Clinical Comorbidities of Patients With Idiopathic Hypersomnia and Narcolepsy: A US Claims-Based Analysis

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Introduction

- Idiopathic hypersomnia and narcolepsy are rare, chronic neurologic sleep disorders[1,2]
- Both idiopathic hypersomnia and narcolepsy are characterized by excessive and profound daytime sleepiness; however, each is associated with distinct clinical features, such as fragmented nocturnal sleep and REM-associated symptoms (sleep paralysis and hypnagogic/hypnopompic hallucinations) in narcolepsy, and long nocturnal sleep, unrefreshing naps, and sleep inertia in idiopathic hypersomnia[3-5]
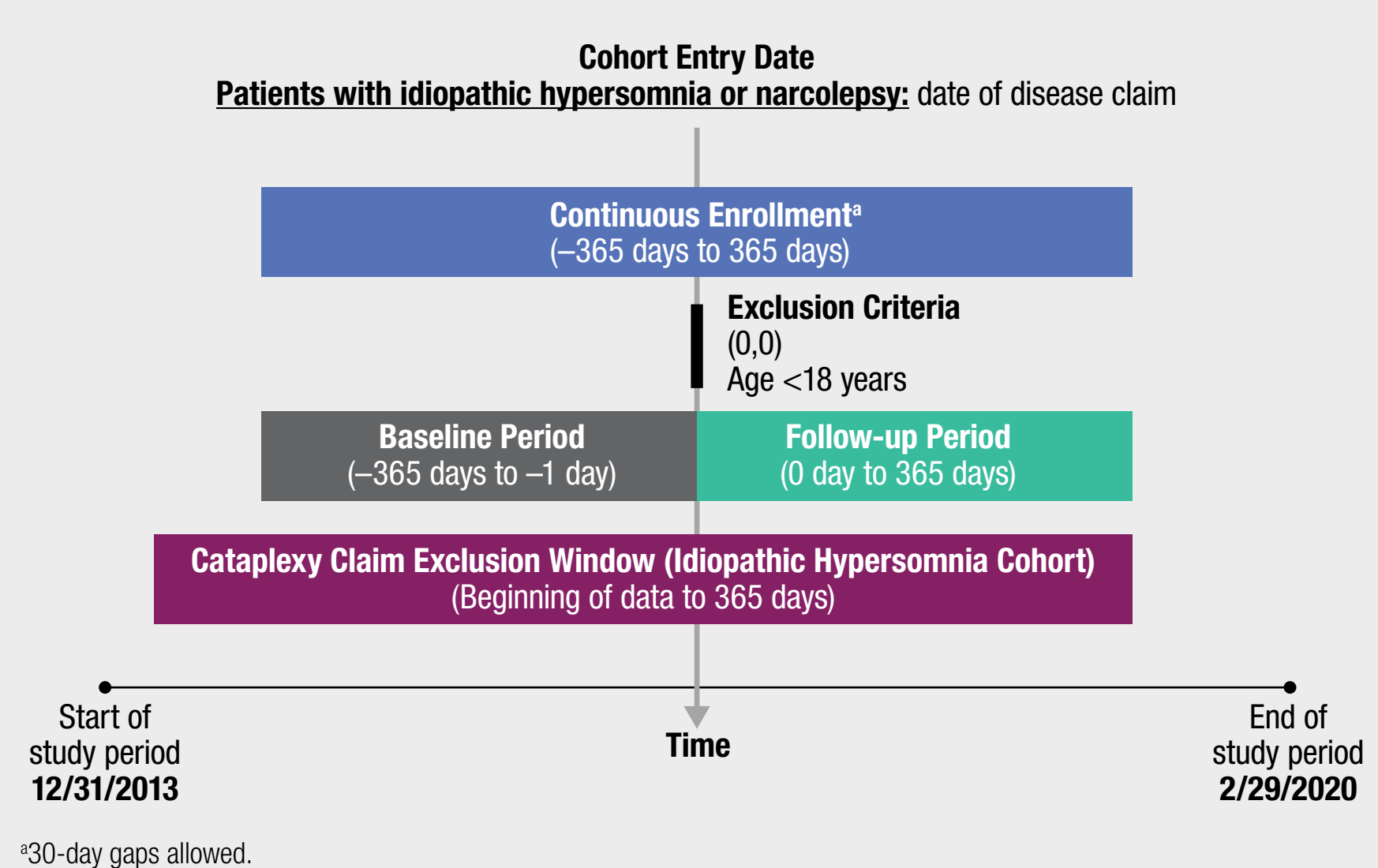
Objective

