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## Background

### Existing knowledge

- Sleep disorders are common during adolescence and often co-occur with mental health conditions, such as anxiety and depression
- Prior studies largely rely on self-reported measures; there is limited evidence on population-level mental health diagnoses following an initial sleep disorder diagnosis

### Objective

- To examine the association between sleep disorder diagnoses during adolescence and subsequent mental health diagnoses within one year.

## Methods

### Data

- A subset of Truveta Data was used; Truveta Data is comprised of **real-world US electronic health record** (EHR) data, which is aggregated, normalized, and de-identified from US health care systems comprising clinics and hospitals.

### Population

- Adolescents aged 12 – 17 years (January 2018 – March 2026)
- $\geq 1$  outpatient encounter 1 year before and after index date
- No prior mental health diagnosis or psychotropic medication treatment
- **Sleep disorders included:** insomnia, sleep apnea, nocturnal enuresis, hypersomnia, parasomnia, and related conditions
- **Mental health outcomes included:** anxiety, depression, bipolar disorder, ADHD, and OCD

• **Sleep cohort:** Adolescents with a first-time sleep disorder diagnosis

• **Comparator cohort:** Adolescents without a sleep disorder diagnosis

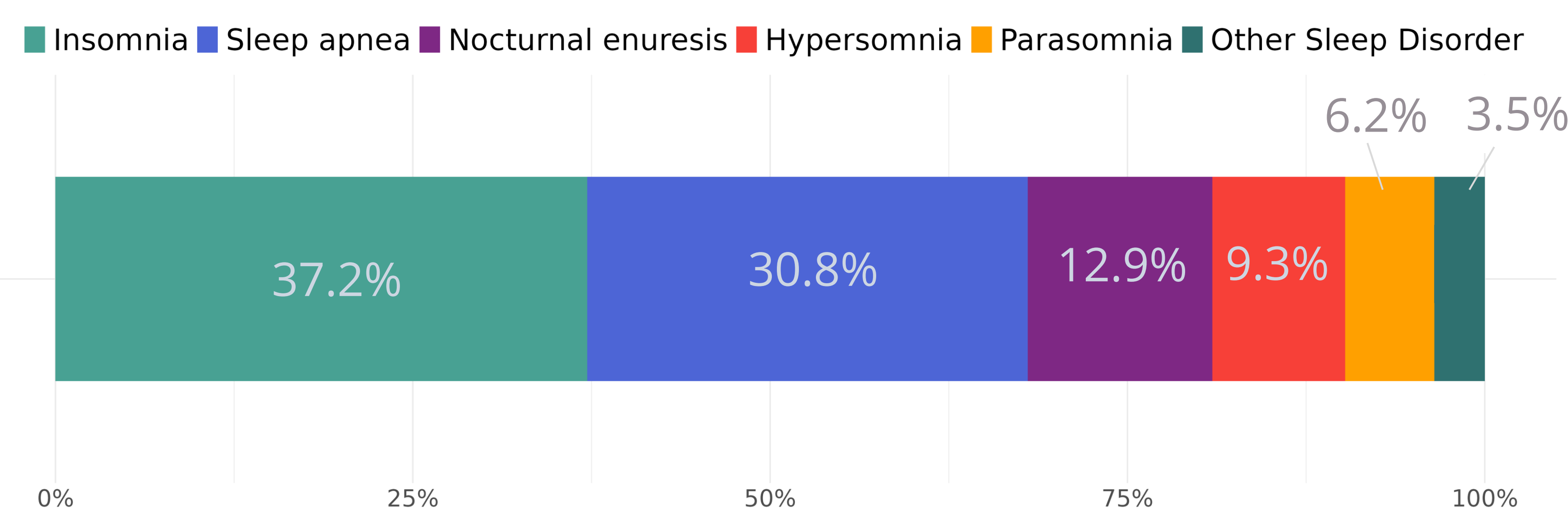
### Analysis

- Sleep cohort matched to comparator cohort (up to 1:5 matching; without replacement) on age, sex, and encounter month
- ATT-weighted propensity scores demographics, comorbidities, and healthcare utilization
- Covariate balanced achieved (all SMD < 0.1)
- Weighted logistic regression estimated likelihood of new mental health diagnosis within 1 year

