ORIGINALUS MOKSLINIS DARBAS

Public Knowledge of Early Stroke Symptoms in the Vilnius Region

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Summary. *Background and aim.* Stroke remains one of the most common causes of death and disability in the world. The evident decline in disabling outcomes can be attributed to the increasing use of reperfusion therapies. Stroke recognition and urgent admission of patients to specialized stroke centres after the onset of first stroke symptoms are essential for treatment outcomes. This study aims to assess public stroke awareness and its change since 2019.

Methods. An anonymous cross-sectional study involving 300 Vilnius residents was conducted in 2022, the results of which were compared with the data of 502 respondents in 2019. A closed-ended questionnaire was used for the study. Statistical analysis was performed using IBM SPSS software with p<0.05 significance level.

Results. Stroke was identified as an acute cerebrovascular disorder by 83.3% of respondents in 2022 (82.7% in 2019). At least one correct warning sign of stroke was indicated by 98.7% of respondents (96.4% in 2019). The most commonly mentioned symptoms of stroke were one-sided face, arm or leg sensory disturbances, paralysis, or weakness (90.0%) and speech disorder (83.3%), with 82.1% and 81.5% respectively in 2019. Only 58% (45.4% in 2019) of respondents reported visual impairment as a stroke symptom. Women had better knowledge of stroke than men (p<0.05). The internet was the main source of information for 63.3% of respondents (64.9% in 2019).

Conclusions. Since 2019, stroke awareness has improved in Vilnius. This proves that F.A.S.T. campaign has reached the public. Women have better knowledge of stroke than men. Visual impairment is the least known symptom of stroke. Therefore, the search for new information programmes, especially directed to the targeted audience, can be useful for better publicity.

Keywords: stroke, signs, survey, public.

INTRODUCTION

Stroke remains the second-leading cause of death and the third-leading cause of death and disability combined (as expressed by disability-adjusted life-years lost – DALYs) in the world [1]. It is estimated that in the European Union alone, stroke caused ~375,000 deaths in 2017, and according to the data, the highest case-fatality rates were in Lithuania, Latvia, and Malta, with over 20% of patients dying within 30 days of hospitalisation for stroke [2]. Meanwhile, Oxford researchers report a significant decline in stroke death cases across the European region, with 33 European countries seeing significant declines in both sexes [3]. Although the death count is decreasing, the incidence of stroke remains high. At the beginning of this century, the age-standardized incidence of stroke in Europe ranged from 95 to 290/100,000 per year [4], and in the last 25 years, stroke has become the second most common cause of disability, with more than 116 million life-years lost due to disease-related disability [5]. According to the data of the Stroke Alliance for Europe (S.A.F.E.), a project of King's College London, an increase of 34% in stroke cases is predicted in the European Union in 2015-2035 [6]. With the launch of a network of stroke centres in Lithuania, these stroke centres are increasingly providing reperfusion treatment every year [7]. With improvements in stroke treatment, the stroke death rate in Lithuania has started to decrease, but remains high, with 2,742 deaths from stroke

