2011* (6).

Prevalence of Use, by Type of Smokeless Tobacco Product

Understanding the use of various ST products is essential for characterizing the level of ST use worldwide. A number of manufactured and locally produced ST products are used in India and Bangladesh.[3,4] In Bangladesh, betel quid with tobacco is chewed by more than 24% of adults (23.5% of men; 25.2% of women). Other products used in Bangladesh include gul (5.3% of adults) and khoini (1.5% of adults).[4] In India, only 6.2% of adults chew betel quid with tobacco (7.5% of men, 5.0% of women); 11.6% of adults use khaini, 8.2% use gutka, and 4.7% use tobacco products that are applied to teeth and gums, such as gul, mishri, or gudahku. Men and adults from rural areas use these products at a higher rate than women and urban residents.[3]

Daily Versus Occasional Use

In countries with high use of ST (Bangladesh, India, and Myanmar), more than 65% of current users (both men and women) were daily users.[3–5] In Bangladesh, prevalence of daily users among the general population was 23.7% (20.7% among men and 26.6% among women). In India, it was 21.4% (27.4% among men and 14.9% among women), and in Myanmar, it was 22% (37.7% among men and 12.2% among women). The prevalence of occasional users among the general population was 3.5% in Bangladesh (5.6% among men and 1.3% among women), 4.5% in India (5.4% among men and 3.5% among women), and 7.6% in Myanmar (13.7% among men and 3.9% among women). In both Bangladesh and India[3,4] 2.3% of the population were former (daily or occasional) users of ST (Bangladesh: 3.1% among men and 1.5% among women; India: 2.6% among men and 1.8% among women). In Myanmar,[5] the former daily ST use prevalence was 1.7% (3.9% among men and 0.3% among women).

Dual Product Use

Dual product use refers to the use of both smoked tobacco and ST products by the same person.[28,29] (These figures do not include use of more than one ST product.) Dual product use by adults was high in India (overall, 5.3%; among men, 9.3%; among women, 1.1%) and Bangladesh (overall, 6.8%; among men, 13.0%; among women, 0.7%).[3,4] In the United States, seven states that had the highest prevalence of cigarette smoking also had the highest prevalence of ST use: Alabama, Alaska, Arkansas, Kentucky, Mississippi, Oklahoma, and West Virginia. At least one of every nine men in these states who smoked cigarettes also used ST (range: 11.8% in Kentucky to 20.8% in Arkansas).[30]

Age at Initiation and Quit Ratio

The available data indicate that the mean age at initiation of ST use among adults aged 20–34 years is 25 years among Bangladeshi adults and 17.9 years among Indian adults. Bangladeshi men initiate use 2 years earlier than women; in India, men begin ST use about a year after women (18.2 years old for men and 17.1 years old for women). These data were obtained by reanalyzing data in the *WHO Report on the Global Tobacco Epidemic, 2011*[6] specifically to look at the ST indicator. The WHO data can also be used to calculate the quit ratio—the number of former ST users divided by the number of people who have ever used ST daily. Quit ratios among adults (aged 15 years and older) were low in both Bangladesh and India, although slightly higher in Bangladesh than in India (5.5% vs. 4.8%, respectively).[3,4,6]

Prevalence Data for Adults and Sociodemographic Variables in Four Countries

This section describes ST use prevalence in four countries in terms of demographic variables such as gender, age, location (rural/urban), and socioeconomic status, where data were available. These data demonstrate some similar patterns of use across countries and differences both within and across countries. Information in this section is derived from GATS data for Bangladesh and India because of their availability and because these two countries are home to more ST users than any other countries in the world. Additional information for the United States and Myanmar comes from the 2009 U.S. Behavioral Risk Factor Surveillance System (BRFSS),[30] the 2012 National Survey on Drug Use and Health,[22] and from WHO STEPS conducted in Myanmar in 2009.[5]

Bangladesh

Current prevalence of any ST use among adults in Bangladesh was 27.2% and was similar for men and women (26.4% and 27.9%, respectively).[4] Use increased steadily with age, rising from 6.6% in the 15−24 age group to 56.4% among those aged 65 and older. Prevalence was higher in rural areas (28.8%) than in urban areas (22.5%), and was more than four times as high among adults with no formal education (42.3%) as among adults with a secondary school education or more (10.2%). A similar pattern was observed with respect to the wealth index, a proxy for socioeconomic status: Adults with the lowest wealth index had the highest prevalence of use (36.1%), and adults with the highest wealth index had the lowest prevalence (17.3%).

India

Data from India[3] reveal a 25.9% prevalence of current ST use among adults, with use among men at 32.9%, compared with 18.4% among women. Although the absolute levels were different, the patterns in India were similar to those observed in Bangladesh. In India, prevalence was also lowest in the 15−24 age group (16.2%) and highest among those aged 65 years and older (33.7%). As in Bangladesh, prevalence in India was higher among adults in rural areas than in urban areas (29.3% vs. 17.7%), and more than twice as high among adults with no formal education as among adults with an education of secondary school or above (33.5% vs. 14.8%). Prevalence was 33.1% among retired and unemployed adults, 32.5% among employed adults, and 6.3% among students. By region of the country, prevalence was highest in the east (38.0%) and lowest in the north (7.0%). Among states in India, prevalence ranged from 49.0% in Bihar to only 5.0% in Goa.

