



PATTERN OF NEUROLOGICAL DISEASES IN ADULT OUTPATIENT NEUROLOGY CLINICS IN TERTIARY CARE HOSPITAL

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ABSTRACT

Objective/Aim: A study was conducted to determine the spectrum of neurological disorders seen in outpatient departments.

Materials and Methods: This study included all outpatients referred to or presented to the neurology department Liaquat University of Medical and Health Sciences for six months from February 2021 to July 2021. The proforma includes information about their demographics, disabilities, and diagnoses. According to the International Classification of Diseases, neurological disorders were classified into different categories by a neurologist. We used SPSS 23.0 for entering and analyzing data.

Results: The study period saw 470 patients visit the neurology outpatient clinic. There were more female participants (54.6%) than male participants. Among the participants, the mean age was 43.84 ± 18.58 . There were 257 patients from urban areas (54.6%), and 213 from rural areas (45.3%). Men were significantly more likely to suffer from vascular diseases (P-value 0.05). Psychiatric disorders and nerve disorders are more likely to be female than male (P-value <0.05). Elderly age groups were more likely to suffer from cardiovascular diseases, movement disorders, and dementia (P-value < 0.05). There was a high prevalence of epilepsy in pediatrics, headaches and mental illness

in young people, as well as nerve disease most prevalent in middle-aged and older individuals (P value <0.05).

Conclusion: There was a higher prevalence of psychiatric disorders followed by nerve disorders and headaches. Among different age groups, prevalence varied significantly, and there was almost no difference by gender.

Keywords: Neurological disorders, epidemiology, clinical pattern

INTRODUCTION

Around the world, neurological diseases are the leading cause of disability adjusted life years and the second most common cause of death.¹ At the global level, they contribute to 5.53% of total deaths.² Globally, they are responsible for up to 28% of disability and contribute to over 20% of the world's disease burden.³ Around 85% of the world's population lives in developing countries, which have the highest rate of neurological diseases.³ There are several types of neurological disorders that are prevalent in Western countries, such as tension-type headaches, migraines, prescription overuse headaches, and Alzheimer's disease and other dementias.⁴ The leading cause of morbidity after stroke is Alzheimer's disease, followed by other dementias.⁴ In developing countries, stroke rates are higher, with 80% of strokes occurring there, according to the World Health Organization.⁵ The number of epileptic patients worldwide approximates 70 million, with 90% living in developing countries.⁶ Demographic and epidemiological changes are contributing to the growing incidence of neurological disorders (NDs) in both developed and developing countries. There was a 3.0% increase in disability-adjusted life-years (DALYs) caused by neurological disease, mostly epilepsy and migraines. The global burden of NDs was 11.3 million DALYs, while dementia was a major cause in some regions.⁷ Low- and middle-income countries (LMICs) are believed to suffer from a higher incidence of neurological disease among adults.⁸ In developed countries, the difference in neurologic disorders and stroke-related mortality rates at older ages is around 40 to 60%, and in sub-Saharan Africa, it is about 70%.^{7,9,10} Pakistan's age-standardized death rate is almost 77% caused by non-communicable diseases (NCDs) and injuries, according to the Worldwide Problem of Disease 2010 report.¹¹ Developing countries suffer from a high burden of neurological diseases, and it is imperative to understand the incidence and pattern of neurological disorders by geography, social class, culture, religion, and ethnicity. Mental retardation, strokes, epilepsy, febrile convulsions, headaches, and convulsions were the most common disorders.¹² There are 131/1000 individuals in Saudi Arabia suffering from neurological disorders, according to a study conducted there. A high prevalence of headaches, epilepsy, febrile convulsions, and mental retardation was observed in comparison to stroke, dementia, and Parkinson's disease.¹³ Hospital-based populations in Pakistan are not necessarily representative of the general population when it comes to the frequency and patterns of major neurological disease. In Pakistan, neurological diseases are not known to occur often or to be prevalent.¹⁴ In contrast, according to data from the Global Burden of Disease Study 2010, stroke causes more than half of disabilities due to neurological disorder. The most common neurological disease is dementia, though migraine, epilepsy, and tetanus are also prevalent.¹⁵ There are approximately 200,000 people in Pakistan who suffer from dementia. It is estimated that close to 200,000 people visit neurology clinics each year in Pakistan. Patients' demographics and diagnoses may differ from one region to another. In a tertiary care hospital, patients can be identified by demographic and diagnosis information. This includes demographic information such as gender and age, along with the frequency of different neurological disorders. Studies, interventions, and clinical trials conducted in communities may contribute to population health improvement, according to the findings of this database.

Our aim was to examine the spectrum of neurological diseases in outpatient care. The distribution of neurological disorders will also be described based on age, gender, and area. A tertiary care hospital's outpatient neurological clinic was studied to estimation the frequency of the main NDs.

MATERIAL AND METHODS

The study was conducted at the Liaquat University Hospital Hyderabad/Jamshoro for six months from February 2021 to July 2021. as an observational cross sectional study. The Hospital Ethical Committee approved the study and a written informed consent was obtained from the participants or attendants. A study was conducted on all patients referred to the neurology outpatient department or presenting to the OPD. The baseline characteristics, level of disability, and diagnosis of the patient were gathered using a predesigned proforma. In accordance with the International Classification of Disease,¹⁶ the neurological conditions were classified in different categories by a neurologist.

