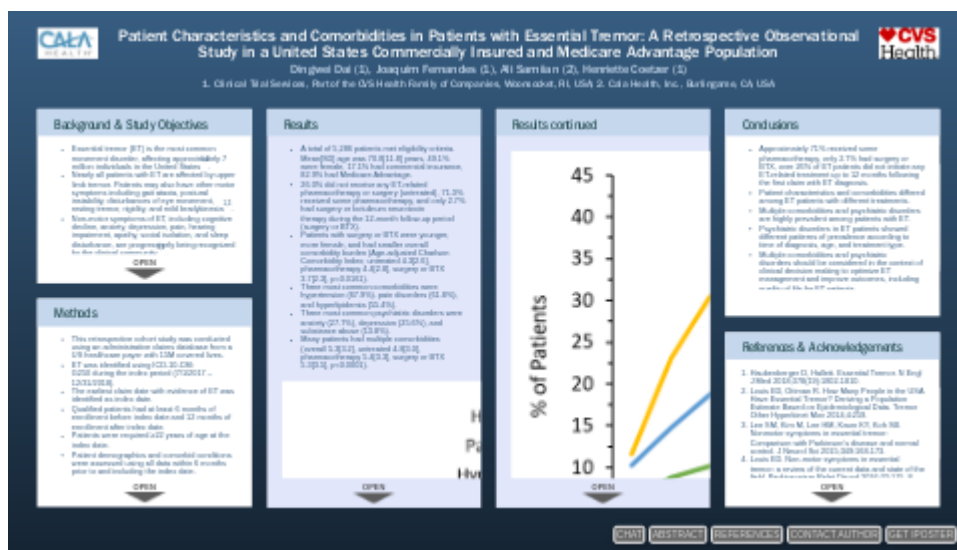


Patient Characteristics and Comorbidities in Patients with Essential Tremor: A Retrospective Observational Study in a United States Commercially Insured and Medicare Advantage Population



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PRESENTED AT:



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}.
- Current treatment have demonstrated limited efficacy which may be linked to comorbidities and poor adherence^{1,6}.
- Limited information exists on the comorbidity burden especially on the extent of multiple comorbidities and psychiatric disorders in patients with ET.
- The aims of this study were to generate real-world evidence of patient characteristics and comorbidities including the prevalence and incidence of mental disorders in ET patients.

METHODS

- This retrospective cohort study was conducted using an administrative claims database from a US healthcare payer with 15M covered lives.
- 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.
- Psychiatric disorders and treatment patterns were examined using all data within 12 months after the index date.

