MMWR™
Morbidity and Mortality Weekly Report
Weekly May 27, 2005 / Vol. 54 / No. 20

World No Tobacco Day — May 31, 2005

Tobacco use causes approximately 5 million deaths worldwide each year (*1*). Since 1987, the World Health Organization (WHO) has sponsored World No Tobacco Day to encourage countries to implement comprehensive programs to reduce tobacco use. The focus this year is on the role of health professionals in tobacco control. Studies indicate that smokers are more likely to quit smoking permanently if they receive physician assistance, behavioral counseling, and pharmacologic treatment (*2*).

In accordance with a code of practice proposed in 2004 (*3*), WHO is encouraging health-care professionals to provide patients with information about the health consequences of smoking, help their smoking patients quit, and act as role models who promote tobacco-free lifestyles. CDC, WHO, and the Canadian Public Health Association have developed and pilot-tested the Global Health Professionals Survey, which assesses health-care–professional tobacco use, attitudes about tobacco, and training to counsel patients in tobacco-cessation techniques (*4*). Additional information on WHO tobacco-control programs is available at http://www.who.int/tobacco.

References

1. World Health Organization. An international treaty for tobacco control. Geneva, Switzerland: World Health Organization; 2003. Available at http://www.who.int/features/2003/08.
2. Fiore MC, Bailey WC, Cohen SJ, et al. Treating tobacco use and dependence: clinical practice guideline. Rockville, MD: US Department of Health and Human Services, Public Health Service; 2000. AHQR publication no. 00-0032.
3. World Health Organization. Code of practice on tobacco control for health professional organizations. Geneva, Switzerland: World Health Organization; 2004. Available at http://www.who.int/tobacco/codeofpractice.
4. CDC. Tobacco use and cessation counseling—Global Health Professionals Survey Pilot Study, 2005. MMWR 2005;54:505–9.

Tobacco Use and Cessation Counseling — Global Health Professionals Survey Pilot Study, 10 Countries, 2005

Tobacco use is projected to cause nearly 450 million deaths worldwide during the next 50 years (*1*). Health professionals can have a critical role in reducing tobacco use; even brief and simple advice from health professionals can substantially increase smoking cessation rates (*2–4*). Therefore, one of the strategies to reduce the number of smoking-related deaths is to encourage the involvement of health professionals in tobacco-use prevention and cessation counseling. Studies have collected information from health-profession students in various countries about their tobacco use and training as cessation counselors (*5–8*); however, no study has collected this information cross-nationally by using a consistent survey methodology. The World Health Organization (WHO), CDC, and the Canadian Public Health Association (CPHA) developed the Global Health Professionals Survey (GHPS) to collect data on tobacco use and cessation counseling among health-profession students in all WHO member states. This report summarizes findings from the GHPS Pilot Study, which consisted of 16 surveys conducted in 10 countries among third-year students in four health-profession disciplines (dentistry, medicine, nursing, and pharmacy) during the first quarter of 2005. The findings indicated that current cigarette smoking among these students was higher than 20% in seven of the 10 countries surveyed. Nevertheless, 87%–99% of the students surveyed believed they should have a role in counseling patients to quit smoking; only 5%–37% of these third-year

INSIDE

DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL AND PREVENTION

The *MMWR* series of publications is published by the Coordinating Center for Health Information and Service, Centers for Disease Control and Prevention (CDC), U.S. Department of Health and Human Services, Atlanta, GA 30333.

SUGGESTED CITATION
Centers for Disease Control and Prevention. [Article Title]. MMWR 2005;54:[inclusive page numbers].

students had actually received formal training in how to conduct such counseling. Schools for health professionals, public health organizations, and education officials should work together to design and implement training in smoking-cessation counseling for all health-profession students.

GHPS is part of the Global Tobacco Surveillance System (GTSS), which collects data through three surveys: the Global Youth Tobacco Survey (GYTS), the Global School Personnel Survey (GSPS), and GHPS. GHPS is a school-based survey of third-year students pursuing advanced degrees in dentistry, medicine, nursing, or pharmacy. GHPS uses a core questionnaire on demographics, prevalence of cigarette smoking and other tobacco use, knowledge and attitudes about tobacco use, exposure to secondhand smoke, desire for smoking cessation, and training received regarding patient counseling on smoking-cessation techniques. GHPS has a standardized methodology for selecting participating schools and classes and uniform data processing procedures. The GHPS Pilot Study surveyed third-year students from Albania (dental [57], medical [138], nursing [356], and pharmacy [56]), Argentina (Buenos Aires) (medical [348]), Bangladesh (dental [205]), Croatia (medical [404]), Egypt (medical [1,770]), Federation of Bosnia and Herzegovina (nursing [874]), India (dental [1,499]), the Philippines (pharmacy [1,045]), the Republic of Serbia (Belgrade) (dental [160], medical [218], and pharmacy [118]), and Uganda (medical [162] and nursing [444]).

