

Trends in the Dispensing of Adult ADHD Medications

A. Maher¹, M. Cahill², AW. Murphy³, G. Molloy¹.

1. School of Psychology, College of Arts, Social Sciences and Health Studies, University of Galway, University Rd., Co. Galway, Ireland.
2. School of Pharmacy and Biomolecular Sciences, Royal College of Surgeons in Ireland, St Stephen's Green, Dublin 2, Ireland.
3. Department of General Practice, College of Medicine, Nursing and Health Sciences, University of Galway, University Rd., Co. Galway, Ireland.

Abstract

Aims

To examine patterns of stimulant ADHD medications to adults in Ireland between 2015 and 2024, under community drug schemes. We aimed to describe changes over time across age groups, demographic characteristics, and geographic areas.

Methods

Dispensing data were obtained from the Irish Primary Care Reimbursement Service, namely prescriptions reimbursed through General Medical Services scheme and Drug Payment scheme. Dispensing volumes and patient numbers for NICE-recommended first-line agents, methylphenidate and lisdexamfetamine, were analysed using a retrospective repeated cross-sectional design.

Results

The number of recorded dosage units of both medications increased by ~211% (700,574 to 2,217,634) between 2015 and 2024. Units of lisdexamfetamine rose by ~504% (59,088 to 356,641) between 2020 and 2023. The number of patients also increased during this time (3,377 to 13,966). Adults aged 16-34 years experienced the largest growth. By 2024, dispensings among females had increased to levels approaching those observed in males. Regional patient variation was evident, with largest increases observed in North Cork, Waterford, and Cork-South Lee.

Discussion

Adult ADHD pharmacotherapy in Ireland appears to have increased over the past decade, which could reflect evolving service provision. Demographic and regional variation could

underscore the need for equitable expansion of adult ADHD assessment and treatment services.

Introduction

Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental condition characterised by persistent patterns of inattention, impulsivity and associated emotional dysregulation that impair functioning across multiple domains¹. Although ADHD was initially understood primarily as a childhood disorder, longitudinal evidence has established that it frequently persists into adulthood, with an estimated adult prevalence between 2% and 3% worldwide². Pharmacological treatment represents a component in the management of adult ADHD, with stimulant medications such as methylphenidate and lisdexamfetamine recommended as first-line therapies in multiple international guidelines. These agents have demonstrated efficacy in reducing core ADHD symptoms and improving daily functioning^{2,3}.

Evidence-based guidelines recommend a comprehensive diagnostic assessment including an evaluation of patients' developmental history, symptom persistence and impairment, collateral information, and the presence of co-existing psychiatric or medical conditions.⁴ The clinical presentation in adults may differ from that in children, with symptoms often manifesting through disorganisation, impaired self-regulation, occupational difficulty, and emotional lability. These differences could contribute to under-recognition earlier in life, particularly among female patients^{5,6}.

Previous pharmacoepidemiological research involving the Irish population has focused primarily on children and adolescents. A recent analysis of national pharmacy claims data reported a 29% increase in dispensed ADHD medications among individuals aged 5 to 15 years between 2017 and 2021, with higher prevalence among males than females⁷. While this study highlighted rising treatment needs in younger populations, it did not examine adults. To our knowledge, no population-level evaluation has characterised ADHD pharmacotherapy among adults in Ireland. Understanding these patterns is increasingly important given emerging service models, rising international referral volumes, and the growing recognition of ADHD as a potentially lifelong condition⁸.

This study aimed to examine patterns in the dispensing of stimulant ADHD medications to adults in Ireland between 2015 and 2024, under community drug schemes. Specifically, the study aimed to describe changes over time for methylphenidate and lisdexamfetamine, across age groups, demographic characteristics, and geographic health areas.

Methods

This study applied a retrospective repeated cross-sectional design. The analysis focused on non-identifiable individuals aged >16 years, having dispensings recorded through the Irish Primary Care Reimbursement Service (PCRS). Dispensing data were obtained from the PCRS pharmacy claims database, which captured medicines dispensed under the General Medical Services Scheme (GMS) and Drug Payment Scheme (DPS). These schemes covered approximately 40% of the Irish population through publicly reimbursed community prescribing in 2024. The dataset contained aggregated annual dispensing data for methylphenidate and lisdexamfetamine, including their total units dispensed and the number of patients who had ≥ 1 dispensing recorded. Available demographic variables comprised age group, gender, and Local Health Office (LHO), nested within Community Healthcare Organisation (CHO) regions.

