

Supplementary Methods

Study design

The Shiga Stroke Registry is an ongoing multicenter population-based registry study designed to build a complete information system for the management of acute ischemic and nontraumatic hemorrhagic stroke in Shiga Prefecture, Japan. Shiga Prefecture is located in the central part of Honshu Island, and more than half of its residents live in an urban area (Keihanshin Metropolitan Area as specified by the Ministry of Internal Affairs and Communications). The population of Shiga Prefecture was 1,399,047 (688,787 men and 710,260 women) in the 2015 census.

Determination of stroke

A diagnosis of stroke was defined according to the World Health Organization Multinational Monitoring of Trends and Determinants in Cardiovascular Disease Project (MONICA) criteria as "rapidly developing signs of focal (or global) disturbance of cerebral function lasting more than 24 hours (unless interrupted by surgery or death), without apparent nonvascular cause."⁷ Stroke was further categorized as ischemic stroke, intracerebral hemorrhage, subarachnoid hemorrhage, or undetermined type. All cases were confirmed clinically and radiologically, and the final diagnosis was made by more than two independent investigators. The records of all suspected cases and the final stroke adjudication were based on meetings between study investigators to resolve potential disagreements.

Variables

Information on the level of consciousness of patients as defined by the World Federation of Neurological Surgeons grade, sex, age, evidence of prior stroke or coronary heart disease, consultation method, smoking and drinking status, findings of imaging investigations, treatment methods, and modified Rankin Scale scores at discharge were obtained from their medical records. Laboratory results were also obtained from medical records and hypertension was defined as systolic/diastolic blood pressure $\geq 140/90$ mm Hg or the use of antihypertensive medications; diabetes mellitus was defined as fasting glucose ≥ 126 mg/dL, glycated hemoglobin (HbA1c; Japan Diabetic Society) $\geq 6.1\%$ (equivalent to HbA1c [National Glycohemoglobin Standardization Program] $\geq 6.5\%$), or the use of anti-diabetic medications. Smoking habits were categorized into three groups (current, past, and never) and drinking habits into four groups (current, occasional, past, and never).

Statistical analysis

Age- and sex-standardized incidence rates were estimated using the person-year approach (per 100,000 person-years), with person-years estimated as the sum of the total Shiga prefectural mid-year population for each year from 2011 to 2015 for eight age groups (<20 years, and 10-year age bands starting from 20–29, 30–39, 40–49, 50–59, 60–69, 70–79, and ≥ 80 years). Age- and sex-standardized incidence rates were also calculated using the direct method with the population of the 2015 Japanese vital statistics as reference.⁸