Depending on the number of schools and third-year students in participating countries and disciplines and the resources available, the 16 GHPS studies included a census of students and schools or a sample of schools and a sample of students. Albania, Argentina (Buenos Aires), Bangladesh, Croatia, Egypt, the Republic of Serbia (Belgrade), and Uganda conducted a census of schools and third-year students. The Federation of Bosnia and Herzegovina, India, and the Philippines drew a two-stage sample of schools and classes of third-year students in selected schools. For each of the 16 surveys, the school response rate was 100%, and the third-year student response rate ranged from 65.6% (Republic of Serbia [Belgrade] [pharmacy students]) to 100% (Albania [pharmacy students]). GHPS was conducted in schools during regular class sessions. GHPS follows an anonymous, self-administered format for data collection, and the questionnaires were translated into local languages as needed. Current cigarette smokers were defined as those who reported that they currently smoke daily or occasionally. Differences in rates for these indicators were considered statistically significant at the $p<0.05$ level.

Current cigarette smoking among third-year health-profession students was most prevalent in Albania, Argentina

(Buenos Aires), Bangladesh, Croatia, Federation of Bosnia and Herzegovina, the Philippines, and the Republic of Serbia (Belgrade), with rates ranging from 18.1% (Republic of Serbia [Belgrade] medical students) to 47.1% (Albania pharmacy students) (Table 1); the lowest current smoking prevalences were reported among Ugandan nursing (0.5%) and medical (2.8%) students, Egyptian medical students (7.9%), and Indian dental students (9.6%). Male students were significantly more likely than female students to currently smoke cigarettes in Albania, Bangladesh, Egypt, India, Philippines, Republic of Serbia (Belgrade) (medical students only), and Uganda. Only among Serbian dental students were females significantly more likely than males to currently smoke cigarettes.

The majority of third-year students (range: 86.6%–99.8%) in all four health disciplines and in all 10 countries believed health professionals should advise patients about smoking cessation (Table 2). However, the percentage of third-year students who had received formal training in tobacco cessation counseling ranged from 5.2% among medical students in Argentina (Buenos Aires) to 36.6% among pharmacy students in the Philippines. Formal training can include classroom lectures, special seminars, clinical practicum, and other problem-based learning opportunities, but training of health professionals varies among countries and across disciplines within countries.

Data on receipt of formal cessation-counseling training among third-year students of different disciplines within the same country were available for Albania, the Republic of Serbia (Belgrade), and Uganda. In Albania, nursing students (22.6%) were significantly more likely than medical students (10.3%) or pharmacy students (7.7%) to have received such training but not significantly more likely than dental students (14.2%). In the Republic of Serbia (Belgrade), medical (32.6%) and dental (20.7%) students were significantly more likely than pharmacy students (9.5%) to have received cessation training. In Uganda, nursing students (35.1%) were more than twice as likely as medical students (15.9%) to have received training. More than 90% of third-year students (range: 90.3%–99.0%) in every survey except medical students in Croatia

TABLE 1. Prevalence of current cigarette smoking* among third-year health-profession students, by sex, country, and discipline — Global Health Professionals Survey Pilot Study, 10 countries, 2005

	Total			Male			Female		
Country/Discipline	No.†	%	(95% CI§)	No.	%	(95% CI)	No.	%	(95% CI)
Albania									
Dental	**41**	**30.1**	**(23.2–38.1)**	12	38.0	(24.9–53.1)	29	27.1	(19.4–36.6)
Medical	**114**	**43.3**	**(40.7–45.9)**	28	65.1	(59.8–69.9)	85	35.7	(32.8–38.7)
Nursing	**271**	**41.5**	**(37.9–45.1)**	63	57.5	(49.8–64.8)	208	36.4	(32.5–40.5)
Pharmacy	**40**	**47.1**	**(42.8–51.4)**	12	65.8	(58.0–72.9)	28	38.9	(34.1–44.0)
Argentina (Buenos Aires)									
Medical	**296**	**35.5**	**(33.6–37.4)**	118	33.4	(30.4–36.4)	177	36.5	(34.1–39.1)
Bangladesh									
Dental	**192**	**22.2**	**(18.2–26.8)**	84	46.7	(39.0–54.7)	108	3.3	(1.6–6.7)
Federation of Bosnia and Herzegovina									
Nursing	**791**	**33.0**	**(28.8–37.6)**	212	27.3	(21.1–34.5)	576	34.8	(29.8–40.2)
Croatia									
Medical	**377**	**36.6**	**(34.1–39.2)**	120	35.9	(31.5–40.4)	256	37.1	(34.1–40.3)
Egypt									
Medical	**1,749**	**7.9**	**(5.7–10.7)**	993	12.9	(9.9–16.5)	756	1.2	(0.5–3.0)
India									
Dental	**1,266**	**9.6**	**(6.7–13.6)**	719	14.9	(10.7–20.4)	541	2.4	(0.8–6.9)
Philippines									
Pharmacy	**595**	**22.1**	**(16.8–28.5)**	119	37.8	(26.5–50.5)	469	18.1	(12.8–24.9)
Republic of Serbia (Belgrade)									
Dental	**152**	**42.5**	**(39.1–45.9)**	42	30.2	(24.6–36.4)	110	47.2	(43.2–51.2)
Medical	**187**	**18.1**	**(15.9–20.7)**	54	23.8	(19.3–29.1)	133	15.9	(13.3–18.8)
Pharmacy	**113**	**20.4**	**(16.2–25.2)**	24	16.7	(9.5–27.7)	89	21.3	(16.6–26.9)
Uganda									
Medical	**151**	**2.8**	**(1.8–4.2)**	101	4.1	(2.7–6.3)	49	0	
Nursing	**378**	**0.5**	**(0.3–0.9)**	60	3.3	(1.9–5.6)	316	0	

