Original Article

A Comparative Study on Knowledge of Cerebrovascular Diseases after Educating Campaign in Rural Area of Thailand

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Background: Cerebrovascular diseases are the cause of disability and loss of ability to conduct normal daily life. Educating people about strokes should be a good way to prevent or decrease the incidence of the diseases, or, if the diseases occur, it should assist in lessening both economic and social impact. The present study aimed to study the effect of educating campaign on the knowledge of cerebrovascular diseases to people in rural areas.

Material and Methods: The study was conducted in people who lived in Na-ngew Sub-district, Khao Suan Kwang District, Khon Kaen Province during November to December 2010. The participants were assessed in their knowledge of stroke using questionnaire twice, before and after the training. The questionnaire consisted of two parts: the personal data and the knowledge assessment part. The latter was composed of 38 questions on the knowledge and practices of stroke. 19 questions out of these were related to risk factors, 11 were related to the symptoms and warning signs, and 8 were related to knowledge on transient ischemic attack [TIA] and practices.

Results: Of the 579 participants, 79 percent were females. The average age was 49±16 years, and 92 percent had not had previous stroke. Participants' knowledge related to stroke increased significantly after the training at the $p<0.001$ level, on risk factors, symptoms and warning signs, transient ischemic attack [TIA] and practices. Although the scores increased; when considering each question item, it was found that the knowledge for risk factors in sex, life style, and dyslipidemia were still low, i.e., 13.8, 31.8, and 51.3 percent respectively and 90 percent understood that chest pain is a symptom of stroke. Only 30.4% called the emergency number 1669 in case of a stroke patient showing symptoms.

Conclusion: Research participants were better informed of stroke in terms of risk factors, symptoms and warning signs, transient ischemic attack [TIA], and practices when seeing someone showing the stroke symptom after the training.

Keywords: Cerebrovascular disease, Rural, Educating campaign

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Stroke is frequently found among neurological disorders and an important cause leading to disability and loss of ability to conduct activity of daily living. The patient becomes a cause of family burden, adding more expenditure to the family for medical treatment when hospitalized as well as home care. The situations of stroke in Thailand from 1994 to 2004 showed an increasing trend. Hence, prevention by means of educating people on the knowledge of risk factors and adjustment of behaviors is very important[1,2]. Past studies showed that people in general still lack knowledge of risk factors of stroke. Most people (80%) only know one risk factor, especially those who have risk factors of stroke themselves[3]. Studies in Thailand found that stroke patients and their relatives still lack knowledge of risk factors and knowledge on the disease itself[4,5], particularly people living in remote areas. It is also difficult for these people to go to hospitals. Besides prevention of risk factors, people should be informed of symptoms and medical signs including warning signs of stroke and practices when facing a patient showing a symptom so as to bring him or her to the hospital in time. The present advancement in treatment and prescription of thrombolytic therapy [rt-PA] in case the patient arrives at the hospital within 4.5 hours after the symptom could reduce possibility of death and daily routine dependency[6]. Therefore, educating people with knowledge on the occurrence of stroke should be an effective means to prevent both social and economic impact from the disease. A study by Alkadry et al[7] showed only 20 percent of people being able to relate correct warning signs of stroke. The study also revealed the lack of appropriate management on risk factors such as diabetes and hypertension. Similarly, Nicol et al[8] indicated that most populations (80%) perceived news from advertisements. Only 20 percent were educated by health professionals. Thus, this training and campaigning was organized to educate people in the rural areas on stroke in order for the people to promote their health and prevent the diseases.

Materials and Methods

The study was conducted on the population residing in Na-ngew Sub-district, Khao Suan Kwang District, Khon Kaen Province in November to December, 2010. Participants under study were from 18 years of age and over who were able to communicate in Thai. They were invited to listen to the project's instructions before giving their consent to join as participants.