Study Period: January 1, 2017 – December 31, 2019

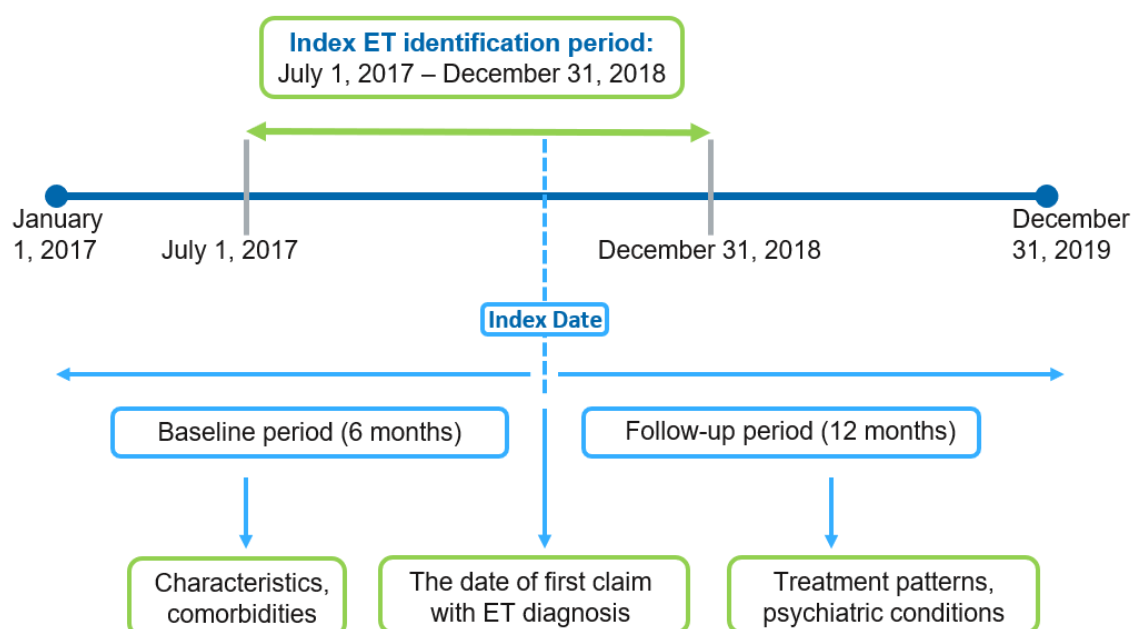


Figure 1. Study design

RESULTS

- A total of 5,286 patients met eligibility criteria. Mean[SD] age was 70.8[11.8] years, 49.1% were female, 17.1% had commercial insurance, 82.9% had Medicare Advantage.
- 26.0% 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).
- Patients with surgery or BTX were younger, more female, and had smaller overall comorbidity burden (Age-adjusted Charlson Comorbidity Index; untreated 4.3[2.6], pharmacotherapy 4.4[2.8], surgery or BTX 3.7[2.3], $p=0.0161$).
- Three most common comorbidities were hypertension (67.9%), pain disorders (61.8%), and hyperlipidemia (55.4%).
- Three most common psychiatric disorders were anxiety (27.7%), depression (25.6%), and substance abuse (13.8%).
- Many patients had multiple comorbidities (overall 5.3[3.2], untreated 4.8[3.0], pharmacotherapy 5.4[3.3], surgery or BTX 5.3[3.5], $p<0.0001$).

