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## RESEARCH ARTICLE

### AN EPIDEMIOLOGICAL STUDY ON EPILEPSY IN AMARAVATHI CAPITAL, AP: RURAL PERSPECTIVE A POPULATION BASED STUDY

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#### ABSTRACT

**Background:** Approximately 80 million people currently live with epilepsy worldwide. The estimated proportion of the general population with active epilepsy (i.e. continuing seizures or with the need for treatment) at a given time is between 4 and 10 per 1000 people. Globally, an estimated 2.4 million people are diagnosed with epilepsy each year. In our study we are considering the prevalence, adherence, risk factors.

**Method:** The study was conducted in rural areas of Amaravathi capital, AP. Socio-demographics, drug therapy, disease pattern, risk factors, socio-economic status were considered during the process of data collection.

**Results:** During the study period 703 subjects of either sex were enrolled. Out of 4000 study population 703 were suffering with epilepsy remaining 1797 were not suffering with epilepsy. It was found that epilepsy distribution was more between ages of 10-40 yrs of age. In our study it was found that 441(63) were males, 262(37) were females. Finally, it was found that epilepsy was more distributed in males than in females. The prevalence of epilepsy in rural areas in and around Amaravathi region was 17.575%. The prevalence epilepsy in rural areas of Amaravathi region per person day was 0.006276.

**Conclusion:** Based on the results obtained our study Strongly concludes that The prevalence of epilepsy in rural areas in and around Amaravathi region was 17.575% by October-December 2017. The prevalence epilepsy in rural areas of Amaravathi region per person day was 0.006276. The prevalence epilepsy in rural areas of Amaravathi region per person year was 2.2910.

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## INTRODUCTION

Epilepsy is a disorder that is best viewed as a symptom of disturbed electrical activity in the brain, which may have many etiologies. It is a collection of many different types of seizures that vary widely in severity, appearance, cause, consequence, and management. Seizures that are prolonged or repetitive can be life-threatening. Epilepsy is defined by the occurrence of at least two unprovoked seizures separated by 24 hours (Joseph, 2008). A focus of an epidemiological study is the population defined in geographical or other terms; for example, a specific group of hospital patients or factory workers could be the unit of study. A common population used in epidemiology is one selected from a specific area or country at a specific time. This forms the base for defining subgroups with respect to sex, age group or ethnicity. The structures of populations vary between geographical areas and time periods. Epidemiological analyses must take such variation into account. This study mainly focus on the prevalence rates of the epilepsy and assess the risk factors in the development of the disease.

## MATERIALS AND METHODS

**Study Design:** Cross-sectional prospective observational population based study.

**Study Period:** October 2017 to March 2018 (6 months).

#### Inclusion Criteria

- Patients who have seizures with irrespective of age and gender.
- Atleast one episode in the past 5 years.

#### Exclusion Criteria

- Patients with metabolic disorders.
- And who experienced status epilepticus.

**Study site:** Amaravathi Rural areas.

**Materials:** Data collection form, prescriptions

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**Statistical methods used for analysis:** Chi square test, Correlation coefficient, Regression analysis.

**RESULTS**

**Table 1. Age of onset of epilepsy in disease population**

Age in years	No. of cases (%)
<10 yrs	138(19.6)
10-20 yrs	262(37.27)
20-30 yrs	101(14.36)
30-40 yrs	74(10.5)
40-50 yrs	62(8.891)
>50 yrs	66(9.39)

**Table 2. Distribution of epilepsy among various age groups**

Age groups	Number (%)
Pediatrics	70(9.95)
Adolescents	185(26.32)
Adults	420(59.7)
Geriatrics	28(3.98)

**Table 3. Gender wise distribution of epilepsy**

Gender	Number (%)
Males(M)	441(63)
Females(F)	262(37)

**Table 4. Epidemiologic distribution of primary epilepsies in study population**

Type of primary epilepsy	Number (%)
Absence seizures	28 (3.98)
Myoclonic seizures	24(3.41)
Atonic seizures	20(2.84)
Partial seizures (simple/ complex)	96(13.65)
Febrile seizures	46(6.54)
Pseudo seizures	12(1.7)
Generalized tonic-clonic seizures	393(55.9)
Focal seizures	84(11.94)

**Table 5. Risk factors in epilepsy patients**

Risk factor	Number (%)
Asphyxia	192(27)
Consanguineous marriage	296(42)
Genetics	144(21)
Other unknown reasons	71(10)

Assesment of medication adherence in epilepsy patients: by using morisky medication adherence-8(mmas) scale

Adherence	Number (%)
High	102(17)
Moderate	50(8)
Low	451(75)

**Prevalence of epilepsy in rural areas around amaravathi region**

Number of persons diagnosed with epilepsy=703 Total population surveyed under study=4000

**Prevalence of epilepsy in rural areas of Amaravathi region:**

$$\begin{aligned} \text{Prevalence} &= \frac{\text{No. of self reported cases in the study}}{\text{No. of persons in the study population}} \\ &= \frac{703}{4000} \times 100 \\ &= 17.575\% \end{aligned}$$

The prevalence of epilepsy in rural areas in and around Amaravathi region was 17.575% by October-December 2017.

