

Treatment Perceptions and Decision-Making Among Physicians Treating Essential Tremor

#008

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Introduction

- Essential Tremor (ET) is one of the most common movement disorders, estimated to affect approximately 6.4 million adults in the US.¹
- ET has a reported global prevalence of up to 2%, and prevalence increases to almost 6% in persons 65 years and older.²
- Individuals with ET have upper limb tremor, especially in the hands.³⁻⁵ However, tremors can also be present or develop over time in the head, voice, and lower extremities.^{3,4} These tremors may cause difficulty with completing basic daily activities and occupational skills.⁶
- Despite this prevalence, we have limited information on the characteristics of patients under management for ET in the US, and a gap in the understanding of how well ET treatment goals are met, how current oral therapies meet those goals, and differences in the approach to treatment between neurologists and PCPs in the US.

Objectives

- To characterize the ET patient population under treatment, determine oral medications prescribed by neurologists versus PCPs, and explore how US physicians perceive the goals and efficacy of ET pharmacotherapy.

Methods

- The study was conducted using Adelphi Essential Tremor Disease Specific Programme™ (DSP), a point-in-time survey of neurologists, PCPs and their patients with ET in the US between March-August 2021. A full DSP methodology has been published previously.⁷
- Physicians involved in the management of patients with ET in the US were identified from public lists of healthcare professionals and were included if they were currently practicing physicians who treated 10 or more patients with diagnosed ET in a typical month.
 - A total of 108 physicians were successfully screened in online; of the 101 (93.5%) physicians who completed the survey, 40 (39.6%) were PCPs and 61 (60.4%) were neurologists, including 24 movement disorder specialists (MDS).
- In the questionnaire, physicians described the characteristics of their practice, number and characteristics of patients with ET under their management, oral ET treatments they use, and 7-point Likert items exploring treatment goals and perceived efficacy of oral medications used in patients with ET under their management.
 - A score of 1 was defined as being not important or low association.
 - A score of 7 was defined as being extremely important or strong association.
- Outcome means were calculated for all clinicians and by clinical specialties (ie, neurology vs primary care); outcome means related to patient characteristics (ie, patient age, ET severity, ET treatment) were weighted by the number of patients with ET seen each month.
- Statistically significant differences in outcome means were tested between neurologists (MDS and non-MDS) and PCPs due to sample size considerations.
- Statistical significance testing between neurologists and PCPs was conducted using a linear regression framework with heteroskedasticity-robust standard errors; outcomes related to patient characteristics also used the number of patients with ET seen each month as an analytical weight for statistical testing. Statistical significance was set at P<0.05.
- All analyses were performed using UNICOM® Intelligence Reporter Version 7.5 or later and STATA statistical software version 17.0.

Results

Physicians' Characteristics

- Across the 101 surveyed physicians, approximately 3,000 patients with ET were seen each month.
- Overall, the majority of physicians were neurologists (60%), had over 15 years of practice experience (83%), and held outpatient visits in a private office setting (78%) (Table 1).

TABLE 1. PHYSICIAN RESPONDENTS' CHARACTERISTICS

	Total population (N=101)	All neurologists (n=61)	MDS-neurologists (n=24)	Non-MDS neurologists (n=37)	Primary care physicians (n=40)
Geographic location (%)					
Northeast ^a	26%	28%	25%	30%	23%
Midwest ^b	22%	23%	17%	27%	20%
Southeast ^c	22%	23%	33%	16%	20%
West ^d	28%	23%	21%	24%	35%
Southwest ^e	3%	3%	4%	3%	3%
Location of outpatient treatment (%)					
Hospital public	6%	7%	7%	7%	4%
Hospital private	7%	6%	3%	8%	8%
Office/Consulting room public	9%	10%	17%	6%	8%
Office/Consulting room private	78%	77%	73%	80%	80%
Year practice started (%)					
Before 1984	5%	5%	4%	5%	5%
1984-1996	36%	39%	25%	49%	30%
1997-2006	42%	39%	42%	38%	45%
2007-2017	17%	15%	25%	8%	20%
After 2017	1%	2%	4%	0%	0%
Share of time spent on academic duties (%)	6%	7%	14%	2%	4%
Involvement in clinical trials (%)					
Currently involved in clinical trials	3%	5%	13%	0%	0%
Have been involved in clinical trials but not currently	28%	30%	50%	16%	25%
Never been involved in clinical trials	69%	66%	38%	84%	75%