## Patient characteristics for sleep and comparator cohort before and after ATT weighting

	Before weighting		After weighting	
	Sleep N = 14,353	Comparator N = 43,489	Sleep N = 13,365	Comparator N = 13,718
<b>Age (Mean, SD)</b>	14.9 (1.8)	14.9 (1.8)	14.9 (1.8)	14.9 (1.8)
<b>Female sex</b>	6,919 (48.2%)	21,565 (49.6%)	6,919 (48.2%)	6,840 (48.5%)
<b>Race</b>				
Asian	608 (4.2%)	2,425 (5.6%)	608 (4.2%)	607 (4.3%)
Black	2,330 (16.2%)	5,086 (11.7%)	2,330 (16.2%)	2,256 (16.0%)
Other	1,651 (11.5%)	4,902 (11.3%)	1,651 (11.5%)	1,626 (11.5%)
Unknown	1,009 (7.0%)	4,054 (9.3%)	1,009 (7.0%)	1,007 (7.1%)
White	8,755 (61.0%)	27,022 (62.1%)	8,755 (61.0%)	8,593 (61.0%)
<b>Ethnicity</b>				
Hispanic or Latino	2,316 (16.1%)	6,829 (15.7%)	2,316 (16.1%)	2,283 (16.2%)
Not Hispanic or Latino	11,025 (76.8%)	32,212 (74.1%)	11,025 (76.8%)	10,799 (76.6%)
Unknown	1,012 (7.1%)	4,448 (10.2%)	1,012 (7.1%)	1,008 (7.2%)
<b>Healthcare utilization in prior year</b>				
Number of outpatient visits	5.8 (7.1)	5.3 (6.4)	5.8 (7.1)	5.7 (6.8)
Number of ED visits	0.3 (0.8)	0.2 (0.6)	0.3 (0.8)	0.3 (0.9)
<b>Comorbidities</b>				
Asthma	1,956 (13.6%)	2,946 (6.8%)	1,956 (13.6%)	1,817 (12.9%)
Autism	392 (2.7%)	233 (0.5%)	392 (2.7%)	268 (1.9%)
Obese BMI	3,834 (26.7%)	5,008 (11.5%)	3,834 (26.7%)	3,626 (25.7%)
Overweight BMI	2,035 (14.2%)	3,740 (8.6%)	2,035 (14.2%)	2,013 (14.3%)