- To describe the clinical profiles of patients with idiopathic hypersomnia and narcolepsy

Methods

- Merative MarketScan US administrative claims were analyzed (study period, 12/31/2013–2/29/2020; index period, 12/31/2014–3/1/2019)
- Eligible patients were ≥18 years of age and continuously enrolled for 365 days before and after cohort entry (≤30-day gaps allowed)
- Patients were excluded from the idiopathic hypersomnia cohort if they received a cataplexy diagnosis at any time before cohort entry or during the follow-up period
- Patients with idiopathic hypersomnia entered the cohort on receipt of their earliest medical claim with a diagnosis for idiopathic hypersomnia (International Classification of Diseases, Ninth Revision, Clinical Modification [ICD-9-CM], 327.11, 327.12; Tenth Revision, Clinical Modification [ICD-10-CM], G47.11, G47.12) in any position within the index period[6,7]
- Patients with narcolepsy entered the cohort on receipt of their earliest medical claim with a diagnosis for narcolepsy (ICD-9-CM, 347.0, 347.00, 347.01, 347.10, 347.11; ICD-10-CM, G47.41, G47.411, G47.419, G47.42, G47.421, G47.429) in any position within the index period[7,8]
- Comorbid conditions were assessed over a 2-year period (365 days before to 365 days after cohort entry) and are described (means and percentages) for both cohorts

Figure 1. Study Design

Cohort Entry Date
Patients with idiopathic hypersomnia or narcolepsy: date of disease claim
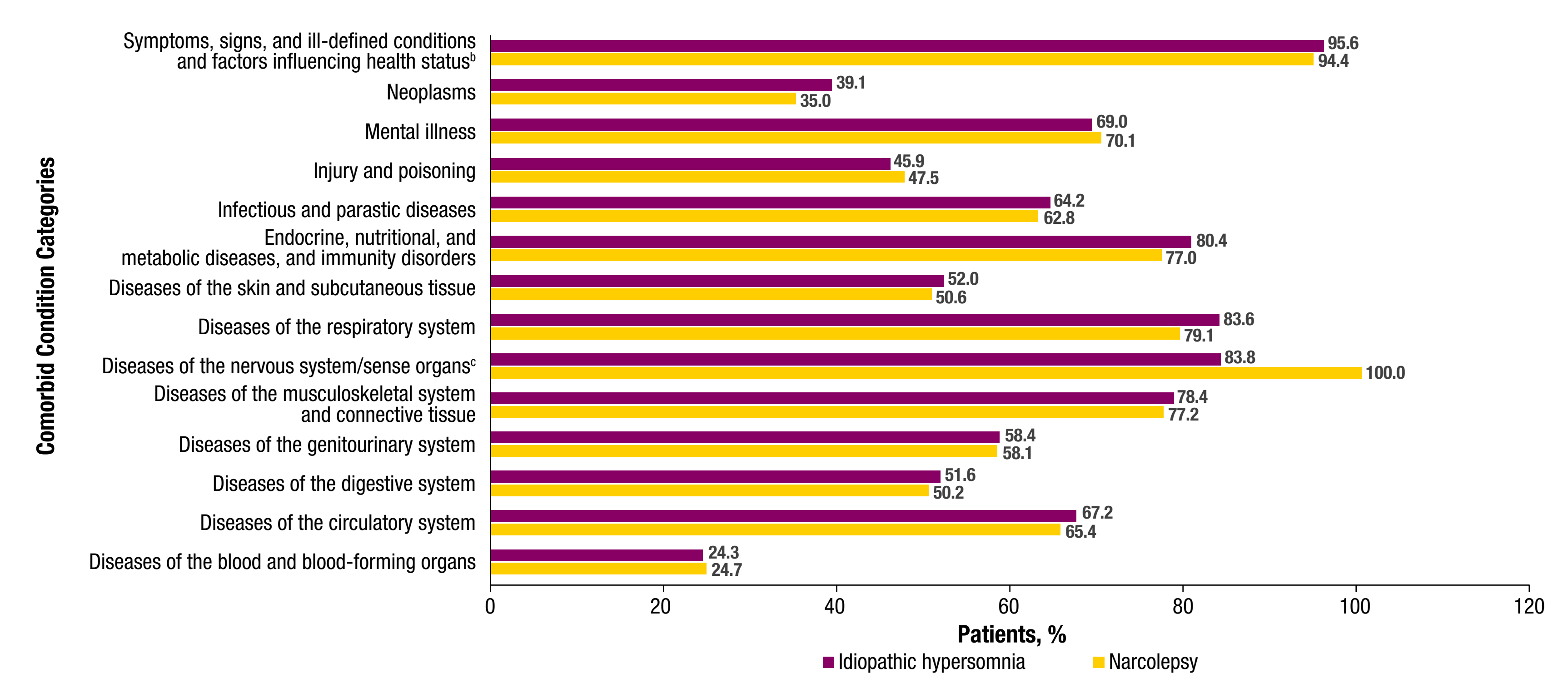
[a]30-day gaps allowed.

