

2006 GEORGIA STROKE AND HEART ATTACK AWARENESS SURVEY



Introduction

Cardiovascular disease (CVD) is the leading cause of death in Georgia, accounting for one third (32%) of deaths in 2006. Georgia's CVD death rate is 9% higher than the U.S. average. In 2006, approximately 143,800 hospitalizations occurred due to CVD among Georgia residents, with an average charge of \$30,700 per hospitalization. Total hospital charges for CVD in Georgia were \$4.4 billion. The overall cost of CVD in Georgia is estimated to be \$10.5 billion. This includes direct health care costs and lost productivity from illness and death (indirect costs).¹ Stroke is the third leading cause of death in Georgia, accounting for 6% of all deaths. In 2006, Georgia's stroke death rate was 16% higher than the national rate.

Significant disparities exist for CVD in Georgia. Death rates for men are 1.4 times higher than for women, and are 1.3 times higher for blacks than for whites. Black males are at particularly high risk for premature death due to CVD: nearly half of those who died from CVD in 2006 were younger than 65. Many Georgians also place themselves at higher risk for CVD by not modifying their risk factors, which include high blood pressure, high cholesterol, overweight/obesity, sedentary lifestyle, smoking, diabetes, and poor diet.

Stroke and heart attack are life-threatening conditions. If you cannot identify the symptoms of a stroke or heart attack, you may not obtain medical assistance quickly enough, which may result in permanent damage to the body or death. Even in survival, full abilities may not be regained, and months of costly medical care and rehabilitation may result. Besides symptom recognition, knowing to call 911 immediately for CVD events is critical.

Due to the large impact of CVD in Georgia, and the potential for improved outcomes through early detection and treatment, the Georgia Division of Public Health conducted a statewide survey in 2006 to measure:

- Knowledge of stroke signs
- Knowledge of heart attack signs
- Knowledge of modifiable CVD risk factors
- Ability to recognize a CVD event and call 911
- Knowledge of hypertension
- Sources of information for CVD treatments

Results were analyzed to determine if knowledge differed by sex, race, age, income level, highest level of education attained, urban or rural residence, individual or family history of stroke or heart attack, and insurance status.

Key Findings

- 2.7 million Georgians, or 39% of Georgia adults, do not know the signs of stroke
- 1.3 million Georgians, or 19% of Georgia adults, do not know the signs of heart attack
- Nearly 2.3 million, or 33% of Georgia adults, do not know the modifiable risk factors for CVD
- 3.2 million Georgians, or 46% of Georgia adults, cannot recognize a stroke and call 911
- More than 2 million Georgians, or 30% of Georgia adults, cannot recognize a heart attack and call 911
- Of all the factors affecting knowledge, education level had the greatest impact
- Other factors significantly predicting knowledge, in order of importance, were: race, income, age, history of stroke, urban or rural residence, history of heart attack, and sex

Actions Necessary to Improve Cardiovascular Awareness in Georgia

In addition to other efforts to improve CVD outcomes in Georgia, interventions to improve awareness of stroke and heart attack signs and risk factors should be targeted to those with the greatest need, in order of importance:

1. Lower education level
2. Non-whites
3. Low- to middle-income
4. Younger than 45 / older than 65
5. No personal or family CVD history
6. Rural residents
7. Males

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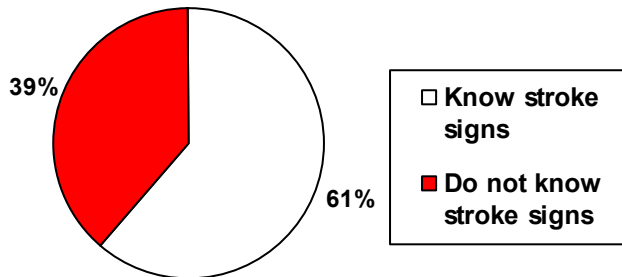
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Knowledge of Stroke Signs

Total Population

- 39% of Georgia adults (2.7 million) do not know the signs of stroke

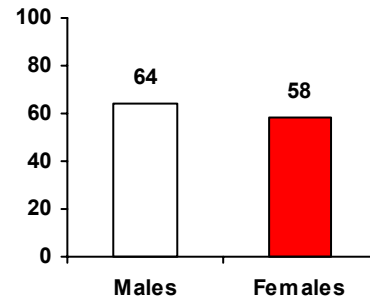
Percent of Adults who Identified ≥ 1 Stroke Sign, Georgia, 2006



Knowledge of Stroke Signs by Sex

- No significant differences between Males and Females

Percent of Adults who Identified ≥ 1 Stroke Sign, by Sex, Georgia, 2006

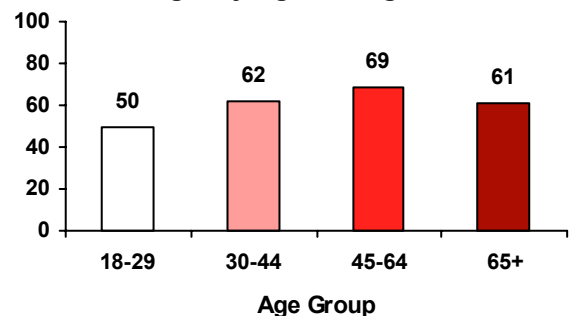


Knowledge of Stroke Signs by Age

Respondents between ages 45 and 64 were:

- 1.4 times more likely* than those ages 18-29 to identify at least one stroke sign
- 1.1 times more likely than those 65 and older to identify at least one stroke sign

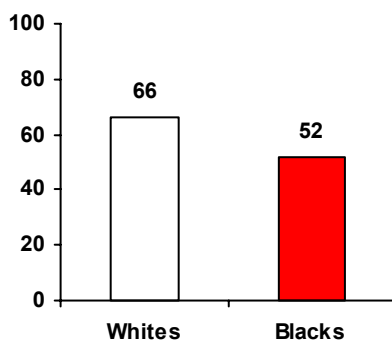
Percent of Adults who Identified ≥ 1 Stroke Sign, by Age, Georgia, 2006



Knowledge of Stroke Signs by Race

- Whites were 1.3 times more likely than Blacks to identify at least one stroke sign

Percent of Adults who Identified ≥ 1 Stroke Sign, by Race, Georgia, 2006

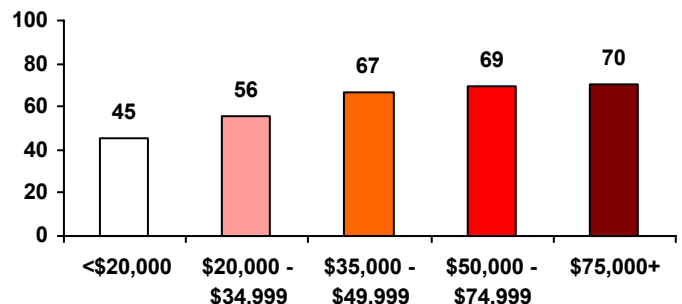


Knowledge of Stroke Signs by Income Level

Those with incomes of \$75,000 or higher were:

- 1.6 times more likely than those with incomes lower than \$20,000 to identify at least one stroke sign
- 1.3 times more likely than those with incomes between \$20,000 and \$34,999 to identify at least one stroke sign

Percent of Adults who Identified ≥ 1 Stroke Sign, by Income Level, Georgia, 2006



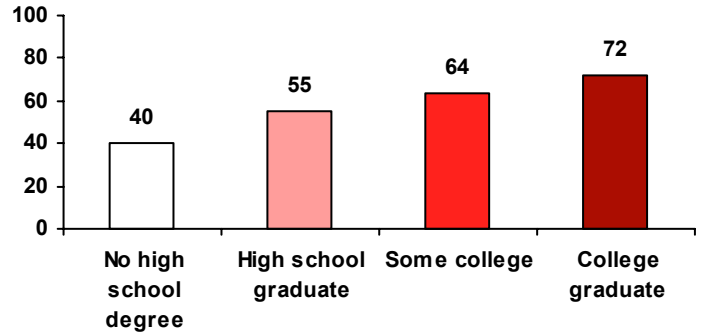
* All differences presented in results are significant at $\alpha = .05$

Knowledge of Stroke Signs by Education Level

College graduates were:

- 1.8 times more likely than those with no high school degree to identify at least one stroke sign
- 1.3 times more likely than those with only a high school degree to identify at least one stroke sign

Percent of Adults who Identified ≥ 1 Stroke Sign, by Education Level, Georgia, 2006



Knowledge of Stroke Signs by Insurance Status

- The insured (70%) were 1.3 times more likely than the non-insured (53%) to know a stroke sign

Knowledge of Stroke Signs by History of Stroke

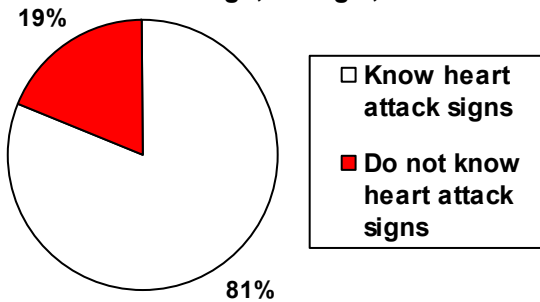
- Those with an individual or family history of stroke (68%) were 1.3 times more likely than those without a history (54%) to know a stroke sign

Knowledge of Heart Attack Signs

Total Population

- 19% of Georgia adults (1.3 million) do not know the signs of heart attack

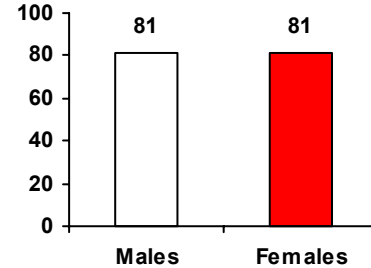
Percent of Adults who Identified ≥ 1 Heart Attack Sign, Georgia, 2006