* Current smokers were defined as those who reported that they currently smoke daily or occasionally.
† The reported number is the unweighted number of cases in the denominator. The male and female numbers might not add to the total number because of nonresponse on the question that determines sex.
§ Confidence interval.

TABLE 2. Third-year health-profession students' attitudes toward and training in smoking-cessation counseling, by country and discipline — Global Health Professionals Survey Pilot Study, 10 countries, 2005

Discipline/Country	Believe health professionals should give advice or information about smoking cessation to patients			Received formal training in cessation counseling			Believe health professionals should be trained in cessation techniques		
	No.*	%	(95% CI†)	No.	%	(95% CI)	No.	%	(95% CI)
Albania									
Dental	51	95.6	(91.2–97.9)	53	14.2	(9.7–20.2)	53	97.9	(94.2–99.3)
Medical	135	95.0	(93.8–95.9)	133	10.3	(9.0–11.9)	135	97.1	(96.2–97.8)
Nursing	331	89.4	(87.2–91.4)	338	22.6	(16.8–24.3)	336	96.7	(95.3–97.7)
Pharmacy	52	86.6	(83.9–89.0)	52	7.7	(5.9–10.0)	52	98.1	(96.8–98.9)
Argentina (Buenos Aires)									
Medical	304	98.8	(98.3–99.1)	305	5.2	(4.4–6.1)	305	91.3	(90.1–92.3)
Bangladesh									
Dental	204	98.1	(96.1–99.1)	204	24.9	(20.7–29.5)	202	97.5	(95.4–98.7)
Croatia									
Medical	393	97.7	(96.8–98.4)	392	14.5	(12.8–16.4)	395	71.7	(69.3–73.9)
Egypt									
Medical	1,767	91.1	(89.6–92.4)	1,770	20.9	(18.4–23.6)	1,766	92.5	(90.4–94.2)
Federation of Bosnia and Herzegovina									
Nursing			NA§	851	28.6	(23.7–34.0)	851	90.3	(87.8–92.3)
India									
Dental	1,335	99.8	(99.8–99.9)	1,332	10.5	(5.8–18.1)	1,339	99.0	(97.9–99.6)
Philippines									
Pharmacy	632	99.3	(98.3–99.7)	629	36.6	(30.6–43.1)	631	93.9	(91.7–95.5)
Republic of Serbia (Belgrade)									
Dental			NA	156	20.7	(18.1–23.6)	157	91.5	(89.5–93.2)
Medical			NA	190	32.6	(29.8–35.6)	189	95.9	(94.5–97.0)
Pharmacy			NA	116	9.5	(6.7–13.2)	116	93.1	(89.7–95.9)
Uganda									
Medical	153	98.8	(97.7–99.3)	154	15.9	(13.5–18.6)	154	97.3	(95.9–98.2)
Nursing	394	98.4	(97.8–98.9)	391	35.1	(33.2–37.0)	388	97.1	(96.3–97.7)

* The reported number is the unweighted number of cases in the denominator.
† Confidence interval.
§ Question not asked.

(71.7%) thought health-profession students should receive cessation counseling training as part of their normal curriculum.

Reported by: *V Costa de Silva, PhD, Tobacco Free Initiative, World Health Organization, Geneva, Switzerland. J Chauvin, Canadian Public Health Assoc, Ottawa, Canada. NR Jones, PhD, W Warren, PhD, S Asma, DDS, T Pechacek, PhD, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.*

Editorial Note: Health professionals who continue to smoke cigarettes send an inconsistent message to patients whom they counsel to quit smoking. Findings from the 2005 GHPS Pilot Study indicate that the current cigarette-smoking rate among third-year health-profession students is higher than 20% in seven of the 10 countries surveyed. The public health community should target cigarette smoking among health-profession students because this behavior endangers their own health and reduces their ability to deliver effective antitobacco counseling to their patients. The findings in this report also indicate that most third-year health-profession students in the countries surveyed did not receive formal training in smoking-cessation counseling, even though more than 90% of the same students want such training to be included in their formal curricula. All health-profession schools, public health organizations, and education officials should discourage tobacco use among health professionals and work together to design and implement programs that train all health professionals in effective cessation-counseling techniques.

