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Major Neurological Disorders in Tribal Areas of Himachal Pradesh: A Community Based Survey

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Abstract

Background: Neurological disorders are being recognized as a part of epidemiological transition worldwide. The much needed database on neurological diseases in India is lacking.

Objective: To estimate the prevalence and pattern of major neurological disorders in tribal population of Himachal Pradesh.

Methods: A community based cross sectional survey was conducted in two tribal districts and two tribal blocks of one district of Himachal Pradesh, India. A cluster randomized sampling technique was used to study a population of 10,000 between 2017 and 2018. 40 clusters were identified in three districts. Study was conducted in two phases in individuals above seven years of age. The individuals screened positive in stage 1 (using NIMHANS protocol for assessing neurological disorders) were examined by clinical team in stage 2 and classified.

Results: 8255 individuals reported for phase two of the study (response rate of 82.55%). The crude prevalence of neurological disorders in the tribal population was 3.04% after clinical assessment in stage two. Migraine (1.9%) was most common disorder followed by stroke (0.47%).

Conclusion: The prevalence of neurological disorders in tribal population is comparable to general population. This is an indicator lifestyle diseases entering into the indigenous population and demands neurological health care tailored in primary health care.

Keywords: Cross sectional survey; Hilly tribes; Neurology

Introduction

Globally, in 2016, neurological disorders were the leading cause of DALYs (276 million 95% UI 247-308) and second leading cause of deaths (9.0 million). Tribal population in Himachal Pradesh, India constitute about 3.9% of the total population of the state and is mostly concentrated in two tribal districts and two tribal blocks (Chamba district) of the state. The socio-demographic and epidemiological transition in this population has changed the morbidity and mortality pattern among these communities. This has brought non-communicable diseases to the forefront of the health care delivery system. The epidemiological data thus obtained will be valuable in understanding the factors leading to development of neurological disorders [1].

Indigenous tribes are described as people who follow traditional non industrial lifestyle in areas that they have occupied for generations. Their lifestyle and genetic makeup makes them different from general population. Industrialization and globalization has touched upon these tribes too. It is of interest to study the pattern of non-communicable diseases among this population to deliver timely health services and preserve the health of these tribes. Community based surveys using standardized methodology to screen neurological disorders are few and only one has been conducted among tribes that too in Gujarat. Hence a community based survey was planned to estimate the prevalence and pattern of major neurological disorders in tribal population of Himachal Pradesh [2].

Methodology

Study area

The study was conducted in two tribal districts of Kinnaur, Lahaul and Spiti and two tribal blocks of district Chamba (Pangi and Bharmour) of the state of Himachal Pradesh. Kinnaur surrounded by the Tibet to the east, in the northeast corner of Himachal Pradesh. It is spread in an area of 6401 sq. km, has a population of 84,121, ranging in altitude from 2,320 to 6,816 metres. Lahaul-Spiti is the fourth least populous district in India. The valley of Lahaul is situated to the south of Ladakh. Its western boundaries touch the Pangi and Churah areas of Distt. Chamba. To its north situated the valleys of Zanskar and Ladakh across Shingola (5090 Mtrs) and Baralacha la (5450 Mtrs) respectively. Its eastern and south eastern boundaries coincide with those of Spiti and Western Tibet across the Kunzom Pass (4500 Mtrs). Pangi is a tribal block in Chamba district. It is inhabited at 2100 meters to 3400 meters. The Pangi tehsil covers 1,601 square kilometers (618 sq. mi), and had a population of 18,868 as per 2011 census. Bharmour block is situated at an

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altitude of 7000 feet in the Budhil valley, forty miles to the south-east of Chamba [3].

Study duration

The survey was conducted between June 2017 and November 2018. Study population Individuals above seven years age and consenting to be a part of the study were included in the study and above [4].

Sample size

A sample size of 10,000 individuals spread over three districts (Two tribal and one with two tribal blocks) was calculated with the assumption that this sample size will provide us with the prevalence on Major Neurological disorders in tribal areas of Himachal Pradesh. Importantly the sample size was spread over socio-economically different tribal blocks with two blocks of relatively poor socio economic status [5].

Sampling

A Cluster randomized sampling technique was used for the purpose of the study. All the revenue villages falling under these selected tribal areas were identified and labeled as the primary sampling unit for selecting the study population. Thereafter the villages were spread into clusters and clusters were listed. A total of 40 clusters (10 each from four selected geographical locations) were identified and sample size of 10,000 was collected from these 40 clusters. Therefore, 250 (10000/40=250) individuals of more than 7 year of age were recruited from each selected cluster. Randomly a household was selected from each village and thereafter a house-to-house survey was carried out to complete the sample size of 250 individuals above 7 years of age. If sample could not be achieved from a revenue village of the selected cluster then the adjoining village was selected and house-to-house survey was carried out accordingly to complete the desired sample.

Strategy

The study was completed in two phases.

