

Incidence and Mortality Rates of Strokes in Kazakhstan: Data from Unified National Electronic Healthcare System 2014-2019

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Introduction

Stroke is a serious non-communicable disorder ranking as a top second cause of death and disability around the world.¹

Table 1. Worldwide incidence and mortality in millions by stroke types in 2019¹

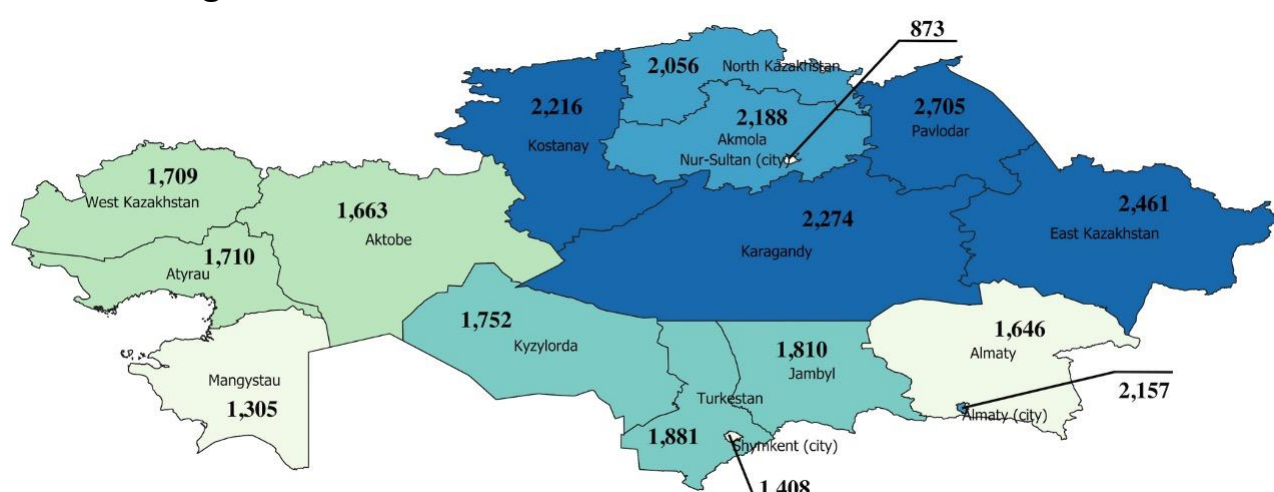
	Ischemic stroke	Intracerebral hemorrhage	Subarachnoid hemorrhage
Prevalence	77.2	20.7	8.4
Mortality	3.3	2.9	0.4

There is no large-scale whole population epidemiological data on stroke in Eurasian countries.

Little is known about the epidemiology of stroke in Kazakhstan; however, Zhusupova et al,² provided an estimate of the

- morbidity rate of cerebral stroke accounted for 3.7 per 1000 person-years, and acute stroke was responsible for 52% of total morbidity
- mortality rate of cerebral stroke accounted for 1.08 per 1000 person-years and covered 26% of all mortality.

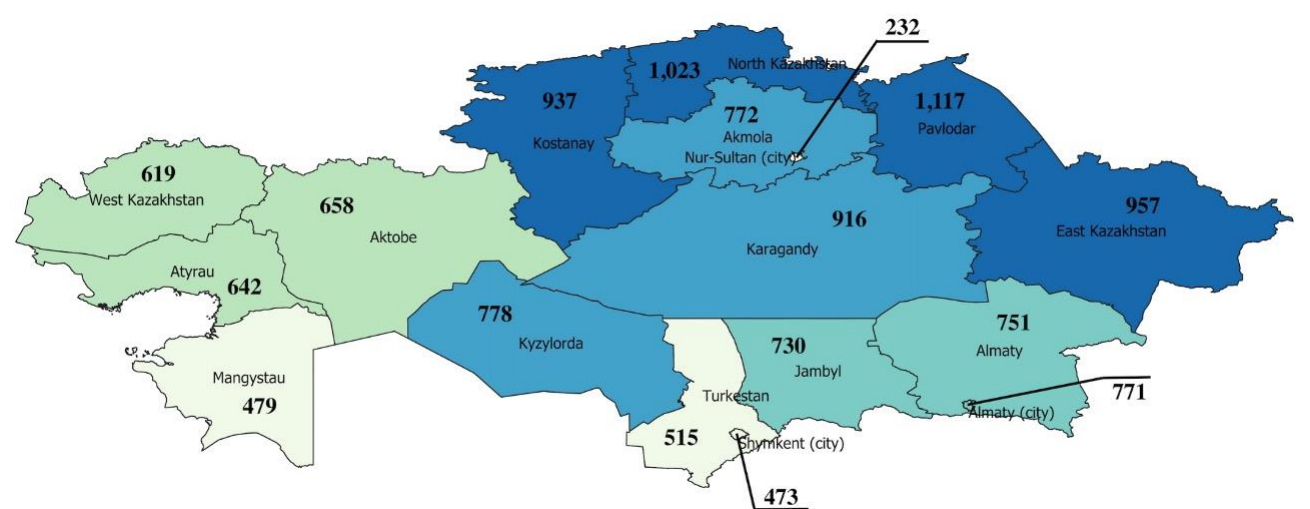
Figure 1. Incidence of stroke in Kazakhstan based on admission and discharge in 2019



