A descriptive study to assess the knowledge regarding risk factors and warning signs of stroke among hypertensive and diabetic patients, Bangalore

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Abstract

Background: Stroke is the major public health problem that affects millions of people in both developing and developed countries. Each year over 13 million people have stroke and 5.5 million people die as a result. Hypertension is the major risk factors for the stroke. High blood pressure may cause to form blood clots in the arteries that supplies the brain which may block the blood flow potentially causing stroke. Another major risk factor for stroke is diabetes mellitus which is recognized as an independent risk factor for stroke which is associated with high morbidity and mortality. Stroke is easy to recognize if one is aware about the stroke, its risk factors and warning signs. The aim of the study is to assess the knowledge regarding risk factors and warning signs of stroke among hypertensive and diabetic patients.

Materials and methods: A descriptive study was employed to assess the knowledge regarding risk factors and warning signs of stroke among hypertensive and diabetic patients in Ramaiah Memorial Hospital, Bangalore.

Convenient sampling technique was used, and 130 hypertensive and diabetic patients were selected. Structured knowledge questionnaire was used to collect data.

Result: More than half of the subjects 60% had moderately adequate knowledge, 28.4% of the subjects had adequate knowledge and 11.6% of the subjects had inadequate knowledge. It was observed that there was significant association between the knowledge and selected socio-demographic variables like educational status (p=0.000), monthly family income (p=0.000), area of residence (p=0.000), regular treatment of hypertension and diabetes mellitus (p=0.000), family history of hypertension and diabetes mellitus (p=0.000), family history of stroke (p=0.021) and information about stroke (p=0.000).

Conclusion: The study revealed that the study subjects had moderately adequate knowledge regarding risk

factors and warning signs of stroke. Health education programmes could be organized in hospital as well as in community settings to aware high-risk population about risk factors and warning signs of stroke.

Keywords: hypertension, diabetes mellitus, risk factors and warning signs of stroke, stroke

Introduction

Human brain is an amazing three pounds organ that is responsible for all functions of the body. A body functions accurately when the brain functions properly. The brain requires oxygen and glucose through a healthy blood supply for proper functioning. When a part of brain does not receive an adequate amount of blood, the brain cells start to die. This condition is called stroke [1]. Stroke is a sudden loss of blood to a part of the brain or hemorrhage into the brain resulting in death of brain cells. [2] A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or bursts due to which the part of the brain does not get enough blood and oxygen it needs, causing brain cells to die. [3] This is a medical emergency. Even though strokes are treatable, disability or death can occur. [4]

Stroke is a major public health problem that affects millions of people in both developing and developed countries.[5] Each year over 13 million people have stroke and around 5.5 million people die as a result.[6] The World Health Organization has defined Stroke as "rapidly developing clinical signs of focal disturbance of cerebral functions, lasting more than 24 hours, or leading to death with no apparent cause other than that of vascular origin". [5]

Hypertension is the major risk factors for the stroke. High blood pressure damages the blood vessels that can narrow, rupture or leak. High blood pressure may also cause to form blood clots in the arteries that supplies the brain which may block the blood flow potentially causing a stroke. [7] Another major risk factor for stroke is diabetes mellitus. Diabetes mellitus is recognized as an independent risk factor for stroke which is associated with high morbidity and mortality [8].

There are certain warning signs of stroke that an individual exhibits in early stages. It is therefore very important to identify these signs to provide right treatment at right time to save the life of the victim. According to the American Stroke Association the warning signs of the stroke include: sudden numbness or weakness of face, arm or leg, especially on one side of the body; sudden confusion, trouble speaking or understanding speech; sudden trouble seeing in one or both eyes; sudden severe headache with no cause [9].

Stroke is easy to recognize if one is aware about the stroke, its risk factors and warning signs. Information should be provided to the general public, specially the high-risk population, to identify the early presentation of stroke. Stroke can be prevented if the cause is understood.

Materials and method

Study Design: The study design used was descriptive study research design

Variables: Study variables for the study include age, gender, educational status, occupation, monthly income, area of residence, marital status, religion, dietary pattern, duration of hypertension, duration of diabetes mellitus, treatment of hypertension and diabetes mellitus, family history of hypertension or diabetes mellitus, family history of stroke, information about stroke and presence of co-morbidities.