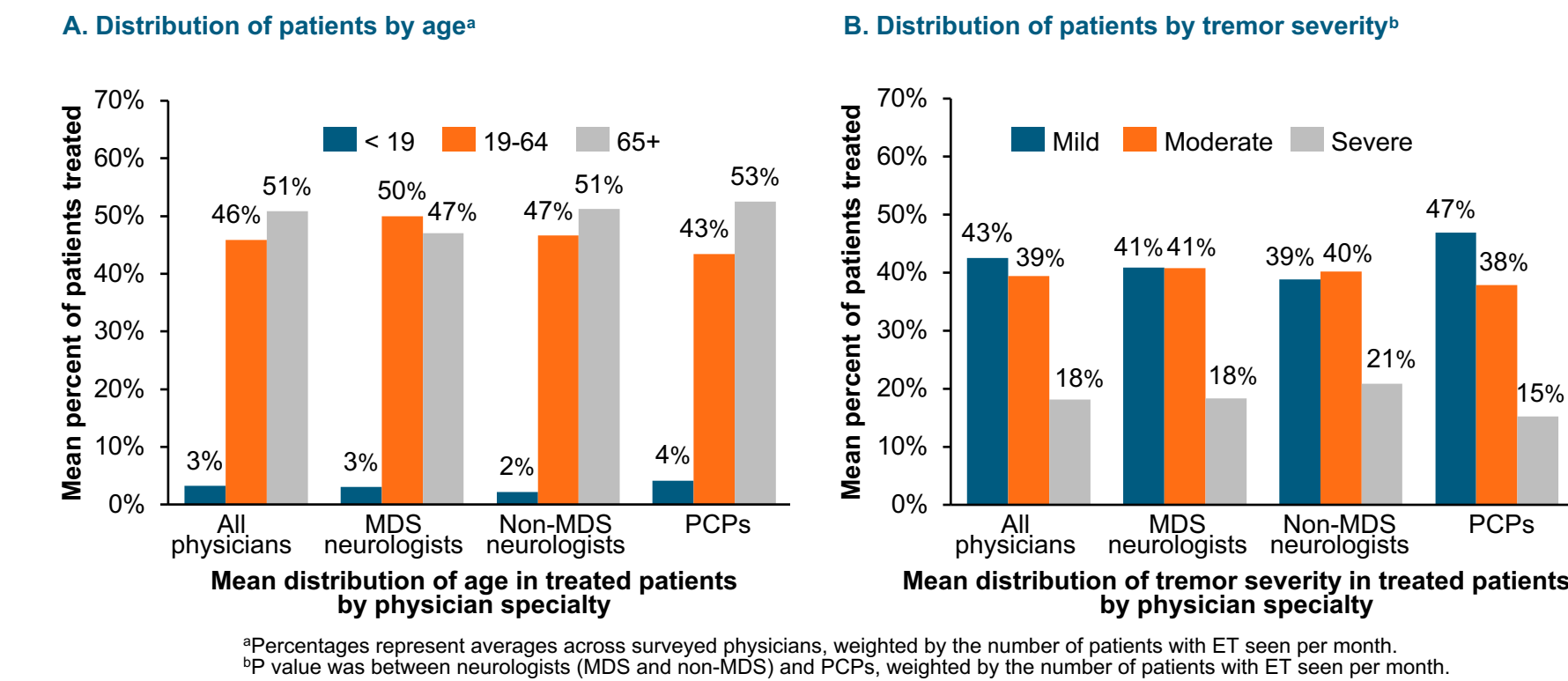
^aNortheast includes New Jersey, New York, Pennsylvania, and Maryland; ^bMidwest includes Illinois, Michigan, Ohio, Wisconsin, and Kansas; ^cSoutheast includes Florida, North Carolina, Alabama, Kentucky, and Louisiana; ^dWest includes California and Nevada; ^eSouthwest includes Texas and Arizona

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Characteristics of Patients with ET

- Nearly all patients with ET under physician management were over 19 years old (97%) and over half (51%) were older adults (≥65 years) (Figure 1A).
- Most (57%) patients seen had moderate or severe ET as reported by physicians, and variation in the share of moderate or severe ET patients by physician specialty (neurologist: 61% vs PCP: 53%) was not statistically significant, P=0.17 (Figure 1B).