Myanmar

Data from Myanmar[5] indicate that the prevalence of current ST use for men and women combined was similar across age groups between ages 25 and 65 years (28.4%–31.5%), whereas young adults (aged 15–24 years) had a somewhat lower prevalence of ST use (21.5%). The highest consumption was observed among men in the 25–34 age group (54.3%) and women in the 45–54 age group (21.1%).[5]

United States

In 2012, prevalence of past-month ST use in the United States was 3.6%, and it was higher among young adults (5.5% among those aged 18–25 years) than among youth (2.1% of those aged 12–17 years) and older adults (3.3% of those aged 26 and older).[22] Men also had a significantly higher prevalence of ST use (7.1%) than women (0.4%). In terms of education, the past-month prevalence of ST use was 4.0% among adults (age 18 and older) with less than a high school education: 4.4% among high school graduates, 3.9% among adults with some college education, and 2.3% among college graduates.

The 2009 BRFSS[30] was the first surveillance system to present U.S. data on current ST use by state. Prevalence rates varied significantly from state to state; prevalence was highest in Wyoming (9.1%), West Virginia (8.5%), and Mississippi (7.5%), and lowest in California (1.3%), the District of Columbia (1.5%), Massachusetts (1.5%), and Rhode Island (1.5%).

Gaps and Limitations of the Current Evidence Base

The data used in this report are based on self-reports and thus may be subject to misclassification of ST use. Secondly, the surveys from which the prevalence estimates of ST use are available vary in terms of their methodologies, timeframes, and approaches (for example, in design, purpose, year of survey, questions used, and indicators measured). Therefore, comparisons among estimates should be made cautiously. Thirdly, due to the lack of available data and differences in methodology (e.g., definitions or questions used for reporting ST use), it was not possible to report on ST use in some countries, particularly among adults; these deficiencies might have some influence on reporting patterns and generalization across countries. Finally, due to the differences in coverage (age groups, countries, representativeness), the reported numbers of ST users are approximations and should be considered as interim results until more accurately weighted calculations become available.

Summary and Conclusions

This chapter has presented data on overall prevalence of ST use in 114 of the 194 WHO member states (almost 58% of countries in the world), at national and subnational levels, for youth and adults. For many of these countries, data on ST use were reported for the first time.

From these data, it is clear that in the first decade of the 21st century, ST use occurs among youth and adults in almost every country of the world, but also that ST use is highly prevalent in some parts of the world and, in some cases, more prevalent than cigarette smoking. The GYTS and GATS, together with other surveys, document in detail the prevalence of ST use and reinforce the need for sustained monitoring of all forms of tobacco use.

From the data reported in this chapter, a few general patterns of ST use prevalence can be readily seen:

- Use rates appear to vary widely among youth and adults.
- Among youth, boys generally report more use than girls.
- Among adults, men generally have a higher prevalence than women, except in Bangladesh and Thailand in the South-East Asia Region; in a few African countries (such as South Africa and Sierra Leone); in Cambodia, Malaysia, and Vietnam in the Western Pacific Region; and in Barbados in the Americas Region.
- Among youth, there is evidence of high prevalence (≥10%) either overall or by gender in the South-East Asia Region (boys in Bhutan, India, and Myanmar), the Eastern Mediterranean Region (Djibouti), the Americas Region (boys in Barbados, Dominica, and Grenada), the African Region (Botswana, Congo, Lesotho, and Namibia), and the Western Pacific Region (Cook Island boys).
- Among adults, there is a high prevalence (≥10%) in the South-East Asia Region (Bangladesh, Bhutan, India, Myanmar, Nepal, and Sri Lanka), in the European Region (Norway, Sweden, Uzbekistan), the Eastern Mediterranean Region (Yemen), the African Region (in Madagascar overall; men in Algeria and Benin; and among women in Mauritania and South Africa), and the Western Pacific Region (in Micronesia overall and among men, and in Cambodia among women).

The significant impact of ST use, particularly in some countries, is illustrated by data showing that more than 300 million adults in 70 countries across all WHO regions use smokeless tobacco. The South-East Asia Region has the largest share (89%) of ST users. GATS data from 13 low- and middle-income countries included in this report account for more than 250 million users of smokeless tobacco.[27] In a few countries, most notably in Bangladesh and India, ST use is very high and surpasses tobacco smoking.

Longitudinal data and continuous monitoring of tobacco use, particularly ST use, are needed to refine understanding of the extent of the problem. More extensive data on patterns of use, ages and groups at highest risk, and cessation success are important to informing tobacco control actions that would effectively reduce morbidity and mortality attributable to tobacco[31] and prevent initiation of use by youth and young adults.

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