All participants were assessed on their knowledge using an interview form before training. Then they were educated on the knowledge of stroke or cerebrovascular diseases by means of lectures, study from exhibitions, manuals, and by means of community broadcasting. After the 15 days of training, the participants were assessed again using an interview form. This interview form comprised two parts. Part one was asking for their demographic data such as gender, age, education, income, occupation, health history, congenital disease, and whether they smoked and exercise. Part 2 comprised 38 questions on the knowledge of stroke, 19 questions out of this were on risk factors, 11 were on symptoms and warning signs of stroke, and 8 were on knowledge of transient ischemic attack [TIA] and practices. The questionnaire was edited by two neurologists and tried out with 10 people from the same population group who were not participants. The present study was received the approval of the ethic committee from Khon Kaen University, Thailand.

Statistical analysis

Scores were divided into 4 groups according to the topics, namely: 1) 19 questions on risk factors, 2) 11 questions on warning and medical signs, 3) 4 questions on transient ischemic attack (TIA), and 4) 4 questions on action when confronting stroke symptoms. Participants who obtained over 40 percent of correct answers of each topic would pass the criteria for assessment. If they passed all topics, their knowledge was rated at an excellent level[9,10].

The data were analyzed by the SPSS 19 program. The demographic data were shown in percentages, means, and standard deviations. The knowledge before and after training was compared by the Paired t-test.

Results

Most of the 579 participants were females (79%). Their average age was 49$\pm$16 years. Ninety-two percent had never had a stroke. Their other demographic details such as education level, incomes, and occupations are shown in Table 1.

It was found that the knowledge of participants increased significantly after the training at the statistic level of $p<0.001$ in risk factors, symptoms and warning signs, transient ischemic attack [TIA], and practices (Figure 1).

Knowledge on risk factors

The scores of knowledge on risk factors were

Table 1. Demographic data of all participants (n = 579)

Information	Number (percentage)
Education (n = 578)	
Primary level	430 (74.4)
Secondary level and higher	135 (23.4)
Not attending school	13 (2.2)
Income/month/person	
Lower than 5,000 baht (lower than 161.29 dollars)	430 (74.3)
5,000 to 9,999 (161.29 to 322.55 dollars)	106 (18.3)
10,000 baht or more (322.56 dollars)	43 (7.4)
Occupation (n = 578)	
Student	17 (2.9)
Trading/independent/personal business	38 (6.6)
Hired labor/farming	430 (70.6)
No occupation/looking after patients/housewife	85 (14.7)
Officials/officers on state enterprises	7 (1.2)
Company officers	1 (0.2)
Underlying disease	
Previous stroke	13 (2.2)
Heart diseases	91 (15.7)
Hypertension	100 (17.3)
Diabetes	59 (10.2)
Dyslipidemia	52 (9.0)

* $p<0.001$ for McNemar Chi-square analysis

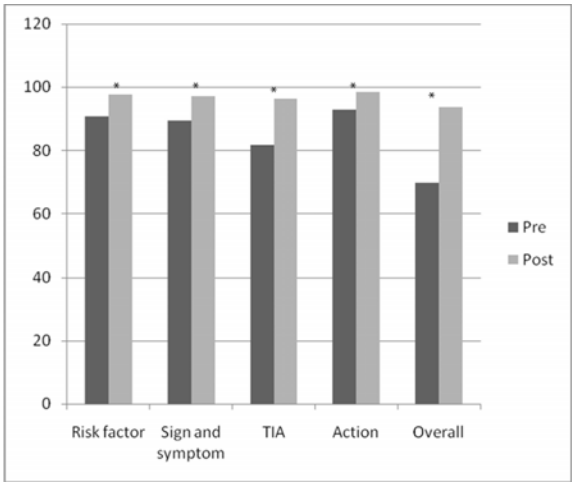

Figure 1. Percentage of those getting the correct answers related to risk factors, signs and symptoms, Transient Ischemic Attack [TIA], action and overall knowledge of stroke before (pre) and after training (post).

