

Comorbidities and Comedication among individuals in treatment for ADHD: A Danish Nationwide study

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INTRODUCTION

- Attention-deficit/hyperactivity disorder (ADHD) is a neurodevelopment disorder that originates in early childhood and continues to impact into adulthood. In Denmark, it is estimated that **2.52% of the population have ADHD**.
- Individuals with ADHD can experience learning and social challenges in childhood and problems with education and employment later in life. ADHD also imposes a substantial economic burden through productivity losses, healthcare use, and educational support.
- ADHD has been associated with increased psychiatric and, to a lesser extent, somatic comorbidity, as well as higher use of psychiatric comedication. However, evidence from a Danish setting is limited, highlighting the need to investigate these patterns in a Danish context.

OBJECTIVES

- To examine the prevalence of comorbidities and the use of psychiatric comedication among individuals in medical ADHD treatment in comparison to a matched control group from the general population.

MATERIAL & METHODS

- This nationwide case-control study included **1,082,378 Danish individuals** aged 7-64 of whom 98,398 had at least one prescription of ADHD medication during 2023. Cases were matched to controls (1:10) from the general population, not in medical treatment for ADHD, on birth year and sex.
- Medical treatment for ADHD includes the following stimulants: dexamfetamine, methylphenidate, lisdexamfetamine, and two non-stimulants: Guanfacine and atomoxetine (ATC code: N06BA02, N06BA04, N06BA12, C02AC02, N06BA09).
- Comorbidities was identified though ICD-10 diagnoses from the Danish National Patient Registry in the period from 2013 to 2023, while psychiatric comedication was identified in 2023 by ATC-codes though the National Prescription Registry.
- Associations were estimated using conditional logistic regression models.

FIGURE 1: Prevalence of Somatic and Psychiatric Comorbidities among ADHD drug users Compared with the Control Group

