

Management of Prevention of Major Behavioral Factors Leading to an Increased Risk of Stroke

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ABSTRACT

Objective: To assess lay public knowledge of stroke and self-reported behavioral risk factors relevant to stroke prevention in a Slovak questionnaire sample.

Study Design: Descriptive cross-sectional questionnaire study

Place and Duration of Study: This study was conducted at the Bratislava, Slovak Republic from 1st February 2025 31st July 2025.

Methods: Data were taken from a self-administered questionnaire distributed online and in printed form to the lay public. Items assessed demographics, stroke definition and symptoms, smoking, alcohol, overweight, fruit and vegetable intake, and sport. Frequencies and percentages were calculated; multiple-response items used 128 respondents as the denominator unless stated.

Results: Among 128 respondents, 65 (50.8%) were female, and 46 (35.9%) were aged 19-25 years. Ninety-five (74.2%) selected the correct stroke definition. Symptom recognition was highest for speech impairment (111; 86.7%), unilateral limb weakness (80; 62.5%) and facial droop (66; 51.6%), but lower for sudden visual disturbance (46; 35.9%). Regular smoking was reported by 75 (58.6%), and regular alcohol use by 84 (65.6%). Self-reported overweight was present in 50 (39.1%). Regular sport was reported by 69 (53.9%); among them, 34 (49.3%) exercised once weekly.

Conclusion: The sample showed reasonable general knowledge of stroke, but incomplete recognition of key warning symptoms and substantial exposure to modifiable behavioral risks. Prevention should combine stroke symptom awareness with smoking and alcohol prevention, weight control, dietary counselling and regular physical activity promotion.

Key Words: Prevention, Behavioral Factors, Stroke, dyslipidaemia

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INTRODUCTION

This manuscript reports a questionnaire survey originally conducted for a master's thesis on the management of prevention of major behavioral factors leading to increased stroke risk.¹ Stroke remains a major public health problem globally, and recent burden estimates emphasize that behavioral and metabolic risks are important contributors to incident stroke, death and disability.^{2,3} Current prevention guidance highlights control of medical risks such as hypertension, dyslipidaemia and diabetes, together with modifiable behaviors including tobacco use, harmful

alcohol use, unhealthy diet, excess weight and insufficient physical activity.^{4,5}

Public knowledge is also important because early recognition of warning symptoms can shorten the delay to emergency care, while awareness of modifiable risk factors supports prevention. Recent cross-sectional studies from different countries show that public stroke knowledge remains uneven, especially for preventability, visual symptoms and recognition of the full set of warning signs.⁶⁻¹⁰ The present study, therefore, aimed to describe stroke knowledge and selected behavioral risk factors in a Slovak lay sample, and to identify practical areas for prevention messages.

METHODS

This was a descriptive cross-sectional study conducted at Slovak Republic from 1st February 2025 31st July 2025 vide letter No. ERC/SEUHSW/2025/074 dated 15th January 2025. The survey was distributed online and in printed form. The source thesis reports 128 completed responses; exact recruitment dates, sampling frame and response rate were not stated. Eligible participants were members of the lay public who completed the questionnaire. No patient intervention was performed.

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The questionnaire included demographic questions and items on stroke knowledge, typical symptoms, regular smoking, age at smoking initiation, daily cigarette consumption, regular alcohol consumption, first alcohol exposure, age at regular alcohol use, daily alcohol quantity, perceived disease states, self-reported overweight, perceived weight-reduction factors, fruit and vegetable intake, regular sport, and sport frequency. For this manuscript, results were organized around the journal article's objective and condensed into four tables. Statistical analysis was done by SPSS-25.

RESULTS

There were 63 (49.2%) males and 65 (50.8%) females. The largest age group was 19-25 years 46 (35.9%), followed by 26-40 years 34 (26.6%) and 41-60 years 33 (25.8%) [Table 1].

Table No. 1: Demographic characteristics of respondents (N = 128)

Characteristic	No.	%
Gender		
Male	63	49.2
Female	65	50.8
Age (years)		
14-18	9	7.0
19-25	46	35.9
26-40	34	26.6
41-60	33	25.8
60 and above	6	4.7

Table No. 2: Stroke knowledge and symptom recognition

Item	No.	%
Correct definition of stroke	95	74.2
Other definition selected	33	25.8
Symptoms selected (multiple responses)		
Speech impairment	111	86.7
Unilateral limb weakness	80	62.5
Facial droop	66	51.6
Sudden visual disorder	46	35.9
Confusion	39	30.5
Upper limb weakness	39	30.5
Lower limb weakness	33	25.8
Forgetfulness	26	20.3
Urinary incontinence	26	20.3
Hand tremor	14	10.9

Ninety-five respondents (74.2%) selected the correct definition of stroke as a sudden, life-threatening condition affecting brain vessels. Recognition of specific symptoms varied. Speech impairment was reported by 111 respondents (86.7%), unilateral limb weakness by 80 (62.5%), facial droop by 66 (51.6%) and sudden visual disorder by 46 (35.9%) [Table 2]. Regular smoking was reported by 75 respondents (58.6%). Among smokers, 49 (65.3%) began regular

smoking at age 13-18 years, and 36 (48.0%) smoked 6-15 cigarettes per day.

