

Stroke prevention: knowledge of the general population in Riyadh Region, Saudi Arabia

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Abstract. – OBJECTIVE: Stroke is a medical emergency that may lead to permanent neurological damage, complications, and disability. It is the second leading cause of death worldwide and one of the main causes of adult-acquired disabilities. Stroke can be prevented by controlling modifiable risk factors and the early detection of stroke warning signs. The current study aimed to assess the knowledge of the general population in the Riyadh region of Saudi Arabia about stroke.

MATERIALS AND METHODS: A cross-sectional and community-based design was employed in this study. The sample was calculated as 432. A pre-tested structured questionnaire was used to collect data. The data was analyzed by SPSS software, version 23. Descriptive statistics were used. The Chi-square test was employed to test differences between qualitative variables, and a p-value less than 0.05 was considered significant.

RESULTS: Results showed that 26.6 % of the population had good knowledge about stroke. Population with average and poor knowledge were 50.5% and 22.9%, respectively. The level of stroke knowledge is related to age; the older population aged 45 and more acquired the highest level of knowledge (50%) compared to the other groups. Age group 35-44 years received the least level of stroke knowledge (19.9%). The school teaching had the highest level (40.0%) of stroke knowledge than the other occupations.

CONCLUSIONS: Stroke knowledge among the population of Saudi Arabia is inadequate. The stroke knowledge is related to age and occupation.

Key Words:

Stroke, Age, Occupation, Saudi Arabia.

Introduction

Stroke is a medical emergency that can cause permanent neurological damage, complications, and disability¹. It is the second leading cause of death worldwide and one of the main causes of adult-acquired disabilities². Stroke can present with sudden onset of neurological disturbance including limb weakness or numbness, loss of vision, disturbance of balance, or speech³. Stroke is a highly preventable and curable illness through the control of modifiable risk factors and the early detection of stroke warning signs⁴. About 80% of stroke-related disability-adjusted life-years and 75% of deaths occur in low-income and middle-income countries⁵. The disease prevalence range between 508 and 777 per 100,000 population in the middle east, and the mean age was between the sixth and seventh decades⁶.

Studies in Saudi Arabia have provided a hospital-based crude annual incidence rate of stroke of 15.1 per 100,000 persons in Jizan⁷, 29.8 per 100,000 persons in the Eastern province⁸, and 43.8 per 100,000 people in Riyadh⁹. Stroke is more prevalent among males in the kingdom¹⁰. Poor knowledge of stroke symptoms and risk factors have been shown to delay health care seeking after a stroke attack. Also, sociocultural beliefs and traditional healers may lead to delay in accessing care and interruption of treatment¹¹. Studies¹²⁻¹⁵ conducted in Saudi Arabia revealed inadequate public knowledge of stroke.

Population-based stroke studies in Saudi Arabia are few; proper awareness and right perception are essential steps for the modification of

stroke risk-related lifestyles and prompt intervention¹⁶. Therefore, the current study aimed to determine the level of knowledge of the general population in the Riyadh region about stroke and determine its relationship with socio-demographic characteristics.

Research Methods

Study Design

A cross-sectional and community-based design was employed in this study. The study was conducted to determine the level of knowledge of the general population in the Riyadh region, Saudi Arabia, about stroke. The study population included different nationalities and both genders in the Riyadh region of Saudi Arabia. Population below 18 years of age were excluded from the study. The sample size was calculated as 432.

Data Collection

A pre-tested questionnaire was used to collect data. The reliability of our study questionnaire was (Cronbach's alpha = 0.751). The questionnaire included socio-demographic data. Questions regarding types of stroke, symptoms, and signs were included. Cronbach's alpha was employed to ensure the reliability of the questionnaire. The data collection team was trained on filling the questionnaire, asking the questions, and keeping it in the study objectives track. The questionnaire was tested in the Al Zulfi region of Saudi Arabia.

To determine the level of stroke knowledge Likert scale was employed. Twelve questions about warning symptoms of stroke and stroke risk factors were asked. Respondents who answered nine to twelve questions correctly were classified as having good knowledge. Participants who answered correctly five to eight and less than five questions were classified as having average and poor stroke knowledge, respectively.

Data Analysis

Data was analyzed by SPSS software, version 23. Descriptive statistics was used. A Chi-square test was employed to test differences between qualitative variables, and a p-value less than 0.05 was considered significant. The ethical approval was obtained from Majmaah University IRB. Informed consent was obtained from the participants, and all data was kept Confidential.

Results

Table I shows the socio-demographic characteristics of the sample. Females were 283 (65.5%) and males were 149 (34.5%). The age group less than 25 years was 113 (26.2%). Age groups 25-34 years, 35-44 years, and more than 45 years were 32.2%, 31.5%, and 10.2%, respectively.

