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Age at Emergence of Gender Inequalities in Prescribed Psychotropic Use: A Longitudinal Retrospective Cohort Study

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Research Article

Keywords: Psychotropic, Adolescent, Gender, Social inequalities, Medicalization

Posted Date: November 9th, 2026

DOI: https://doi.org/10.21203/rs.3.rs-10891375/v1

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Additional Declarations: No competing interests reported.

Title

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ABSTRACT

Gender inequalities in the prevalence and trends of psychotropic medication use are well documented, but longitudinal evidence on the age at which these inequalities emerge remains limited. This study aimed to identify the age at which gender inequalities in psychotropic medication use emerge and to examine how their onset and magnitude vary according to socioeconomic position. A retrospective longitudinal cohort study was conducted using electronic health records from 174,336 adolescents aged 9–11 years in the Spanish National Health System, followed from 2018 to 2024. First prescriptions of anxiolytics, hypnotics and sedatives (AHS) and antidepressants were identified Cumulative incidence was estimated using the Kaplan–Meier method, and age-specific hazard ratios (HRs) by sex were calculated using piecewise Cox models. Girls had a significantly higher risk of initiating psychotropic medication use from age 12 onwards for both AHS (HR = 1.24 [1.12–1.38]) and antidepressants (HR = 1.58 [1.29–1.93]), with the largest gender differences observed at age 14 (AHS: HR = 2.14 [1.99–2.42]; antidepressants: HR = 3.06 [2.70–3.48]). Gender inequalities in AHS use emerged one year earlier among adolescents from low-income backgrounds, whereas this pattern was not observed for antidepressant use. Studying the emergence of gender inequalities and the influence of socioeconomic position on psychotropic use enables the development of interventions to prevent a widening gender gap in mental health, which may persist throughout life.

Keywords: Psychotropic, Adolescent, Gender, Social inequalities, Medicalization

Introduction

There is strong evidence indicating that determinants such as gender, socioeconomic status, and age play a key role in shaping social patterns in mental health [1]. Women consistently show higher lifetime rates of psychotropic medication use [2], and adolescence constitutes a critical period in the life course when many mental health disorders first emerge, with a greater burden among girls [3]. However, evidence remains scarce on the timing of the emergence of gender inequalities in psychotropic medication use, as well as on the interplay between gender and socioeconomic position in their onset, limiting the capacity to implement interventions at the point when inequalities first arise.

Available evidence on gender differences in psychotropic medication use is largely derived from cross-sectional studies and indicates that such differences become apparent during adolescence [4–10]. However, findings are heterogeneous, with different studies placing their onset at different ages. A study conducted across five European countries reported a higher prevalence of antidepressant use among girls between the ages of 10 and 19 [4]. In the United Kingdom and France, gender differences in the initiation of antidepressant treatment have been observed between 15 and 18 years [5, 6]. Other research has detected gender differences in antidepressant use as early as 12–13 years, with these disparities becoming more pronounced from 14–15 years onwards [7]. Similarly, in a sample of Italian adolescents, the incidence of use was higher among girls from the age of 14 [8]. Evidence regarding the use of anxiolytics, hypnotics, and sedatives (AHS) is more limited. One study conducted in two European countries identified gender differences between 15 and 17 years for both AHS and antidepressants [9], whereas a study in Spanish adolescents found such differences from the age of 14 [10]. Nevertheless, the cross-sectional design of these studies precludes establishing whether age is causally related to the onset of the gender gap, underscoring the need for longitudinal studies to examine how these differences develop over time.

These gender differences in psychotropic medication use should be understood in the context of distinct developmental patterns in mental health problems by sex. During childhood, behavioural problems are more prevalent among boys and are less commonly treated with anxiolytics, hypnotics and sedatives (AHS) or antidepressants. During adolescence, however, the prevalence of anxiety and depressive disorders increases markedly among girls, conditions that are more commonly associated with the use of these medications [11, 12]. Beyond these developmental differences, the literature has highlighted the role of gender norms and expectations in shaping the expression, recognition, and management of emotional distress, as well as the potential influence of gender bias in healthcare provision on diagnostic and prescribing practices [13]. Together, these factors underscore the importance of examining when gender differences in psychotropic medication use emerge across adolescence and how they evolve with age.

Adopting an intersectional approach, research examining how socioeconomic position shapes the timing of the emergence of gender inequalities remains limited. In adult populations, gender disparities in psychotropic medication use are more pronounced among individuals with lower income levels [14], suggesting an intersectional effect whereby women from socioeconomically disadvantaged backgrounds face a greater risk of experiencing mental health problems and are more likely to be prescribed psychotropic medications [14, 15]. However, little is known about the extent of these inequalities in

adolescence or, more specifically, about how socioeconomic position influences the age at which gender differences in psychotropic medication use first arise.

