Original Article

Evaluation of knowledge, attitude and risk factor of Stroke in Tabuk Region, Saudi Arabia

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ABSTRACT

Background: This research seeks to assess stroke-related knowledge, attitudes, and risk factors within Tabuk's population. Stroke's significant impact necessitates understanding local perceptions. The aim is to enhance stroke awareness, encourage healthier lifestyles, and reduce the local stroke burden. Through this investigation, the community can gain accurate knowledge, cultivate positive attitudes, and adopt informed practices, potentially improving overall well-being in Tabuk.

Methodology: The study was conducted in Tabuk, located in northwest Saudi Arabia. Data was collected through a predesigned questionnaire. Recruitment period for participants will be from the 1st of June 2023 to the 30th of July 2023.

Results: This study discovered that 84.4% of participants were familiar with "stroke," while 95.3% correctly identified its brain location. About 80.9% accurately recognized blood vessel blockage or burst as the cause. Awareness varied for risk factors: diabetes (42.6%), high blood pressure (79.2%), high cholesterol (60.6%), and smoking (72.0%). Symptoms recognition ranged from 22.5% (high temperature) to 59.4% (trouble walking). Positive attitudes towards blood clot emergencies (85.4%) contrasted uncertainty about treatment (51.0%). Distribution analysis revealed 39.4% with adequate knowledge, 30.2% with satisfactory awareness, and 54.6% with positive attitudes. Demographic factors showed no significant associations ($p > .005$), suggesting the need for targeted educational campaigns in Tabuk for improved stroke awareness and prevention.

Conclusion: The findings emphasize the importance of addressing knowledge gaps, correcting misconceptions, and promoting positive attitudes towards stroke prevention and treatment.

Keyword: stroke knowledge, stroke attitudes, risk factors, Tabuk population.

Introduction

The evaluation of knowledge, attitude, and risk factors of stroke is of utmost importance in understanding and addressing this prevalent and potentially devastating medical condition. Stroke, also known as cerebrovascular accident (CVA), Is a leading cause of mortality and morbidity worldwide. It occurs when the blood supply to the brain is disrupted, leading to the death of brain cells and consequent impairment of neurological function.

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Given its significant impact on individuals, families, and societies, it is crucial to assess the level of knowledge, attitude, and risk factors associated with stroke in order to develop effective preventive strategies and improve patient outcomes [1]. Firstly, evaluating the knowledge of stroke among the general population is essential for raising awareness and promoting early recognition of stroke symptoms. Knowledge about the warning signs and symptoms, such as sudden weakness or numbness of the face, arm, or leg, difficulty speaking or understanding speech, and severe headache, is crucial for prompt medical intervention. A lack of awareness can result in delayed treatment, which can significantly worsen the prognosis for stroke patients. Therefore, conducting surveys and educational campaigns to assess and improve the public's knowledge about stroke is vital [2, 3]. In addition to knowledge and attitude, evaluating the risk factors associated with stroke is crucial for implementing preventive measures. Several modifiable risk factors, such as hypertension, smoking, diabetes, obesity, and physical inactivity, have been identified as major contributors to stroke incidence. Assessing the prevalence and impact of these risk factors within a population can guide targeted interventions, such as lifestyle modifications, medication adherence, and public health campaigns. Moreover, understanding the distribution of risk factors across different demographic groups can help identify health disparities and inform resource allocation and policy-making [4]. To effectively evaluate knowledge, attitude, and risk factors of stroke, a comprehensive approach is required. This may involve conducting population-based surveys, analyzing medical records and databases, and utilizing qualitative research methods to explore the underlying beliefs and attitudes towards stroke. Collaborative efforts between healthcare professionals, researchers, policymakers, and community organizations are essential to ensure the validity and reliability of the evaluation process [5]. The evaluation of knowledge, attitude, and risk factors of stroke is crucial for developing effective preventive strategies, improving patient outcomes, and reducing the burden of this devastating condition. By assessing the level of knowledge, understanding attitudes, and identifying risk factors associated with stroke, healthcare professionals and policymakers can implement targeted interventions and educational campaigns to raise awareness, promote early recognition, and reduce modifiable risk factors. Ultimately, this comprehensive evaluation can contribute to the prevention and management of stroke, leading to improved health outcomes and a better quality of life for individuals and communities.

