

PREDICTION OF INCIDENCE AND PREVALENCE OF STROKE IN NORTHEASTERN AZERBAIJAN

***Aliyev R.R.**

*Azerbaijan State Physicians' Advancement Institute named after A. Aliyev,
Department of Neurologic Diseases, Baku, Azerbaijan*

*e-mail: rahim_aliyev@mail.ru

Abstract

The purpose of the research was studying 10 year (1999-2008) dynamics of incidence and prevalence of stroke in the north-eastern region and giving a prognosis regarding the status of the incidence and prevalence of stroke in the northeast region of Azerbaijan. In this part of Azerbaijan located Guba-Khachmaz economic region. Retrospectively studied all cases of stroke in the region. 10 year chronological average level of primary incidence and prevalence of stroke were $1.2 \pm 0.05\%$ and $2.4 \pm 0.07\%$. It is established that the primary incidence of stroke in 1999-2008 years in the region is characterized by a tendency of low growth of disease. Predicted an increase in incidence and prevalence of stroke in 2015 – 1.56% and 3.20% . Obtained data's are important for adequate therapeutic measures aimed for reducing the incidence and prevalence of stroke in the population.

Key words: stroke, incidence, prevalence, prognosis.

Literature data in 90's of last century described 9 million cases of cerebrovascular diseases annually, out of which 6 million accounted for stroke and 4.6 million of stroke cases died [1, 2, 3]. In contrast, based on WHO report for 2002, 15 million people become ill with stroke worldwide annually (mainly ischemic stroke), out of which 5 million ends lethally and another 5 million permanently become dependent on other person's help [4, 5]. Recurrent stroke occurs in 14% of stroke patients within 12 months of initial stroke [6]. Taking into account the importance of this problem, the **purpose** of the proposed research study was to investigate prevalence and incidence of stroke in northeast of the Azerbaijan and predict relevant values for 2015.

Material and Methods. in order to accomplish the purpose of the study, stroke incidence and prevalence data for 10-year period (1999-2008) for relevant region was analysed. Respective data was obtained from Central Regional Hospitals' Statistics Departments, city, district, and village hospitals, outpatient facilities, and physician assistant/obstetrician stations.

Number of population was determined using State Statistics Committee's National Census data [7]. Disease incidence and prevalence rates per 1000 population were calculated using variation statistics direct standardization. Stroke incidence and prevalence rates were predicted for the year of 2015 for the region and its individual rayons using exponential distribution method [8]. Calculations were performed using Microsoft Excel.

Brief Summary about Region. Guba-Khachmaz economic region is situated in northeast of Azerbaijan. This region consists of Siyazan, Shabran, Guba, Gusar, and Khachmaz administrative rayons. Overall area of the region is 7.66 thousand sq. km, accounting for 8.8% of country's area. This economic region is characterized with its unique landscape features. There are four sharply differing altitude zones within the region ranging from 26 meters to 4466 meters, which are plains, foothill, mid-mountainous, and high mountainous zones. Climate also changes depending on the altitude, as warm climatic conditions prevail in plains, whereas high mountainous areas are characterized with cold-humid and cold climate [9]. Landscape peculiarities and climatic conditions resemble smaller model of the country.

Based on the results of National Census of Azerbaijan Republic for 2009, total number of population in the region is 488,741 thousand, accounting for 5,48% of country's population. 33,99% of population (166,105 thousand persons) reside in urban areas, whereas remaining 66,01% (322,636 thousand persons) are settled in rural areas. The highest number of urban population is located in Siyazan (65,6%), with the highest number of rural population being concentrated in Guba (75,11%). 49,84% of population (243,575 thousand persons) consist of men and 50,16% (245,166 thousand persons) of women. Average density of population in Guba-Khachmaz economic region is 63.8 persons per square kilometer, which is lower than country average. Average population density in Azerbaijan is 103.0 persons per square kilometer [7]. Depending on the landscape and climatic conditions of the region, population is mainly located in plains running along Caspian Sea [9].