The WHO Framework Convention for Tobacco Control (WHO-FCTC), adopted by the 56th World Health Assembly in May 2003, is the first international public health treaty on tobacco control (*9*). In addition to providing a blueprint for a global response to the pandemic of tobacco-induced death and disease, WHO-FCTC calls for countries to use standard methods and procedures for surveillance. GHPS provides

countries with a way to measure tobacco use among their third-year health-profession students, the desire for cessation among students who smoke, the extent to which students are being trained to provide tobacco-cessation counseling, and the willingness of students to use such training to reduce tobacco use among their patients. The GHPS Pilot Study proved successful in terms of school and student participation, fieldwork procedures, data collection, cost, and reliability of data. In light of these successes, GHPS will be expanded during academic year 2005–06 to include approximately 40 additional countries. The goal of WHO, CDC, and CPHA is to gather data from all four disciplines in as many of the 192 WHO member states by the end of academic year 2008.

The findings in this report are subject to at least four limitations. First, because GHPS respondents are third-year health-profession students who have not had substantial interaction with patients, survey results should not be extrapolated to account for practicing health professionals in any of the countries. Second, the GHPS did not survey students in all health professions whose members could provide patients with cessation counseling (e.g., chiropractors, traditional healers, psychologists, and counselors). Third, because adult smoking rates across countries are not collected by using a standardized and consistent methodology, comparison of the prevalence in this report with the prevalence in the general adult populations is not possible. Finally, a reliability study of the GHPS core questionnaire items has not been undertaken but is required before full expansion of the survey.

The theme of WHO's World No Tobacco Day (WNTD) 2005 is the role of health professionals in tobacco control. Organizations of health professionals are aware of members' potential role and responsibility in tobacco control, and several have already initiated specific activities. For example, the Doctors' Manifesto for Tobacco Control was launched in 2002 with the support of medical associations worldwide (*10*). In addition, several individual associations have adopted their own codes regarding tobacco control, such as the provision in the Pharmacists against Tobacco code of practice that bans smoking in pharmacies.* Countries in each of the six WHO regions will sponsor events for WNTD 2005, including the dissemination of GHPS findings. A list of the events is available at http://www.who.int/tobacco/communications/events/wntd/2005.

Acknowledgments

This report is based, in part, on contributions by F Musoke, Makerere Univ, Kampala, Uganda. NA Labib, Cairo Univ, Cairo, Egypt. H Vrazic, European Medical Students' Assoc, Zagreb, Croatia. R Shuperka, Institute of Public Health; A Lena, For a Tobacco Free Albania, Tirana, Albania. A Ramic-Catak, Federal Public Health Institute, Sarajevo, Federation of Bosnia and Herzegovina. D Stojiljkovic, Ministry of Health, Belgrade, Republic of Serbia. R Pitarque, Municipality of Olavaria, Buenos Aires, Argentina. Z Ali, Bangladesh Institute of Development Studies, Dhaka, Bangladesh. M Shah, Government Dental College and Hospital, Ahmedabad, India. M Miguel-Baquilod, Ministry of Health, Manila, Philippines. N Schneider, European Medical Students' Assoc, Heidelberg, Germany. H Richter-Airijoki, C Audera-Lopez, T Musa, J-P Baptiste, T Butua, F El-Awa, H Nikogosian, K Schotte, A Peruga, K Rahman, B Fishburn, J Santos Tobacco Free Initiative, World Health Organization, Geneva, Switzerland.

References

1. Peto R, Lopez AD. Future worldwide health effects of current smoking patterns. In: Koop CD, Pearson C, Schwarz MR, eds. Critical issues in global health. New York, NY: Jossey-Bass; 2001.
2. US Department of Health and Human Services. Reducing tobacco use: a report of the Surgeon General. Atlanta, GA: US Department of Health and Human Services, CDC; 2000.
3. Fiore MC, Bailey WC, Cohen SJ, et al. Treating tobacco use and dependence. Clinical practice guideline. Rockville, MD: US Department of Health and Human Services; 2000.
4. Lancaster T, Stead L, Silagy C, et al. Effectiveness of interventions to help people stop smoking: findings from the Cochrane Library. BMJ 2000;321:355–8.
5. Gupta PC, Ray CS. Smokeless tobacco and health in India and South Asia. Respirology 2003;8:419–31.
6. Naskar NN, Bhattacharya SK. A study on drug abuse among the undergraduate medical students in Calcutta. J Indian Med Assoc 1999;97:20–1.
7. Mammas IN, Bertsias GK, Linardakis M, Tzanakis NE, Labadarios DN, Kafatos AG. Cigarette smoking, alcohol consumption, and serum lipid profile among medical students in Greece. Eur J Public Health 2003;13:278–82.
8. Vakeflliu Y, Argjiri D, Poposhi I, Agron S, Melani AS. Tobacco smoking habits, beliefs, and attitudes among medical students in Tirana, Albania. Prev Med 2002;34:370–3.
9. World Health Organization. WHO framework convention on tobacco control. Geneva, Switzerland: World Health Organization; 2003. Available at http://www.who.int/tobacco/framework.
10. Tobacco under the microscope: the doctors' manifesto for global tobacco control. Edinburgh, United Kingdom: British Medical Association Tobacco Control Resource Centre; 2002. Available at http://www.doctorsmanifesto.org.