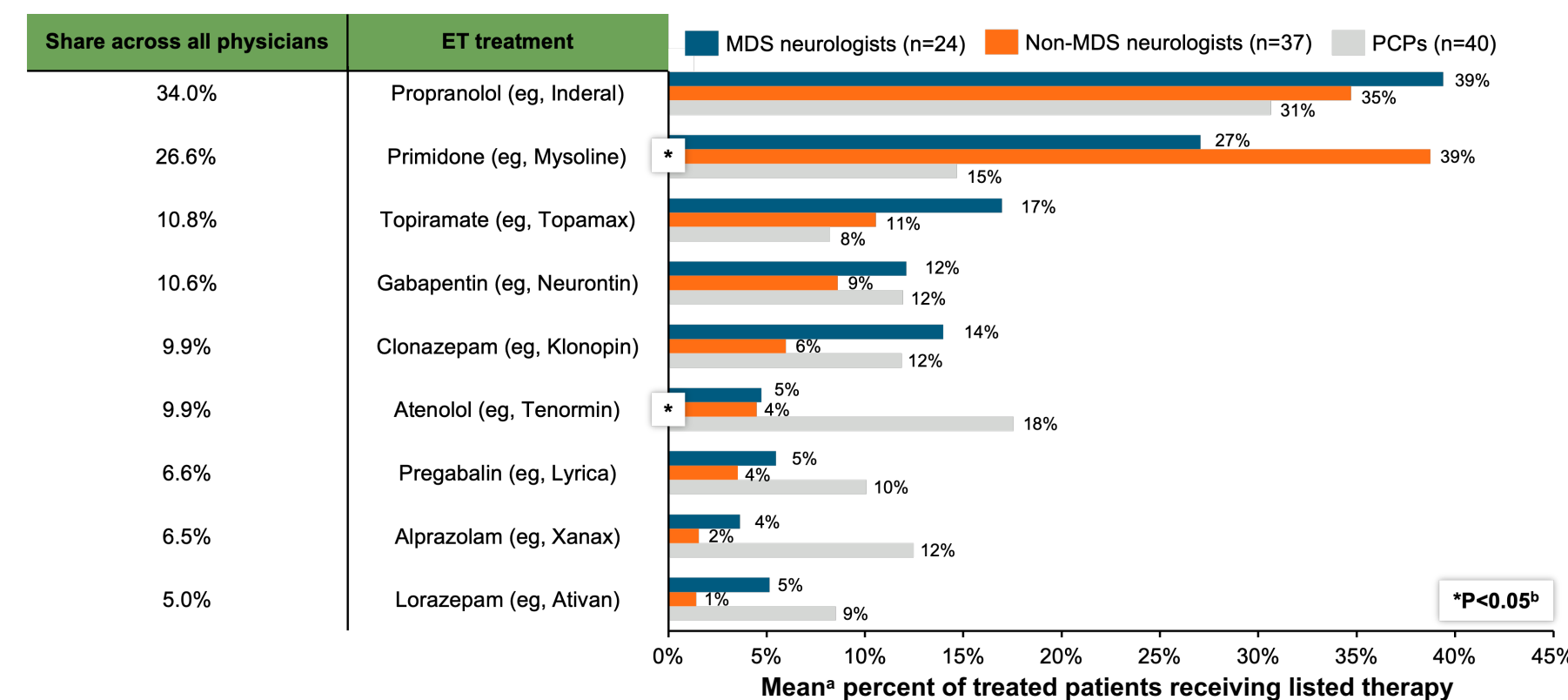
FIGURE 1. CHARACTERISTICS OF PATIENTS UNDER ET MANAGEMENT



ET Oral Treatment Patterns

- The most prescribed oral medications were propranolol (34.0%) and primidone (26.6%) across all physician types, followed by topiramate, gabapentin, clonazepam, and atenolol (all ~10% each) and pregabalin, alprazolam and lorazepam (with ~5% each) (Figure 2).
- Compared to neurologists, PCPs prescribed primidone to a significantly lower proportion of patients and atenolol to a significantly higher proportion of patients (P<0.05) (Figure 2).

