AWARENESS REGARDING STROKE AMONG THE ADULT POPULATION OF GOKARNESHWOR MUNICIPALITY

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ABSTRACT

A stroke is a medical emergency that occurs as a result of decreased blood supply or cessation of blood flow to the brain. Even though there are preventable risk factors still, it is one of the leading causes of disability worldwide. Awareness of the risk factors and early recognition of the symptoms can help the prevention and management of stroke. This study was conducted with an aim of assessing the awareness regarding stroke among adult population residing at Gokarneshwor Municipality. A descriptive cross-sectional study was conducted among 195 adult populations using a non-probability convenience sampling method. Data was collected by face-to-face interview technique with the self-constructed questionnaire. Data were entered and analyzed using the SPSS-16. Descriptive statistics like frequency, percentage, and inferential statistics such as the chi-square test were used and were considered significant at $p< 0.05$ (95% CI). The mean age of the respondents was 36.01 ± 12.66 years. Of all, hypertension was prevalent in 32 respondents. Almost three fourth of the participants had heard about stroke. Top three stated risk factors were hypertension, alcohol consumption, and smoking. We concluded that providing informal education and conducting awareness programs on stroke would be helpful to promote awareness regarding this condition.

KEYWORDS

Awareness, stroke, adult population

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INTRODUCTION

Globally, stroke has been regarded as the second leading cause of death and third leading cause of death and disability.[1,2] Worldwide, the incidence and prevalence of stroke has been estimated to be 12.2 million incident cases and 101 million respectively and the prevalence rates have increased by 22.0% and incidence rates by 15.0% among people younger than age 70 years.[2]

Stroke is a medical emergency where there is deprivation of blood and oxygen to brain tissue either by ischemia or hemorrhage inside the brain parenchyma leading to long term disability.[3] A systemic review from Nepal has found ischemic stroke more common than hemorrhagic stroke.[4] The age-standardized prevalence of stroke in Nepal is 2,967 per 100,000 population[5] and the average age of the people having stroke was 62.4 years.[4]

Risk factors for stroke can be broadly classified as modifiable and non-modifiable.[6] Age, sex race, and ethnicity are non-modifiable and hypertension, current smoking, obesity, physical inactivity, dyslipidemia, diabetes mellitus, past history of cardiac diseases and alcohol consumption are the common modifiable risk factors of stroke around the world.[4,6] Face drooping, arm weakness, and speech difficulty are the first warning features to be experienced by a person. If people are aware of these symptoms in time, it would help to reduce morbidity and mortality.[7]

Stroke is a preventable public health problem. Checking and controlling risk factors would play a significant role in the prevention of stroke. Public awareness of risk factors, regular follow-up, and awareness of warning signs can help to reduce its incidence.[8] Lifestyle modifications, such as maintaining a healthy diet, engaging in regular physical activity, avoiding smoking, and alcohol consumption, and managing stress levels can significantly reduce the risk of stroke.[9]

Several studies have shown that awareness about stroke and its risk factors is at an average level.[10-12] In order to improve the outcome and implementation of preventive strategies related to this condition, better exploration of the baseline information is the pre requisite. Therefore, this study was planned to assess the baseline information on awareness about stroke among the adult population residing at Gokarneshwor municipality of Kathmandu.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among the adult population in Ward No. 8 of Gokarneshwor Municipality. The study population was adults of age between 19 and 65 years. Ethical clearance was obtained from NMC-IRC (Ref no.04-80/81). An estimated sample size of 177 was calculated from the study conducted at Morang District of Nepal assuming a 65.8% percentage of adults having an average level of awareness.[12] The formula applied for sample size calculation was $n = z^2pq/d^2$ where n = desired sample size, z = the standard normal deviate usually set at 1.96 correspond to 95% confidence limits, p = prevalence of average level of awareness and d = desired decision level at 0.07 so the sample size was 177.[12,13] In addition, 10% of the calculated sample was added as in the form of non-response rate, so the final minimum sample size was 195. A convenient sampling technique was used. The adult population who were unwilling to participate, and had hearing and speaking problems were excluded from the study.

Several literature had been reviewed to develop questions related to awareness of strokes.[11-14] Consultation with at least three nursing experts was done to finalize the questions. The questionnaire was modified to incorporate various terms used for 'strokes' in the local language, such as '*Mastiskaghat*', '*Mastiskapakshyaghat*', '*stroke*' and '*Chotpatak bina nai taukoma ragat jammne*'. The awareness of stroke questionnaire comprises questions related to general information (3 questions), risk factors (11 questions), warning signs (11 questions), and preventive measures (7 questions). The total score for the questionnaire was 32. Each correct answer scores one point, whereas an incorrect or "I don't know" answer scores zero points. The level of awareness was categorized based on the median score obtained. A score lower than the cut off value was considered as inadequate level of awareness while a score equal to or greater than the cut off score considered as adequate level of awareness. Median score was considered as the cut off score.

