Knowledge Regarding the Signs, Symptoms, and Risk Factors Associated with Stroke in Medical and Nonmedical Personnel

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Abstract

Introduction: Stroke was the second-leading global cause of death accounting for 11.8% of total deaths worldwide and a leading cause of disability. Stroke was the leading cause of death in Indonesia accounting for 21.1% of them. Knowledge is essential for the prevention of stroke and minimizing delay in receiving proper treatment. **Methods:** This was a cross-sectional observational study using a questionnaire consisting of questions about signs, symptoms, and risk factors for stroke in the Indonesian Language with a minimal amount of technical jargon. There were 113 respondents, 49 has a medical background (11 was medical doctors) and 64 was from a nonmedical background. **Results:** Majority of the nonmedical personnel knew that hemiparesis is a symptom of stroke, but only a third knew that hemihypesthesia is one of the symptoms. Approximately half knew that dysarthria and uneven face is a symptom of stroke. Only a few knew that sudden loss of vision is a symptom of stroke. Hypertension and hypercholesterolemia were the two most popular risk factors among nonmedical personnel, other risk factors were only known to <40% of the respondents. After comparing the results between medical and nonmedical personnel, medical personnel was more confident about their knowledge ($P < 0.001$). The difference was also statistically significant in hemihypesthesia ($P = 0.029$) and sudden loss of vision ($P = 0.032$). The difference was statistically significant when assessing several risk factors such as arrhythmia ($P = 0.004$), smoking ($P = 0.004$), hypertension ($P = 0.001$), diabetes ($P < 0.001$), and atrial fibrillation ($P < 0.001$). Disappointingly, both groups performed poorly in recognizing menopause as a risk factor. **Conclusion:** The knowledge about the symptoms and signs of stroke other than hemiparesis was poor in nonmedical personnel. Medical personnel was only slightly better than nonmedical personnel. This is a wake-up call to emphasize the importance of stroke, its prevention and early recognition.

Keywords: General population, knowledge, risk factors, stroke, symptoms

INTRODUCTION

Data showed that in 2013, stroke was the second-leading global cause of death behind ischemic heart disease, accounting for 11.8% of total deaths worldwide and a leading cause of disability.[1,2] The magnitude of the problem is even greater in Indonesia, being the leading cause of death accounting for 21.1% of them, surpassing the ischemic heart disease.[3] Knowing the risk factors involved in stroke is essential to reduce the incidence. For the general population, knowing risk factors involved in stroke may help the individuals to be more aware

and actively preventing the disease in themselves and other people related to them. For medical personnel, astute knowledge is important to help them to screen, advise, and address the risk factors in patients. For nonmedical personnel, the insight of sign and symptoms of stroke is essential to shorten the period between onset of symptoms and medical care. There was a saying that in stroke, "time is the brain," and the prognosis may differ largely if the patient presented/diagnosed early. Ischemic

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stroke patients might be able to get reperfusion treatment if they presented within the requisite timeframe.[4] An individual educated in such knowledge will be more likely to recognize a stroke and helps themselves or other people to get early medical attention. Medical personnel with good knowledge of stroke will be less likely to miss the diagnosis even when the symptom was atypical. Delay in treatment resulting from poor knowledge regarding symptoms and signs of stroke may lead to a poorer prognosis.[5] The aim of our study is to assess the knowledge regarding the symptoms and risk factors of stroke from both medical and nonmedical personnel, then compared the knowledge between them.

METHODS

Setting

This study was conducted in January 2018 in Jakarta, Indonesia.

Study design

This was a cross-sectional observational study using a questionnaire. We assessed the knowledge about signs, symptoms, and risk factors for stroke through a questionnaire in the Indonesian Language with a minimal amount of technical jargon. The questionnaire consists of the questions with multiple choice answer and checklists. The sample was taken randomly consenting participants from both medical and nonmedical personnel in Jakarta, Indonesia.

Statistical analysis

The analysis was performed to assess the difference in knowledge between medical and nonmedical personnel; subsequent analysis was performed between doctors and other medical personnel. There were 113 respondents, 49 has a medical background (11 were medical doctors) and 64 was from a nonmedical background. Information from the questionnaire was coded and entered into IBM Statistical Package for Social Sciences (SPSS) Statistics for Windows, (Version 24.0, Armonk, NY: IBM Corp., USA). The difference in knowledge between medical and nonmedical personnel; doctors, and other medical personnel were compared using the Chi-square test. The mean difference (continuous variable) was analyzed using *t*-test.

