

# Do Stroke Patients Know Their Risk Factors?

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*Background:* Risk factor management is the key to stroke prevention. Although several studies have assessed the awareness of different risk factors in the general public, there are limited data available on how well acute stroke patients know their own risk factors. The aim of this study was to assess stroke patients' informedness of their own stroke risk factors. *Methods:* All consecutive eligible acute stroke and transient ischemic attack patients hospitalized at the Tartu University Hospital, Department of Neurology, during 9 months in 2010 were interviewed about different stroke risk factors within 72 hours from hospitalization. The respective information was also retrieved from medical records. *Results:* Of the 341 patients admitted during the study period, 195 were eligible for the interview. Diabetes was the best known risk factor (89%) followed by hypertension (80%), atrial fibrillation (78%), previous stroke (77%), and heart failure and/or ischemic heart disease (66%). *Conclusions:* We found that acute stroke patients are best informed of their diabetes and worst informed of their ischemic heart disease and/or heart failure. There is, however, room for amelioration in the awareness of all of the studied risk factors. More attention should be addressed to explaining the risks and treatment options to patients at risk of stroke and the general population. **Key Words:** Acute stroke—cardiovascular risk—awareness—stroke prevention.

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## Introduction

The risk of cardiovascular events can be decreased by identification and treatment of modifiable risk factors.<sup>1</sup> Research has indicated that patients who perceive themselves to be at an increased risk of stroke comply with stroke prevention practices more likely than those who do not.<sup>2,3</sup> Several studies have been performed concerning awareness of stroke risk factors, signs, and symptoms among the general population and different subgroups,<sup>4,6</sup> including acute stroke patients.<sup>7-10</sup> However, there is limited information on how well stroke patients are informed of

the risk factors and the concomitant illnesses that they suffer from these.<sup>5</sup>

To our knowledge only 1 previous study has assessed acute stroke patients' awareness of their own risk factors on hospital admission.<sup>5</sup> In addition, 1 study has assessed risk factor awareness in self-reported stroke survivors<sup>11</sup> and another in pooled self-reported survivors of stroke and self-reported survivors of myocardial infarction.<sup>12</sup>

## Aims

The aim of this study was to evaluate acute stroke patients' awareness of their own risk factors.

## Methods/Patients

The methods of this study have been described elsewhere.<sup>13</sup> In brief, all consecutive patients with an admission diagnosis of stroke or transient ischemic attack (TIA) admitted to the Tartu University Hospital, Department of Neurology, were registered during 9 months in 2010. The exclusion criteria for the study were impaired consciousness, severe aphasia, early discharge, subarachnoid hemorrhage, and refusal to participate.

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Received February 9, 2015; revision received September 23, 2015; accepted October 31, 2015.

The study was supported by the Estonian Research Council IUT2-4 grant.

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1052-3057/\$ - see front matter

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<http://dx.doi.org/10.1016/j.jstrokecerebrovasdis.2015.10.029>

To be able to assess how well the patients were informed of their stroke risk factors, we interviewed them and reviewed their medical records separately. Each patient was interviewed face to face using a unified structured questionnaire. Every patient was asked whether he or she had hypertension, atrial fibrillation, ischemic heart disease, congestive heart failure, diabetes mellitus, or had had a previous stroke prior to the current hospitalization. All interviews were conducted by the same person and were carried out within 72 hours from hospitalization. In addition, information about stroke risk factors and concomitant diseases was searched from medical records.

A patient was considered to have hypertension if hypertension had been diagnosed prior to stroke and/or constantly elevated blood pressure values ( $\geq 140/90$  mm Hg) were registered during the first week following stroke. Having diabetes was registered when the patient had been diagnosed with diabetes prior to stroke and/or constantly had elevated blood sugar levels ( $\geq 10$  mmol/L) during the first week after stroke. A patient was considered to have ischemic heart disease when ischemic heart disease had been diagnosed prior to/during stroke. Depending on the patient and his or her symptoms and past history, different methods such as measuring laboratory markers (creatinine kinase muscle and brain isoenzyme (CK-MB), troponin T (TnT), etc.), electrocardiogram, and heart catheterization were used. A patient was considered to have congestive heart failure when congestive heart failure had been diagnosed prior to stroke and/or the patient was experiencing typical symptoms and systolic and/or diastolic heart failure was confirmed on echocardiography. A patient was considered to have atrial fibrillation (AF) if she or he had been diagnosed with AF prior to hospitalization and/or AF was detected on an electrocardiogram and/or by 24-hour Holter monitoring. Having had a previous stroke was defined as having

a recorded clinically symptomatic stroke in the patient's medical history.

The patients' answers to questions regarding stroke risk factors were compared with the data obtained from their medical records.

All patients were informed about the nature and the aims of the study and provided written consent before the interviews. The study protocol was approved by the Ethics Review Committee on Human Research of the University of Tartu.

## Results

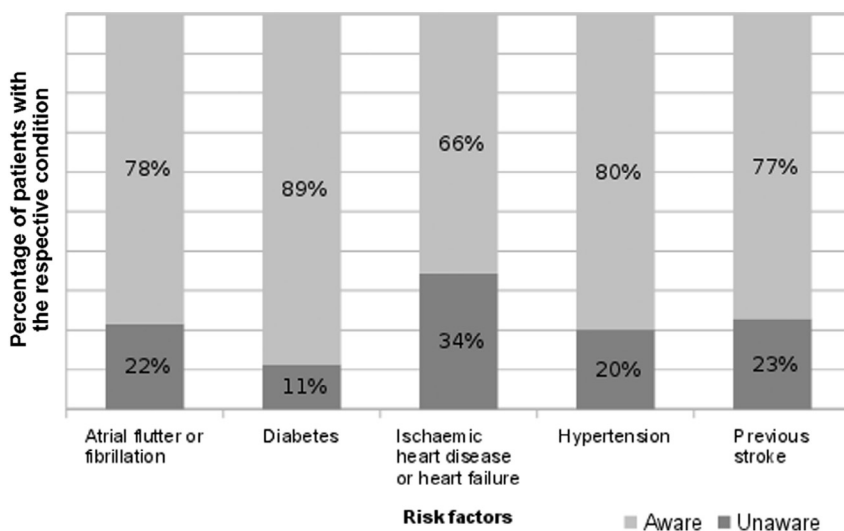
During the study period, 341 acute stroke/TIA patients were admitted. The data of 195 (58%) patients were included in the analysis. Eleven (3%) patients refused to participate in the study, 86 (25%) were excluded because of severe aphasia, 16 (5%) because of a final diagnosis other than stroke/TIA, 15 (4%) because of impaired consciousness, 15 (4%) because of early discharge, and 3 (1%) because of death.

The mean age of the final study group was 71.6 ( $\pm 12.4$ ) years. The group consisted of 95 men (49%) and 100 women (51%). One hundred sixty-five patients had experienced a brain infarction (84%), 19 had intracerebral hemorrhage (10%), and 11 had TIA (6%).

According to the medical records 154 patients (79%) had hypertension, 74 (38%) had AF, and 35 (18%) had diabetes. Ischemic heart disease and/or heart failure was present in 67 cases (34%) and 40 patients (21%) had suffered from a previous stroke.

The patients' awareness of the risk factors and concomitant illnesses they possessed according to their medical records is shown in [Figure 1](#).

Forty-five patients (23%) reported being current smokers or having quit smoking less than 2 years ago.



**Figure 1.** Patients' awareness of their risk factors and concomitant diseases.

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