Study Results. 10 year average incidence of stroke among population of Guba-Khachaz region during 1999-2008 was $1.2\pm 0.05\%$. The least incidence of stroke cases in the region was noted in Siyazan in 2001 ($0.8\pm 0.15\%$), with the highest incidence being reported in Guba in 2008 ($1.8\pm 0.1\%$) ($p < 0.0001$). Lowest level of stroke incidence was reported in 1999 ($0.99\pm 0.05\%$), with the highest level being reported in 2008 ($1.47\pm 0.06\%$) (Table 1).

10 year average prevalence of stroke among population of Guba-Khachmaz economic region during 1999-2008 was $2.4\pm 0.07\%$. Lowest level of stroke prevalence was reported in 2001 ($2.14\pm 0.07\%$), with the highest level being reported in 2008 ($3.0\pm 0.09\%$) ($p < 0.0001$).

10-year average of stroke incidence among women was $1.1\pm 0.07\%$, whereas the same parameter was $1.2\pm 0.07\%$ among men ($p > 0.05$). During this time period, statistically significant difference among incidence rates of stroke for males and females was noted in 2000 only ($p < 0.05$). 10-year average prevalence of stroke among males and females were similar, being $2.4\pm 0.1\%$, with no statistically significant difference being noted for the timeframe studied ($p > 0.05$).

Table 1

Stroke incidence and prevalence rates in Guba-Khachmaz region
(1999-2008)

Years		Incidence		Prevalence	
		%o	No	%o	No
1999	total	0.99 ± 0.05	438	2.18 ± 0.07	968
	M	1.04 ± 0.07	225	2.16 ± 0.1	468
	F	$0.93\pm 0.06^*$	213	$2.19\pm 0.1^*$	500
2000	total	1.05 ± 0.05	470	2.20 ± 0.07	988
	M	1.15 ± 0.07	252	2.18 ± 0.1	478
	F	$0.95\pm 0.07^{**}$	218	$2.21\pm 0.1^*$	510
2001	total	1.04 ± 0.05	471	2.14 ± 0.07	970
	M	1.10 ± 0.07	244	2.12 ± 0.1	469
	F	$0.98\pm 0.07^*$	227	$2.16\pm 0.1^*$	501
2002	total	1.13 ± 0.05	516	2.25 ± 0.07	1028
	M	1.18 ± 0.07	265	2.30 ± 0.1	514
	F	$1.08\pm 0.07^*$	251	$2.21\pm 0.1^*$	514
2003	total	1.22 ± 0.05	562	2.43 ± 0.07	1119

	M	1.25±0.08	281	2.47±0.1	557
	F	1.20±0.07*	281	2.40±0.1*	562
2004	total	1.12±0.05	523	2.34±0.07	1089
	M	1.20±0.07	274	2.32±0.1	530
	F	1.05±0.07*	249	2.36±0.1*	559
2005	total	1.16±0.05	547	2.43±0.07	1143
	M	1.21±0.07	280	2.42±0.1	558
	F	1.12±0.07*	267	2.44±0.1*	585
2006	total	1.16±0.05	553	2.41±0.07	1148
	M	1.22±0.07	287	2.46±0.1	579
	F	1.10±0.07*	266	2.36±0.1*	569
2007	total	1.18±0.05	570	2.54±0.07	1226
	M	1.21±0.07	289	2.56±0.1	610
	F	1.15±0.07*	281	2.52±0.1*	616
2008	total	1.47±0.06	714	3.0±0.09	1460
	M	1.49±0.09	358	3.05±0.1	735
	F	1.45±0.08*	356	2.95±0.1*	725

Note:

1. Total – total number of cases. M- males, F- females (hereinafter);
2. *p>0.05, **p<0.05; * - gender differences

10-year average incidence of stroke in Siyazan for the study period was 1.07±0.17%. 10-year average incidence of stroke among males and females was similar, being 1.07±0.25%.

Table 2 illustrates incidence and prevalence rates in Siyazan region. As seen from the table, incidence rates varied chaotically from 1999 to 2001, with a steady increase from 2001 to 2004. It remained stable in 2004-2006 and another steadily increasing trend was noted in 2006-2008. Lowest stroke incidence was noted in 2001, being 0.8±0.15% and the highest incidence rate was reported in 2008, being 1.5±0.2% (p<0.01).