Study setting: The study was carried out at Ramaiah Memorial Hospital, Bangalore.

Sample size: 130 hypertensive and diabetic patients.

Sampling technique: convenient sampling technique was used to select the samples.

Inclusion and exclusion criteria

Inclusion

- Already diagnosed to have hypertension and diabetes mellitus since 1 year and are on treatment.
- Patients who are willing to participate in the study
- Age above 35 years

Exclusion criteria

- Patients who already had a history of stroke.

Development of tool

After an extensive review of literature and discussion with experts, a structured questionnaire regarding the risk factors and warning signs of stroke was developed by the researcher. The questionnaire included various items on brain, high blood pressure, diabetes mellitus, risk factors of stroke, warning signs of stroke and preventive measures. In addition, information regarding socio-demographic variables of subjects was collected.

Validity

Content validity of the tool was established by suggestions from experts that included general physicians, endocrinologist, endovascular neurosurgeon and nurse experts. There was 100% agreement between the experts on relevance of items included on the tool.

Reliability

The tool was tested for reliability using split half test method (r=0.776)

Ethical clearance

The ethical clearance for this study was obtained from the ethics committee of Ramaiah Medical College.

Pilot study

Pilot study was conducted at Ramaiah Medical College Hospital. A total of 15 hypertensive and diabetic patients were selected for the study. On completion of pilot study, it was found that it was feasible to undertake the main study.

Data collection procedure

The data were collected in Ramaiah Memorial Hospital, Bangalore, after obtaining formal permission from the concerned authorities. Hypertensive and diabetic patients were selected for the study. Subjects were given detailed information about the study and informed consent was obtained from all the subjects. Data was obtained by using structured knowledge questionnaire. The data collected were coded and entered in the master sheet.

Statistical method

The data analysis was done by using descriptive and inferential statistics. SPSS (version 20) was used to analyze the data.

1. Frequency and percentage distribution were computed for socio-demographic characteristics.

2. Frequency and percentage distribution were computed for knowledge.

3. Association between the knowledge regarding risk factors and warning signs of stroke and socio-demographic variables using chi-square test.

Results

The collected data were analyzed according to the objectives if study. The findings are presented below.

Table 1: Socio-demographic characteristics of the subjects

Sn.	Socio demographic variables	Frequency (f)	Percentage (%)
1.	Age in years		
	35-45	25	19.2
	45-55	45	34.6
	55-65	39	30
	>65	21	16.2
2.	Gender		
	Male	71	54.6
	Female	59	45.4
3.	Educational status		
	Non-literate	17	13.1
	Primary education	27	20.8
	Secondary education	42	32.3
	Graduate and above	44	32.8

Table 1 depicts that, 34.6% of the subjects belonged to the age group of 45-55 years of age. More than half (54.6%) of the subjects were male. About 32.8% of the subjects were graduates

Table 2: frequency and percentage distribution with regards to selected socio-demographic variables. n=130

Sn.	Sociodemographic variables	Frequency (f)	Percentage (%)
4.	Occupation		
	Government job	17	13.1
	Private job	53	40.8
	Home maker	37	28.5
	Retired	23	17.7
5.	Monthly family income		
	5000-20000	22	16.9
	20000-35000	51	39.2
	35000-50000	38	29.2
	>50000	19	14.6

Table 2 depicts that, nearly half of the subjects (40.8%) had private job and 39.2% of the subjects had monthly family income between 20,000-35,000.

Table 3: frequency and percentage distribution with regard to selected socio-demographic variables. n=130

Sn.	Socio-demographic variables	Frequency (f)	Percentage (%)
6.	Area of residence		
	Urban	97	74.6
	Rural	33	25.4
7.	Marital status		
	Married	91	70
	Unmarried	13	10
	Widow/widower	20	15.4
	Divorcee	6	4.6
8.	Religion		
	Hindu	84	64.6
	Christian	28	21.6
	Muslim	18	13.8
	Others	0	0

Table 3: depicts that, majority of the subjects (74.6%) resided in urban area. Most of the subjects (91%) were married. More than half of the subjects (64.6%) were Hindu.

