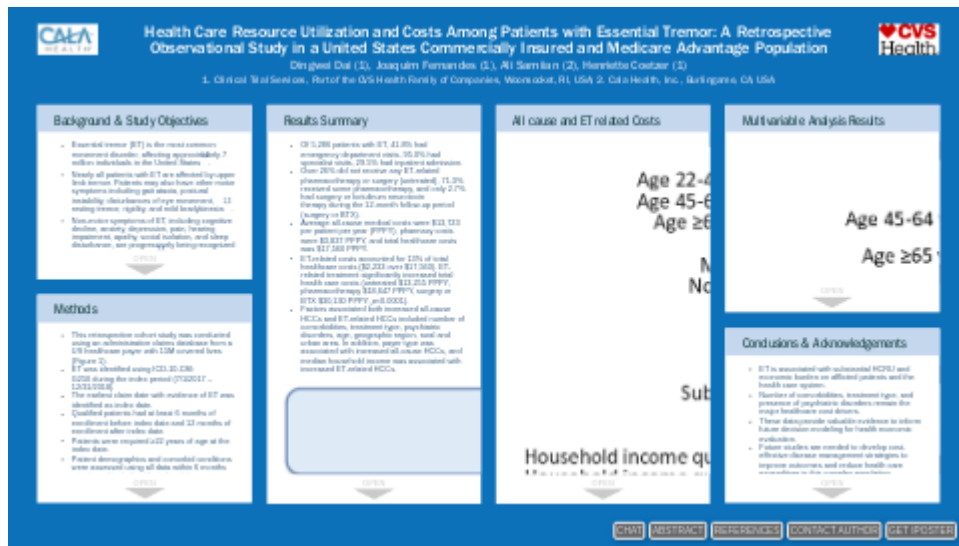




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BACKGROUND & STUDY OBJECTIVES

- Essential tremor (ET) is the most common movement disorder, affecting approximately 7 million individuals in the United States^{1,2}.
- Nearly all patients with ET are affected by upper limb tremor. Patients may also have other motor symptoms including gait ataxia, postural instability, disturbances of eye movement, resting tremor, rigidity, and mild bradykinesia^{1,3}.
- Non-motor symptoms of ET, including cognitive decline, anxiety, depression, pain, hearing impairment, apathy, social isolation, and sleep disturbance, are progressively being recognized by the clinical community^{3,4}.
- These motor and non-motor symptoms negatively impact patients' quality of life^{1,5}.
- Limited data exists on healthcare resource utilization (HCRU) and costs (HCCs) for ET patients with Commercial Insurance or Medicare Advantage coverage in the United States.
- The aims of this study were to evaluate HCRU and HCCs and the association of patient characteristics and comorbidities with HCCs among ET patients.

METHODS

- This retrospective cohort study was conducted using an administrative claims database from a US healthcare payer with 15M covered lives (Figure 1).
- ET was identified using ICD-10-CM: G250 during the index period (7/1/2017 – 12/31/2018).
- The earliest claim date with evidence of ET was identified as index date.
- Qualified patients had at least 6 months of enrollment before index date and 12 months of enrollment after index date.
- Patients were required ≥ 22 years of age at the index date.
- Patient demographics and comorbid conditions were assessed using all data within 6 months prior to and including the index date.
- Treatment pattern, psychiatric disorders, HCRU, and HCCs were examined using all data within 12 months after the index date.
- Multivariable generalized linear models were performed to assess the association of patient characteristics and comorbidities with total HCCs.