Results

Table 1. Baseline Characteristics of (A) Patients With Idiopathic Hypersomnia and (B) Patients With Narcolepsy

A. Patients With Idiopathic Hypersomnia	
Patients, n	11,426
Age, years	
Mean (SD)	44.3 (14.0)
Median [IQR]	45.0 [34.0, 55.0]
Sex, n (%)	
Male	3997 (35.0)
Female	7425 (65.0)
Unknown	4 (0.0)
US geographic region, n (%)	
Northeast	1076 (9.4)
North Central	2353 (20.6)
South	4702 (41.2)
West	943 (8.3)
Unknown/missing	2352 (20.6)
Insurance type, n (%)	
Commerical	8566 (75.0)
Medicare	528 (4.6)
Medicaid	2327 (20.4)
Commercial and Medicare	5 (0.0)
Total number of comorbidities,[a] mean (SD)	11.4 (5.2)
B. Patients With Narcolepsy	
Patients, n	31,214
Age, years	
Mean (SD)	43.0 (15.0)
Median [IQR]	43.0 [31.0, 54.0]
Sex, n (%)	
Male	10,957 (35.1)
Female	20,246 (64.9)
Unknown	11 (0.0)
US geographic region, n (%)	
Northeast	2991 (9.6)
North Central	6706 (21.5)
South	11,713 (37.5)
West	2311 (7.4)
Unknown/missing	7493 (24.0)
Insurance type, n (%)	
Commerical	22,058 (70.7)
Medicare	1695 (5.4)
Medicaid	7448 (23.9)
Commercial and Medicare	13 (0.0)
Total number of comorbidities,[a] mean (SD)	10.7 (5.5)

[a]Comorbidities assessed were identified using Clinical Classifications Software categories and ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) and ICD-10-CM codes referenced in the literature. IQR, interquartile range; SD, standard deviation.

- In total, 11,426 patients with idiopathic hypersomnia and 31,214 patients with narcolepsy were included
- Mean number of comorbid medical conditions was 11.4 and 10.7 at baseline for patients with idiopathic hypersomnia and patients with narcolepsy, respectively, and 15.4 and 14.6, respectively, for the combined baseline and follow-up period
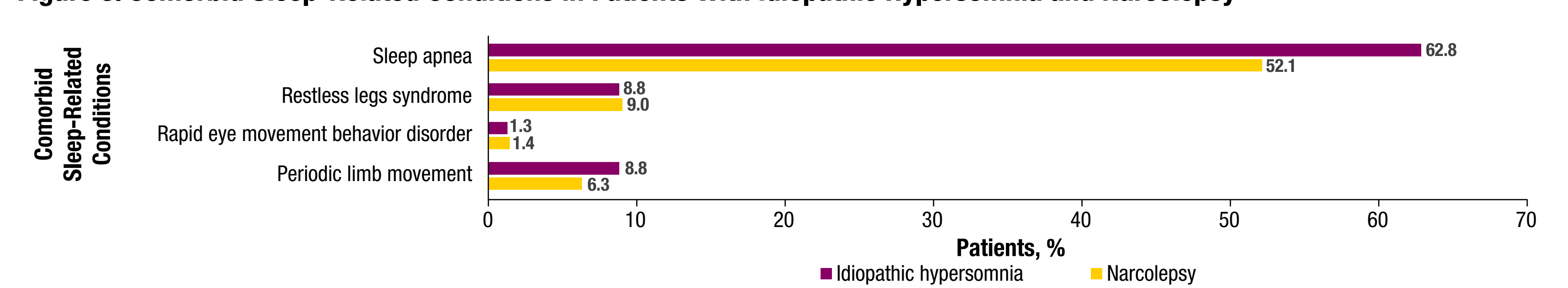
Figure 2. Clinical Comorbid Condition Categories in Patients With Idiopathic Hypersomnia and Narcolepsy[a]

[a]Comorbid clinical categories were identified using Clinical Classifications Software that aggregates International Classification of Diseases, Tenth Revision, Clinical Modification/Procedure Coding System (ICD-10-CM/PCS) codes into clinically meaningful categories.
[b]The first undefined category includes a range of conditions, including but not limited to syncope, fever of unknown origin, lymphadenitis, gangrene, shock, nausea and vomiting, and malaise and fatigue.[9]
[c]Narcolepsy meets the criteria for "diseases of the nervous system/sense organs," hence the 100% prevalence for this category.