FIGURE 2. MEAN^a PERCENTAGE OF PATIENTS WITH ET PRESCRIBED ONE OF THE FOLLOWING ORAL PHARMACOTHERAPIES



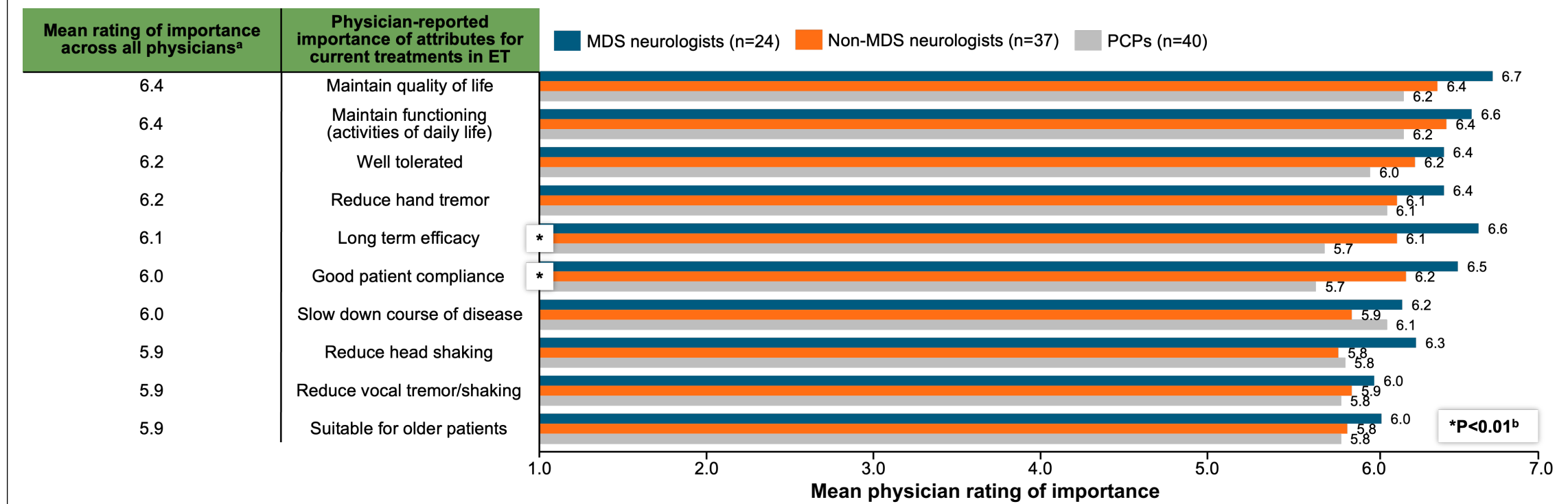
Conclusions

- Most surveyed physicians prioritized patient function and well-being in the treatment of adults with ET.
- Although neurologists and PCPs differed in treatment patterns, goals, and perception of drug efficacies, the overall consensus is that current oral medications do not adequately address patient-relevant outcomes.
- This study highlights an unmet need for more effective pharmacotherapies to meet treatment goals for patients with ET.

ET Treatment Perceptions

- The mean rating of importance (on a 7-point Likert scale) that physicians placed on the top 10 treatment attributes (of the 38 surveyed) when prescribing a currently available oral therapy, ranged from 5.9 to 6.4 (Figure 3).
- The most important treatment goals aligned between neurologists and PCPs were to maintain their patients' quality of life and functioning (activities of daily living).
- Moreover, neurologists rated the importance of long-term efficacy and patient compliance significantly higher than PCPs did (P<0.01) (Figure 3).

FIGURE 3. PHYSICIAN-RATED IMPORTANCE (1-7) OF THE TOP 10 ATTRIBUTES WHEN PRESCRIBING CURRENTLY AVAILABLE THERAPIES



- Both neurologists and PCPs rated the oral medications evaluated as generally having a limited-to-moderate effect (mean range: 1.6-5.0), and medications were rated especially low for slowing disease progression, reducing head shaking, reducing voice tremor, and long-term efficacy (Figure 4).
- Though comparisons are limited due to sample size constraints, variation was observed by physician type for the subset of oral medications they had prescribed.
 - Compared to PCPs, neurologists had a more favorable view of propranolol, primidone, and topiramate in maintaining quality of life and functioning, whereas PCPs tended to rate pregabalin and lorazepam more favorably than neurologists.
 - Additionally, neurologists held a more favorable view that topiramate is suitable for older patients and PCPs had a more favorable view that atenolol can help reduce vocal tremor.
 - Taking all treatment goals into account, neurologists rated propranolol and primidone the highest, whereas PCPs rated pregabalin, atenolol, and lorazepam the highest. Of note, both neurologists and PCPs overall rated alprazolam, topiramate, and gabapentin the lowest.