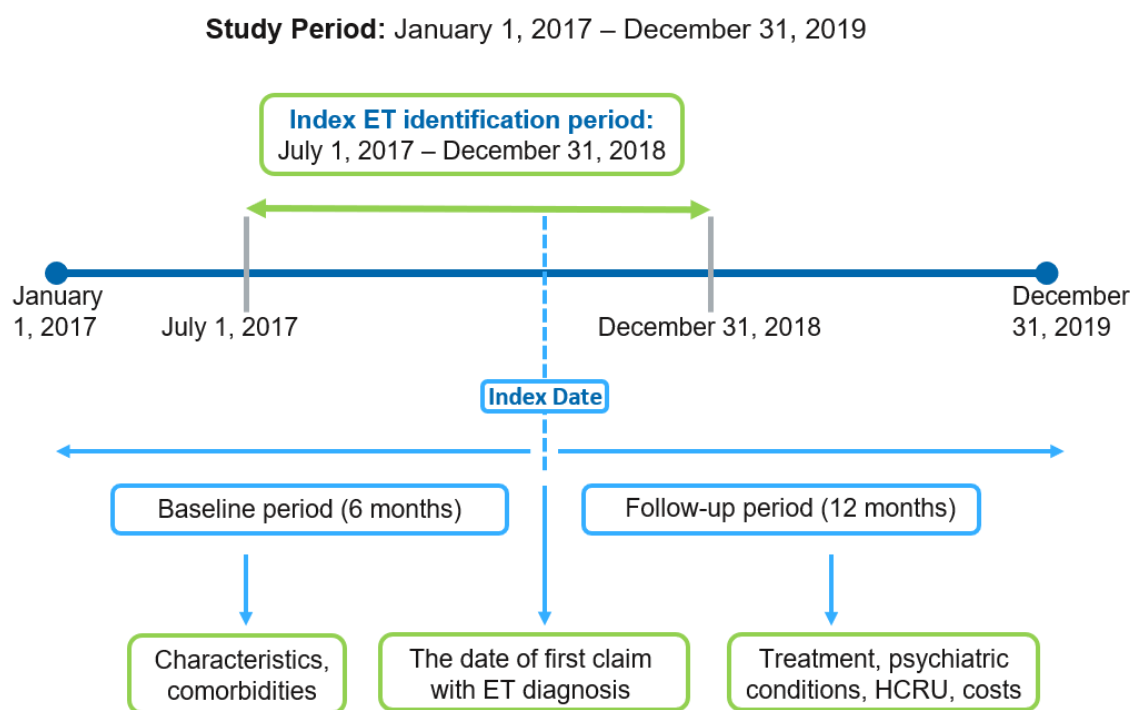


Figure 1. Study design

RESULTS SUMMARY

- Of 5,286 patients with ET, 41.8% had emergency department visits, 95.0% had specialist visits, 29.5% had inpatient admission.
- Over 26% did not receive any ET-related pharmacotherapy or surgery (untreated), 71.3% received some pharmacotherapy, and only 2.7% had surgery or botulinum neurotoxin therapy during the 12-month follow-up period (surgery or BTX).
- Average all-cause medical costs were \$13,723 per patient per year (PPPY), pharmacy costs were \$3,837 PPPY, and total healthcare costs was \$17,560 PPPY.
- ET-related costs accounted for 13% of total healthcare costs (\$2,233 over \$17,560). ET-related treatment significantly increased total health care costs (untreated \$13,255 PPPY, pharmacotherapy \$18,647 PPPY, surgery or BTX \$30,130 PPPY, $p < 0.0001$).
- Factors associated both increased all-cause HCCs and ET-related HCCs included number of comorbidities, treatment type, psychiatric disorders, age, geographic region, rural and urban area. In addition, payer type was associated with increased all-cause HCCs, and median household income was associated with increased ET-related HCCs.