Table 4: frequency and percentage distribution with regards to selected socio-demographic variables. n=130

Sn.	Socio-demographic variables	Frequency (f)	Percentage (%)
9.	Dietary pattern		
	Vegetarian	79	60.8
	Non-vegetarian	51	39.2
10.	Duration of hypertension		
	1 year	30	23.1
	2-5 years	36	27.7
	5 years and above	64	49.2

Table 4 depicts that more than half of the subjects (60.8%) were vegetarian. Nearly half of the subjects (49.2%) had hypertension for more than 5 years.

Table 5: frequency and percentage distribution with regard to selected socio-demographic variables. n=130

S.N.	Socio-demographic variables	Frequency	Percentage
11.	Duration of diabetes mellitus		
	1 year	28	21.5
	2-5 years	36	27.7

Sn.		Frequency	Percentage
	5 years and above	66	50.8
12.	Regular treatment of hypertension and diabetes mellitus		
	Yes	114	87.7
	No	16	12.3
13.	Family history of hypertension and diabetes mellitus		
	Yes	96	73.8
	No	34	26.2

Table 5 depicts that, half of the subjects (50.8%) had diabetes mellitus for more than 5 years. Majority (87.7%) subjects were regularly taking treatment of hypertension and diabetes mellitus. Most of the subjects (73.8%) had a family history of hypertension and diabetes mellitus.

Table 6: frequency and percentage distribution with regards to selected socio-demographic variables.

Sn.	Socio-demographic variables	Frequency (f)	Percentage (%)
14.	Family history of stroke		
	Yes	79	60.8
	No	51	39.2
15.	Ever heard about stroke		
	Yes	111	85.4
	No	19	14.6
16.	Presence of co-morbidities		
	No	114	87.7
	Yes	16	12.3

Table 6 depicts that more than half (60.8%) of the subjects had a family history of stroke. Majority of the subjects (85.4%). Majority of the subjects (87.7%) did not have any other co-morbidities.

2.Frequency and percentage distribution of knowledge

Table 7: Frequency and percentage distribution with regard to level of knowledge regarding risk factors and warning signs of stroke. n=130

Knowledge	Frequency (f)	Percentage (%)
Adequate knowledge	37	28.4
Moderate knowledge	78	60
Inadequate knowledge	15	11.6

Table 7 depicts that 28.4% subjects had adequate knowledge, more than half of the subjects (60%) had moderately adequate knowledge and only 11.6% subjects had inadequate knowledge regarding risk factors and warning signs of stroke.

1.   Association between knowledge regarding risk factors and warning signs of stroke and socio-demographic variables.

Table 8: association between level of knowledge and selected socio-demographic variables. n=130

Sn.	Socio-demographic variables	Level of knowledge			Chi-square value (χ^2)	P value
		Adequate	Moderate	Inadequate		
1.	Age in years				9.297	0.158
	35-45 25	10	12	3	df=6	
	45-55 45	18	26	1	NS	
	55-65 39	11	21	7		
	>65 21	3	17	1		
2	Gender					
	Male	24	39	8	2.248	0.325
	Female	13	39	7	df=2 NS	

df= degree of freedom   NS= Not significant

Table 8 depicts that there was no significant association between level of knowledge and selected socio-demographic variables like age and gender.

Table 9: Association of level of knowledge with regard to selected socio-demographic variables. n=130

Sn.	Socio-demographic variables	Level of knowledge			Chi-square Value (χ^2)	P value
		Adequate	Moderate	Inadequate		
3.	Educational status					
	Non-literate	4	3	10	84.783	0.000
	Primary education	1	23	3	df=6	
	Secondary education	5	37	0	S*	
	Graduate and above	27	15	2		
4.	Occupation					
	Government job	6	10	1		
	Private job	15	31	7	6.995	0.321
	Home maker	6	25	6	df=6	
	Retired	10	12	1	NS	

S*= significant df= degree of freedom   NS= Not significant

Table 9 depicts that there is significant association between the level of knowledge and educational status.

Table 10: Association of level of knowledge with selected socio-demographic variables. n=130

S.N.	Socio-demographic variables	Level of knowledge			Chi-square value (χ^2)	P value
		Adequate	Moderate	Inadequate		
5.	Monthly family income				34.482	0.000

	5000-20000	5	9	8	df=6	
	20000-35000	6	39	6	S*	
	35000-50000	16	21	1		
	>50000	10	9	0		
6.	Area of residence				31.463	0.000
	Urban	35	59	3	Df=2	
	Rural	2	19	12	S*	

df= degree of freedom   S*= Significant

Table 10 depicts that, there was significant association between level of knowledge and selected socio-demographic variables like monthly family income.

