

Dispensing of Psychotropic Medications in Australia between 2013 and 2022

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July 17, 2023

Abstract

Purpose: To determine the proportion of Australians dispensed psychotropic medications between 2013 and 2022 according to their age. **Methods:** Services Australia provided a de-identified 10% random Pharmaceutical Benefits Scheme (PBS) sample that allowed us to determine the proportion of Australians dispensed at least one script per year for the use of antipsychotics, antidepressants, anxiolytics, and hypnotics. The classification of medications followed Anatomical Therapeutic Chemical (ATC) coding. Participants were stratified into 10-year age groups from 0-9 to [?]90 years, and sex was coded as male/female. We used logit models to analyse the data. **Results:** The number of records per year ranged from 1,540,520 to 1,746,402, and 54.10% were for females. A greater proportion of older adults, particularly those aged [?]70 years, were dispensed antipsychotics, antidepressants, anxiolytics, and hypnotics than any other age-group. The proportion of people dispensed antipsychotics, anxiolytics, and hypnotics declined between 2013 and 2022, but increased for antidepressants, most markedly for adolescents and young adults. Females were more frequently dispensed antidepressants, anxiolytics, and hypnotics than males, but males were more frequently dispensed antipsychotics than females. **Conclusions:** Older age groups and females are the most frequent recipients of psychotropic medications dispensed in Australia. The organisation and resourcing of health services should reflect this reality.

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Running title : Psychotropics in Australia

Word count : 1467

References : 15

Tables : 1

Figures : 1

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ACKNOWLEDGEMENTS

We thank Services Australia for granting us access to the data described in this report.

AUTHOR CONTRIBUTION

OPA conceived the study, analysed the data, and drafted the initial version of the manuscript. All authors contributed to obtaining funding for this project. AP prepared the data for analyses. OPA analysed the data for this study and completed the initial draft of the manuscript. All authors reviewed the paper and contributed to the drafting of the final version. All authors approved the final version of the paper for submission to the journal.

DATA AVAILABILITY

The 10% PBS data are available from Services Australia (<https://www.servicesaustralia.gov.au>).

FUNDING STATEMENT

This research was funded through infrastructure grants from the WA Department of Health to OPA, CEB, FS and DP.

INFORMED CONSENT

The University of Western Australia Human Research Ethics Committee approved and oversaw the conduction of the study.

ETHICAL STATEMENT

All activities of this study were conducted in accordance with the Declaration of Helsinki.

CONFLICT OF INTEREST STATEMENT

CBE is a member of the Drug Utilisation Sub-Committee of the Pharmaceutical Benefits Advisory Committee, but the contents of this publication are responsibility of the authors alone. The authors declare no other interests.

ABSTRACT

Purpose : To determine the proportion of Australians dispensed psychotropic medications between 2013 and 2022 according to their age.

Methods : Services Australia provided a de-identified 10% random Pharmaceutical Benefits Scheme (PBS) sample that allowed us to determine the proportion of Australians dispensed at least one script per year for the use of antipsychotics, antidepressants, anxiolytics, and hypnotics. The classification of medications followed Anatomical Therapeutic Chemical (ATC) coding. Participants were stratified into 10-year age groups from 0-9 to [?]90 years, and sex was coded as male/female. We used logit models to analyse the data.

Results : The number of records per year ranged from 1,540,520 to 1,746,402, and 54.10% were for females. A greater proportion of older adults, particularly those aged [?]70 years, were dispensed antipsychotics, antidepressants, anxiolytics, and hypnotics than any other age-group. The proportion of people dispensed antipsychotics, anxiolytics, and hypnotics declined between 2013 and 2022, but increased for antidepressants,

most markedly for adolescents and young adults. Females were more frequently dispensed antidepressants, anxiolytics, and hypnotics than males, but males were more frequently dispensed antipsychotics than females.

Conclusions : Older age groups and females are the most frequent recipients of psychotropic medications dispensed in Australia. The organisation and resourcing of health services should reflect this reality.

Keywords : antipsychotic, antidepressant, anxiolytic, hypnotic, prevalence, epidemiology, age.