The university graduated were 338 (78.2%), and those with general education were 94 (21.8%). Two hundred population (58.1%) were married, 165 (38.2%) were single, and 16 (3.7%) were divorced. Two hundred and 16 (50%) of respondents were employees, 106 (24.5%) were students, 53 (12.3%) were housewives, 15 (3.5%) were school-teachers. Most of the population (95.1%) were living in urban areas.

Figure 1 shows the knowledge of the population in the Riyadh area about stroke. One hundred and fifteen (26.6%) of respondents acquired good knowledge. Population with average and poor knowledge were 50.5% and 22.9%, respectively.

Table II shows items of Stroke responses of the sample. Questions related to knowledge of different stroke questions were answered correctly by 65.3%, 29.9%, and 65.3%, respectively. The range

Table I. Social factors among study population, Riyadh Area, 2020-2021 (n=432).

Social factor	Frequency	%
Gender		
Female	283	65.5
Male	149	34.5
Age		
Less than 25	113	26.2
25-34	139	32.2
35-44	136	31.5
45 and more	44	10.2
Education		
General	94	21.8
University and postgraduates	338	78.2
Marital status		
Married	251	58.1
Single	165	38.2
Divorced	16	3.7
Occupation		
Private	9	2.1
Employee	216	50.0
Students	106	24.5
Housewife	53	12.3
No job	33	7.6
school teacher	15	3.5
Residence		
Urban	411	95.1

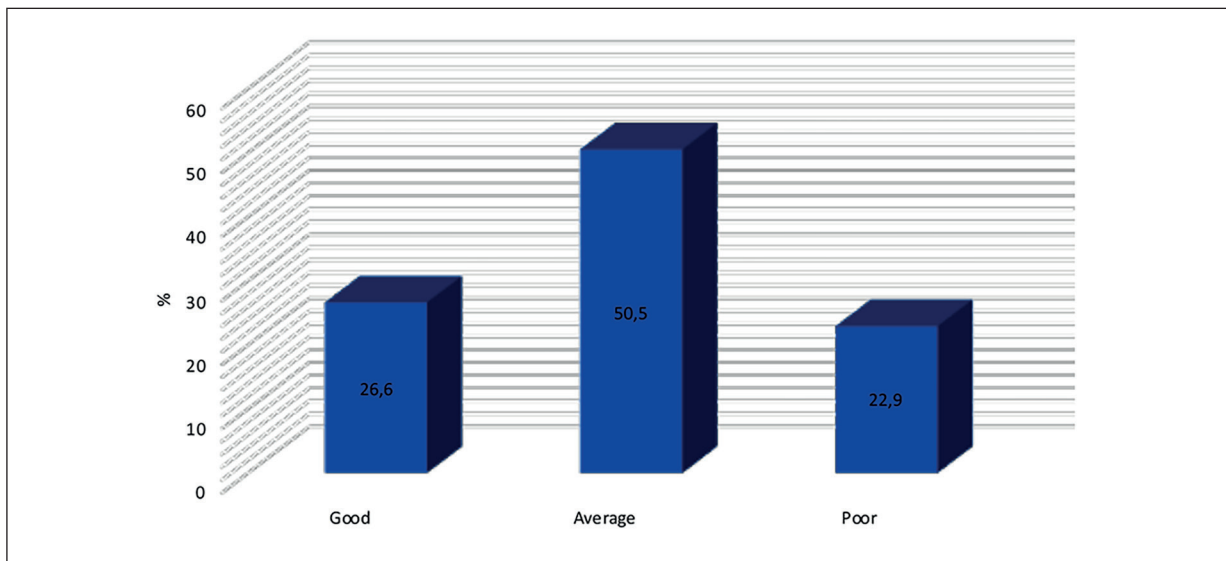


Figure 1. Population stroke level of knowledge.

of questions about symptoms and warning signs of stroke answered correctly ranged between 70.4% and 18.3%.

The relation between stroke knowledge and socio-demographic characteristics was shown in Table III. A significant relation was found between stroke knowledge and the age of respondents. The population age 45 years and more acquired the highest level of stroke knowledge while respondents age between 35 and 40 years had the lowest level of stroke knowledge (50.0% vs. 19.9%, $p \leq 0.001$). School teachers

had the higher stroke knowledge, while respondents who work at private jobs had the least level of stroke knowledge (40.0% vs. 11.1%, $p=0.009$). Marital status, gender, education, and residence showed no significant relation with stroke level of knowledge.

Discussion

The second most common cause of mortality worldwide is stroke and remains a leading cause

Table II. Knowledge level of stroke among study population, Riyadh Area.

