

Family Physicians' Awareness and Knowledge Levels of Stroke Risk Factors and Transient Ischemic Attack

Mustafa Bayraktar^{1*}, Mehmet Akif Nas², Mehmet Nuri Koçak³

¹ Department of Family Medicine, Ataturk University, Medical Faculty, Erzurum, Turkey

² Department of Medical Education, Ataturk University, Medical Faculty, Erzurum, Turkey

³ Department of Neurology, Ataturk University Medical Faculty, Erzurum, Turkey

Corresponding Author: Mustafa Bayraktar, Department of Family Medicine, Faculty of Medicine, University of Ataturk, Morphology building, A-block, Erzurum/ Türkiye, e-mail: mustafabayraktar@atauni.edu.tr

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Abstract

Objective: Family physicians should know the risk factors of stroke, screen and raise awareness of patients. In this context, it is necessary to investigate the level of knowledge and awareness of family physicians and family medicine assistants.

Methods: A survey including questions about demographic characteristics of the participants, non-modifiable and modifiable risk factors for stroke and transient ischemic attack (TIA) was prepared using the online Google survey method. The knowledge levels of the participants were investigated and statistically compared according to demographic characteristics.

Results: The mean survey score of the participants was 25.55 ± 4.34 out of 32 points. Among the questionnaire questions, hypertension, diabetes mellitus, atrial fibrillation, previous history of stroke, smoking and hypercoagulability were correctly recognized as stroke risk factors by all participants (% 100). The least known risk factors were glaucoma (19.4%), hyperthyroidism (25.8%) and chronic obstructive pulmonary disease (COPD) (41.9%). The majority of the participants also had a high level of knowledge about TIA. For most participants, the difference in knowledge levels did not differ by demographics regarding stroke risk factors and TIA ($p>0.05$).

Conclusion: The knowledge levels of family physicians about stroke risk factors and TIA were found to be satisfactory. Knowledge of stroke risk factors and screening of patients should be among the important duties of family physicians as a preventive medicine practice.

Keywords: Family physician, primary prevention, risk factors, stroke, transient ischemic attack

Introduction

Family medicine prioritizes preventive medicine by screening for risk factors before disease develops through primary preventive care practices and by increasing public awareness and education. Within the scope of preventive medicine practices, the Ministry of Health launched the Disease Management Platform (HYP) in 2021 and common chronic diseases (hypertension, diabetes, obesity, cardiovascular disease) were screened by family physicians and chronic risk assessment of patients began (Ministry of Health, 2021). These screened diseases raise community awareness and provide an opportunity for early intervention of high-risk individuals.

Stroke, as an important cause of mortality and morbidity, was listed as the third most common non-communicable disease in Türkiye with 477 thousand cases in the Health Statistics Yearbook published in 2023 (Ministry of Health, 2023). The risk factors of stroke have been defined in order to reduce the number of cases and to decrease the mortality and morbidity rates with preventive medical practices of the disease. While age, gender, race and genetic factors are non-modifiable risk factors for stroke; hypertension, dyslipidemia, atrial fibrillation, diabetes, obesity, inappropriate diet, sedentary life, and smoking and alcohol use have been defined as modifiable

risk factors (Shehjar, F., 2023). Studies have shown that 5 of the most prevalent risk factors account for approximately 90% of the population's risk (O'Donnell, MJ., 2010). These major stroke risk factors are: hypertension, abdominal obesity, diet, smoking and physical inactivity.

As the third most common disease, stroke and its risk factors must become part of the family physician's checklist and society's awareness through risk screening. In this context, it is necessary to assess the level of knowledge of family physicians, to determine their training needs and, if necessary, to develop awareness-raising practices. In this study, we aimed to investigate the knowledge levels of family physicians and family medicine assistants about stroke risk factors and transient ischemic attack (TIA) and to compare the demographic characteristics affecting their knowledge levels.

Methods

The study was designed as a cross-sectional descriptive study. The knowledge level and awareness about stroke risk factors and TIA among family physicians and family physician assistants working in Erzurum province was assessed online using Google survey method. Local ethics committee approval was obtained from the university ethics committee with the decision number 30.06.2022/06-75.

The sample population of our study was a total of 272 family physicians and assistants working in Erzurum. The lowest proportion of this value, 10% (minimum 27 persons) was included in the study as the sample size.

As part of the study, prior to answering the online questionnaire, participants were informed about the study and asked if they would volunteer to participate. If they answered "yes," the survey questions were visible and answers were available. If they answered "no," the survey was closed.

