

## Prevalence of Neurological Disorders and Utilization of Health Services in A Subcenter Area in Udupi Taluk

Shankar S<sup>1</sup>, Arvind N Prabhu<sup>2</sup>, Ashwini Kumar<sup>3</sup>, George P Jacob<sup>4</sup>

### Abstract

**Introduction:** Recognizing the magnitude of neurological disorders and the disabilities associated with it in the community is the first step towards integration of neurology care with general health care. Increase in neurological disorders and mismatch between need and available resources (Manpower and infrastructure) are posing challenges for providing neurological care to the community.

**Objective:** To study prevalence of neurological disorders and the utilization of health services in a sub-center area in Udupi Taluk

**Methods:** A community based cross sectional study was conducted for a period of two years among individuals in 1027 households of the study population

**Results:** Study targeted 1132 families out of which 1027 families were covered comprising of 5031 individuals. Among them about 10% suffered from neurological disorders with almost 50% of them having various types of pains/aches. Headaches followed by stroke and seizures were the next common neurological disorders. A large majority utilized allopathic services predominantly at primary and secondary centers. Only 10% of those with neurological disorders visited a qualified neurospecialist. Most of this population was unaware regarding availability of neurological care.

**Conclusion:** Headache, Pains and aches are the most common neurological disorders in this population with underutilization and poor awareness about neurological services. Large scale population based surveys are the need of the hour for developing hospital and community based neurological services in India.

**Keywords:** Community based study; Prevalence; Neurological disorders; Utilization.

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**Author's Affiliation:** <sup>1</sup>Associate Professor, Department of Community Medicine, Dhanalakshmi Srinivasan Medical College and Hospital, Siruvachur, Perambalur, Tamil Nadu 621113, India. <sup>2</sup>Assistant Professor, Department of Neurology, <sup>3</sup>Additional Professor, Department of Community Medicine, Kasturba Medical College, Manipal Academy Higher Education, Manipal, Karnataka 576104, India. <sup>4</sup>Professor, Department of Community Medicine, Mount Zion Medical College, Ezhamkulam, Adoor, Pathhanmthitta, Kerala 691523, India.

**Corresponding Author: Arvind N Prabhu**, Assistant Professor, Department of Neurology, Kasturba Medical College, Manipal Academy Higher Education, Manipal, Karnataka 576104, India.

**E-mail:** arvindnprabhu@gmail.com

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### Introduction

Neurological disorder is a major public health challenge responsible for 12% of the total deaths globally. It has accounted for 6.3% of the global burden of disease in 2005 which is expected to rise to 6.77% by 2030.<sup>1,2</sup> In low and middle income countries it poses a double burden of communicable diseases due to meningitis, Japanese encephalitis etc. as well as non-communicable diseases like cerebrovascular accidents, Alzheimer's, dementia, etc.<sup>2</sup>

In India neurological disorders are in a rise because of epidemiological transition and unhealthy lifestyle of individuals.<sup>3,4</sup> Not only is the

number of neurologists and health services less compared to the total population of the country but it is also concentrated in the urban areas.<sup>3,5</sup> This has led to mismatch in the needs of the people and the availability of health services. The stigma associated with neurological diseases creates a hindrance in the health seeking behavior of the individuals and their adherence to treatment. Thereby posing a challenge to the policy makers to provide neurological care to the community. Also most of the data available is hospital based and does not give a clear picture of the true burden of the disease.

So this study has been undertaken to study the prevalence of neurological disorders and the utilization of health services in a sub-center area in Udupi Taluk

## Methodology

A community based cross-sectional study was conducted for a period of two years (September 2012 to October 2014) in the Alevoor Subcenter area of Udupi Taluk after obtaining consent from the Institutional Ethics Committee.

Udupi district is one of the three districts of coastal Karnataka with a population of 11,77,361 (2011 census). It consists of three taluks, namely Udupi, Kundapura and Karkala. Total number of Primary health centers (PHC) in Udupi district are 61. Also there are 6 Community health centers, two taluk hospitals and one district hospital. 18,687 is the population of Manipura PHC. Alevoor sub-center belongs to Manipura Primary Health center of Udupi taluk. It covers a population of 5346 in 1132 families, which are homogenous in terms of occupation, socioeconomic status and food habits.

All households coming under the sub Centre area and families who were permanent residents of this area or residing at least for the past 1 year were included in the study. Family or households who are not willing to participate in the study or which were locked/subjects not present at home even after 3 visits were not included in the study. A pre-designed pre-tested semi-structured questionnaire was used to collect information from the family

members after obtaining consent from them. They were assured that confidentiality and anonymity would be maintained. The questionnaire contained three parts: first part consisted of socio demographic details of the household as well as individual details. Second part consisted of screening questions. Uniformity in case classification was ensured by the use of operational definitions of various neurological disorders which were developed at the beginning of the.