KEY POINTS

- The proportion of the population dispensed antipsychotics, antidepressants, anxiolytics and hypnotics increases with age, and is particularly high among individuals aged [?]70 years.
- The dispensing of antipsychotics has decreased progressively over the past 10 years for individuals aged [?]80 years.
- The dispensing of antidepressants increased after 2018, most markedly for individuals aged 10-19 years and 20-29 years.
- A larger proportion of women than men were dispensed antidepressants, anxiolytics and hypnotics, but more men than women were dispensed antipsychotics between 2013 and 2022.
- The observed pattern of dispensing of medications suggest that the prevalence of mental health problems is higher in later than earlier life.

PLAIN LANGUAGE SUMMARY

Information about the dispensing of medications offers helpful insights into the health of the population. We used a 10% random sample of the Australian Pharmaceutical Benefits Scheme to examine the patterns of dispensing of medications commonly used to manage mental disorders for individuals aged 0-9, 10-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-70, 80-89, and [?]90 years. We found that the dispensing of antipsychotics, antidepressants, anxiolytics, and hypnotics increased with age and was particularly high among individuals older than 70 years. More men than women were dispensed antipsychotics, but more women than men were dispensed antidepressants, anxiolytics and hypnotics between 2013 and 2022. The dispensing of antipsychotics, anxiolytics and hypnotics declined with time between 2013 and 2022, but increased for antidepressants after 2019, most markedly for people aged 10 to 39 years. These data suggest that psychological and behavioural symptoms affect a disproportionate number of older adults, while temporal changes in the pattern of use of antidepressants after 2019 implies that the mood of adolescents and young adults may have been more affected by the COVID19 pandemic than other age groups.

1 | INTRODUCTION

An increasing number of people are exposed to psychotropic medications every year,¹ with recent released data showing that 1 in every 6 Australians filled a script for a mental health disorder in the 2020-2021 financial year.² There is also evidence that the proportion of individuals dispensed certain psychotropic medications, such as antidepressants, has been increasing among adolescents and young adults, although people aged [?]45 years continue to be the most frequent consumers of antidepressants and other psychotropic medications.^{3,4}

Data about the dispensing of psychotropic medications offer indirect information about the mental health of the population, as well as about health service use and needs. Recent reports have been mostly limited to specific classes of medications (such as antidepressants), or to particular age-groups (e.g., adolescents), making it difficult to draw conclusions about the overall pattern of psychotropic use of the entire population. In addition, limiting the reporting of data to the proportion of people using a certain class of medications may lead to inaccurate conclusions if the results fail to consider the sizeable proportion of people not included in these databases. For example, if 20% of people aged 20-29 years included in a pharmaceutical database are dispensed an antidepressant, but only 40% of people in this age group are dispensed a medication that leads to the inclusion of the individual in the dataset, this would mean that 8% rather than 20% of individuals aged 20-29 years would have received an antidepressant during the relevant period.

This study aimed to determine the proportion of Australian residents dispensed antipsychotics, antide-

pressants, anxiolytics, and hypnotics between 2013 and 2022. We included all age-groups and completed additional analyses to account for people not dispensed any medications.

2 | METHODS

2.1. | *Study design, setting and participants*

This study included individuals of all ages included in the de-identified 10% random Pharmaceutical Benefits Scheme (PBS) sample between 2013 and 2022, which collects data from all community pharmacies, private hospitals and PBS public hospitals. Details about the structure and composition of the PBS database have been described elsewhere.⁵

The Human Research Ethics Committee of the University of Western Australia reviewed and approved the project (2022/ET000372).

2.2 | *Study measures*

Outcomes of interest included the dispensing of antipsychotic medications, antidepressants, anxiolytics, and hypnotics. The PBS item code of each medication dispensed between 2013 and 2022 was linked to the following Anatomical Therapeutic Chemical (ATC) codes: N05A for antipsychotics, N06A for antidepressants, N05B for anxiolytics, and N05C for hypnotics.⁶ We stratified age into the following groups: 0-9, 10-19, 20-29, 30-39, 40-49, 50-59, 60-69, 70-79, 80-89, and [?] 90 years. Sex was recorded as male or female. We used published estimates for the fraction of the population dispensed medications during the 2020-2021 period:⁷ 0-9 years, 45.9%; 10-19, 45.9%; 20-29, 54.4%; 30-39, 57.5%; 40-49, 65.7%; 50-59, 69.1%; 70-79, 92.4%; 80-89, 98.0%; [?] 90 years, 99.0%.