Methods

Sample size: Sample size was 404 participants. Taking 5% margin of error, and a 95% confidence interval. Seventeen multiple-choice questions were used to assess knowledge related to stroke and its different risk factors. Additionally, seven multiple-choice questions were used to assess Knowledge related to signs and symptoms of stroke. Eleven multiple-choice questions were used to attitude towards prevention and treatment of stroke. Each accurate answer worth one point, whereas each wrong or do not know response resulted in a score of zero. Bloom's classification cut-off points for knowledge are as follows: An appropriate knowledge score of 75%-100% was regarded adequate; a suitable knowledge score of 50%- 74% was considered satisfactory; and a score of less than 50% was considered poor knowledge. A positive attitude is associated with a score greater than the mean, and a negative attitude is associated with a score less than the mean. Cronbach's Alpha was used to assess the internal consistency or reliability of a set of items within a questionnaire or scale. The analysis involved both descriptive and inferential statistical tests. Descriptive statistics were used to summarize and describe the characteristics of the study participants and the findings. Frequencies and percentages were calculated for categorical variables, such as age, gender, educational level, marital status, smoker, past and family history of stroke. For continuous variables like Knowledge and attitude scores, mean and standard deviation was calculated for normally distributed variables while median and Inter-Quartile Range (IQR) was calculated for non-normally distributed variables. Additionally, Fisher Exact test was conducted to find association between the demographic characteristic, knowledge and attitude. The significance level for all statistical tests was set at $p < 0.05$, indicating a 95% Confidence Interval. All statistical calculations were performed using IBM SPSS version 27.0.1

Results

The sociodemographic characteristics of the participants in the study are summarized in (Table 1). A total of 404 participants were included. Regarding age distribution, the majority of participants fell within the age range of 18 to 39 years (60.4%), followed by those aged 40 to 65 years (28.7%). A smaller proportion of participants were less than 18 years old (10.1%), while those older than 65 years constituted the smallest group (0.7%). In terms of gender, the sample consisted of more female participants (66.1%) compared to male participants (33.9%). Marital status varied, with a significant portion being single (53.0%), followed by married participants (42.1%), and a smaller percentage who were separated, divorced, or widowed (5.0%).

The prevalence of smoking was relatively low, with 17.6% of participants reported being smokers. Additionally, 11.6% of participants indicated having any chronic disease, such as diabetes or high blood pressure, while the majority reported no chronic diseases (88.4%). (Table 2) presents the past and family history of stroke among participants in the study. Regarding personal history, the vast majority of participants (98.8%) reported that they had never experienced a stroke before. Only a small percentage (1.2%) indicated that they had previously a stroke.

In terms of family history, the majority of participants (87.6%) stated that no one in their family had a history of stroke. On the other hand, 12.4% of participants reported that they had family members who had experienced a stroke. (Table 3a) indicate that regarding awareness of the term "stroke," a significant majority (84.4%) of participants indicated that they had heard about it, while a smaller proportion (15.6%) reported not being familiar with the term. Concerning the location of a stroke, the majority of participants (95.3%) correctly identified the brain as the site where a stroke occurs. A few respondents (2.5%) incorrectly associated a stroke with the heart, and an even smaller number (0.2%) mentioned the lung. Some participants (2.0%) responded that they didn't know the location.

When asked about the cause of a stroke, the majority (80.9%) of participants correctly identified that a stroke occurs when a blood vessel in the brain becomes blocked or bursts, leading to a loss of function in that part of the brain. A minority of participants (13.4%) responded that they didn't know the cause. A very small percentage (0.5%) incorrectly attributed a stroke to extreme stress causing changes in behavior.

Diabetes: A significant proportion of participants (44.8%) didn't know if diabetes is a risk factor for stroke. However, 42.6% correctly identified diabetes as a risk factor. High blood pressure: The majority of participants (79.2%) correctly recognized high blood pressure as a risk factor, while 17.1% didn't know. High level of cholesterol: Most participants (60.6%) identified high cholesterol as a risk factor, though 28.7% were uncertain.

Epilepsy: A significant number (48.0%) didn't know if epilepsy is a risk factor for stroke, while 34.2% correctly recognized it as a risk factor.

Heart disease: The majority (54.0%) correctly identified heart disease as a risk factor, but 32.7% were uncertain.

Family history: A substantial percentage (42.3%) recognized family history as a risk factor, while 31.7% didn't know. (Table3 b).

