

Level of awareness regarding stroke among Riyadh population

Mohammed K.T. Abutaima¹, Ammar Almaghrabi¹, Rashed Alhazzaa¹,
Abdullah Alaydaa¹, Abdulhakim Alshuraymi¹, Meshari Alzahim¹,
Sohaib Ashour¹, Mohammed Alayed¹, Mukhlid Alshamrani¹,
Ammar Fathi M. Khalifa²

¹Medical Students, ²Department of Community Medicine, Almaarefa University, Ad Diriyah, Saudi Arabia

ABSTRACT

Background: Stroke is known to be the second leading cause of death and persistent disability worldwide, with 5.5 million deaths each year. Public knowledge regarding risk factors, signs and symptoms and the prevention of stroke is an important factor in reducing the incidence of stroke. **Objective:** This study aimed to determine the level of awareness regarding stroke in Riyadh, Saudi Arabia. **Methods:** This study recruited 150 participants from primary health care (PHC) centres, based on the methodology of a similar cross-sectional study conducted in Riyadh. The study group included adult male and female PHC visitors and excluded visitors with mental illness and medical personnel. Systematic random sampling was used to select participants. Data were collected using a self-administered questionnaire and analysed using SPSS. Microsoft Excel was used to generate tables and charts. Consent was obtained before data collection, with emphasis on each participant's right to withdraw from the study at any time. **Result:** A total of 150 respondents were included in this study. We found that the majority of the participants had a high level of awareness regarding the risk factors of stroke (n = 115, 76.66%). More than half of the participants (n = 95, 63.3%) had a moderate level of awareness of the signs and symptoms of stroke. The study also revealed that there was no statistically significant relationship between education level and level of awareness regarding risk factors of stroke (p = 0.334). **Conclusion:** This study found that the majority of participants had a high level of awareness regarding stroke. Regarding the education level of the participants, we found that the majority of participants with primary school-level education had a high level of awareness regarding stroke risk factors. Furthermore, we found that the level of awareness about prevention of stroke was moderate among participants. Thus, further studies should explore how to improve levels of awareness regarding the prevention of stroke.

Keywords: Awareness, population, Riyadh, stroke

Introduction

Stroke is known as a sudden lack of blood flow to the brain that causes vascular lesion involving cerebral infarction, intracerebral haemorrhage or subarachnoid haemorrhage. The duration of stroke is greater than 24 hours, and it is known to be the second leading cause of death and permanent disability worldwide.^[1-4] Occlusions of the cerebral vessels (ischemic stroke) accounts for more than 80% of all strokes, while primary intracerebral bleeding

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Abutaima MK, Almaghrabi A, Alhazzaa R, Alaydaa A, Alshuraymi A, Alzahim M, et al. Level of awareness regarding stroke among Riyadh population. J Family Med Prim Care 2021;10:538-41.

Address for correspondence: Dr. Mohammed KT Abutaima,
Medical Students, Almaarefa University, Exit No. 1, King Khalid
Branch Road, Al Khalidiyah, Al Khalidiyah, Ad Diriyah 13 Exit No.
1, Ad Diriyah 13713, Saudi Arabia.
E-mail: MOHAMMAD3366@GMAIL.COM

Received: 30-06-2020

Revised: 05-09-2020

Accepted: 20-10-2020

Published: 30-01-2021

Access this article online

Quick Response Code:



Website:
www.jfmpc.com

DOI:
10.4103/jfmpc.jfmpc_1304_20

(haemorrhagic stroke) accounts for the remaining 20% of strokes. Stroke pathophysiology is complex and includes various processes including energy depletion, cellular ion homeostasis loss, increase blood acidity, increased calcium levels inside cells, increase excitotoxicity, toxicity of free radical-mediated, production of arachidonic acid products, cell toxicity by cytokine-mediated, stimulation of complement system, disruption of blood-brain barrier (BBB), stimulation of glial cell and leukocyte aggregation.^[5]

