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Public Knowledge of Stroke Amongst a Saudi Population

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Abstract— **Background:Adequate public awareness and knowledge of stroke is needed for proper identification and prevention of potential morbidity and disability. This study was conducted to examine the public stroke awareness and knowledge in a regional Saudi population.**
Methods:A cross sectional study was conducted using a structuredquestionnaire designed to examine public knowledge about stroke warning signs, risk factors, and acute management. Participants were included during an educational stroke campaign at a large shopping center in Jeddah, Saudi Arabiaduring the month of August, 2011.
Results:A total of 506 participants were included. Most participants were young (62% <30 years), females (70%), and well educated (80% had a university degree). Although most participants (87%) recognized stroke definition and the need for urgent medical attention, only 34% rated their stroke knowledge as good.Factors correlating with giving the correct answers to the stroke warning signs and risk factors including female gender (92% females vs 83% males, p=0.003) and adequate financial income (91% adequate vs 74% inadequate, p=0.017). On the other hand, factors correlating significantly with the general perception of good stroke knowledge included younger age (<30 years), female gender, being single, having university education, and residing in an urban area.
Conclusion:Although most participates were able to recognized stroke symptoms and the need for urgent medical attention, their level of knowledge was weak and correlated with their social, economic, and educational levels. Further education is needed in our region.

Index Terms— **Stroke, Awareness, Knowledge, Jeddah, Saudi .**

I. INTRODUCTION

Stroke is a serious neurological disorder associated with high probability of morbidity and significant potential burden on the healthcare system (1). Therefore, it is crucial to identify preventable risk factors, such as hypertension, diabetes, high cholesterol, obesity, and smoking. As well, early recognition of stroke is key in the timely provision of the needed treatment, which in turn could considerably reduce associated morbidity. The usefulness of early thrombolytic therapy is a further clinical evidence to support undertaking a strong public awareness programs(2).The importance of improving public stroke awareness has been addressedin a number of previous studies; however, it received limited study in our region (3-7). Such educational campaigns should focus on recognizing stroke symptoms, risk factors, and the importance of immediate emergency department visit. We aimed to study stroke knowledge and awareness amongst a population sample from Western Saudi Arabia. Understanding the degree of public awareness and attitudes are key steps in order to design educational programs and efforts to alleviate the associated stroke morbidity.

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II. METHODS

A cross sectional study was conducted using a structuredquestionnairedesigned to examine the public stroke awareness and knowledge. Personal, social, and demographic data were included. Knowledge about strokeincluded questions about symptoms,warning signs, risk factors, and acute management; all based on the American Stroke Association guidelines (8). Important warning signs included sudden numbness or weakness in one side of the face, arm or leg, sudden confusion or difficulty speaking, sudden visual impairment in one or both eyes, sudden difficulty in walking, dizziness or loss of balance and coordination, and sudden severe headache with no known cause. Questions on established stroke risk factors included hypertension, diabetes, smoking, alcohol, hypercholesterolemia, obesity, heart and blood diseases, and family history of stroke.The questionnairewas made available in both Arabic and English languages and was distributed to adults during an educational stroke campaign at a large shopping center in Jeddah, Saudi Arabia during the month of August, 2011. Additional questionnaires were completed through a conjoint educational website on the Internet.

The questionnaires were anonymously administered and all participants were assured of their confidentiality.The biomedical ethics committee of King Abdulaziz University hospital approved the study.The data were analyzed using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL, US), version 22. Descriptive statistics were computed for all variables. The chi-square test was used to establish the relationship between categorical variables.