Data collection was done through face-to-face interview technique using a Nepali version self-constructed questionnaire in the month of September 2023. Each household has been approached starting from the point as per the feasibility of the researcher. All the family members who met the eligibility criteria and gave consent were included in the study.

Pretesting was done on 20 respondents who were excluded from the final sample.

The data was entered in the SPSS 16. Frequency and percentage were used for descriptive analysis and the chi-square test was used to find the association between level of awareness and independent variables.

RESULTS

Altogether 195 adults were included in the study, amongst whom majority 132 (67.7%) were from age group less than or equals 39 years. Almost equal percentage of both male and female were included. More than half 106 (54.35%) were *Brahmin-Chhettri.* Seventy five (38.6%) were unemployed, majority 178 (91.2%) were literate and among them also more than half 92 (51.69) had education up to secondary level (Table 1).

Out of total respondents, 22 (11.28%) had family history of stroke and 16.41% had

Table 1: Socio demographic-characteristics of respondents (n=195)

Characteristic	n	%
Age in completed years		
19-39	132	67.70
40-59	50	25.64
60 and above	13	6.66
Gender		
Male	98	50.26
Female	97	49.74
Ethnicity		
Brahmin-Chhetri	106	54.35
Aadibasi-Janajati	76	38.98
Dalit	6	3.08
Madhesi	7	3.59
Occupation		
Service	25	12.82
Agriculture	33	16.92
Business	57	29.23
Unemployed	75	38.46
Others	5	2.57
Education Status		
Illiterate	17	8.71
Literate	178	91.29
Education Level (n=178)		
Read and write	18	10.11
Basic Level (Class 1 to 8)	36	20.22
Secondary Level (Class 9 to 12)	92	51.69
University level (Bachelor and above)	32	17.98

Table 2: Information related to stroke and HTN (n=195)

Characteristics	n (%)
Family History of stroke (n=195)	
Yes	22 (11.28)
No	173 (88.71)
Diagnosed Hypertension (n=195)	
Yes	32 (16.41)
No	163 (83.58)
Under medication (n=32)	
Yes	31 (96.87)
No	1 (3.12)
In regular follow up (n=31)	
Yes	29 (90.62)
No	3 (9.37)

Table 3: Respondents awareness on stroke (n=195)

Characteristics	n (%)
Heard about stroke (n=195)	
Yes	150 (76.92)
No	45 (23.07)
Having HTN and Heard about stroke (n=32)	
Yes	31 (96.9)
No	1(3.1)
Organ related to stroke (n=150)	
Brain	141 (94.00)
Heart	9 (6.00)
Emergency Condition (n=150)	
Yes	147 (98.00)
No and I don't know	3 (2.00)
Contagious disease (n=150) *	
Yes and I don't know	8 (5.3)
No	142 (94.70)
Preventable disease(n=150)	
Yes	129 (86.0)
No and I don't know	21 (14.0)

Indicates negative response where no bears score 1

history of hypertension. Among them, three of the respondents were not in regular follow up and one of them had left the antihypertensive medications (Table 2).

More than two third (76.9%) of the study population and almost all with hypertension mentioned that they had heard about stroke. Among them 6% mentioned that the major organ involved was heart. Even though some had heard about stroke they (n=3, 2%) were not fully aware that stroke is the emergency condition and 5.3% felt that it was a contagious disease. One hundred and twenty nine respondents mentioned that stroke is a preventable condition (Table 3).

Table 4: Awareness regarding risk factors of stroke (n=150)	
Risk Factors	**n (%)**
Hypertension	
Yes	148 (98.7)
No and I don't know	2 (1.3)
Smoking habit	
Yes	135 (90.0)
No and I don't know	15 (10.0)
Obesity/ Over weight	
Yes	122 (81.3)
No and I don't know	28 (18.7)
Diabetes	
Yes	88 (58.7)
No and I don't know	62 (41.3)
Family History	
Yes	77 (51.3)
No and I don't know	73 (48.7)
Exercise *	
Yes and I don't know	9 (6.0)
No	141 (94.0)
Fatty food	
Yes	132 (88.0)
No and I don't know	18 (12.0)
Alcohol Consumption	
Yes	139 (92.7)
No and I don't know	11 (7.3)
Cough *	
Yes and I don't know	35 (23.3)
No	115 (76.7)
Heart disease	
Yes	114 (76.0)
No and I don't know	36 (24.0)
Ageing	
Yes	129 (86.0)
No and I don't know	21 (14.0)