Stroke symptoms depend on the affected area of the brain, which in turn is characterized by the involved arterial structure. Typical symptoms of stroke in the left hemisphere include aphasia, right hemiparesis and right hemianopia, whereas stroke in the right hemisphere typically results in left hemispatial neglect, left hemiparesis and left hemianopia. While the majority of strokes are supratentorial (90%), post-circulation or infratentorial stroke has some additional manifestations such as diplopia, bulbar weakness, dysphagia, unilateral dysmetria and incoordination, as well as decreased levels of consciousness.^[6]

The prevalence of stroke is increasing worldwide, with an incidence of 13,676,761 in 2016. A total of 5.5 million global deaths occurred in 2016, with 8539 of those deaths occurring in Saudi Arabia.^[7] Many regional studies have been conducted in Saudi Arabia: the first was conducted in Riyadh with a stroke incidence of 43.8/100,000 individuals; the second study was conducted in the Eastern province with an incidence of 29.8/100,000 individuals; the third study was conducted in the Aseer region with an incidence of 57.64/100,000 individuals.^[8,9] However, there is a gap in the statistics of stroke incidence in Saudi Arabia overall. Our study thus aimed to determine the level of awareness regarding stroke.

Methodology

A survey of primary health care (PHC) centres was conducted based on a cross-sectional study conducted in Riyadh, Saudi Arabia – the capital city, which is located in central Saudi Arabia. A group of 150 participants was recruited from PHC centres including adult male and female PHC centre visitors and excluding visitors with mental illness and medical personnel. The participants were chosen by systematic random sampling. Data were collected using a self-administered, pre-tested and pre-coded questionnaire composed of closed-ended questions regarding level of awareness about stroke. The questionnaire was subjected to a probe to evaluate its validity and reliability. Data were analysed using Statistical Package of Social Sciences (SPSS) version 23 and Microsoft Excel was used to generate tables and charts. *P* values of 0.05 or less were considered significant. Consent was obtained from participants before data collection, with emphasis on confidentiality and the right of participants to withdraw from the study at any time.

Results

The results shown in Table 1 summarize the demographics of study participants. The majority of respondents were male (71.3%) and that (41.3%) of the respondents were between the ages of 18 and 30. A third of the respondents (33.3%) were between the ages of 31 and 40. An equal proportion of the participants (12.7%) were between the ages of 41 and 50 or over the age of 50. Furthermore, the majority (85%) of the respondents were Saudi. A minority (2%) of respondents were illiterate, whereas 4.7% of respondents were primary school educated, 27.3% of respondents were secondary school educated and the majority (66%) of the respondents were university graduates. More than half (54%) of the respondents were employed, though 37.3% of respondents were unemployed and 8.7% of respondents were self-employed. Finally, 33% of respondents were single, 59% of respondents were married, 7% of respondents were divorced and only 1% of respondents were widowed.

Table 2 summarizes participant awareness of risk factors for stroke. It shows that the majority (90%) of the respondents report that high blood pressure is a risk factor for stroke, while (10%) of

Table 1: Demographic data of study participants

	Number	Percentage
Gender		
Male	107	71.3%
Female	43	28.7%
Total	150	100.0%
Age		
18-30	62	41.3%
31-40	50	33.3%
41-50	19	12.7%
Over 50	19	12.7%
Total	150	100%
Nationality		
Saudi	127	85%
Non-Saudi	23	15%
Total	150	100%
Education level		
Illiterate	3	2%
Primary	7	4.7%
Secondary	41	27.3%
University	99	66%
Total	150	100%
Occupation		
Employed	81	54%
Unemployed	56	37.3%
Self-employed	13	8.7%
Total	150	100%
Marital status		
Single	49	33%
Married	89	59%
Divorced	10	7%
Widowed	2	1%
Total	150	100%

n=150

the respondents do not think that high blood pressure is a risk factor for stroke. Similarly, more than two-thirds (74%) of the respondents report that heart disease is a risk factor for stroke, while less than one-third (26%) of the respondents do not think that heart disease is a risk factor for stroke. Furthermore, 76% of the respondents report that uncontrolled diabetes mellitus is a risk factor for stroke, whereas 24% of the respondents do not think that uncontrolled diabetes mellitus is a risk factor. Finally, it was found that 76.66% of the respondents believe that smoking is a risk factor for stroke, and 23.33% of the respondents do not think that smoking is a risk factor.

