Behavioral Risk Factor Surveillance System

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Contents

High Blood Pressure & High Blood Cholesterol

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Introduction

Blood pressure is the force in the arteries when the heart beats (systolic pressure) and when the heart is at rest (diastolic pressure). It is measured in millimeters of mercury (mm Hg). High blood pressure (or **hypertension**) is defined in an adult as a blood pressure greater than or equal to 140 mm Hg systolic pressure or greater than or equal to 90 mm Hg diastolic pressure. Blood pressure between 120-139 mm Hg systolic pressure or 80-89 mm Hg diastolic defines **prehypertension**. People in this category are considered likely to develop hypertension in the future.[1]

High blood pressure increases the risk for a number of diseases, including congestive heart failure, kidney failure, heart attack, and stroke. When other risk factors are present (e.g., overweight, smoking, and physical inactivity), the risk from high blood pressure increases several-fold. Over 46,000 Americans had high blood pressure listed on their death certificates as the primary cause of death in 2001 and it has been estimated that approximately 50 million Americans have high blood pressure.[2] Of those with high blood pressure, 30 percent don't know they have it; 34 percent are on medication and have it controlled; 25 percent are on medication but don't have their high blood pressure under control; and 11 percent aren't on medication.[3]

Cholesterol is a soft, fat-like, waxy substance found in the bloodstream and in all body cells. Cholesterol is an important part of a healthy body because it is used for producing cell membranes and some hormones, and serves other needed bodily functions. **Hypercholesterolemia** is the term for high levels of blood cholesterol.[2]

Copies may be obtained by contacting:

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New York State Department of Health
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High blood cholesterol is a major risk factor for heart disease and stroke. Lowering high blood cholesterol levels will decrease the incidence of coronary heart disease and decrease mortality.[4] Approximately 37 million Americans had high blood cholesterol in 2001. Furthermore, fewer than half of all Americans with high blood cholesterol are receiving medical treatment and only about half of the people who are prescribed a medication are still taking it six months later. [2]

Data Collection

This report includes information gathered through the Behavioral Risk Factor Surveillance System (BRFSS) in odd years from 1991 through 2001. The BRFSS is conducted with funds and technical assistance from the Centers for Disease Control and Prevention (CDC). New York State began conducting this survey annually in 1985. Questions developed by CDC are administered via a telephone survey to a representative sample of the adult (18 and older), non-institutionalized population. This survey provides information on behaviors and risk factors for chronic diseases, infectious diseases, and other health conditions for New York State adults. Sample sizes for the NYS BRFSS survey for the odd years from 1991 through 2001 were; 1,923, 2,389, 2,477, 2,650, and 3,899 respectively

High Blood Pressure and Medical Treatment

To estimate how many adults have high blood pressure, respondents were asked if a doctor, nurse, or other health professional had ever told them that they have high blood pressure. In 1991, 22% of the New York State adult population was estimated to have high blood pressure (Figure 1). This prevalence remained nearly constant until 2001, when the prevalence was found to be four percent higher than the 1991 estimate. The age-adjusted* prevalence for 2001 is not significantly different from that for 1991, however. As expected, the prevalence of hypertension increases with age (Table 1). For the 45-54 year-old age group, the prevalence of hypertension (25%) exceeds the corresponding Healthy People 2010 (HP2010†) objective (16%). More than 50% of the population in the oldest age group (ages 65 years and over) was estimated to have high blood pressure. There were no significant differences found in hypertension prevalence between whites (27%), African-Americans (32%) and Hispanics (21%). Respondents who classified themselves as belonging to another race or ethnic group (18%) had a significantly lower prevalence than whites. People in this category were mostly of Asian background. People with disabilities had a prevalence of hypertension rate almost twice as high as those without disabilities (42% and 23%, respectively) (chi-square 58.68, $p < .01$)

The 926 respondents who reported that they had been told they have high blood pressure were also asked if they were currently taking medicine for the condition. Sixty-nine percent of New York adults with high blood pressure reported that they took medication to treat it (Table 1). Older people

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* Age-adjusted rates are used to compare population groups that have different age compositions. Age is known to be associated with health conditions and risk factors.