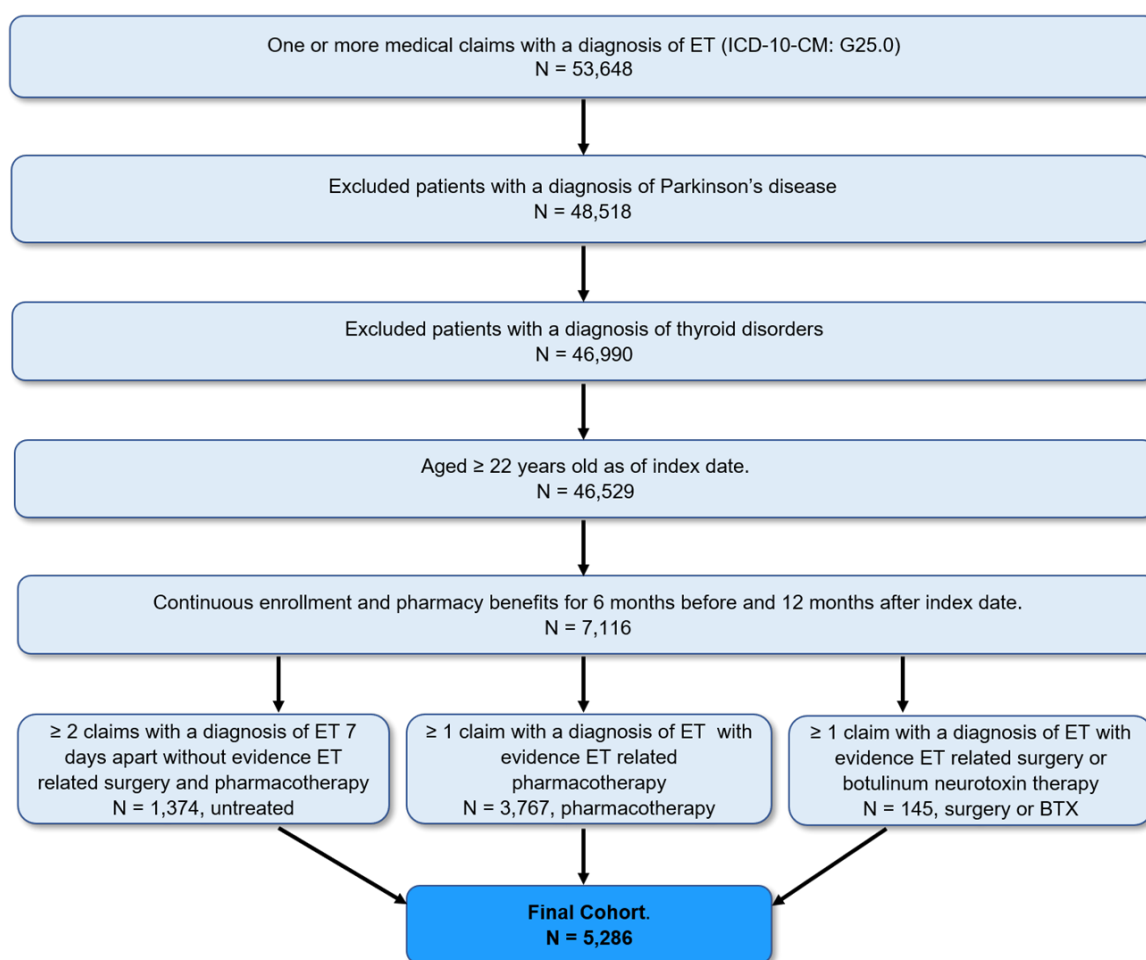


Figure 2. Patient attrition

ALL CAUSE AND ET RELATED COSTS

