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Epidemiology of neurological disorders in Warangal, India – risk factor assessment-based prospective observational study

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Abstract

Introduction and Objective. Neurological disorders are without a doubt among the most terrifying ailments that humans can experience. Although several observational studies on neurological illnesses have been conducted worldwide, there are relatively few such studies in India. The aim of the study is to research patients with neurological disorders in terms of their profiles, demographic data, family history, dietary habits, social habits, occupational status, geographical location, diagnosis, and treatment plan.

Materials and methods. The 6-month prospective observational study involved an in-depth interview schedule, and an information sheet in English and local languages using1,000 patients.

Results. The findings of this study demonstrate that the prevalence of cervical discomfort followed by ischemic stroke is rather significant, and that neurological diseases were more common in rural areas than in metropolitan areas. Patients had hypertension (HTN), diabetes mellitus (DM), either alone or both together, Ischemic stroke, pain, epilepsy, thyroid, migraine, tuberculoma, and hamorrhagic stroke as previous illnesses.

Conclusions. The prevalence of neurological problems was found to be higher in individuals over the age of 40 than in younger people. According to the statistics, females (58.5%) are more prone to neurological problems than males (41.5%). The patients' body weight was also taken into account, and it was shown that the majority of the individuals with neurological diseases (33.7%) were of normal body weight. The frequency of neurological diseases was found to be much higher (55%) in rural regions than in urban areas (45%). The majority of patients with neurological illnesses were housewives. Analysis concluded that cervical discomfort is the most common neurological illness, compared to other neurological disorders.

Key words

STROBE, epidemiology, neurological disorders, observational study, risk factor asessment

INTRODUCTION

Apart from cerebral neoplasia, injuries and infections, at least 2,500 Indians per million are plagued by neurological problems [1–3]. Numerous risk variables involved in neurological diseases need to be recognized in order that their effect must correctly understood for the benefit of the patients [4–10]. The aim of this study is to identify the pattern of prevalence across different neurological disorders, collect data pertaining to the risk factors and outcomes of the disorders, and stratify patients based on demographic information, past medical and familial history, diet, social habits and occupation.

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MATERIALS AND METHOD

Study design. The prospective cohort observational study was conducted within the Secondary and Tertiary care hospitals of Warangal, the second largest city in Telangana, India. The area covers 471 square kilometres and the city population is around 10 lakhs among whom 62% live in urban areas with diverse ethnic, religious, cultural, socio-economic, and linguistic backgrounds. With the help of the STROBE approach, the results were assessed in terms of risk variables that affect the neurological state of individuals [11–22].

The 6-month study involved an in-depth interview schedule; an information sheet was developed in English. All the patients arriving at the hospital with neurological complaints were approached. All interviews were conducted in Hindi, English, or the preferred local dialect (Telugu), by three researchers – the main interviewer and two note takers. The follow-up was done for each subject who took his updates. The examination was carried out using an established questionnaire produced by the National Institute of Mental Health and Neurosciences (NIMHANS), with

slight adjustments depending on survey needs and local conditions [23–27].

All subjects with neurological symptoms and signs were clinically observed and documented. Of the 1,700 individuals approached, 1,000 were enrolled as the remainder did not meet the inclusion criteria, or were not willing to participate in the study [28–32]. Data collection was inspected occasionally in order to obtain a systematic layering of information. The study variables included age, gender, residence (rural/urban), occupation, financial status, dietary habits, smoking habits, tobacco chewing, alcohol consumption, past medical history, family history of diseases, and the presence of emotional disturbances in personal or professional life. Previous prescriptions saved in the form of hard and soft copies were collected and studied with the assistance of neurologists and psychiatrists.

The study inclusion criteria were inpatients and outpatients with neurological disorders belonging to all age groups and both genders. Exclusion criteria included pregnant women and patients unwilling to participate in the study. Data sources included patient case notes, laboratory reports, reviews of records and treatment charts. The limitations of the study were that the majority of patients came from rural settings, which meant that their illiteracy and insecurity prevented effective data collection. The short study time led to the absence of follow-up of the study.

RESULTS

Of the total of 1,000 patients enrolled in the observational study, females (58.5%) were found to be more prone to neurological disorders. The highest percentage of subjects (37.9%) belonged to the age group of 41–60. The overall incidence of neurological ailments was much higher (55%) in remote areas than in the cities. According to the findings, hypertension (49.5%) was the leading risk factor for stroke, while diabetes mellitus (20.3%) was the leading risk factor for neuropathy. Alcohol usage (45.8%) was shown to be the leading cause of their disease, followed by cigarette smoking (5.7%), according to socio-demographic statistics. Based on their occupations, a majority of the patients with neurological disorders were found to be homemakers (30.2%), followed by employees (25%), farmers (22.8%), students (13.5%) and daily labourers (8.5%) (Tab. 1),

Cervical Pain (19.1%) was ranked high in occurrence followed by ischemic stroke (15.4%), migraine (14.9%), lumbar pain (10.1%), neuropathy (7.6%), haemiplegia (7%), vertigo (5.4%), headache (2.9%), haemorrhagic stroke (2.4%), Parkinson's disease (1.3%), tuberculoma (0.9%), Bell's palsy (0.8%), trigeminal neuralgia (0.8%) (Tab. 2).