Phase I: (Screening phase)

The screening phase was carried out by the field staff trained in the screening of neurological disorders administering the study questionnaire to the consenting individuals above 7 years of age. The study questionnaire was administered by the field workers in the household settings through a house to house survey. All eligible individuals, fulfilling inclusion criteria, were contacted. Individuals absent from their homes at the time of visit were requested to report at the local/nearby Anganwadi Centre on the subsequent day. Interviews were conducted in local languages from the head of the household or surrogate respondent, who was able to provide information for each family member of the selected household. The screening instruments consisted of parameters for information on socio demographic characteristics of the households and a modified version of National Institute of Mental Health and Neurosciences (NIMHANS) protocol for assessing presence of neurological disorders.

Phase II: (Clinical phase)

In stage II, all individuals who responded positive to screening protocol in stage I were invited to undergo examination by a clinical team under standard conditions. To maintain the operational definitions of various neurological disorders and to have a uniform case definition and classification, a symptom based classification was used for analysis.

Clinical team comprised of neurologists, pediatrician, physician and public health experts at a time. Neurologists' diagnosis was considered as gold standard for defining a suspected and confirmed case.

Data and statistical analysis

The data collected was entered in Microsoft excel software and double checked for duplicate and missing information. Analysis was conducted using Epi Info version. The descriptive data was presented as mean and proportions.

Ethical consideration

This analysis was a part of Indian Council of Medical Research (ICMR) funded project which was conducted after approval from institutional ethics committee of Rajendra Prasad Government Medical College, Kangra at Tanda, Himachal Pradesh.

Results

Out of a total of 10,000 individuals, only 8255 individuals reported for phase two of the study yielding us response rate of 82.55% for the second phase. There was no significant difference in age distribution among different age groups and gender distribution also showed no significant difference. Mean age was 35.7 ± 17.89 **(Table 1)**.

Age group (years)	Male (%)	Female (%)	Total
8-15	612(50.8)	592(49.2)	1204(14.6)
16-25	786(50.3)	775(49.7)	1561(18.9)
26-35	840(51.1)	802(48.9)	1642(19.9)
36-45	756(51.8)	702(48.2)	1458(17.6)
46-55	532(49.7)	538(50.3)	1070(12.9)
56-65	411(51.4)	388(48.6)	799(9.6)
66-75	203(53.7)	175(46.3)	378(4.5)
>75	60(41.9)	83(58.1)	143(1.7)
Total	4200(50.8)	4055(49.2)	8255
Mean Age	35.7 ± 17.81	35.7 ± 17.97	35.7 ± 17.89

Table 1: Age and gender distribution of study participants.

Around 38.2% of the participants were having secondary level education and 15.2% were illiterate. Only 2% of the participants were having the professional degree **(Table 2).**

Educational status	Male (%)	Female (%)	Total (%)
Professional degree	103(59.5)	70(40.5)	173(2.09)
Graduate	599(67.6)	286(32.4)	885(10.7)
Secondary school	1789(56.6)	1367(43.4)	3156(38.2)
High School	676(51.4)	638(48.6)	1314(15.9)
Primary School	708(48.3)	757(51.7)	1465(17.7)
Literate, no formal education	1(16.6)	5(83.4)	6(0.07)
Illiterate	324(25.7)	932(74.3)	1256(15.2)
Total	4200	4055	8255

Table 2: Distribution by educational status.

In 8255 participants, 1602 positive responses were recorded and more than one positive response was given by some participants in stage one. The crude prevalence of neurological disorders was 3.04% in the study population after clinical assessment in stage 2. It was more in males (3.8%) as compared to females (2.2%) and was statistically significant (p<0.000). Migraine was major disorder (1.9%) **(Table 3).**

Diagnosis	Male (N%)	Female (N %)	Total (N%)	p-value
Migraine	98(2.3)	60(1.4)	158(1.9)	0.016
Epilepsy	18(0.42)	11(0.27)	29(0.35)	0.227
Stroke	30(0.71)	9(0.22)	39(0.47)	0.001
Cerebral Palsy	4(0.09)	3(0.07)	7(0.08)	0.962
Parkinsonism	3(0.07)	2(0.04)	5(0.06)	0.968
Dementia	3(0.07)	2(0.04)	5(0.06)	0.968
Others	5(0.11)	3(0.07)	8(0.09)	0.092
All disorders taken together	161(3.8)	90(2.2)	251(3.04)	<0.0001

Table 3: Prevalence of neurological disorders in study population (n=8255).

Discussion

Community based studies for a spectrum of neurological disorders have been initiated mostly in rural Bangalore, Bombay, Delhi, Guajarat and Kashmir.8 The current study revealed a crude prevalence of Neurological disorders of 3.04% in tribal population. The crude prevalence rate from six studies conducted between 1982 and 1995 varied from 0.967-4.070% with an average of 2.394%. The prevalence rate of neurological disorders among tribal population of Gujarat was 2.592%.4 Neurological disorders constitute 16.8% of the total deaths in lower middle income countries as per the global burden of disease study. The absolute number of deaths from all neurological disorders combined increased by 39% and DALYs by 15% in 2015 GBD study. The prevalence of Neurological disorders in this study was higher among males similar to the findings by in Kolkata, 10 our findings are contrary to those community based survey from Bangalore and Malda where the prevalence was higher among females.