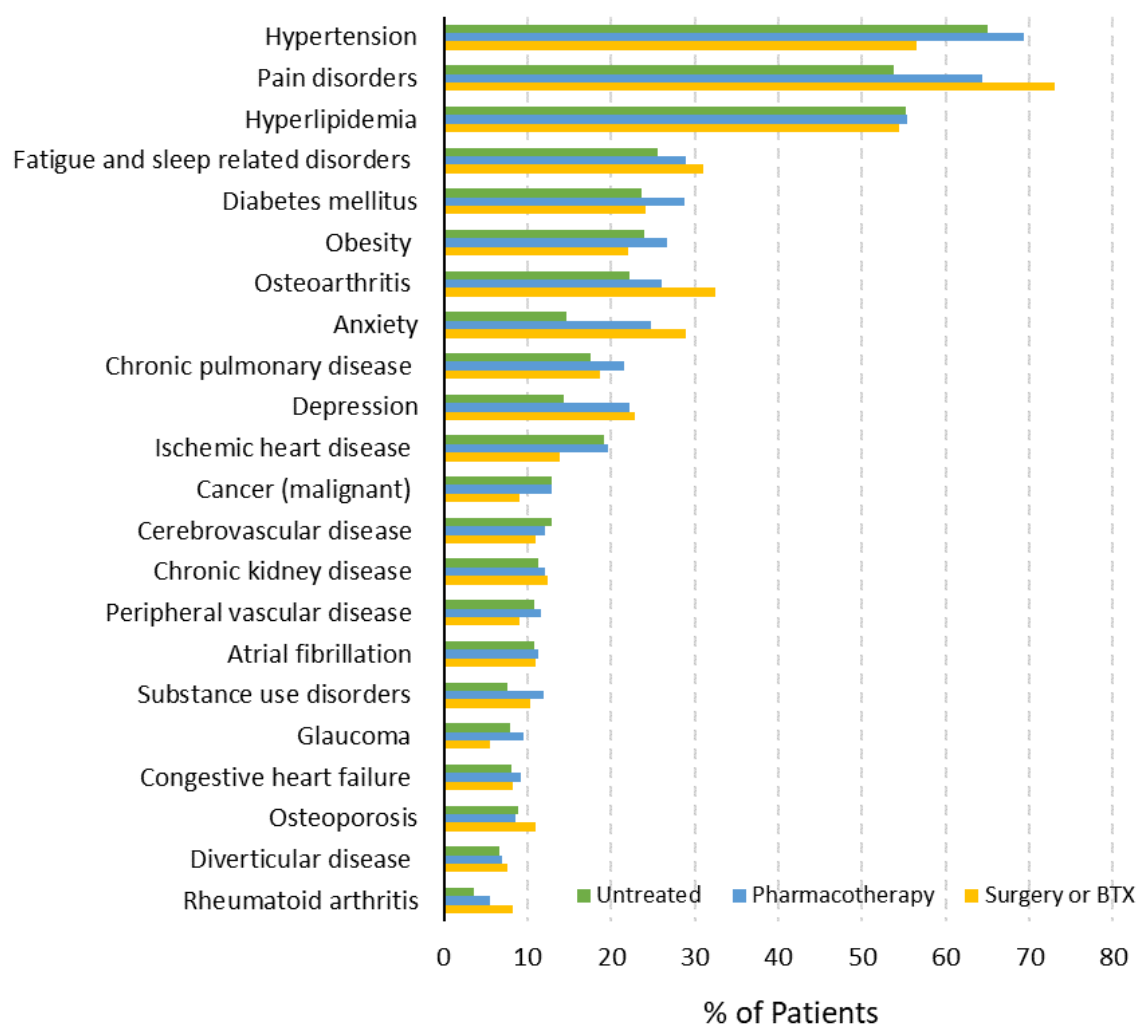


Figure 2. Top 22 most common comorbid conditions by treatment type

RESULTS CONTINUED

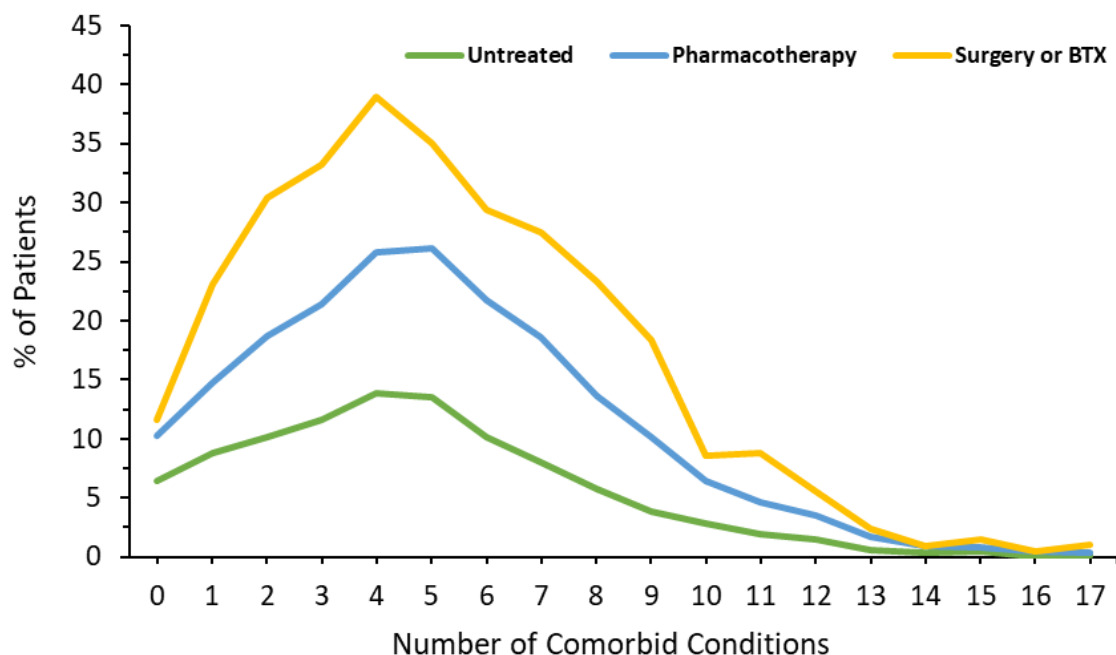


Figure 3. Number of comorbid conditions by treatment type: mean number of comorbidities was 5.3 per patient in the cohort. Many patients had multiple comorbidities: 79.7% of ET patients had ≥ 3 comorbidities, 56.9% had ≥ 5 comorbidities, and 23.4% had ≥ 8 comorbidities. Figure 3 shows multiple comorbidities patterns varied by treatment type.

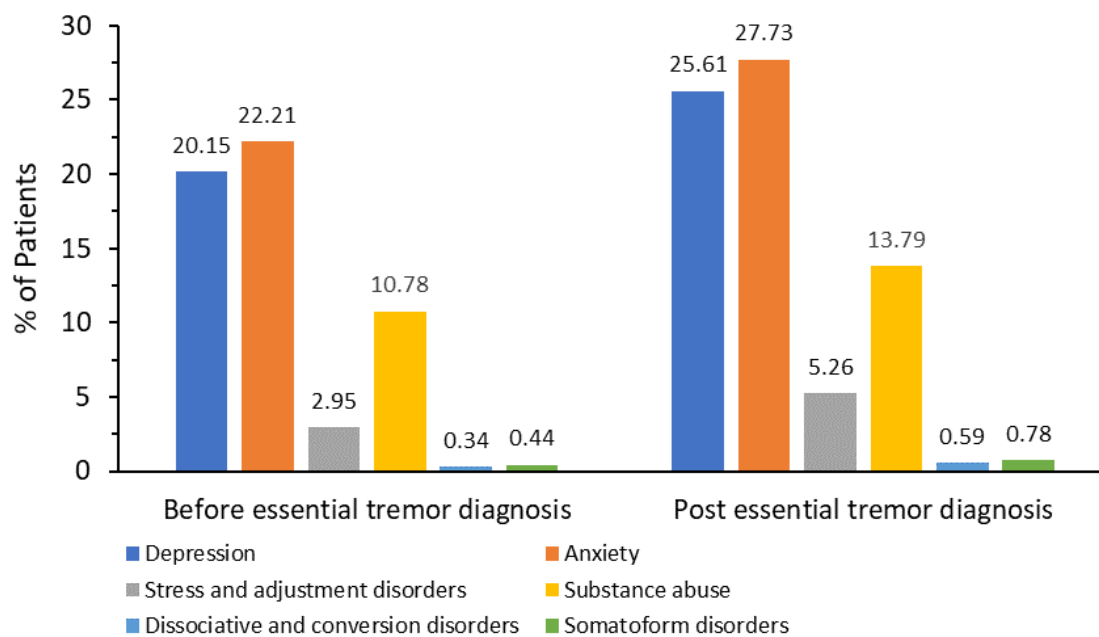


Figure 4. Prevalence of psychiatric disorders before and after essential tremor diagnosis: Across the cohort, 2,425 (45.9%) ET patients within first year after ET diagnosis with psychiatric disorders. The most common psychiatric disorders were anxiety (27.7% of all ET patients), depression (25.6%), and substance abuse disorders (13.8%). Near 14% of all ET patients had ≥ 2 psychiatric disorders. Among surgery or BTX group, psychiatric disorders were more common than pharmacotherapy and untreated group (prevalence of any psychiatric disorders: 57.9%, 49.2%, and 35.5% respectively; $p < 0.0001$). The prevalence of all six psychiatric disorders were significantly higher post ET diagnosis than before ET diagnosis (all $p < 0.001$).