- Patients with idiopathic hypersomnia and patients with narcolepsy experience similarly high proportions of diseases in the following categories: diseases of the nervous system and sense organs; symptoms, signs, and ill-defined conditions and factors influencing health status; diseases of the respiratory system; endocrine, nutritional, and metabolic diseases and immunity disorders; diseases of the musculoskeletal system and connective tissue
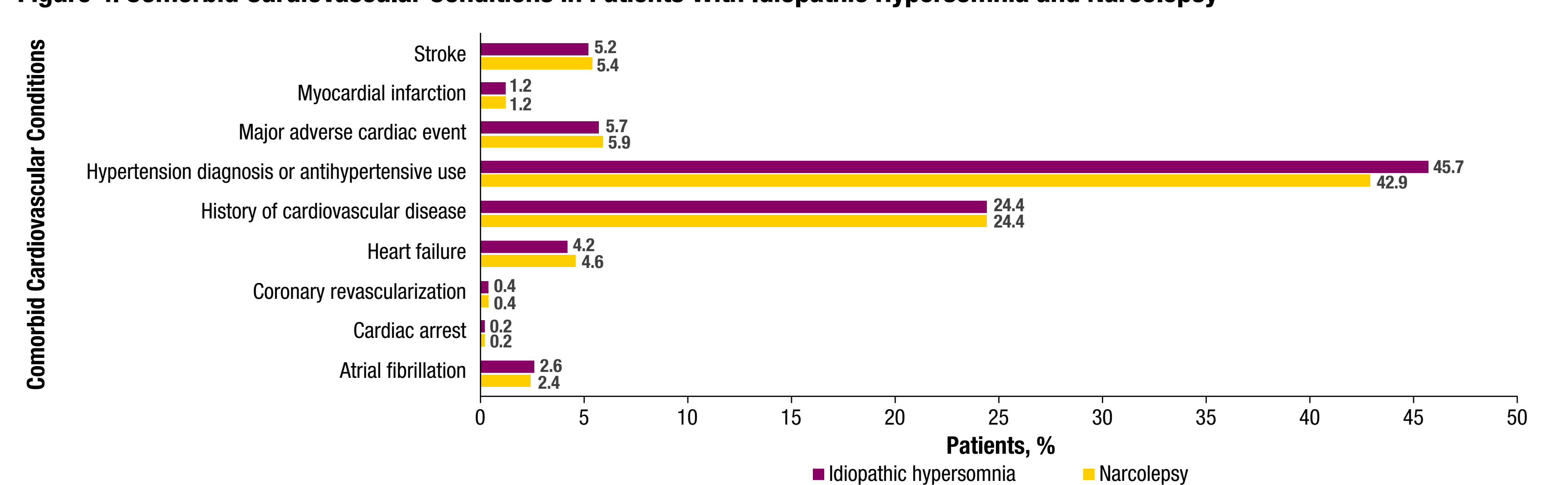
Figure 3. Comorbid Sleep-Related Conditions in Patients With Idiopathic Hypersomnia and Narcolepsy[a]

[a]Comorbid conditions were identified using ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) and ICD-10-CM codes.