The prevalence of migraine in present study was 1.9% and highest as compared to other disorders. This was similar to the estimates obtained by wherein the prevalence was 1.26% in rural area of Bangalore. The prevalence of Stroke was 0.4% in our study. Kalkonde, from a rural area of Gadchiroli reported somewhat similar prevalence of 0.39%.13 reported the prevalence of stroke from tribal population of Guajarat to be 0.11%.4. The prevalence estimates from Bangalore for cerebro vascular disorders was 0.15%. Male preponderance was observed in our study and this was in line to other studies from Maharashtra and Kolkata During the last four decades community based studies in different regions of the country showed crude prevalence rates of completed strokes varying from 52-472 per 100000 persons, with the exception of a very high rate of 842 among Parsis, a distinct ethnic community.

The prevalence of Cerebral Palsy was 0.08% in the present study comparable to study done by Raina SK in Jammu and Kashmir. Population-based studies from around the world report prevalence estimates of CP ranging from 1.5 to more than 4 per 1,000 live births or children of a defined age range. Prevalence of Dementia in present study was 0.06% reported the prevalence of dementia in Kolkata to be 0.139%. A population-based, cross-sectional survey conducted in Latin America, India, and China have arrived at crude prevalence rate ranging from 0.8% in rural India to 4.6% in urban Latin America in a survey in Pangi valley of Himachal Pradesh on geriatric population reported a prevalence of 1.2% using Bharmouri mental state examination. In another study by prevalence of dementia from four different regions of Himachal Pradesh showed that the prevalence was higher among urban elderly population (3.2%) as compared to rural elderly (1.4%). In 2010, a study conducted among two ethnically different population groups living within the same geographical region of north India revealed a significant difference in prevalence of dementia among individuals aged 60 years and above. Hence indigenous tribes still have a low prevalence of dementia as compared to rural, urban and migrants.

Limitation

The response rate in phase two of study was 82.55% from phase one which may have missed out many of the cases. Reasons could be geographical barriers in the hard to reach areas as camp was set at health centre of clusters; people tend to forget dates as they perceived it less important as compared to routine work [6-10].

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Conclusion

This community based survey on tribal population residing in geographically hard to reach and high altitude gave a crude prevalence of neurological disorders to be 3.04%. It adds to the evidence of few community surveys on tribal population. The prevalence among tribes is comparable to other areas hence highlighting the demand of trained neurologists, redefining health services with integration of neurology care in the general health care. The adequate neurology services have to be provided with essential workforce and infrastructure for the tribal population in remote areas of the country. Telemedicine and community health center model approach are the need of hour.

References

1. Mansukhani KA, Barretto MA, Donde SA, Wandrekar J, Nigudkar A, et al. (2018) Epidemiological Survey of Neurological Diseases in a Tribal Population Cluster in Gujarat. Ann Ind Aca Neu 21: 294-299.
2. Kalkonde YV, Sahane V, Deshmukh MD, Nila S, Mandava P, et al. (2016) High prevalence of stroke in rural Gadchiroli, India: A Community-based study. Neuroepidemiology. 46: 235-239.
3. Anand K, Chowdhury D, Singh KB, Pandav CS, Kapoor SK et al. (2001) Estimation of mortality and morbidity due to strokes in India. Neuroepidemiology. 20: 208-211.
4. Abraham J, Rao PS, Inbaraj SG, Shetty G, Jose CJ, et al. (1970) An epidemiological study of hemiplegia due to stroke in South India. Stroke. 1: 477-481.
5. Razdan S, Kaul RL, Motta A, Kaul S, Bhatt RK, et al. (1994) Prevalence and pattern of major neurological disorders in rural Kashmir (India) in 1986. Neuroepidemiology. 13: 113-119.
6. Siddiqui MR, Sajid MS, Uncles DR, Cheek L, Baig MK (2011) A meta-analysis on the clinical effectiveness of transversus abdominis plane block. J Clin Anesth 23: 7-14.
7. Bhattacharjee S, Ray M, Ghose T, Maitra S, Layek A (2014) Analgesic efficacy of transversus abdominis plane block in providing effective perioperative analgesia in patients undergoing total abdominal hysterectomy: A randomized controlled trial. J Anaesthesiol Clin Pharmacol 30: 391-396.
8. Saxena R, Joshi S, Srivastava K, Tiwari S, Sharma N, et al. (2016) Comparative study of ultrasound-guided abdominal field blocks versus port infiltration in laparoscopic cholecystectomies for postoperative pain relief. Indian J Anaesth 60: 578-83.
9. McDonnell JG, O'Donnell B, Curley G, Heffernan A, Power C, et al. (2007) The analgesic efficacy of transversus abdominis plane block after abdominal surgery: a prospective randomized controlled trial. Anesth Analg 104: 193-197.
10. Ramkiran S, Jacob M, Honwad M, Vivekanand D, Krishnakumar M, et al. (2018) Ultrasound-guided combined fascial plane blocks asan intervention for pain management after laparoscopic cholecystectomy: a randomized control study. Anesth Essays Res 12: 16-23