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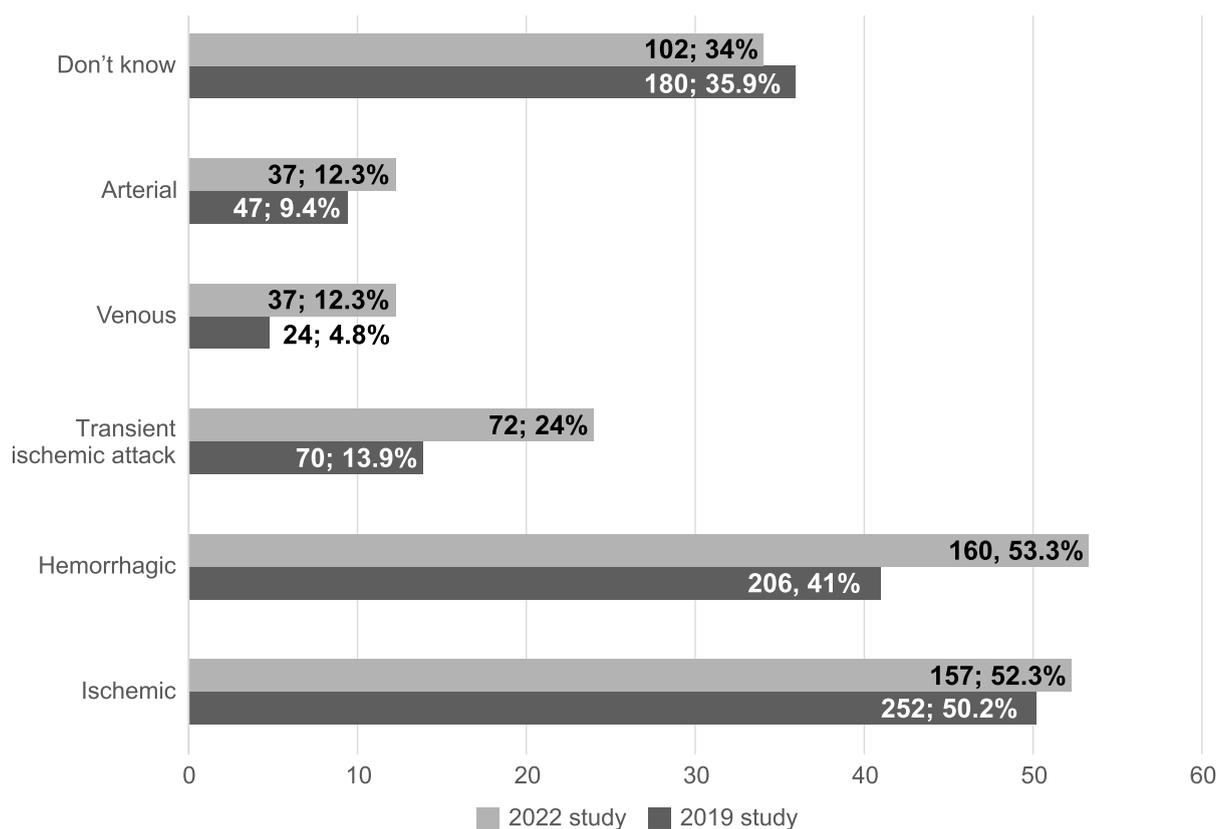*E-mail: aivaras.atkociunas@santa.lt*

Fig. 1. **Types of stroke according to survey participants**

in 2021 [8]. The time between the onset of the first symptoms and the patient's admission to hospital is critically important for this treatment. Reducing the time from stroke onset to hospital admission and reducing risk depends on the knowledge of stroke among patients, their family members, and the general population. However, many stroke patients arrive at hospital late due to lack of knowledge about stroke [9]. Therefore, increasing public awareness is crucial to prevent stroke and its burden. This study aimed to assess knowledge of stroke warning signs and evaluate how it has improved since 2019.

METHODS

An anonymous cross-sectional study was conducted in 2022. During this study, 300 randomly selected participants aged 18-72 from the Vilnius region were interviewed. The results were compared with the data of 502 respondents collected in 2019. A questionnaire developed by the author (A.A.) was used for this anonymous survey; it was based on the questions used in the study performed in 2015 [10]. Closed-type questions with provided answers were chosen to simplify the questionnaire for the respondents.

The obtained data were summarized and processed using Microsoft Office Excel 365, data analysis was performed using IBM SPSS Statistics (version 23). The difference between the groups was considered reliable at a significance level of p<0.05.

RESULTS

Socio-Demographic Characteristics of Study Participants

Of the 300 respondents, 220 (73.3%) were women. The mean age of the respondents was 31.2±12.28 years, with no difference between women and men (the youngest respondent was 18 years old and the oldest was 72 years old). For comparison, the 2019 study had 502 respondents aged 18 to 82 years, with 350 (69.7%) women. Participants were divided into three age groups: under 25 – 140 (46.7%), between 25 and 65 – 153 (51.0%), and over 65 – 7 (2.3%).

More than half (176 (58.7%)) of the respondents reported having a university degree (59.6% in 2019), 29 (9.7%) a non-university higher education degree (12.4% in 2019), 18 (6.0%) a vocational school diploma (12% in 2019), 69 (23.0%) secondary education (14,5% in 2019), and 8 (2.7%) respondents had primary education (1.4% in 2019); in the 2019 survey one respondent (0.2%) had no education. Two hundred and sixty nine (89.7%) respondents lived in the town (91.6% in 2019), 24 (8.0%) in the suburbs (5% in 2019), and 7 (2.3%) in the countryside (3.4% in 2019).