* Additional information is available at http://www.fip.org/pharmacistsagainsttobacco.

Cigarette Smoking Among Adults — United States, 2003

One of the national health objectives for 2010 is to reduce the prevalence of cigarette smoking among adults to 12% (objective 27-1a) (*1*). To assess progress toward this objective, CDC analyzed self-reported data from the 2003 National Health Interview Survey (NHIS). The results of that analysis indicated that, in 2003, approximately 21.6% of U.S. adults were current smokers. Although this prevalence is lower than

the 22.5% prevalence among U.S. adults in 2002 and significantly lower than the 22.8% prevalence in 2001, the rate of decline is not sufficient to meet the national health objective for 2010 (*2*). Comprehensive, sustained interventions that reduce the rate of smoking initiation and increase the rate of cessation are needed to further the decline in cigarette smoking among adults (*3*).

Questions on smoking in the 2003 NHIS were included in the adult core questionnaire, which was administered by in-person interview to a nationally representative sample of 30,852 persons aged ≥18 years in the civilian, noninstitutionalized U.S. population; survey response rate for adults was 74.2%. Respondents were asked, "Have you smoked at least 100 cigarettes in your entire life?" and "Do you now smoke cigarettes every day, some days, or not at all?" Ever smokers were defined as those who reported smoking ≥100 cigarettes during their lifetimes. Current smokers were defined as those who reported smoking ≥100 cigarettes during their lifetimes and currently smoking every day or some days. Former smokers were defined as ever smokers who no longer smoked. Poverty-level status was calculated on the basis of U.S. Census Bureau 2002 poverty thresholds. Data were adjusted for nonrespondents and weighted to provide national estimates of cigarette smoking prevalence; 95% confidence intervals (CIs) were calculated to account for the multistage probability sample design.

In 2003, an estimated 21.6% (45.4 million) of U.S. adults were current smokers; of these, 81.0% (36.8 million) smoked every day, and 19.0% (8.6 million) smoked some days. Among those who currently smoked every day, 41.1% (15.1 million) reported they had stopped smoking for at least 1 day during the preceding 12 months because they were trying to quit. Among the estimated 43.4% (91.5 million) of persons who had ever smoked, 50.3% (45.9 million) were former smokers.

Prevalence of current cigarette smoking varied substantially across populations and subpopulations (Table). More men (24.1%) than women (19.2%) reported current smoking. Among racial/ethnic populations, Asians (11.7%) and Hispanics (16.4%) had the lowest prevalence, and American Indians/Alaska Natives had the highest prevalence (39.7%). By education level, smoking prevalence was highest among adults who had earned a General Educational Development diploma (44.4%) and lowest among those with graduate degrees (7.5%). Among age groups, persons aged ≥65 years had the lowest prevalence of cigarette smoking (9.1%), and persons aged 25–44 years had the highest prevalence (25.6%). Current smoking prevalence was higher among adults living below the poverty level (30.5%) than among those at or above the poverty level (21.7%).

Persons in certain subpopulations had cigarette smoking prevalence rates below the 2010 health objective target of 12%. These subpopulations included women with undergraduate (11.0%) or graduate degrees (6.7%), men with graduate degrees (8.1%), Hispanic women (10.3%), Asian women (6.5%), and men and women aged ≥65 years (10.1% and 8.3%, respectively) (Table).

During 1983–2003, a sustained decline in cigarette smoking occurred in all age groups except persons aged 18–24 years (Figure). In this group, prevalence increased during 1993–2002, before declining significantly from 28.5% in 2002 to 23.9% in 2003, the lowest reported prevalence for persons aged 18–24 years since 1991 (*4*).

Reported by: *A Trosclair, MS, R Caraballo, PhD, A Malarcher, MD, C Husten, MD, T Pechacek, PhD, Office on Smoking and Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.*

Editorial Note: The findings in this report indicate that cigarette smoking continues to decline among adults in the United States. In 2003, for the first time since NHIS began collecting smoking data in 1965, the prevalence of cigarette smoking among women declined below 20%, to 19.2%. For the second consecutive year, more than half of U.S. adults who ever smoked reported they were no longer smokers. In addition, cigarette smoking among persons aged 18–24 years declined to the lowest level since 1991. The increase in smoking prevalence among young adults during 1991–2002 was similar to an increase in smoking among youths in 8th, 10th, and 12th grades during the early 1990s (*5*). Factors associated with the increase in smoking among adolescents (e.g., increased tobacco industry marketing to youths) might have had a similar influence on smoking prevalence among young adults (*6*). A cohort effect might also have contributed to the increase in smoking prevalence among young adults, as youths with high rates of smoking during the early 1990s entered the young adult age group during 1992–2002 (*5–7*).