As shown in Table 3, the majority of respondents (76.66%) had a high level of awareness overall regarding stroke risk factors. A minority (16.66%) of the respondents had a moderate level of awareness of stroke risk factors and 7.33% of respondents had a low level of awareness of stroke risk factors.

Table 4 shows that 73.3% of respondents reported that arm weakness and difficulty of speech are signs of stroke. Furthermore, a majority of respondents (75.3%) reported that aphasia is a primary symptom of stroke.

Table 5 shows the overall level of awareness of stroke signs and symptoms. We found that more than half of participants had a high level of awareness regarding the signs and symptoms of stroke (63.3%), and 22% of participants had a moderate level of awareness regarding the signs and symptoms of stroke. Only a minority (14.7%) of participants had low level of awareness regarding the signs and symptoms of stroke.

Table 6 shows that 66.66% of illiterate participants had a high level of awareness regarding risk factors for stroke, while no participants in the illiterate subgroup had a moderate level of awareness and 1 (33.3%) had a low level of awareness. Of participants with primary school education, 71.4% had a high level of knowledge of stroke risk factors, 14.3% had moderate knowledge of stroke risk factors and 14.3% had a low level of knowledge of stroke risk factors. Of participants with a secondary school level education, 70.7% had a high level of awareness of stroke risk factors whereas 17% and 12.1% of these participants had a moderate and low level of stroke risk factor awareness, respectively. Finally, the majority (78.7%) of participants with a university level education had a high level of awareness of stroke risk factors, whereas 17.1% had a moderate level of stroke risk factor awareness and 4% had a low level of stroke risk factor awareness.

Discussion

Many studies use questionnaires to identify the level of awareness regarding specific conditions or diseases. The objective of the questionnaire in this study was to assess awareness regarding stroke in the general population, and to examine specific knowledge regarding risk factors as well as signs and symptoms of stroke. Furthermore, the relationship between educational

level and awareness of stroke risk factors was also evaluated based on questionnaire responses. This main limitation of this study to consider is that the number of participants was unbalanced with regards to gender, nationality, marital status and education level.

The results of this study suggest that the majority of the respondents had a high level of awareness regarding stroke risk factors, which is in line with a study conducted in Saudi Arabia by Rania Naguib in 2020.^[10] However, a similar study was conducted in Norway by Antje Sundseth in 2014,^[11] which showed that participants had a low level of knowledge about the risk factors of stroke. This difference might be because the majority of participants in our study were educated at the university level and had acquired knowledge of stroke risk factors from social media or the internet. This implies that the Saudi Arabian Ministry of Health should continue to facilitate effective health education presentations regarding the risk factors of stroke.

This study also demonstrated that knowledge of the signs and symptoms of stroke was generally high among participants, as approximately half of the respondents demonstrated good knowledge of stroke signs and symptoms. This aligns with a study conducted in Egypt by Hatem Shehata in 2016.^[12] However, a study conducted in Nigeria by Odiase Ehidiemen in 2018^[13] indicated that a minority of participants could identify the signs and symptoms of stroke. This may be attributed to the number of signs and symptoms of stroke that were included in our study questionnaire. This implies that researchers should investigate

Table 2: Awareness of risk factors for stroke

Hypertension	Yes	No	Total
	135 (90%)	15 (10%)	150 (100%)
Heart Disease	Yes	No	Total
	111 (74%)	39 (26%)	150 (100%)
Uncontrolled Diabetes Mellitus	Yes	No	Total
	114 (76%)	36 (24%)	150 (100%)
Smoking	Yes	No	Total
	115 (76.66%)	35 (23.33%)	150 (100%)

Table 3: Overall level of awareness regarding stroke risk factors

HIGH	MODERATE	LOW
114 (76.66%)	25 (16.66%)	11 (7.33%)

Table 4: Awareness of signs and symptoms of stroke

Arm weakness and difficulty of speech are signs	Yes	No	Total
	110 (73.3%)	40 (26.7%)	150 (100%)
Aphasia is a primary sign	Yes	No	Total
	113 (75.3%)	37 (24.7%)	150 (100%)