Knowledge of Heart Attack Signs by Sex

- No significant differences between Males and Females

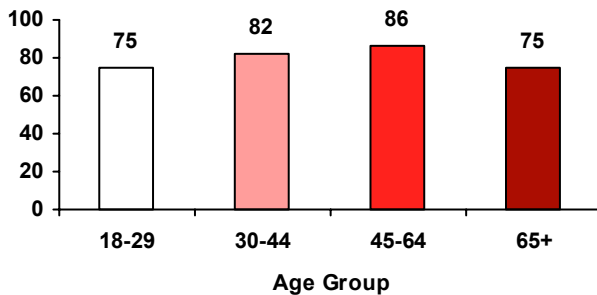
Percent of Adults who Identified ≥ 1 Heart Attack Sign, by Sex, Georgia, 2006



Knowledge of Heart Attack Signs by Age

- Respondents between ages 45 and 64 were 1.2 times more likely than those ages 18-29 and those 65 and older to identify at least one heart attack sign

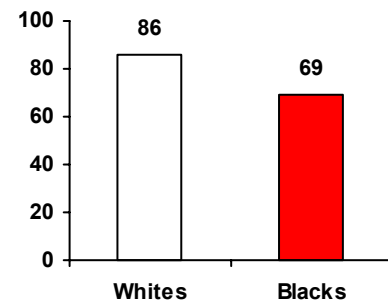
Percent of Adults who Identified ≥ 1 Heart Attack Sign, by Age, Georgia, 2006



Knowledge of Heart Attack Signs by Race

- Whites were 1.3 times more likely than Blacks to identify at least one heart attack sign

Percent of Adults who Identified ≥ 1 Heart Attack Sign, by Race, Georgia, 2006

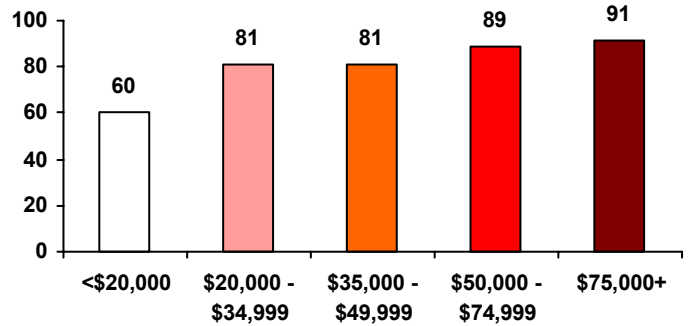


Knowledge of Heart Attack Signs by Income Level

Those with incomes of \$75,000 or higher were;

- 1.5 times more likely than those with incomes lower than \$20,000 to identify at least one heart attack sign
- 1.1 times more likely than those with incomes between \$20,000 and \$34,999 and between \$35,000 and \$49,999 to identify at least one heart attack sign

Percent of Adults who Identified ≥ 1 Heart Attack Sign, by Income Level, Georgia, 2006

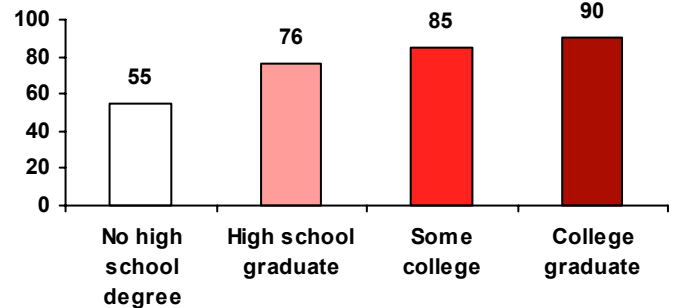


Knowledge of Heart Attack Signs by Education Level

College graduates were:

- 1.6 times more likely than those with no high school degree to identify at least one heart attack sign
- 1.2 times more likely than those with only a high school degree to identify at least one heart attack sign

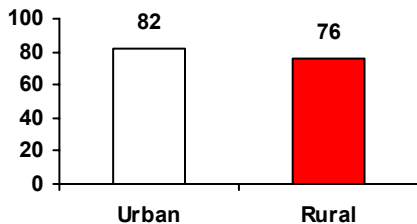
Percent of Adults who Identified ≥ 1 Heart Attack Sign, by Education Level, Georgia, 2006



Knowledge of Heart Attack Signs by Residence

- Urban residents were 1.1 times more likely than rural residents to know a heart attack sign

Percent of Adults who Identified ≥ 1 Heart Attack Sign, by Residence, Georgia, 2006



Knowledge of Heart Attack Signs by Insurance Status

- The insured were 1.1 times more likely than the non-insured to know a stroke sign

