BACKGROUND

- Epilepsy is a neurological disorder characterized by recurrent seizures, affecting approximately 4.3 million adults in the United States (US).
- Most patients with epilepsy are on average at least 45 years old.
- Hispanics and African Americans are more likely to be hospitalized compared to those without any comorbidities.
- Despite similar demographic and socioeconomic characteristics, patients with epilepsy and comorbidities had significantly greater annual all-cause health care costs compared to those without.
- Although we pooled 4 years of data, the sample sizes were above 34,500 for the CMD cohort and above 6 million for the no CMD cohort.

OBJECTIVE

- To examine the prevalence and incremental economic burden of CMDs in a US epilepsy cohort.

METHODS

Study Design and Data Source

- This study utilized a cross-sectional, retrospective, descriptive study design using pooled data from 2010-2013 (MDicare 2016) and 2014-2017 (MDicare 2016) of the Medical Expenditure Panel Survey (MEPS).

Patient Selection and Identification of Interest

- Patients with epilepsy were identified using IC-9-CM diagnosis codes.
- We further divided patients into two cohorts based on the presence of CMDs.

Descriptive Analyses

- Descriptive analyses entailed the tabular display of mean values, measures of central tendency, and measures of variability for continuous variables.

Analysis of Variance

- One-way analysis of variance was performed to identify subgroups in average annual health care expenditures by the presence of CMDs.

RESULTS

- Overall, 345 patients (weighted N = 3.9 million) had epilepsy during one of the 4 years of pooled data.
- Among adults with epilepsy, more than one-third had comorbid conditions (weighted percentage = 37%).

Demographic and Clinical Characteristics (Table 1)

- Patients with CMDs were younger than patients with epilepsy (age group 22-49 years: 60.8% vs. 40%, p < 0.001), however, other socio-economic characteristics such as gender, race, and metropolitan region did not differ between the two study cohorts.
- Socioeconomic characteristics were measured by poverty status and education were similar between the two study cohorts. Similarly, the two study cohorts did not differ on access to health care (e.g., insurance status).
- Clinical characteristics significantly differed between the two study cohorts.

- A greater proportion of patients in the CMD cohort had fair/poor health status compared to those in the no CMD cohort (26% vs. 16%, p = 0.001).
- Similarly, a higher proportion of patients in the CMD cohort reported high polypharmacy and a number of other chronic conditions than those in the no CMD cohort.

- Annual all-cause health care costs among adults with epilepsy were $15,360 ($870) among patients with epilepsy and CMDs versus $11,934 ($739) among patients with epilepsy but without CMDs ($P = 0.001).

- Annual health care costs for emergency room visits, prescription drugs, and home health services were significantly greater in the CMD cohort versus no CMD cohort.

- Multivariable OLS regression that adjusted for patient demographic, socioeconomic, and clinical characteristics indicated that patients with comorbid CMDs had 45% (β = 0.372; exp[β] = 1.45; P < 0.001) higher health care expenditures than patients without CMDs.

- The power of the study was 0.8 with a significance level of 0.05.

Table 1. Demographics and Clinical Characteristics by Cohort

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>No CMD (n = 267)</th>
<th>CMD (n = 380)</th>
<th>Weighted N (n = 3.2, 3.9 million)</th>
<th>p = 0.001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>36.2±7.5</td>
<td>36.2±7.5</td>
<td>3.2 million vs. 3.9 million</td>
<td>0.143</td>
</tr>
<tr>
<td>Gender</td>
<td>Female</td>
<td>56%</td>
<td>53%</td>
<td>0.143</td>
</tr>
<tr>
<td>Medicaid</td>
<td>Yes</td>
<td>23%</td>
<td>26%</td>
<td>0.068</td>
</tr>
<tr>
<td>Income</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.029</td>
</tr>
<tr>
<td>Education</td>
<td>Less than high school</td>
<td>42%</td>
<td>46%</td>
<td>0.015</td>
</tr>
<tr>
<td>Employment</td>
<td>Full-time</td>
<td>52%</td>
<td>52%</td>
<td>0.797</td>
</tr>
<tr>
<td>Marital status</td>
<td>Married</td>
<td>64%</td>
<td>65%</td>
<td>0.797</td>
</tr>
<tr>
<td>Hospitalization status</td>
<td>Outpatient</td>
<td>10%</td>
<td>10%</td>
<td>0.999</td>
</tr>
<tr>
<td># of chronic conditions</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.001</td>
</tr>
<tr>
<td>Income</td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
<td>0.090</td>
</tr>
<tr>
<td>Educational attainment</td>
<td>Less than high school</td>
<td>42%</td>
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</tr>
<tr>
<td># of chronic conditions</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.001</td>
</tr>
</tbody>
</table>

- All analyses were conducted using survey-specific procedures in SAS version 9.4 ( Cary, NC: SAS Institute, Inc.; 2011).

- Further research is needed to generate greater understanding of the incremental economic burden due to the presence of CMDs among patients with epilepsy.

DISCUSSION

- Using nationally representative survey data, this study highlighted the elevated prevalence of CMDs among patients with epilepsy.

- Despite similar demographic and socioeconomic characteristics, patients with epilepsy and CMDs had significantly greater annual all-cause health care costs compared to those without CMDs.

- Measures of general health status, polypharmacy, and a number of other chronic conditions that were significantly poorer in the CMD cohort versus no CMD cohort.

- The potential burden of comorbid conditions should be considered by providers in the integrated care setting and the management of patients with epilepsy.

- Further research is needed to generate greater understand the reasons behind increased health care costs among patients with epilepsy and CMDs.

- Key limitations included the following:
  - This study used survey data and thus may have inherent limitations associated with survey data such as recall bias and inaccuracy of self-reported measures such as prescription drug use.
  - No information was available on epilepsy severity and whether patients had comorbid conditions that may have contributed to the reasons for which there was a greater burden of comorbid conditions.

REFERENCES


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