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ORIGINAL ARTICLES

Prevalence of stroke in Kashmiri migrant community

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Abstract

Objective: The aim of the study was to assess the prevalence of stroke in a migrant community (Kashmiri) settled in Jammu district of J&K, India. *Methods*: The study was conducted as a population based cross-sectional study at Mishriwala, 12 kms west of Jammu city. A door to door survey of 964 individuals of Mishriwala community cluster was conducted with a participation rate of 95%. *Results:* Eight cases of completed stroke were ascertained yielding a crude prevalence rate of 1,169/100,000 (95% CI=300/100,000-1,700/100,000) in the age group 15 years and above. When the prevalence was standardized to world standard population for age, the prevalence was slightly lower at 856/100,000 (95% CI=400/100,000-11,000/100,000). The proportion of stroke occurring in females (63%) was higher than that in males and the age-specific prevalence increased with age.
Conclusion: The prevalence rate of stroke among Kashmiri Pandits is comparable to rates reported from the developed world.

INTRODUCTION

Stroke is a leading cause of serious, long-term disability in the developed world, with an estimated number of stroke survivors in the United States and Canada reaching six million.[1,2] It has an enormous physical, psychological and financial impact on the patients, families, the health care system and society.[3] Moreover, stroke burden is projected to increase from around 38 million disability-adjusted life years (DALYs) lost globally in 1990 to 61 million DALYs in 2020.[4]

Determination of the prevalence of stroke is crucial for accurate health-care planning and delivery of appropriate interventions at various community and institutional levels. The aim of the study was to assess the prevalence of stroke in a migrant community (Kashmiri) settled in Jammu district of J&K as minority groups may have unique issues that may be missed in large population-wide studies that are not specifically designed to detect them.

METHODS

Background

The State of Jammu and Kashmir is the northern most state of India comprising three distinct climatic regions viz. Arctic cold desert areas of Ladakh, temperate Kashmir valley and sub-tropical region of Jammu. Kashmir valley is known for its beauty world over. It has been witnessing militancy related conflict since 1990. A large scale migration of Kashmiri Hindus (henceforth will be called 'Kashmiri Pandits) from Muslim majority Kashmir was witnessed in 1990 as an early effect of militancy. The then government of Jammu & Kashmir established temporary shelters for these Kashmiri Pandits in places like Jammu. Five such temporary shelters around Jammu city were converted into quasi-permanent settlements over a period of time.

Methods

The study was conducted in June 2009 as a population based cross-sectional study at Mishriwala. Mishriwala (one of the five temporary settlements) is spread over an area of 3 sq km with a total population of 964 individuals, 12 kms west of Jammu city. The population is stable, with little immigration or emigration in last 19 years. All inhabitants of Mishriwala migrant camp, a suburban area of Jammu city were included in the study. Participation rate of those included in

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the study was 95% and a total of 916 individuals participated. The high participation was partly due to a door to door campaign in the area explaining the study one week prior to the date of survey. Earlier we reported on the prevalence of dementia among Kashmiri Pandits from the same area.[5]

The study was conducted as door to door survey covering whole of Mishriwala cluster. During the first phase, data was collected by the Survey Team comprising of an Epidemiologist assisted by Medical Students from our Institute.

The Survey Team was trained in the detection of neurological complaints and in completing a screening questionnaire. The questionnaire was written in local vernacular prepared in accordance with the WHO protocol for measuring the prevalence of neurological disorders in developing countries.[6] The process was similar to the one used in an earlier study conducted on ethnically similar population by one of the contributors to this study.[7] A written informed consent was obtained prior to conduct of survey.

The questionnaire was administered to all family members and the demographic details were collected from all families, preferably from the head of the household or reliable informant during house-to-house survey. The Clinical Team comprising of a Neurologist and a Physician assisted by an Epidemiologist, who subsequently interviewed and examined all suspected cases in their home settings.

The records of clinical data were verified by the Physician and Epidemiologist for completeness of data collection. The previous investigations, e.g., EEG and neuroimaging; details of prescription and compliance were also noted during this phase. Patients were asked their regular occupation or, if they were retired, their last full time occupation. Women were assigned their own occupation, with the exception of housewives, who were assigned their husbands or father's occupation. This was done purely for the calculation of socio-economic status of the family.

Classification of pathological stroke type was not done as full investigative details were not available from all the patients.