In the first part of the survey questions, demographic data of the participants were obtained. The second part included questions about the knowledge and awareness of the participants about stroke risk factors. The third part included questions about TIA. The knowledge level measurement questions, which consisted of 32 questions in total, were triple Likert type, and the options of "yes", "no" and "don't know" could be marked. The answer "yes" received 1 point, "no" and "don't know" answers were considered wrong and received 0 points, and since all propositions were correct, the maximum score that could be obtained was 32 points. The validity and reliability of the questions were not tested and there was no cut-off value. Therefore, participants were expected to score high by giving correct answers.

Since the age ranges of the participants were close, two groups were formed as under the age of 30 and over the age of 30. Similarly, the length of time they have been working as physicians was also categorized and three groups were formed: under 5 years, between 5-10 years and over 10 years. Statistical analysis was conducted to determine if there was a difference between the demographic characteristics of the participants and their responses.

Statistical Analysis

SPSS 27.0 (IBM, USA) program was used for statistical analysis. Categorical data are presented as frequencies and percentages, and numerical data are presented as means and standard deviations. Chi-square test was applied in the analysis of categorical data. In the analysis, Pearson Chi-square test result could not be obtained since it was seen that the expected count value less than 5 was more than 20% in all data in 2x2 crosstabs; Thus, Fischer's exact test was used when the minimum expected count was less than 5, and the Continuity Correction between 5 and 25. Phi and Cramer's V values were used to measure the strength of significant results. Similarly, for tables with 3x2 or more cells, the results of the Pearson chi-square test could not be applied, so Linear-by-Linear Association values were taken. In the study, $p < 0.05$ was considered statistically significant.

Results

One of the family physicians included in the study refused to participate and was excluded from the study, and a total of 31 participants were included in the study. The mean age of these participants was 32.3 ± 5.1 years, 54.8% (n=17) were male, 61.3% (n=19) were married, and their mean duration of medical practice was 7.4 ± 4.9 years (Table 1). Among the participants, 58.1% (n=18) were Family Medicine Assistants, and 10 (32.3%) had done neurology internship during their residency.

The mean survey score of the participants was 25.55 ± 4.34 , which was considered high. The distribution of the answers given to the survey questions is given in Table 2. Accordingly, hypertension, diabetes mellitus, atrial fibrillation, smoking, history of previous stroke, and hypercoagulability were correctly known by all participants (100%). The least known risk factors were glaucoma (19.4%), hyperthyroidism (25.8%) and chronic obstructive pulmonary disease (COPD) (41.9%). Only 16.1% (n=5) of the participants were aware that the risk of stroke was higher in women. The level of knowledge about TIA was mostly high.

Table 3 shows the variation of the answers given to the questionnaire according to the gender, marital status, age and duration of medical practice category,

and whether the participants had a previous neurology rotation. Accordingly, no statistical difference was found between the groups according to gender, length of practice and whether or not neurology rotation was taken ($p>0.05$). Only married people were more likely to know that if TIA lasted more than one hour, there was an 80% risk of ischemic stroke ($p=0.022$; Cramer's $V=0.456$) and that TIA patients experienced loss of balance ($p=0.016$; Cramer's $V=0.484$). By age category, individuals older than 30 years were more likely to know that COPD ($p=0.045$; Cramer's $V=0.400$) and congestive heart failure ($p=0.027$; Cramer's $V=0.435$) were risk factors. No statistical comparisons were made between the subgroups of family physicians, as there were only 3 general practitioners in the group.

Discussion

In our study, we aimed to raise awareness by investigating the stroke risk factors knowledge levels of family physicians and family medicine assistants. According to the data we received, awareness of the 5 major risk factors for stroke and TIA was high. In addition, the fact that these results generally did not change with the demographic characteristics of the participants reveals that there is a widespread awareness and knowledge levels.

It is known that developing primary preventive medicine practices by screening for stroke risk factors is the most important disease burden-reducing measure (Caprio, F.Z., 2019). Implementing primary prevention not only offers the opportunity to prevent disease, but also offers significant cost savings (Owolabi, M.O., 2022). Regarding this, it has been determined that even investigating only the history of previous stroke among stroke risk factors will provide an important clue and contribution to family physicians as well as neurologists (Błaż, M., 2023).

In our literature search, we found a shortness of studies investigating primary care physicians' knowledge of stroke risk factors. A study of 98 general practitioners in Sri Lanka found that 48% of the participants were aware of hypertension, 38.8% of dyslipidemia and 37.8% of diabetes among self-reported stroke risk factors (Chang, T., 2020). These values are considerably lower than the values we obtained and we found a high level of knowledge about stroke risk factors. In a study conducted on 127 general practitioners in Hungary, it was found that atrial fibrillation was commonly considered as a risk factor in two stroke scenarios (Harsanyi, S., 2020). Another study examining the level of knowledge about secondary prevention of stroke among

general practitioners and nurses found that only 32.7% of participants knew 4 or more risk factors, while 29.3% did not know any risk factor (Yang, J., 2019). A study conducted on 89 Family Physicians in Saudi Arabia was revealed that awareness of stroke risk factors was quite low (10%-20%) (Alfarawi, F.M.S., 2022). In our study, awareness of many stroke risk factors, especially 5 major risk factors, was found to be quite high.

