In the name of God

S.U.M.S.

Shiraz E-Medical Journal

Vol. 9, No.2, April 2008

http://semj.sums.ac.ir/vol8/apr2007/stroke.htm

Stroke Awareness in Two Rural Counties in Mississippi, USA.

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Received for Publication: November 10, 2007, Accepted for Publication: February 15, 2007.

Abstract:

Mississippi has one of the highest stroke mortality rates in the nation. This paper present results of 2005 and 2006 surveys undertaken in an intervention and control county in rural Mississippi. A random-digit-dial (RDD) telephone surveys were conducted on adults 18 and older sampled from the civilian, non-institutionalized populations of Warren (control) and Washington (intervention) counties before and after implementing a 6-month long stroke awareness educational campaign in Washington County. The analyzed results indicate that response rates to several of the questions increased after the intervention in Washington County, the results of this small sample survey do not show sufficient evidence to support any effect of the intervention. A significant lesson learned from this effort is that a more specific target population must be selected for intervention, and much tailored messages and appropriate media must also be identified and implemented.

Key Words: CVD, Surveys, Cardiovascular, Cardiovascular Disease, Community Health, Community Health Education.

Introduction:

Stroke is the third leading cause of death and the leading cause of disability [1]. Among all persons in the U.S. the age-adjusted death rate in 2001-2003 was 842.7 (per 100,000), compared to 961.3 among White and 1,186.1 among African Americans in Mississippi [2]. Stroke incidence is clearly associated with advancing age. Although younger adults are at lower risk, stroke in this population has a particularly high public health impact because of associated indirect costs, such as longer years of lost productivity. Racial and ethnic disparities exist in stroke prevalence and CVD risk behaviors and medical history [3]. Minority ethnic groups have higher rates or more severe strokes, but variations in prognosis for clinical outcomes other than mortality remain less certain [4]. Income may explain the association between ethnicity and stroke [5].

Among minority populations, African Americans in particular experience a nearly two-fold greater mortality from stroke than Caucasian Americans [6]. Because stroke incidence is thought to be largely responsible for disparities in stroke mortality, and many stroke risk factors are more prevalent among minority groups than among [7], a logical strategy is to try to reduce such factors, especially among the most poor. Mississippi has one of the highest prevalence rates and racial disparities of cardiovascular and stroke risk factors, such as lack of exercise (27.8%, 34.4%), diabetes (14.7%, 8.7%), hypertension (30.4%, 39.7%), and daily smokers (20.7%, 12.6%), among whites as compared to African Americans [8]. Mississippi has one of the highest stroke mortality rates in the nation. This paper presents results of a 2005 and 2006 surveys undertaken in an intervention and control county in rural Mississippi in preparation for a community stroke education intervention.

Materials and Methods:

A random-digit-dial (RDD) sample was purchased from Accudata for Warren and Washington Counties. A sample of 6,600 numbers was provided for each county. RDD telephone surveys were conducted on adults 18 and older sampled from the civilian, non-institutionalized populations of Warren (control) and Washington (intervention) counties, Mississippi in 2005 and 2006. Each number provided in the sample was dialed in an effort to complete a survey. Non-available numbers were dialed again. The average number of attempts for the sample was 2 per number. Approximately 13.3 numbers were needed per completed survey. Respondents were qualified as being residents of Warren or Washington County and to be 18 years of age and older. The sample reflects the demographics of each respective county (see table 1). Respondents completed a survey approximately 5 minutes in length to determine the level of stroke awareness.

Results:

Although response rates to several of the questions increased after the intervention in Washington County, the results of this small sample survey do not show sufficient evidence to support any effect of the intervention. A significant lesson learned from this effort is that a more specific target population must be selected for intervention, and much tailored messages and appropriate media must also be identified and implemented.

Respondents were asked about knowledge of stroke risk factors, stroke symptoms and signs, and actions to be taken in the event of a stroke. Data were analyzed using SPSS.

