

# The Epidemiological Pilot Analysis of Epilepsy Patients in a Community Clinic Aims to Inform Effective Care.

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## PURPOSE

Epilepsy is one of the most common neurologic disorders, affecting an estimated 3% of the population. Demographic, cultural, and socioeconomic factors influence not only the clinical characteristics of epilepsy but also overall patient well being and demands on health services.

Adult epilepsy patients are at increased risk for medical and neuro-psychiatric disorders that pose a challenge for epilepsy management and have a detrimental impact on quality of life. A thorough understanding of the targeted community is important for several reasons, including the following; (i) effective allocation of limited resources (ii) engagement of appropriate support organizations, such as the local chapter of the Epilepsy Foundation of Texas ([www.eftx.org](http://www.eftx.org)), (iii) delivery of much needed medical interventions, and (iv) improvement of quality of life and societal integration of our patients.

We aimed to identify the unique demographic and clinical features of the adult epilepsy patients receiving care at the Ben Taub General Hospital Neurology Clinic (BTGHNC). Our goal was to inform healthcare allocation and research initiatives targeting this unique community. **This study sought to inform about the community-specific demographic and clinical profile of epilepsy patients as an important first step towards formulating approaches for effective management of epilepsy in community clinics.**

## METHODS

The study was approved by the Baylor College of Medicine Institutional Review Board (protocol H-26320). We compiled summary records on almost 5,000 patients followed at the BTGHNC between 2007 and 2012 then selected a representative pilot cohort of 221 individuals treated between June 30 and August 1, 2012, for in-depth chart review.

Each patient's electronic medical record was analyzed with attention to the basic demographic information, as well as medical, cardiac, psychiatric, and neurologic conditions. We collected over 70 clinical and demographic data points on each patient, including data on gender, age, race, ethnic background along with pertinent diagnostic tests and treatment responsiveness.

## RESULTS: Summary characteristics

- The patients ranged in age from 14 to 73, with an average age of 36 for both males and females. The cohort showed a predominance of females (59%) and patients self identified as White Hispanics (61%) (Fig.1A). The predominant country of origin in the Latin American population was Mexico (35%).
- The observed ethnic distribution was consistent with data reported online for all patients served by the Harris Health System<sup>1</sup>. In contrast, a large-scale demographic survey of epilepsy patients across 19 US states found 74.1% whites, 8.8% blacks, 11.2% Hispanics, and 6.0% other race/ ethnicity<sup>2</sup>.
- Epilepsies were defined according to the ILAE guidelines. Symptomatic localization-related epilepsy (SLRE), i.e., epilepsy due to an underlying structural abnormality of the brain was dominant in our study cohort (Fig.2)<sup>3</sup>. The most common lesions were **vascular, developmental, and infectious**.