**Prevalence of epilepsy in rural areas of Amaravathi region per person day was:**

$$\begin{aligned} \text{Per person- day} &= \frac{\text{No. of cases}}{\text{Total number of time contributed by subjects in the study}} \\ &= \frac{703}{4000 \times 28 \text{ days each}} \\ &= 0.0062767 \end{aligned}$$

The prevalence epilepsy in rural areas of Amaravathi region per person day was 0.006276.

**Prevalence of epilepsy in rural areas of Amaravathi region per person year was:**

$$\begin{aligned} \text{Per person- year} &= \text{Cases per person days} \times 365 \text{ days/1- person year} \\ &= 0.006276 \times 365 \\ &= 2.291 \end{aligned}$$

The prevalence epilepsy in rural areas of Amaravathi region per person year was 2.2910.

**Assessment of risk factors by odds ratio and the level of significance with chisquare test:**

Risk factor	Cases (n=703)	Controls (n=3297)	Odds ratio(CI)	P- value
Consanguineous parentage	296	200	13.8182(11.2-16.9)	0.0001***
Birth asphyxia	192	50	26.3014(19.0-36.39)	0.0001***
Genetics	144	70	14.46(10.72-19.50)	0.0001***

### Correlation and regression analysis between various variables taken into Study:

Variables	P-value	Correlation value
Correlation between risk factors and primary epilepsy	0.0001***	0.655
Correlation between risk factors and secondary epilepsy	0.0001***	0.328
Correlation between therapy and medication adherence	0.0001***	0.314
Correlation between age and primary epilepsy	0.0001***	0.405
Correlation between age and secondary epilepsy	0.0001***	0.305
Correlation between gender and primary epilepsy	0.0001***	0.383
Correlation between gender and secondary epilepsy	0.0001***	0.434
Correlation between smoking and secondary epilepsy	0.0001***	0.358

### DISCUSSION

Out of 4000 study population 703 were suffering with epilepsy remaining 1797 were not suffering with epilepsy (From table-1). It was found that epilepsy distribution was more between ages of 10-40 yrs of age. In our study it was found that 441(63) were males, 262(37) were females (From Table-3). Finally, it was found that epilepsy was more distributed in males than in females. According to study Senthil Amudhan *et al.*, the epilepsy distribution was more in first decade of life and according to gender males were more effected than males. The prevalence of epilepsy in rural areas in and around Amaravathi region was 17.575%. The prevalence epilepsy in rural areas of Amaravathi region per person day was 0.006276. The prevalence epilepsy in rural areas of Amaravathi region per person year was 2.2910. According to study R. Sridharan *et al.*, prevalence was 6 persons per year. The most common type of epilepsy is found to be generalised tonic-clonic seizures (55.9%) and least is of (1.7%) pseudo seizures(From table-4). According to study R. Sridharan *et al.*, most common type is complete partial seizures(36%) and least is of myoclonic seizures(3%).According to our study 192(27%) had birth asphyxia as risk factor for epilepsy, 296(42%) had consanguineous parentage as risk factor for epilepsy, 144(21%) had positive genetics for epilepsy that acted as risk for them, 71(10%) had idiopathic risk factors that lead to epilepsy (From Table-5). Finally, it was found that consanguineous marriage was major risk factor for epilepsy; next to it birth asphyxia acted as second major risk factor for epilepsy in study population.

### Conclusion

Based on the results obtained our study Strongly concludes that The prevalence of epilepsy in rural areas in and around Amaravathi region was 17.575% by October- December 2017. The prevalence epilepsy in rural areas of Amaravathi region per person day was 0.006276. The prevalence epilepsy in rural areas of Amaravathi region per person year was 2.2910.

Finally, consanguineous parentage, asphyxia, genetics were considered as major risk factors that leads to epilepsy. It was found that on correlation and regression analysis between risk factors and type of epilepsy , therapy and medication adherence, age and types of epilepsy, gender and type of epilepsy, smoking and secondary epilepsy there was positive correlation between these variables with linear regression and the level of significance was 0.0001\*\*\* which was extremely significant.

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