Table 1. Demographic Characteristics by County

	Washington County	Warren County
Gender		
Female	53.0	53.5
Male	47.0	46.5
Race		
White	64.1	53.4
African-American	35.9	46.6
Gender/Race		
White Males	28.0	27.5
Non-White Males	19.6	19.1
White Females	36.1	25.9
Non-White Females	16.3	27.5
Age Group		
18-39	42.5	37.2
40-59	32.9	38.7
60 and older	24.6	24.1
Area		
Urban	50.8	46.3
Rural	49.2	53.7
Income		
< $20,000	32.4	26.0
$20,000-$34,999	23.5	25.7
$35,000-$54,999	21.2	21.6
$55,000 +	22.9	26.8
Education		
Less than High School	16.6	15.4
High School Graduate	34.7	30.8
College Degree	38.1	39.7
Graduate	10.6	14.2

Table 2. County-wide Responses and the Related p-values

Question	Washington County (intervention)			Warren County (control)			P value for difference between counties*
	2005	2006	P value for difference between years*	2005	2006	P value for difference between years*	
Stroke prevention							
"Can strokes be prevented?"	80.2	81.6	0.11	80.6	81.4	0.65	0.18
Source of information about stroke							
Any source	51.5	55.7	0.40	51.3	57.6	0.40	0.45
Radio, newspaper, or TV	86.2	87.4	0.70	84.1	87.3	0.56	0.19
Health care provider	45.3	51.2	0.69	43.8	33.2	**0.05**	0.16
Mail, pamphlet, or brochure	55.7	58.6	**0.08**	57.7	50.0	0.30	0.61
Risk factors for stroke							
Stress	17.5	21.2	0.59	19.1	21.5	0.59	0.86
High BP	48.0	57.3	0.48	50.3	44.2	**0.04**	**0.01**
High cholesterol	17.3	15.8	0.29	17.3	21.2	0.40	0.30
Smoking	20.6	17.9	0.90	21.9	24.6	0.45	0.65
Diabetes	14.2	13.0	0.17	8.7	9.4	0.76	0.28
Overweight	26.4	23.3	0.83	24.7	26.4	0.22	0.26
Lack of exercise	12.7	10.1	0.86	9.2	13.6	0.10	0.15
Family history of CVD	9.6	6.7	0.58	11.0	8.9	0.15	0.75
Past history of CVD	6.6	5.4	0.93	7.7	4.7	**0.07**	0.27
Action to be taken if stroke suspected							
Call or visit MD	14.7	13.2	0.63	11.2	10.5	0.74	0.94
Call EMS or 911	55.3	60.1	0.17	57.7	59.7	0.97	0.61
Go to ER or call EMS or 911	73.9	73.6	0.99	77.0	76.7	0.75	0.76
Symptoms/signs of stroke							
Weakness, numbness, paralysis, slurred speech, different facial features	50.8	46.9	0.40	48.2	51.8	0.62	0.23
Loss of vision	12.2	10.6	0.79	12.2	11.8	0.62	0.78
Speech difficulty, slurred speech	20.3	26.4	**0.003**	22.7	27.2	0.11	0.27
Headache	18.8	16.3	0.16	18.9	16.5	0.13	0.17
Dizziness, unsteadiness, passing out	27.2	21.0	0.20	28.8	17.5	**0.0008**	0.28

*adjusted for age, sex, race, income, and education.

Discussion:

Upon completion of surveys in both counties (control and intervention) in the early part of 2005, a major stroke sign/symptom awareness education campaign was launched in July that ended in December 2005 in the Washington County (intervention). Several thousands brochures, flyers, and refrigerator magnets were distributed. Local radio and TV stations aired the project's activities and contents. Such materials were delivered to most churches in Washington County. The pastors announced and encouraged their members to be aware of stroke signs and to seek medical assistance immediately upon noticing any one of them. The second surveys (same questionnaire) were administered in both counties in July 2006 (approx. 6 months after education campaign).

