Original article:

Stroke Risk Perception And Its Awareness Among Hypertensive Patients In Qassim Region Saudi Arabia

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Abstract

Background: Stroke is the most leading reasons of mortality globally and is the main cause of disability worldwide. Therefore it was necessary to study the knowledge and awareness level among the high risk population such as hypertensive concerning warning signs.

Aim: To identify the stroke risk perception and awareness among hypertensive patients in Qassim Region, Saudi Arabia.

Methods: A descriptive cross-sectional study was conducted on 203 hypertensive patients at the hypertension clinic in Buraidah central hospital. Data collection tool used in this study were socio-demographic data, past medical history, knowledge on stroke risk factors and stroke warning signs and self-reported stroke risk.

Results: The results showed that (n=117, 57.6%) of participants had elevated systolic blood pressure and (n=115, 56.7%) of them were smokers, the knowledge means of stroke risk were 10.73 ±3.53 while the mean knowledge of warning signs was 9.276±2.99. The regressions result was statistically insignificant for the variables on the risk score; however, the age was statistically significant ($p< 0.001$).

Conclusion: The study revealed that most of the hypertensive patients had unsatisfactory knowledge regarding risk factor and warning signs of stroke. Knowledge as a predictor for stroke risk was found not to be a significant predictor for stroke risk in this study. Increase awareness among the population to encourage primary prevention of hypertension should be the first concern by preventing smoking, reducing salt consumption, encourage physical activity, healthy diet and healthy lifestyles.

Keywords: Stroke Risk Perception, Awareness, Hypertensive Patients, Qassim Region, Saudi Arabia

الملخص

خلفية: السكتة الدماغية هي أهم أسباب الوفيات على مستوى العالم وهي السبب الرئيسي للإعاقة في جميع أنحاء العالم. لذلك كان من الضروري دراسة مستوى المعرفة والوعي بين السكان المعرضين لمخاطر عالية مثل ارتفاع ضغط الدم فيما يتعلق بعلامات التحذير.

الهدف: التعرف على إدراك وخطر الإصابة بالسكتة الدماغية لدى مرضى ارتفاع ضغط الدم في منطقة القصيم، المملكة العربية السعودية. طرق البحث: أجريت دراسة لحظية على ٢٠٣ مرضى ارتفاع ضغط الدم في عيادة ارتفاع ضغط الدم في مستشفى بريدة المركزي. كانت أداة جمع البيانات المستخدمة في هذه الدراسة البيانات الاجتماعية والديموغرافية، والتاريخ الطبي السابق، والمعرفة حول عوامل خطر السكتة الدماغية وعلامات التحذير من السكتة الدماغية وخطر السكتة الدماغية المبلغ عنها ذاتيا.

النتائج: أظهرت النتائج أن ٥٧,٦ ٪ من المشاركين لديهم ارتفاع ضغط الدم الانقباضي ٥٦,٧ ٪ من بينهم مدخنون، وكانت متوسط المعرفة لمخاطر السكتة الدماغية ١٠,٧٣ ± ٣,٥٣ في حين أن متوسط معرفة علامات التحذير كان ٩,٢٧٦ ± ٢,٩٩. كانت نتيجة الانحدار غير ذات دلالة إحصائية للمتغيرات في درجة المخاطر؛ ومع ذلك، كان العمر ذات دلالة إحصائية (ع > ٠,٠٠٠).

الخلاصة: كشفت الدراسة أن غالبية مرضى ارتفاع ضغط الدم لديهم معرفة غير مرضية فيما يتعلق بعامل الخطر وعلامات التحذير من السكتة الدماغية. تم العثور على المعرفة كتنبؤ لمخاطر السكتة الدماغية ليست مؤشرا كبيرا لخطر السكتة الدماغية في هذه الدراسة. زيادة الوعي بين السكان لتشجيع الوقاية الأولية من ارتفاع ضغط الدم يجب أن يكون الشاغل الأول عن طريق منع التدخين، والحد من استهلاك الملح، وتشجيع النشاط البدني، واتباع نظام غذائي صحي وأنماط الحياة الصحية.