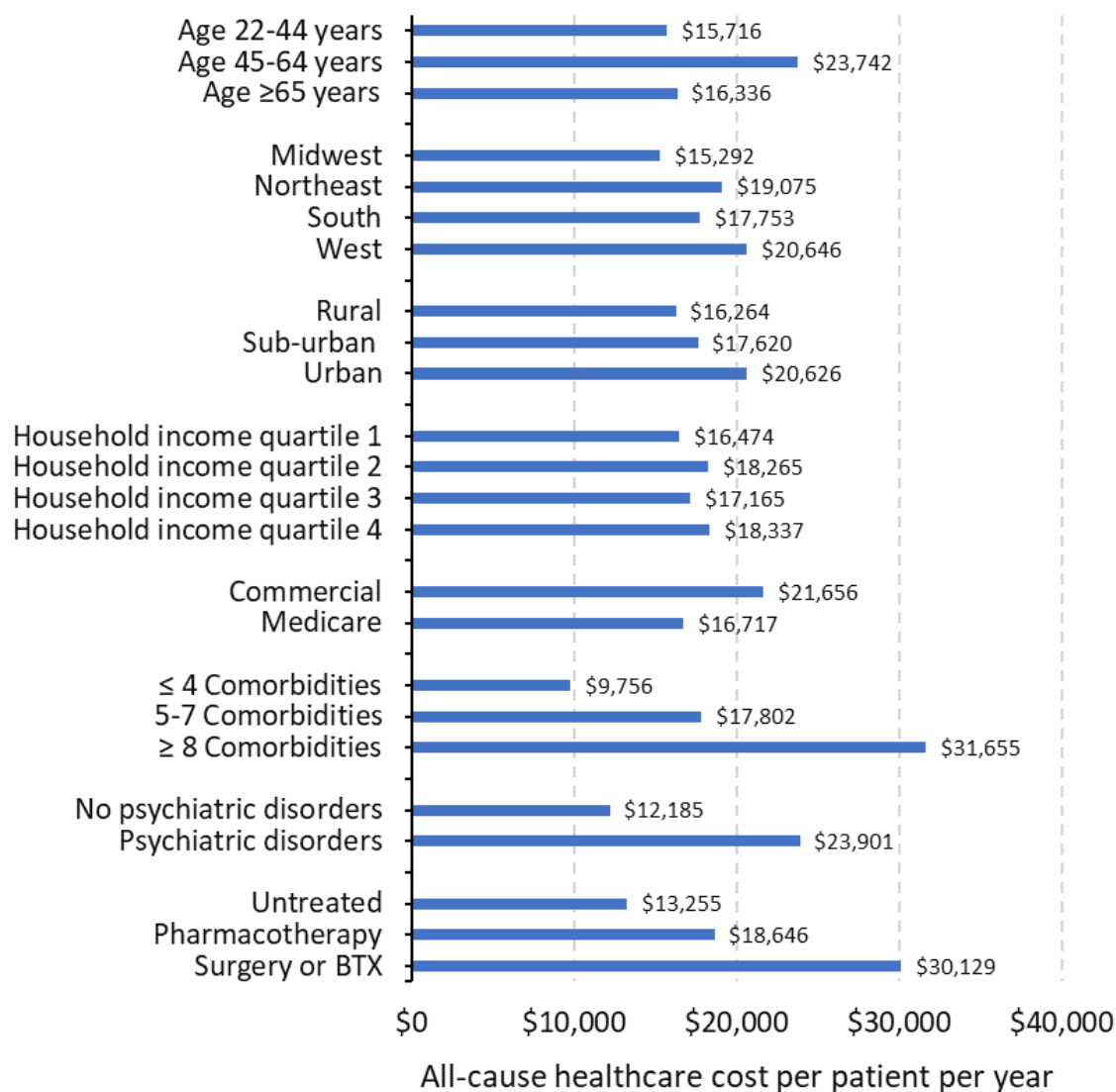


Figure 3. All cause HCCs accrued during the 12-months follow-up period by patient characteristics