(Table 4) outlines the participants' awareness of signs and symptoms associated with stroke. Each question assesses the participants' recognition of specific symptoms. Regarding sudden confusion, trouble speaking, or understanding speech as stroke symptoms, 55.2% correctly identified them, while 27.7% were unsure. Similarly, 27.7% recognized sudden nosebleeds as a potential symptom, with 37.6% answering incorrectly. In terms of sudden numbness or weakness of the face, arm, or leg, 58.2% correctly recognized it as a symptom, while 28.5% were unsure. For sudden trouble seeing in one or both eyes, 47.5% identified it correctly, and 35.9% were unsure. (Table 5) shows following, findings Emergency recognition and treatment: The majority of participants recognized a blood clot as a medical emergency (85.4% "Yes"), indicating awareness of the urgency associated with this condition. However, a small portion of participants were uncertain (10.9% "I don't know") or believed otherwise (3.7% "No"). Similarly, attitudes towards the availability of current stroke treatments varied. While 32.4% acknowledged the presence of treatments, a significant number remained uncertain (51.0% "I don't know"), and a smaller fraction believed otherwise (16.6% "No").

Prevention and recovery: When considering the potential outcomes of stroke, opinions diverged. A substantial proportion believed in the possibility of a full recovery from stroke (42.3% "Yes"). Conversely, some participants were unsure (41.6% "I don't know"), and a minority believed that full recovery was not possible (16.1% "No").

Beliefs about stroke prevention: A significant proportion of participants believed stroke to be a preventable disease (62.4% "Yes"). However, uncertainty remained (28.2% "I don't know"), and a smaller number disagreed (9.4% "No"). Participants' awareness of specific prevention methods was varied. The majority acknowledged the role of controlling blood pressure (53.0% "Yes"), while opinions on controlling blood sugar (41.6% "Yes") and controlling blood cholesterol (52.7% "Yes") were also prevalent. Preventive measures like quitting smoking (59.7% "Yes"), regular exercise, and a healthy diet (69.3% "Yes") were widely endorsed. However, there was some uncertainty about the role of blood thinners (40.3% "I don't know"). Cronbach's Alpha is a statistical used to assess the internal consistency or reliability of a set of items within a questionnaire or scale. (Table 6). For the “Knowledge related to stroke and its risk factors" measure, the Cronbach's Alpha coefficient was .840, indicating a high level of internal consistency among the 16 items that assess participants' knowledge of stroke and its associated risk factors. The "awareness about signs and symptoms of stroke" measure exhibited a Cronbach's Alpha coefficient of .809, suggesting strong internal consistency among the 7 items that gauge participants' awareness of stroke symptoms. In the case of the

"attitude towards prevention and treatment of stroke" measure, the Cronbach's Alpha coefficient was .820, indicating a reliable internal consistency across the 12 items that assess participants' attitudes regarding stroke prevention and treatment. (Table 7b) delves into the distribution of knowledge and attitude scores among the participants. It categorizes participants into different levels of knowledge and attitudes, providing a more nuanced perspective on their responses. For the "Knowledge related to stroke and its risk factors," the distribution indicates that 39.4% of participants exhibited an adequate level of knowledge, while 27.2% had poor knowledge, and 33.4% had a satisfactory level of knowledge. Regarding awareness about stroke symptoms, 30.2% of participants had adequate awareness, 42.8% had poor awareness, and 27.0% had satisfactory awareness levels. Concerning attitudes towards stroke prevention and treatment, the distribution showcases that 45.2% held a negative attitude, while 54.6% held a positive attitude.

Age: For knowledge about stroke and attitude towards stroke prevention and treatment, the Chi-square tests did not yield statistically significant results in relation to age ($\chi^2 = 5.821$, df = 6, p = .444; $\chi^2 = 3.073$, df = 3, p = .381).

Gender: Gender also did not show a significant association with knowledge about stroke and attitude towards stroke prevention and treatment ($\chi^2 = .273$, df = 2, p = .873; $\chi^2 = .386$, df = 1, p = .534).

Marital status: Marital status displayed no significant association with knowledge about stroke and attitude towards stroke prevention and treatment ($\chi^2 = 5.884$, df = 4, p = .208; $\chi^2 = .936$, df = 2, p = .626).

Educational Level: Educational level did not demonstrate a significant association with knowledge about stroke and attitude towards stroke prevention and treatment ($\chi^2 = 14.766$, df = 8, p = .064; $\chi^2 = 3.735$, df = 4, p = .443).

Smoker status: The Chi-square tests indicated no significant association between smoker status and knowledge about stroke and attitude towards stroke prevention and treatment ($\chi^2 = .376$, df = 2, p = .829; $\chi^2 = 2.351$, df = 1, p = .125).

Chronic disease: For knowledge about stroke and attitude towards stroke prevention and treatment, the Chi-square tests did not yield statistically significant results in relation to the presence of chronic diseases ($\chi^2 = .537$, df = 2, p = .765; $\chi^2 = .509$, df = 1, p = .475).