Analyses were descriptive. Dispensing metrics were summarised annually from 2015 to 2024. Percentage change was calculated using 2015 as the baseline year. Age and gender distributions were derived from annual category counts. Inferential statistical testing was not undertaken due to the use of aggregated anonymised data. All analyses were performed using Microsoft Excel and R version 4.5.2.

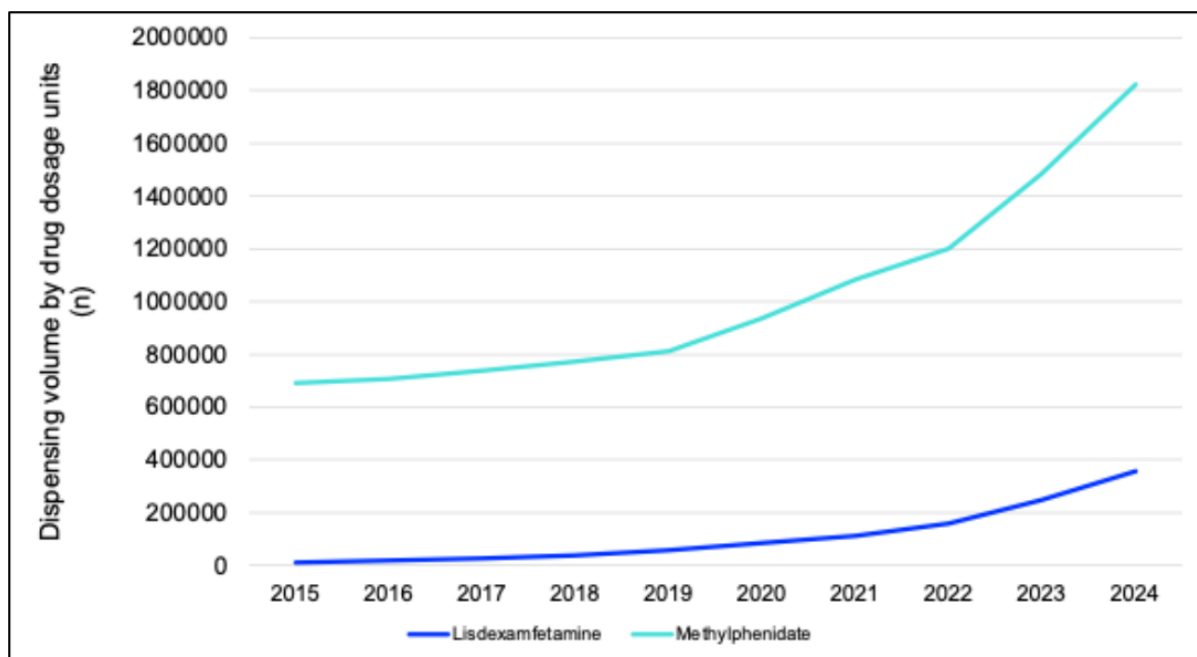
All data were fully anonymised and aggregated before access. Ethical approval was not required in accordance with institutional and national guidelines using fully anonymised administrative health data⁹.

Results

Medication Volume

As shown in Fig.1, the total dosage units of methylphenidate and lisdexamfetamine dispensed to adults increased by ~217% (from 700,574 to 2,217,634) between 2015 and 2024. The period of greatest expansion occurred from 2020 to 2023, with a ~504% rise (59,088 to 356,641) in lisdexamfetamine dispensed units. Although methylphenidate remained the most widely dispensed medication in absolute numbers (1,820,993 in 2024), lisdexamfetamine showed the fastest relative growth.

Fig. 1: Prescribing trajectories ADHD medication (2015-2024)



Regional patient variation

The number of patients with ≥ 1 stimulant medication dispensing recorded increased across all LHOs between 2015 and 2024, although the magnitude of change varied substantially between regions. Patient counts rose in every area, ranging from a 113% increase in North Dublin (n=133 to 283) to a 437% increase in North Cork (n=38 to 204). The largest increases were observed in North Cork (437%, n=38 to 204), Waterford (362%, n=52 to 240), and Cork-South Lee (322%, n=72 to 304), followed by Sligo/Leitrim (267%, n=67 to 246), Louth (267%, n=54 to 198), and Laois/Offaly (263%, n=82 to 298). Smaller increases were observed in North Dublin (113%, n=133 to 283), Dublin South West (134%, n=108 to 253), Galway (151%, n=145 to 364), and South Tipperary (151%, n=59 to 148).