III. RESULTS

Most approached people (136 of 212, 64%) agreed to participate. Additional 370 questionnaires were completed on our conjoint online campaign, giving a total of 506 participants. The socio-demographic characteristics are shown in table 1. Most participants were young (62% less than 30 years of age), females (70%), of Saudi nationality (82%), and well educated (80% had a university degree). Most participants (87%) recognized stroke definition and 89% recognized the need for placing an emergency call. However, when asked about the strength of their knowledge, 26%felt that it was poor and 40% felt it was fair. Only 34% rated their stroke knowledge as good.The most common sources of their information were the media (26%) and the Internet (25%).Only 16% reported a positive family history of strokes.Two factors correlated with giving the correct answers to the stroke warning signs and risk factors includingfemale gender (92% females vs 83% males, p=0.003) and adequate financial income (91% adequate vs 74% inadequate, p=0.017). On the other hand, factors correlating with the general perception of good stroke knowledge included younger age (<30 years), female gender, being single, having university education, and residing in an urban area, all detailed in table 2.

IV. DISCUSSION

Our study documented that our public is not well informed about stroke. Although the majority of participantsrecognized stroke definition and acute management, the strength of their knowledge was not adequate. Only one third rated their stroke knowledge as good.In a larger study from a different region of Saudi Arabia, only 64% were able to define stroke correctly (9). Increased awareness and educational programs are needed. The Internet and other media were the most important source of information in our sample. This can be used more effectively for community education and promoting stroke awareness. Our study also found a significant correlation with the social, economical, and educational levels of the participants. Individuals with higher income, urban lifestyle and higher education have direct access to sources of knowledge and information (10). However, these individuals may be more aware of their increased vulnerability to stroke on account of their associated risk factors. Further educational programs should focus on these groups with lowered stroke awareness and knowledge.

Interestingly, female gender and younger age (<30 years) correlated with higher stroke knowledge. This may be explained by their over representation in the study sample. It may also reflect their increased interest and better education. Additional limitations to our study included the underrepresentation of males and those from lower socio-educational backgrounds. This will limit the ability to generalize from our findings. However, or study was relatively large with a good response rate that was supplemented with online enrollment. It represented well a certain segment of our community. Finally, our questionnaire is self-structured and hence has not been used or validated in previous studies.

We conclude that although most participates were able to recognized stroke symptoms and the need for urgent medical attention, their level of knowledge was weak and correlated with their social, economic, and educational levels. Further education is needed in our region. A country wide epidemiological study is needed to further assess areas of focused education and potential target groups.

Table 1: Demographic characteristics of the study population (n=506).

Demographics		**Number**	**%**
Age	20-30 years	311	61.5
	30-40 years	103	20.5
	>40 years	90	18
Sex	Female	353	70
Nationality	Saudi	414	82
Marital Status	Single	221	44
	Married	266	53
	Other	16	3
Educational Level	Illiterate	9	2
	Complete secondary or below	88	18
	University or above	407	80
Family monthly income	Enough and exceeds	242	48
	Only enough	226	45
	Not enough with debt	35	7
Residency	Urban	493	97.5
	Rural	11	2.5

Table 2: Factors Correlating With the General Perception of Good Stroke Knowledge.

Demographics		Knowledge			p-value
		Poor N=128	Fair N=197	Good N=169	
Age	20-30	64(21%)	115(37%)	128(42%)	<0.001
	30-40	37(37%)	39(39%)	24(24%)	
	40-50	23(36.5%)	27(43%)	13(20.5%)	
	>50 years	4(17%)	16(66.5%)	4(16.5%)	
Sex	Male	56(37.5%)	54(36%)	40(26.5%)	0.001
	Female	72(21%)	142(41.5%)	129(37.5%)	
Marital Status	Single	43(20%)	77(35%)	99(45%)	<0.001
	Married	82(32%)	110(43%)	65(25%)	
	Divorced	3(21.5%)	6(43%)	5(35.5%)	
Educational Level	None	1(11%)	7(78%)	1(11%)	0.001
	School	35(40%)	34(39%)	18(21%)	
	University	92(23%)	156(39.5%)	149(37.5%)	
Residence	Urban	121(25%)	195(40.5%)	166(34.5%)	0.016
	Rural	7(64%)	2(18%)	2(18%)	

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