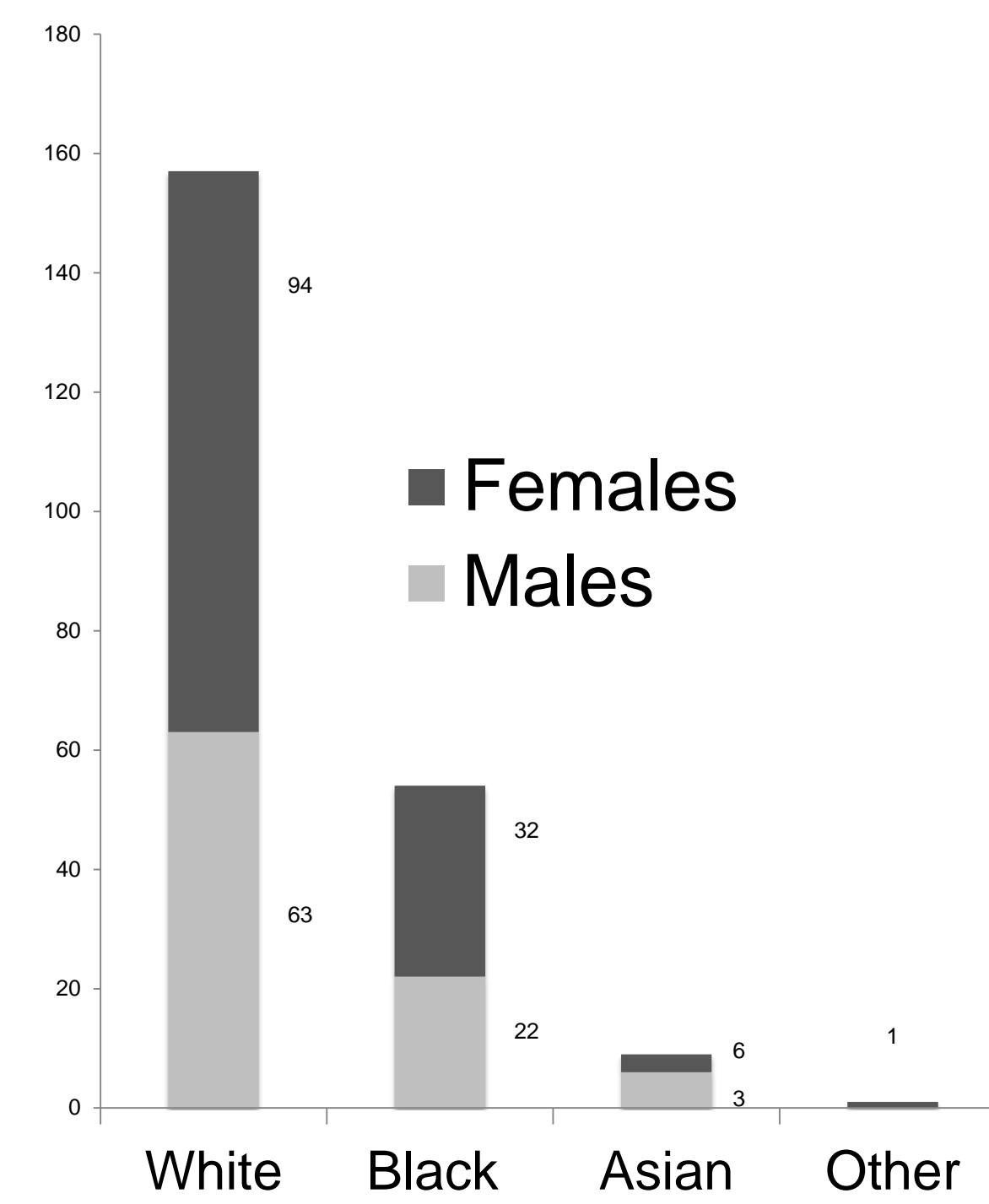


Fig 1A. Distribution by race and gender

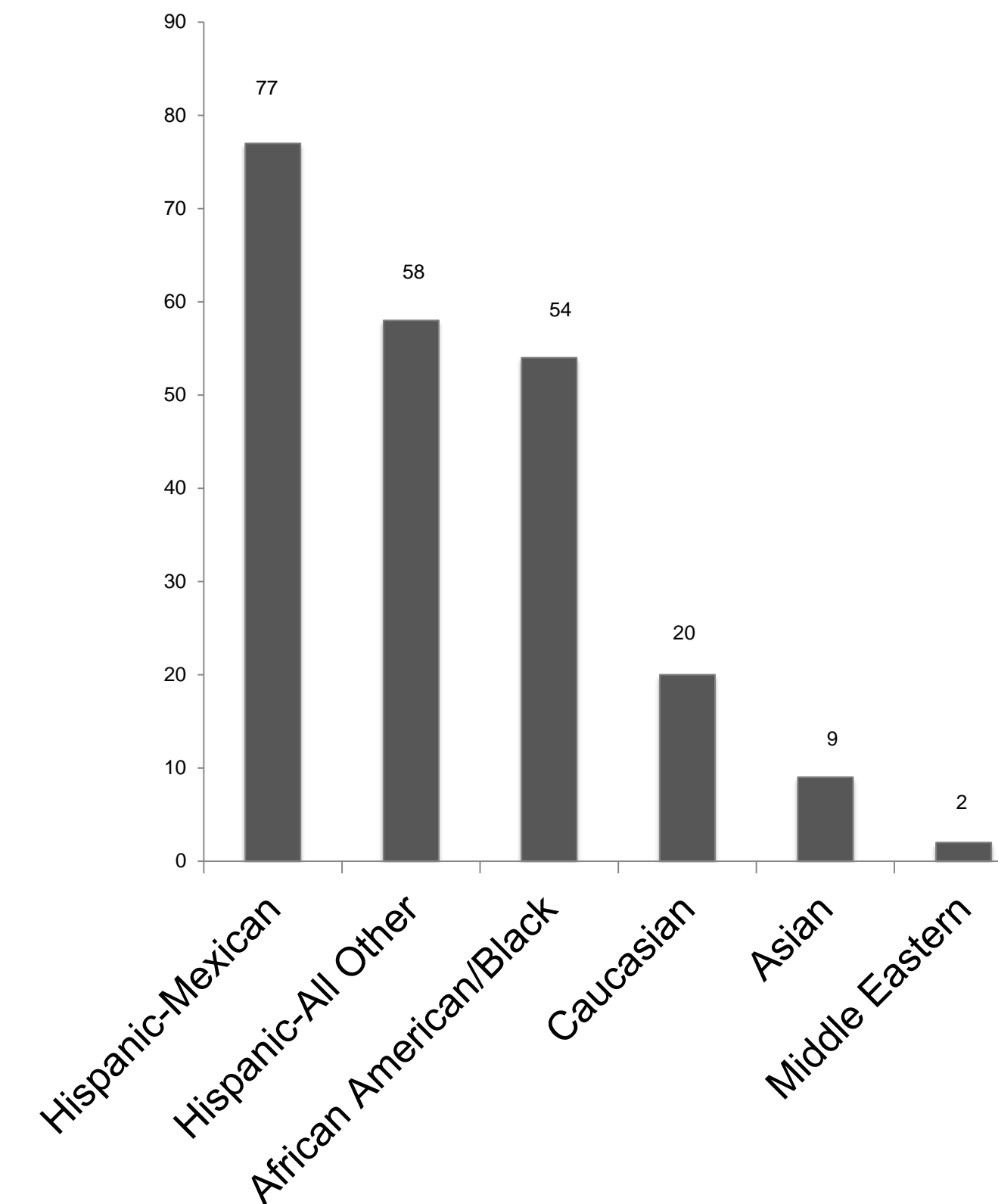