2.3 | *Statistical analyses*

We calculated the total count and proportion of participants in each age group who had been dispensed an antipsychotic antidepressants, anxiolytic, or hypnotic between 2013 to 2022 during each of these years. We evaluated the effect of time, age, and sex on the dispensing of these medications using logit models for the analysis of panel data. The results of these analyses were summarised by the odds ratio (OR) and respective 99.9% confidence interval (99.9%CI). Reference groups were 2013, age 0-9 years, and male sex. Because of the very large sample and the risk of type I error, we set alpha at 0.1% ($p[?]0.001$). All tests were two-tailed.

3 | RESULTS

The PBS file included 16,389,245 records (Table 1). Of all records, 54.10% were for females. Figure 1 shows the proportion of participants dispensed antipsychotics, antidepressants, anxiolytics, and hypnotics between 2013 and 2022. There was a decline in the proportion of people dispensed antipsychotic medications over time, most noticeably amongst those aged [?] 80 years. The dispensing of antipsychotics was highest among those aged 80-89 and 90 years or over. There was minimal difference between the age groups 30 to 69 years in the dispensing of antipsychotics. About 1 in every 6 people in the PBS database were dispensed an antidepressant. The 80-89 and [?]90-year age-groups were the most frequently dispensed antidepressants. There was a progressive rise in the proportion of people dispensed antidepressants over time, with a noticeable sharp increase after 2019 among people aged 10-19 (8.36% from 2013 to 2022), 20-29 (9.87% from 2013 to 2022) and 30-39 years (4.44% from 2013 to 2022). The dispensing of anxiolytics was highest among the older age groups, although the proportion of people aged 60 years or over dispensed anxiolytics declined with time, particularly after 2014. A similar pattern of dispensing was observed for hypnotics. The odds of females being dispensed an antipsychotic were lower compared with males (OR=0.74, 99.9%CI=0.72-0.76), but higher for the dispensing of antidepressants (OR=2.71, 99.9%CI=2.66-2.77), anxiolytics (OR=1.58, 99.9%CI=1.55-1.61), and hypnotics (OR=1.60, 99.9%CI=1.57-1.64).

As the proportion of the population issued medication scripts is relatively low among young people, we adjusted our calculations for the estimated likely denominator for the relevant age-group.⁷ The results of these analyses are displayed in Figure 1. The proportion of Australians aged 10-19, 20-29 and 30-39 years

dispensed antidepressants increased from 2.92% to 5.93%, 7.74% to 12.44%, and from 10.13% to 12.65% between 2013 and 2022.

4 | DISCUSSION

Our results show that a large proportion of Australians accessing community pharmacies are dispensed psychotropic medications, antidepressants being the most frequent among them. We found that older adults, most noticeably those aged 80 years or over, were the most frequent recipients of antipsychotics, antidepressants, anxiolytics, and hypnotics, although the proportion of older adults dispensed antipsychotics, anxiolytics and hypnotics has declined over the past 10 years, particularly after 2015. We also found that an increasing proportion of participants were dispensed antidepressants between 2013 and 2022, with the most marked rise occurring amongst those aged 10-19 and 20-29 years. A larger proportion of females than males were dispensed antidepressants, anxiolytics, and hypnotics, but a greater proportion of males than females were dispensed antipsychotics, albeit not in later life.