Knowledge of Heart Attack Signs by History of Heart Attack

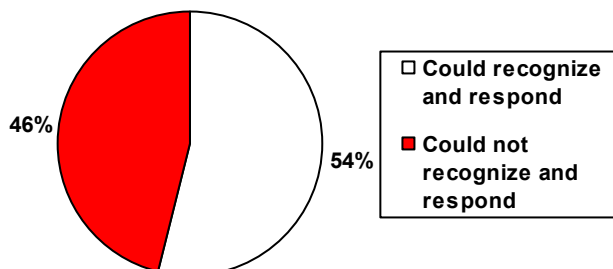
- Those with an individual or family history of heart attack were 1.1 times more likely than those without a history to know a heart attack sign

Ability to Recognize a Cardiovascular Disease (CVD) Event and Call 911

Total Population: Stroke Response

- 46% of Georgia adults (nearly 3.2 million) cannot recognize a stroke and call 911

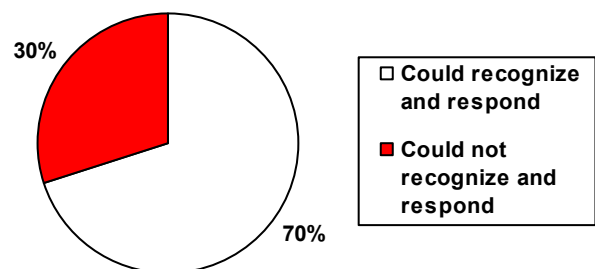
Percent of Adults who Could Recognize a Stroke and Call 911, Georgia, 2006



Total Population: Heart Attack Response

- 30% of Georgia adults (over 2 million) cannot recognize a heart attack and call 911

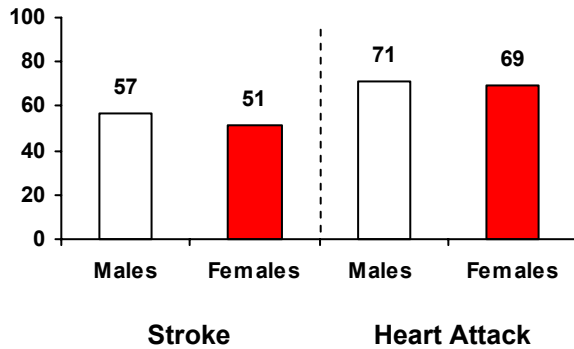
Percent of Adults who Could Recognize a Heart Attack and Call 911, Georgia, 2006



Ability to Recognize a CVD Event and Call 911: By Sex

- No significant difference between Males and Females

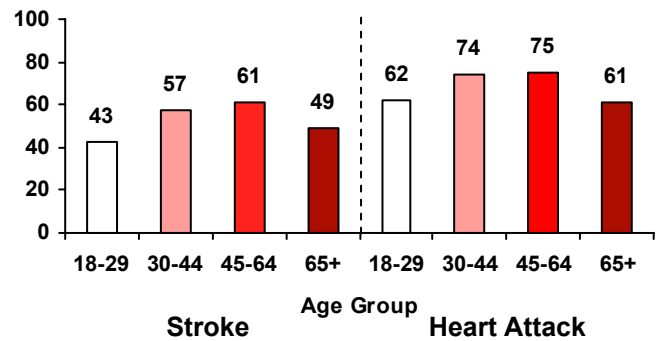
Percent of Adults who Could Recognize a CVD Event and Call 911, by Sex, Georgia, 2006



By Age

- Respondents between ages 45 and 64 were 1.3 times more likely than those 65 and older to be able to identify a stroke and call 911

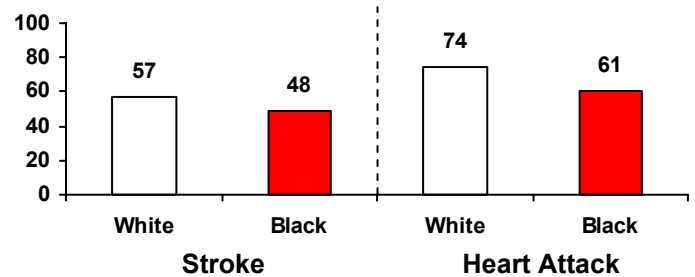
Percent of Adults who Could Recognize a CVD Event and Call 911, by Age, Georgia, 2006



Ability to Recognize a CVD Event and Call 911 by Race

- Whites were 1.2 times more likely than Blacks to be able to identify a CVD event and call 911

Percent of Adults who Could Recognize a CVD Event and Call 911, by Race, Georgia, 2006

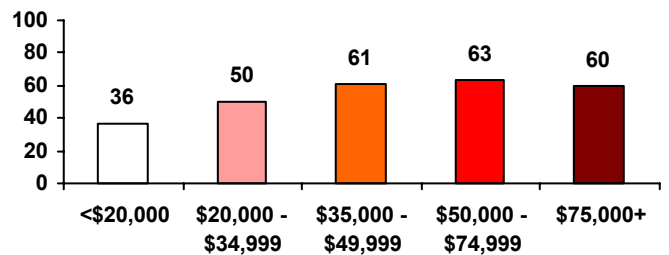


Ability to Recognize a Stroke and Call 911 by Income Level

Those with incomes of \$75,000 or higher were:

- 1.7 times more likely than those with incomes lower than \$20,000 to be able to recognize a stroke and call 911
- 1.2 times more likely than those with incomes between \$20,000 and \$34,999 to be able to recognize a stroke and call 911

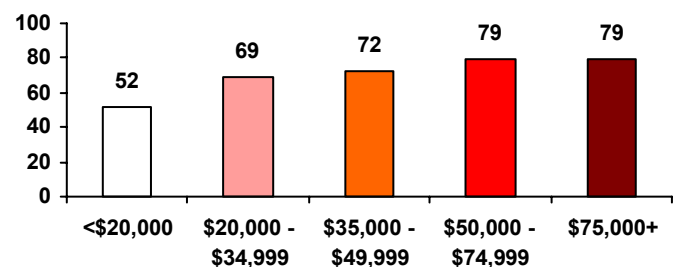
Percent of Adults who Could Recognize a Stroke and Call 911, by Income Level, Georgia, 2006



Ability to Recognize a Heart Attack and Call 911 by Income Level

- Those with incomes of \$75,000 or higher were 1.5 times more likely than those with incomes lower than \$20,000 to be able to recognize a heart attack and call 911

Percent of Adults who Could Recognize a Heart Attack and Call 911, by Income Level, Georgia, 2006

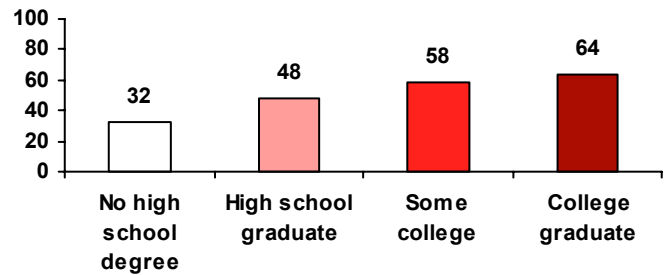


Ability to Recognize a Stroke and Call 911 by Education Level

College graduates were:

- Twice as likely as those with no high school degree to be able to recognize a stroke and call 911
- 1.3 times more likely than those with only a high school degree to be able to recognize a stroke and call 911

Percent of Adults who Could Recognize a Stroke and Call 911, by Education Level, Georgia, 2006

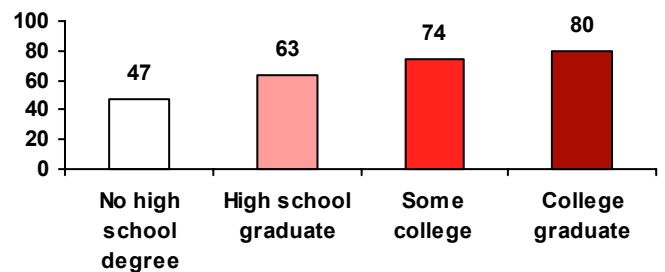


Ability to Recognize a Heart Attack and Call 911 by Education Level

College graduates were:

- 1.7 times more likely than those with no high school degree to be able to recognize a heart attack and call 911
- 1.3 times more likely than those with only a high school degree to be able to recognize a heart attack and call 911

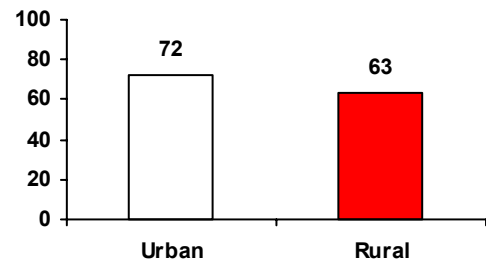
Percent of Adults who Could Recognize a Heart Attack and Call 911, by Education Level, Georgia, 2006



Ability to Recognize a Heart Attack and Call 911 by Residence

- Urban residents were 1.1 times more likely than rural residents to be able to recognize a heart attack and call 911

Percent of Adults who Could Recognize a Heart Attack and Call 911, by Residence, Georgia, 2006



Ability to Recognize a CVD Event and Call 911 by Insurance Status

- The insured (56%) were 1.3 times more likely than the uninsured (43%) to be able to recognize a stroke and call 911
- The insured (72%) were 1.2 times more likely than the uninsured (59%) to be able to recognize a heart attack and call 911

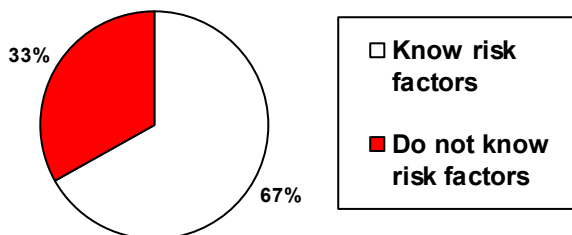
Ability to Recognize a CVD Event and Call 911 by History of Stroke

- Those with an individual or family history of stroke (59%) were 1.2 times more likely than those without a history (48%) to be able to recognize a stroke and call 911