From a public health perspective, understanding when and how gender inequalities emerge is essential for disentangling the mechanisms that generate and sustain them across the life course, and for identifying critical windows for early intervention. Because the timing of their emergence can only be adequately assessed through longitudinal analyses, the lack of longitudinal evidence represents an important gap in the literature. In this context, the aim of this study is to determine the age at which gender inequalities in psychotropic medication use first arise and to examine how their onset and magnitude vary according to socioeconomic position from a longitudinal perspective.

Methods

A longitudinal retrospective cohort study was conducted using clinical records from the Primary Care Clinical Database (BDCAP) in Spain. This study was reported in accordance with the STROBE Statement for cohort studies [16]. The completed STROBE checklist is provided in **Appendix S1**.

Data source

The Primary Care Clinical Database (BDCAP), managed by the Spanish Ministry of Health, compiles annually anonymised electronic health records, representative of the Spanish population, capturing healthcare activity within the primary care setting of the National Health System (NHS). A more detailed description of the database and its methodology can be found elsewhere [17].

Study design and population

A cohort was initiated on 1 March 2018, including all individuals aged 9–11 years at the start of the follow up, who were followed from 2018 to 2024. During follow-up, individuals could be censored due to several circumstances: end of the study period (31 December 2024), reaching 18 years of age, or exit from the healthcare system (e.g., death or migration), whichever occurred first. Participants with less than three years of follow-up were excluded according to the predefined eligibility criteria. Analyses were performed using complete-case data, and no imputation of missing values was undertaken. For more information about the cohort construction, see **Figure S1.**

The inclusion of individuals aged 9 to 11 years at cohort entry, with follow-up until 18 years of age, was intended to ensure coverage of the adolescent period, generally considered to extend from ages 10 to 18 years [18], while providing sufficient observation time to examine the emergence of gender differences in AHS and antidepressant use, which our previous cross-sectional study identified at approximately 12–13 years of age.

Outcomes

The study outcomes were incident use of anxiolytics, hypnotics and sedatives (AHS) and antidepressants, identified through pharmacy dispensing records. For each individual, the first recorded dispensing during the follow-up period was considered, thereby capturing incident events. To ensure the identification of first use, individuals with any recorded use in the three months prior to the start of follow-up were excluded, as they were considered prevalent users.

Exposures

The exposures of interest were sex, age, and income level. Sex was recorded as a binary variable based on information from each individual's clinical record. As differences between male and female adolescents are shaped by social and cultural gender constructs, results will be interpreted as gender differences, and the terms boys and girls will be used to refer to specific gender subpopulations [19].

Income level corresponded to the annual income used to determine pharmaceutical co-payment and was categorised into the following groups: high (>€18,000) and low–middle (<€18,000 and exempt from co-payment). The pharmaceutical co-payment exemption category includes for example recipients of minimum income support or unemployed individuals without benefits. For adolescents, income level was assigned based on the registered parent or guardian as the reference in the social security system.

Statistical analysis

We conducted survival analyses with delayed entry (left truncation) to account for individuals entering the study at different ages, using age as the underlying time scale. Time at risk was defined as the period from entry into follow-up, with person-time accruing from age 9 years onwards, until exit from the study. Participants exited the study either upon occurrence of the event of interest (first dispensing of the drug under study) or by right censoring.

Cumulative incidence was derived from the Kaplan–Meier estimator as the complement of the survival function. In addition, we identified the earliest time point at which the 95% confidence intervals of the Kaplan–Meier estimates for the sex groups no longer overlapped. Overall differences between the survival curves were assessed using the log-rank test.

To estimate sex differences in the risk of initiation across age, we fitted Cox proportional hazards models. As the proportional hazards assumption was violated for sex (see **Figure S2**), and our objective was to estimate age-specific risks, sex was modelled as a time-varying effect using a piecewise Cox model. Follow-up time was divided into one-year age intervals, and separate hazard ratios for sex were estimated within each interval. Hazard ratios were assumed to be constant within, but allowed to vary across, yearly intervals. We also calculated incidence rates per 1,000 person-years for each interval, stratified by boys and girls.

Additionally, to examine the joint effects of sex and socioeconomic status, we created a composite variable combining sex and income level and repeated the analyses. As the proportional hazards assumption was also violated for this, we modelled it as a time-varying effect using a piece-wise Cox model, with follow-up divided into yearly intervals and separate hazard ratios estimated for each interval. Boys in the high-income group were used as the reference category.