Fig 1B. Distribution by ethnicity

## Fig 2. Breakdown by epilepsy etiology

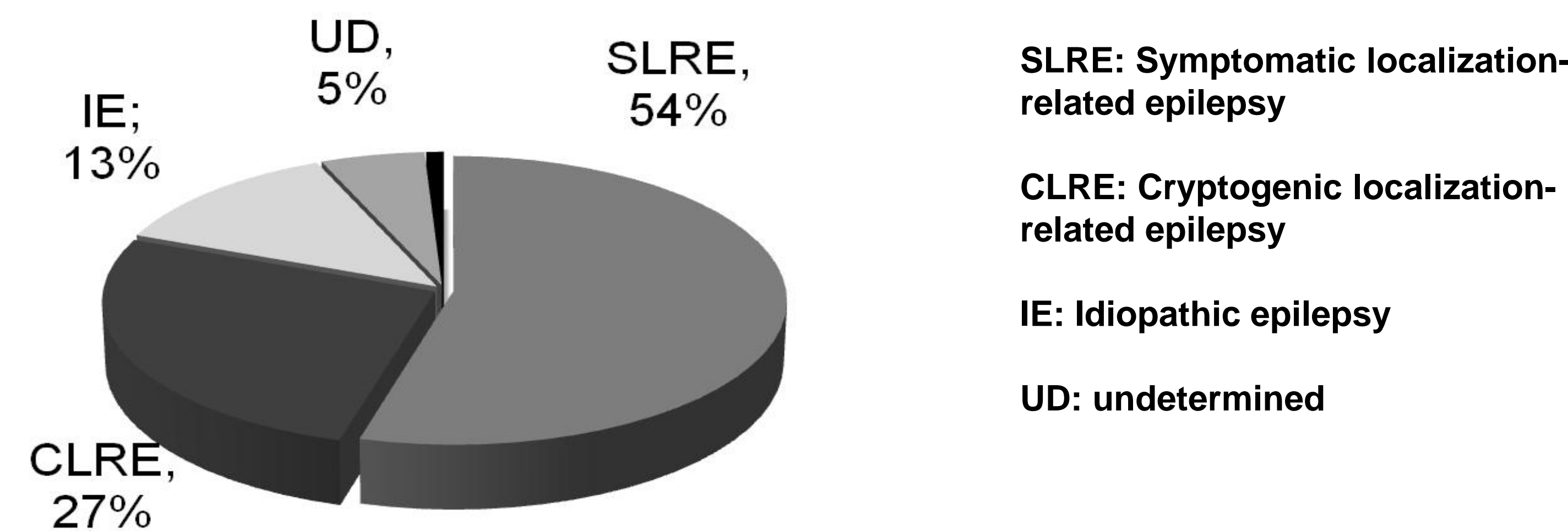
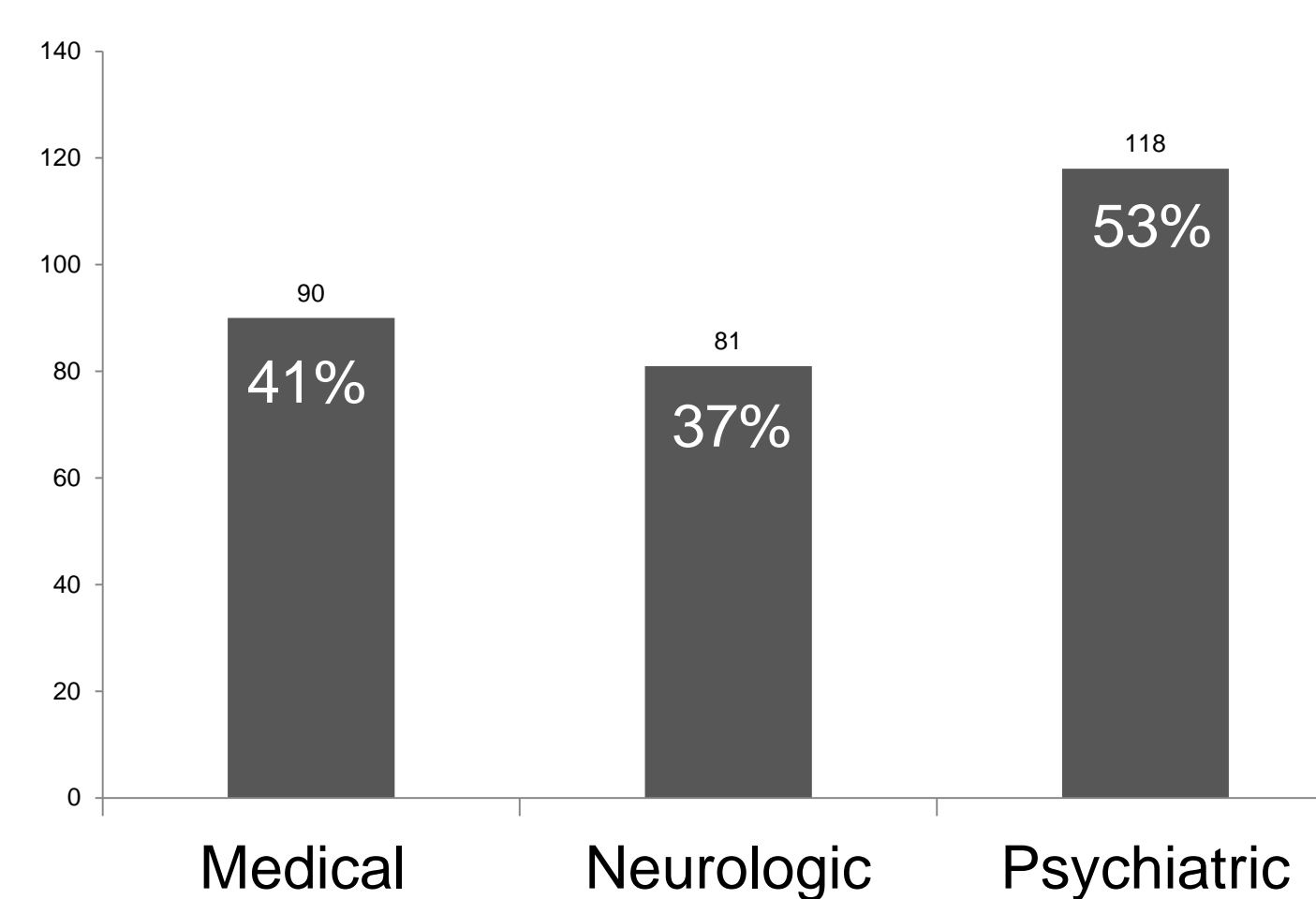


Fig 3. Prevalence of comorbidities.