Total Population

- 33% of Georgia adults (nearly 2.3 million) do not know the modifiable risk factors for CVD
- This knowledge, if accompanied by effective action, is key to preventing and reducing CVD events

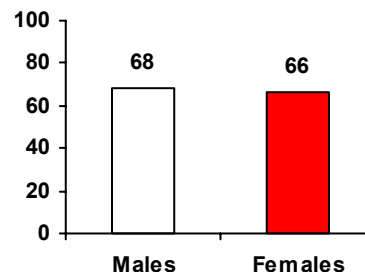
Percent of Adults who Identified ≥ 1 Modifiable CVD Risk Factor, Georgia, 2006



Knowledge of Risk Factors by Sex

- No significant differences between Males and Females

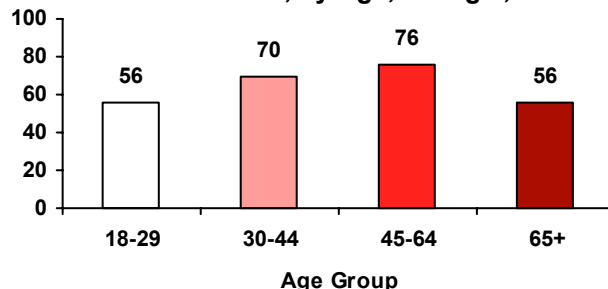
Percent of Adults who Identified ≥ 1 Modifiable CVD Risk Factor, by Sex, Georgia, 2006



Knowledge of Risk Factors by Age

- Respondents between ages 45 and 64 were 1.4 times more likely than those ages 18-29 and those 65 and older to identify at least one modifiable CVD risk factor

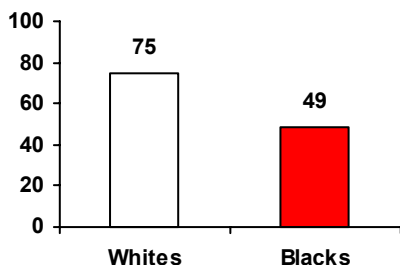
Percent of Adults who Identified ≥ 1 Modifiable CVD Risk Factor, by Age, Georgia, 2006



Knowledge of Risk Factors by Race

- Whites were 1.5 times more likely than Blacks to identify at least one risk factor

Percent of Adults who Identified ≥ 1 Modifiable CVD Risk Factor, by Race, Georgia, 2006



Whites were significantly more likely than Blacks to identify these modifiable CVD risk factors:

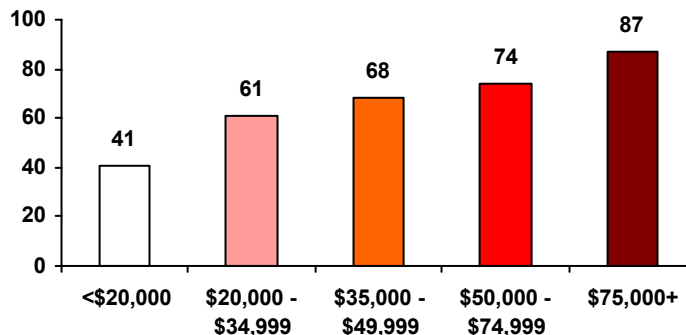
- High cholesterol
- Tobacco use
- Physical inactivity
- Obesity
- Diet

Knowledge of Risk Factors by Income Level

Those with incomes of \$75,000 or higher were:

- 2.1 times more likely than those with incomes lower than \$20,000 to identify at least one modifiable CVD risk factor
- 1.2 to 1.4 times more likely than those with incomes between \$20,000 and \$74,999 to identify at least one modifiable CVD risk factor

Percent of Adults who Identified ≥ 1 Modifiable CVD Risk Factor, by Income Level, Georgia, 2006

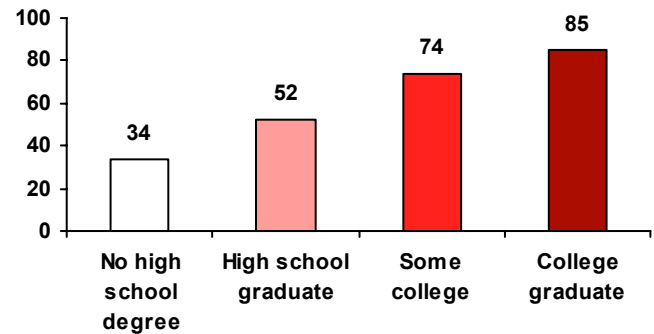


Knowledge of Risk Factors by Education Level

College graduates were:

- 2.5 times more likely than those with no high school degree to identify at least one modifiable CVD risk factor
- 1.6 times more likely than those with only a high school degree to identify at least one modifiable CVD risk factor
- 1.2 times more likely than those with only some college to identify at least one modifiable CVD risk factor