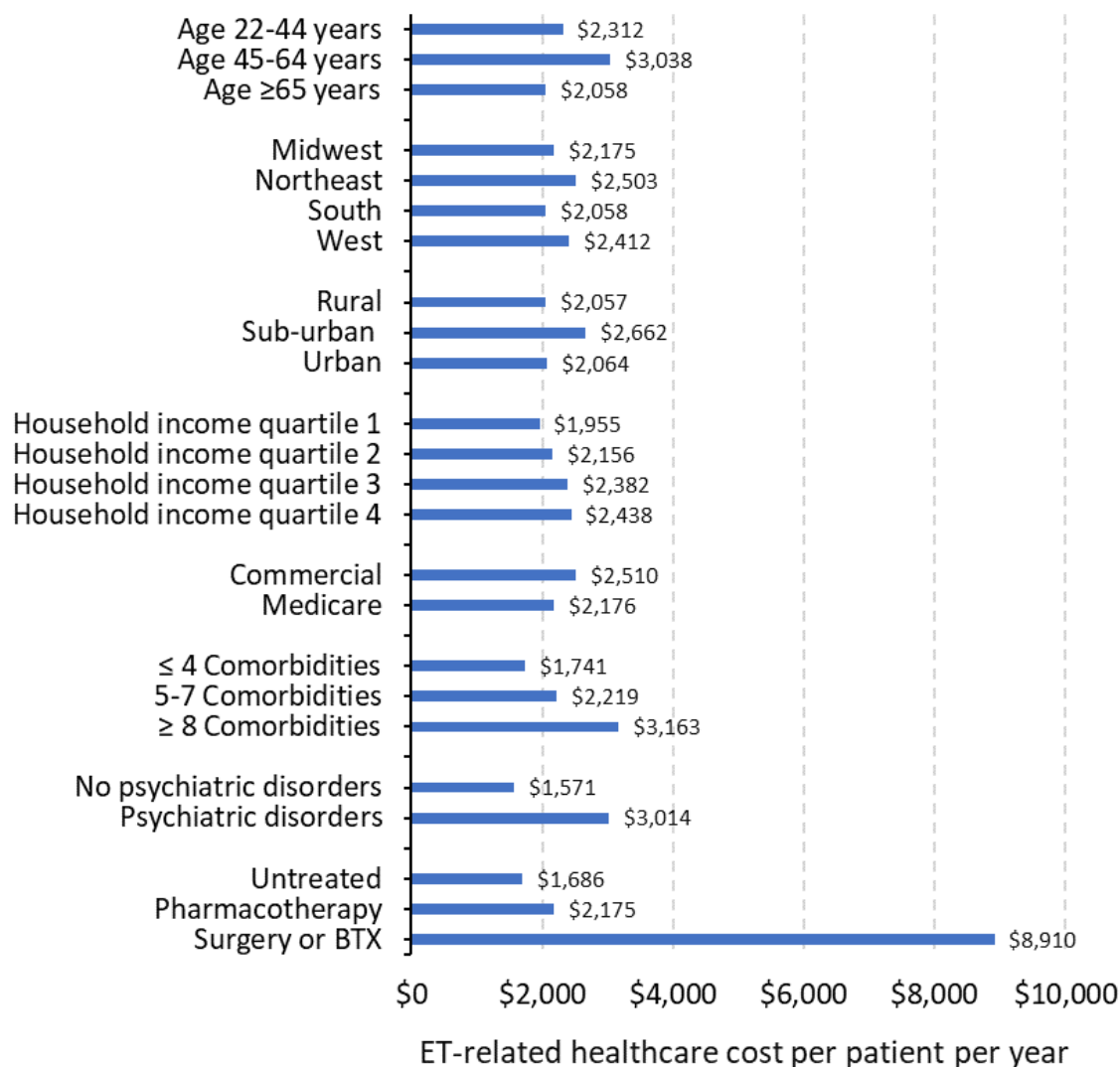


Figure 4. ET-related HCCs accrued during the 12-months follow-up period by patient characteristics