Table No.3:Smoking and alcohol-related behaviours

Variable	No.	%
Regular smoking (n=128)	75	58.6
Non-smoker (n=128)	53	41.4
Age at regular smoking initiation among smokers (n = 75)		
13-18 years	49	65.3
19-25 years	23	30.7
26-40 years	3	4.0
>40 years	-	-
Cigarettes/day among smokers (n = 75)		
1-5	9	12.0
6-15	36	48.0
16-20	21	28.0
>20	9	12.0
Regular alcohol consumption (n=128)	84	65.6
Abstinent (n = 128)	44	34.4
First tasted alcohol at 13-18 years (n=128)	100	78.1
Age at regular alcohol use among drinkers at 13-18 years (n = 84)	37	44.0
Age at regular alcohol use among drinkers at 19-25 years (n = 84)	42	50.0
≤1 drink/day among drinkers (n=84)	72	85.7

Table 4: Weight, diet and physical activity variables

Item	No.	%
Self-reported overweight (n=128)	50	39.1
No self-reported overweight (n=128)	78	60.9
Perceived weight-reduction factors selected (multiple responses)		
Regular physical exercise	83	64.8
Avoiding sweetened drinks	76	59.4
Reducing sugar intake	75	58.6
Long brisk walks	68	53.1
Reducing alcohol intake	59	46.1
Reducing animal fats	41	32.0
Fruit/vegetables: three or more portions on 5+ days/week	15	11.7
Regular sport (n = 128)	69	53.9
No regular sport (n = 128)	59	46.1
Sport once weekly among active respondents (n = 69)	34	49.3
Sport twice weekly among active respondents (n = 69)	19	27.5
Sport three or more times weekly among active respondents (n = 69)	16	23.2

Regular alcohol consumption was reported by 84 respondents (65.6%); 100 respondents (78.1%) first tasted alcohol at age 13-18 years. Among regular

drinkers, 42 (50.0%) began regular drinking at age 19-25 years and 37 (44.0%) at age 13-18 years (Table 3). Self-reported overweight was present in 50 respondents (39.1%). In the fruit and vegetable item, only 15 respondents (11.7%) reported consuming three or more portions on five or more days per week. Regular sport was reported by 69 respondents (53.9%), but among these respondents, 34 (49.3%) exercised only once per week (Table 4).

DISCUSSION

The study supports the working assumption that respondents knew the general concept of stroke but had incomplete recognition of warning symptoms. The gap was most evident for sudden visual disturbances and facial droop, despite these being important symptoms for a timely emergency response. This pattern is consistent with recent public-awareness studies reporting variable recognition of stroke symptoms and risk factors across populations.⁶⁻¹⁰

The behavioral findings identify prevention priorities. The proportion reporting regular smoking was high, and most smokers started during adolescence. Recent INTERSTROKE evidence confirms that active tobacco use is associated with increased acute stroke risk, and public health messages should combine cessation support with prevention of youth initiation.¹¹ Regular alcohol consumption was also common, and most respondents had their first exposure during adolescence. Alcohol-related evidence is complex by dose and pattern, but moderate-to-high and heavy episodic intakes are important preventable risks, and current guidance emphasizes reducing alcohol-related harm.¹²⁻¹⁴

The lifestyle findings point to weight, diet and physical activity counselling. Self-reported overweight was common, while frequent fruit and vegetable intake and sport frequency were limited. Global data show increasing obesity and insufficient physical activity burdens, and both are central to stroke prevention strategies.¹⁵⁻¹⁸ Diet advice should be practical and emphasize minimally processed foods, fruits and vegetables, lower salt and lower saturated fat intake, consistent with current prevention guidance.^{19,20}

This study has limitations. It used a convenience sample, relied on self-report, did not measure body mass index objectively, and did not report the response rate, the exact study months, or detailed ethics information in the source document. The sample was relatively young, which limits generalizability. No inferential statistics were performed because the study's aim was descriptive. Nevertheless, the findings are useful for designing concise public education messages about stroke warning signs and modifiable behavioral risk factors.

CONCLUSION

The general understanding of stroke was relatively good, but recognition of key warning symptoms was incomplete. Smoking, alcohol exposure from adolescence, self-reported overweight, limited fruit and vegetable intake and low frequency of sport were important behavioral prevention targets. Public health action should combine rapid stroke-recognition education with practical prevention of smoking, harmful alcohol use, excess weight, unhealthy diet and physical inactivity.

Recommendations: Community and school-based programs should prioritize four concise messages: recognize stroke warning symptoms, avoid tobacco initiation and support cessation, reduce harmful alcohol use, and improve daily movement and diet quality. Primary care teams can use the same domains to screen adults briefly and refer high-risk individuals for cessation, weight-management, alcohol-advice or physical-activity support.

Author's Contribution:

Concept & Design or acquisition of analysis or interpretation of data:	Milan Luliak, Mathias Duesterhoeft
Drafting or Revising Critically:	Milan Luliak, Mathias Duesterhoeft
Final Approval of version:	All the above authors
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