



MICHIGAN BRFSS SURVEILLANCE BRIEF

A NEWSLETTER FROM THE LIFECOURSE EPIDEMIOLOGY & GENOMICS DIVISION, MDHHS

An Overview of Stroke Within the Michigan Adult Population

Background. Stroke is a cardiovascular disease that occurs as a result of a decreased blood supply to the brain. This results when a blood vessel in the brain is obstructed by a clot or ruptures. Stroke is the 5th leading cause of death in the United States and Michigan¹, and is a major cause of long-term disability. Approximately 795,000 people in the United States experience a new or recurrent stroke each year.²

Falls are one of the most common complications among stroke survivors, and they continue to be a major concern due to the physical and psychosocial consequences in all post-stroke stages. Falls can be prevented by implementing interventions aimed at balance, stability, and gait deficits. These deficits can be monitored during post-stroke follow-up healthcare visits.

Access to care is critical in achieving health equity and increasing the quality of life among stroke survivors. Regular follow-up doctor visits provide for post-stroke complication intervention opportunities, thus decreasing the risk of hospital readmission. One recent study estimated that half of readmissions within 30 days among stroke survivors were preventable and over one quarter of those readmissions could have been avoided through early outpatient follow-up.³

Methods. Questions related to stroke, various demographics, and doctor visits were included within the Michigan Behavioral Risk Factor Surveillance System (MiBRFSS) in both 2013 and 2014. Additional questions on falls and injuries that resulted from these falls were included within the 2014 survey.

The lifetime prevalence of stroke was defined as ever being told by a doctor, nurse, or other health professional that you had this condition. For the doctor visits indicator, respondents were asked how many times they had been to a doctor, nurse, or other health professional within the past 12 months. Falls were defined as events in which a respondent unintentionally came to rest on the ground or another lower level. Injuries that resulted from these falls were also documented.

These data were used to determine the lifetime prevalence of stroke among Michigan adults, to examine how often those whom have had a stroke visit their doctor, and to compare the prevalence of recent falls and injuries due to these falls by stroke status. Subpopulations based on demographic factors were also compared to determine if significant differences existed within these indicators.

Results. Based on data from the 2013-2014 MiBRFSS, an estimated 3.4% of Michigan adults reported ever being told by a doctor, nurse, or other health professional that they had a stroke (Table 1). The lifetime prevalence of stroke increased with age, but was similar by gender (Males: 3.5% vs. Females: 3.3%). Black adults (4.7%) were more likely than White adults (3.2%) to have ever been told they had a stroke. Furthermore, the lifetime prevalence of stroke decreased within increasing household income.

Table 1 indicates that an estimated 2.5% of Michigan adults without health insurance reported ever being told they had a stroke. To get a better idea of who these people were, we looked into the demographic distributions for this group. These individuals were found to be predominantly younger (18-44 years: 45.3%), White (72.0%), low income adults (<\$20,000: 56.0%) [data not shown].

Table 1. Lifetime Prevalence of Stroke among Michigan Adults, 2013-2014 Michigan BRFSS

	Ever Told Stroke	
	%	95% CI
Total	3.4	(3.1-3.8)
Age		
18-44 years	1.1	(0.8-1.5)
45-54 years	2.7	(2.1-3.6)
55-64 years	4.9	(4.1-5.8)
65-74 years	6.7	(5.7-8.0)
75+ years	9.9	(8.6-11.4)
Gender		
Male	3.5	(3.1-4.0)
Female	3.3	(3.0-3.8)
Race		
White	3.2	(2.9-3.5)
Black	4.7	(3.7-6.0)
Other	4.4	(3.1-6.3)
Household Income		
<\$20,000	5.8	(4.9-6.8)
\$20,000 - \$34,999	5.1	(4.3-6.1)
\$35,000 - \$49,999	3.3	(2.5-4.2)
\$50,000 - \$74,999	1.8	(1.3-2.4)
\$75,000 or more	1.3	(1.0-1.8)
Health Insurance		
Yes	3.6	(3.3-3.9)
No	2.5	(1.8-3.6)

MiBRFSS News

- The 2015 MiBRFSS weighted data file should be arriving within the next couple of months and the resulting annual tables should be available on the MiBRFSS website (www.michigan.gov/brfs) in August or September 2016.
- The 2016 MiBRFSS Data Users Meeting was held in June, and the meeting presentation can be found on the MiBRFSS website.
- Did you miss an issue of *Michigan BRFSS Surveillance Brief*? If so, archived issues can be found on the MiBRFSS website.

