

Stroke Literacy in a South Brazilian City: A Community Based Survey

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Background: This community-based and cross-sectional study was performed in a Brazilian city and aimed to evaluate stroke literacy. *Methods:* A stroke knowledge survey was administered to passersby of a public square from December 2015 to October 2016, in Santa Maria, Rio Grande do Sul. Convenience sampling was performed. *Results:* A total of 633 respondents completed the survey. Of the respondents, 33% knew the meaning of “AVC”; 29.5% incorrectly localized stroke in the heart. Any warning sign of stroke (open-ended question) could not be remembered by 50.7% of the respondents; individuals with a higher level of schooling (>7 years of education) and those who localized stroke in the brain were more likely to call an emergency in the case of a stroke (adjusted odds ratio [OR] 1.040, 95% confidence interval [CI] 1.004-1.078 for years of schooling; adjusted OR 1.542, 95% CI 1.102-2.156 for replying “yes” to brain as the organ affected in stroke). *Conclusions:* Brazilian public knowledge about stroke is still scarce, even in a population with levels of formal education above the national average or in a city where annual promotion of Stroke Awareness Campaigns have taken place for almost a decade. Thus, it might be necessary to design different informative strategies targeted to our study’s population to improve stroke campaigns in Brazil. In Brazil, increasing awareness of stroke focused on stroke prevention and recognition of its warning signs should be a national priority in public health as the access to stroke treatment remains limited. **Key Words:** Stroke literacy—risk factors—warning signs—awareness.

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Introduction

Stroke has been known to be the third greatest cause of disability and the second most common cause of mortality in the world.¹ Among Latin American countries,

Brazil has been the country with the highest mortality rates due to stroke.²

According to the National Health Survey, a Brazilian community-based epidemiological survey, there were approximately 2,231,000 stroke cases in 2013. Increased stroke prevalence was associated with aging and low educational level.³ The Study of Stroke Mortality and Morbidity in Adults (EMMA Study), a long-term stroke cohort in a low-income area of Brazil, revealed through survival analysis from April 2006 to December 2010 an overall survival rate of 48% (mean survival of 40 months) in 665 first-ever stroke cases. Lower educational levels and diabetes were independent predictors of poor survival.⁴

In this regard, the Brazilian Stroke Society, Brazilian Stroke Network, Brazilian Academy of Neurology, and Brazilian Stroke Association have started more than 8 years

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ago the Brazilian National World Stroke Campaign to promote the acronym "AVC" (meaning cerebrovascular accident in Portuguese), its warning signs (WSs), risk factors, and treatment among the population.⁵

In the Brazilian National World Stroke Campaign, there is a promotion of interviews and advertisements about stroke with artists and health professionals on television and radio throughout the week, which precedes the World Stroke Day (October 29). Videos about stroke risk factors and WS are launched on YouTube and Facebook; events such as stroke awareness walks/runs take place; and blood pressure measurements in squares, shopping malls, and the hospitals are also carried out. The World Stroke Day campaign is based on the print media, with the distribution of brochures designed by the World Stroke Organization (translated to Portuguese) containing information about stroke risk factors, WS, and treatment, which are distributed to the participating cities of the Brazilian Stroke Network. Health professionals, students, health authorities, journalists, and other professionals join this action.⁶

In 2014, Brazil placed second as the country with the best stroke awareness campaign, an activity where more than 45 countries took part. Santa Maria, in particular, has been one of the 70 Brazilian cities participating annually in the stroke awareness campaign since 2010.⁵

Stroke literacy in Brazil was evaluated in a national survey in 2008⁷ and in smaller studies in the recent years.^{8,9} All of these have shown no improvement in public knowledge about stroke, which has been opposed to the tendency observed in developed countries, where public awareness about stroke has been a health priority and stroke awareness campaigns have shown better results.^{10,11}

In this context, the aims of our study were to investigate public stroke literacy in a Brazilian city where stroke awareness campaigns have been performed annually since almost a decade, to evaluate which variables were associated with a better knowledge of stroke, and to analyze which factors were critical for the decision of calling an emergency service in case of a stroke.

Methods

This cross-sectional study was carried out from December 2015 to October 2016, at Saldanha Marinho Square, the central region of Santa Maria (population of 261,031),¹² the Rio Grande do Sul, by professionals and students from Physical Therapy and Medicine courses of the Federal University of Santa Maria. The data collection of this survey was based on convenience sampling.

Passersby who were eligible for the research were selected in an almost random manner by the interviewers as they approached the site of the research and were invited to participate in the study. The inclusion criteria were verbally consenting to be interviewed, being able to speak

Portuguese, age between 18 and 80 years, and absence of stroke reported until the time of the questionnaire.

The study questionnaire was based on previous work.^{7,11,13,14} A pilot test of this instrument was performed with members of this community, and closed-ended and open-ended questions about stroke were included. Ten medical students were previously trained and evaluated for quality and comparability.

The first part of the questionnaire included questions about demographic characteristics (age, gender, race, marital status, and years of education).

The second part of the questionnaire was composed of 4 questions. One question asked if the participants had heard at least once the acronym AVC, and another about the meaning of this abbreviation (i.e., cerebrovascular accident). The third was a close-ended question about the organ affected by stroke (heart, brain, other, or I do not know). In the last question, the participants were asked which was their main source of information about stroke (school, university, newspaper and magazine, the Internet, television, radio, friends, or family).

The third part of the questionnaire contained an open-ended question. The subjects were asked to say 1 stroke WS, and only the first response would be registered.

In the fourth part of the questionnaire, the individuals were instructed to answer (yes/no/I do not know) if the sign inquired (mouth drooping, impaired strength, difficulties to speak or understand, chest pain, pain that irradiates to the arm) was a stroke WS. The fourth section, which contained close-ended questions, was included after the section of open-ended questions (third part of the questionnaire) so that it would be possible to record the first stroke WS remembered by the subject without any suggestion regarding the correct answer.

The fifth section included 2 open-ended questions about stroke risk factors. The first question asked at least 1 stroke risk factor, and more than 1 answer was allowed. In the other question, the participants were asked which is the main risk factor for stroke, and only the first response would be registered.

The sixth section contained an open-ended question about action in the event of a stroke. The participants were asked how they would proceed if someone they knew had a stroke.

Epi Info, version 7.1 (CDC, Atlanta, GA) was used to create a database. Double data entry and standardized procedures were performed for quality checking. The data were then transported to the IBM SPSS software version 23 (IBM Corp., Armonk, NY) for statistical analysis. Open-ended responses were analyzed through IBM SPSS Text Analytics for Surveys 4.0 (IBM Corp.), a software that enables the transformation of an unstructured survey text into quantitative data. It uses natural language processing technologies specifically designed for survey text. The solution categorizes responses and integrates results with other survey data for better insight and statistical analysis.¹⁵

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