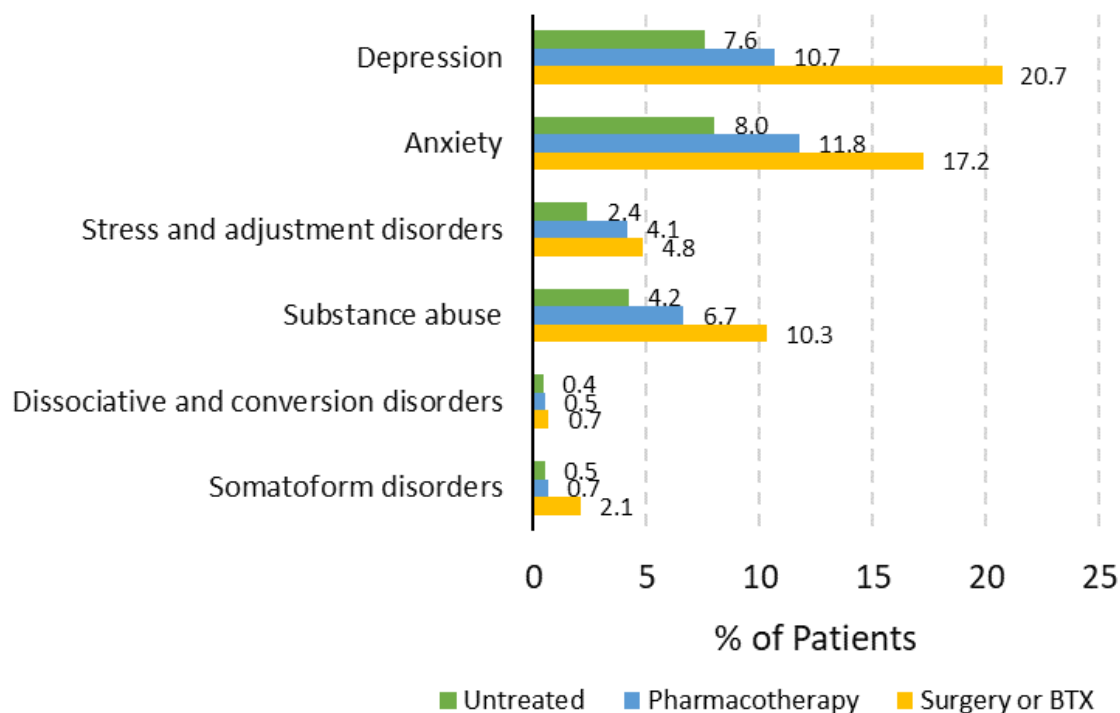


Figure 5. Incidence of psychiatric disorders within 1 year after essential tremor diagnosis: the incidence of any psychiatric disorders among surgery or BTX group was higher than pharmacotherapy and untreated group (39.3%, 26.6%, and 18.6% respectively; all $p < 0.0001$).

CONCLUSIONS

- Approximately 71% received some pharmacotherapy, only 2.7% had surgery or BTX, over 26% of ET patients did not initiate any ET-related treatment up to 12 months following the first claim with ET diagnosis.
- Patient characteristics and comorbidities differed among ET patients with different treatments.
- Multiple comorbidities and psychiatric disorders are highly prevalent among patients with ET.
- Psychiatric disorders in ET patients showed different patterns of prevalence according to time of diagnosis, age, and treatment type.
- Multiple comorbidities and psychiatric disorders should be considered in the context of clinical decision making to optimize ET management and improve outcomes, including quality of life for ET patients.