† Healthy People 2010 is a set of health objectives for the Nation to achieve over the first decade of the new century. It can be used by many different people, States, communities, professional organizations, and others to help them develop programs to improve health. For more information, visit their web site: http://www.healthypeople.gov/

are far more likely to report using medication to treat their high blood pressure. Only 4% of people aged 18 through 24 years old reported using medications, but among the oldest age group, 87% used such treatments. Men (63%) were less likely to report medical treatment than women (75%) (chi-square= 12.94, $p < .01$). Although people with disabilities were more likely to have high blood pressure, they were also more likely to be taking medications to treat it. Eighty percent of people with disabilities who reported having hypertension were taking medications, compared to 64% for those without disabilities (chi-square 26.65, $p < .01$)

High Blood Cholesterol and Screening

To estimate how many adults have high blood cholesterol, respondents were asked if a doctor, nurse, or other health professional had ever told them that their cholesterol was high. In 1991, 25% of adults in New York reported being told they had high blood cholesterol (Figure 2). Although the prevalence varied over the intervening years, the 2001 prevalence of 30% is a significant increase from 1991. The corresponding age-adjusted prevalences for these measures were also significantly different, indicating that the upward shift cannot entirely be explained by New York State's increasing average age (t-test -3.15, $p < .01$). As with hypertension, the prevalence of high blood cholesterol increased in successively older age groups (Table 1) with the 35-44 year-old age group exceeding its HP2010 goal (23% vs. <17% respectively) (chi square 394.54, $p < .01$). The high blood cholesterol breakdown observed for disability was also similar to that found for high blood pressure. People reporting disabilities were nearly twice as likely to report high blood cholesterol (45% vs. 27% respectively) (chi-square 44.23, $p < .01$). No substantial difference in rates for high blood cholesterol were observed by race, gender, income, or education groupings.

All respondents who reported that they had had their blood cholesterol checked were asked about how long it has been since their last screening. Seventy-seven percent of respondents reported that they had their cholesterol checked within the last 5 years. This was very close to the corresponding HP2010 goal (80%). Respondents in younger age groups were unlikely to report that they had been screened for elevated blood cholesterol, but by the ages of 35 through 44 years, 76% of the sample had been screened. A higher proportion of whites reported that they had been tested (80%) than any other group, but only the difference between whites and Hispanics (67%) was statistically significant (chi-square 19.40, $p < .05$). People with disabilities were more likely to report that they have had their cholesterol screened within the past 5 years than other people (83% vs. 76%, respectively) (chi-square 9.52, $p < .01$).

Discussion

Heart disease and stroke are two of the three leading causes of death in New York State. Hypertension and high blood cholesterol are major risk factors for both. The upward pattern observed for both of these conditions in the above analysis corresponds to patterns found for the nation as a whole.[5, 6] This may be partly due to the corresponding trends of increased obesity.[7] Whatever the reason for this upward trend, this pattern suggests that treatment and control of these conditions must be an important focus of public health efforts. These conditions are easy to identify and treatments are available, yet many New Yorkers are not being screened or treated. Of particular concern are the high prevalence of both risk factors among people with disabilities and low-income individuals.

The New York State Healthy Heart Program has highlighted issues about hypertension and high blood cholesterol in *Cardiovascular Health in New York State: A Plan for 2004 – 2010*. This Plan recommends adhering to evidence-based guidelines, including those of National Heart, Lung and Blood Institute covering screening and treatment for hypertension and high blood cholesterol. The Healthy Heart Program works with health professionals to institute protocols in health care settings that will make it easier to follow these guidelines and that will ensure that all patients receive the recommended care.

Figure 1. **Adults (aged 18 years and older) who had been told they have high blood pressure: New York State BRFSS, 1991-2001.**

