



# Use of antipsychotics, benzodiazepine derivatives, and dementia medication among older people with intellectual disability and/or autism spectrum disorder and dementia



Anna Axmon<sup>a,\*</sup>, Jimmie Kristensson<sup>b</sup>, Gerd Ahlström<sup>c</sup>, Patrik Midlöv<sup>d</sup>

<sup>a</sup> Occupational and Environmental Medicine, Department of Laboratory Medicine, Lund University, SE 221 00 Lund, Sweden

<sup>b</sup> Department of Health, Blekinge Institute of Technology, Karlskrona, Sweden

<sup>c</sup> Department of Health Sciences, Lund University, SE 221 00 Lund, Sweden

<sup>d</sup> Center for Primary Health Care Research, Department of Clinical Sciences in Malmö, Lund University, SE 221 00 Lund, Sweden

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## ABSTRACT

**Background:** Although people with intellectual disability (ID) and people with dementia have high drug prescription rates, there is a lack of studies investigating drug use among those with concurrent diagnoses of ID and dementia.

**Aim:** To investigate the use of antipsychotics, benzodiazepine derivatives, and drugs recommended for dementia treatment (anticholinesterases [AChEIs] and memantine) among people with ID and dementia.

**Methods and procedures:** Having received support available for people with ID and/or autism spectrum disorder (ASD) was used as a proxy for ID. The ID cohort consisted of 7936 individuals, aged at least 55 years in 2012, and the referent cohort of age- and sex-matched people from the general population (gPop). People with a specialists' diagnosis of dementia during 2002–2012 were identified (ID,  $n = 180$ ; gPop,  $n = 67$ ), and data on prescription of the investigated drugs during the period 2006–2012 were collected.

**Outcome and results:** People with ID/ASD and dementia were more likely than people with ID/ASD but without dementia to be prescribed antipsychotics (50% vs 39% over the study period; odds ratio (OR) 1.85, 95% confidence interval 1.13–30.3) and benzodiazepine derivatives (55% vs 36%; OR 2.42, 1.48–3.98). They were also more likely than people with dementia from the general population to be prescribed antipsychotics (50% vs 25%; OR 3.18, 1.59–6.34), but less likely to be prescribed AChEIs (28% vs 45%; OR 0.32, 0.16–0.64).

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## What this paper adds

This paper adds results from a large group of older people with intellectual disability (ID), identified through a register that includes a high proportion of people with ID in Sweden. It also contributes data regarding the prescription of benzodiazepine derivatives, anticholinesterases, and memantine among people with ID and dementia. We have not been able to find such data in any previously published research. Finally, it adds comparisons with a general population sample with regard to the investigated drugs, also something we have failed to find in previously published data.

\* Corresponding author.

E-mail addresses: [anna.axmon@med.lu.se](mailto:anna.axmon@med.lu.se) (A. Axmon), [jimmie.kristensson@med.lu.se](mailto:jimmie.kristensson@med.lu.se) (J. Kristensson), [gerd.ahlstrom@med.lu.se](mailto:gerd.ahlstrom@med.lu.se) (G. Ahlström), [patrik.midlov@med.lu.se](mailto:patrik.midlov@med.lu.se) (P. Midlöv).

## 1. Introduction

As the life expectancy increases for people with intellectual disability (ID) (Dieckmann, Giovis, & Offergeld, 2015; Janicki, Dalton, Henderson, & Davidson, 1999; Patja, Iivanainen, Vesala, Oksanen, & Ruoppila, 2000) the prevalence of age related diseases such as dementia is expected to increase in this population. However, little is known about drug use among people with concurrent diagnosis of ID and dementia. Such knowledge is important to get a deeper understanding about the treatments provided.