Item	Knowledge		Total (n = 432)
	Correct (%)	Incorrect (%)	
Types of stroke			
Hemorrhagic	282 (65.3)	150 (34.7)	432 (100%)
Ischemic	129 (29.9)	303 (70.1)	432 (100%)
TIA	282 (65.3)	150 (34.7)	432 (100%)
Symptoms and signs			
Difficult swallow	304 (70.4)	128 (29.6)	432 (100%)
Sudden diff in swallowing	304 (70.4)	128 (29.6)	432 (100%)
Paralysis any part of body	83 (19.2)	349 (80.8)	432 (100%)
Paralysis one side of body	241 (55.8)	191 (44.2)	432 (100%)
Blurring of vision	267 (61.8)	165 (38.2)	432 (100%)
Loss of balance	316 (73.1)	116 (26.9)	432 (100%)
Loss of memory	186 (43.1)	246 (56.9)	432 (100%)
Numbness one side of the body	79 (18.3)	353 (81.7)	432 (100%)
Loss of consciousness	285 (66)	147 (34)	432 (100%)
Headache	271 (62.7)	161 (37.3)	432 (100%)
Pain and tight chest	104 (24.1)	328 (75.9)	432 (100%)

Table III. Relation between stroke knowledge and socio-demographic characteristics (n=432).

Variables		Knowledge			Total No. (%)	p
		Good No. (%)	Average No. (%)	Poor No. (%)		
Gender	Female	73 (25.8)	148 (52.3)	62 (21.9)	283 (65.5)	0.571
	Male	42 (28.2)	70 (47.0)	37 (24.8)	149 (34.5)	
Age/years	Less than 25	28 (24.8)	73 (64.6)	12 (10.6)	113 (26.2)	< 0.001
	25-34	38 (27.3)	64 (46.0)	37 (26.6)	139 (32.2)	
	35-44	27 (19.9%)	70 (51.5%)	39 (28.7%)	136 (31.5)	
Marital status	45 and more	22 (50.0)	11 (25.0)	11 (25.0)	44 (10.2)	0.051
	Single	41 (24.8)	94 (57.0)	30 (18.2)	165 (38.2)	
	Married	73 (29.1)	115 (45.8)	63 (25.1)	251 (58.1)	
	Divorced/widow	1 (6.3)	9 (56.3)	6 (37.5)	16 (3.7)	
Education	General	20 (21.3)	46 (48.9)	28 (29.8)	94 (21.8)	0.148
	University and post	95 (28.1)	172 (50.9)	71 (21.0)	338 (78.2)	
Occupation	Employee	62 (28.7)	98 (45.4)	56 (25.9)	216 (50.0)	0.009
	Students	33 (31.1)	60 (56.6)	13 (12.3)	106 (24.5)	
	Housewives	9 (17.0)	26 (49.1)	18 (34.0)	53 (12.3)	
	No job	4 (12.1)	23 (69.7)	6 (18.2)	33 (7.6)	
	School teachers	6 (40.0)	7 (46.7)	2 (13.3)	15 (3.5)	
	Private work	1 (11.1)	4 (44.4)	4 (44.4)	9 (2.1)	
Residence	Urban	109 (26.5)	211 (51.3)	91 (22.1)	411 (95.1)	0.171
	Rural	6 (28.6)	7 (33.3)	8 (38.1)	21 (4.9)	

of adult disability. The knowledge on stroke in the community has an influence on stroke prevention, risk factors, warning symptoms identification and management. Dissemination of accurate information regarding stroke types and warning signs is essential to prevent stroke morbidity and fatality within vulnerable communities. Increasing stroke knowledge among communities is known to result in a shorter presentation time to the emergency department following stroke onset¹⁷. Stroke is prevalent in Saudi Arabia; disease prevalence range between 508 and 777 per 100,000 population, and the mean age was between the sixth and seventh decades⁶. Almost half (50.5%) of the participants found to have average knowledge about stroke. Population with good stroke knowledge were (26.6%). This low level of stroke knowledge is higher than the findings of Basfar et al¹⁸ who found that only one-third of the study population of Jeddah, Saudi Arabia had a good level of stroke knowledge. The finding is consistent with other studies conducted in Saudi Arabia^{19,20}. However, this result is inconsistent with other studies that found a high level of stroke knowledge among Saudi Arabia^{21, 22}.

Regarding the assessment of study population knowledge about stroke types, (65.3%) knew about Hemorrhagic and transient ischemic attack

(TIA). This finding is consistent with Basfar et al¹⁸, who found most participants recognized stroke definition and types although the strength of their knowledge was not adequate.

In our findings, there is a significant association between stroke knowledge with age ($p < 0.001$)¹⁸ and occupation ($p=0.009$)²¹. Another study²¹ showed significant association with income, educational level, and employment status. Basfar et al¹⁸ found a relation between stroke knowledge with female gender, being single, having university education, and residing in an urban area.

Conclusions

Stroke knowledge among the population of Saudi Arabia is inadequate. Stroke knowledge is significantly associated with age and occupation. The old age group and schoolteachers have the highest level of stroke knowledge compared to others. School teachers are recommended to be utilized in raising awareness of the population about stroke

Conflict of Interest

The Authors declare that they have no conflict of interests.

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