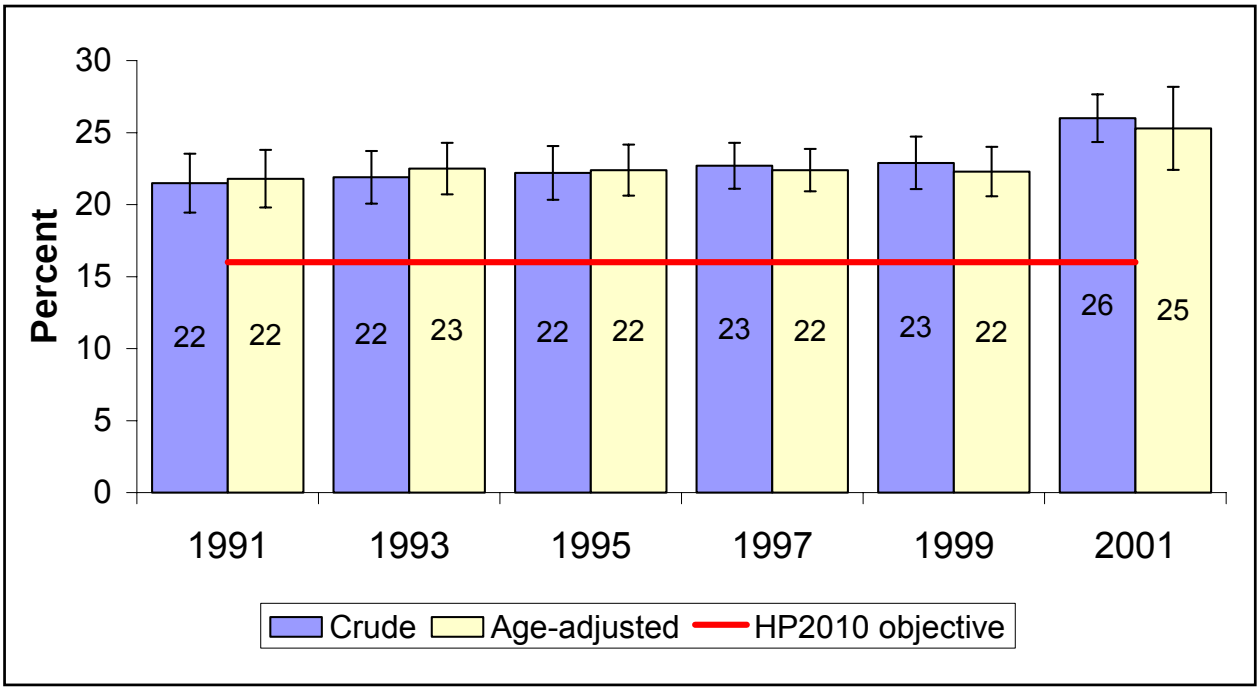
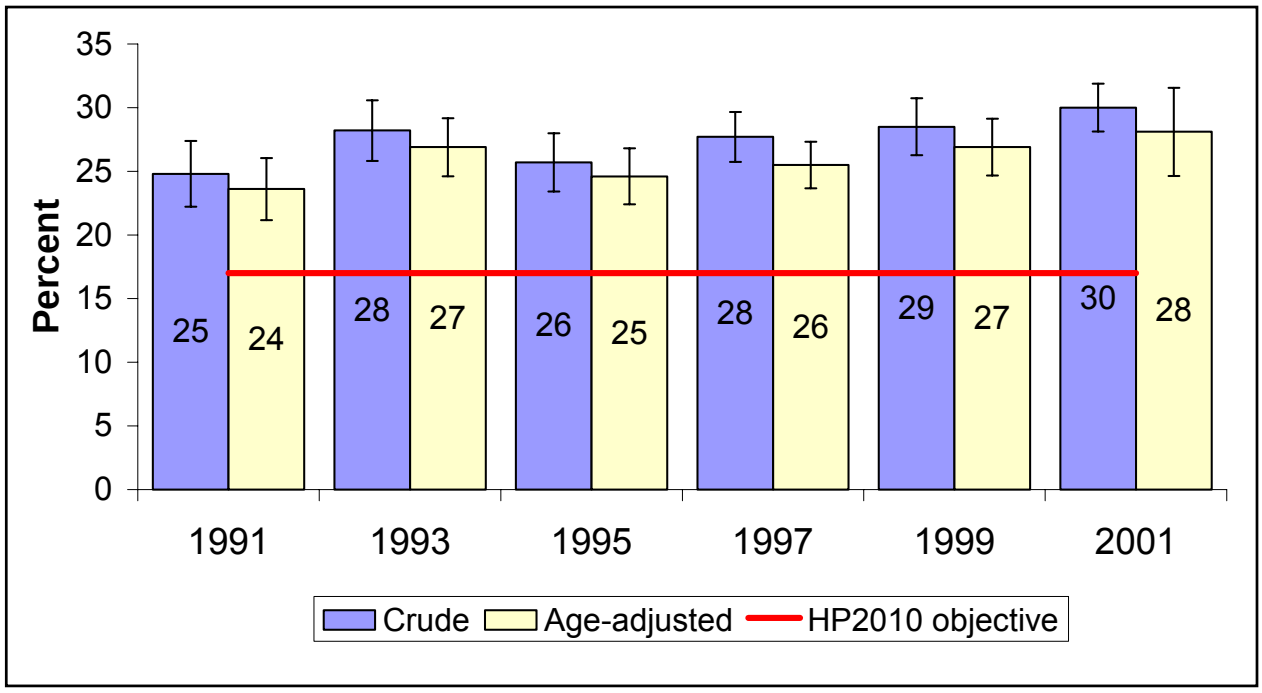