Washington County:

In Washington County, the most frequently reported source of stroke information in 2005 was the media (radio/newspaper/TV, 86.2%), followed by mail/pamphlet/brochure (55.7%) and HC provider (45.3%) (see table 2). Each of these percentages increased in 2006 after intervention (with the rank order staying the same) but, after adjustment for age, sex, race, income, and education, the change in percentage in each case was statistically significant only for mail/pamphlet/brochure (p=0.08). The majority of respondents (80.2%) stated that stroke could be prevented; this increased slightly in 2006 (p=0.11). The most frequently reported risk factor for stroke was high BP (48.0% in 2005, increasing to 57.3% in 2006) followed by overweight (26.4% in 2005, decreasing to 23.3% in 2006), smoking (20.6% in 2005, decreasing to 17.9% in 2006), and stress (17.5% in 2005, increasing to 21.2% in 2006). None of these changes was statistically significant after adjustment for age, sex, race, income, and education. The most frequently reported symptom/sign of stroke was the grouping of weakness/numbness/paralysis/ slurred speech/different facial features (50.8%) followed by dizziness/unsteadiness/passing out (27.2%) and speech difficulty/slurred speech (20.3%). The latter was the only symptom/sign grouping that showed an increase in 2006 (26.4%, adjusted p=0.003). The majority of respondents stated that, in the event of a suspected stroke, they would call EMS/911 (55.3%); this increased to 60.1% in 2006 (p=0.17). 73.9% stated that they would go to the nearest ER or call EMS/911; this did not change in 2006.

Warren County:

The general pattern was similar in Warren County, the control county. The most frequently reported source of stroke information in 2005 was the media (radio/newspaper/TV, 84.1%), followed by mail/pamphlet/brochure (57.7%) and HC provider (43.8%). (See table 2.) In 2006 the percentage reporting media as a source increased to 87.3 % (p=0.56) whereas the percentages for the other two

sources decreased (with the rank order staying the same). The majority of respondents (80.6%) stated that stroke could be prevented; this increased only slightly in 2006 (p=0.65). The most frequently reported risk factor for stroke was high BP (50.3% in 2005) followed by overweight (26.4% in 2005), smoking (20.6% in 2005), and stress (17.5% in 2005).

The percentage reporting high BP decreased in 2006 to 44.2% (p=0.04), whereas the other percentages increased slightly. None of these increases was statistically significant after adjustment for age, sex, race, income, and education. The most frequently reported symptom/sign of stroke was the grouping of weakness/numbness/paralysis/slurred speech/different facial features (48.2% in 2005, increasing to 51.8% in 2006) followed by dizziness/unsteadiness/passing out (28.8% in 2005, decreasing to 17.5% in 2006) and speech difficulty/slurred speech (22.7% in 2005, increasing to 27.2% in 2006). Only the change in the percentage reporting dizziness/unsteadiness/passing out was statistically significant (p=0.001). The majority of respondents stated that, in the event of a suspected stroke, they would call EMS/911 (57.7%); this increased to 59.7% in 2006 (p=0.97). 77.0% stated that they would go to the nearest ER or call EMS/911; this did not change in 2006.

County comparison:

In many cases, when there was an increase in percentage in Washington County, a similar increase was seen in Warren County. Even in those cases where an increase occurred in Washington County while a decrease occurred in Warren County, numbers (sample size) were not sufficiently large to show statistical significance, with one exception. The exception was in the percentage reporting high BP as a risk factor for stroke, which increased from 48.0% to 57.3% in Washington County while decreasing from 50.3% to 44.2% in Warren County (p=0.01 for difference between counties).

Acknowledgment:

We thank NIH/NCMHD staff and administrators for awarding Grant #5P20-MD0005344-02 that supported this project via EXPORT Center at Jackson State University. A number of Master of Public Health Students from Jackson State University' MPH Program assisted in administering this project. We thank them all. We also thank community members, particularly those in Washington County in Delta Mississippi for their participation and support. Without their participation and support, this study could not have been completed. Our special thanks to staff at Jackson State University' EXPORT Center for their logistic supports.

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