

**Original Research Article****Profile of Seizure in Elderly Population Attending Rural Tertiary Care Centre of Central India**

Authors

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Email: [vk.rims@gmail.com](mailto:vk.rims@gmail.com), Mobile: +919450865362**ABSTRACT**

**Background:** Epilepsy is a major health problem in developing countries including India. The epilepsy incidence has been steadily increasing by average annual rate of 3.5% in the elderly population over the past 2 decades. There is considerable variability in causes and risk factors for seizures and epilepsy in the elderly. Studies in rural population regarding profile of seizure patients in elderly are lacking.

**Aim:** To evaluate profile of seizures in elderly population attending a tertiary rural medical institute in central India.

**Methods:** This was a cross sectional study carried out on elderly patients who had seizures and satisfied inclusion and exclusion criteria. All patients underwent through history, examination and investigations. Statistical analysis of the data was performed.

**Results:** Total 101 patients were included in this study, out of which 61 patients were male and 40 were female. 20 patients belonged to age group between 61-70 years(19.80%), 49 patients were in age group between 71-80 years(48.51%) and 32 out of 101 patients were in age group above 80 years(31.68%). 17 had diabetes mellitus (16.83%), 21 were known hypertensive (20.79%), were as 13 patients were suffering from both diabetes mellitus and hypertension (12.87%). However in 38 patients no comorbidities were present (37.62%). 4 patients were having coronary artery disease (11.88%). 57 had GTCS (56.44%), 16 had episodes of simple partial seizure (15.84%), 20 patients had complex partial seizures (19.80%). 8 out of 101 patients presented with status epilepticus (7.92%). In this study aetiology of seizures could not be determined in 30 patients (29.70%). Stroke was most common aetiology identified for seizures.

**Conclusion:** GTCS is most common type of seizure in elderly population (56.44%). Stroke is the most common aetiology identified in rural elderly population (38.61%). However no aetiology was found in 29.7% patients. Most of the patient (62.38%) included in this study have comorbid conditions like diabetes, hypertension and coronary artery disease.

**Keywords:** Epilepsy; Seizure; Stroke; Diabetes Mellitus; Hypertension; Elderly.

## Introduction

Old age is the most common time in life to develop epilepsy. The clinical manifestations of seizures, the causes of epilepsy, and the psychosocial impact of the diagnosis can be different in older people than in younger ones. Age related physiological changes can affect the pharmacokinetics and pharmacodynamics of antiepileptic drugs. The situation is compounded by a paucity of good clinical studies.<sup>1</sup> Epilepsy is a major health problem in developing countries including India.<sup>2</sup> Epilepsy involving at least two unprovoked seizure episodes<sup>3</sup> is the third most prevalent neurological condition affecting the elderly, after stroke and dementia-related diseases<sup>4</sup>. The epilepsy incidence has been steadily increasing by average annual rate of 3.5% in the elderly population over the past 2 decades,<sup>5</sup> while the incidence rates in the paediatric and nonelderly adult population have been decreasing. In developing countries, it has been estimated that incidence rate for epilepsy was higher (about 100-190/100,000/year) than those in developed countries (40-70/100,000/year).<sup>6</sup> In developed countries, aetiology of epilepsy is also age-dependent. In children, about 20% are remote symptomatic, 50% are cryptogenic while 30% are idiopathic. There is considerable variability in causes and risk factors for seizures and epilepsy in the elderly.<sup>7,8</sup> In elderly, about 55% is remote symptomatic while 45% are idiopathic/cryptogenic.<sup>9</sup> Studies in rural population regarding profile of seizure patients in elderly are lacking.

## Material and Methods

This cross sectional study was carried out on 101 patients in UPUMS, Saifai from Oct 2016 to Mar 2017 who aged >60 years and presented with or had seizures during hospital stay.

### Inclusion criteria

All patients with epilepsy and epileptic seizures after 60 years attending the departments of medicine were included.

### Exclusion criteria

Patients with seizures below 60 years.  
Head trauma patients.

Medical history with inborn brain injury or those who were taking anticonvulsant drugs prescribed because of seizures accompanied by loss of consciousness were excluded.