Figure 2. **Adults (aged 18 years and older) who had been told they have high blood cholesterol: New York State BRFSS, 1991-2001.**



Note: Age-adjustment is to the 2000 U.S. Population

Table 1. Blood pressure and blood cholesterol, adults (aged 18 years and older): New York State BRFSS, 2001

	Blood Pressure				Blood Cholesterol			
	Hypertension[1]		Taking Medication[2]		High Cholesterol[3]		Screened Within 5 Years[4]	
	%	± CI 95%	%	± CI 95%	%	± CI 95%	%	± CI 95%
HP2010 Goal	*16.0*		*NA*		*17.0*		*80.0*	
New York State	26.0	1.7	69.1	3.4	30.0	1.9	77.3	1.7
Region								
NYS exclusive of NYC	27.9	2.0	71.5	3.9	30.2	2.2	79.7	1.9
New York City	22.5	2.8	63.7	7.0	30.0	3.5	72.7	3.3
Age (years)								
18 - 24	6.9	2.9	4.0 *	7.7	11.8	5.0	55.5	6.8
25 - 34	10.7	2.5	18.5	9.6	17.3	3.6	62.8	4.4
35 - 44	15.0	2.9	45.1	10.7	22.9	3.7	75.8	3.3
45 - 54	24.9	3.9	65.3	8.8	32.9	4.4	84.9	3.1
55 - 64	42.0	5.1	79.9	6.7	39.1	5.3	92.6	2.6
≥ 65	57.6	4.5	87.1	4.8	45.4	4.7	88.2	3.6
Race/ethinicity								
White	26.8	1.9	69.0	3.7	31.6	2.1	80.8	1.8
African American	31.9	5.9	72.4	11.6	23.6	6.4	73.9	5.7
Hispanic	21.3	4.4	64.7 *	11.1	28.9	5.7	66.9	5.6
Other	18.3	6.6	71.5	16.9	29.8	8.4	78.1	6.1
Gender								
Male	26.6	2.5	62.5	5.4	33.1	3.0	75.3	2.7
Female	25.5	2.2	75.2	4.2	27.6	2.4	79.1	2.2
Income (per year)								
< $15,000	37.8	6.0	80.2	7.8	31.8	6.6	70.7	5.9
$15,000- 24,999	27.9	4.5	73.2	8.4	35.8	5.7	67.5	5.6
$25,000- 34,999	31.7	5.1	69.9	9.0	37.9	5.7	79.7	4.2
$35,000- 49,999	25.5	4.4	63.8	9.8	25.6	4.7	72.2	4.6
$50,000- 74,999	23.4	3.8	57.6	9.4	30.4	4.4	83.3	3.5
≥ $75,000	19.9	3.5	64.4	9.6	24.4	3.6	85.7	3.5
missing	24.0	4.2	74.1	8.8	30.1	5.2	77.0	4.2
Educational Attainment								
< High School	36.4	5.9	75.0	8.5	37.4	6.8	65.1	6.5
High School or G.E.D	27.6	3.1	69.9	6.0	31.2	3.7	74.6	3.2
Some post-High School	23.9	3.1	61.6	7.4	28.5	3.6	78.1	3.3
College graduate	21.8	2.6	70.2	6.1	28.2	2.9	84.3	2.1
Disability[5]								
Yes	41.8	4.4	82.4	5.3	45.4	4.9	82.7	3.8
No	22.5	1.7	63.9	4.2	26.5	2.0	76.1	1.9

[1] Have you ever been told by a doctor, nurse, or other health professional that you have high blood pressure?

[2] Are you currently taking medicine for your high blood pressure?

[3] Have you ever been told by a doctor, nurse, or other health professional that your blood cholesterol is high?

[4] About how long has it been since you last had your blood cholesterol checked?

[5] All respondents who report activity limitations due to physical, mental, or emotional reasons OR have health problems that require the use of special equipment.

* Unreliable estimate due to small sample size (n< 50)

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Additional Web-based Resources

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Centers for Disease Control and Prevention. The Burden of Chronic Diseases and Their Risk Factors: National and State Perspectives 2004. http://www.cdc.gov/nccdphp/burdenbook2004 February 2004.

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New York State Department of Health. The Burden of Cardiovascular Disease in New York: Mortality, Prevalence, Risk Factors, Costs, and Selected Populations. www.health.state.ny.us/nysdoh/chronic_disease/cardiovascular/burdenofcvdinnys.pdf.