Table 5: Overall level of awareness of stroke signs and symptoms

High	Moderate	Low
95 (63.3%)	33 (22%)	22 (14.7%)

Table 6: Relationship between the education levels and level of awareness regarding stroke risk factors

	Illiterate	Primary	Secondary	University	Total
High	2 (66.6%)	5 (71.4%)	29 (70.7%)	78 (78.7%)	114 (76%)
Moderate	0 (0%)	1 (14.3%)	7 (17%)	17 (17.1%)	25 (16.6%)
Low	1 (33.3%)	1 (14.3%)	5 (12.1%)	4 (4%)	11 (7.4%)
Total	3 (2%)	7 (4.6%)	41 (27.4%)	99 (66%)	150 (100%)

P=0.334

the behaviour of stroke patients with regards to changes in their lifestyle following stroke.

Finally, this study found no relation between educational level and knowledge of stroke risk factors, which contradict the claims of a study conducted in Saudi Arabia by Wijdan Basfar in 2016.^[14] This might be attributable to the greater number of female respondents in that study compared to our study. This implies that the Saudi Arabian Ministry of Health should further investigate the relationship between educational level and awareness of stroke risk factors.

Acknowledgments

The authors are thankful to AlMaarefa University for providing facilities to carry out this work.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

- Sacco RL, Kasner SE, Broderick JP, Caplan LR, Connors JJ, Culebras A, *et al.* An updated definition of stroke for the 21st century: A statement for healthcare professionals from the American Heart Association/American Stroke Association. *Stroke* 2013;44:2064-89.
- Coupland A, Thapar A, Qureshi M, Jenkins H, Davies AH. The definition of stroke. *J Royal Soc Med* 2017;110:9-12.
- Memon I, Abu-Shaheen A, Heena H, Al-Tannir M. Point prevalence study for stroke in Saudi Arabia: A cross-sectional survey. *Saudi J Health Sci* 2019;8:93-7.
- Phipps S, Cronin A. Management of acute ischemic stroke. *BMJ* 2020;368:l6983.
- Woodruff TM, Thundyil J, Tang SC, Sobey CG, Taylor SM, Arumugam TV. Pathophysiology, treatment, and animal and cellular models of human ischemic stroke. *Mol Neurodegener* 2011;6:11.
- Musuka TD, Wilton SB, Traboulsi M, Hill MD. Diagnosis and management of acute ischemic stroke: Speed is critical. *CMAJ* 2015;187:887-93.
- Global, regional, and national burden of stroke, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *Lancet Neurol* 2019;18:439-58.
- Al Rajeh S, Awada A. Stroke in Saudi Arabia. *Cerebrovasc Dis* 2002;13:3-8.
- Alhazzani A, Mahfouz A, Abolyazid AY, Awadalla NJ, Aftab R, Faraheen A, *et al.* Study of stroke incidence in the Aseer region, Southwestern Saudi Arabia. *Int J Environ Res Public Health* 2018;15:215.
- Naguib R, Fayed A, AlFadhliyah A, AlMansour NS, AlDakheel RM, AlQahtani RM, *et al.* Awareness about stroke and proper actions to be taken; A room for improvement. *J Stroke Cerebrovasc Dis* 2020;29:104794.
- Sundseth A, Faiz K, Rønning O, Thommessen B. Factors related to knowledge of stroke symptoms and risk factors in a Norwegian stroke population. *J Stroke Cerebrovasc Dis* 2014;23:1849-55.
- Shehata H, Ahmed S, Abdelalim A, El Sherbiny N. Knowledge and attitude towards stroke among workers in Cairo University Hospitals. *Egypt J Neural Psychiatry Neurosurg* 2016;53:54-9.
- Ehidimen O, Ehinwenma O. Awareness of stroke risk factors and warning symptoms amongst hypertensive patients in Benin city. *Ann Med Health Sci Res* 2018;8:40-4.
- Basfar W, Al-Sebyani A, Aljawi G, Milyani HA, Jan MM. Public knowledge of stroke amongst a Saudi population. *World J Res Rev* 2016; 3:10-2.