Studies investigating the level of knowledge of family physicians about TIA are also limited in the literature. In a study conducted on primary care physicians and nurses in Spain, 83.9% of the participants knew the duration of TIA, but only 14% could describe the clinical symptoms (Purroy, F., 2011). A study in Sweden on 614 general practitioners and hospital physicians, it was found that the risk of TIA turning into stroke in the first 24 hours was known by only 9% and the probability of TIA turning into stroke in the first three months was known by 26% (Streit, S., 2015). In our study, the level of TIA knowledge among family physicians and assistants was generally quite high.

Limitations

Although this study was one of the unique studies in this area, it has some limitations. First, the sample size was small, which may affect the study results. Second,

the study was conducted mainly on the family physician assistants, which could not reflect all family physicians in the field. Third, this study was designed to obtain the knowledge levels, but the validity tests of the survey questions were not conducted.

Conclusion

In our study, the level of knowledge of family physicians about stroke risk factors and TIA was found to be high. This result is seen as a promising result that it would be appropriate to include stroke in the routine screening program and that family physicians will play a leading role in the primary prevention of stroke.

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TABLES

Table 1. Demographic properties of the participants.

Total Score in Questionnaire	Mean		25.55
	Median		26.00
	Std. Deviation		4.34
	Minimum		12
	Maximum		32
	Interquartile Range		6
Age	Mean		32.29
	Median		31.00
	Std. Deviation		5.11
	Minimum		25
	Maximum		46
	Interquartile Range		5
Total Duration in the Medical Profession	Mean		7.35
	Median		6.00
	Std. Deviation		4.90
	Minimum		2
	Maximum		20
	Interquartile Range		6
Age Category (n, %)	Under 30 years old	9	29.0
	Over 30 years old	22	71.0
Medical Professional Time Category (n, %)	Less than 5 years	12	38.7
	5-10 years	13	41.9
	More than 10 years	6	19.4
Sex (n, %)	Male	17	54.8
	Female	14	45.2
Marital Status (n, %)	Single	12	38.7
	Married	19	61.3
Occupation (n, %)	Practitioner	3	9.7
	Assistant	18	58.1
	Expert	10	32.3
Neurology Rotation Status (n, %)	No	18	58.1
	Yes	10	32.3
	N/A	3	9.7
	Total	31	100.0

Table 2. The answers of the participants to the questionnaire.

			Frequency	Percent
Which gender is more at risk for ischemic stroke?		Male	24	77.4
		Equal	2	6.5
		Female	5	16.1
Does a family history of stroke increase the risk of stroke?		No	1	3.2
		Yes	30	96.8
Do the following disease increase the risk of having a stroke?	Hypertension	Yes	31	100.0
	Diabetes Mellitus	Yes	31	100.0
	Dyslipidemia	No	1	3.2
		Don't know	1	3.2
		Yes	29	93.5
	Obesity	No	1	3.2
		Yes	30	96.8
	Atrial Fibrillation	Yes	31	100.0
	COPD	No	8	25.8
		Don't know	10	32.3
		Yes	13	41.9
	Hyperthyroidism	No	8	25.8
		Don't know	15	48.4
		Yes	8	25.8
	Glaucoma	No	11	35.5
Don't know		14	45.2	
Yes		6	19.4	
Congestive Heart Failure	No	6	19.4	
	Don't know	2	6.5	
	Yes	23	74.2	
Previous history of having a stroke	Yes	31	100.0	
Does the following lifestyle lead to an increased risk of stroke?	Physical inactivity	No	2	6.5
		Yes	29	93.5
	Smoking	Yes	31	100.0
	Alcohol use	No	3	9.7
		Don't know	4	12.9
	Sleep disturbance	Yes	24	77.4
No		4	12.9	
Don't know		6	19.4	
Could the following disease potentially, not definitively, lead to an increased risk of stroke?	Migraine	Yes	21	67.7
		No	7	22.6
		Don't know	9	29.0
	Metabolic Syndrome	Yes	15	48.4
		Don't know	1	3.2
	Sleep Apnea	Yes	30	96.8
		No	2	6.5
		Don't know	2	6.5
	Hyperhomocysteinemia	Yes	27	87.1
No		2	6.5	
Don't know		2	6.5	
Hypercoagulability	Yes	26	83.9	
	Yes	31	100.0	