Among Michigan adults who were ever told they had a stroke, an estimated 5.4% reported not seeing their doctor at all within the past year, while 46.6% reporting visiting their doctor 6 or more times within the past year (Table 2). These estimates were very different among Michigan adults who had never had a stroke. An estimated 13.0% of Michigan adults who had never had a stroke reported not going to their doctor within the past year, and only 23.5% reported visiting their doctor 6 or more times within the past year (data not shown).

Table 3 shows that 32.2% of Michigan adults reporting falling 1 or more times within the past 12 months. Those who were ever told they had a stroke (58.8%) were more likely to have experienced a fall within the past 12 months when compared to those who have never had a stroke (30.9%). Furthermore, 13.1% of Michigan adults reported being injured within the past 12 months as a result of a fall. Adults who have ever had a stroke were again more likely than those who have never had a stroke to have been injured due to a fall within the past 12 months (stroke: 30.3% vs. no stroke: 12.3%).

Conclusions. These data are limited by the inability to determine when the reported stroke occurred in relation to the respondent's doctor visits and/or falls. However, these data suggest that those who have had a stroke are visiting a doctor more frequently than adults that have never had a stroke. In addition, a much greater proportion of adults who had ever been told they had a stroke had fallen within the past year, and were more likely to be injured due to a fall compared to those who did not have a stroke. These findings highlight an opportunity to focus post-stroke intervention efforts on fall prevention, which could lead to reduced stroke readmission rates.

Unfortunately, due to insufficient numbers of MiBRFSS respondents within the groups reporting total number of physician visits and falls in the past year, the demographics among these groups could not be assessed. Further information pertaining to this high risk stroke survivor group should be considered in order to determine opportunities for future efforts.

References

- ¹ 2014 Michigan Death Certificate Registry. Division of Vital Records and Health Statistics, Michigan Department of Community Health; Population Estimate National Center for Health Statistics. U.S. Census Populations With Bridged Race Categories. Accessed May 16, 2016.
- ² American Heart Association. Heart disease and stroke statistics--2014 update: a report from the American Heart Association. *Circulation*. 2014;129:e28-e292.
- ³ Nahab F, Takesaka, J, Mailyan E., Judd L., Culler S., Webb A., Frankel M., Choi D., Helmers S. Avoidable 30-Day Readmissions Among Patients with Stroke and Other Cerebrovascular Disease. *Neurohospitalist*. 2012 Jan; 2(1):7-11.

Table 2. Number of Doctor Visits Within the Past Year among Michigan Adults Who Were Ever Told They Had a Stroke, 2013-2014 Michigan BRFSS

None	5.4	(3.4-8.5)
1-5 visits	48.0	(43.3-52.7)
6-10 visits	21.6	(17.9-25.8)
11 or more visits	25.0	(21.1-29.3)

Table 3. Recent Falls among Michigan Adults by Stroke Status, 2014 Michigan BRFSS

	Fell 1 or More Times Within the Past 12 Months		Was Injured Due to a Fall Within the Past 12 Months	
	%	95% CI	%	95% CI
Total	32.2	(30.8-33.7)	13.1	(12.1-14.3)
Ever Told Stroke				
Yes	58.8	(51.8-65.5)	30.3	(23.6-37.8)
No	30.9	(29.5-32.3)	12.3	(11.2-13.4)

The Michigan Behavioral Risk Factor Surveillance System (MiBRFSS)
The MiBRFSS comprises annual, statewide telephone surveys of Michigan adults aged 18 years and older and is part of the national BRFSS coordinated by the CDC. The annual Michigan Behavioral Risk Factor Surveys (MiBRFS) follow the CDC BRFSS protocol and use the standardized English core questionnaire that focuses on various health behaviors, medical conditions, and preventive health care practices related to the leading causes of mortality, morbidity, and disability. Landline and cell phone interviews are conducted across each calendar year. Data are weighted to adjust for the probabilities of selection and a raking weighting factor is used to adjust for the distribution of the Michigan adult population based on eight demographic variables. All analyses are performed using SAS-callable SUDAAN® to account for the complex sampling design.

Suggested citation: Fussman C, Nickles A. The Michigan Stroke Experience: Burden, Healthcare Utilization, and Falls. *Michigan BRFSS Surveillance Brief*. Vol. 10, No. 2. Lansing, MI: Michigan Department of Health and Human Services, Lifecourse Epidemiology and Genomics Division, June 2016.