The Chi-square test results suggest that the demographic factors examined in this study (age, gender, marital status, educational level, smoker status, chronic disease) did not exhibit statistically significant associations with knowledge about stroke or attitude towards stroke prevention and treatment(p>.005). (Table 9) presents the identified risk factors for stroke based on participant responses. The most recognized risk factor was hypertension (79.2%), followed by smoking (72.0%), older age (68.1%), lack of exercise (62.9%), and unhealthy diet (61.6%). Other notable risk factors included high cholesterol (60.6%), heart disease (54.0%), family history of stroke (42.3%), diabetes (42.6%), and stress (51.0%). Epilepsy (34.2%) and atrial fibrillation (31.7%) were recognized to a lesser extent. These findings highlight variations in participants' awareness of different stroke risk factors, providing valuable insights for targeted educational campaigns and interventions aimed at promoting stroke prevention and public health awareness.

Discussion

This community-based study shows the level of public knowledge and attitude towards stroke. A total of 404 participants were included. Majority of participants fell within the age range of 18 to 39 years. In terms of gender, the sample consisted of more female participants (66.1%) compared to male participants (33.9%). Majority of participants (98.8%) reported that they had never experienced a stroke before. Similarly, majority of participants (87.6%) stated that no one in their family had a history of stroke. This is similar to the study conducted in Saudi Arabia in 2017 [3]. The study revealed notable gaps in participants' knowledge regarding stroke causes and symptoms. While the term "stroke" was familiar to a majority of participants, their comprehension varied. A significant proportion of respondents were unsure about the correct causes of stroke, indicating a need for targeted educational campaigns to clarify the role of factors like blood vessel blockages and bursts. Majority of the participants identified hypertension, smoking, older age and stress as the risk factor of stroke. This is in contrast to study conducted in Saudi Arabia [3] But similar to a study conducted in india which shows hypertension is an important risk factor of stroke[12].Trouble seeing and trouble speaking and understanding, weakness of face, arm or leg sudden trouble walking are the most important symptoms identified by the participants. Similar findings were reporte d by the study in Saudi Arabia and NEPAL [6, 11], however misconceptions were observed in identifying stroke symptoms, with a relatively low proportion recognizing high body temperature as a potential sign. These findings underscore the importance of addressing misconceptions and enhancing public awareness through targeted educational efforts. The findings of this study have important implications for public health initiatives aimed at raising awareness about stroke and its prevention in the Tabuk population. Targeted interventions should address knowledge gaps and misconceptions, emphasizing the accurate identification of stroke symptoms and the importance

Table 1: Sociodemographic Characteristics of the Participants.

		Frequency (n=404)	%
Age	18 - 39 Years.	244	60.4%
	40-65 Years.	116	28.7%
	Less than 18 Years.	41	10.1%
	Older than 65 Years	3	0.7%
Gender	Female	267	66.1%
	Male	137	33.9%
Marital status	Married	170	42.1%
	Separated/divorced/widowed	20	5.0%
	Single	214	53.0%
Educational level	College degree	234	57.9%
	Middle education	6	1.5%
	Postgraduate degree	18	4.5%
	Primary education	3	0.7%
	Secondary education	143	35.4%
Smoker	No	333	82.4%
	Yes	71	17.6%
Any Chronic disease(DM, High blood pressure)	No	357	88.4%
	Yes	47	11.6%

Table 2: Past and family history of stroke of the Participants.

		Frequency (n=404)	%
Have you ever had a stroke before?	No	399	98.8%
	Yes	5	1.2%
Has anyone in your family ever had stroke?	No	354	87.6%
	Yes	50	12.4%

Table 3a: Knowledge related to cause of stroke.

		Count	Column N %
Have you heard about term of stroke?	No	63	15.6%
	Yes	341	84.4%
Where in the body does a stroke occur?	Brain	385	95.3%
	Heart	10	2.5%
	Lung	1	0.2%
	I don't know	8	2.0%
What causes a stroke?	I don't know	54	13.4%
	When a blood vessel in your brain gets blocked or bursts and that part of the brain doesn't work anymore	327	80.9%
	When you get very stressed and you don't act like yourself	2	0.5%
	When you have a blocked blood vessel in your heart	18	4.5%
	When you sleep on one side of your body and pinch a nerve in your arm or leg	3	0.7%

Table 3b: Knowledge related to different risk factors of stroke.