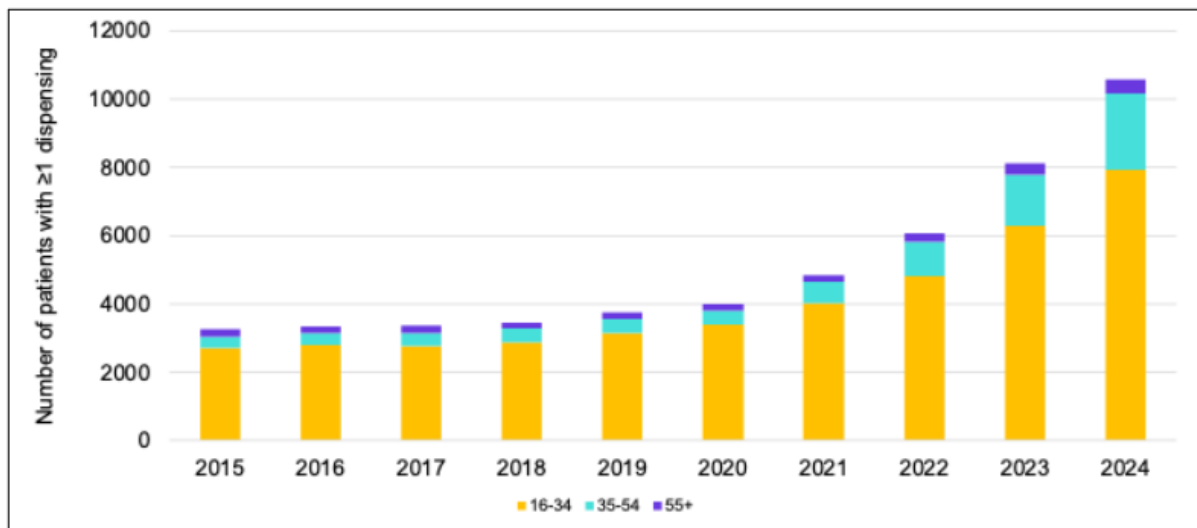
In absolute terms, patient counts in 2024 ranged from 134 in West Cork to 364 in Galway. The highest patient numbers were recorded in Galway (364), Cork-South Lee (304), Kerry (303), Kildare / West Wicklow (294), and North Dublin (283), while lower number of patients were observed in West Cork (134), South Tipperary (148), and North Tipperary/East Limerick (161).

Age variation

Age-stratified analysis showed year-on-year increases in dispensing to patients, across all adult age groups, with no observed declines during the study period (Fig. 2). Adults aged 16-

34 years were the most prevalent patient population and experienced the largest absolute growth (2,708 to 7,930), followed by those aged 35-54 years (332 to 2,232). Individuals aged 55 years and older represented the least prevalent patient population throughout the study period, although dispensings increased steadily in this group (216 to 403).