RESULTS

In a question regarding nonmedical personnel subject's knowledge about stroke according to him/herself, 37 (57.8%) respondents said they knew well about it. Fifty-five respondents (85.9%) knew about hemiparesis. Twenty-one respondents (32.8%) knew about hemihypesthesia. Thirty-seven respondents (57.8%) knew about the uneven face. Twenty-nine respondents (45.4%) knew about dysarthria. Only seven respondents (10.9%) knew that sudden loss of vision is a symptom of stroke. Mean for knowing some risk factors out of 5 was 2.33. Twenty-five respondents (39.1%) knew that older people are at higher risk for stroke. Eight respondents (12.5%) knew that gender is a risk factor. Seventeen respondents (26.6%) knew that arrhythmia is a risk factor. Eleven respondents (17.2%) knew that family history plays a part. 18 respondents (28.1%) knew that smoking increased the risk of stroke. 42 respondents (65.6%) knew that hypercholesterolemia was associated with stroke. As for hypertension and diabetes, 50 respondents (78.1%) and 10 respondents (15.6%) knew that they were risk factors for stroke. Nobody knows that menopause is a risk factor for stroke. Mean for knowing some risk factors out of 9 was 2.77.

In a question regarding a subject's knowledge about stroke according to him/herself, medical personnel were more confident about their knowledge ($P < 0.001$) [Table 1]. The difference was also statistically significant in hemihypesthesia ($P = 0.029$) and sudden loss of vision ($P = 0.032$). The difference was not statistically significant when assessing hemiparesis, dysarthria, and uneven face ($P = 0.742$, $P = 0.055$, and $P = 0.078$). The difference was significant when assessing several risk factors such as arrhythmia ($P = 0.004$), smoking ($P = 0.004$), hypertension ($P = 0.001$), diabetes ($P < 0.001$), and atrial fibrillation ($P < 0.001$). Disappointingly, both performed poorly in recognizing menopause as a risk factor (0 in nonmedical vs. 2 in medical, $P = 0.362$). The difference was not significant in knowing that age ($P = 0.197$), gender ($P = 0.16$), and cholesterol ($P = 0.49$) as a risk factor. The difference in knowing symptoms (out of 5) and risk factors (out of 9) are 0.815 ($P = 0.004$) and 1.76 ($P < 0.001$). The difference in knowledge between doctor and other medical personnel was slim, with only menopause the only differing factor ($P = 0.047$) [Table 2].

DISCUSSION

Among the nonmedical personnel, hemiparesis was the most well-known symptom of stroke. Hemiparesis is one the most familiar symptom of stroke among the general population, be it on films, movies, or regular conversation. Half knew that uneven face is a sign of stroke; it is one of the components of the acronym "FAST" which is often promoted in Western countries. It is less frequently heard in Indonesia. The acronym "FAST" in the Indonesian language should be broadcasted more frequently for a public audience to see. Fewer knew that hemihypesthesia is a symptom of stroke, possibly because the symptom is less alarming than hemiparesis, nonmedical personnel, especially the less educated individual, may mistake it for "fatigue." Only a small fraction knew that sudden loss of vision is a symptom of stroke, this should be more emphasized since it might be an episode of transient ischemic attack which further increases the risk of subsequent stroke.[6] Most did not know that arrhythmia (atrial fibrillation) is a risk factor for stroke, atrial fibrillation itself was mostly unknown among nonmedical personnel. However, there was atrial fibrillation campaign in recent years, and it is hoped that more will be aware of atrial fibrillation. Hypertension was the most popular risk factor for stroke in our sample, but only