Although tobacco use usually begins during adolescence, initiation also can occur during young adulthood (*6,7*). Preventing smoking initiation and tobacco use among youths and young adults is critical to reducing tobacco use in the United States. Young adults, who constitute the youngest legal market for the tobacco industry in the United States, and adolescents continue to be the target of intensive tobacco industry marketing efforts, including sponsorship of age-specific promotions and other marketing strategies that appeal to persons in these age groups (*7,8*).

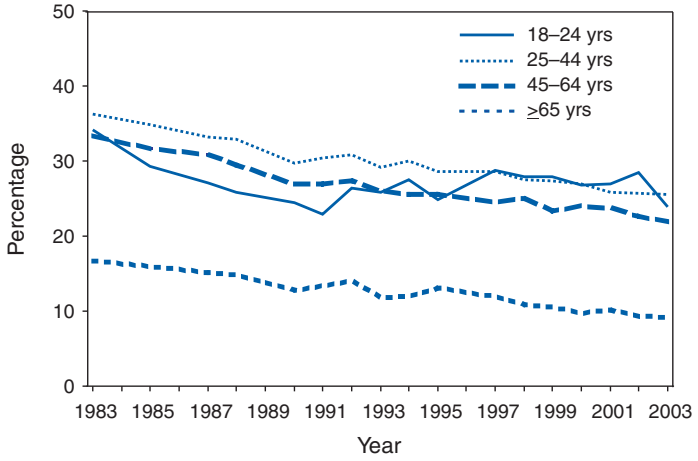
Efforts to reduce cigarette smoking prevalence among all adults include increasing the retail price of tobacco products and implementing complete smoking bans in all worksites, campuses, sports arenas, concert venues, bars, restaurants, and

TABLE. Percentage of persons aged ≥18 years who were current smokers,* by sex and selected characteristics — National Health Interview Survey, United States, 2003

Characteristic	Men (n = 13,427) %	Men (n = 13,427) (95% CI†)	Women (n = 17,425) %	Women (n = 17,425) (95% CI)	Total (N = 30,852) %	Total (N = 30,852) (95% CI)
Race/Ethnicity§						
White, non-Hispanic	24.3	(±1.0)	21.2	(±0.9)	**22.7**	**(±0.7)**
Black, non-Hispanic	25.5	(±2.5)	18.3	(±1.8)	**21.5**	**(±1.6)**
Hispanic	22.1	(±2.0)	10.3	(±1.1)	**16.4**	**(±1.2)**
American Indian/Alaska Native¶	42.0	(±15.9)	37.3	(±14.7)	**39.7**	**(±11.9)**
Asian**	17.5	(±4.5)	6.5	(±2.2)	**11.7**	**(±2.5)**
Education††						
0–12 (no diploma)	32.4	(±2.1)	21.2	(±1.9)	**26.6**	**(±1.4)**
<8 yrs	23.4	(±2.9)	11.8	(±2.0)	**17.6**	**(±1.8)**
9–11 yrs	40.6	(±3.4)	28.5	(±3.0)	**34.0**	**(±2.3)**
12 yrs (no diploma)	35.2	(±7.7)	23.7	(±5.8)	**29.3**	**(±4.6)**
GED (diploma)§§	43.4	(±5.9)	45.6	(±5.8)	**44.4**	**(±4.1)**
12 yrs (diploma)	29.2	(±2.0)	22.1	(±1.5)	**25.4**	**(±1.2)**
Associate degree	21.9	(±2.9)	18.2	(±2.1)	**19.8**	**(±1.7)**
Some college (no degree)	23.7	(±1.8)	20.4	(±1.3)	**21.9**	**(±1.1)**
Undergraduate degree	13.6	(±1.8)	11.0	(±1.5)	**12.3**	**(±1.1)**
Graduate degree	8.1	(±1.6)	6.7	(±1.5)	**7.5**	**(±1.1)**
Age group (yrs)						
18–24	26.3	(±2.6)	21.5	(±2.3)	**23.9**	**(±1.8)**
25–44	28.4	(±1.4)	22.8	(±1.2)	**25.6**	**(±1.0)**
45–64	23.9	(±1.5)	20.2	(±1.4)	**22.0**	**(±1.0)**
≥65	10.1	(±1.4)	8.3	(±1.1)	**9.1**	**(±0.9)**
Poverty level¶¶						
At or above	24.2	(±1.0)	19.1	(±0.9)	**21.7**	**(±0.7)**
Below	33.0	(±3.1)	28.8	(±2.5)	**30.5**	**(±2.1)**
Unknown	21.2	(±1.6)	16.0	(±1.3)	**18.4**	**(±1.0)**
Total	**24.1**	**(±0.8)**	**19.2**	**(±0.7)**	**21.6**	**(±0.6)**

* Persons who reported smoking at least 100 cigarettes during their lifetimes and who reported at the time of interview smoking every day or some days. Excludes 402 respondents whose smoking status was unknown.
† Confidence interval.
§ Excludes 310 respondents of unknown or multiple racial/ethnic categories or whose race/ethnicity was unknown.
¶ Wide variances among estimates reflect small sample sizes.
** Does not include Native Hawaiians or other Pacific Islanders.
†† Among persons aged ≥25 years; excludes 409 persons with unknown years of education.
§§ General Educational Development.
¶¶ Calculated on the basis of U.S. Census Bureau 2002 poverty thresholds.