Statistical Analysis: We performed statistical analyses with SPSS version 23.0. A Mean \pm Standard Deviation method was used to analyze quantitative variables, and a frequency and percentage method was used to analyze qualitative variables. The frequencies of diseases were calculated based on age, gender, residence and education. When appropriate, the chi-square test and T test were applied. The significance level was set at a P value of <0.05 .

RESULTS

The study period saw 470 patients visit the neurology outpatient clinic. A majority (54.6%) of the participants were females and the remainder were males. Among the patients, the mean age was 43.84 ± 18.58 . There were 257 patients from urban areas (54.6%), and 213 from rural areas (45.3%). We have summarized the educational status, disability grade, and co-morbid conditions in Table-I. It was revealed that 139 patients (29.5%) had psychiatric illnesses, followed by 109 (23.1%) and 108 (22.9%) with nerve disorders and headaches. The muscular disorder was present in 69 (14.6%) people, and the vascular disease was present in 63 (13.4%) people. There were 27 patients diagnosed with epilepsy (5.7%). There was a reduced prevalence of the rest of the disorders. A gender-specific trend of neurological disorders is shown in Table II. There was a significantly higher incidence of cardiovascular diseases among males (P-value 0.005). A significantly higher rate of neurological disorders and psychological disorders was observed in females (P-value <0.05). The frequency of diseases based on gender is shown in Table II. According to the study, the majority of participants are between the age group 17-36years. In order to determine the trends in disease among different age groups, age stratification was used. There was a significant increase in vascular diseases among those who were 57-70 years old (P value <0.05). It was most common to observe movement disorders and dementia at the age of ≥ 70 (P value 0.000). There was a greater prevalence of epilepsy in pediatric age groups (P value 0.002). There was a greater prevalence of headaches among those aged 17-36 years (P value <0.05). There were 57 patients (35.4%) from 37-56 years of age with nerve disorders (P-value of <0.05). In the 17-36 age group, psychiatric disorders were more prevalent (P-value 0.001). A stratified analysis of patients based on their residence revealed no significant differences in disease patterns. Pakistanis were more likely to suffer from epilepsy and nerve disorders (P value <0.05).

Table-I. Baseline characteristics of the study participants (n=470).

Demographic Features		Frequency	Percentage
Mean age		43.84 \pm 18.58	
Education	Illiterate	250	53.1%
	Matric	103	21.9%
	Intermediate	38	8.0%
	Bachelors and above	79	16.8%
Residence	Urban	257	54.6%
	Rural	213	45.3%
Gender	Male	213	45.3%
	Female	257	54.6%
Disability	Grade 0	233	49.5%
	Grade 1	155	32.9%
	Grade 2	33	7.0%

	Grade 3	24	5.1%
	Grade 4	19	4.0%
	Grade 5	6	1.2%
Co morbid states	HTN	66	14.0%
	DM	21	4.46%
	IHD	12	2.5%
	More than 1 Premorbid states	41	8.7 %

Table-II. Neurological diseases are distributed based on gender (n=470).

Neurological Disorders	Male (n= 213)	%	Female(n= 257)	%	P-Value
Vascular	38	17.8%	25	9.7%	0.005*
Infections	5	2.3%	4	1.5%	0.46
Demyelinating diseases	2	0.9%	2	0.7%	0.75
Movement disorders	17	7.9%	12	4.6%	0.17
Dementia	6	2.8%	2	0.7%	0.07
Epilepsy	13	6.1%	14	5.4%	0.67
Headaches	43	20.1%	65	25.2%	0.32
Nerve disorders	30	14.0%	79	30.7%	0.05*
Muscle disorders	31	14.5%	38	14.7%	0.73
Spinal disorders	11	5.1%	12	4.6%	0.7
Psychiatric disorders	53	24.8%	86	33.4	0.045*

Table-III. Neurological diseases are classified according to age (n=470)

Neurological Disease	≤ 16 years n=18 (3.8%)	17-36 years n=172 (36.5%)	37-56 years n=161 (34.2%)	57-70 years n=99 (21%)	≥70 years n=20 (4.2%)	P-Value
Vascular	0	7(4.0%)	24 (14.9%)	27 (27.2%)	5 (25.0%)	0.05*
Infections	0	5 (2.9%)	2 (1.2%)	1 (1.0%)	1 (5.0%)	0.327
Demyelinating diseases	1 (5.5%)	2 (1.1%)	1 (0.6%)	0	0	0.174
Movement disorders	0	3 (1.7%)	6 (3.7%)	14 (14.1%)	5 (25.0%)	0.05*
Dementia	0	0	0	4 (4.0%)	4 (20.0%)	0.05*
Epilepsy	4 (22.2%)	12 (6.9%)	6 (3.7%)	2 (2.0%)	3 (15.0%)	0.002*
Headaches	5 (27.7%)	63 (36.6%)	32 (19.8%)	7 (7.0%)	1 (5.0%)	0.05*
Nerve disorders	1 (5.5%)	28 (16.3%)	57 (35.4%)	23 (23.2%)	1 (5.0%)	0.05*
Muscle disorders	2 (11.1%)	24 (13.9%)	28 (17.4%)	15 (15.1%)	1 (5.0%)	0.360
Spinal disorders	2 (11.1%)	7 (4.0%)	9 (5.5%)	5 (5.0%)	0	0.441
Psychiatric disorders	3 (16.6%)	69 (40.2%)	43 (26.7%)	22 (22.2%)	1 (5.0%)	0.001*

Table-IV. Neurological disease distribution according to residence (n=470).