Comparison of stroke incidence among males and females revealed that similar values were reported in 1999-2001 and in 2006. In 2002-2004, incidence prevailed among females, whereas males became dominating in 2005, 2007, and 2008.

Table 2

Stroke incidence and prevalence rates in Siyazan (1999-2008)

Year		Incidence		Prevalence		No. population
		%o	No	%o	No	
1999	total	0.9±0.2	31	2.25±0.3	76	33783
	M	0.9±0.2	15	2.0±0.4	34	16700
	F	0.9±0.2	16	2.5±0.35	42	17083
2000	total	1.0±0.2*	33	2.2±0.3*	74	34142
	M	1.0±0.2	16	2.0±0.3	33	16911
	F	1.0±0.2	17	2.4±0.37	41	17231
2001	total	0.8±0.15*	27	1.8±0.2*	62	34524
	M	0.8±0.15	14	1.5±0.3	26	17132
	F	0.8±0.15	13	2.1±0.35	36	17392
2002	total	0.9±0.2*	30	1.9±0.2*	67	34938
	M	0.8±0.2	13	1.7±0.3	30	17347
	F	1.0±0.2	17	2.1±0.35	37	17591
2003	total	1.0±0.2*	34	2.2±0.3*	78	35336
	M	0.9±0.2	15	2.1±0.35	36	17570
	F	1.1±0.25	19	2.4±0.37	42	17766
2004	total	1.1±0.2*	38	1.9±0.2*	69	35763
	M	1.0±0.2	18	1.7±0.3	30	17780
	F	1.1±0.25	20	2.2±0.35	39	17983
2005	total	1.1±0.2	40	2.0±0.2*	72	36155
	M	1.2±0.26	21	1.8±0.3	32	17999
	F	1.1±0.25	19	2.2±0.35	40	18156
2006	total	1.1±0.2	41	2.2±0.25*	80	36659
	M	1.1±0.25	20	1.9±0.3	35	18280
	F	1.1±0.25	21	2.5±0.37	45	18379
2007	total	1.4±0.2*	52	2.2±0.2	82	37201
	M	1.5±0.3	28	2.0±0.3	37	18577
	F	1.3±0.3	24	2.4±0.36	45	18624
2008	total	1.5±0.2*	55	2.2±0.2	86	37626
	M	1.55±0.3	29	1.9±0.3	38	18770
	F	1.4±0.3	26	2.5±0.36	48	18856
Average	total	1.07±0.17	381	2.1±0.24	746	35612.7
	M	1.07±0.25	189	1.87±0.3	331	17706.6
	F	1.07±0.25	192	2.32±0.36	415	17906.1

Note: *p>0.05; * - in comparison with previous year

Overall average prevalence of stroke was 2.1±0.24%, being 1.87±0.3% among males and 2.32±0.36% among females. Prevalence rates during the study period were higher among women compared to men. Stroke prevalence values varied randomly during these years.

10-year average of stroke incidence in Shabran during the study period was $1.0 \pm 0.1\%$ (Table 3).

Table 3

Stroke incidence and prevalence in Shabran (1999-2008)