Table 11: Association of level of knowledge with selected socio-demographic variables such as area of residence and marital status. n=130

S.N.	Socio-demographic variables	Level of knowledge			Chi-square value (χ^2)	P value
		Adequate	Moderate	Inadequate		
7.	Marital status				11.044	0.087s
	Married	20	59	12	df=6	
	Unmarried	8	5	0	NS	
	Widow/ widower	7	10	3		
	Divorcee	2	4	0		
8.	Religion				3.040	0.551
	Hindu	25	47	12	df=4	
	Christian	8	19	1	NS	
	Muslim	4	12	2		

df= degree of freedom,   NS= Not significant

Table 11 depicts that, there was no significant association between selected socio-demographic variables like marital status and religion.

Table 12: Association of level of knowledge with selected socio-demographic variables such as religion, dietary pattern and duration of hypertension. n=130

Sn.	Socio-demographic variables	Level of knowledge			Chi-square value (χ^2)	P value
		Adequate	Moderate	Inadequate		
9.	Dietary pattern				1.125	0.570
	Vegetarian	22	46	11	df=2	
	Non-vegetarian	15	32	4	NS	
10.	Duration of hypertension				8.255	0.083

	1 year	11	13	6	df=4	
	2-5 years	8	27	1	NS	
	5 years and above	18	38	8		

df= degree of freedom   NS= Not significant

Table 12 depicts that, there was no significant association between selected socio-demographic variables like religion, dietary pattern and duration of hypertension.

Table 13: Association of level of knowledge with selected socio-demographic variables. n=130

Sn.	Socio-demographic variables	Level of knowledge			Chi-square value (χ^2)	P value
		Adequate	Moderate	Inadequate		
11.	Duration of diabetes mellitus				6.902	0.141
	1 year	10	13	5	df=4	
	2-5 years	8	27	1	NS	
	5 years and above	19	38	9		
12.	Regular treatment of hypertension and diabetes mellitus				19.874	0.000
	Yes	36	70	8	df=2	
	No	1	8	7	S*	

df= degree of freedom   NS= Not significant   S*= Significant

Table 13 depicts that, there was significant association between level of knowledge and selected socio-demographic variables like regular treatment of hypertension and diabetes mellitus

Table 14: Association of level of knowledge with regard to selected socio-demographic variables. n=130

Sn.	Socio-demographic variables	Level of knowledge			Chi-square value (χ^2)	P value
		Adequate	Moderate	Inadequate		
13.	Family history of hypertension and diabetes mellitus				19.575 df=2 S*	0.000
	Yes	30	62	4		
	No	7	16	11		
14	Family history of stroke				7.682 df=2 S*	0.021
	Yes	20	45	14		
	No	17	33	1		

df= degree of freedom   S*= Significant

Table 14 depicts that there was significant association between the level of knowledge and selected socio-demographic variables like family history of hypertension and diabetes mellitus and family history of stroke.

Table 15: Association of level of knowledge with selected socio-demographic variables. n=130

Sn.	Socio-demographic variables	Level of knowledge			Chi-square value (χ^2)	P value
		Adequate	Moderate	Inadequate		
15	Ever heard about stroke				46.906	0.000
	Yes	34	73	4	df= 2	

16.	No	3	5	11	S*	
16.	Presence of other co-morbidities				5.383	0.068
	No	29	70	15	df=2	
	Yes	8	8	0	NS	

df= degree of freedom   NS= Not significant   S*= Significant , Table 15 depicts that there was significant association between level of knowledge and selected socio-demographic variables like information about stroke.