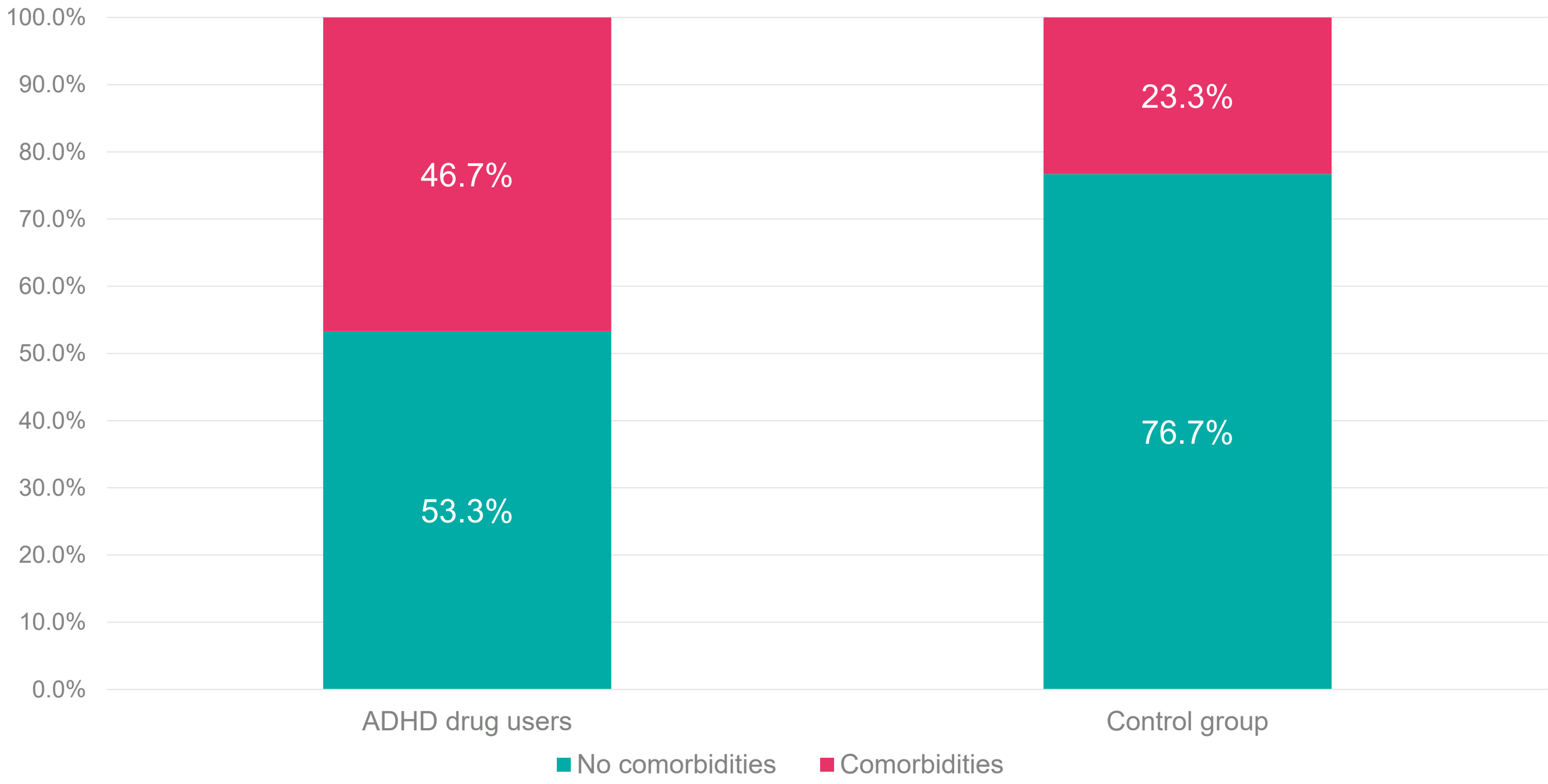