All analyses were conducted separately for each pharmacological group—anxiolytics, hypnotics and sedatives (AHS) and antidepressants. All analyses were conducted using R version 4.5.3 [20]). The study protocol was prospectively registered with the Open Science Framework (OSF) (https://osf.io/8g5qa/overview?view_only=0f61a2e9f23043aeb1f2c3a95c8c74cc).

Results

The final cohort included a total of 174,336 adolescents, of whom 51.4% were boys. The median age at the start of follow-up and the total follow-up time were similar between groups. The distribution by year of birth and income level was comparable between boys and girls. Regarding the outcome of interest, a higher proportion of girls experienced first use of AHS and antidepressants over the study period.

Table1: Baseline characteristics of the cohort

	Boys (n= 89,678)	**Girls (n=84,658)**
Age at the start of the follow-up (years) (median [IQR])	10.11 [9.22, 11.03]	10.11 [9.21, 11.05]
Follow-up period (years) (median [IQR])	6.75 [6.24, 6.75]	6.75 [6.23, 6.75]
Year of Birth, n (%)		
2006	17584 (19.6)	16943 (20.0)
2007	23971 (26.7)	22300 (26.3)
2008	24962 (27.8)	23371 (27.6)
2009	23161 (25.8)	22044 (26.0)
Income level, n (%)		
High	30416 (33.9)	28869 (34.1)
Low-Middle	58347 (65.1)	54946 (64.9)
Unclassified	915 (1.0)	843 (1.0)
AHS Use, n (%)	4744 (5.3)	6751 (8.0)
Antidepressant Use, n (%)	1649 (1.8)	3776 (4.5)

The cumulative incidence of AHS revealed a progressively increasing use from age 9, with similar trajectories in both sexes up to age 12 (**Figure 1A**). Beyond this age, the incidence increased more rapidly among girls, becoming significantly higher than in boys from 13.4 years onward. By age 18, 12.2% of girls and 8.2% of boys had initiated AHS use under a medical prescription. Specifically, beginning at age 12, girls showed an increased risk of initiating prescribed AHS use compared with boys (HR = 1.24, 95% CI 1.12–1.38) and this remained higher in subsequent years (**Figure 2A)**. The greatest difference was observed at age 14, when girls had a 2.19-fold higher risk of initiation (95% CI 1.99–2.42). Detailed hazard ratios, 95% confidence intervals, and p-values are provided in **Table S1**.

For antidepressant use, the cumulative incidence was similarly low in both sexes up to age 13 (**Figure 1B**). The first statistically significant differences in cumulative incidence between boys and girls emerged at age 13.1 years, and this divergence widened with age, such that by the end of follow-up, cumulative incidence reached 6.8% in girls and 2.8% in boys. Consistent with the findings for AHS, no statistically significant differences in the probability of initiating antidepressant use were observed up to age 12, at which point girls had a 1.58-fold higher risk of initiation (HR = 1.58, 95% CI 1.29–1.93) (**Figure 2B**). At age 14, the HR for antidepressant initiation increased to 3.06 (95% CI 2.70–3.48).

Differences between the sex-specific Kaplan–Meier curves were statistically significant in all cases according to the log-rank test ($p < 0.001$) (see **Appendix S2**).

Figure 1: Cumulative incidence of AHS (A) and antidepressant use (B), stratified by sex. The numbers below the x-axis represent the number of individuals at risk at the corresponding ages.

