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AWARENESS OF EARLY WARNING SIGNS OF STROKE IN RURAL AND URBAN POPULATION

Original scientific paper

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ABSTRACT

The objectives of our study are: 1. To find out the awareness of early warning signs of stroke in rural population. 2. To find out the awareness of early warning signs of stroke in urban population. 3. To find out the difference between the level of awareness in rural and urban population. It was a survey - based study in which the population fulfilling the criteria were given the stroke questionnaire with Prior consent. Based on the responses, the percentage of awareness among the population was calculated. The difference between the level of awareness in rural and urban population was calculated. The total Sample was 162 including rural (81) and urban (81). The sample size was derived using formula $n = \frac{4pq}{L^2}$ *. Were, p=44.3%, q=100 - p, L= 12% (p= prevalence rate, q= 100 - p, L= allowable error). Based on stroke questionnaire it was seen that the rural population had more prevalence rate of stroke and were familiar with the term stroke or paralysis whereas urban population (12%) was unaware of the warning signs of the stroke. Awareness was quiet high in Rural Population (19%). The level of awareness was less in both the population but was less in urban population as compared to rural population.*

Keywords: *Awareness, Morbidity, Mortality, Rural, Stroke, Urban, Warning Signs*

INTRODUCTION

According to definition used by World Health Organization (WHO) "Stroke is defined as rapidly developing clinical symptoms and signs of focal and at times global loss of cerebral function with symptoms lasting more than 24 hours or leading death with no apparent cause other than that of vascular origin." Stroke is the sudden loss of neurological functions caused by an interruption of the blood flow to the brain. Three types of major stroke are now recognized. These are -

1. Ischemic stroke
2. Hemorrhagic stroke
3.Lacunar stroke

Ischemic variety with cerebral infraction results from atherothrombosis or brain embolism to cerebral vessels. The term Transient Ischemic Attack means cerebral ischemia with complete recovery of focal neurological insufficiency within 24 hours, resulting from platelet.

Hemorrhagic stroke with bleeding within the central nervous tissue occurs due to ruptured cerebral aneurysm in the young and hypertensive intra-cerebral bleeding in the elderly. Lacunar strokes are deep, small cerebral infracts located in basal ganglia or deep white matter, resulting from disease of small penetrating vessels (Mujal, API textbook of Medicine). Stroke is a universal health emergency and is the second cause of death and leading cause of adult morbidity worldwide. Besides, the number of stroke patients will rise in future because of demographic changes and unsatisfactory control of prime risk factors for stroke (Bonita, et al., 2004). Prevalence rate of stroke in rural areas is 84 - 262/100,000 and that of urban areas is 334 - 424/100,000. Stroke is frequent, recurring and is more often disabling than fatal (Pandian & Sudhan, 2013). Use of Tobacco, alcohol, sedentary lifestyle and unhealthy diet low in fruit and vegetables are

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modifiable risk factors that leads to metabolic risk factors like obesity and overweight, high cholesterol, high blood pressure and high blood sugar levels.
Other risk factors for stroke involve old age, systolic blood pressure, antihypertensive treatment, high insulin levels, smoking cigarette, history of cardiovascular disease, atrial fibrillation and left ventricular hypertrophy.
Warning signs of strokes are rapid or abrupt numbness or weakness of face, arm or leg, sudden confusion, trouble communicating or understanding, trouble seeing through one or both eyes/ blurred vision, giddiness or loss of balance, severe headache with no known case (Mujal, API textbook of Medicine).
Although all these warning signs of stroke are known there is still need of awareness about these warning signs and risk factors for early diagnosis which will result into better outcome and less disability.
India has seen a remarkable increase in morbidity and mortality of people due to stroke over the past few decades. Increasing stroke and higher mortality rates among Indian population needs driven attention for prevention and early management of stroke. The major deciding factor is to initiate the treatment within the time period, which can be done by early identification of stroke symptoms (Pandian & Sudhan, 2013). According to the study done by National Institute of Neurological Disorders and stroke (NINDS) showed good outcome in patients after 3 months of stroke treatment given 0 - 90 minutes and 91- 180 minutes after stroke arrival. So early the stroke treatment better is the outcome (Marler, 2000). Despite the immense and increasing burden of stroke, mainly in people of working age group, the disorder does not receive the attention it deserves and requires for avoidance and controlling or in terms of research funds (Bonita, et al., 2004). Most of the awareness studies had been hospital - based survey, however there are less community - based studies in India about community understanding and awareness of stroke warning signs and risk factors (Yadav, 2013). There is lack of literature review on awareness and comparative studies about awareness of early warning signs of stroke in rural and urban population. Reducing the time from stroke onset to hospital arrival and enhancing control of stroke risk factors depends on the community awareness of stroke warning signs and risk factors (Pancioli, 1998). For this Organized effort from both the government administration and private sector is needed tofaceor stop the stroke epidemic in India. For this a proper survey should be done to find out present awareness of warning signs of stroke among rural and urban population. Hence, we conducted the study of awareness of warning signs and symptoms of stroke in rural and urban population.

