

Poor Stroke Risk Perception despite Moderate Public Stroke Awareness: Insight from a Cross-sectional National Survey in Greece

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Background: Although stroke is the fourth cause of death in Western societies, public stroke awareness remains suboptimal. The aim of this study was to estimate stroke risk perception and stroke awareness in Greece through a cross-sectional telephone survey. *Methods:* A trained interview team conducted this cross-sectional telephone survey between February and April 2014 using an online structured questionnaire. Participants were selected using random digit dialing of landline and mobile telephone numbers with quota sampling weighted for geographical region based on the most recent General Population Census (2011). *Results:* Between February and April 2014, 723 individuals (418 women [58%], 47.4 ± 17.8 years) agreed to respond. Among all respondents, 642 (88.8%) were able to provide at least 1 stroke risk factor; 673 respondents (93.08%) were able to provide correctly at least 1 stroke symptom or sign. When asked what would they do in case of acute onset of stroke symptoms, 497 (68.7%) responded that they would either call the ambulance or visit the closest emergency department. Only 35.3%, 18.9%, 17.2%, 20.7%, and 15.0% of respondents with atrial fibrillation, arterial hypertension, dyslipidemia, diabetes mellitus, and current smoking, respectively, considered themselves as being in high risk for stroke. *Conclusions:* Stroke risk perception in Greece is low despite moderate public stroke awareness. **Key Words:** Stroke—atrial fibrillation—arterial hypertension—stroke risk perception—stroke awareness—survey.

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Although stroke is the fourth cause of death in Western societies after heart diseases, cancer, and chronic lower respiratory diseases,¹ public awareness for stroke risk remains suboptimal.² This has important implications regarding stroke prevention because awareness for stroke is crucial for stroke risk perception (also reported elsewhere as perceived stroke susceptibility), which in turn plays a well-known central role in preventive medicine as suggested by the "Protection Motivation Theory."³ Under this context, these findings could potentially explain the remaining high stroke incidence despite the availability of a sufficient armamentarium against stroke risk factors. In addition, poor awareness concerning stroke and its management seem to have negative implications for favorable acute stroke management given that only a small minority of patients worldwide arrive at the emergency department within the golden 4.5-hour period in which intravenous thrombolysis can be performed.^{4,5}

The aim of this study was to assess the stroke risk perception and stroke awareness in Greece through a cross-sectional telephone survey because similar data from our country are missing.

Methods

A trained interview team conducted this cross-sectional telephone survey between February and April 2014 using an online structured questionnaire (available online at https://docs.google.com/forms/d/1Y19uXT9b7PKvvOQvXv_Z-hN5DJzZ3ZqvuH8uVpa0LF0/formResponse), which included closed questions regarding age, gender, education, profession, smoking, lifestyle and eating habits, stroke risk perception, presence of stroke risk factors, and ways to obtain stroke knowledge and open questions concerning stroke risk factors, stroke symptoms and signs, and action that would be taken during a stroke. Respondents were invited to estimate their stroke risk perception as "no risk," "small risk," "high risk," or "do not know"; we did not provide definitions of these answers, and the participants were advised to respond using their own judgment of the magnitude of risk, a methodology that is similar to previous studies.⁶⁻⁸ The survey firstly field tested internally by the interview team to identify potential drawbacks and necessary redesigning of the questions and answers, a methodology that was followed also in previous studies.^{6,8} The interviewers gave no clues toward the correct answers except when clarifications were asked by the participants. Participants were selected using random digit dialing of landline and mobile telephone numbers with quota sampling weighted for geographical region based on the most recent General Population Census (2011). The survey was anonymous; therefore, no ethics approval was considered necessary.

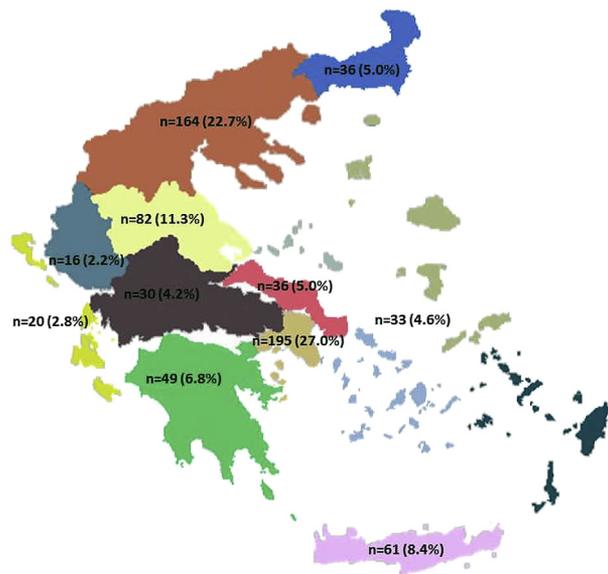


Figure 1. Geographic distribution of survey respondents.

Results

Between February and April 2014, 723 individuals (418 women [58%], 47.4 ± 17.8 years) consented to respond to the structured questionnaire during an anonymous telephone call. Among them, 363 (50.2%) had completed a tertiary education, 79 (10.9%) had a current or previous health-care-associated profession, and 15 (2.1%) had a prior event of stroke. Also, 609 (84.2%) had a public health insurance, 76 (10.5%) had a private insurance, whereas 26 (3.6%) had no insurance. The geographic distribution of the participants is presented in Figure 1.