MULTIVARIABLE ANALYSIS RESULTS

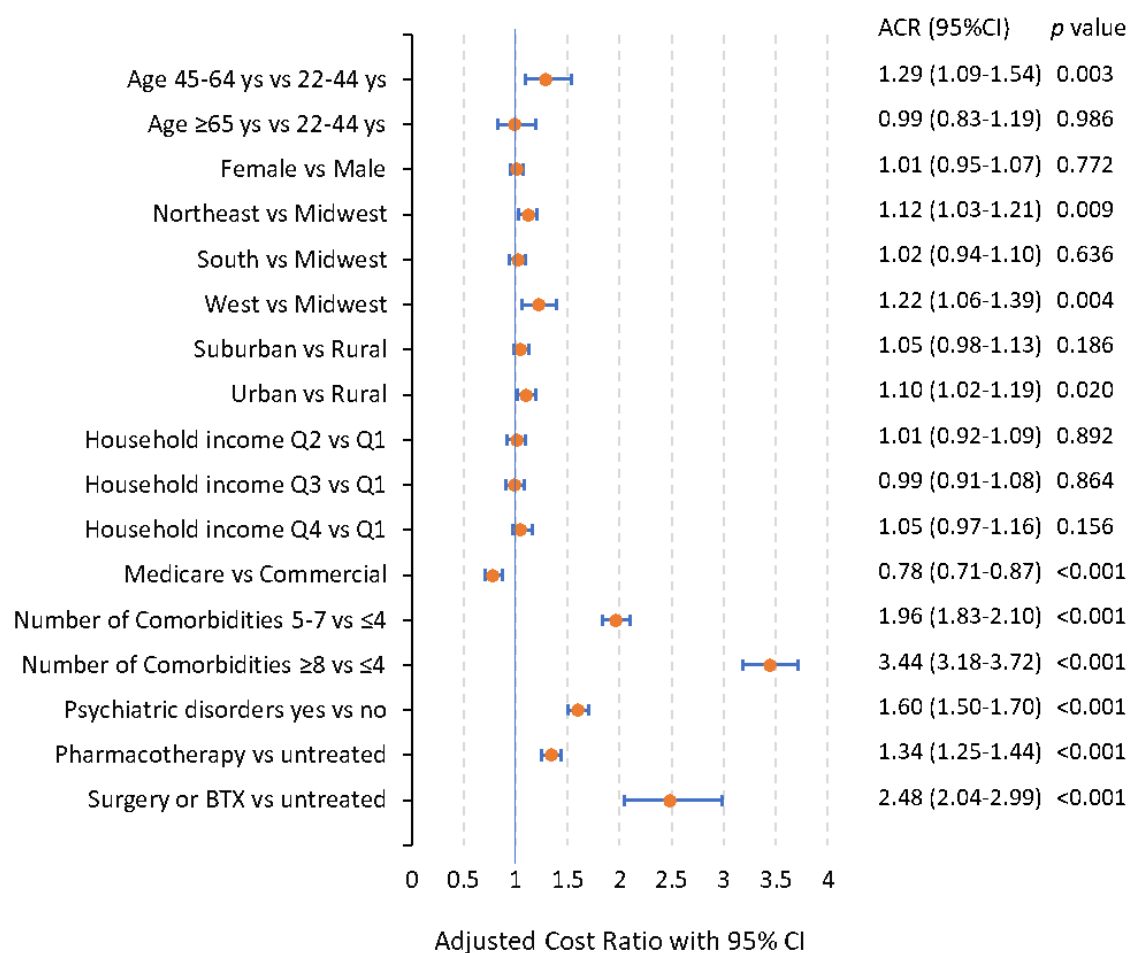


Figure 5. Association of factors with all cause HCCs. Forest plot of total all cause HCCs accrued during the 12-months follow-up period, displayed as cost ratio. The vertical blue line represents a cost ratio of 1, which is associated with equal costs for both groups. For each cost ratio displayed, the symbol orange dot depicts the mean and the horizontal blue line represents the 95% CI. Lines which do not cross the dashed vertical line are statistically significant.