The diagnosis of epilepsy was made under the guidelines of the International League Against Epilepsy 2010.

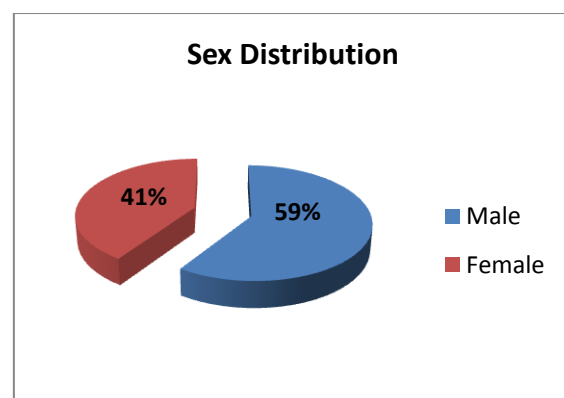
Details about each patient's medical history, family history, and seizure description, circumstances of seizures, neurological findings, and treatment was recorded by preformed questionnaire. CBC, KFT, LFT, Serum Electrolytes, RBS, Blood Sugar Fasting and PP, HbA1c, NCCT Head and MRI if required were done.

Data was tabulated and statistical analysis was done by SSPS version 22.

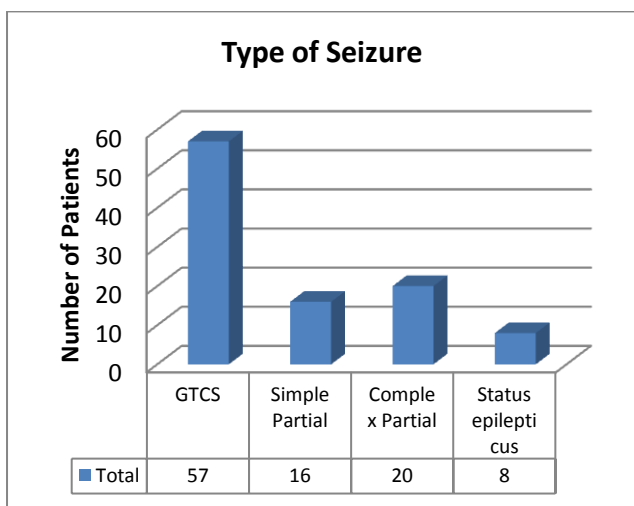
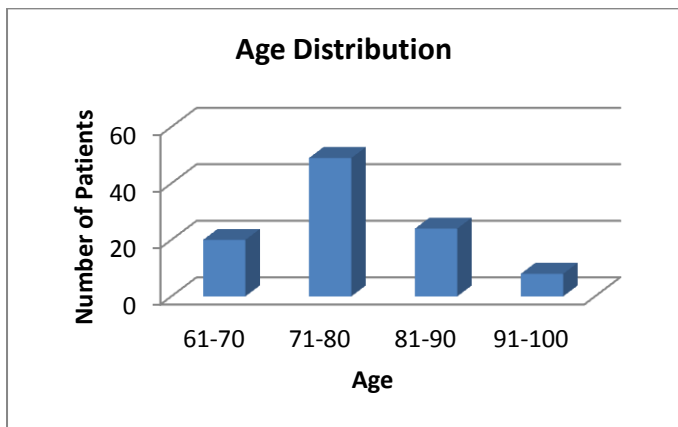
## Results

In this study total 101 patients were taken who satisfied the inclusion and exclusion criteria. Minimum age was 61 years and maximum age was 94 years, with mean age of 77.23 years.