Antipsychotics, or neuroleptics, are a range of pharmaceuticals approved primarily for schizophrenia, bipolar disorder, and psychotic disorders. However, off-label prescription to treat challenging behaviors among people with ID is common (Deb, Unwin, & Deb, 2015; Doan, Lennox, Taylor-Gomez, & Ware, 2013; Tsiouris, Kim, Brown, Pettinger, & Cohen, 2013), as is prescription to manage behavioral and psychological symptoms of dementia (BPSD) (Gareri, De Fazio, Manfredi, & De Sarro, 2014). This is in spite of research suggesting that antipsychotics may not be an effective treatment for challenging behaviors (Tyner et al., 2009), and that the use of these drugs is associated with a range of side effects (Gardette et al., 2012; Huybrechts et al., 2012; Vigen et al., 2011). Although there are antipsychotics that may be effective in the treatment of BPSD (La Malfa, Lassi, Bertelli, & Castellani, 2006), the effectiveness has been questioned (Gauthier et al., 2010). Moreover, the use of these drugs is associated with an increased risk of serious adverse cerebrovascular events (Ballard & Howard, 2006).

Even though benzodiazepines are not the usual or recommended treatment, benzodiazepine derivatives are used for epilepsy, sleep disorders, anxiety, and panic disorders. The use of benzodiazepine derivatives have been found to be associated with several adverse effects, e.g. increased risk of falls in older adults (Ham et al., 2014; van Strien, Koek, van Marum, & Emmelot-Vonk, 2013), and should be avoided for treatment of BPSD (Gauthier et al., 2010; Schneider, Dagerman, & Insel, 2006; Sink, Holden, & Yaffe, 2005).

Thus, antipsychotics and benzodiazepine derivatives are prescribed to a larger extent than warranted to both people with ID and people with dementia, even though the clinical efficacy for off-label use is questionable and adverse reactions are common and can be severe. The situation is worsened by the fact that both antipsychotics and benzodiazepine derivatives may interact with dementia treatments such as anticholinesterases (AChEIs) and memantine (Pasqualetti, Tognini, Calsolaro, Polini, & Monzani, 2015). Recently, both the American Geriatrics Society (By the American Geriatrics Society Beers Criteria Update Expert, 2015) and the Swedish National Board of Health and Welfare have included antipsychotics as well as benzodiazepines when listing potentially inappropriate drugs among older people (Socialstyrelsen, 2010).

The aim of the present study was to investigate drug use, by using purchase of prescribed drugs as a proxy, of antipsychotics and benzodiazepine derivatives in people with ID and dementia in comparison with people with ID but without dementia and people with dementia from the general population. Furthermore, to investigate use of the dementia treatments AChEIs and memantine associated with ID.

## 2. Materials and methods

### 2.1. Study population

The present study is a register study based on a cohort of people with ID (ID cohort) and an age- and sex-matched referent cohort from the general population (gPop cohort). The cohort comprising people with ID was an administrative one, identified using the so called LSS-register. This register is maintained by the Swedish National Board of Health and Welfare, and contains information on people who have received support and services because of ID, autism, or “a condition resembling autism” (the latter two will be referred to as autism spectrum disorders; ASD). To receive these services, the individual must apply to the municipality, where an investigation is made to determine if the person fulfills the criteria of having ID or ASD, and an assessment of needs is made. All services for all people receiving them are included in the register. However, no information on diagnoses (e.g. ID or ASD) is included.

As we were not able to separate those with ID with or without ASD from those with ASD only, we used having received support according to the LSS as a proxy for ID. Through the LSS-register, we identified all 7936 individuals who were 55 years or older in 2012, alive at the end of that year, and had received at least one type of service during the year. A randomly selected referent cohort comprising 7936 people from the general population (gPop), matched one-to-one by birth year and sex, was identified from the Swedish National Population Register. The matching was performed by Statistics Sweden.

Diagnoses in the Swedish National Patient register during 2002–2012 were used to identify individuals with dementia (F00–F03, F10.7A, and G30–G31 in International Classification of Disease, 10th revision [ICD-10];  $n=216$  in the ID cohort, and  $n=81$  in the gPop cohort). This implies that all diagnoses were made by physicians in either inpatient care or specialist care according to practice and standards at the time of the diagnosis. Those who contributed with less than one year to the study (36 in the ID cohort and 14 in the gPop cohort), i.e., were diagnosed during 2012, were excluded, leaving 180 people with dementia in the ID cohort and 67 in the gPop cohort. Sex- and age-distributions are presented in Table 1.

### 2.2. Outcome measures

The Swedish Prescribed Drug Register, which is also kept at the Swedish National Board of Health and Welfare, was established in July 2005. This register contains information on all dispensed prescriptions, and is complete for the entire

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