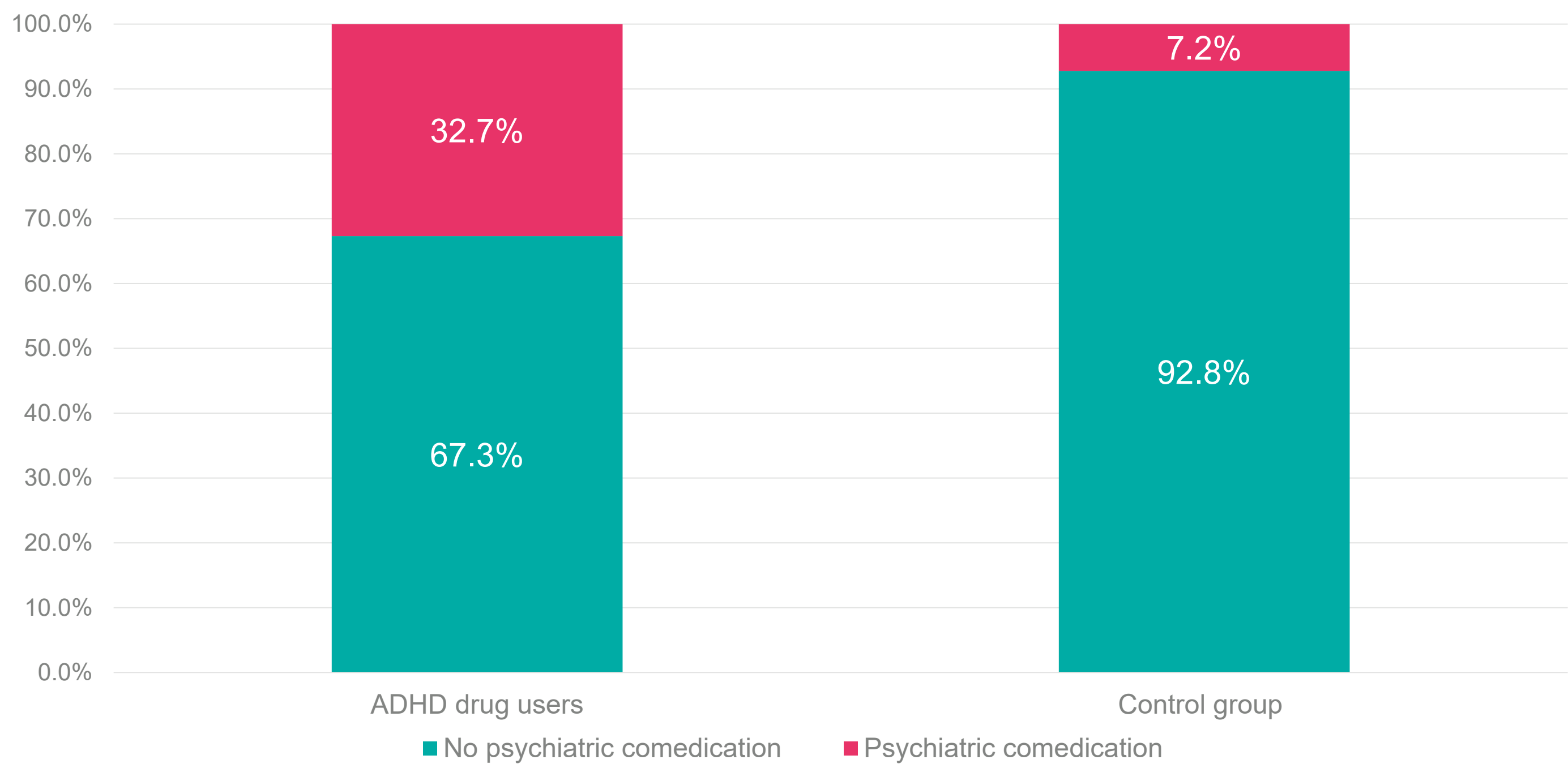