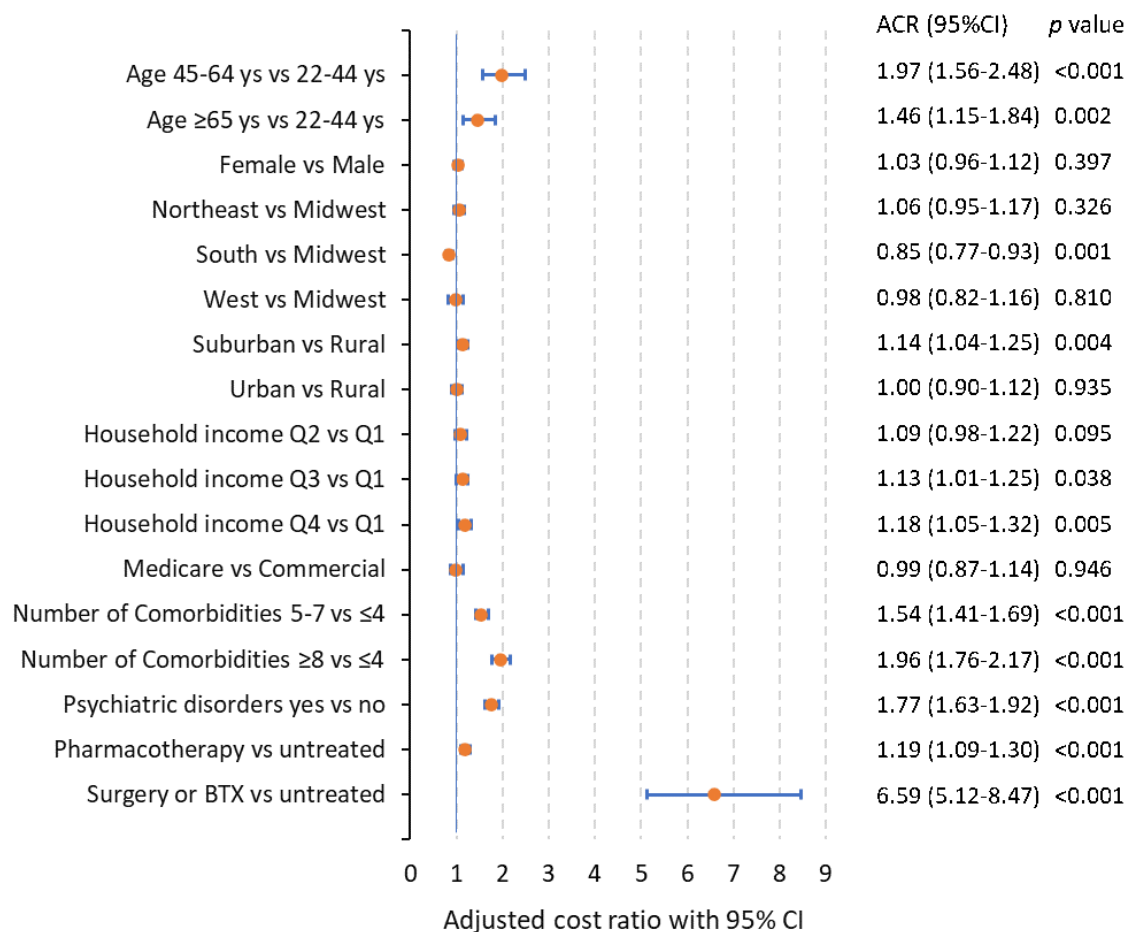


Figure 6. Association of factors with ET-related HCCs. Forest plot of total ET-related HCCs accrued during the 12-months follow-up period, displayed as cost ratio. The vertical blue line represents a cost ratio of 1, which is associated with equal costs for both groups. For each cost ratio displayed, the symbol orange dot depicts the mean and the horizontal blue line represents the 95% CI. Lines which do not cross the dashed vertical line are statistically significant.

CONCLUSIONS & ACKNOWLEDGEMENTS

- ET is associated with substantial HCRU and economic burden on afflicted patients and the health care system.
- Number of comorbidities, treatment type, and presence of psychiatric disorders remain the major healthcare cost drivers.
- These data provide valuable evidence to inform future decision modeling for health economic evaluation.
- Future studies are needed to develop cost-effective disease management strategies to improve outcomes and reduce health care expenditure in this complex population.

Acknowledgements:

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ABSTRACT

Health Care Resource Utilization and Costs Among Patients with Essential Tremor: A Retrospective Observational Study in a United States Commercially Insured and Medicare Advantage Population

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OBJECTIVES: Essential tremor (ET) is the most common movement disorder, affecting an estimated 7 million individuals in the United States, or approximately 2.2% of the population. The aims of this study were to assess health care resource utilization (HCRU) and costs among patients with ET.

METHODS: This retrospective observational cohort study was conducted using an administrative claims database from a US healthcare payer with 15M covered lives. We identified patients with ET (ICD-10-CM: G250) during the study period (1/1/2017 – 12/31/2019). The earliest claim date with evidence of ET was identified as index date. Qualified patients were ≥ 22 years of age and had at least 6 months of enrollment before the index date and 12 months of enrollment after the index date. Patient demographics and clinical characteristics were assessed using all data within 6 months prior to and including the index date. Treatment patterns, HCRU, and costs were estimated using all data within 12 months after the index date.

RESULTS: Of 5,286 patients with ET, 41.8% had emergency department visits, 95.0% had specialist visits, 29.5% had inpatient admission, 26.0% received no ET-related pharmacotherapy or refractory surgery (untreated), 71.3% received some pharmacotherapy, and 2.7% had refractory surgery during the 12-month follow-up period. Average all-cause medical costs were \$13,723 per patient per year (PPPY), pharmacy costs were \$3,837 PPPY, and total health care costs were \$17,560 PPPY. Among total costs, ET-related costs were \$2,233 PPPY (13% of total cost). ET-related treatment significantly increased total health care costs (untreated \$13,255 PPPY, pharmacotherapy \$18,647 PPPY, surgery \$30,130 PPPY, $p < 0.0001$).

CONCLUSIONS: These data indicate that ET is associated with substantial HCRU and economic burden on afflicted patients and the health care system. Future studies are needed to optimize disease management strategies to improve outcomes and reduce health care expenditure in this complex population.

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