Respondents' Knowledge of Stroke

Stroke was identified as an acute cerebrovascular disorder by 250 (83.3%) respondents, 44 (14.7%) respondents be-
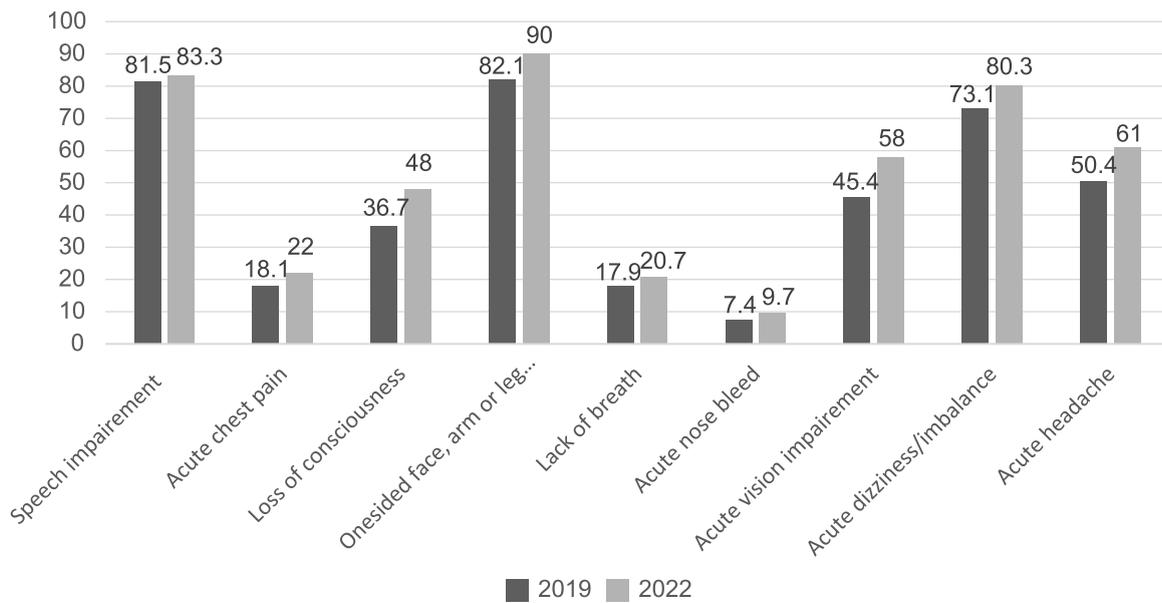
Fig. 2. **Distribution of naming early signs of stroke among respondents (in percentage)**

lieved that stroke is an acute cardiac circulation disorder, and the remaining 6 (2%) did not know the answer to this question. In the 2019 study, 415 (82.7%) respondents identified stroke as a brain disorder, while 78 (15.5%) respondents marked acute cardiac circulation disorder as stroke.

The types of stroke indicated in the 2022 and 2019 studies are shown in Fig. 1.

Women marked ischemic (p<0.05) and hemorrhagic (p<0.05) stroke types more often than men. No significant differences related to age or education were found.

297 (99%) respondents correctly indicated that stroke is a serious illness that can cause disability or death (98.8% in 2019), and 243 (81.0%) respondents believed that there are treatment options for stroke (89% in 2019). 29 (9.7%) respondents thought that stroke is not a curable disease. Women chose the correct answer more often (p<0.05); no age or education-related group differences were found. The sudden onset of stroke symptoms was indicated by 241 (80.3%) respondents (68.9% in 2019, the difference is statistically significant at p<0.01). The vast majority (298 (99.3%)) of the respondents would call an ambulance without delay if they suspected that someone close to them had a stroke (in 2019, 97% of respondents would have done so).

As many as 294 (98.0%) respondents thought that time period during which the patient is brought to the hospital is a significant factor for the outcome of the disease (96.2% respondents answered this way in 2019).

Warning Stroke Signs and Symptoms

At least one correct stroke warning sign was identified by 296 (98.66%) respondents, and 247 (82.33%) respondents reported three or more signs (99.4% and 79.88% respectively in 2019).

The most commonly indicated early signs of stroke and the differences from the 2019 study are shown in Fig. 2.

Chi-square analysis showed a statistically significant improvement compared to the 2019 study in recognizing the following symptoms: one-sided face, arm or leg sensory disturbances, paralysis or weakness (p=0.002), acute vision impairment (p=0.0005), acute dizziness/balance impairment (p=0.02), acute headache (p=0.004), and loss of consciousness (p=0.0005).

After counting the correct answers of the respondents, the number of correct answers was compared between the groups to assess their level of knowledge. Women had a statistically better indicator of knowledge than men (p<0.05).

Respondents' Sources of Information About Stroke

The majority (190 (63.3%)) of the respondents learned stroke information from the internet, followed by health professionals (151 (50.3%)) and family or friends (140 (46.7%)). Other sources of information and changes since 2019 are shown in Fig. 3.