FIGURE 2: Prevalence of Psychiatric Comedications among ADHD Drug Users Compared to the Control Group



RESULTS

- Among those in ADHD treatment, 46.7% had at least one comorbidity compared to 23.3% in the control group (**Fig. 1**).
- The use of psychiatric comedications (besides ADHD medication) was likewise more common among individuals in ADHD treatment (32.7%) compared to the controls (7.2%) (**Fig. 2**). Especially the use of antidepressant and antipsychotic drugs was higher among individuals in medical treatment for ADHD compared to the control group (**Table 1**).
- Females aged 7-29 years in ADHD treatment had 4.48-4.50 times higher odds of comorbidities compared to females not in ADHD treatment. Similar patterns were observed for males but with slightly lower ORs (**Fig. 3**).

FIGURE 3: Age- and sex-stratified conditional logistic regression model showing OR for comorbidities adjusted for place of residence

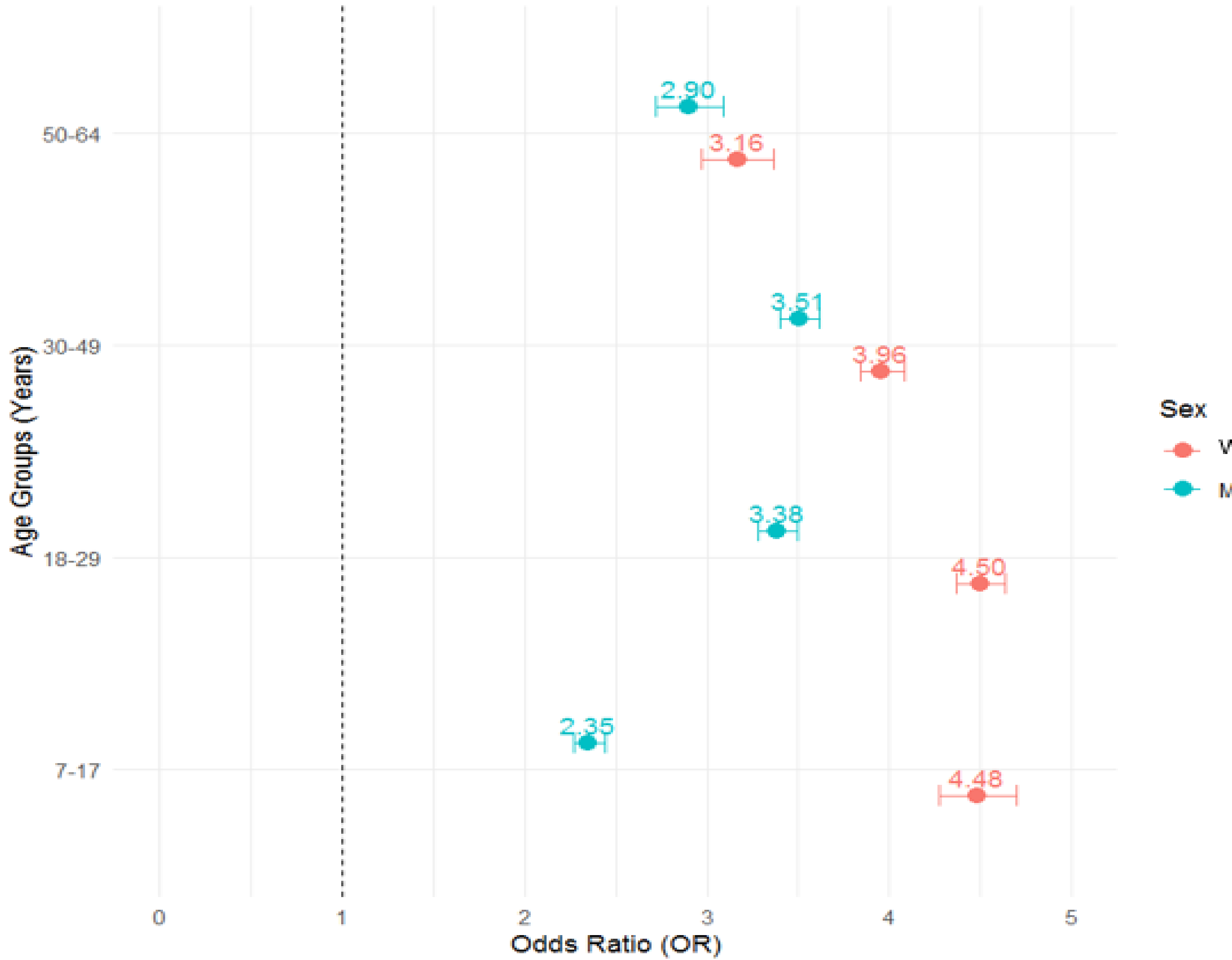


Table 1: Prevalence of Psychiatric Comedications among ADHD Drug Users Compared to the Control Group

Type of comedication	ADHD drug users n (%)	Control group n (%)	P-value chi ² -test
Antidepressive drugs			<0.0001*
Children (7-17 years)	1,256 (5.5)	1,671 (0.7)	
Young adults (18-29 years)	8,502 (24.6)	18,084 (5.2)	
Middle-aged adults (30-49 years)	10,610 (32.3)	25,289 (7.7)	
Older adults (50-64 years)	3,347 (40.9)	7,867 (9.9)	
Antipsychotic drugs			<0.0001*
Children (7-17 years)	633 (2.8)	694 (0.3)	
Young adults (18-29 years)	4,458 (12.9)	6,893 (2.0)	
Middle-aged adults (30-49 years)	5,543 (16.9)	7,905 (2.4)	
Older adults (50-64 years)	1,542 (18.8)	2,230 (2.7)	
Sedative drugs			<0.0001*
Children (7-17 years)	193 (0.8)	659 (0.3)	
Young adults (18-29 years)	812 (2.4)	2,023 (0.6)	
Middle-aged adults (30-49 years)	1,631 (5.0)	3,236 (1.0)	
Older adults (50-64 years)	757 (9.2)	1,504 (1.8)	
Sleeping drugs			<0.0001*
Children (7-17 years)	239 (1.0)	452 (0.2)	
Young adults (18-29 years)	1,007 (2.9)	2,740 (0.8)	
Middle-aged adults (30-49 years)	1,216 (3.7)	3,149 (1.0)	
Older adults (50-64 years)	369 (4.5)	980 (1.2)	
Number of psychiatric comedication			<0.0001*
1	23,768 (24.2)	57,526 (5.9)	
2	7,031 (7.2)	11,116 (1.1)	
3	1,283 (1.3)	1,722 (0.2)	
4	109 (0.1)	113 (0.01)	
Mean number of psychiatric comedication (SD)	1.31 (0.56)	1.21 (0.48)	<0.0001*

CONCLUSION & PERSPECTIVES

- This study reveals that both prevalence of somatic and psychiatric comorbidities and the use of psychiatric comedication are significantly higher among individuals in ADHD treatment.
- The highest occurrence of comorbidities is seemingly among females aged 7-17 year and 18-29 years.
- Longitudinal studies are needed to confirm the temporal association of these results.