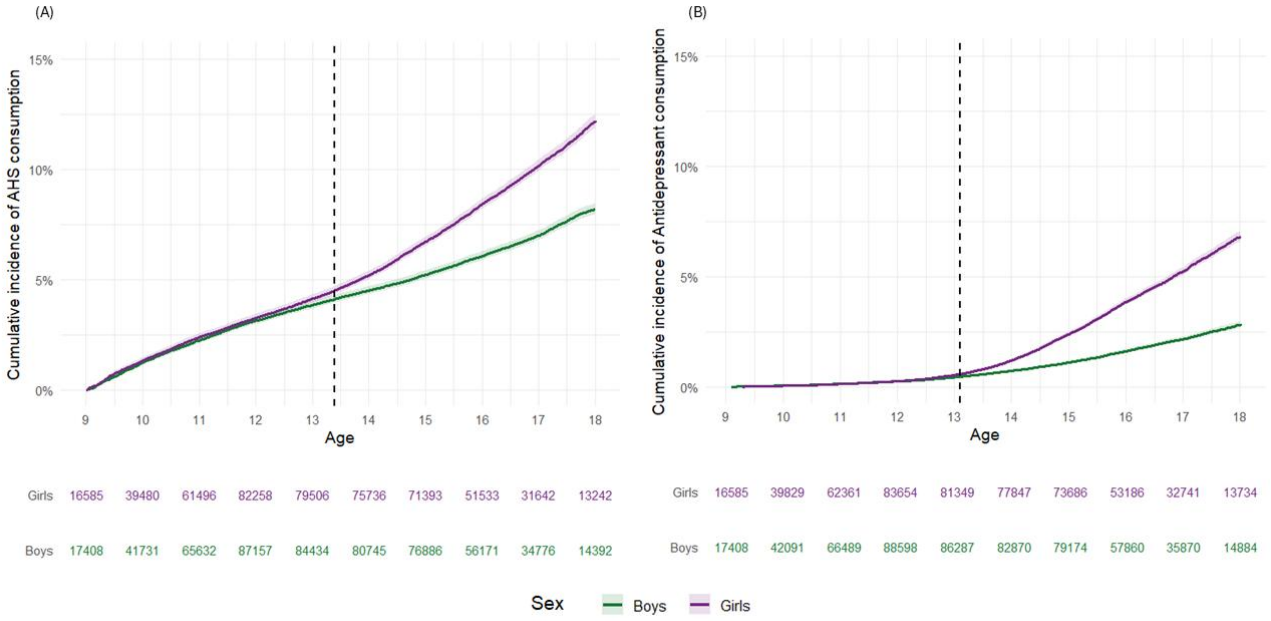
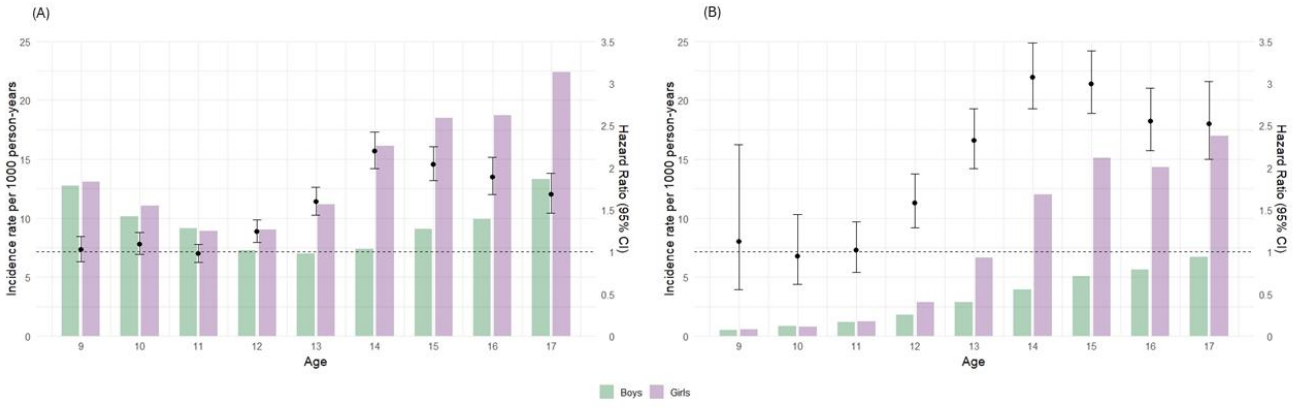


Figure 2: Hazard ratios by sex (ref: boys) and incidence rates (per 1000 person-years) for AHS (A) and antidepressants (B) initiation



Results by sex–income level groups showed different patterns across pharmacological groups. For AHS, socioeconomic differences emerged before sex differences, whereas for antidepressants, socioeconomic and sex differences emerged simultaneously. Moreover, for AHS, sex differences in the onset of the gender gap in cumulative incidence emerged at different ages across income groups: at age 13.3 years in the low–middle-income group and at 14.5 years in the high-income group (**Figure 3A**). Compared with boys in the high-income group, girls and boys in the middle–low-income group had a higher hazard of initiating AHS use at age 12 (HR girls = 1.85, 95% CI 1.56 - 2.20 and HR boys = 1.42, 95% CI 1.19 - 1.70),

and girls in the high-income group at age 13 (HR =1.41, 95% CI 1.15 - 1.72) (**Figure 4A**). Detailed hazard ratios, 95% confidence intervals, and p-values are provided in **Table S2**. At age 13, the risk among high-income girls exceeded that of low–middle-income boys, and highest hazards were observed at age 14 (HR high-income girls = 2.28, 95% CI 1.85 - 2.80; HR low-middle-income boys= 1.81, CI 95% 1.49 - 2.20 and HR low–middle-income girls = 3.95, 95% CI 3.29 - 4.74), compared to high-income boys.