When examining the sources of information, radio was mentioned more often by men (p<0.05), but the choice of other sources of information did not differ significantly between the groups. Those who indicated health professionals and the internet gave more correct answers to some questions (p<0.05), while family and friends, television (TV) and radio were chosen as sources of information by those who indicated the most incorrect answers to some questions (p<0.05).

It was noted that respondents who indicated speech disorder and paralysis more often indicated health professionals and the internet as sources of information (p<0.05).
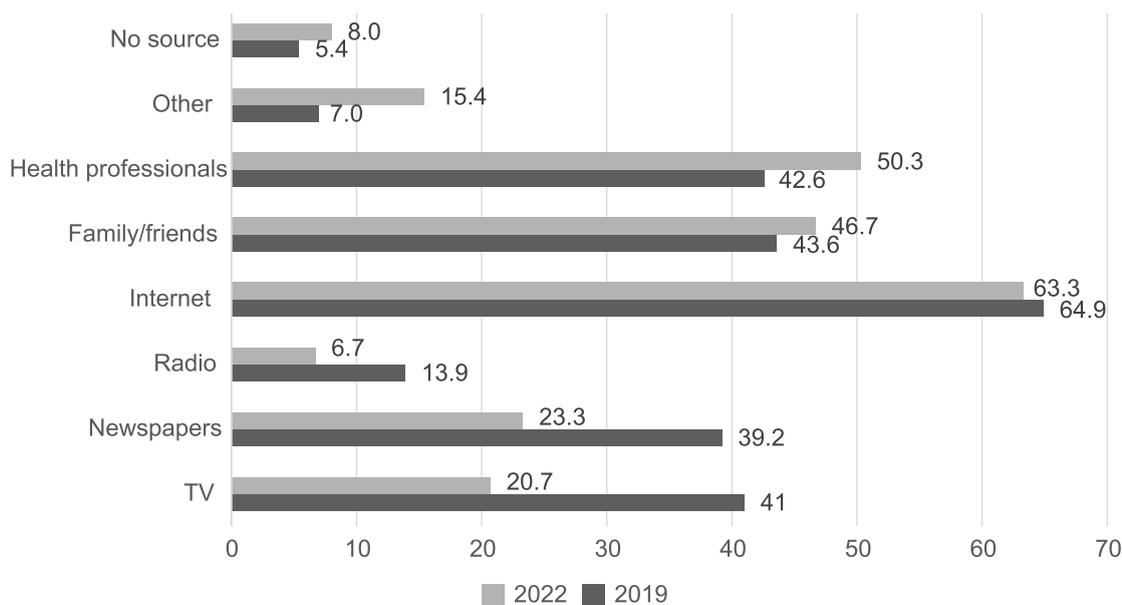
Fig. 3. **Sources of information (in percentage)**

DISCUSSION

After reviewing the data provided by the stroke centres [7] and the data of the Health Information Centre of the Institute of Hygiene on the causes of death in 2014-2021 [8, 11–13], it can be assumed that Lithuanian society learns to better recognize the early signs of stroke every year. For this reason, people who have had a stroke reach specialized stroke treatment centres more quickly. All this may have an impact on the declining mortality from stroke in Lithuania.

Public knowledge on stroke is a topic of interest to professionals and is the subject of many studies both in Lithuania and around the world. After analyzing the data, it became clear that a significant number of people confuse the names of diseases common in society: "stroke" which describes an acute cerebral blood flow disorder and "infarction" which describes a heart disease – myocardial infarction.

The study data showed that Vilnius residents perceive stroke as a sudden, life-threatening and potentially disabling disease that can be treated.

From the results of this study, we can see that the acronym for stroke symptoms F.A.S.T. is well known to the public. Seeing better results, we can be glad that the efforts of organisations such as the Lithuanian Stroke Association to educate the public are paying off. It should be noted, that loss of consciousness (LOC) is mainly reflex-mediated and can be cardiogenic, vasovagal, caused by carotid sinus hypersensitivity or orthostatic hypotension [14]. Stroke is rarely the true cause of LOC; if no significant neurological changes occur before the episode or during the recovery period, other aetiology should be suspected. For this reason, the public should be educated about the possible causes of LOC to prevent other serious conditions. Meanwhile, sudden loss of vision in one or both eyes remains the least frequently reported early sign of stroke suggesting

that people using only one acronym F.A.S.T. may not remember all the possible signs of stroke, and therefore may not be able to timely recognize and help a person with a stroke. In our opinion, it would be worthwhile for new campaigns to promote the „BE-FAST" acronym in the public and thus educate people about balance and vision disorders as possible early signs of a stroke [15].