	Infection and inflammation	No	3	9.7	
		Don't know	1	3.2	
		Yes	27	87.1	
Answer whether the following information about Transient Ischemic Attack (TIA) is correct or not	An ischemic attack lasting no more than 1 hour.	No	4	12.9	
		Yes	27	87.1	
	If it lasts longer than one hour, there is an 80% risk of ischemic stroke.	No	5	16.1	
		Don't know	7	22.6	
		Yes	19	61.3	
	If it lasts longer than two hours, there is a 90% risk of ischemic stroke.	No	2	6.5	
		Don't know	10	32.3	
		Yes	19	61.3	
	In 22% of TIA patients. Within 90 days, a major stroke occurs.	No	2	6.5	
		Don't know	11	35.5	
		Yes	18	58.1	
	50% of strokes after TIA occur within the first 48 hours.	No	3	9.7	
		Don't know	6	19.4	
		Yes	22	71.0	
	Indicate whether the following are among the signs of Transient Ischemic Attack (TIA)	Facial asymmetry is seen in TIA.	No	3	9.7
			Don't know	3	9.7
			Yes	25	80.6
There is a lisp in the tongue.		No	1	3.2	
		Don't know	1	3.2	
		Yes	29	93.5	
There is loss of strength in unilateral arms and legs.		Don't know	1	3.2	
		Yes	30	96.8	
Loss of sensation in unilateral arms and legs.		No	1	3.2	
		Don't know	1	3.2	
		Yes	29	93.5	
Loss of vision in one eye.		No	4	12.9	
		Don't know	4	12.9	
		Yes	23	74.2	
Patients report loss of balance.		No	2	6.5	
		Don't know	2	6.5	
		Yes	27	87.1	
		Total	31	100.0	

Table 3. Statistical comparisons of respondent responses across demographics.

		By Gender	By Marital Status	Age Category*	Medical Professional Duration Category ‡	Neurology Rotation Status*
Does a family history of stroke increase the risk of stroke?		1.000*	0.387*	0.290	0.793	–
Do the following disease increase the risk of having a stroke?	Hypertension	–	–	–	–	–
	Diabetes Mellitus	–	–	–	–	–
	Dyslipidemia	0.488*	0.142*	0.503	0.176	–
	Obesity	1.000*	0.387*	0.290	0.793	–
	Atrial Fibrillation	–	–	–	–	–
	COPD	0.316†	0.691†	0.045	0.088	0.434
	Hyperthyroidism	1.000*	1.000*	1.000	0.764	0.669
	Glaucoma	1.000*	0.653*	0.642	0.481	1.000
	Congestive Heart Failure	0.698*	0.676*	0.027	0.426	1.000
	Previous history of having a stroke	–	–	–	–	–
Does the following lifestyle lead to an increased risk of stroke?	Physical inactivity	0.488*	1.000*	0.503	0.550	0.524
	Smoking	–	–	–	–	–
	Alcohol use	1.000*	1.000*	0.384	0.437	0.626
	Sleep disturbance	1.000*	1.000*	0.105	0.974	1.000
Could the following disease potentially, not definitively, lead to an increased risk of stroke?	Migraine	0.843†	0.335†	1.000	0.599	0.254
	Metabolic Syndrome	1.000*	0.387*	0.290	0.274	1.000
	Sleep Apnea	0.607*	0.630*	0.560	0.580	0.533
	Hyperhomocysteinemia	1.000*	0.060*	0.131	0.501	0.601

Hypercoagulability		–	–	–	–	–
	Infection and inflammation	0.607*	0.272*	0.063	0.872	1.000
Answer whether the following information about Transient Ischemic Attack (TIA) is correct or not	An ischemic attack lasting no more than 1 hour.	1.000*	1.000*	0.295	0.205	0.533
	If it lasts longer than one hour, there is an 80% risk of ischemic stroke.	0.496†	0.022*	0.704	0.253	1.000
	If it lasts longer than two hours, there is a 90% risk of ischemic stroke.	0.952†	0.452*	0.418	0.102	1.000
	Major stroke occurs in 22% of TIA patients within 90 days.	0.055†	1.000†	0.696	0.802	1.000
	50% of strokes that develop after TIA are within the first 48 hours.	0.456*	0.704*	0.689	0.148	0.375
Indicate whether the following are symptoms of Transient Ischemic Attack (TIA)	Facial asymmetry is seen in TIA.	0.185*	0.174*	1.000	0.481	1.000
	There is lispings in the tongue.	0.488*	1.000*	0.503	0.176	1.000
	There is loss of strength in unilateral arms and legs.	1.000*	1.000*	1.000	0.105	1.000
	Loss of sensation in unilateral arms and legs.	0.488*	0.510*	0.503	0.706	1.000
	Loss of vision in one eye.	0.240*	0.676*	0.660	0.426	1.000
	Patients report loss of balance.	0.304*	0.016*	0.063	0.111	0.284

(Note: Bold p values indicate statistical significance)

* Fisher's Exact Test

† Continuity Correction

‡ Linear-by-Linear Association