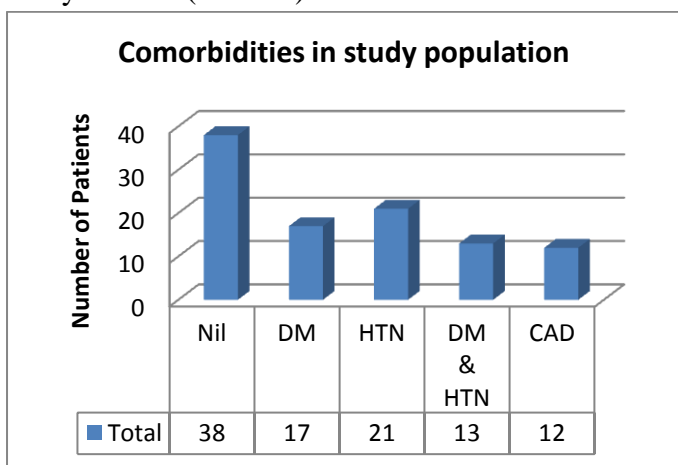
Out of 101 patients 60 patients were male and 41 were females. Males were 59.40% and females were 39.60%.



20 patients belonged to age group between 61-70 years(19.80%), 49 patients were in age group between 71-80 years(48.51%) and 32 out of 101 patients were in age group above 80 years(31.68%). Among 101 patients included in this study 57 had GTCS (56.44%), 16 had episodes of simple partial seizure (15.84%), 20 patients had complex partial seizures (19.80%). 8 out of 101 patients presented with status epilepticus (7.92%).

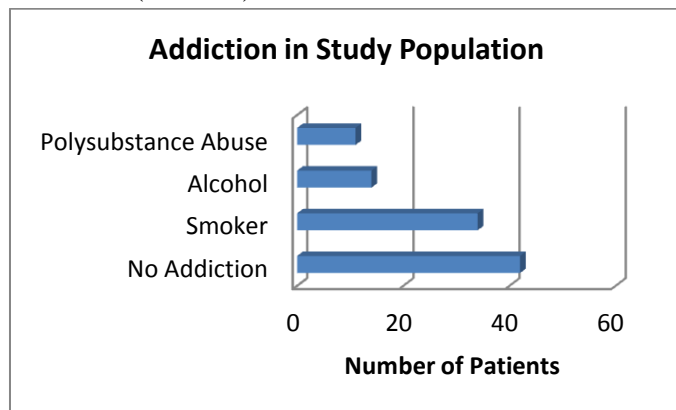


Out of 101 patients 17 had diabetes mellitus (16.83%), 21 were known hypertensive (20.79%), were as 13 patients were suffering from both diabetes mellitus and hypertension (12.87%). However in 38 patients no comorbidities were present (37.62%). 4 patients were having coronary artery disease (11.88%).



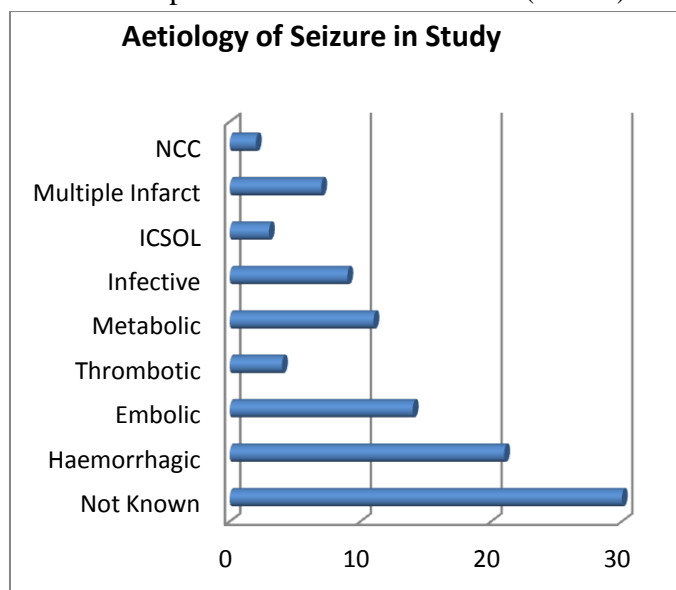
In our study 34 patients were smoker (33.66%), 14 out of 101 patients consumed alcohol (13.86%), 11 patients were polysubstance abuser (10.89%).

However in 42 patients (41.58%) no addiction was present. Among patients who had addiction, 13 were females (31.71%) and all of them were smoker. Among 61 males, 21 were smokers (35%), 14 consumed alcohol (23.33%), 11 were polysubstance abuser (18.33%) while 14 male patients had no addiction (13.86%).