As we can see from the findings of this study, women have better knowledge of stroke. In 2015, Ek S. addressed the issue by studying gender differences in health information behaviour among the Finnish population. The author found that women were more proactive and engaged in seeking, gaining, and discussing health-related issues [16]. We think that health information behaviour problems are similar in our region, but further investigation is needed to clarify the situation. In any case, we believe that gender-related differences may account for better knowledge among women. Therefore, new stroke information programmes should be more sensitive to the gender of the targeted audience.

The choice of sources of information is important for obtaining reliable information about stroke. The most correct answers were given by those respondents who indicated the internet and health professionals as the source. We are pleased that information on stroke provided by doctors is reaching the public. Based on the given answers, we can assume that information does not reach everyone by all these means of dissemination. There is a lack of reliable information about stroke on television and radio, so attention should be paid to the underused means of disseminating information. The worst way to get information is to rely on the principle of a broken phone, this can be seen from the answers of the respondents who indicated family and friends as their source of information. For this reason, one of our most important goals as health professionals should be to disseminate reliable information to the public through as many different means as possible.

In conclusion, we would like to highlight that since 2019 the knowledge about stroke in the Vilnius region has improved. Women still have better stroke knowledge than men, and gender-related differences may account for better knowledge among women. Therefore, new stroke awareness programmes should be more gender-sensitive. To spread information most effectively, it is best to choose the sources of information most frequently used by the target audience and to increase the availability of reliable information.

STUDY LIMITATIONS

In order to collect more accurate data and avoid misinterpretations, this study was limited to assessing the knowledge of residents of the Vilnius region about the early signs and first steps in the event of stroke. For this reason, the data obtained during the study cannot reflect the situation in Lithuania as a whole but are valuable on the scale of the Vilnius region.

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VISUOMENĖS ŽINIOS APIE ANKSTYVUOSIUS INSULTO POŽYMIUS VILNIAUS REGIONE

Santrauka

Įvadas ir tikslas. Insultas išlieka viena dažniausių mirties ir negalios priežasčių pasaulyje. Matomas neįgalumo padarinių sumažėjimas gali būti siejamas su vis dažniau taikomu reperfuziniu gydymu. Gydymo rezultatams yra būtinas insulto atpažinimas ir skubus pacientų patekimas į specializuotus insulto centrus po pirmųjų insulto simptomų atsiradimo. Šiuo tyrimu siekiama įvertinti visuomenės informuotumą apie insultą ir jo kaitą nuo 2019 m.

Metodai. 2022 m. Vilniaus regione atliktas anoniminis skersinio pjūvio tyrimas, kuriame dalyvavo 300 respondentų, tyrimo rezultatai buvo lyginti su 2019 m. pateiktais 502 respondentų atsakymais. Tyrimo metu buvo naudotas uždaro tipo klausimynas. Duomenų analizė atlikta IBM SPSS programa. Grupių skirtumai laikyti reikšmingais, kai p < 0,05.

Rezultatai. Insultą, kaip ūminį galvos smegenų kraujotakos sutrikimą, 2022 m. įvardino 83,3 % apklaustųjų (2019 m. 82,7 %). Bent vieną teisingą insulto ankstyvąjį požymį nurodė 98,7 % respondentų (2019 m. 96,41 %). Vienos pusės veido, rankos ar kojos jutimų sutrikimas, paralyžius ar nusilpimas (90 %) ir kalbos sutrikimas (83,3 %) – dažniausiai nurodyti insulto požymiai (2019 m. atitinkamai 82,1 ir 81,5 %). Regos sutrikimą, kaip galimą insulto požymį, nurodė tik 58 % (2019 m. 45,4 %) apklaustųjų. Moterų žinios apie insultą yra geresnės, nei vyrų (p < 0,05). Internetas buvo dažniausias informacijos šaltinis 63,3 % apklaustųjų (2019 m. 64,9 %).

Išvados. Nuo 2019 m. informuotumas apie insultą Vilniuje yra pagerėjęs. Tai įrodo, kad F.A.S.T. kampanija pasiekė visuomenę. Moterys geriau žino apie insultą nei vyrai. Regėjimo sutrikimas yra mažiausiai žinomas insulto simptomas. Todėl geresniam viešinimui gali praversti naujų informacinių programų, ypač skirtų tikslinei auditorijai, paieška.

Raktažodžiai: insultas, požymiai, apklausa, visuomenė.