3B. Neurologic Comorbidities	Number of patients	Percent of patients
Headaches	39	18%
Cognitive compromise	27	12%
Memory impairment	13	6%
Impaired vision	11	5%

Table 3 A, B, & C. Specific comorbidities.

3A. Medical Comorbidities	Number of patients	Percent of patients
Hypertension	58	26%
Diabetes, Impaired glucose tolerance	32	15%
Irregular menses	17	13%
Thyroid dysfunction	10	5%

3C. Psychiatric Comorbidities	Number of patients	Percent of patients
Depression	76	34%
Anxiety	27	12%
Illicit substance or alcohol abuse	33	15%
Insomnia	13	6%

## RESULTS: Co-morbid conditions

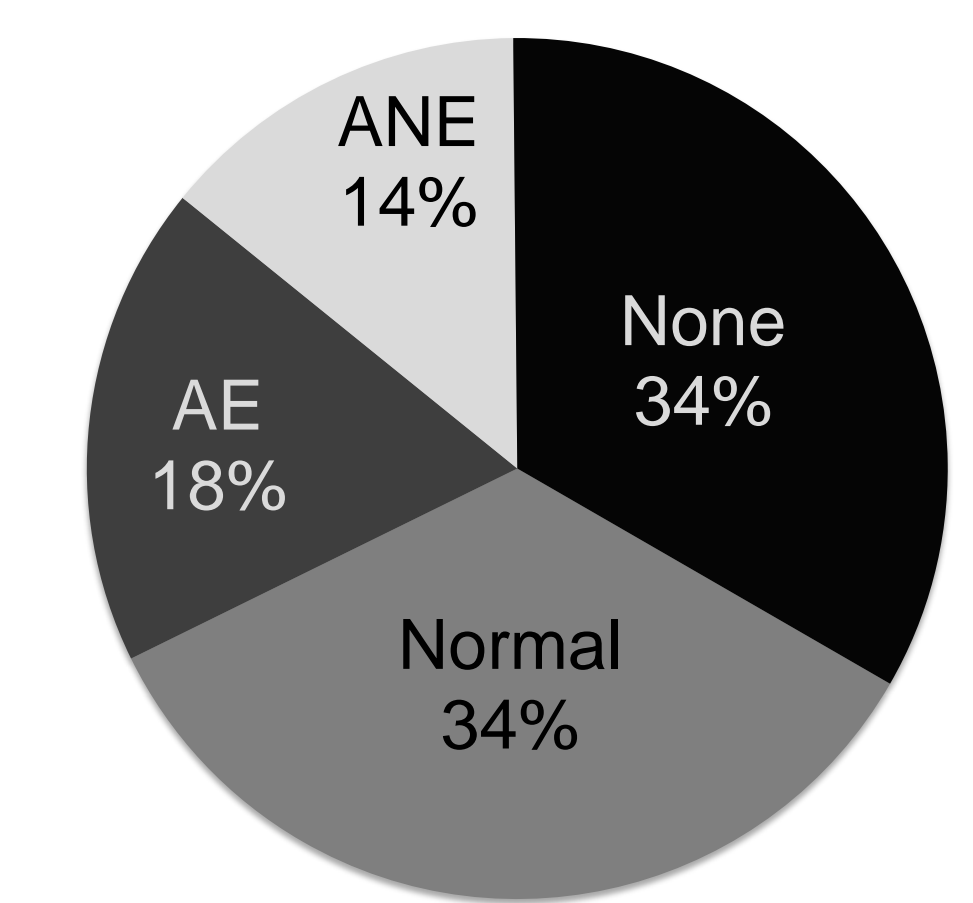
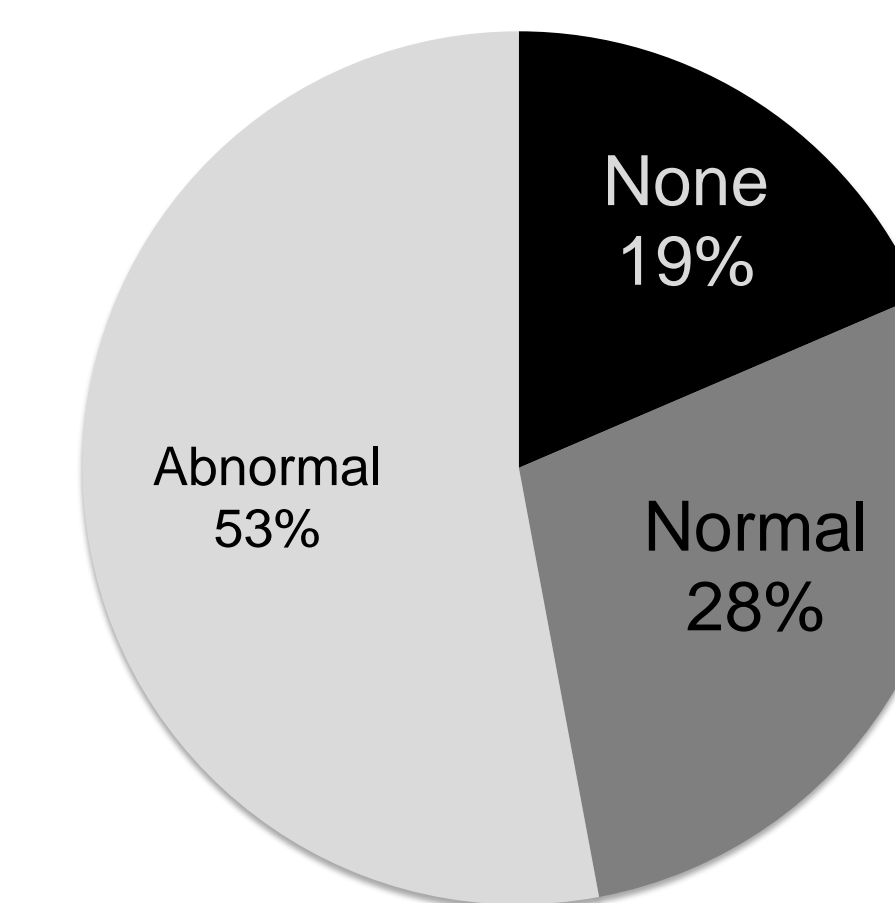
- Comorbid conditions were frequent and psychiatric illnesses were the leading cause (53%) (Fig.3).
- Over one-third of patients in our cohort suffer from depression and 12% suffer from anxiety. The high prevalence of depression in our sample is consistent with findings in the literature<sup>4</sup>. As depression and epilepsy may share a common pathway, comorbid depression may potentially impact seizure frequency and seizure control<sup>5,6</sup>.