Indicates negative score where "No" bears score of 1

Table 5: Awareness regarding warning signs of stroke (n=150)	
Warning signs	**Yes, n (%)**
Sudden numbness/ weakness of face, arms and legs	
Yes	138 (92.0)
No and I don't know	12 (8.0)
Sudden severe headache without cause	
Yes	140 (93.33)
No and I don't know	10 (6.7)
Chest pain *	
Yes and I don't know	41 (27.3)
No	109 (72.7)
Sudden onset of fainting	
Yes	136 (91.27)
No and I don't know	14 (9.3)
Sudden trouble seeing in one or both eyes	
Yes	119 (79.3)
No and I don't know	31 (20.7)
Sudden vomiting *	
Yes and I don't know	77 (51.3)
No	73 (48.7)
Sudden onset of memory loss	
Yes	134 (89.3)
No and I don't know	16 (10.7)
Sudden trouble speaking	
Yes	118 (78.7)
No and I don't know	32 (21.3)
Fever *	
Yes and I don't know	44 (29.3)
No	106 (70.7)
Sudden onset of dizziness	
Yes	144 (96.0)
No and I don't know	6 (4.0)
Sudden trouble walking / loss of balance	
Yes	137 (91.3)
No and I don't know	13 (8.7)

Regarding the knowledge on risk factors, majority (98.7) reported that hypertension was a risk factor. About 90% and 81% of the respondents were aware that smoking and obesity were the risk factors for stroke respectively. Almost fifty to sixty percent were aware of the risk factors like diabetes and family history. About 23% mentioned cough as the risk factor for stroke. About 2/3rd were aware that heart disease was the risk factor. More than 90% mentioned alcohol consumption as risk factor. Majority (86%) mentioned that ageing is a risk factor for stroke (Table 4).

Majority of the respondents were aware of the warning sign and symptoms of stroke. About half of the respondents mentioned vomiting as one of the warning signs and just a few

Table 6: Awareness regarding preventive measures of stroke (n=150)		
Preventive Measures	**Yes n (%)**	**No and don't know n (%)**
Intake of healthy diet	145 (96.7)	5 (3.3)
Controlling blood glucose level	115 (76.7)	35 (23.3)
Maintaining healthy weight	140 (93.3)	10 (6.7)
Controlling blood pressure	144 (96.0)	6 (4.0)
Controlling cholesterol	119 (79.3)	31 (20.7)
Regular follow up by patients with HTN	144 (96.0)	6 (4.0)
Quitting smoking habit	142 (94.7)	8 (5.3)

Table 7: Association between selected variables and awareness level of stroke (n=150)				
Variables	**Awareness Level**		**Total n**	**P-Value**
	Inadequate (n=61, 40.7%), n (%)	**Adequate (n=89, 59.3%), n (%)**		
Age group				
Up to 30years	26 (43.3)	34 (56.7)	**60**	0.614
31 and above	35 (38.9)	55 (61.1)	**90**	
Gender				
Male	27 (36.0)	48 (54.0)	**75**	0.87
Female	34 (45.3)	41 (54.7)	**75**	
Occupation				
Employed	32 (36.4)	56 (56.3)	**88**	0.957
Unemployed	29 (46.8)	33 (53.2)	**62**	
Education Status				
Illiterate	5 (45.5)	6 (54.5)	**11**	0.758
Literate	56 (40.3)	83 (59.7)	**139**	
Family history/ relatives				
No	57 (43.8)	73 (56.2)	**130**	0.04*
Yes	4 (20.0)	16 (80.0)	**20**	
Have hypertension				
No	47 (39.5)	72 (60.5)	**119**	0.567
Yes	14(45.2)	17 (54.8)	**31**	

p<0.05, statistically significant

more than 1/4th stated as fever (n=44, 29.3%) and chest pain (n=41, 27.3%) are the warning symptoms for stroke. Similarly, majority of the respondents were aware about the warning signs of stroke yet about 20.0% were unaware that controlling blood glucose and cholesterol can prevent for having stroke (Table 5 and 6).