Year		Incidence		Prevalence		No. population
		%o	No	%o	No	
1999	total	1.0 ± 0.2	44	2.1 ± 0.2	95	46400
	M	1.0 ± 0.2	22	1.7 ± 0.3	38	22600
	F	0.9 ± 0.2	22	2.4 ± 0.3	57	23800
2000	total	$1.1 \pm 0.2^*$	50	2.1 ± 0.2	98	46800
	M	1.1 ± 0.2	24	1.9 ± 0.3	43	22750
	F	1.1 ± 0.2	26	2.3 ± 0.3	55	24050
2001	total	$1.0 \pm 0.2^*$	49	$2.0 \pm 0.2^*$	96	47200
	M	1.0 ± 0.2	24	1.8 ± 0.3	42	23000
	F	1.0 ± 0.2	25	2.2 ± 0.3	54	24200
2002	total	1.0 ± 0.2	49	$2.1 \pm 0.3^*$	99	47700
	M	1.0 ± 0.2	24	1.9 ± 0.3	43	23300
	F	1.0 ± 0.2	25	2.3 ± 0.3	56	24400
2003	total	$1.1 \pm 0.2^*$	51	$2.2 \pm 0.2^*$	104	48000
	M	1.1 ± 0.2	25	2.0 ± 0.3	47	23500
	F	1.1 ± 0.2	26	2.3 ± 0.3	57	24500
2004	total	$1.0 \pm 0.1^*$	50	$2.1 \pm 0.2^*$	103	48600
	M	1.0 ± 0.2	24	2.0 ± 0.3	47	23900
	F	1.1 ± 0.2	26	2.3 ± 0.3	56	24700
2005	total	$1.1 \pm 0.2^*$	51	$2.0 \pm 0.2^*$	100	49200
	M	1.1 ± 0.2	26	1.9 ± 0.3	46	24200
	F	1.0 ± 0.2	25	2.2 ± 0.3	54	25000
2006	total	$1.0 \pm 0.1^*$	50	2.0 ± 0.2	101	49700
	M	0.9 ± 0.2	22	2.0 ± 0.3	49	24500
	F	1.1 ± 0.2	28	2.1 ± 0.3	52	25200
2007	total	1.0 ± 0.1	51	2.0 ± 0.2	101	50300
	M	0.9 ± 0.2	23	1.9 ± 0.3	48	24900
	F	1.1 ± 0.2	28	2.1 ± 0.3	53	25400
2008	total	$0.9 \pm 0.1^*$	47	2.0 ± 0.2	102	51100
	M	0.8 ± 0.2	21	1.9 ± 0.3	47	25300
	F	1.0 ± 0.2	26	2.1 ± 0.3	55	25800
Average	total	1.0 ± 0.1	492	2.06 ± 0.2	999	48500
	M	0.99 ± 0.2	235	1.89 ± 0.28	450	23795
	F	1.04 ± 0.2	257	2.22 ± 0.3	549	24705

Note: * $p > 0.05$; * - in comparison with previous year

10-year average of stroke incidence among males and females was $0.99\pm 0.2\%$ and $1.04\pm 0.2\%$, respectively. Lowest level of incidence was noted in 2008, being $0.9\pm 0.1\%$, whereas the highest rate was reported in 2000, 2003, and 2005, being $1.1\pm 0.2\%$. When comparing stroke incidence among males and females, it is revealed that similar rates were observed in 200-2003, females prevailed in 2004, and 2006-2008, and males prevailed in 1999 and 2005.

Overall 10-year average prevalence of stroke was $2.06\pm 0.2\%$, being $22\pm 0.3\%$ among females and $1.89\pm 0.28\%$ among males. Prevalence rates were higher among females than males during the whole study period. Prevalence rates remained stable during 1999-2000, being $2.1\pm 0.2\%$, gradually, but steadily increased in 2001-2003, steadily decreased in 2003-2005, and again remained stable in 2005-2008, being $2.0\pm 0.2\%$.

Analysis of stroke incidence in Guba during selected study period revealed that this parameter remained stable in 1999-2001 and changed in a random manner in 2002-2008 (Table 4).

10-year average of stroke incidence was $1.13\pm 0.09\%$. 10-year average of stroke incidence among males and females were $1.23\pm 0.13\%$ and $1.03\pm 0.12\%$, respectively and did not have statistically significant differences ($p>0.05$). However, males became ill with stroke at a higher rate than females in 2000 and 2001 ($p<0.05$).

Table 4

Stroke incidence and prevalence in Guba (1999-2008)

Year		Incidence		Prevalence		No. population
		%o	No	%o	No	
1999	total	1.0 ± 0.09	133	2.1 ± 0.1	280	136845
	M	1.1 ± 0.1	72	2.2 ± 0.2	149	66841
	F	0.9 ± 0.1	61	1.9 ± 0.2	131	70004
2000	total	1.0 ± 0.09	141	2.1 ± 0.1	293	139099
	M	1.2 ± 0.1	83	2.2 ± 0.2	150	68110
	F	0.8 ± 0.1	58	2.0 ± 0.2	143	70989
2001	total	1.0 ± 0.09	131	$2.0\pm 0.1^*$	278	140000
	M	1.1 ± 0.1	72	2.1 ± 0.2	147	68673
	F	0.8 ± 0.1	59	1.8 ± 0.2	131	71327