الكلمات المفتاحية: تصور مخاطر السكتة الدماغية، الوعي، مرضى ارتفاع ضغط الدم ومنطقة القصيم المملكة العربية السعودية

Introduction

Stroke is one of the greatest public causes of morbidity and fatality internationally. The global incidence of stroke is predicted to be nearly fifteen million incidence strokes every year. It has been assessed that disability-adjusted life years from a stroke is approximately 90% in developing countries, which is approximately seven times the disability adjusted life years lost in developed countries. Stroke is classified as the third leading cause of mortality worldwide, with nearly six million terminal cases per year [1].

Individuals with hypertension are at greater risk for suffering a stroke; public stroke prevention program should be focused to enhance the awareness of hypertensive people about the early warning symptoms of stroke and changeable risk factors [2].

In the kingdom of Saudi Arabia (KSA), hypertension has been predictable to be the primary risk factor for fatality. It has been assessed that nearly 25% of adults (age 15–64 years) have hypertension. High blood pressure among Saudi adults is well recognized. A massive national study found that nearly two thirds (total N = 1213) of the hypertensive patients had uncontrolled blood pressure, a terrifyingly high ratio [3].

High blood pressure is believed to be the prominent risk factor for death worldwide, initiating an expected 7.5 million deaths every year (13% of all deaths) [4]. Hypertension is the most significant risk factor for all types of stroke. The relationship between hypertension and stroke has been approved for many years. There has been persuasive evidence for the previous 30 years that controlling blood pressure leads to the prevention of stroke [5].

Identifying of stroke warning signs is reasonably tied to taking the necessary actions to seek early emergency care. Poor recognition of stroke symptoms and risk may diminish the motivation for a modification in behavior and prolong delay of seeking emergency treatment. Investigators studying this delay have revealed that the greatest percentage of the delay exists in the pre-hospital interval of the incident: from the beginning of stroke symptoms to emergency department arrival [6]. The main aspects associated with this delay are a deficiency of patient and community awareness of stroke signs and symptoms and ignoring to seek emergency treatment [7].

Stroke is a preventable and curable illness through the control of changeable risk factors and the early discovering of stroke warning signs correspondingly [2]. General knowledge regarding stroke improves correct awareness, and enhance the performance of practices implemented by individuals to prevent and treat stroke. Awareness about risk factors of stroke and warning signs, appropriate action or immediate practices is essential in dealing with a stroke. In addition, the correct attitude towards stroke prevention can control both mortality and morbidity among the public and high risk groups [8].

Many previous studies have measured awareness in public and hypertensive patients regarding stroke, its symptoms and risk factors. Some researchers have confirmed general inadequate knowledge of stroke risks and warning signs among participants [7, 9]. Other researchers have demonstrated that knowledge regarding stroke risk factors was inadequate among individuals at higher risk for stroke [10, 11]. Therefore, proper risk awareness is an essential step for the modification of risk related lifestyles. Therefore it was necessary to study the knowledge and awareness level among the high risk population such as hypertensive concerning warning signs, and changeable risk factors to prevent the event or at least discover it early. The current study aimed to identify stroke risk perception and level of awareness of stroke among hypertensive patients in Qassim region, Saudi Arabia.

Methodology

Study design

A descriptive cross-sectional study carried out from December 2018 to March 2019 to identify the stroke risk perception and its awareness among hypertensive patients in Qassim Region, Saudi Arabia.

Setting

The study was carried out in the hypertension clinic in Buraidah Central Hospital, Qassim region, KSA. It receives nearly one hundred thousand and half clients previous year 2018, approaching from different health regions of Qassim [12].

Sample

The participants included patients attending hypertension clinic on selected days from December 2018 to March 2019. Patients under the age of 18 years, non-Arabic speakers, or health professional were excluded. The calculation of sample size for stroke awareness was based on the prevalence of hypertension whereas considered a significant risk factor for stroke. The sample size was estimated using Fisher's formula: $n = \frac{Z^2 P(1-P)}{d^2}$ **Where n is the sample size, Z is the statistic corresponding to level of confidence, P is expected prevalence and d is precision,** for estimating sample size in descriptive studies where hypertension prevalence was 15.1 % [13] and number = 197 participants and 203 participants were recruited.