12.2±3.0 before the training and 13.8±2.4 after the training, denoting significant increase at $p<0.001$. The percentage of those who passed the criteria rose from 90.9 to 97.6%. Among those who did not pass (53 persons), 85 percent showed an improved knowledge level. Although the scores increased; when considering each question item, it was found that the knowledge for risk factors in sex, life style, and dyslipidemia were still low, i.e., 13.8, 31.8, and 51.3 percent whereas the answers for other risk factors were 90 percent correct.

Knowledge on symptoms and warning signs

The average score increased significantly from 8.5±2.7 in the pretest to 9.5±1.7 in the post-test at $p<0.001$. The passing proportion increased from 89.5 to 97.2 percent. Among the participants who did not pass the criteria before training (n = 61), 82 percent passed after the training. Most (90%) of the participants, however, still understood that chest pain is one symptom of stroke, and inability to understand spoken language is another item for which they did not get the right answer.

Knowledge on transient ischemic attack [TIA]

The average score after training was 3.7±0.8, a significant increase in terms of statistics at $p<0.001$ compared to the average of 3.1±1.4 before training. As

a whole, the group obtained an increase from 81.7 to 96.2 percent.

Knowledge on actions

Like other topics, the average score after the training became significantly higher at the $p<0.001$ level (3.4 ± 0.8 compared to 2.8 ± 0.9). The group passing the criteria increased from 92.9 to 98.5 percent. Besides, 90.2 percent of participants who did not pass the criteria at first (n = 41) finally passed. Only 68.4 percent, however, knew that stroke is a disease that requires life-long treatment, whereas only 30.4 percent knew they should contact the emergency number, 1669 in case someone suffers from acute stroke.

Discussion

The study showed that research participants became better acknowledged of stroke in terms of risk factors, symptoms and warning signs, TIA, and knowledge on how to react when someone is having stroke symptoms.

From the past studies, the proportion of people informed of stroke differed owing to the characteristics of questions asked. Both close- and open-ended questions were used. Close-ended questions resulted in a higher percentage of people getting the right answers than open-ended questions. Besides, the population participating in the studies varied in terms of ages and education levels, leading to different research results. Rowe et al[11] showed that 58 percent of participants reported chest pain as a stroke symptom. Similarly, the present study found that participants in general misunderstood this. A study by Yoon[12] confirmed that knowledge of stroke diseases was little in the stroke patient group as well as in the general population. Little information has been provided as to the importance of emergent hospital access. It has been found from asking people in general that it is necessary for them to be more informed by common media in which simple language is used. This can also be on television and in school classrooms.

The media used for campaigning in this study included announcements from community broadcasting, printed media and CDs, and lectures by neurologists in order to distribute as much information to the community as possible. Most populations prefer media with picture illustrations, whereas they may have trouble using electronics equipment. For printed matter, people found them hard to read because of small fonts and loaded contents. Gender, ages, and educational levels were not found to make the knowledge different. A study by Schneider et al[13] indicated that the greatest sources of information were mass media including television (32%), magazines (24%), and newspapers (22%). Others (20%) received information from doctors, from families with stroke patients (19%), from medical textbooks (9%), and by word of mouth (5%). A study by Miyamatsu[14] conducted in Japan showed that educating people by means of television increased knowledge of stroke in women aged 40 to 74, but had no effect on males. In contrast, Silver[15] found that it increased the knowledge of both males and females whose education was lower than secondary level and the age group lower than 65 years. Silver's study found no effect on the higher age group. It was also shown that advertisements in newspapers did not have any effect on the knowledge of stroke. All of these studies enabled the present investigators to know that moving pictures and television should be the most appropriate media for disseminating knowledge to people, whereas printed media does not have an impact. People's age group and educational levels should also be taken into account.