FIGURE. Percentage of current cigarette smoking among persons aged ≥18 years, by age group and year — National Health Interview Survey, United States, 1983–2003



nightclubs. Strategies for reducing cigarette smoking prevalence among young adults include 1) providing effective smoking-cessation interventions and quitlines tailored to youths and young adults in school, work, and community settings; 2) conducting countermarketing campaigns designed to help young persons reject messages promoting cigarette use, reduce access by minors to tobacco products, and increase access to school programs for preventing tobacco use; and 3) monitoring smoking trends among youths and young adults (*6–10*). Ongoing surveillance of smoking patterns among young adults and evaluation of tobacco-control programs can identify those interventions that are most effective for this age group.

The findings in this report are subject to at least four limitations. First, the wording of questions about cigarette smoking and NHIS data collection procedures have changed since 1993. Before 1993, current smokers were defined as those

who had smoked at least 100 cigarettes and currently smoked. Starting in 1993, current smokers were defined as those who had smoked at least 100 cigarettes and currently smoked either every day or some days. Therefore, any comparison of data collected before 1993 with data collected since 1993 should be interpreted with caution. Second, many young adults view themselves as "social smokers" and might not identify themselves as smokers even on "some days" when completing the NHIS questionnaire, leading to underestimates of current smoking. Third, the NHIS questionnaire is administered only in English and Spanish, which might lead to imprecise estimates of smoking prevalence among other racial/ethnic populations who are unable to respond to the survey. Finally, because NHIS sample sizes for some subpopulations are minimal (e.g., Asians and American Indians/Alaska Natives), estimates derived from 1 year of data are less precise for these groups.

Effective interventions for tobacco-use prevention and cessation should be implemented in the United States among persons of all ages to accelerate the decline in smoking prevalence among adults and decrease the public health burden of tobacco-related diseases (*3,6–10*). In addition, tailored interventions for populations and subpopulations at high risk are needed to reduce disparities in cigarette smoking by age, race/ethnicity, and education level.

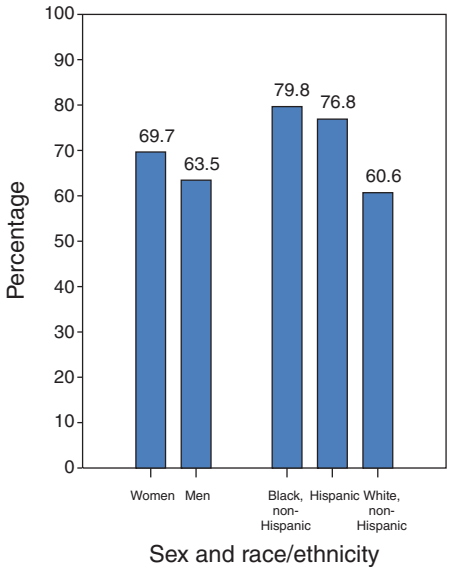
References

1. US Department of Health and Human Services. Healthy people 2010: understanding and improving health. 2nd ed. Washington, DC: US Department of Health and Human Services; 2000. Available at http://www.healthypeople.gov.
2. CDC. Cigarette smoking among adults—United States, 2002. MMWR 2004;53:427–31.
3. Task Force on Community Preventive Services. The guide to community preventive services: tobacco use prevention and control. Am J Prev Med 2001;20(2 Suppl 1):1–87.
4. CDC. Cigarette smoking among adults—United States, 1991. MMWR 1993;42:230–3.
5. Johnston LD, O'Malley PM, Bachman JG, Schulenberg JE. Monitoring the future: national survey results on drug use, 1975–2003. Volume I: secondary school students. Bethesda, MD: National Institutes of Health, National Institute on Drug Abuse; 2004. DHHS publication no. (NIH) 04-5507.

QuickStats

FROM THE NATIONAL CENTER FOR HEALTH STATISTICS

Percentage of Adults Aged 18–24 Years Who Have Never Smoked Cigarettes*, by Sex and Race/Ethnicity — United States, 2002–2003



* Have not smoked 100 or more cigarettes during their lifetimes.

During 2002–2003, young women were more likely than young men to report having never smoked cigarettes. Among those aged 18–24 years, Hispanic and non-Hispanic black adults were more likely than non-Hispanic white adults to have never smoked.

Source: National Health Interview Surveys, 2002 and 2003. Available at http://www.cdc.gov/nchs/nhis.htm.