Data collection and Procedure

Close ended interview questionnaire was used to collect data related to this study; it was written in a simple Arabic language developed by researchers.; A literature review was undertaken to uncover relevant items for the questionnaire, it consisted of four sections: first one; personal characteristics (age, sex, occupation, marital status, education, etc.), sources of information and previous medical history (history of hypertension, hypercholesterolemia, diabetes, smoking, cardiac disease, etc.). The second part of the questionnaire assessed the patients' awareness on stroke risk factors and stroke signs awareness which consists of 23 and 20 items addressing the risk factors, non-risk factors, signs, and non-signs

of stroke. The third part self-reported stroke risk it used a six-response category scale with one being "very unlikely" and six being "very likely". The awareness questionnaire was pre tested by pilot study on 10 patients attending the hypertension clinic of Buraidah Central hospital to test the clarity of questions and to estimate the time required for using the tools. Permission to carry out the study was obtained from the administrators of the hospital and the head of Medical Education Research Center (MERC)**.** One point was given for the correct answer and a zero was given for the incorrect answer; the individual scores were added to obtain a total score. The total knowledge was considered satisfactory if the percent score was 60% or more and unsatisfactory if less than 60% [14]. Recruited patients completed a 10–15 minutes questionnaire prior to their consultation. The fourth part was participant's record to identify the body Mass Index (BMI) and blood pressure **(hypertension was classified as a blood pressure (BP) reading of 140/90 mm Hg or higher),** which measured at participants' arrival to the clinic. Framingham Stroke Risk **[FSR]**; Stroke risk was estimated for each patient based on the adjusted FSR risk score is used to assess a participant's chance of having a stroke over ten years [15], the estimated nine risk factors: age, gender, systolic blood pressure, diabetes, antihypertensive treatment, prior heart disease, atrial fibrillation, current smoking, and left ventricular hypertrophy. The FSR was used to represent the participant's actual risk of stroke.

Statistical analyses

Data were analyzed using (Statistical Package for the Social Sciences) SPSS version 20.0. Findings were described as mean ± standard deviation (SD) for quantitative variables and frequency (percentage) for qualitative variables. During the data analysis, one point for each correct answer was assigned, and zero for any other answer. Multiple linear regressions model was conducted to evaluate the association of relationship of the independent variables to stroke risk factors and to identify the factors influencing stroke risk and to examine the effect of each factor on the stroke risk score. Test of normality was done (Kolmogorov-Smirnov). Statistical significance was defined as $p < 0.05$.

Validity and Reliability

Examining the content validity of the study tools was done by 5experts by professors of nursing at the College of Nursing. Examining reliability of the suggested tools was done statistically by Cronbach's alpha test whereas 0.864 was Cronbach's alpha for awareness of stroke risk factors and 0.921 was Cronbach's alpha for awareness of stroke signs [16].

Ethical Consideration:

The study was approved by the Regional Research Ethics Committee (RREC) Qassim region, KSA prior to the beginning of the study. Aim of the study was clarified to the respondents. Informed consent was obtained from each. Respondents were informed that

they had the right to reject participation and to withdraw at any time. Confidentiality of data was confirmed.

Results

Table 1 shows the personal characteristics of the respondents, regarding age, it shows that (n=94, 46.3%) were between 25 to 45 years while (n=6, 3%) were above 65 years. The participants' average age was 41.83±12.51, the gender analysis shows that (n=104, 51.2%) of them were male and (n=125, 61.6%) were married. The nationality of the participants shows that (n=174, 85.7%) were Saudi and (n=155, 76.4%) had enough income. Regarding education, (n=105, 51.7%) of participants reported to have higher education.

Regarding the source of information, figure 4 showed that (n=100, 49%), (n=87, 43%), and (n=16, 8%) had information from family/ friends, social media and health practitioners.