2002	total	1.1±0.09*	148	2.2±0.1*	307	140986
	M	1.1±0.1	79	2.4±0.2	163	69286
	F	1.0±0.1	69	2.0±0.2	144	71700
2003	total	1.2±0.09*	170	2.3±0.1*	331	141967
	M	1.3±0.1	89	2.6±0.2	178	69854
	F	1.1±0.1	81	2.1±0.2	153	72113
2004	total	0.9±0.08**	131	2.2±0.1*	310	143782
	M	1.0±0.1	70	2.3±0.2	161	70853
	F	0.8±0.1	61	2.0±0.2	149	72929
2005	total	1.0±0.08*	145	2.2±0.1	323	145670
	M	1.1±0.1	76	2.4±0.2	170	71378
	F	0.9±0.1	69	2.1±0.2	153	74292
2006	total	1.2±0.09*	174	2.6±0.1**	391	148489
	M	1.3±0.1	93	2.8±0.2	209	73490
	F	1.1±0.1	81	2.4±0.2	182	74999
2007	total	1.1±0.09*	169	2.5±0.1*	382	150600
	M	1.2±0.1	90	2.7±0.2	201	74700
	F	1.0±0.1	79	2.4±0.2	181	75900
2008	total	1.8±0.1***	279	3.7±0.2***	565	151900
	M	1.9±0.2	144	3.9±0.2	294	75400
	F	1.8±0.2	135	3.5±0.2	271	76500
Average	total	1.13±0.09	1621	2.40±0.13	3460	143933.8
	M	1.23±0.13	868	2.57±0.19	1822	70858.5
	F	1.03±0.12	753	2.24±0.18	1638	73075.3

Note: *p>0.05, **p<0.05, *** p<0.0001; * - in comparison with previous year

The lowest incidence during the selected study period was reported in 2004, being 0.9±0.08%, whereas the highest rate was reported in 2008, being 1.8±0.1% (p<0.0001). 10-year average of stroke prevalence was 2.4±0.13%. 10-year average of stroke prevalence was 2.24±0.18% among females and 2.57±0.19% among males. The lowest prevalence rate of 2.0±0.1% was reported in 2001 and the highest prevalence rate of 3.7±0.2% was reported in 2008 (p<0.0001). Stroke prevalence also demonstrated random changes during studied years (Fig. 3.4).

Stroke incidence during selected study period remained stable in Gusar in 1999-2001, being 1.1±0.1%, peaked in 2002-2004, being 1.2±0.1%, and remained almost stable in 2005-2008 (Table 5). 10-year average incidence of stroke was 1.12±0.12%.

Table 5
Stroke incidence and prevalence in Gusar (1999-2008)

Year		Incidence		Prevalence		No. population
		‰	No	‰	No	
1999	total	1.1±0.1	90	2.4±0.2	198	81688
	M	1.2±0.2	49	2.7±0.3	108	39635
	F	1.0±0.2	41	2.1±0.2	90	42053
2000	total	1.1±0.1	91	2.4±0.2	196	82345
	M	1.2±0.2	49	2.7±0.3	107	39915
	F	1.0±0.2	42	2.1±0.2	89	42430
2001	total	1.1±0.1	92	2.3±0.2*	193	83001
	M	1.2±0.2	50	2.6±0.3	104	40568
	F	1.0±0.2	42	2.1±0.2	89	42433
2002	total	1.2±0.1*	97	2.4±0.2*	201	83493
	M	1.3±0.2	51	2.7±0.3	112	40902
	F	1.1±0.2	46	2.1±0.2	89	42591
2003	total	1.2±0.1	99	2.4±0.2	203	83920
	M	1.3±0.2	52	2.7±0.3	112	41212
	F	1.1±0.2	47	2.1±0.2	91	42708
2004	total	1.2±0.1	98	2.4±0.2	199	84560
	M	1.3±0.2	52	2.6±0.3	107	41585
	F	1.1±0.2	46	2.1±0.2	92	42975
2005	total	1.1±0.1*	95	2.4±0.2	207	85221
	M	1.2±0.2	51	2.6±0.3	109	41994
	F	1.0±0.2	44	2.3±0.2	98	43227
2006	total	1.1±0.1	98	2.5±0.2*	213	85899
	M	1.3±0.2	53	2.7±0.3	116	42440
	F	1.0±0.2	45	2.2±0.2	97	43459
2007	total	1.0±0.1*	90	2.6±0.2*	229	86622
	M	1.2±0.2	50	2.8±0.3	118	42920
	F	0.9±0.1	40	2.5±0.2	111	43702
2008	total	1.1±0.1*	95	2.7±0.2*	236	87010
	M	1.2±0.2	52	2.8±0.3	121	43100
	F	1.0±0.2	43	2.6±0.2	115	43910
Average	total	1.12±0.12	945	2.46±0.17	2075	84375.9
	M	1.23±0.17	509	2.69±0.26	1114	41427.1
	F	1.02±0.15	436	2.24±0.23	961	42948.8