		Frequency (n=404)	%
Is Diabetes a risk factor for stroke?	I don't know	181	44.8%
	No	51	12.6%
	Yes	172	42.6%
Do you think high blood pressure is the risk factor of stroke?	I don't know	69	17.1%
	No	15	3.7%
	Yes	320	79.2%
Do you think high level of cholesterol is the risk factor of stroke?	I don't know	116	28.7%
	No	43	10.6%
	Yes	245	60.6%
Is epilepsy a risk factor for stroke	I don't know	194	48.0%
	No	72	17.8%
	Yes	138	34.2%
	I don't know	132	32.7%

Do you think heart disease is the risk factor of stroke?	No	54	13.4%
	Yes	218	54.0%
Do you think family history is the risk factor of stroke?	I don't know	128	31.7%
	No	105	26.0%
	Yes	171	42.3%
Incidence of stroke increase at age 65 years and older	I don't know	106	26.2%
	No	23	5.7%
	Yes	275	68.1%
Do you think Lack of exercise is the risk factor of stroke?	I don't know	81	20.0%
	No	69	17.1%
	Yes	254	62.9%
Do you think obesity or overweight is the risk factor of stroke?	I don't know	83	20.5%
	No	61	15.1%
	Yes	260	64.4%
Do you think unhealthy diet is the risk factor of stroke?	I don't know	95	23.5%
	No	60	14.9%
	Yes	249	61.6%
Do you think smoking is the risk factor of stroke?	I don't know	76	18.8%
	No	37	9.2%
	Yes	291	72.0%
Do you think Stress is the risk factor of stroke?	I don't know	121	30.0%
	No	77	19.1%
	Yes	206	51.0%
Do you think atrial fibrillation is stroke risk factor?	I don't know	227	56.2%
	No	49	12.1%
	Yes	128	31.7%

Table 4: Awareness about signs and symptoms of Stroke.

		Frequency (n=404)	%
Do you think sudden confusion, trouble speaking or understanding speech is a stroke symptom?	I don't know	112	27.7%
	No	69	17.1%
	Yes	223	55.2%
Do you think sudden nosebleed is a stroke symptom?	I don't know	140	34.7%
	No	152	37.6%
	Yes	112	27.7%
	I don't know	115	28.5%
	No	54	13.4%

Do you think sudden numbness or weakness of face, arm or leg is a symptom of stroke?	Yes	235	58.2%
Do you think sudden trouble seeing in one or both eyes is a stroke symptom?	I don't know	145	35.9%
	No	67	16.6%
	Yes	192	47.5%
Do you think sudden vomiting is a stroke symptom?	I don't know	146	36.1%
	No	116	28.7%
	Yes	142	35.1%
Do you think sudden trouble walking, dizziness, loss of balance or coordination are stroke symptoms?	I don't know	116	28.7%
	No	48	11.9%
	Yes	240	59.4%
Do you think high temperature is a symptom of stroke?	I don't know	165	40.8%
	No	148	36.6%
	Yes	91	22.5%

Table 5: Attitude towards prevention and treatment of stroke.

		Frequency (n=404)	%
Is a blood clot considering an emergency?	I don't know	44	10.9%
	No	15	3.7%
	Yes	345	85.4%
Is there any current treatment for stroke?	I don't know	206	51.0%
	No	67	16.6%
	Yes	131	32.4%
Early medical intervention will prevent severe disability following stroke?	I don't know	106	26.2%
	No	28	6.9%
	Yes	270	66.8%
A fully recovery from stroke is possible?	I don't know	168	41.6%
	No	65	16.1%
	Yes	171	42.3%
If someone shows signs and symptoms of stroke, what do you think you should do first?	Call an ambulance	183	45.3%
	Call health care provider	26	6.4%
	Contact his/her family	2	0.5%
	Give them Aspirin	63	15.6%
	I don't know	38	9.4%
	Take them to the hospital	92	22.8%
Is stroke a preventable disease?	I don't know	114	28.2%

	No	38	9.4%
	Yes	252	62.4%
Does stroke could be prevented by controlling blood pressure	I don't know	162	40.1%
	No	28	6.9%
	Yes	214	53.0%
Stroke could be prevented by controlling blood sugar?	I don't know	193	47.8%
	No	43	10.6%
	Yes	168	41.6%
Stroke could be prevented by controlling blood cholesterol?	I don't know	156	38.6%
	No	35	8.7%
	Yes	213	52.7%
Stroke could be prevented by quitting smoking?	I don't know	126	31.2%
	No	37	9.2%
	Yes	241	59.7%
Stroke could be prevented by doing regular exercise and eating healthy diet?	I don't know	105	26.0%
	No	19	4.7%
	Yes	280	69.3%
Stroke could be prevented by controlling using of blood thinner?	I don't know	163	40.3%
	No	20	5.0%
	Yes	221	54.7%

Table 6: Cronbach's Alpha reliability for the measuring knowledge and attitude towards Stroke.