Table 1: Number and percentage distribution of participants according to their personal information

Parameter	Number [N=203]	Percentage [%]
Age: Less than 25	20	9.9
25 – 44	94	46.3
45 - 64	83	40.9
More than 65	6	3.0
Mean of age:	41.83±12.51	
Gender		
Male	104	51.2
Female	99	48.8
Marital status		
Single	55	27.1
Married	125	61.6
Divorced	18	8.9
Widowed	5	2.5
Nationality		
Saudi	174	85.7
Non Saudi	29	14.3
Income		
Enough	155	76.4

Not enough	48	23.6
Client education		
Illiterate	11	5.4
Primary	29	14.3
Secondary	58	28.6
Higher	105	51.7
Source of information		
Health practitioners	16	8
Family/friends	100	49.3
Social media	87	42.9

Figure 1: Percentage distribution of participants according to their blood pressure and Body Mass Index

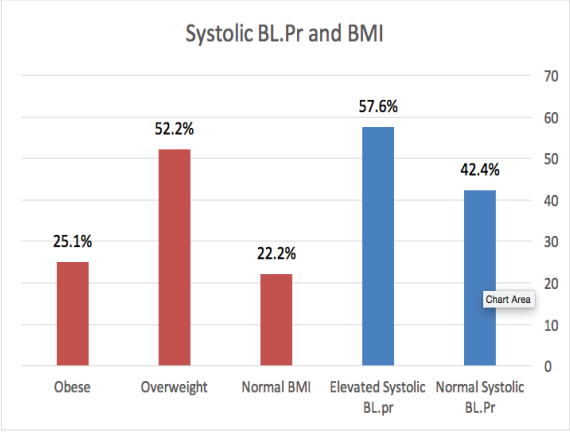


Figure1 shows that (n=117, 57.6%) of participants suffered from elevated systolic blood pressure with average 136.72±11.30 mmgh, while in (n=49, 24.1%) of participants the diastolic blood pressure was high with average 89.57±6.43 Kg. Additionally, (n=106, 52.2%) of Participants were obese and (n=51, 25.1%) of them were morbidly obese. Normal BMI is 18.5-24.9. Values of 25-29.9 are considered overweight. Values of 30 or higher are considered obese.

Figure 2: Percentage distribution of participants according to their risk factors of stroke

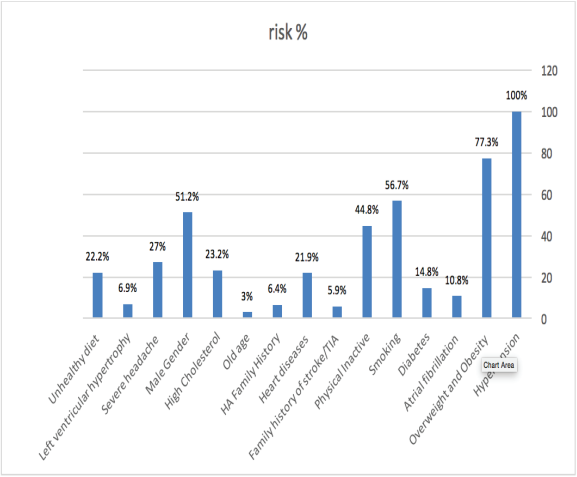


Figure 2 shows that all participants were diagnosed with hypertension and (n=157, 77.3%) of them were obese. Regarding smoking, it shows that (n=115, 56.7%) of the participants smoked and (n=91, 44.8%) of them were physically inactive and (n=45, 22.2%) of them were eating an unhealthy diet. Additionally, (n=43, 21.9%) of participants were diagnosed with heart diseases while (n=47, 23.2%) of them were diagnosed with high cholesterol and (n=22, 10.8 %) had been diagnosed with atrial fibrillation.