In contrast, for antidepressants, the pattern was primarily driven by sex rather than income level. Throughout the follow-up period, girls in both income groups consistently showed higher cumulative incidence than boys in the corresponding groups, and gender differences appeared at similar ages in both income groups (13.2 years in the low–middle-income group and 13.5 years in the high-income group) (**Figure 3B**). In the Cox model (**Figure 4B),** girls in both income groups had a higher risk of initiating antidepressant use from age 12 onwards, with a greater magnitude among those in the low–middle-income group (HR high-income girls=1.60, 95% CI 1.10 – 2.25 and HR low-middle-income girls=1.82, 95% CI 1.33-2.50). Boys in the low–middle-income group had a higher risk of initiating antidepressant use than high-income boys at ages 14 and 15 only.

Figure 3: Cumulative incidence of AHS (A) and antidepressant use (B), stratified by sex–income level groups. The numbers below the x-axis represent the number of individuals at risk at the corresponding ages

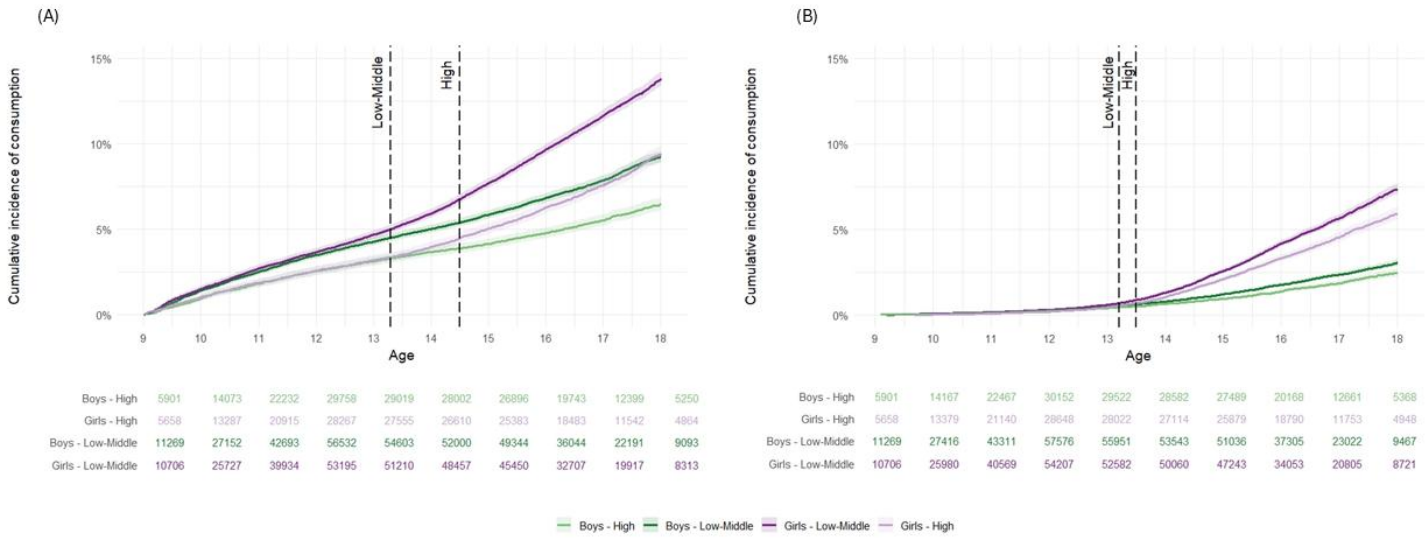
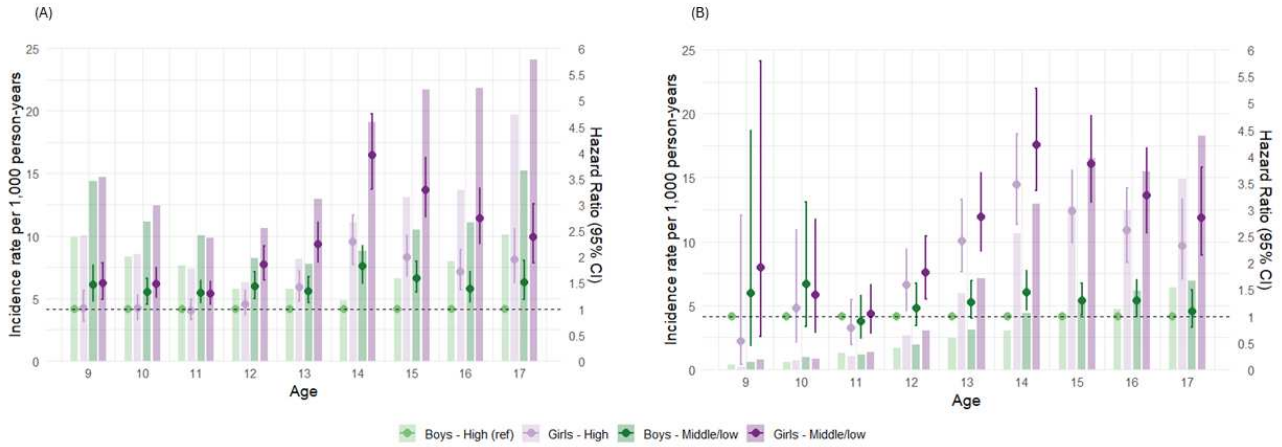