METHOD ANS MATERIALS

The purpose of the study was to find out awareness of early warning signs of stroke in rural and urban population in karad.
An approval for study was obtained from protocol and ethical committee. After approval the subjects were selected for this study were from rural as well as urban areas. Rural population was considered on the basis of people living under Gram Panchayat for more than 10 years and Urban Population was considered on the basis of people living under Nagar Palika for more than 10 years. List of the people was obtained from gram panchayat and Nagar Palika. The subjects were selected by table method. Subjects fulfilling inclusion and exclusion criteria were given the questionnaire on the date of enrolment. The subjects had been explained about the study and information was provided to them. They were explained about the pattern of study, need of study, its effect on general population, importance about the information generated. Prior consent was obtained from subjects and the information was gathered by using Stroke questionnaire. The sample size is 162. The sample size was derived from the formula

$$n = \frac{4pq}{L^2}$$

Were,
p=44.3%, q=100 - p, L= 12% (p= prevalence rate, q= 100 - p, L= allowable error)
p=44.3% is derived from the article "Incidence and Prevalence of Stroke in India: A Systematic Review." Author – SureshKumar KamalaKannan

$$n = \frac{4 \times 44.3 \times 65.7}{12^2}$$

= 81
Total sample size = 162 (81 in rural and 81 in urban population)
The study duration is of six months (December 2019 - May 2020).
The information was gathered and statistical analysis was done to compare awareness of early warning signs of stroke in rural and urban population in order to derive conclusion.

Age group of participants in both rural and urban area was in between 20 - 80 years. The Table 1 shows the mean age in urban population was 43.60 where minimum age group was 22 and max age group was 75. In rural population the mean age was 45.70 where 22 was minimum age group and 84 was max age group.

Table 1. Interpretation of Age Distribution in Rural and Urban Population

	Urban	Rural
Mean	43.60	45.70
SD	14.023	16.509

RESULTS

The Table 2 shows awareness of early warning signs of stroke according to rural and urban population. People with more than 35 years of age were more aware as compared to people with less than 35 years of age in both rural and urban areas. Chi square test was performed and the *p* value .1945 was not significant.

Table 2. Awareness According to Age

Age ≤ 35 years	12%
Age ≥ 35 years	88%
p value	.1945

The Table 3 shows that the Awareness was quiet high in Rural Population as compared to that of Urban Population. Chi square test was performed and the p value .1945 was not significant.