Note: * $p > 0.05$; * - in comparison with previous year

10-year average of this parameter among males and females was $1.23 \pm 0.17\%$ and $1.02 \pm 0.15\%$, respectively. The lowest incidence rate was noted in 2007, being $1.0 \pm 0.1\%$.

10-year average prevalence of stroke in the region was $2.46 \pm 0.17\%$. This number was $2.24 \pm 0.23\%$ among females and $2.69 \pm 0.26\%$ among males.

Stroke prevalence in 1999-2005 remained almost stable, being $2.4\pm 0.2\%$ ($2.3\pm 0.2\%$ in 2001 only). 2005-2008-ci illər ərzində isə dinamik artmışdır.

10-year average of stroke incidence in Khachmaz during selected study period was $1.3\pm 0.09\%$ (Table 6). Relevant values for men and women were $1.28\pm 0.13\%$ and $1.25\pm 0.13\%$, respectively. The lowest incidence rate was reported in 1999 ($1.0\pm 0.08\%$) and the highest rate was reported in 2008 ($1.5\pm 0.1\%$) ($p < 0.0001$). Stroke incidence steadily increased in 1999-2003, remained stable in 2003-2005 ($1.4\pm 0.1\%$), and declined in 2006 ($1.2\pm 0.09\%$). In 2007 and 2008 an increasing trend was noted, the figures being $1.3\pm 0.09\%$ and $1.5\pm 0.1\%$.

Comparison of stroke incidence rates among males and females revealed that the rates were similar in 1999, 2001-2003, and 2005. Females prevailed in 2007 and 2008; however, this difference was not statistically significant ($p > 0.05$). In contrast, a statistically significant difference was noted in 2004, with higher rate being reported among males ($1.5\pm 0.1\%$ and $1.2\pm 0.1\%$) ($p < 0.05$).

Table 6

Stroke incidence and prevalence in Khachmaz (1999-2008)

Years		Incidence		Prevalence		No. Population
		%	No	%	No	
1999	total	1.0 ± 0.08	140	2.2 ± 0.1	319	145600
	M	1.0 ± 0.1	67	2.0 ± 0.2	139	70500
	F	1.0 ± 0.1	73	2.4 ± 0.2	180	75100
2000	total	$1.1\pm 0.09^*$	155	2.2 ± 0.1	327	147050
	M	1.1 ± 0.1	80	2.0 ± 0.2	145	71150
	F	1.0 ± 0.1	75	2.4 ± 0.2	182	75900
2001	total	$1.2\pm 0.09^*$	172	$2.3\pm 0.1^*$	341	148500
	M	1.2 ± 0.1	84	2.1 ± 0.2	150	72200
	F	1.2 ± 0.1	88	2.5 ± 0.2	191	76300
2002	total	$1.3\pm 0.09^*$	192	$2.4\pm 0.1^*$	354	149700
	M	1.3 ± 0.1	98	2.3 ± 0.2	166	72900
	F	1.3 ± 0.1	94	2.5 ± 0.2	188	76800
2003	total	$1.4\pm 0.1^*$	208	$2.7\pm 0.1^{**}$	403	151000
	M	1.4 ± 0.1	100	2.5 ± 0.2	184	73600
	F	1.4 ± 0.1	108	2.8 ± 0.2	219	77400
2004	total	1.4 ± 0.1	206	2.7 ± 0.1	408	153000
	M	1.5 ± 0.1	110	2.5 ± 0.2	185	74800
	F	1.2 ± 0.1	96	2.9 ± 0.2	223	78200
2005	total	1.4 ± 0.1	216	$2.9\pm 0.1^*$	441	154400
	M	1.4 ± 0.1	106	2.7 ± 0.2	201	75500