Figure 4: Hazard ratios by sex and income level (ref: high income boys) and incidence rates (per 100 person-years) for AHS (A) and antidepressants (B) initiation



Discussion

This study identifies the onset of gender differences at age 12 in the first use of prescribed anxiolytics, hypnotics and sedatives (AHS) and antidepressants among adolescents in Spain. The greatest gender differences in the risk of initiation were observed at age 14 for both AHS and antidepressants. Patterns differed when gender and socioeconomic position were jointly considered. For AHS, income inequalities emerged earlier than gender inequalities, and the onset of the gender gap occurred approximately one year later in the higher-income group than in the lower-income group (age 13 vs. age 12, respectively). In contrast, for antidepressants, gender differences emerged at around age 12 in both the low-middle-income and high-income groups, with little variation by socioeconomic position before that age.

To our knowledge, this is the first longitudinal study to examine the onset of gender inequalities in psychotropic drug use. Some cross-sectional studies have identified gender differences in AHS or antidepressant use beginning at age 12-13 [7, 21], whereas others have reported later ages [8, 22, 23]. However, cross-sectional studies do not follow individuals longitudinally; instead, they capture the accumulation of prevalent cases at a given point in time and therefore cannot identify the age at which incidence trajectories begin to diverge between girls and boys. The only longitudinal study we have found reported a higher cumulative incidence among females from age 16 onwards [24]. The later emergence of the gender gap may be attributable in part to methodological differences, including population follow-up from age 12 onwards, the use of cumulative incidence rather than age-specific initiation rates, and the grouping of different psychotropic drug classes. In addition, the earlier study period (1994–2005) and cross-national differences in trends in adolescent mental health, psychotropic use, and gender equality may also contribute to the later emergence of the gender gap [25, 26].

The onset of the gender gap in psychotropic drug use at around 12 years of age may be partly explained by the increase in psychological distress during this developmental stage, consistent with the well-established gender differences in anxiety and depression observed in early adolescence. Several studies have reported that anxiety and depressive disorders

are more common among boys during childhood, but that this pattern reverses around the age of 12 years, after which girls experience higher rates of these conditions [27, 28]. This onset of the gender gap in internalizing problems has been linked to a complex interplay of biological, psychological, environmental, and social factors [11, 29]. On the one hand, girls generally enter puberty earlier than boys, experiencing physical and hormonal changes that may increase vulnerability to stress-related internalizing symptoms [30]. However, evidence suggests that biological factors alone account for only a small proportion of the observed gender differences in mental health [31, 32]. According to Hill and Lynch's gender intensification hypothesis, puberty is accompanied by increasing pressure to conform to traditional gender roles, potentially exacerbating psychological distress and contributing to the emergence of gender differences in anxiety and depressive symptoms [33]. Within this broader social context, the earlier onset of puberty may expose girls to a range of psychosocial stressors, including increased body image concerns, greater sensitivity to peer relationships, exposure to negative life events, and academic pressure. Consistent with this perspective, qualitative studies have shown that low mood and anxiety are often perceived as normative experiences among adolescent girls and are frequently linked to gendered expectations and social pressures [34], potentially increasing the likelihood that these experiences are diagnosed and treated with psychotropic medications. School, in particular, has been identified as an important source of stress among adolescent girls [35]. This may be especially relevant because the transition from primary to secondary education typically occurs between 11 and 13 years of age, coinciding with the age at which gender inequalities in psychotropic drug use begin to emerge [36]. In addition, the gendered socialization contributes in how boys and girls differ in how psychological distress is experienced, expressed, recognised, and managed: Whereas boys are more likely to externalize distress through disruptive, aggressive, or oppositional behaviors—often leading to diagnoses such as attention-deficit/hyperactivity disorder or conduct disorders—girls more frequently exhibit internalizing symptoms characterized by anxiety, sadness, and emotional distress [37–39]. Girls have also been shown to be more likely than boys to recognise emotional difficulties and seek help for them [37, 40]. Consequently, psychological distress among girls may be more readily translated into diagnoses of anxiety or depression and subsequently treated with anxiolytics, hypnotics, sedatives, or antidepressants.