The study included 1,000 individuals, with the majority (20.1%) being between the ages of 40 – 50. Research by Callixte KT et al. yielded similar results [33] on the pattern of neurological disorders in out-patient consultations in Africa. It was found that subjects aged 40 and older showed more neurological ailments (71.3%), and women (58.5%) showed a higher percentage of occurrence than men (41.5%). In a study by Gioffrè-Florio et al. [34, 35] on the prevalence of neurological disorders in Bangalore, India, it was found that the rural population was more prone to neurological ailments than the urban population. Identical results were obtained by Panegyres PK et al., [36], who estimated the neurological disease burden of the rural community in Eastern India, and demonstrated that rural subjects showed more neurological ailments than the urban population. 922 (92.2%) patients were non-vegetarians, and only 78 (7.8%) patients were vegetarians. The results were identical with

Table 1. Distribution of disease occurrence in patient population

Age (Years)	Gender	Past Medical History	Social History	Occupation
0-20 (6%)	Males (41.5%)	Hypertension (49.5%)	Alcohol (45.8%)	Homemakers (30.2%)
21-40 (29.2%)	Females (58.5%)	Diabetes Mellitus (20.3%)	Smoking (5.7%)	Employees (25%)
41-60 (37.9%)		Stroke (12.2%)	Alcohol + Smoking (3.7%)	Farmers (22.8%)
61-80 (24.9%)		Pain (9.5%)	Pan / Gutka (0.8%)	Students (13.5%)
81-100 (2%)		Epilepsy (8.5%)		Daily labourers (8.5%)

Table 2. Distribution of neurological disorders with percentage of occurrence

Cerebro- vascular diseases	Headache And Pain	Movement Disorders	Neuro-muscular Disorders	Auto immune Disorder	Cranial Nerve Disorders	Neuro-degenerative Disorders	Tumours	Neurological Infections
Ischemic stroke (15.4%)	Cervical pain (19.1%)	Vertigo (5.4%)	Myasthenia gravis (0.1%)	Guillain barre syndrome (0.5%)	Bell's palsy (0.8%)	Parkinson's disease (1.3%)	Tuberculoma (0.9%)	Vestibular Neuronitis (0.4%)
Haemorrhagic stroke (2.4%)	Lumbar pain (10.1%)	Paroxysmal dyskinesia (0.1%)	Multiple sclerosis (0.1%)		Trigeminal neuralgia (0.8%)	Alzheimer's disease (0.2%)		
Haemiplegia (7%)	Headache (2.6%)							
Quadriplegia (0.1%)	Neuropathy (7.6%)							
Deep vein thrombosis (0.1%)	Migraine (14.9%)							
Posterior reversible encephalopathy syndrome (0.1%)								

those of Medawar E et al. Of the total number of patients, 258 (25.8%) had the habit of drinking alcohol, 57 (5.7%) were smokers, 37 (3.7%) had both habits, 8 (0.8%) had the habit of chewing tobacco, and the remainder – 640 (64%), were found to be free from these habits. Pan B, et al. [38] showed the same results on neurobiological and neurocognitive consequences of chronic alcohol use and cigarette smoking in North America, and found 58% of patients had the habits of both alcohol and smoking, followed by 32% with the habit of drinking alcohol, and 15% had the habit of smoking.

CONCLUSIONS

The study analyzed the key risk factors for brain diseases and which appear to be gender-specific, with females being more vulnerable since their hormones impact neuritis development, synapse formation, myelin fabrication, and neural plasticity. The frequency of neurological illnesses was significantly higher in the countryside (55%), where a greater proportion of people engaged in agriculture. Cervical discomfort was discovered to be the leading cause of sickness in farmers (19.1%). From dawn to dusk, the heavy work load that farming demands has a greater effect on the deterioration of spinal healt, and can also be a pivotal factor in generating cervical pain. Alcohol intake (45.8%) is another big risk factor, as alcohol travels quickly through the blood-brain barrier, influencing the brain›s neurons directly, and can damage or even kill a cell, slowing down the signal propagation. The findings presented confirm that the data supports previous studies.

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