Table 2: Number and percentage distribution of participants according to their correct knowledge of stroke risk factors

Stroke risk factors Knowledge	Number [N=203]	Percentage [%]
Hypertension	115	56.7
High cholesterol	99	48.8
Diabetes	87	42.9
Smoking	98	48.3
Overweight	81	39.9
Lack of exercise	96	47.3
Salty diet	52	25.6
History of stroke	77	37.9
History of neck vein disease	32	15.8
Heart disease	77	37.9
Alcohol	69	34.0
Non-stroke risk factors Knowledge		
Trouble Sleeping	87	42.9
Hypoglycemia	106	52.2
Varicose veins	117	57.6
Iron deficiency	105	51.7
Low level of calcium in diet	105	51.7
Alzheimer disease or dementia	118	58.1
Lyme disease	115	56.7
Stress	95	46.8
Exposure to too much sun	116	57.1
Living close to power plant	87	42.9
Travel to foreign countries	126	62.1
Total mean of risk factor knowledge	10.73 ±3.53	

Regarding the correct knowledge of stroke risk factors table 2 explains that the mean of knowledge was 10.73 ±3.53. High blood pressure is the risk factor for stroke which was correctly chosen by (n=115, 56.7%) of the participants followed by high cholesterol (n=99, 48.8%), smoking (n=98, 48.3%), lack of exercise (n=96, 47.3%) and diabetes (n=87, 42.9%). History of neck vein disease is the related risk factor which was least identified by the participants, there were only (n=32, 15.8%) of them who correctly answer. Regarding correct knowledge of non-stroke risk factors, it explains that traveling is not the risk factor for stroke that was correctly chosen by (n=126, 62.1%) of the participants followed by Alzheimer's by (n=118, 58.1%). Sleeping trouble was least identified by the participants, there were only (n=87, 42.9%) of them who correctly answered.

Table 3: Number and percentage distribution of participants according to their correct knowledge of warning signs of stroke

Stroke warning signs	Number [N=203]	Percentage [%]
Double vision	86	42.4
Dizziness	93	45.8
Problems with speaking	84	41.4
Vomiting	32	15.8
Weakness or numbness of face	83	40.9
Weakness/numbness of one side of the body	104	51.2
Confusion	70	34.5
Severe headache	95	46.8
Loss of balance	86	42.4
Weakness or numbness of arm	69	34.0
Trouble with coordination	108	53.2
Non-stroke warning signs		
Back pain	69	34.0
Difficulty breathing	68	33.5
Chest pain	60	29.6
Swollen ankles	86	42.4
Cold fingers /toes	86	42.4
Cough	114	56.2
Leg cramps	78	38.4
Neck pain	73	36.0
Total mean of stroke warning signs	9.276±2.99	

Regarding correct knowledge of the warning signs of stroke, table 3 shows that the mean of knowledge was 9.276±2.99, trouble with co-ordination is the warning sign for stroke which was correctly chosen by (n=108, 53.2%) of the participants followed by weakness or numbness of one side of the body by (n=104, 51.2%) and severe headache by (n=95, 46.8%). Vomiting is the warning sign that was least identified by the participants, there was only (n=32, 15.8%) of them who correctly answered. Regarding correct knowledge of non-stroke warning signs, it describes that cough is not the warning signs for stroke that was correctly chosen by (n=114, 56.2%) of the participants followed by swollen ankles and cold fingers by (n=86, 42.2%). Chest pain was least identified by the participants, there were only (n=60, 29.6%) of them who correctly answered. Regarding total knowledge of stroke, it shows that (n=164, 80.8%) of participants had unsatisfactory knowledge of stroke, while only (n=39, 19.2%) of them had satisfactory knowledge of stroke.

Figure 3: Percentage distribution of participants according to their Self-Reported Stroke Risk Scores

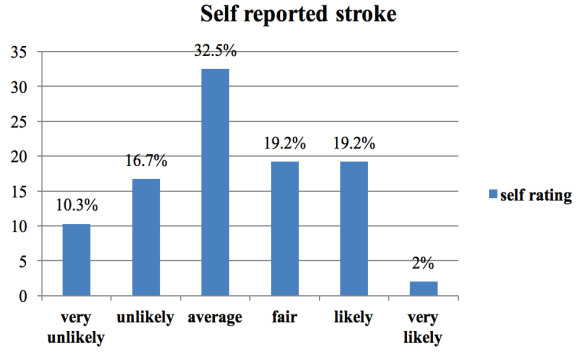


Figure 3 states the self-reported stroke risk of the participants. Whereas (n=66, 32.5%) of them estimated their risk rate as average stroke risk, (n=39, 19.2%) estimated their risk as likely stroke risk and (n=4, 2%) estimated their risk as very likely stroke risk.