Validation of questionnaires

The validity of screening questionnaire was carried out in a pilot study among 50 subjects. They were examined by the clinical Team again to look for the false positive and false negative cases. On the basis of the pilot study, the questionnaire was found to have sensitivity of 94% and specificity of 92%.

Diagnostic criteria

Stroke was defined as a rapidly developing clinical syndrome of focal (or global) disturbance of cerebral function, with symptoms lasting 24h or longer or leading to death, with no apparent cause other than due to vascular origin.[1] Only stroke survivors were included in this study.

RESULTS

Demographic data

For the 916 screened subjects, those over 15 years of age represented 74% of the population (Table 1). This was much higher than the national average.[8] The sex distribution in the study population was almost equal between both genders, with men slightly more in number (51.2%). The age-sex characteristic of study population is shown in Table 1.

The distribution and prevalence rate of stroke is shown in Table 2. Eight cases of completed stroke were found yielding a crude prevalence rate of 1,169/100,000 in the age group 15 years and above. The proportion of stroke occurring in females (63%) was higher than that in males.

A prevalence rate of 3,947/100,000 was found in population 70 years and above. The age-specific prevalence increased with age. Our prevalence rates are almost similar to the rates in developed world.[9-11] When the prevalence was standardized to world standard population[12] for age; the prevalence was slightly lower at 856/100,000.

DISCUSSION

The worldwide prevalence rate for cerebrovascular disease is between 500 and 700/100,000 population[9-11] the crude prevalence rate of 1,169/100,000 and standardized prevalence rate of 856/100,000 for stroke among Kashmiri migrants is similar to international averages. The exponential increase in prevalence of completed stroke with age preponderance in this study is also compatible with the international data.

Earlier studies show a marked difference in the prevalence rate between various countries and across communities within the same nation. For example, in India the reported crude stroke prevalence varied from 57/100,000 in Vellore (southern India)[13], 45/100,000 in Rohtak (northern India)[14], 147/100,000 in Kolkata (eastern India)[15], 222/100,000 among Hindus in Bombay (western India)[16], to 843/100,000 in Bombay's Parsi community.[17] There was also a difference between our results and previous study among shepherds

Table 1: Demographic profile of study population (Mishriwala)

Age (yrs)	Sex		
	Male	**Female**	**Total**
0-9	85 (18.1)	83 (18.5)	168 (18.3)
10-19	77 (16.4)	74 (16.5)	151 (16.4)
20-29	69 (14.7)	68 (15.2)	137 (14.9)
30-39	62 (13.2)	56 (12.5)	118 (12.8)
40-49	49 (10.4)	46 (10.2)	95 (10.3)
50-59	41 (8.7)	37 (8.2)	78 (8.5)
60-69	49 (10.4)	44 (9.8)	93 (10.1)
≥ 70	37 (7.8)	39 (8.7)	76 (8.2)
Total	**469 (100)**	**447 (100)**	**916 (100)**