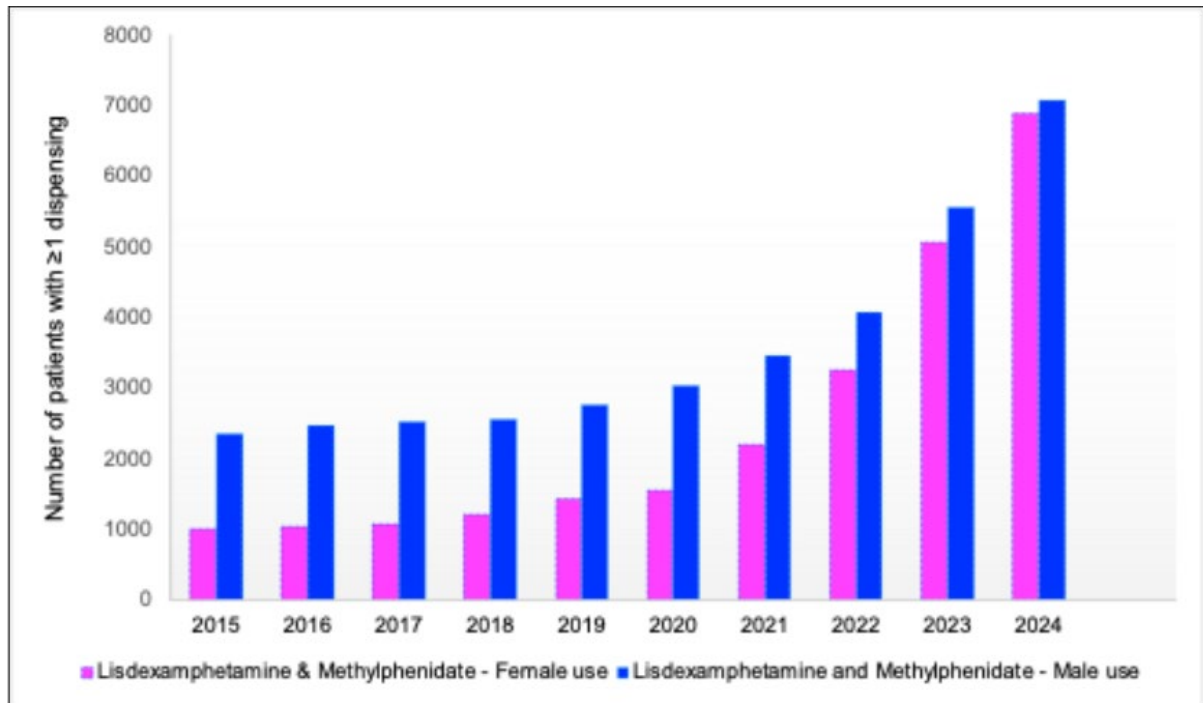
Fig. 2: A decade of age-dynamics in ADHD medication prescribing (2015-2024)



Gender variation

Dispensings increased for both males and females across the study period, as shown in Fig. 3 (males: 2,358 in 2015 to 7,073 in 2024; females: 1,019 in 2015 to 6,893 in 2024). Males comprised the majority of recorded dispensings in earlier years; however, the difference between male and female dispensings narrowed progressively over time, resulting in near parity by 2024 (male: female ratio 2.3:1 in 2015; male: female ratio ~1.03:1 in 2024).

Fig. 3: Gender-based utilisation patterns of stimulant-ADHD pharmacotherapy



Discussion

This study provides an analysis of adult ADHD medication dispensing in Ireland, in the GMS and DPS schemes, over a ten-year period. The findings highlight increases in the dispensings of methylphenidate and lisdexamfetamine dosage units between 2015 and 2024, with the steepest increase occurring between 2020 and 2023. The observed patterns mirror a global rise in ADHD diagnosis and treatment across adult populations.

The rapid rise in lisdexamfetamine units is notable. This may reflect evolving prescribing practice following specialist assessment or shortages of other stimulant medications¹⁰. The persistence of methylphenidate as the most commonly dispensed medication is unsurprising, given its long-standing clinical use and its historical position as a first line therapy in guidelines, alongside lisdexamfetamine¹¹.

Gender-related findings could suggest that historical gender differences in ADHD treatment are becoming less pronounced. The substantial growth of female patients having dispensings recorded is supported by a rise in ADHD diagnoses amongst women internationally; hypothesised in part, due to under-identification during childhood and adolescence^{12–14}.

Age-related trends could demonstrate growing diagnosis and treatment across adulthood. The increase in patient counts for individuals aged 45 years and older may reinforce the

understanding that ADHD symptoms do not resolve entirely with age and may contribute to functional impairment in later life^{13,15}.

Despite plans for expanded access to specialist services, including the launch of a national clinical programme and model of care for adult ADHD by the HSE, regional variation could suggest differing levels of access to diagnostic services, specialist pathways, and trained clinicians. These findings highlight the importance of coordinated planning to ensure equitable access^{10,16}.

The study has significant limitations. Private prescriptions were not captured, which may lead to underestimation, particularly for individuals outside public reimbursement schemes. Although the medications included in this study are primarily indicated for the treatment of ADHD, they may also be prescribed for other conditions (e.g., narcolepsy). As such, it cannot be definitively assumed that all dispensings captured were issued for ADHD. Similarly, prescriptions dispensed under the Long Term Illness (LTI) Scheme were excluded, as ADHD is not among the conditions covered by this scheme. While lisdexamphetamine and methylphenidate may be reimbursed under the LTI Scheme for alternative indications, inclusion of these claims would introduce uncertainty regarding the underlying diagnosis and increase the risk of misclassification. Under the Drug Payment Scheme, individuals and families pay prescription costs up to a monthly threshold, above which further costs are reimbursed by the state; changes to this threshold over the study period may have influenced the volume of dispensings captured in PCRS data, independent of underlying prescribing patterns. The data reported here are crude dispensing volumes (dosage units) rather than more precise rates of prescribing per unit of population over time. Nonetheless, dispensing databases provide robust population level estimates and are a key source of pharmaco-epidemiological information.