The limitation of this study was in the measurement of knowledge that can be subject to change. The study did not aim at observing if the behaviors of the population group changed, nor long-term following-up of persistence of knowledge. Hence, studies should be conducted on the behavior of participants after the campaign. People should be followed-up in the long run and the means of campaign should also be investigated in terms of its worthiness and optimal efficiency. Besides, most of the population in the present study was similar in age and educational levels. There was no difference that could otherwise affect the perception and giving of information. Thus, studies should be further carried out for more information for future campaigns.

What is already known on this topic?

Studies in Thailand found that stroke patients and their relatives still lack knowledge of risk factors and knowledge on the disease itself, particularly people living in remote areas.

What this study adds?

Knowledge related to stroke increased significantly after the training, on risk factors, symptoms and warning signs, transient ischemic attack [TIA] and practices. Only 30.4 % called the emergency number 1669 in case of a stroke patient showing symptoms.

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Potential conflicts of interest

The authors declare no conflict of interest.

References

1. Travis LH, Flemming KD, Brown RD Jr, Meissner I, McClelland RL, Weigand SD. Awareness of stroke risk factors, symptoms, and treatment is poor in people at highest risk. J Stroke Cerebrovasc Dis 2003;12:221-7.
2. Sug YS, Heller RF, Levi C, Wiggers J, Fitzgerald PE. Knowledge of stroke risk factors, warning symptoms, and treatment among an Australian urban population. Stroke 2001;32:1926-30.
3. Reeves MJ, Hogan JG, Rafferty AP. Knowledge of stroke risk factors and warning signs among Michigan adults. Neurology 2002;59:1547-52.
4. Wattnapan P, Tamnanthong N, Manimmanakorn. Recognition of risk factors among stroke patients at Srinagarind Hospital. J Thai Rehabil Med 2003;13:25-33.
5. Pansombat A, Piravej K, Charnnarong N. Knowledge about stroke and ability in assessing activity of daily living by stroke patients and family members. J Thai Rehabil Med 2007;17:7-13.
6. Wardlaw JM, Sandercock PA, Berge E. Thrombolytic therapy with recombinant tissue plasminogen activator for acute ischemic stroke: where do we go from here? A cumulative meta-analysis. Stroke 2003;34:1437-42.
7. Alkadry MG, Wilson C, Nicholson D. Stroke awareness among rural residents: the case of West Virginia. Soc Work Health Care 2005;42:73-92.
8. Nicol MB, Thrift AG. Knowledge of risk factors and warning signs of stroke. Vasc Health Risk Manag 2005;1:137-47.
9. Weltermann BM, Homann J, Rogalewski A, Brach S, Voss S, Ringelstein EB. Stroke knowledge among stroke support group members. Stroke 2000;31:1230-3.
10. Falavigna A, Teles AR, Vedana VM, Kleber FD, Mosena G, Velho MC, et al. Awareness of stroke risk factors and warning signs in southern Brazil. Arq Neuropsiquiatr 2009;67:1076-81.
11. Rowe AK, Frankel MR, Sanders KA. Stroke awareness among Georgia adults: epidemiology and considerations regarding measurement. South Med J 2001;94:613-8.
12. Yoon SS, Byles J. Perceptions of stroke in the general public and patients with stroke: a qualitative study. BMJ 2002;324:1065-8.
13. Schneider AT, Pancioli AM, Khoury JC, Rademacher E, Tuchfarber A, Miller R, et al. Trends in community knowledge of the warning signs and risk factors for stroke. JAMA 2003;289:343-6.
14. Miyamatsu N, Kimura K, Okamura T, Iguchi Y, Nakayama H, Toyota A, et al. Effects of public education by television on knowledge of early stroke symptoms among a Japanese population aged 40 to 74 years: a controlled study. Stroke 2012;43:545-9.
15. Silver FL, Rubini F, Black D, Hodgson CS. Advertising strategies to increase public knowledge of the warning signs of stroke. Stroke 2003;34:1965-8.