Diseases	Residence		P-Value
	Rural n=213 (45.3%)	Urban n=257 (54.6%)	
Vascular	27 (12.6%)	38 (14.7%)	0.33
Infection	5 (2.3%)	3 (1.16%)	0.23
Demyelinating disease	1 (0.4%)	3 (1.16%)	0.48
Movement disorder	13 (6.1%)	15 (5.8%)	0.67
Dementia	4 (1.8%)	3 (1.16%)	0.57
Epilepsy	10 (4.6%)	20 (7.78%)	0.23
Headache	43 (20.1%)	71 (27.6%)	0.07
Nerve disorders	51 (23.9%)	56 (21.7%)	0.47
Muscle disorders	35 (16.4%)	30 (11.6%)	0.17
Spinal disorders	13 (6.1%)	8 (3.11%)	0.12
Psychiatric disorders	62 (29.1%)	78 (30.3%)	0.68

DISCUSSION

Pakistani researchers conducted the study to define the frequency of neurological disorders (NDs). There are often burdens and disabilities associated with NDs, which adversely affect public health. Among all outpatient visits in our study, 34% were from people between the ages of 45 and 66. According to a study published in Dhaka, Bangladesh, 59.7% of admitted patients were above the age of 40.¹⁷ It was reported in a Nigerian study that 40.8% of respondents were aged 51-60.¹⁸ According to further studies in Pakistan,¹³ Bangladesh,¹⁷ and African countries, the study participants had a mean age of 45 years.^{19,20} We found that most patients were self-referred and that most patients had headaches, strokes, epilepsy, depression, musculoskeletal pain, Parkinson's disease, vertigo, cervical radiculopathy, dementia, and meningitis as their major symptoms. Several studies have come to similar conclusions about headache disorders such as a study conducted by Alam et al., in Peshawar, Pakistan,¹³ an Indian study by Anand et al.,²¹ and a study showed by Callixte et al., in sub-Saharan Africa.^{20,22} In line with previous studies, stroke accounted for 98.2% of outpatient visits.^{17,18,20,23} Globally, 86% of stroke deaths occur in developing countries, according to WHO estimations in 2001.²⁴ Pakistani researchers found that stroke prevalence is much higher than worldwide literature at (19.1%) 19000 strokes per 100,000 people.²⁵ Approximately 44 to 843 strokes occur for every 100,000 people in India, according to one study.²⁶ Pakistani and Western populations need to be studied further to determine whether stroke subtypes are more prevalent in Pakistan.²⁷ The prevalence of meningitis as an out-patient clinic visit was also the second highest in our study. Epilepsy and cerebrovascular accidents were the most common presentations in a previous study.¹³ Among the most common diagnoses reported in a study conducted in Bangladesh were stroke and seizures.¹⁷ There is a high frequency of epilepsy between people under the age of 30. Epilepsy is the second most common neurological disorder after meningitis.²⁸ A common neurological disorder, epilepsy affects approximately 50 million people worldwide.²⁹ It is communal for older people to suffer from neurodegenerative diseases. Globally, Parkinson's disease prevalence increases with age, according to a meta-analysis. The number of people suffering from Parkinson's disease worldwide is estimated at 7 to 10 million.³⁰ There was a difference in dementia prevalence across geographical regions,³¹ but dementia was common both among young and old.³² I estimated that 1.9% of the population in South Asia suffers from dementia.³³ Our neurological setting sees 45.8% of patients with Alzheimer's disease. Mental health indicators in Pakistan predict a gloomy future, with depression prevalence estimated at 6%, schizophrenia prevalence estimated at 1.5%, epilepsy prevalence estimated at 1–2%, and Alzheimer's disease prevalence estimated at 1%.³⁴ Research on these diseases is lacking, so it is difficult to determine how many people are affected. Pakistan has a population of 194.9 million, making it one of the world's most populous countries. It is estimated that at least 10% of Pakistanis suffer from neurological diseases. It has been reported that, almost 75% of government hospitals lack neurologists and >70% of medical colleges do not have neurologists. Approximately 10 to 20 neurologists are produced in Pakistan each year, with about half of them leaving the country.

CONCLUSION

Based on our study, most of the patients seen in the OPD have psychiatric disorders followed by nervous disorders and headaches. There was a significant increase in disorders among certain age groups, and few of these disorders were gender specific. It is also possible to allocate resources to help prevent and treat NDs in Pakistan by estimating age, gender and area specific disease burdens.

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