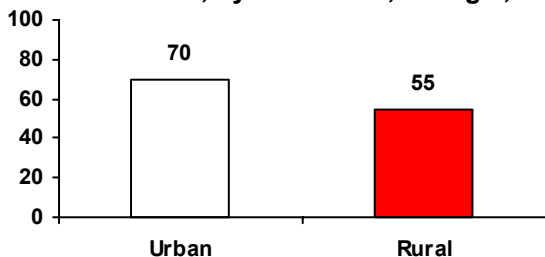
Percent of Adults who Identified ≥ 1 Modifiable CVD Risk Factor, by Education Level, Georgia, 2006



Knowledge of Risk Factors by Residence

- Urban residents were 1.3 times more likely than rural residents to know a modifiable CVD risk factor

Percent of Adults who Identified ≥ 1 Modifiable CVD Risk Factor, by Residence, Georgia, 2006



Knowledge of Risk Factors by Insurance Status

- Insured respondents were 1.3 times more likely than non-insured respondents to know a modifiable CVD risk factor

Knowledge of Risk Factors by History of Stroke

- Respondents with an individual or family history of stroke were 1.1 times more likely than those without a history to know a modifiable CVD risk factor

Knowledge of Risk Factors by History of Heart Attack

- Respondents with an individual or family history of heart attack were 1.1 times more likely than those without a history to know a modifiable CVD risk factor

Knowledge of Hypertension

Question	% answering correctly
High blood pressure (BP) can cause strokes	96
People taking medication for hypertension should take it daily	96
High BP can cause heart attacks	95
Weight loss usually decreases BP	90
160/100 is high BP	87
Eating salt usually increases BP	78
Exercising usually decreases BP	77
High BP can NOT cause cancer	77
Hypertension usually lasts a lifetime	69
High BP can cause kidney disease	68
130/80 is normal BP	58
Most people with high BP feel fine/are asymptomatic	57
Drinking 1+ alcoholic drinks daily usually increases BP	56

Where Respondents Heard About Cardiovascular Disease Treatments

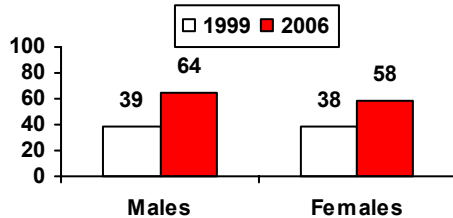
Source	%
Newspaper, magazine, medical journal	33
TV, radio	24
Hospital, doctor's office, healthcare facility	23
Internet	16
Brochure, poster, flyer	14

* Respondents could select more than one option

**Knowledge of Stroke Signs:
Total Population and By Sex**

- In 2006, respondents (61%) were 1.6 times more likely to know ≥ 1 stroke sign than in 1999 (39%)
- In 2006, males were 1.6 times more likely and females were 1.5 times more likely to know ≥ 1 stroke sign than in 1999

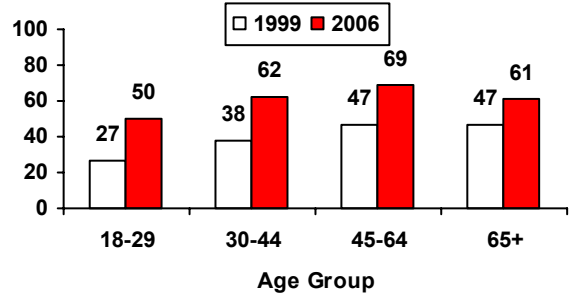
Percent of Adults who Identified ≥ 1 Stroke Sign, by Sex, Georgia, 1999 and 2006



By Age

- In 2006, respondents in all age groups except those 65 and older were more likely to know ≥ 1 stroke sign than in 1999

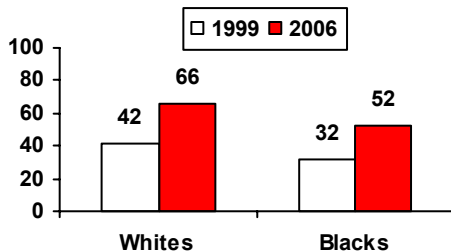
Percent of Adults who Identified ≥ 1 Stroke Sign, by Age, Georgia, 1999 and 2006



By Race

- In 2006, both Whites and Blacks were 1.6 times more likely to know ≥ 1 stroke sign than in 1999

Percent of Adults who Identified ≥ 1 Stroke Sign, by Race, Georgia, 1999 and 2006

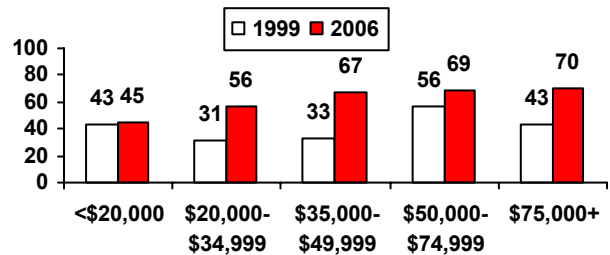


By Income Level

Ability to identify ≥ 1 stroke sign increased from 1999 to 2006 for respondents with incomes of:

- \$20,000-\$34,999
- \$35,000-\$49,999
- \$75,000+

Percent of Adults who Identified ≥ 1 Stroke Sign, by Income Level, Georgia, 1999 and 2006

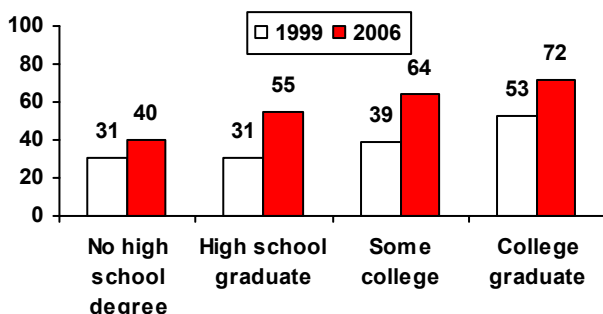


By Education Level

Ability to identify ≥ 1 stroke sign increased from 1999 to 2006 for respondents with the following education:

- High school graduate
- Some college
- College graduate

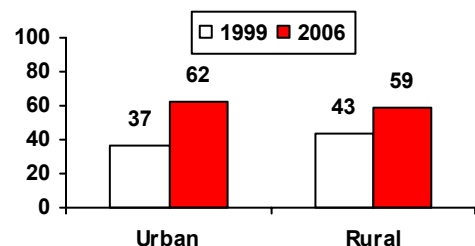
Percent of Adults who Identified ≥ 1 Stroke Sign, by Education Level, Georgia, 1999 and 2006



By Residence

- Urban residents were 1.7 times more likely to know ≥ 1 stroke sign in 2006 than in 1999

Percent of Adults who Identified ≥ 1 Stroke Sign, by Residence, Georgia, 1999 and 2006



Would Call 911 for Stroke

- In 2006, respondents (86%) were 1.2 times more likely to say they would call 911 for stroke compared to 1999 (70%)

* Rates not corrected for knowledge of stroke signs (see Methodology for details)

Methodology

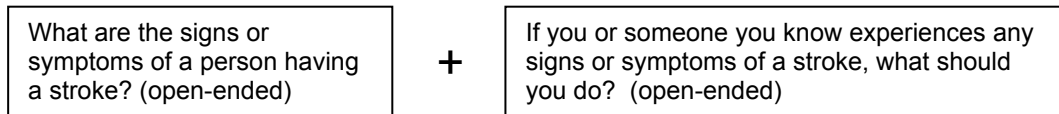
In 2006, the Georgia Division of Public Health conducted a statewide, random-digit dialed telephone survey (N=3,000) on stroke and heart attack awareness. This was a follow-up to a study conducted in 1999, which was limited to the metro Atlanta area and measured awareness of stroke signs only. For the 2006 study, an adult was selected at random from each household for interview. The sample was comprised of three groups of Georgia counties stratified by cardiovascular disease (CVD) death rate. Each stratum contained 1,000 respondents. With this design, analysis could account for geographic differences in CVD death rates. Weighted data were analyzed using SAS and SAS-callable SUDAAN.

Knowledge was measured using open-ended questions, which provide a more accurate assessment than multiple choice questions.^{2,3} A sample question measuring knowledge of stroke symptoms is: "What are the signs or symptoms of a person having a stroke? Try to tell me as many as you can." The interviewer would then let the respondent state as many symptoms as they could, without prompting the respondent or giving any suggestions. Respondents were coded positive for knowledge if they stated at least one item in the respective category:

Stroke signs	Heart attack signs	Modifiable cardiovascular disease risk factors
Weakness or numbness in face, arm, or leg Sudden confusion or difficulty speaking Dizziness or loss of coordination or balance Headache Vision problems	Chest pain Shortness of breath Arm or shoulder pain or discomfort Feeling weak, faint, or lightheaded Jaw, neck, or back pain or discomfort	High blood pressure High cholesterol Overweight/obesity Sedentary lifestyle Smoking Diabetes Poor diet

A combination of questions was used to measure the ability to recognize a CVD event and call 911.

Example for "Ability to recognize a stroke and call 911":



Only respondents who correctly answered both questions were considered able to recognize and respond to a stroke. If they could not answer the first question right, even if they knew that you should call 911 for a stroke, in a real-life situation the respondent might not recognize the stroke and therefore might not take the proper action. Improper analysis of such items can result in highly inflated knowledge estimates. In this survey, 86% of respondents said they would call 911 in the event of a stroke. However, after screening out those who could not identify at least one stroke sign, the true prevalence was found to be 54%.

Response Rates

CASRO rate	45.3%
Cooperation rate	75.6%
Overall response rate	18.5%

For response rate definitions, please see the 2005 Behavioral Risk Factor Surveillance System Data Quality Report Handbook at: http://www.cdc.gov/brfss/technical_infodata/surveydata/2005/2005DQRHandbook.rtf

References

- ¹ Derived from national estimates published by the American Heart Association. *Heart Disease and Stroke Statistics- 2004 Update*. Dallas, TX: American Heart Association; 2004.
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