Table 1: The knowledge regarding sign, symptoms, and risk factors of stroke among medical and nonmedical personnel					
	Medical personnel		Total	Percentage sample	*P*
	No	Yes			
Know about stroke?					
Yes	37	47	84	74.3	<0.001
Not fully understand	27	2	29	25.7	
Stroke is the highest cause of disability					
Yes	46	42	88	77.9	0.127
No	18	7	25	22.1	
Knowledge about stroke (mean/median)					
Hemiparesis/plegia?					
Yes	55	44	99	87.6	0.742
No	9	5	14	12.4	
Hemihypesthesia?					
Yes	21	27	48	42.5	0.029
No	43	22	65	57.5	
Uneven face					
Yes	37	37	74	65.5	0.078
No	27	12	39	34.5	
Dysarthria					
Yes	29	32	61	54.0	0.055
No	35	17	52	46.0	
Sudden loss of vision					
Yes	7	14	21	18.6	0.032
No	57	35	92	81.4	
Risk factors for stroke (mean/median)					
Age					
Yes	25	26	51	45.1	0.197
No	39	23	62	54.9	
Gender					
Yes	8	12	20	17.7	0.16
No	56	37	93	82.3	
Heart rhythm					
Yes	17	27	44	38.9	0.004
No	47	22	69	61.1	
Family history					
Yes	11	17	28	24.8	0.055
No	53	32	85	75.2	
Smoking					
Yes	18	28	46	40.7	0.004
No	46	21	67	59.3	
Cholesterol					
Yes	42	36	78	69.0	0.491
No	22	13	35	31.0	
Hypertension					
Yes	50	49	99	87.6	0.001
No	14	0	14	12.4	
Diabetes					
Yes	10	26	36	31.9	<0.001
No	54	23	77	68.1	
Menopause					
Yes	0	2	2	1.8	0.362
No	64	47	111	98.2	
Atrial fibrillation					
Yes	20	37	57	50.4	<0.001
No	44	12	56	49.6	

Table 2: The knowledge regarding sign, symptoms, and risk factors of stroke among doctors and other medical personnel

	Medical personnel		Total	Percentage sample	P
	No	Yes			
Know about stroke?					
Yes	11	36	47	41.6	<0.001
Not fully understand	0	2	2	1.8	
Stroke is the highest cause of disability					
Yes	11	31	42	37.2	0.33
No	0	7	7	6.2	
Knowledge about stroke (mean/median)					
Hemiparesis/plegia?					
Yes	11	33	44	38.9	0.574
No	0	5	5	4.4	
Hemihypesthesia?					
Yes	7	20	27	23.9	0.732
No	4	18	22	19.5	
Uneven face					
Yes	9	28	37	32.7	0.708
No	2	10	12	10.6	
Dysarthria					
Yes	9	23	32	28.3	0.287
No	2	15	17	15.0	
Sudden loss of vision					
Yes	3	11	14	12.4	0.914
No	8	27	35	31.0	
Risk factors for stroke (mean/median)					
Age					
Yes	7	19	26	23.0	0.649
No	4	19	23	20.4	
Gender					
Yes	5	7	12	10.6	0.108
No	6	31	37	32.7	
Heart rhythm					
Yes	8	19	27	23.9	0.303
No	3	19	22	19.5	
Family history					
Yes	6	11	17	15.0	0.156
No	5	27	32	28.3	
Smoking					
Yes	9	19	28	24.8	0.087
No	2	19	21	18.6	
Cholesterol					
Yes	10	26	36	31.9	0.256
No	1	12	13	11.5	
Hypertension					
Yes	11	38	49	43.4	-
No	0	0	0	0.0	
Diabetes					
Yes	9	17	26	23.0	0.068
No	2	21	23	20.4	
Menopause					
Yes	2	0	2	1.8	0.047
No	9	38	47	41.6	
Atrial fibrillation					
Yes	10	27	37	32.7	0.252
No	1	11	12	10.6	

minority knows that diabetes and smoking are an important risk factor for stroke.

Almost all of the medical personnel knew that hemiparesis is the presenting symptom of stroke, the knowledge was excellent in both medical and nonmedical personnel. Only a small fraction of medical personnel knew that sudden loss of vision is a sign and symptom of stroke, although they perform reasonably well when compared to nonmedical personnel, it is still a disappointing result. Medical personnel was better compared to nonmedical personnel in identifying atrial fibrillation, diabetes, hypertension, and smoking as risk factors. Despite a better result, only 26 out of 49 correctly identifies diabetes as a risk factor. Diabetes is one of the major risk factors for stroke, and all of the medical personnel should be able to identify it correctly.[7] However, the result is most disappointing in menopause, as only 2 out of 49 medical personnel know and did not perform better compared to nonmedical personnel. Subsequent analysis found that only menopause was significant for the difference in knowledge between doctors and other medical personnel, which means that the knowledge about stroke is still poor.

Conclusion

The knowledge regarding the symptoms and signs of stroke other than hemiparesis was poor, especially regarding the sudden loss of vision. The most popular risk factors are hypertension and hypercholesterolemia. However, respondents lacked the knowledge about other risk factors.

The result that the medical personnel can only recognize symptoms slightly better than the nonmedical personnel was slightly disappointing, and both performed relatively poor in answering questions. This is a wake-up call to emphasize the importance of stroke, its prevention and early recognition.

Conflicts of interest
There are no conflicts of interest.

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