## RESULTS: Diagnostic studies of epilepsy

- Brain imaging and electroencephalography (EEG) are staples in confirming epilepsy diagnosis and in prognostication (Fig.4A and 4B).
- We found that only about 2/3 of the cohort underwent EEG testing of which 48% was abnormal.
- Brain MRI studies were available on 81% of patients of which 23% showed signal change consistent with mesial temporal sclerosis, a condition that is often associated with surgically remediable epilepsy.

Fig 4A. MRI testing results

Fig 4B. EEG testing results



AE: Abnormal with epileptiform activity; ANE: Abnormal with non-epileptiform activity

## CONCLUSIONS

- We found demographic disparity between our cohort and data describing broader US population. This underscores the need for understanding the individually community seeking health services in order to provide culturally competent care.
- There is high prevalence of neuro-psychiatric and medical comorbidities which highlights the importance of an interdisciplinary team approach to patients with epilepsy that will include medical professionals and allied support services.
- EEG and brain MRI studies are not universally available in all patients. It will be important to identify the barriers towards obtaining this essential diagnostic tests since they are important in guiding epilepsy diagnosis, prognosis for seizure recurrence, appropriate selection of antiepileptic medications, and identification of surgically treatable epilepsy conditions.

**This pilot epidemiological survey of the BTGHNC patients with epilepsy revealed important demographic and clinical issues specific to community care that will help guide further health research and lead to improvement in the delivery of patient care.**

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