	F	1.4±0.1	110	3.0±0.2	240	78900
2006	total	1.2±0.09*	190	2.3±0.1***	363	155800
	M	1.3±0.1	99	2.2±0.2	170	76800
	F	1.2±0.1	91	2.4±0.2	193	79000
2007	total	1.3±0.09*	208	2.7±0.1**	432	157800
	M	1.3±0.1	98	2.7±0.2	206	77200
	F	1.4±0.1	110	2.8±0.2	226	80600
2008	total	1.5±0.1*	238	3.0±0.1**	471	158800
	M	1.4±0.1	112	3.0±0.2	235	78100
	F	1.6±0.1	126	2.9±0.2	236	80700
Average	total	1.3±0.09	1925	2.54±0.1	3859	152165.0
	M	1.28±0.13	954	2.40±0.18	1781	74275.0
	F	1.25±0.13	971	2.67±0.19	2078	77890.0

Note: * $p>0.05$, ** $p<0.05$, *** $p<0.0001$; * - in comparison with previous year

Discussion. Overall 10-year average of stroke prevalence was $2.54\pm 0.1\%$, being $2.67\pm 0.19\%$ and $2.4\pm 0.18\%$ among females and males, respectively. Average stroke incidence among females was higher in 1999-2007 compared to males. However, vice versa was noted in 2008, being $3.0\pm 0.2\%$ among males and $2.9\pm 0.2\%$ among females. Average stroke prevalence demonstrated an increasing trend in 1999-2005, decreasing to $2.3\pm 0.1\%$ in 2006 and re-increasing in 2007 and 2008.

The least average incidence for 10-year study period was noted in Shabran, being $1.0\pm 0.1\%$, whereas the highest rate was reported in Khachmaz, being $1.3\pm 0.09\%$ ($p<0.05$). The lowest incidence rates among males and females were noted in Shabran, being $0.99\pm 0.2\%$ and $1.04\pm 0.2\%$, respectively, and the highest rates were observed in Khachmaz, being $1.28\pm 0.13\%$ and $1.25\pm 0.13\%$, respectively ($p>0.05$).

The lowest stroke prevalence rate in the region was noted in Shabran, being $2.06\pm 0.2\%$, whereas the highest rate was reported in Khachmaz, being $2.54\pm 0.1\%$ ($p<0.05$). The lowest stroke prevalence rate among men in the region was reported in Siyazan ($1.87\pm 0.3\%$) and the highest rate in Gusar ($2.69\pm 0.26\%$) ($p<0.05$). The lowest 10-year average stroke prevalence rate among women was observed in Shabran ($2.22\pm 0.3\%$) and the highest rate in Khachmaz ($2.67\pm 0.19\%$) ($p>0.05$).

Incidence and prevalence rates for stroke in 2015 were predicted for Guba-Khachmaz economic region, as well as its administrative rayons, based on available results using exponential distribution method (Table 7). Increase in stroke incidence and prevalence has been predicted for the region for 2015.

Although, increase in stroke incidence rate was predicted for Siyazan, no difference should be observed in prevalence. Predicted values suggest that epidemiologic situation for stroke will remain stable compared to previous years in Shabran. Sharp increasing trend in both incidence and prevalence rates is being predicted for Guba, to exclude 2008. Prediction is that in Gusar, incidence rate will remain stable, with relative increase in prevalence rate being noted. In Khacmaz, it is predicted that both incidence and prevalence rates for stroke will increase.