Measure	Cronbach's Alpha	No of Items
Knowledge related to stoke and its risk factors	.881	16
Awareness about signs and symptoms of stroke	.809	7
Attitude towards prevention and treatment of stroke	.820	12

Table 7a: Mean Knowledge and attitude score of included subjects.

	Mean	Maximum	Minimum	Standard Deviation
Knowledge related to stoke and its risk factors	10	16	0	4
Awareness about signs and symptoms of Stroke	3	7	0	2
Total knowledge score	13	23	0	6
Attitude towards prevention and treatment of stroke	7	12	0	3

Table 7b: Mean Knowledge and attitude score of included subjects.

		Frequency	%
Knowledge	Adequate	117	29.0%
	Satisfactory	157	38.9%
	Poor	130	32.2%
1.Knowledge related to stroke and its risk factors	Adequate	159	39.4%
	Poor	110	27.2%
	Satisfactory	135	33.4%
2. Knowledge about signs and symptoms of Stroke	Adequate	122	30.2%
	Poor	173	42.8%
	Satisfactory	109	27.0%
Attitude	Negative	183	45.2%
	Positive	221	54.6%

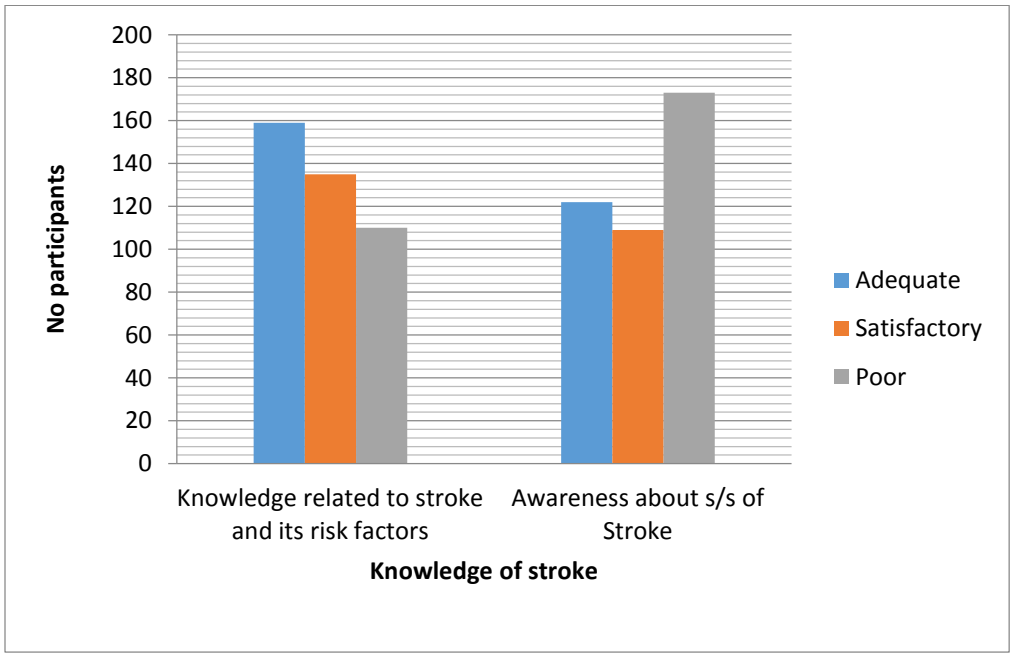

Figure 1: Participants' knowledge scores.

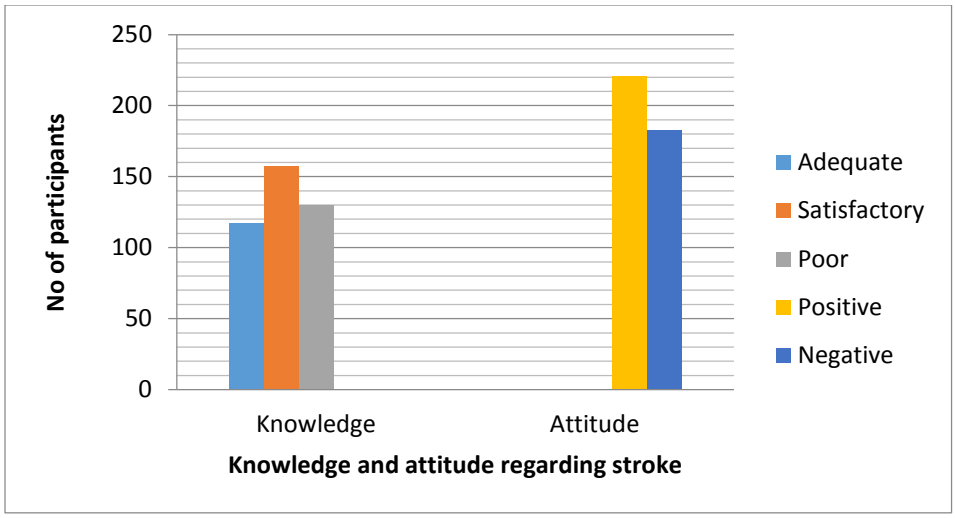

Figure 2: Participants' knowledge and attitude scores.