- The most common comorbid sleep-related condition for patients with idiopathic hypersomnia and patients with narcolepsy is sleep apnea
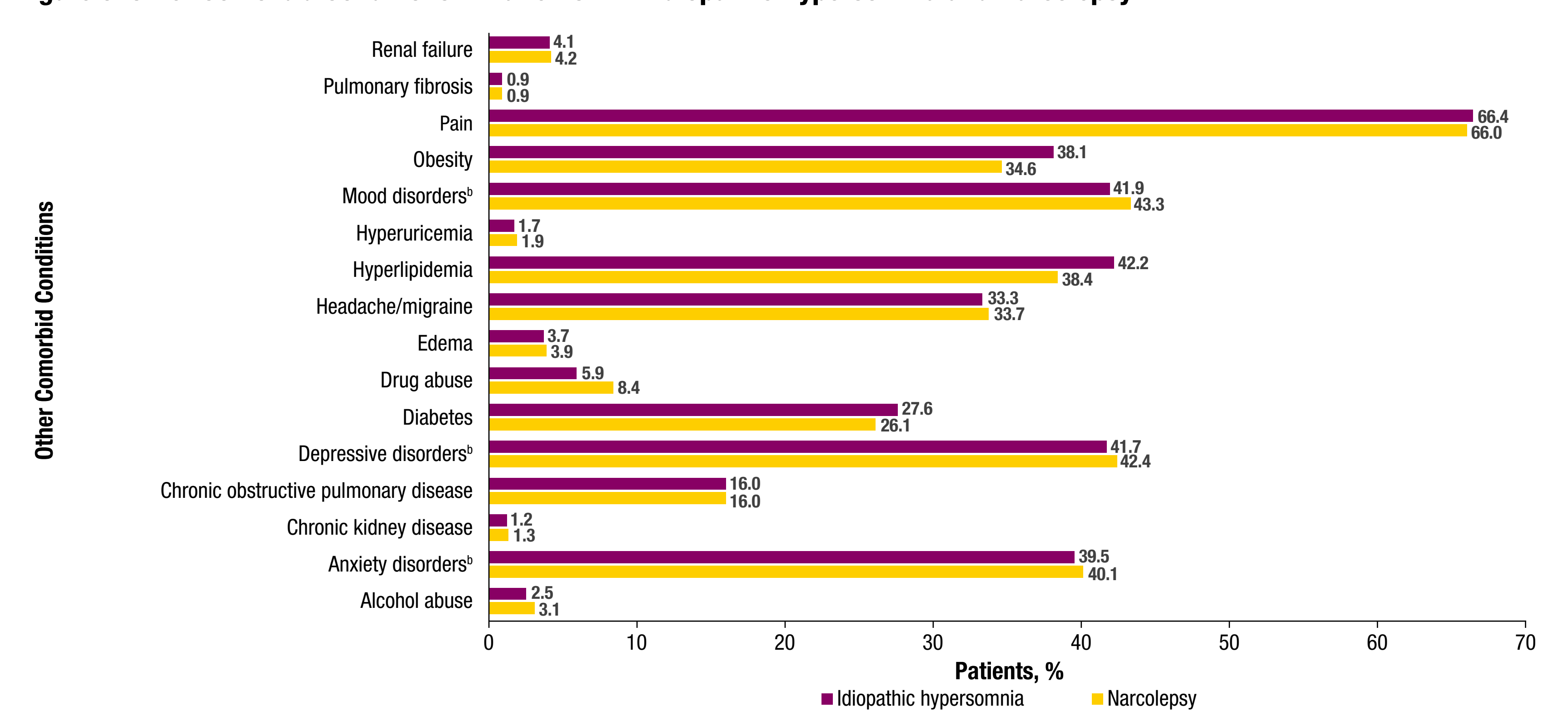
Figure 4. Comorbid Cardiovascular Conditions in Patients With Idiopathic Hypersomnia and Narcolepsy[a]

[a]Cardiovascular conditions were identified using Clinical Classifications Software, ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) codes, ICD-10-CM codes, Common Procedural Terminology, or prescription claims (ie, antihypertensive use).

- More than 40% of patients with idiopathic hypersomnia and patients with narcolepsy experience a hypertension diagnosis or antihypertensive use

Figure 5. Other Comorbid Conditions in Patients With Idiopathic Hypersomnia and Narcolepsy[a]

[a]Other comorbid conditions were identified using Clinical Classifications Software, ICD-9-CM (International Classification of Diseases, Ninth Revision, Clinical Modification) codes, ICD-10-CM codes, and prescription claims (ie, pain).
[b]Mood disorders is a subgroup of the Clinical Classifications Software category for mental illness; therefore, there may be some overlap in reported percentages for depressive disorders and anxiety disorders.

- Pain is the most common other comorbid condition
- Psychiatric comorbidities (mood disorders, depressive disorders, and anxiety) were also very common in both patients with idiopathic hypersomnia and patients with narcolepsy

Conclusions

- Patients with idiopathic hypersomnia and patients with narcolepsy experience a broad range of comorbid medical conditions across different organ systems
- The most common comorbid conditions observed in these patients include neuropsychiatric disorders, metabolic disorders, respiratory system disorders, musculoskeletal disorders, and cardiovascular conditions
- Although their sleep pathologies are distinct, patients in both groups experience a similarly high burden of comorbid conditions[3-5]
- These data suggest that consideration of the high comorbidity burden experienced by patients with idiopathic hypersomnia or narcolepsy may be relevant when evaluating treatment options

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