Results

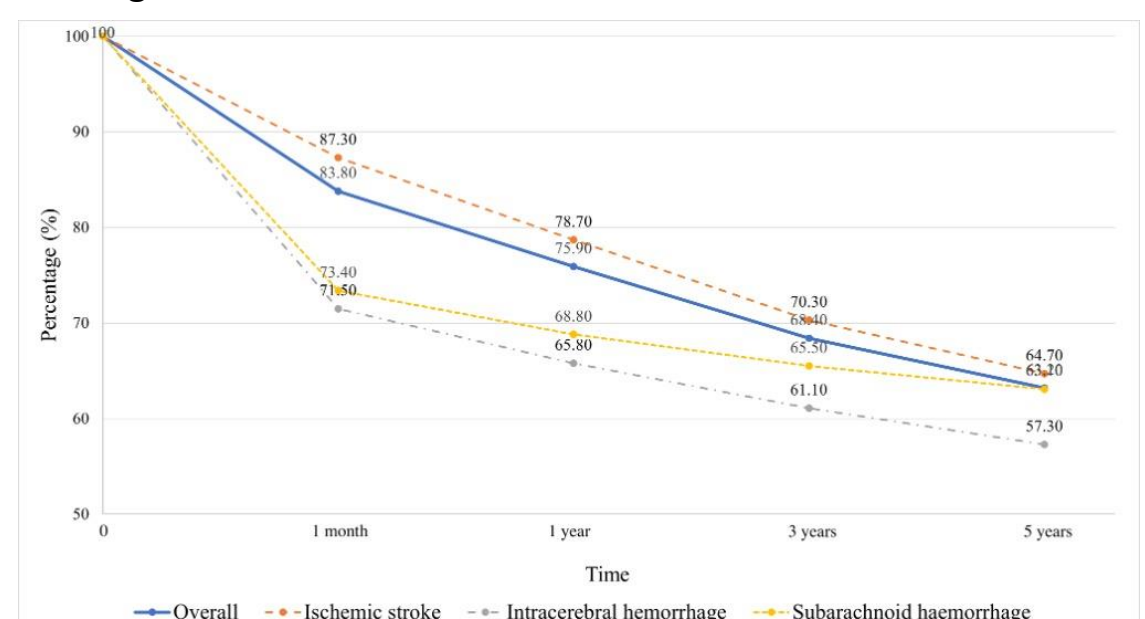
- ✓ The incidence in 2014 were 1,905 per million population (PMP), while in 2019 was 1,884 PMP.
- ✓ All-cause mortality accounts for 60,060 (34%) cases during 2014-2019.

Figure 2. All-cause mortality of stroke patients in Kazakhstan based on admission and discharge in 2019



- ✓ Although the 1-month crude survival rate for AIS patients is 87.3%, there is a sharp decrease to 64.7% by the 5-year follow-up period

Figure 3. Kaplan-Meier survival curves due to all-cause mortality based on discharge status



Conclusion

This is the first study in Kazakhstan that presents the incidence and mortality rate of stroke events based on admission and discharge status. The results showed that the incidence rate per year did not increase over the observed period, and the all-cause mortality rate among stroke patients approximately doubled in the observed period.

Table 2. Socio-demographic and medical characteristics of patients with different types of stroke for the years 2014-2019

	Total (n = 177 947)	Acute ischemic stroke (n=138 542, 78%)	Intracerebral hemorrhage (n=34 262, 19%)	Subarachnoid hemorrhage (n=5 143, 3%)
Age, (Mean±SD)	63±14.0	64.8±12.7	59.2±15.6	52±19.7
Gender, n (%)				
Female	84 255 (47)	65 958 (48)	15 659 (46)	2 638 (51)
Male	93 692 (53)	72 584 (52)	18 603 (54)	2 505 (49)
Ethnicity, n (%)				
Kazakh	95 198 (54)	70 217 (51)	21 668 (63)	3 313 (64)
Russian	50 189 (28)	41 978 (30)	7 191 (21)	1 020 (20)
Other	32 560 (18)	26 347 (19)	5 403 (16)	810 (16)
All-cause mortality, n (%)				
Alive	117 887 (66)	94 133 (68)	20 444 (60)	3 310 (64)
In-hospital mortality, n (%)	23 368 (13)	13 368 (9.6)	8 789 (25.6)	1 211 (23.5)
Recurrence, n (%)	10 012 (6)	7 204 (5)	2 465 (7)	343 (7)
Diabetes, n (%)	23 418 (13)	20 956 (15)	2 217 (6)	245 (5)
Hypertension, n (%)	86 218 (48)	70 477 (51)	13 919 (21)	1 822 (35)

1. Rajsic, S. et al. Economic burden of stroke: a systematic review on post-stroke care. The European Journal of Health Economics 20, 107-134 (2019).
 2. Zhusupova, A. S. Modern strategy of medical care to patients with stroke./Zhusupova AS, Alzhanova DS, Nurmanova ShA, Syzdykova BR, Dzhumahayeva AS, Altayeva BS. Neurosurgery and Neurology of Kazakhstan, 30 (2013).