Table 7

Prediction of incidence and prevalence of stroke in Guba-Khachmaz region for 2015

Region \ Epidemiologic Values	Incidence (‰)	Prevalence (‰)
Siyazan	1.80	2.19
Shabran	0.92	1.92
Guba	1.71	3.79
Gusar	1.05	2.81
Khacmaz	1.71	3.39
Guba-Khacmaz economic region	1.56	3.20

Conclusion. Based on WHO reports, stroke incidence is about 2% per year [10]. This value was 1-2% in European countries in 2001-2003 [11]. Provided data suggests concluding that incidence and prevalence of stroke in Azerbaijan, represented by Guba-Khacmaz region, is on average level compared to other countries.

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РЕЗЮМЕ

ПРОГНОЗ ЗАБОЛЕВАЕМОСТИ И РАСПРОСТРАНЕННОСТИ ИНСУЛТА В СЕВЕРО-ВОСТОЧНОМ РЕГИОНЕ РЕСПУБЛИКИ АЗЕРБАЙДЖАН

Алиев Р.Р.

*Азербайджанский Государственный Институт Усовершенствования
Врачей, Баку, Азербайджан*

Цель исследования – изучение 10-летней (1999-2008 гг.) динамики случаев заболеваемости и распространенности вследствие церебрального инсульта в северо-восточном регионе и вычисление прогноза относительно состояния эпидемиологии инсульта в отдельных регионах экономического района. В этом регионе Азербайджана

находиться Куба-Хачмазский экономический район. Ретроспективно изучены все случаи инсульта в регионе. 10-летний хронологический средний уровень первичной заболеваемости инсультом составил $1,2\pm 0,05\%$, уровень распространенности инсульта – $2,4\pm 0,07\%$. Установлено, что первичная заболеваемость инсультом и его распространенность в 1999-2008 гг. в регионе характеризуется тенденцией низкого роста заболеваемости. Прогнозировано увеличение показателей заболеваемости и распространенности инсульта на 2015 год – $1,56\%$ и $3,20\%$. Полученные данные имеют большое значение для проведения адекватных лечебно-профилактических мероприятий, направленных на уменьшение частоты заболеваемости и смертности при инсульте среди населения.

Ключевые слова: инсульт, заболеваемость, распространенность, прогноз.

XÜLASƏ

AZƏRBAYCANIN ŞİMAL-ŞƏRQİNDƏ İNSULTLA XƏSTƏLƏNMƏ VƏ ONUN YAYILMASININ PROQNOZU

Əliyev R.R.

Ə.Əliyev ad. Azərbaycan Dövlət Həkimləri Təkmilləşdirmə İnstitutu, Sınir xəstəlikləri kafedrası, Bakı

Təqdim edilmiş tədqiqat işinin məqsədi respublikamızın şimal-şərqində insultla xəstəlmə və onun yayılmasının araşdırılması və bu göstəricilərin 2015-ci il üçün proqnozunun verilməsi olmuşdur. Azərbaycanın şimal-şərqində Quba-Xaçmaz iqtisadi rayonu yerləşir. Retrospektiv olaraq regionda bütün insult hadisələri öyrənilmişdir. Baş beyni insultu ilə ilkin xəstəlmənin 10 illik xronoloji orta səviyyəsi $1,2\pm 0,05\%$, baş beyni insultunun yayılmasının 10 illik xronoloji orta səviyyəsi $2,4\pm 0,07\%$ olmuşdur. Təyin edilmişdir ki, regionda 1999-2008-ci illər ərzində baş beyni insultu ilə ilkin xəstəlmə və onun yayılması aşağı artma tendensiyasına malikdir. Regionda 2015-ci il üçün insultla bağlı xəstəlmə, onun yayılmasının artması proqnozlaşdırılmışdır – $1,56\%$ və $3,20\%$. Əldə edilmiş nəticələr əhali arasında insultla bağlı xəstəlmə və ölümün azaldılmasına yönəldilmiş adekvat tibbi-profilaktik tədbirlərin aparılması üçün böyük əhəmiyyətə malikdir.

Açar sözlər: insult, xəstəlmə, yayılma proqnoz.

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