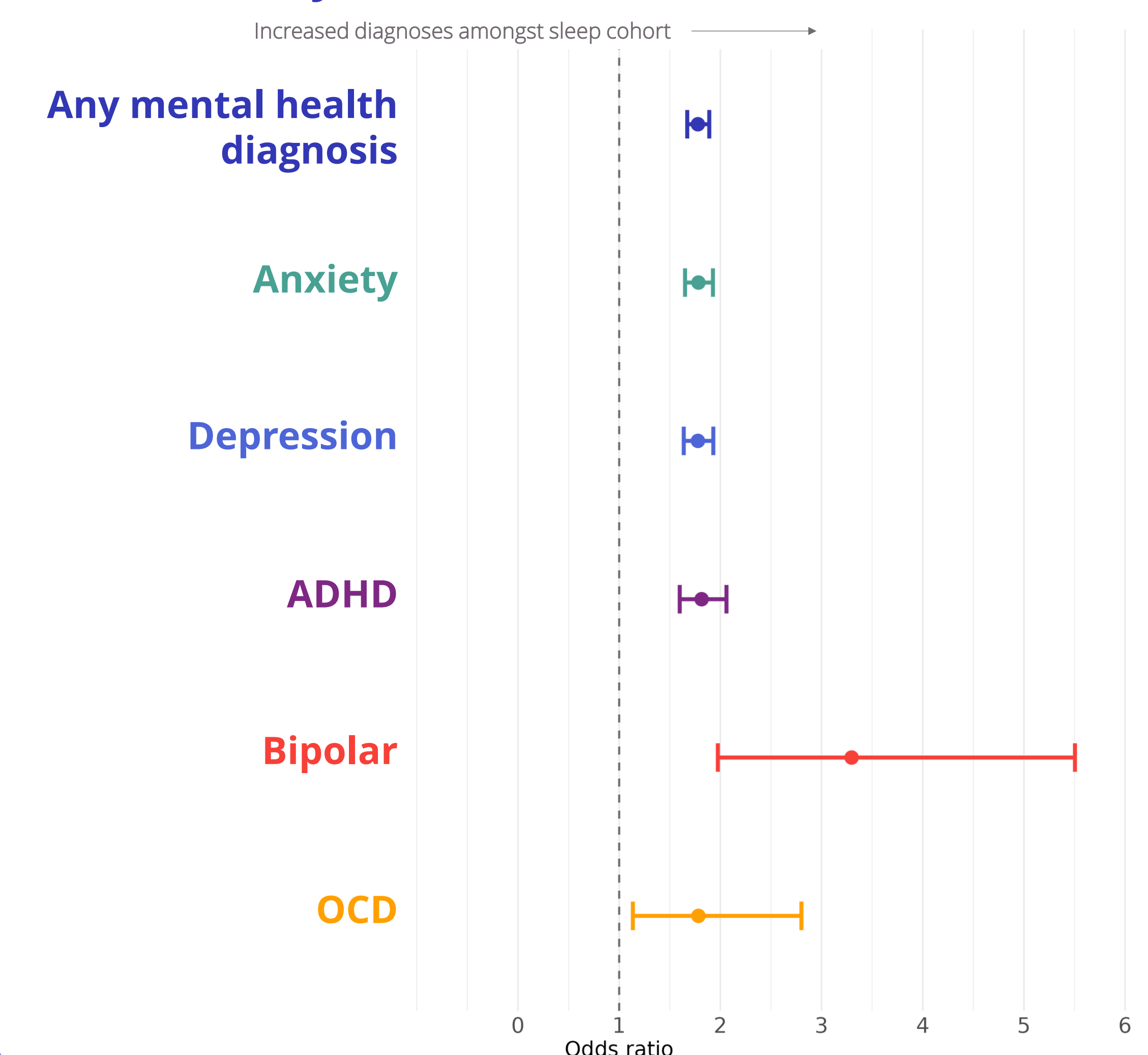
## Distribution of sleep disorders in sleep cohort



## Results

- Most common sleep disorders were insomnia (37.2%), sleep apnea (30.8%), and nocturnal enuresis (12.9%)
- Sleep disorder diagnosis was associated with higher odds of any mental health diagnosis within 1 year (OR 1.78, 95% CI 1.67–1.89), including:
  - Anxiety (OR 1.78, 95% CI 1.65–1.93)
  - Depression (OR 1.78, 95% CI 1.64–1.93)
  - ADHD (OR 1.81, 95% CI 1.60–2.06)
  - Bipolar (OR 3.30, 95% CI 1.98, 5.50)
  - OCD (OR 1.78, 95% CI 1.14, 2.80)

## Likelihood of mental health diagnoses within 1 year



## Conclusions

- Adolescents with a sleep disorder were 78% more likely to receive a first-time mental health diagnosis within one year, with elevated risk observed across anxiety, depression, ADHD, bipolar disorder, and OCD
- Findings were consistent with prior literature using self-reported measures, supporting a strong association between sleep and mental health
- Adolescence represents a critical window for integrated mental health screening following sleep disorder diagnosis

Adolescents with a sleep disorder diagnosis have higher odds of incident mental health diagnoses within one year