6. Lantz PM. Smoking on the rise among young adults: implications for research and policy. Tob Control 2003;12(Suppl 1):i60–i70.
7. Backinger CL, Fagan P, Matthews E, Grana R. Adolescent and young adult tobacco prevention and cessation: current status and future directions. Tob Control 2003;12(Suppl 4):iv46–iv53.
8. Ling PM, Glantz SA. Why and how the tobacco industry sells cigarettes to young adults: evidence from industry documents. Am J Public Health 2002;92:908–16.
9. Orleans CT, Arkin EB, Backinger CL, et al. Youth tobacco cessation collaborative and national blueprint for action. Am J Health Behavior 2003;27(Suppl 2):S103–S119.
10. Chaloupka FJ, Cummings KM, Morley CP, Horan JK. Tax, price, and cigarette smoking: evidence from the tobacco documents and implications for tobacco company marketing strategies. Tob Control 2002;11(Suppl 1):i62–i72.

Blood Lead Levels — United States, 1999–2002

Adverse health effects caused by lead exposure include intellectual and behavioral deficits in children and hypertension and kidney disease in adults (*1*). Exposure to lead is an important public health problem, particularly for young children (*2*). Eliminating blood lead levels (BLLs) ≥10 µg/dL in children is one of the national health objectives for 2010 (objective no. 8-11) (*3,4*). Findings of National Health and Nutrition Examination Surveys (NHANES) from the period 1976–1980 to 1991–1994 reveal a steep decline (from 77.8% to 4.4%) in the percentage of children aged 1–5 years with BLLs ≥10 µg/dL (*5,6*). However, BLLs remain higher for certain populations, especially children in minority populations, children from low-income families, and children who live in older homes (*5*). This report updates estimates of BLLs in the U.S. population with the latest NHANES data, collected during 1999–2002. The findings indicated that BLLs continued to decrease in all age groups and racial/ethnic populations. During 1999–2002, the overall prevalence of elevated BLLs for the U.S. population aged ≥1 year was 0.7%. BLLs in non-Hispanic black children remained higher than in non-Hispanic white or Mexican-American children, although the proportion of BLLs ≥10 µg/dL in this population decreased (72%) since 1991–1994. Approximately 310,000 children aged 1–5 years remained at risk for exposure to harmful lead levels. Public health agencies should continue efforts to eliminate or control sources of lead, screen persons at highest risk for exposure, and provide timely medical and environmental interventions for those identified with elevated BLLs.

NHANES is an ongoing series of cross-sectional surveys on health and nutrition designed to be nationally representative of the noninstitutionalized, U.S. civilian population by using a complex, multistage probability design. All NHANES surveys included a household interview followed by a detailed physical examination in a mobile examination center (MEC), at which time venous blood samples were obtained from persons aged ≥1 year. BLLs were measured by graphite furnace atomic absorption spectrophotometry in the inorganic toxicology laboratory at CDC.

Detailed analyses compared BLLs of 16,825 persons from the NHANES survey conducted during 1999–2002 with BLLs of 13,472 persons from the NHANES survey conducted during 1991–1994. Results were analyzed by age group, race/ethnicity (i.e., non-Hispanic white, non-Hispanic black, and Mexican American), and low-income status (with the threshold determined by multiplying the U.S. Census Bureau poverty level threshold for the year of the interview by 1.3). Elevated BLLs were defined as BLLs ≥10 µg/dL for all ages. Geometric mean (GM) BLLs and 95% confidence intervals were calculated. All analyses used MEC sample weights to account for the unequal probability of selection, oversampling, and survey nonresponse.

For 1999–2002, the overall prevalence of elevated BLLs for the U.S. population was 0.7% (Table 1), a decrease of 68% from 2.2% in the 1991–1994 survey. The largest decrease (72%) in elevated BLLs, from 11.2% to 3.1%, was among non-Hispanic black children aged 1–5 years, consistent with a previous decline from 1988–1991 to 1991–1994 (Figure).

During the 1999–2002 survey period, children aged 1–5 years had the highest prevalence of elevated BLLs (1.6%), indicating that approximately 310,000 children in that age group remained at risk for exposure to harmful lead levels. Youths aged 6–19 years had the lowest prevalence of elevated BLLs (0.2%), although this estimate was not statistically reliable. Overall, by race/ethnicity, non-Hispanic blacks and Mexican Americans had higher percentages of elevated BLLs (1.4% and 1.5%, respectively) than non-Hispanic whites (0.5%) (Table 1). Among subpopulations, non-Hispanic blacks aged 1–5 years and aged ≥60 years had the highest prevalence of elevated BLLs (3.1% and 3.4%, respectively). Although the prevalence of elevated BLLs among non-Hispanic black children was higher compared with children in the other two racial/ethnic populations, statistical power was not sufficient to examine these differences because of the small proportions and variability around the estimates.

GM BLLs declined significantly ($p<0.05$) from the 1991–1994 survey period in all populations and subpopulations (Table 2). Overall, the GM BLL declined from 2.3 µg/dL in 1991–1994 to 1.6 µg/dL in 1999–2002. The highest GM BLLs in 1999–2002 were among children aged 1–5 years (1.9 µg/dL) and adults aged ≥60 years (2.2 µg/dL), and the lowest were among youths aged 6–19 years (1.1 µg/dL). Males had significantly higher GM BLLs than females, except among children aged 1–5 years, which is consistent with the 1991–