Table 4 : Multiple linear regressions of knowledge and demographics on total risk scores

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	15.226	8.156		1.867	.063
Total knowledge of stroke	-.151	.172	-.058	-.874	.383
Gender	-1.561	1.836	-.058	-.850	.396
Age	.332	.081	.307	4.087	.000
Marital status	1.449	1.494	.071	.970	.333
Nationality	1.643	2.615	.042	.628	.531
Education	-1.554	1.062	-.099	-1.464	.145
Income	.564	2.132	.018	.264	.792
Self-rating	1.167	.689	.111	1.693	.092

a.Dependent Variable: total score of risk.

In the multiple regressions analysis, table 4 shows the effects of the independent variables (total knowledge of stroke, gender, age, marital status, nationality, education, income and self-rating) to total score of risk, the following were found to be non-significant predictors; total knowledge (p = 0.383) , gender (p = 0.396), education (p = 0.145), marital status (p= 0.333), nationality (p= 0.531), income (p= 0. 792) and self-rating (p= 0.092). Additionally, it shows that the age only variable that was found to be significant predictors (p< 0.001), that means that the greater the age increased the risk of stroke.

Discussion

According to the data gathered, the personal communication sources were found as the main source of information about stroke (49.3%), followed by social media (42.9%) and the least mentioned source was health personnel (8%). This finding was congruent with several recent studies done in numerous

countries [8, 17, 18]. During the last decades, the controlling of stroke risk factors such as arterial hypertension, atrial fibrillation, and diabetes has rapid progress [19]. Despite this improvement, stroke incidence is still high; one of the logical explanations could be the poor information of stroke risk as explained in the current study and in many studies around the world as in China [20], the United States [21], Greece [22] and the Gulf Cooperation Council countries [23].

With regards to risk factors and incongruent with the findings of previous studies, the present study revealed that all participants have hypertension which is known globally as the most common risk factors for stroke. Hypertension ranks in prevalence from 33.8% in Brazil [24], 38.4% in Australia [25] to 80.7% in Eastern Europe [26]. In addition, a large national study (n=1213) found that 63% of the hypertensive patients in Saudi Arabia had uncontrolled blood pressure, which maximizing the risk for stroke [3]. According to Kaddumukasa et al. [27], increase awareness and peoples' recognition of appropriate information, concerning stroke risk factors and warning signs may help in preventing stroke morbidity and fatality within exposed populations. Stroke risk factors mostly reported were hypertension (56.7%), high cholesterol (48.8%), smoking (48.3%), lack of exercise (47.3%) and overweight (39.9%). On the other hand, salty diet was less identified than was expected (25.6%). These findings are inconsistent with the previous studies which were carried out in various nations; in Italy [28], Canada [29] and Australia [30]. This discrepancy may be due to the differences related to studies' setting and population.

Conclusion

The study revealed that most of the hypertensive patients had unsatisfactory information regarding risk factor and signs of stroke. This study tested knowledge of stroke risk and awareness of signs as a predictor for stroke risk. Knowledge only was detected not to be an associated predictor for stroke risk in this study. Additionally, it was found that most of the hypertensive patients had additional risk factors of stroke as obesity and smoking.

Recommendations

Increase awareness among the population to encourage primary prevention of hypertension should be the first concern by preventing smoking, reducing salt consumption, encourage physical activity, healthy diet and healthy lifestyles. Implementation of an educational program to enhance awareness of patients regarding their future risk of stroke and to change their risk factors is necessary for KSA especially to the older hypertensive patients and those with poor blood pressure control.

Limitations

The major limitations of this study are because the study sample was non probability sample, in a perspective of deficiency of mandatory data to implement accurate recruiting. The second limitation is that respondents were recruited in the hospital, which could

hinder the generalization of our findings to the general population living across Qassim region. Because the data were self-reported, the response is subject to recall bias in addition to a small sample size which may not be applicable to a larger population.

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Conflict of interest

The authors declare no conflict of interest

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