Beyond the influence of structural factors, adolescence may represent a key developmental stage during which girls' mental health is more likely to be medicalized than boys', contributing to the medicalization of women's mental health across the life course. Consistent with this perspective, in a previous study we found that by the age of 13 years, girls already exhibited a higher probability of anxiolytic-hypnotic and antidepressant use than boys, even after accounting for differential patterns of mental health diagnoses [13]. Such gendered patterns of medicalization may be partly attributable to bias in mental healthcare. More broadly, gender bias in mental healthcare has been associated with the overdiagnosis and overtreatment of women, alongside the underdiagnosis and undertreatment of men [13]. Healthcare professionals may be more likely to recognise and act upon psychological distress when it is expressed by women [41], whereas conventional norms of masculinity may discourage men from expressing emotional vulnerability or lead them to minimise their symptoms during medical consultations, making mental health problems more difficult for healthcare professionals to identify and diagnose [37]. Moreover, the use of psychotropic medication may be more readily accepted and

legitimized among girls by key socializing institutions, including peers, families, and schools. Together, these processes may facilitate the translation of psychological distress into clinical recognition and psychopharmacological treatment among girls to a greater extent than among boys.

Regarding the earlier emergence of the gender gap in psychotropic medication use among lower socioeconomic groups, one possible explanation is that gender and socioeconomic disadvantage may intersect in shaping mental health trajectories, with the influence of gender norms potentially being more pronounced among socioeconomically disadvantaged populations [42]. In this context, psychiatric problems may emerge earlier among disadvantaged girls. Previous research has shown that lower socioeconomic status is associated with an earlier onset of puberty [43] and an earlier transition into adolescence [44], factors that may contribute to the earlier development of emotional distress in terms of anxiety among socioeconomically disadvantaged adolescents, particularly girls. This is consistent with previous studies reporting greater use of psychotropic medications among socioeconomically disadvantaged girls [10]. However, evidence is mixed. For example, a recent study from the United Kingdom found that low household income was associated with higher levels of internalizing problems during adolescence, but did not identify significant sex differences in this association [45]. Therefore, it is also possible that socioeconomic disadvantage amplifies gendered patterns in the recognition and medicalization of emotional distress, leading girls from lower income families to be more likely to receive psychopharmacological treatments. In this regard, previous research has shown that emotional and psychosocial problems among socioeconomically disadvantaged populations are frequently managed in primary care through prescriptions of anxiolytics and antidepressants [46], and a greater medicalization of mental health among women in lower socioeconomic positions [14]. This may reflect the prominent role of anxiolytics in the management and medicalization of emotional distress and everyday life problems among socioeconomically disadvantaged populations.

Study strengths and limitations

This study has several limitations that should be considered. First, as the data only capture dispensations through the public healthcare system, medication use in the private sector may be underrepresented, particularly among higher socioeconomic groups. However, the Spanish NHS provides universal prescription coverage, and a substantial proportion of privately prescribed medications are ultimately dispensed and reimbursed through the public system. Moreover, private healthcare utilization is not known to differ systematically by sex within socioeconomic strata, making it unlikely that this limitation substantially affects the observed gender differences in psychotropic drug use.

Second, psychotropic drug use could only be assessed from age 9 onwards due to data availability constraints. Nevertheless, previous studies have consistently reported minimal gender differences in psychotropic use during childhood, suggesting that this limitation is unlikely to substantially affect the interpretation of our findings [9, 23]. Furthermore, our analyses focused on age-specific hazard ratios for treatment initiation, which estimate the relative risk of initiating medication use at each age among individuals who had not previously started treatment.

Finally, information on the clinical indication associated with each prescription was not available. Although these medications are commonly used to treat anxiety and depression, they may also be prescribed for other conditions.

Nevertheless, this study has several strengths that should be highlighted. It is based on a large, population-based cohort derived from a nationally representative database, which enhances the generalisability of the findings. The BDCAP contains data extracted from the electronic health records of a population sample representative of the Spanish population, with annual sample sizes ranging from approximately 5 to 13 million individuals during the period 2018–2024 [17]. The database has been extensively used in previous epidemiological research to investigate the prevalence and incidence of clinical diagnoses, patterns of medication prescription and use, and socioeconomic inequalities in health outcomes and healthcare utilization [47, 48]. The use of routinely collected clinical data ensures a high level of accuracy in diagnostic recording, and the use of dispensing data provides a close approximation to actual medication use, as it reflects drugs that were effectively obtained by patients.