REFERENCES & ACKNOWLEDGEMENTS

1. Haubenberger D, Hallett. Essential Tremor. *N Engl J Med* 2018;378(19):1802-1810.
2. Louis ED, Ottman R. How Many People in the USA Have Essential Tremor? Deriving a Population Estimate Based on Epidemiological Data. *Tremor Other Hyperkinet Mov* 2014;4:259.
3. Lee SM, Kim M, Lee HM, Kwon KY, Koh SB. Nonmotor symptoms in essential tremor: Comparison with Parkinson's disease and normal control. *J Neurol Sci* 2015;349:168-173.
4. Louis ED. Non-motor symptoms in essential tremor: a review of the current data and state of the field. *Parkinsonism Relat Disord* 2016;22:115–8.
5. Lee S, Chung SJ, Shin HW. Neuropsychiatric Symptoms and Quality of Life in Patients With Adult-Onset Idiopathic Focal Dystonia and Essential Tremor. *Front Neurol*. 2020;11:1030. doi: 10.3389/fneur.2020.01030.
6. Shanker V. Essential tremor: diagnosis and management. *BMJ* 2019;366:l4485. doi: 10.1136/bmj.l4485.

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ABSTRACT

Patient Characteristics and Comorbidities in 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 a progressive, neurological disease characterized by tremor, most often of the hands or arms, and impacts negatively on quality of life. The aims of this study were to assess patient characteristics and comorbidities.

METHODS: This retrospective cohort study was conducted using an administrative claims database from a large US healthcare payer. 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 index date and 12 months of enrollment after index date. Patient demographics and comorbid conditions were assessed using all data within 6 months prior to and including the index date. Treatments were examined using all data within 12 months after the index date.

RESULTS: A total of 5,286 patients met eligibility criteria. Mean[SD] age was 70.8[11.8] years, 49.1% were female, 17.1% had commercial insurance, 82.9% had Medicare Advantage, 26.0% did not receive any ET-related pharmacotherapy or refractory surgery (untreated), 71.3% received some pharmacotherapy, and only 2.7% had refractory surgery during the 12-month follow-up period. Patients with refractory surgery were younger (untreated 72.0[11.3], pharmacotherapy 70.5[11.9], surgery 67.2[12.3], $p < 0.0001$), more female (untreated 45.6%, pharmacotherapy 49.7%, surgery 69.7%, $p < 0.0001$), and had smaller overall comorbidity burden (Age-adjusted Charlson Comorbidity Index; untreated 4.3[2.6], pharmacotherapy 4.4[2.8], surgery 3.7[2.3], $p = 0.0161$). The five most common comorbidities were hypertension (67.9%), pain disorders (61.8%), hyperlipidemia (55.4%), fatigue and sleep related disorders (28.1%), and diabetes mellitus (27.3). Many patients had multiple comorbidities (overall 5.3[3.2], untreated 4.8[3.0], pharmacotherapy 5.4[3.3], surgery 5.3[3.5], $p < 0.0001$).

CONCLUSIONS: Patient characteristics and comorbidities differed among ET patients with different treatments. Multiple comorbidities are highly prevalent among patients with ET and should be considered in the context of clinical decision making to optimize ET management.

REFERENCES

1. Haubenberger D, Hallett. Essential Tremor. *N Engl J Med* 2018;378(19):1802-1810.
2. Louis ED, Ottman R. How Many People in the USA Have Essential Tremor? Deriving a Population Estimate Based on Epidemiological Data. *Tremor Other Hyperkinet Mov* 2014;4:259.
3. Lee SM, Kim M, Lee HM, Kwon KY, Koh SB. Nonmotor symptoms in essential tremor: Comparison with Parkinson's disease and normal control. *J Neurol Sci* 2015;349:168-173.
4. Louis ED. Non-motor symptoms in essential tremor: a review of the current data and state of the field. *Parkinsonism Relat Disord* 2016;22:115–8.
5. Lee S, Chung SJ, Shin HW. Neuropsychiatric Symptoms and Quality of Life in Patients With Adult-Onset Idiopathic Focal Dystonia and Essential Tremor. *Front Neurol*. 2020;11:1030. doi: 10.3389/fneur.2020.01030.
6. Shanker V. Essential tremor: diagnosis and management. *BMJ* 2019;366:l4485. doi: 10.1136/bmj.l4485.