Table 8: Associations between Demographic Factors and Knowledge & Attitude towards Stroke.

		Knowledge						Attitude			
		Adequate		Poor		Satisfactory		Negative		Positive	
		Count	%	Count	%	Count	%	Count	%	Count	%
Age	18 - 39 Years.	75	64.1	78	60.0	91	58.0	115	62.8	129	58.4
	40-65 Years.	30	25.6	35	26.9	51	32.5	50	27.3	66	29.9
	Less than 18 Years.	10	8.5	17	13.1	14	8.9	18	9.8	23	10.4
	Older than 65 Years	2	1.7	0	0.0	1	0.6	0	0.0	3	1.4
	p-value	.444					.381				
Gender.	Female	77	65.8	84	64.6	106	67.5	118	64.5	149	67.4
	Male	40	34.2	46	35.4	51	32.5	65	35.5	72	32.6
		.873					.534				
Marital status	Married	43	36.8	54	41.5	73	46.5	77	42.1	93	42.1
	separated	3	2.6	7	5.4	10	6.4	7	3.8	13	5.9
	Single	71	60.7	69	53.1	74	47.1	99	54.1	115	52.0
	p-value	.208					.626				
Educational level	College degree	69	59.0	73	56.2	92	58.6	107	58.5	127	57.5
	Middle education	1	0.9	3	2.3	2	1.3	3	1.6	3	1.4
	Postgraduate degree	6	5.1	0	0.0	12	7.6	6	3.3	12	5.4

	Primary education	2	1.7	1	0.8	0	0.0	0	0.0	3	1.4
	Secondary education	39	33.3	53	40.8	51	32.5	67	36.6	76	34.4
	p-value	.064					443				
Smoker	No	97	82.9	105	80.8	131	83.4	145	79.2	188	85.1
	Yes	20	17.1	25	19.2	26	16.6	38	20.8	33	14.9
	p-value	.829					.125				
Any Chronic disease	No	103	88.0	117	90.0	137	87.3	164	89.6	193	87.3
	Yes	14	12.0	13	10.0	20	12.7	19	10.4	28	12.7
	p-value	.765					.475				

Table 9: Risk factors of stroke identified by the participants.

Risk factors	Frequency	%
Diabetes	172	42.6%
Hypertension	320	79.2%
cholesterol	245	60.6%
Epilepsy	138	34.2%
Heart disease	218	54.0%
Family history	171	42.3%
Older age	275	68.1%
Lack of exercise	254	62.9%
Unhealthy diet	249	61.6%
Smoking	291	72.0%
Stress	206	51.0%
Atrial fibrillation	128	31.7%

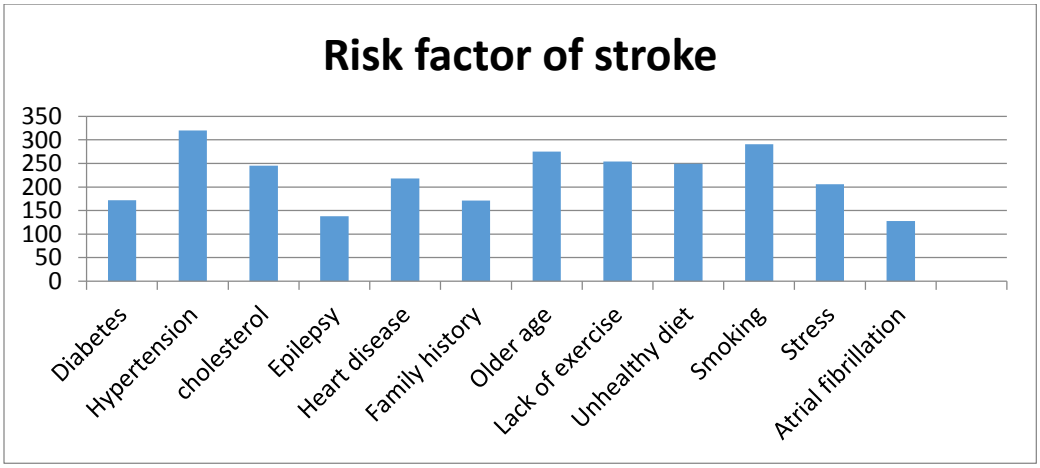

Figure 3: Participants' knowledge of risk factors of stroke.