The collected data was analyzed by using the statistical package SPSS (Statistical Package for Social Sciences) version 15 for windows. Findings were described in terms of percentages and proportions.

## Results

The Study was conducted in Alevoor Subcenter of Manipura PHC of Udupi Taluk in Udupi District, Karnataka. The study involved 1027 families comprising of 5031 individuals.

Data could not be collected from 18 houses in spite of repeated attempts, since they were locked. These families were considered to be non-respondents and they constituted 1.7% of total study families.

Majority of the families were Hindus (93.6%) followed by Christians (3.7%) and Muslims (2.7%). More than half of the families (59.3%) belonged to middle socio economic strata whereas very few of them (4.1%) belonged to high socio economic strata according to modified Udai Pareek scale. The study sample included 5031 subjects with almost equal gender distribution, i.e. 51.1% males and 48.9% females.

Almost one third of the population were in the age group of 15-30 years (30.4%) whereas very few of them were above 60 years of age (9.3%). Majority of individuals (87.8%) were literates. About 17.5% of the working population was skilled workers followed by 17.3% of them were unskilled or manual laborers. Among males, majority 30.5% of the population were skilled workers, while among females 33.3% of them were home makers (Table 1).

**Table 1:** Gender-wise distribution of baseline characteristics of study participants

Sociodemographic Characteristics	Gender		Total
	Male (N=2568)	Female (N=2463)	
• Age			N= 5031
<12 months	51 (2)	60 (2.4)	111 (2.2)
1-4 years	181 (7)	158 (6.4)	339 (6.7)

Sociodemographic Characteristics	Gender		Total
	Male (N=2568)	Female (N=2463)	
<b>• Age</b>			<b>N= 5031</b>
5-9 years	157 (6.1)	154 (6.3)	311 (6.2)
10-14 years	198 (7.7)	170 (6.9)	368 (7.3)
15-19 years	226 (8.8)	203 (8.2)	429 (8.5)
20-44 years	1159 (45.1)	1100 (44.7)	2259 (44.9)
45-60 years	373 (14.5)	372 (15.2)	746 (14.8)
>60 years	223 (8.7)	245(10.0)	468(9.3)
<b>• Education Level</b>	<b>N=2269</b>	<b>N=2184</b>	<b>N=4453</b>
illiterate	173 (7.6)	373 (17)	542 (12.2)
primary	260 (11.5)	276 (12.6)	536 (12)
secondary	1255 (55.3)	1032 (47.3)	2287 (51.4)
higher secondary	248 (10.9)	250 (11.4)	498 (11.2)
<b>• Diploma</b>	<b>33 (1.5)</b>	<b>8(0.4)</b>	<b>41 (0.9)</b>
Graduation	292 (12.9)	242 (11.1)	534 (12)
Post-graduation	8 (0.4)	3 (0.1)	11 (0.2)
<b>• Occupation</b>	<b>N=2269</b>	<b>N=2184</b>	<b>N=4453</b>
unemployed	196 (8.6)	322 (14.7)	518 (11.6)
unskilled/retired	448 (19.7)	321 (14.7)	769 (17.3)
semi-skilled	146 (6.4)	192 (8.8)	338 (7.6)
skilled	693 (30.5)	88 (4.0)	781 (17.5)
business	132 (5.8)	10 (0.5)	142 (3.2)
white collared/ professionals	184 (8.1)	112 (5.1)	296 (6.6)
students	462 (20.4)	411 (18.8)	873 (19.6)
homemaker	8 (0.4)	728 (33.3)	736 (16.5)

The prevalence of neurological disorder was 10% in this population with almost half of them suffering from Backache, intra vertebral disc prolapse and sciatica (5%) followed by other musculoskeletal disorders (2.6%), migraine (1%), stroke. (0.6%) and seizures (0.53%). Seizure was more common among

children in the age group of 0-14 years (41%). Headache was more common in the middle aged people, i.e. 31-45 years(49%). Majority of stroke cases were in the age group of 46-60 years (43%) followed by more than 61 years (36%) (Table 2).