Table 3. Awareness of Warning Signs of Stroke in Rural and Urban Population

	Rural	Urban	Total
Unaware	31%	38%	69%
Aware	19%	12%	31%
p value	.1945		

DISCUSSION

Stroke is sudden loss of neurological functions triggered by a disruption of the blood flow to the brain. Although, prevalence of stroke is high the knowledge regarding the same is very low. The Table 2 shows awareness of warning signs of stroke according to age. In rural area 8% people were aware about the warning signs of stroke with less than 35 years of age and 42% people were aware with more than 35 years of age. In urban area 4% people were aware about the warning signs of stroke with less than 35 years of age and 46% people were aware with more than 35 years of age. People with more than 35 years of age were more aware (88%) as compared to people with less than 35 years of age (12%) in both rural and urban areas. Chi square test was performed and the p value .1945 was not significant. Table 3 shows awareness in rural and urban population about the warning signs of stroke. 31% subjects were unaware in rural area and 38% in urban area about the warning signs of stroke. Awareness was quiet high in Rural Population (19%) as compared to that of Urban Population (12%). Chi square test was performed and the p value .1945 was not significant. In the cross - sectional study directed in urban and rural Mukono district central Uganda which showed stroke knowledge is poor in both rural and urban areas. The study was conducted by using the systemic sampling method, the sample size was 377. A pretested questionnaire was given to the people. The top stroke risk factor identified by the subjects were stress and hypertension. 76 percent of the participants did not knew stroke as a disorder of brain (Kaddumukasa, et al., 2015). In the article peer reviewed: knowledge of stroke warning signs and risk factor in rural community, 800 adults with age group 45 years and older from 2 rural countries participated. A telephone-based survey using questionnaire was used. In their study it was seen that 70% of participants were able to answer correctly about two or more warning signs for stroke which were numbness on any side of the face/body (45%) and difficulty speaking (38%). Were as 45% were able to answer correctly about two or more stroke risk factors which were cigarette smoking (50%) and high blood pressure (44%). People with age group of 45 to 64 years (odds ratio [OR] 2.44; 95% confidence interval [CI], 1.78–3.46) and women (OR 2.02; 95% CI, 1.46–2.80) with 12 or more years of education (OR 1.96; 95% CI, 1.08–3.56), and those with high cholesterol (OR 1.68; 95% CI, 1.17–2.42) were more likely to answer correctly two or more warning signs compared with people without these features. Women (OR 1.48; 95% CI, 1.07–2.05) and young age group of 45 to 64 years (OR 1.35; 95% CI, 1.01–1.81) answered correctly about two or more stroke risk factors compared with men and older age group (Blades, et al., 2005). In the study, "Recognition of Stroke Warning Signs and Risk Factors Among Rural Population in Central Pennsylvania" the sample size was 163. This study showed 85.3%that is ≥3 (out of 4) answered correctly about stroke warning signs and 71.8% that is ≥3 (out of 5) answered correctly about stroke risk factors (Kaddumukasa, et al., 2015). Were as, 34.4% mentioned neck pain followed by chest pain (33.1%) as the warning signs of stroke. Identification of wrong stroke warning signs were ≥1 (out of 3). This was seen to be significantly lower among the subjects with postgraduate level education in comparison with other literacy groups. 95.7% of subjects chose "call 911 immediately" in response to an acute stroke. The most cited source of information was a relative with a history of stroke. High level of education increases odds of recognition of stroke risk factors which was ≥3 (.21; 95% confidence interval, .09–.61). The result was found by multivariate analysis. Knowing anyone with stroke was associated with an awareness of the life-threatening nature of stroke ($r = .21$, $p < .01$). 85% of the participants answered correctly about the warning signs with no significant age and literacy (9). In the study "Knowledge of stroke symptoms and treatment among community residents in Western Urban China" with total of 1101 participants only 15.6% of the participants knew about all the 5 warning signs of stroke; 17.6% answered that they would call for emergency for all 5 stroke warning signs. Prior questionnaire was provided. Correctly answering stroke warning signs was associated with the response of calling emergency (odds ratios, 1.92 - 3.34). Even among those participants who knew all 5 warning signs of stroke, only 35.5% (95% confidence interval, 28.3 - 42.6) answered that they would call emergency for all 5 signs (Yang, et al., 2014).

In the study "Difference in stroke knowledge between rural and urban communities in a developing country after community-based stroke knowledge campaigns: results from cross - sectional study" a standardized questionnaire to assess knowledge of stroke risk factors and warning signs was given in urban and non-urban communities of Nuevo Leon, Mexico. A total of 4,144 surveys were collected. Mean age group was 44.2 ± 16.1 and out of which 75.9% were female. People from rural and semi-urban areas recognized > 3 risk factors ($p < .001$) and warning signs ($p < .001$) as compared to the urban area. After logistic regression analysis, participants who received previous information about stroke remained significant for the knowledge of > 3 stroke risk factors and warning signs ($p < .001$; 95% CI 1.997 - 2.727; $p < .001$; 95% CI 1.880 - 3.787) respectively were awareness being quite low in urban as compared to that of rural area. Rural and semi - urban regions responded or answered correctly as compared to urban population. Obtaining stroke information is a determining factor for stroke knowledge. Stroke Educational Campaigns are a cost-effective method to increase awareness of stroke, thus reducing stroke problem (Góngora-Rivera, et al., 2018). All these study shows that the awareness of risk factors and the awareness of warning signs of stroke was more in rural population despite more literacy rate in urban area. The awareness of warning signs of stroke was more in case of rural population because the incidence rate of the disease stroke was more in rural population.

CONCLUSION

The level of awareness about the warning signs of stroke amongst people living in rural and urban area was identified. The level of awareness about warning signs of stroke was higher among rural population as compared to urban population. Although more knowledge of stroke warning signs and risk factors amongst people is needed as it is accompanied with enhanced probability of appropriately calling emergency help.

AUTHORS STATEMENTS

The ethical approval of the project was done by the institutional ethics committee.

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