Among all respondents, 642 (88.8%) were able to provide at least 1 stroke risk factor (in open-ended questionnaire), with the commonest being arterial hypertension, smoking, and obesity reported by 474 (65.6%), 316 (43.7%), and 243 (33.6%) individuals, respectively. At least 1 stroke symptom or sign from the open-ended questionnaire was provided correctly by 673 (93.08%) participants with the 3 most frequent ones being limb paresis (355 of 723, 49.1%), dysarthria (317 of 723, 43.8%), and facial droop (278 of 723, 38.4%). When participants were asked what would they do in case of acute onset of stroke symptoms, almost two thirds (497 of 723, 68.7%) responded that they would either call the ambulance or visit the closest emergency department. Of note, an almost similar percentage of respondents (461 of 723, 63.7%) believed that stroke symptoms may be reversible if properly treated. No or little awareness concerning stroke was recorded in 484 (66.9%) of respondents. The main ways to obtain further information regarding stroke would be friends or family members in 428 (59.2%), television in 307 (42.5%), a physician in 209 (28.9%), journals/books/newspapers in 178 (24.6%), and internet in 172 (23.8%) participants.

Table 1. Presence of stroke risk factors among the respondents and perceived stroke risk

Parameter	All respondents, N = 723	“No risk at all,” n = 180 (25%)	“Small risk,” n = 311 (43%)	“High risk,” n = 82 (11%)	“Do not know,” n = 150 (21%)
Atrial fibrillation	17 (2.35)	1 (5.88)	7 (41.18)	6 (35.29)	3 (17.65)
Arterial hypertension	185 (25.58)	16 (8.65)	85 (45.95)	35 (18.92)	49 (26.49)
Dyslipidemia	180 (24.89)	23 (12.78)	89 (49.44)	31 (17.22)	37 (20.56)
Diabetes mellitus	58 (8.02)	7 (12.07)	25 (43.10)	12 (20.69)	14 (24.14)
Current smoker	233 (32.23)	44 (18.88)	111 (47.64)	35 (15.02)	43 (18.45)
Previous stroke	15 (2.07)	1 (6.67)	5 (33.33)	8 (53.33)	1 (6.67)
Obesity	337 (46.6)	71 (39.4)	143 (46.0)	57 (69.5)	66 (44)
Presence of 2 stroke risk factors	107 (14.79)	13 (12.15)	47 (43.93)	15 (14.02)	32 (29.91)
Presence of 3 stroke risk factors	28 (3.87)	2 (7.14)	18 (64.29)	6 (21.43)	2 (7.14)
Presence of more than 3 stroke risk factors	15 (2.07)	2 (13.33)	4 (26.67)	7 (46.67)	2 (13.33)

Numbers represent absolute values and percentages (in brackets).

Of interest, most respondents with a known stroke risk factor considered themselves as having no or little stroke risk (Table 1). In fact, only 35.3%, 18.9%, 17.2%, 20.7%, and 15.0% of participants with known atrial fibrillation, arterial hypertension, dyslipidemia, diabetes mellitus, and current smoking, respectively, considered themselves as being at high risk for a stroke event (Table 1). Furthermore, surprisingly enough, only 14%, 21.4%, and 46.7% of respondents with 2, 3, or more than 3 stroke risk factors, respectively, considered themselves as being at high risk for stroke (Table 1).

Discussion

The present study shows that perception of stroke risk in Greece is remarkably poor despite half of the participants having achieved a complete tertiary education program, and most of the entire study population had at least moderate stroke awareness. During the last decades, major progress has been made in the management of stroke risk factors such as arterial hypertension, diabetes mellitus, and atrial fibrillation.⁹⁻¹² However, despite this progress, stroke incidence still remains high. One plausible explanation may be the poor perception of stroke risk as revealed in our study and in several studies in other regions such as the United Kingdom,¹³ Australia,¹⁴ the United States,^{6,15-17} and China.⁸ On the contrary, a German-based survey in 2007 showed better stroke risk perception, which is, however, explained by the fact that the population in this study was highly selected, that is, they included participants of a previous stroke awareness campaign conducted by the German Stroke Foundation in 2003.⁷ This is the first time that data about stroke risk perception are reported from all over the country (Fig 1). Recently, data regarding stroke awareness were presented for our country; however, compared with our study, this study was limited only to

Northern Greece and there was no assessment of stroke risk perception.¹⁸

Obviously, the current strategies aiming to increase the stroke risk perception seem inadequate. Given the high stroke incidence in Western European countries and the United States, as well as the important public health burden, alternative measures are urgently needed to increase stroke risk perception, which could, in turn, lead to significant decline in stroke incidence. In this context, it was shown that high-stroke-risk patients who were counseled by a physician about their risk were more likely to perceive their risk accurately compared with patients of similar risk who did not receive physician counseling.¹⁷ Also, further measures that could be implemented include daily and detailed information concerning the public health burden of stroke in politicians, public health and local governors, medical schools, charity and nonprofit organizations, lessons on the issue during primary, secondary, and tertiary education programs of the country, and development of competences and professional standards for health promotion.

Strengths of this study include the fact that it was a survey in the general unselected population weighted for geographical region according to the latest Census (2011); however, our sample was not weighted for other parameters like sex and age. In addition, we used open-ended questions to ask about awareness of stroke risk factors and symptoms/signs, which, however, may have introduced recall bias and coding errors. Nevertheless, as our results are in agreement with most of the published studies in the field, the previously mentioned limitations seem not to affect the reliability of the study.

In conclusion, this study indicates that stroke risk perception is low despite moderate public stroke awareness. New combined strategies need to be designed by the politicians, health decision makers, and the scientific community to address efficiently this important public health issue.

Supplementary Data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2014.07.055>

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