Figures in parenthesis are percentages.
Female: Male = 953 : 1000

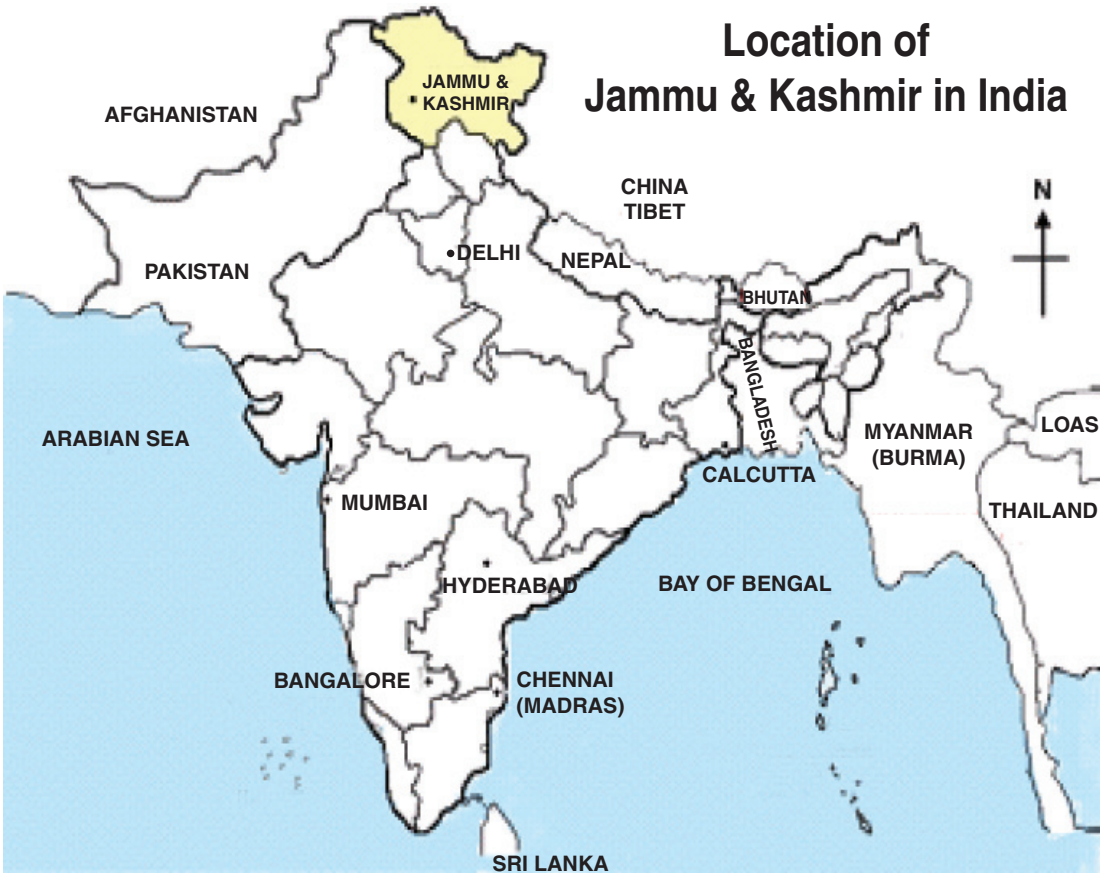
and cultivators in the rural Kashmir.[5] The study was conducted prior to 1990. The prevalence was lower at 143/100,000.

According to our estimates, prevalence of stroke in study population is higher in females, with 63% of the stroke subjects being women. Among women, the prevalence appears to fall in 70+ age group, but the number of cases is very small. The higher prevalence among women seen in our study among the migrant Kashmiri population may be explained by: 1) that women develop stroke at a later age than do men, as observed in Spanish studies[18,19]; 2) that male stroke sufferers have worse survival prospects than their female counterparts; and 3) that such sex-selective survival is particularly evident at very old ages. Since the latter two statements have not been empirically supported by the results of European studies, in which age-adjusted case-fatality rates were higher among women than among men[20,21], the pattern of stroke in Mishriwala might be explained by the effect of differential incidence traits in the two sexes.

Table 2: Distribution and prevalence rates for completed stroke in Mishriwala, migrant camp

Age Years	Total		Distribution Males		Females		Prevalence rate/100,000 Total	Males	Females
	N	n	N	n	N	n	Rate	Rate	Rate
15-19	87	--	42	--	45	--	--	--	--
20-29	137	1	69	--	68	1	720	--	1,470
30-39	118	--	62	--	56	--	--	--	--
40-49	95	--	49	--	46	--	--	--	--
50-59	78	1	41	--	37	1	1,282	--	2,702
60-69	93	3	49	1	44	2	3,225	2,040	4,545
70+	76	3	37	2	39	1	3,947	5,405	2,564
Total	**684**	**8**	**349**	**3**	**335**	**5**	**1,169**	**859**	**1,492**

Crude prevalence rate: 1169/100,000 (95% CI=300/100,000-1700/100,000)
Standardized Prevalence Rate: 856/100,000 (95% CI=400/100,000-1,100/100,000)



The strength of this study was that a formal instrument written in the local vernacular language was used in the survey, with training of the Survey Team. However, the number of stroke subjects detected was small, affecting the determination of the prevalence." Nevertheless we believe that the data from this study is invaluable as it was the first ever stroke prevalence study among the Kashmiri migrants population. Stroke prevalence for ethnic Kashmiri population, including migrants after 1990 (the year when conflict started) is scarce. Future stroke studies should incorporate the knowledge, understanding and attitude of the patients as well as general public. Ageing of the Indian population suggests that the burden of stroke in India will increase, thus calling for more research on stroke.

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