Conclusions and implications for health policy

In conclusion, adolescence represents a critical period not only for the emergence of gender differences in mental health symptoms and diagnoses, but also for the onset of the gender gap in anxiolytic, hypnotic and sedative (AHS) and antidepressant use. Our findings suggest that these disparities begin to emerge at the age of 12 years and widen throughout adolescence, with specific patterns across socioeconomic groups. The increasing use of psychotropic medications among adolescents, particularly among girls, has raised concerns regarding the effectiveness and appropriateness of pharmacological approaches to emotional distress during this stage of life [5, 49]. Although these medications may be beneficial for some young people, their use has been associated with a range of adverse effects [50]. Beyond their clinical effects, psychotropic medications may also have important social and psychological consequences for adolescents. More broadly, the growing reliance on psychopharmacological treatments may reinforce biomedical interpretations of distress, encouraging young people, families, and professionals to locate the source of suffering primarily within the individual rather than in the social conditions, gendered experiences, and life circumstances that contribute to mental health problems [51].

These findings have important implications for public health, and addressing gender inequalities in AHS and antidepressant use requires interventions across multiple sectors. In clinical practice, greater attention should be paid to the social and gendered dimensions of emotional distress, as well as to the potential role of gender biases in diagnosis and prescribing practices. Efforts to normalise the use of psychotropic medications for everyday life difficulties should be carefully reconsidered. At the same time, families, schools, and other social institutions play a central role in shaping how emotional and behavioural difficulties are interpreted and managed during adolescence [52]. While access to appropriate mental healthcare remains essential, an exclusive focus on individual-level clinical interventions risks overlooking the social, educational, economic, and gender-related factors that contribute to psychological distress. A broader perspective grounded in the social determinants of health is therefore needed to complement clinical approaches

and prevent the emergence and reproduction of gender inequalities in mental health in future generations.

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Statements and Declarations

Acknowledgements

The authors would like to thank the OPIK Research Group for the support provided in the development of this study. The authors also acknowledge the Spanish Ministry of Health for granting access to the data and for the technical support provided in relation to these data.

Study funding

This work is carried out within the framework of the project "Analysis of the use of psychotropic drugs among adolescents: a gender and intersectional perspective" (PID2022-136340OB-100) funded by MICIU/AEI/ 10.13039/501100011033 and by "ERDF/EU", and "European Union NextGenerationEU/PRTR; as well as by the Predoctoral research training fellowships associated with the Generación de Conocimiento research projects (Grant PREP2022-000855 funded by MICIU/AEI/10.13039/501100011033 and by "ESF+").

K.L.'s research was funded by the Ministerio de Ciencia, Innovación y Universidades (Spain) (PID2023-148033OB-C21) and by the Agència de Gestió d'Ajuts Universitaris i de Recerca (2021 SGR 01421) (GRBIO) de la Generalitat de Catalunya (Spain).

Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Author Contributions

All authors contributed to the study conception and design. Material preparation, data collection and analysis were performed by Maite Campo, Amaia Ayala and Klaus Langohr. All authors contributed to the interpretation of the results. The first draft of the manuscript was written by Maite Campo and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

Ethics approval

The study is based on secondary data extracted from the BDCAP clinical database, which was accessed following a formal data request to the Ministry of Health. All data were fully anonymized prior to being made available to the research team, ensuring that no individuals could be identified.

Data availability

Access to the original data is available to the research community upon request to the Spanish Ministry of Health: solicitudesbdcap@sanidad.gob.es

The analysis code and study materials are available via an anonymized OSF link for peer review and will be made publicly available upon publication.

Supplementary Information

Additional Supplementary Information may be found in the online version of this article:

Appendix S1. STROBE checklist for cohort studies

Figure S1. Cohort construction flowchart

Figure S2. Schoenfeld residual plots for assessing the proportional hazards assumption for AHS (A) and antidepressant use (B).

Appendix S2. Log-rank test for AHS by sex (A), Antidepressants by sex (B), AHS by sex and income level (C) and Antidepressants by sex and income level (D).

Table S1. Hazard ratio (HR) estimates by age period for AHS (A) and antidepressant (B) use, stratified by sex.

Table S2. Hazard ratio (HR) estimates by age period for AHS (A) and antidepressant (B) use, stratified by sex and income level.

Appendix S3. Availability of Data and Code

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SupplementaryMaterial.pdf