**Table 2:** Age-wise distribution of neurological disorders

Neurological disorders	0-14 years (n, %)	15-30 years (n, %)	31-45 years (n, %)	46-60 years (n, %)	61 years and above (n, %)	Total N= 5031 (n, %)
Headache and migraine	2 (4)	14 (29)	24 (49)	8 (16)	1 (2)	49 (1)
Cerebrovascular accident	0 (0)	1 (3.5)	5 (17.9)	12 (42.9)	10 (35.7)	28 (0.6)
Seizure	11 (41)	6 (22)	3 (11)	4 (15)	3 (11)	27 (0.53)
Backache, IVDP, sciatica	0 (0)	28 (11)	70 (27.2)	85 (33)	74 (28.8)	257 (5.1)
Other musculoskeletal disorders	2 (1.5)	9 (7)	33 (25.4)	33 (25.4)	53 (40.7)	130 (2.6)
Other Neurological disorders	0(0)	3 (37.5)	2 (25)	2 (25)	1 (12.5)	8 (0.15)
<b>Total</b>	<b>15 (3)</b>	<b>61 (12)</b>	<b>137 (27.5)</b>	<b>144 (29)</b>	<b>142 (28.5)</b>	<b>499 (10)</b>

Total number of the people with neurological complaints utilizing the allopathic care was 451 (89%); other modalities (Ayush care) were 48 (11%). Of the 451 patients utilizing allopathy; 226 also consulted the Ayush modalities in addition to allopathy (Table 3).

Around 70% people with neurological complaints utilized services in government sector. 89% of these at PHC and remaining 11% at tertiary district hospitals. Of the remaining 153 patients (31%) preferred the private health services. 78% of them visited the local private practitioner and

**Table 3:** Utilization of health facilities by people with neurological disorder in the past one year

Neurological disorder	Government health care facility		Private health care facility	
	PHC	Tertiary care District Hospital	Private Practitioners/ Nursing Homes	Private Tertiary Hospitals
Headache and migraine	22	12	14	1
Cerebrovascular accident	2	4	9	13
Seizure/ Epilepsy	3	10	5	9
Backache, IVDP, sciatica	194	7	48	8
Other musculoskeletal disorders	86	2	41	1
Other Neurological Diseases	1	3	3	1
<b>Total</b>	<b>308</b>	<b>38</b>	<b>120</b>	<b>33</b>
<b>Grand Total</b>		<b>346</b>		<b>153</b>

remaining tertiary bigger private hospitals. 90% of the headache and chronic Low back ache patients were the ones to utilize health care facility.

Of the above 499 patients, only 51 visited a qualified neurologist. Most of the people were unaware about the availability of neurology care. Financial constraints, time and distance of the tertiary center were the other main hurdles for seeking neurology services.

## Discussion

The present study is a small scale moderately designed representative population based epidemiological study about neurological disorders in a taluk village in Karnataka state. The present study covered nearly all households in the given geographic location. The age and sex composition of the surveyed population is in accordance with the census data.

The specific relationship between various neurological disorders, occupation and socioeconomic status needs to be examined with particular reference to etiology, pathogenesis, and utilization of services and provision of care for neurological disorder.

Overall prevalence rate of neurological diseases in India in older studies from various regions ranged from 967 to 4070 per 1,00,000 population.<sup>3</sup> These observations from various regions of India have wide variations. This is due to variety of screening, instruments and methods. Similar observation has been made in this region in the present study. However the patient with pains and aches and musculoskeletal problems have also been included.

Chronic Back pain and musculoskeletal disorders constituted the majority of cases. This may be due to unskilled and semiskilled population and heavy

household work in women who have dual duty of homecare and field work during the work season. The strength of this study is including pains and aches which is a neglected symptom. The etiology of chronic pain may be occupational or due to osteoporosis/other etiologies. However this was not studied in the present survey.

The reporting of core neurological diseases like Cerebrovascular Accident/stroke and epilepsy were less in the study population. This may be due to lack of knowledge among the people.

The utilization of health facilities is poor in the present study. The factor may be lack of awareness about the health facilities, stigma, cultural factors financial burden and time, however larger study needs to be planned to ascertain the underutilization.

Neurological disorders are a major cause of morbidity and mortality all over the globe. The special characteristics of chronicity, progression, recurrence with additional physical, mental and cognitive disability contribute to the heavy burden placed on the individual, family and society.

Additionally stigma attached to disorders like epilepsy and stroke leads to complexity in identification, management and counselling. It has been continuously emphasized that the prevalence and utilization data are required for public health service planning. To our knowledge there is no large study regarding the utilization of health services for neurological diseases in India. This is an attempt made in that direction and to plan a larger study. This study has certain limitations.

The methodology, the screening questionnaire did not include all neurological diseases like trauma and peripheral neuropathy. Thus this may underestimate the overall burden. Also this was conducted in a small geographic area and few thousand households only. Thus cannot be

extrapolated to larger population. The specific relationship between various neurological disorders, occupation and socioeconomic status needs to be examined with particular reference to etiology, pathogenesis, and utilization of services and provision of care for neurological disorders.

The present study is a small drop in the vast population of our country and may be useful for health care policy makers in planning and establishing appropriate neurological services; and for planning a large scale epidemiological study for researchers.

The need for neurological services are high and utilization at available tertiary centers is low. Meaningful efforts are needed to be done to integrate and improve neurological health into primary health services.

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