Access to the large PBS database allowed us to examine the dispensing patterns of medications in Australia between 2013 and 2022, with evidence from other sources suggesting that the agreement between dispensing and medication use is high.⁸ One important caveat of this dataset is that the numbers reflect only the people who have been dispensed a medication during the relevant time-period (not necessarily a psychotropic drug). This is the case for about 54% of people aged 0-17 years, but only 2% of those aged 80 years or over.⁷ As a result, prevalence estimates are likely to be inflated for the population of young and middle-aged people, but should be relatively accurate for older people. Hence, the observed discrepancy in the use of psychotropic medications between older and younger people could be even more pronounced than our calculations using the crude PBS data suggest. Our additional analyses yielded results that are consistent with this hypothesis (Figure 1).

The proportion of people dispensed antipsychotics, anxiolytics and hypnotics declined over the 10 years of the study, but the proportion of those receiving antidepressants increased. This rise in the proportion of people dispensed antidepressants has been observed in some,⁹ but not all, countries,¹⁰ and has recently been portrayed as a consequence of the COVID-19 pandemic or, alternatively, of stockpiling of medications triggered by uncertainty surrounding the medium and long term consequences of lockdowns.¹¹ Our analyses suggest that stockpiling is an unlikely explanation for our findings, as rises in the dispensing of psychotropics were not apparent for other medication classes. They also suggest that the pandemic may have affected the mood of adolescents and young adults more markedly, although upwards trends in the dispensing of antidepressants had been apparent for at least five to six years earlier. Such a change may reflect an increase in the prevalence of mood disorders in the community (particularly among adolescents and young adults),¹² changes in diagnostic practice,¹³ or a shift in prescription habits that have led to progressively greater use of antidepressants for the management of conditions other than depression (such as anxiety disorders).¹⁴ The concurrent decline in the use of other psychotropic medications could further be viewed as an indication that the dispensing of antidepressants may be increasingly used for the management of conditions other than depressive disorders. In addition, sex differences in the dispensing of psychotropics may have been due to real discrepancies in the prevalence of mental health disorders treated by these medications, or may represent differing gender-mediated help-seeking behaviours.¹⁵

In conclusion, our results indicate that older adults and females have been, and continue to be, the most frequent recipients of psychotropic medications dispensed in Australia over the past decade. The organisation and resourcing of health services should reflect this reality.

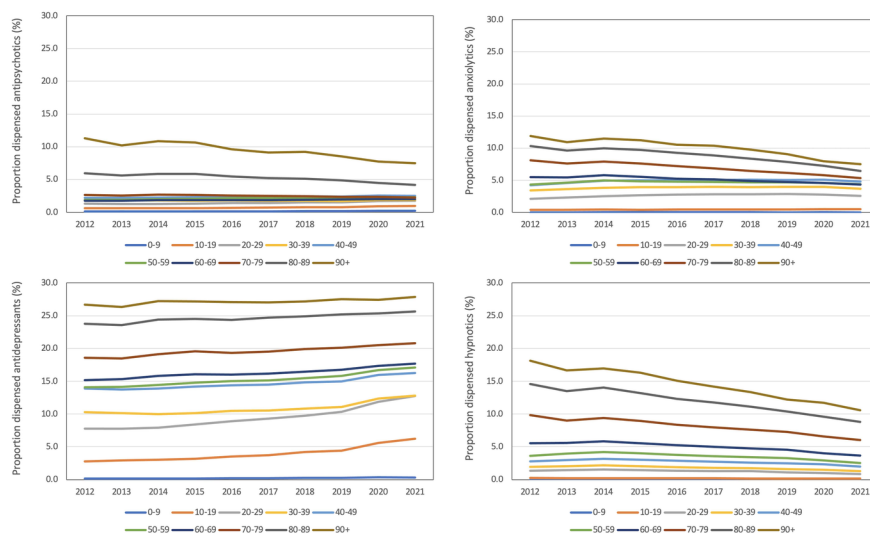
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FIGURE LEGEND

Figure 1. The figure shows the proportion (%) of people included in the 10% PBS database who were dispensed antipsychotics (top left), antidepressants (bottom left), anxiolytics (top right), and hypnotics (bottom right) between 2012 and 2021 according to their age groups (coloured lines). The estimates depicted in the figure were adjusted for the proportion of people expected to have been missed in each age-group because they were not included in the PBS database.⁷



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