About fifty nine percent (n=89, 59.3%) of the respondent have adequate level of awareness whereas 61 (40.7%) had inadequate level of awareness. The chi square test showed that there was not any statistically significant relations exists between variables like age, gender, occupation education and hypertension status with awareness level. However, having a family members or relatives with stroke is a significant factor (p=0.04) for the awareness of stroke (Table 7).

DISCUSSION

Overall, among the respondents 1/10 had family and or relatives having a history of stroke. Sixteen percents were diagnosed with hypertension. This is comparable to study conducted at Morang District where six percent of the studied population was having hypertension.[12] Among the diagnosed cases 9.0% were not in regular follow up and 3.0% were not under medication. This is in line with the study conducted in semi urban area of Nepal where almost similar percentage (5.0%)

is not under medication.[10] In this study almost 2/3rd of the respondent heard about stroke. This is in line with the previous study conducted in high school children in Nepal where almost 71% heard about stroke.[11] Almost all (95.0%) of the respondents with hypertension heard about stroke. This is similar to the study findings conducted in Pakistan[15] where majority of the respondents with hypertension heard about stroke.Researchers found that that the higher percentage of respondents having diagnosed with hypertension have heard about stroke as compare to general population. This might be a reason that being a patient with hypertension they eager to know about its complications or they are told about complications by the health care professionals.

Majority of the respondents in this study identified brain as an involved organ. This is in contrast to the findings of the study conducted at semi urban area of Nepal where only near about 1/3rd of the hypertensive patients identified brain as the involved organ.[10] The difference might be because we had involved those adults who had heard about stroke. Similar, to the findings of other studies the findings also showed that majority are aware of the preventable nature of the disease.[10,11,15] Though, majority answered correctly still few (5.0%) feels that it is a contagious disease. This is in contrast to the study conducted in Chitwan District of Nepal where about 1/5th mentioned

that it's a contagious disease.[11] Fourteen percent were unaware about the preventable nature of the disease. The majority identified hypertension as risk factors. More than 10.0% who have heard about stroke are unaware of the important risk factors like smoking and obesity. Almost 1/3rd of the total studied population were unaware of these risk factors. The CDC has highlighted that one should know about the risk factors like smoking to reduce the risk of having stroke.[16] The meta analysis showed the current smokers are at 1.9 times at risk of stroke as compare to non smokers.[17] A few more than 40.0% were unaware that diabetes can cause stroke. Study has shown that diabetes is the leading cause of stroke which can lead to various micro and macro vascular changes often leading to stroke.[18]

Regarding warning signs we assume that near about 1/4th do not know about warning signs as they did not heard or know about stroke. Among those who have heard, the top most identified warning sign was sudden numbness/weakness of face and limbs. Though, majority identified warning symptoms still there were 5-10% of the respondents who couldn't identified symptoms like sudden severe headache, sudden onset of fainting and sudden memory loss. The respondents who answered warning signs in our study is higher than the previous other studies.[11,19] The difference might because of difference in time interval and different settings. People need to know about major common symptoms as the findings from patients with stroke showed that the mean number of stroke symptoms reported by patients were 11 with numbness or unilateral weakness as the number one symptoms.[20]

In this study majority of the respondents were aware of the preventive measures like intake of healthy diet, maintain healthy weight, controlling blood pressure and being in regular follow up are preventive measures for stroke .The respondents being aware on these components were higher than the previous studies. Almost 1/5th is unaware of major preventive measures like controlling blood sugar and cholesterol. This is a few less as compare to the studies conducted previously.[19] More than half of the respondents who have heard about stoke had adequate knowledge and forty percent had inadequate knowledge of stroke. The percentage of people with inadequate knowledge level can still be high if we consider the whole of the population. Family or relatives having stroke was the only single factors which was associated to the awareness level of stroke. This is similar to the study findings which showed knowing someone

with stroke was associated with awareness of stroke.[21]

In conclusion, still few respondents with hypertension are unaware of stroke and few patients with hypertension are not in regular follow up. Near about one fourth of the population had not heard about stroke and even those who mentioned they had heard almost 1/5th are unaware of risk factors like smoking, diabetes, alcohol and cholesterol level. And equal number doesn't know that it's a preventable condition. People need to aware of major risk factors and its preventable nature then only they can keep themselves away from illness.

Health care professional (HCP) and female community health volunteer, students on field visit need to aware general population on preventable nature of disease. HCPs need to make public aware about different risk factors like smoking, hypertension, diabetes, alcohol and their associations with stroke in simple language.

There are some limitations of the study in terms of selection of setting feasible to researcher, limited number of sample. Furthermore, nature of questions with readymade response, interviewer biases are other limitation of this study.

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