Discussion

The findings of the study showed that 28.4% of the subjects had adequate knowledge, 60% of the subjects had moderate knowledge and only 11.6% of the subjects had inadequate knowledge regarding risk factors and warning signs of stroke. A similar study was done to assess knowledge on stroke among middle aged adult in a community in Nepal. The results of the study revealed that the overall knowledge regarding stroke risk factors and warning signs was average (65.8%). It was found that there was significant association between level of knowledge and ethnicity and level of education. [10]

A community based cross-sectional study was conducted to assess awareness of stroke among respondents in Nigeria. The findings of the study revealed that 82% of the respondents were aware about the stroke but only 21.8% had good knowledge about the risk factors of the stroke. The study concluded that there was poor knowledge of risk factors of stroke among the respondents. [11]

The present study findings showed that there is a significant association between level of knowledge and educational status, monthly family income, area of residence, regular treatment of hypertension and diabetes mellitus, family history of hypertension and diabetes mellitus, family history of stroke and information about stroke. (p<0.05). The findings of the study also showed that there is no association between level of knowledge and other selected variables like age, gender, occupation, marital status, religion, dietary pattern, duration of hypertension, duration of diabetes mellitus. A similar study was conducted to assess the awareness of stroke diabetic and hypertensive patients at Saudi Arabia. The study results revealed that awareness about risk factors and warning signs was significantly associated with educational level (p=0.001). The study also showed that there was no significant association between about stroke with age, gender and occupation. [12]

Limitations

Authenticity of the information regarding socio-demographic variables is based on the response of the subjects.

Limited sample size.

Conclusion

The present study findings revealed that the patients had moderately adequate knowledge regarding the risk factors and warning signs of stroke. Health education programmes could be organized in hospital as well as in community settings to aware high risk population about risk factors and warning signs of stroke.

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References

1. Stroke: Diabetes and Other Risk Factors - Healthline [Internet]. [Cited 2020Apr29]. Available from: https://www.healthline.com/health/diabetes/diabetes-and-stroke

2. Lewis SM. Medical-surgical nursing: assessment and management of clinical problems. St. Louis, MO: McGraw-Hill; 2007.

3. About stroke. American Stroke Association [Internet]. [cited 2019 February 2] Available from: https://www.stroke.org/en/about-stroke

4. Medicalnewstoday.com. 2021. Stroke: Causes, symptoms, diagnosis, and treatment. [Internet] Availablefrom:https://www.medicalnewstoday.com/articles/7624 [Cited 8 August 2021].

5. Sacco RL, Kasner SE, Broderick JP, Caplan LR, Connors JJB, 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 [Internet]. Stroke. U.S. National Library of Medicine; 2013 [cited 2020Apr29].Availablefrom:https://www.ncbi.nlm.nih.gov/pubmed/23652265

6. World Stroke Organization. 2021. Learn about stroke. [Internet] Available from: https://www.world-stroke.org/world-stroke-day-campaign/why-stroke-matters/learn-about-stroke [Cited 8 August 2021].

7. How high blood pressure can affect your body [Internet]. Mayo Clinic. Mayo Foundation for Medical Education and Research; 2019 [cited 2020Apr29]. . Available from: https://www.mayoclinic.org/diseases-conditions/high-blood-pressure/in-depth/highblood-pressure/art-20045868

8. Tun NN, Arunagirinathan G, Munshi SK, Pappachan JM. Diabetes mellitus and stroke: A clinical update. World Journal of Diabetes. 2017;8(6):235-48. Availablefrom:https;//www.ncbi.nlm.nih.gov/pmc/articles/PMC5483423

9. Risk factors of stroke. American Heart Association/ American Stroke Association [Internet]. 2015 [cited 2020 February 12] Availablefrom:https://www.strokeassociation.org/letstalkaboutstroke**.**

10. Silwal S, Khadka S, Sah B. Knowledge on Stroke among Middle Aged Adult in a Community at Ratuwamai, Morang. Tribhuvan University Journal [Internet]. 2019 [cited 8 August 2021]. Available from: https://www.nepjol.info/index.php/TUJ/article/view/28680

11. Olorukooba A, Mohammed Y, Yahaya S, Amadu L, Ibrahim J, Onoja-Alexander M. Awareness of stroke and knowledge of its risk factors among respondents in Shika community, Kaduna State, Nigeria. Archives of Medicine and Surgery [Internet]. 2018 [cited 8 August 2021]Availablefrom:https://www.archms.org/article.asp/issn/25431951;

12. [Internet]. 2021 [cited 21 July 2021]. Available from:https://www.researchgate.net/publication/337228185_Awareness_of_Stroke_among_Diabetic_and_Hypertensive_Patients_at_King_Fahad_Hospital_in_AlMadinah_KSA_2016