Overall, the increasing dispensings recorded for ADHD stimulant pharmacotherapy could underscore the need for expanded assessment pathways, multidisciplinary follow-up, and structured medicines management. Continued surveillance of dispensing patterns could assist national service planning and resource allocation.

Declarations of Conflicts of Interest:

None declared.

Corresponding Author:

Anthony Maher,
School of Psychology,
College of Arts, Social Sciences and Health Studies,

University of Galway,
University Rd.,
Co. Galway,
Ireland.

E-Mail: A.Maher21@universityofgalway.ie

References:

1. Faraone, S. V. *et al.* Attention-deficit/hyperactivity disorder. *Nat. Rev. Dis. Primer* 1, 15020 (2015).
2. Conrad, P. & Bergey, M. R. The impending globalization of ADHD: Notes on the expansion and growth of a medicalized disorder. *Soc. Sci. Med.* 122, 31–43 (2014).
3. Wolraich, M. L. *et al.* Clinical Practice Guideline for the Diagnosis, Evaluation, and Treatment of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents. *Pediatrics* 144, e20192528 (2019).
4. National Institute for Health and Care Excellence. Attention deficit hyperactivity disorder: diagnosis and management. (2023).
5. Advokat, C. What are the cognitive effects of stimulant medications? Emphasis on adults with attention-deficit/hyperactivity disorder (ADHD). *Neurosci. Biobehav. Rev.* 34, 1256–1266 (2010).
6. on behalf of the WHO World Mental Health Survey Collaborators *et al.* The descriptive epidemiology of DSM-IV Adult ADHD in the World Health Organization World Mental Health Surveys. *ADHD Atten. Deficit Hyperact. Disord.* 9, 47–65 (2017).
7. Chan, A. Y. L. *et al.* Attention-deficit/hyperactivity disorder medication consumption in 64 countries and regions from 2015 to 2019: a longitudinal study. *eClinicalMedicine* 58, 101780 (2023).
8. Jennum, P. *et al.* Long-term effects of attention deficit hyperactivity disorder (ADHD) on social functioning and health care outcomes. *J. Psychiatr. Res.* 182, 212–220 (2025).
9. HSE, Research & Development. Ethical Approval for Research in the HSE & its funded organisations. (2025).
10. Raaj, S., Wrigley, M. & Farrelly, R. Adult ADHD in the Republic of Ireland: the evolving response. *BJPsych Bull.* 48, 173–176 (2024).
11. Kooij, J. J. S. *et al.* Updated European Consensus Statement on diagnosis and treatment of adult ADHD. *Eur. Psychiatry* 56, 14–34 (2019).

12. Kazda, L. *et al.* Overdiagnosis of Attention-Deficit/Hyperactivity Disorder in Children and Adolescents: A Systematic Scoping Review. *JAMA Netw. Open* 4, e215335 (2021).
13. Danielson, M. L. *et al.* Trends in Stimulant Prescription Fills Among Commercially Insured Children and Adults — United States, 2016–2021. *MMWR Morb. Mortal. Wkly. Rep.* 72, 327–332 (2023).
14. Ayano, G. *et al.* Prevalence of attention deficit hyperactivity disorder in adults: Umbrella review of evidence generated across the globe. *Psychiatry Res.* 328, 115449 (2023).
15. Agnew-Blais, J. C. *et al.* Evaluation of the Persistence, Remission, and Emergence of Attention-Deficit/Hyperactivity Disorder in Young Adulthood. *JAMA Psychiatry* 73, 713 (2016).
16. Cantwell, E., Nelan, I., Iddid, S. Z., McCarthy, S. & Driscoll, D. O. ADHD prescribing: national findings of children and adolescents attending mental health services in Ireland. *Int. J. Clin. Pharm.* <https://doi.org/10.1007/s11096-025-01979-z> (2025) doi:10.1007/s11096-025-01979-z.