Out of 101 patients included in this study aetiology of seizures could not be determined in 30 patients (29.70%). Stroke was most common aetiology identified for seizures. 39 patients had stroke (38.61%). Among patients with stroke as aetiology for seizures 21 (53.84%) had haemorrhagic stroke, 14 (35.89%) had embolic and 4 (10.25%) patients had thrombotic stroke.

Metabolic causes were found in 11 out of 101 patients (10.89%), 7 patients had evidence of multiple infarct (6.93%), 3 had ICSOL (2.97%) and 2 were diagnosed to have NCC as a cause of seizure. 9 out of 101 patients had CNS infection (8.91%).



Aetiology of seizures in various age groups in mentioned in table given below.

AETIOLOGY	No. of Patients in Age Groups (Yrs)		
	61-70	71-80	>80
Not Known	7	13	10
Haemorrhagic	4	11	6
Embolic	3	6	5
Thrombotic	1	2	1
Metabolic	2	7	2
Infective	1	3	5
ICSOL	0	1	2
Multiple Infarct	0	6	1
NCC	2	0	0

## Discussion

In this study mean age of the patient was 77.23 years. Male: Female ratio was 1.4:1. Most common type of seizure observed was GTCS. Stroke was found to be most common aetiology for seizure in elderly. Sanjib Sinha et al<sup>10</sup> showed the mean age of the patients was  $68.0 \pm 7.5$  years. Two third patients were male (n = 131, 65.2%; M:F was 1.8:1). The most common type of seizure noted was simple partial seizures (n = 84; 42%), followed by generalized tonic clonic seizure (n = 61; 30.3%), and complex partial seizure (n = 55; 27.4%). Study done by Tomotaka Tanaka et al. (2015) shows that Post Stroke Seizure recurred in 31 patients (30%) during the follow-up. Total of 104 patients (71 men, mean age,  $72.1 \pm 11.2$  years) were analyzed. Independent predictors of recurrent PSS were age <74 years.<sup>11</sup>

Study conducted by Telma M. R. de Assis et al (2015) showed that the most common etiology was ischemic stroke (37%), followed by neoplasias (13%), haemorrhagic stroke (12%), and metabolic disturbances (5.5%).<sup>12</sup>

Study done by Jayant N et al (2014) shows that status epilepticus has also been reported to be more frequent in the elderly. In our study status epilepticus was found in 7.92% patients. It was evident from their study that in patients who are 60 and older, the annual incidence is 86/100,000, which is almost twice that seen in the general population. It was even higher after the age of 70 years.<sup>12</sup>

Age wise data is comparable to our study. Studies by Hui-Jun Tian et al (2015), showed the following

inferences with their study in a total of 104 outpatients, comprising of 53 men and 51 women. According to the known etiological factors, cerebrovascular disease (53.2%) is the most common underlying cause, followed by craniocerebral trauma (16.1%), primary or metastatic neoplastic disease (16.1%), and others (14.5%). Our studies also shows Stroke as most common aetiology of seizure in elderly. The most common type of seizure in the group studied was partial seizures (51.9%), followed by generalized seizures (37.5%).<sup>13</sup> In our study GTCS is most common type of seizure in elderly population. Cerebrovascular disease is the most commonly identified cause of adult-onset epilepsy. Cardioembolic infarction, haemorrhagic stroke, and cortical lesions are most commonly associated with seizures, called post-stroke seizures (PSS).<sup>14-15</sup> In aged individuals, PSS accounts for 39%–45% of all seizures.<sup>16-17</sup>

## Conclusions

GTCS is most common type of seizure in elderly population (56.44%). Stroke is the most common aetiology identified in rural elderly population (38.61%). However no aetiology was found in 29.7% patients. Most of the patient (62.38%) included in this study have comorbid conditions like diabetes, hypertension and coronary artery disease. Haemorrhagic stroke were found more as an aetiology of seizure in elderly in rural population may be because of low awareness of hypertension among rural population. Among the study population addiction is very common in males and less common in females. Further research work with many more subjects is required to better understand underlying aetiology for proper management of disease.

**Conflicts of interest:** None

**Source of Funding:** None

**Ethical Issue:** None

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