Of immediate medical attention. Strategies could include community workshops, awareness campaigns, and collaboration with healthcare providers to ensure accurate dissemination of information. Additionally, efforts to enhance emergency response knowledge are crucial to ensure timely and effective treatment for stroke patients. Public health organizations and healthcare providers should collaborate to create accessible resources and educational materials that empower individuals to take appropriate actions when witnessing stroke symptoms. This study has several limitations. The cross-sectional design limits our ability to establish causality between demographic factors and knowledge/attitudes. Self-reporting could introduce response bias, impacting the accuracy of the collected data. Additionally, the study's focus on the Tabuk population restricts the generalizability of the findings to other regions.

Conclusion

This study assessed participants' knowledge, awareness, and attitudes towards stroke and its risk factors. Demographics showed diversity but lacked significant associations with knowledge and attitudes. Hypertension, smoking, and older age were well-recognized risk factors, while epilepsy and atrial fibrillation had lower awareness. Attitudes revealed a mix of positive sentiments, indicating room for improvement in recognizing stroke as preventable and treatable. The study's reliability was supported by Cronbach's Alpha coefficient. These findings highlight the need for targeted education campaigns to bridge knowledge gaps and promote better stroke prevention and treatment awareness for improved public health outcomes.

Conflict of Interest

None

Funding

None

References

1. Asirvatham AR, Marwan MZ. Stroke in Saudi Arabia: a review of the recent literature. Pan African Medical Journal. 2014;17(1).
2. Borhani Haghighi A, Karimi AA, Amiri A, Ghaffarpasand F. Knowledge and attitude towards stroke risk factors, warning symptoms and treatment in an Iranian population. Medical Principles and Practice. 2010 Sep 28;19(6):468-472.
3. Alreshidi FM, Alrashidi AS, Alshammari FN, Qadi AB, Alrashidi AG, Alghaythi SM, et al. Knowledge, attitude and practicetowards stroke risk factors and warning symptoms in Saudi Arabia. The Egyptian Journal of Hospital Medicine. 2017 Oct 1;69(3):2082-2087.
4. Duque AS, Fernandes L, Correia AF, Calvinho I, Pinto M, Freitas P, et al. Awareness of stroke risk factors and warning signs and attitude to acute stroke. International Archives of Medicine. 2015 Oct 6;8(1):1-10.
5. Soto-Cámara R, González-Bernal JJ, González-Santos J, Aguilar-Parra JM, Trigueros R, López-Liria R. Knowledge on signs and risk factors in stroke patients. Journal of clinical medicine. 2020 Aug 7;9(8):2557.
6. Rizvi MR, Sharma A, Malki A, Sami W. Enhancing Cardiovascular Health and Functional Recovery in Stroke Survivors: A Randomized Controlled Trial of Stroke-Specific and Cardiac Rehabilitation Protocols for Optimized Rehabilitation. Journal of Clinical Medicine. 2023; 12(20):6589.
7. Pradhan RR, Jha A, Bhandari S, Ojha S, Karn R. Knowledge, attitude, and practice of stroke and thrombolysis among students preparing for undergraduate medical entrance examination in Kathmandu, Nepal. Health Sci Rep. 2021;4(2):e268.
8. Bhat AB, Ahmed KI, Sharna RN, Barman S. Knowledge, attitude and practice regarding stroke amongst the close relatives of stroke victims at a tertiary care hospital in Bangladesh. International Journal of Cardiovascular and Cerebrovascular Disease. 2016;4(3):35-40.
9. Farpour H, Mashhadiagha A, Edrisi F, Farpour S. Knowledge, attitude, and practice regarding stroke potential complications among stroke survivors' family members in Shiraz, Iran. Turk J Phys Med Rehabil. 2022;69(1):83-88.
10. Madsen TE, Baird KA, Silver B, Gjelsvik A. Analysis of Gender Differences in Knowledge of Stroke Warning Signs. J Stroke Cerebrovasc Dis. 2015;24(7):1540-1547.
11. Thapa, L., Sharma, N., Poudel, R. S., et al. Knowledge, attitude, and practice of stroke among high school students in Nepal. J Neurosci Rural Pract. 2016;7(4):504-509.
12. Das, S., Hazra, A., Ray, B. K., et al. Knowledge, attitude, and practice in relation to stroke: A community-based study from Kolkata, West Bengal, India. Ann Indian Acad Neurol. 2016;19(2):221-227.