FIGURE 4. MEAN PHYSICIANS' RATING (1-7) ON THE EFFICACY OF THE MOST PRESCRIBED ET ORAL TREATMENTS IN ACHIEVING TREATMENT GOALS^a

	Propranolol (n=9)		Primidone (n=11)		Topiramate (n=10)		Gabapentin (n=11)		Clonazepam (n=12)		Atenolol (n=7)		Pregabalin (n=11)		Alprazolam (n=13)		Lorazepam (n=14)	
	Neuro.	PCPs	Neuro.	PCPs	Neuro.	PCPs	Neuro.	PCPs	Neuro.	PCPs	Neuro.	PCPs	Neuro.	PCPs	Neuro.	PCPs	Neuro.	PCPs
Maintain quality of life	4.8	4.0	4.8	3.5	4.0	2.5	3.8	3.5	4.0	3.9	4.3	3.9	4.7	4.3	3.4	3.7	3.9	4.5
Maintain functioning ^b	4.8	3.7	4.9	3.3	4.0	3.0	3.8	3.6	3.8	4.1	4.1	4.1	3.9	4.4	3.8	3.9	3.9	4.6
Well tolerated	4.7	3.9	4.4	4.0	3.9	3.5	4.7	4.2	4.8	4.7	4.4	4.4	4.7	4.5	4.1	4.3	4.1	4.5
Reduce hand tremor	4.6	4.3	4.9	3.9	3.8	4.0	3.6	3.9	4.5	4.2	4.1	4.4	4.4	4.6	3.8	4.0	4.2	4.1
Long-term efficacy	4.7	3.5	4.7	3.9	3.8	3.2	3.5	3.7	3.9	3.7	3.4	3.9	4.2	3.4	3.9	3.6	3.8	
Good patient compliance	4.6	4.1	4.5	4.4	4.3	3.2	4.5	4.1	4.8	4.9	4.9	4.4	4.7	5.0	4.2	4.6	4.7	4.6
Slow down course of disease	2.0	2.8	2.2	3.4	2.0	1.8	2.5	2.4	1.8	2.8	2.0	3.4	2.6	3.1	1.6	2.9	1.9	3.1
Reduce head shaking	4.2	3.8	3.6	3.9	3.6	3.8	3.2	3.6	3.9	4.0	3.3	4.4	3.6	4.3	3.6	3.9	3.5	3.9
Reduce vocal tremor/shaking	3.4	3.8	3.6	3.6	3.1	3.2	3.2	3.5	3.8	4.0	2.4	3.9	3.3	3.9	3.1	3.9	3.5	4.1
Suitable for older patients	4.7	4.5	4.4	4.8	4.3	2.8	4.9	3.8	4.4	3.8	4.7	4.5	4.1	4.5	3.2	4.0	3.4	3.9

^aNeurologists include MDS and non-MDS neurologists; to reduce participant burden, physicians were only asked to rate a subset of the treatments (on a 7-point Likert scale, where a score of 1 meant not important/low association and 7 meant extremely important/strong association), which they had previously indicated they prescribed. Therefore, the smaller ns do not represent response attrition.
^bFunctioning was measured by activities of daily living.

Limitations

- While minimal exclusion criteria governed the selection of physicians, physician inclusion could be influenced by the willingness to participate and practical considerations of geographical location.
- This study did not include an adequate sample size to evaluate differences between MDS and non-MDS neurologists, and it did not include data from other medical subspecialties, such as psychiatry.
- The required 10 patients per month for physician participation in this study may have encouraged an overreporting of patients, and diagnostic accuracy cannot be guaranteed.

Abbreviations

DSP, Disease Specific Programme; ET, essential tremor; MDS, movement disorder specialists; Neuro, neurologist; PCP, primary care physician; US, United States

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References

- Crawford AS, Lally C, Pettilo J, Paskavitz J, Louis E. How many adults in the US have essential tremor? Using data from epidemiological studies to derive age-specific estimates of prevalence. *Neurology*. 2020;94(15 suppl). Abstract 4458.
- Louis ED, McCreary M. How common is essential tremor? Update on the worldwide prevalence of essential tremor. *Tremor Other Hyperkinet Mov (NY)*. 2021;11:28.
- Bhatia KP, Bain P, Bajaj N, et al. Consensus Statement on the classification of tremors. from the task force on tremor of the International Parkinson and Movement Disorder Society. *Mov Disord*. 2018;33(1):75-87.
- Lenka A, Jankovic J. Tremor syndromes: an updated review. *Front Neurol*. 2021;12:684835.
- AAN fact sheet: summary of evidence-based guideline for patients and their families: treatment of essential tremor. American Academy of Neurology website. American Academy of Neurology.
- Louis ED, Machado DG. Tremor-related quality of life: A comparison of essential tremor vs. Parkinson's disease patients. *Parkinsonism Relat Disord*. 2015;21(7):729-735.
- Anderson P, et al. Real-world physician and patient behaviour across countries: Disease-Specific Programmes - a means to understand. *Curr Med Res Opin*. 2008;24(11):3063-3072.