Psychotropic medication in a randomly selected group of citizens receiving residential or home care

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ABSTRACT

INTRODUCTION: Treatment with one or more psychotropic medications (PMs), especially in the elderly, is associated with risk, and the effects of treatment are poorly validated. The aim of this article was to describe the use of PM in a population of citizens receiving either residential care or home care with focus on the prevalence of drug use, the combination of different PMs and doses in relation to current recommendations.

METHODS: The medication lists of 214 citizens receiving residential care (122) and home care (92) were collected together with information on age, gender and residential status.

RESULTS: Two thirds of the citizens (64.5%) used one or more PMs (antipsychotics 15.9%, antidepressants 43.5%, anxiolytics/hypnotics 27.1% and anti-dementia drugs 16.4%). Citizens treated with antipsychotics were also prescribed antidepressants (52.9%), anxiolytics/hypnotics (35.3%) and anti-dementia drugs (20.9%). Citizens treated with anti-dementia drugs were also prescribed antipsychotics (20.0%) and antidepressants (54.3%). Doses over 20 mg and 10 mg of citalopram and escitalopram, respectively, were given to 28.0% of the citizens treated with these antidepressants.

CONCLUSION: Compared to previous studies, we observed improvements with regard to doses and choice of drug, but the use of PMs among the elderly is still not sufficiently in accordance with current recommendations.

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Treatment with psychotropic medication (PM), including antipsychotics, antidepressants, anxiolytics/hypnotics and anti-dementia drugs, and especially polypharmacy with PM has been widely debated over the past years. Focus has been on the evidence of effects versus the risk of unwanted side effects. The elderly are more prone to experiencing side effects, which can lead to hospital admission [1, 2]. This is partly due to changes in pharmacokinetics and pharmacodynamics in the elderly patient, but also due to a higher prevalence of polypharmacy and co-morbidity [3].

Antipsychotics have been used to treat behavioural disturbances caused by dementia and have been associated with harmful effects including an increased risk of death. Recognising this, the Danish Health and Medicines Authority have issued warnings against this off-label use and recommended that patients with dementia are not treated with antipsychotics [4, 5]. PM in general and benzodiazepines in particular have been associated with an increased risk of falls and long-term use is discouraged [6, 7]. The effectiveness of antidepressants in patients with dementia has been questioned [8]. The effect of anti-dementia drugs is debated, and it is recommended that individual treatment is evaluated every 15 months [9].

The combination of antipsychotics and anxiolytics/hypnotics is associated with increased mortality, and the Danish Health and Medicines Authority has emphasised that this combination should be avoided [10]. The combination of antipsychotics and antidepressants, especially in the elderly, can also raise concerns since it is well established that both drug categories and an age over 65 years increase the risk of QTc prolongation and arrhythmias [11].

To study the prevalence of drug use, we conducted a retrospective survey of the combination of different PMs and doses in relation to current recommendations in a population consisting of citizens receiving either residential care or home care in Frederiksberg Municipality in Copenhagen, Denmark. The survey was part of a collaborative project between Frederiksberg Municipality, the Department of Clinical Pharmacology, Bispebjerg Hospital and the Department of Integrated Health Care, Bispebjerg Hospital. The survey was suggested by the participating nurses as they felt that that the above-mentioned concerns and precautions were not always met.

METHODS

A pharmacist recruited by the municipality recorded individual data on PM regularly and as needed with name of drug and dose together with the total number of medications from medication lists for all residents from one randomly selected residential care facility among the 13 facilities situated in the municipality which provides care of 900 citizens in total. Similarly, data were collected from a randomly selected group of citizens receiving home care from one of three groups of nursing

ORIGINAL ARTICLE

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staff. The staff visit approximately 1,300 citizens in total. As data were collected from the medication list of the municipality, it was not possible to identify the current indication for and duration of treatment. Nor did we have information regarding co-morbidity or information about previous medication review, including possible non-pharmacological interventions. Other variables were age (year of birth), gender (male/female) and residential status (nursing home/homecare). Data were collected in January 2013 on two randomly selected days; included data from a total of 214 persons were included: 122 citizens from residential care and 92 citizens receiving home care on the dates when we conducted the survey.

Data were anonymised and analysed using SAS version 9.3. An external person performed the descriptive statistical analyses. Focus was on the use of PM, and other medications were therefore only counted by number, and no distinction was made between regularly prescribed and "as needed" medication.

PM was defined as antipsychotics (Anatomical Therapeutic Chemical Classification (ATC) N05A), antidepressants (ATC N06A), anxiolytics/hypnotics (ATC N05BA, N05C and R06AD02) and anti-dementia drugs (ATC N06DA).

Trial registration: The Danish Data Protection Agency approved the project with journal number 2007-58-0015.

RESULTS

In total, 214 medication lists were reviewed. The median age of the citizens included was 84 years (range: 25 to 100 years); all but 14 citizens were more than 65 years old, 77.0% were female (72.2% in the residential care versus 79.4% in the home care group). The mean number of total medications was 10.1 drugs (range: 1-22). Subgroups are presented in **Table 1**. In the group of citizens receiving residential care, 93.4% received five drugs or more, whereas the equivalent percentage was 85.9% in the home care group.

A total of 64.5% of the citizens received one or more PMs; a diagram of percentages of citizens receiving from none to four PMs is presented in **Figure 1**. The prevalence of treatment with each type of PM is illustrated in **Figure 2**. In addition to the percentages shown in Figure 2, a prescription of anxiolytics/hypnotics as needed was found in 47.7% of the residents, and 18.6% of the residents had a prescription of antipsychotics as needed.

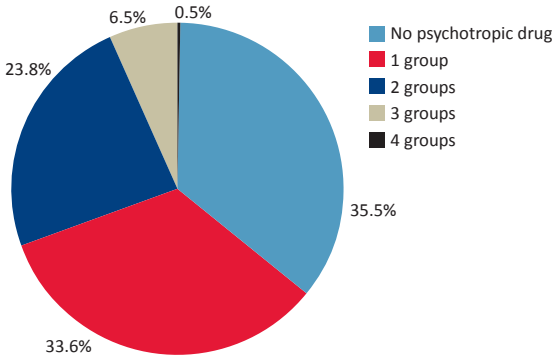
TABLE 1

Number of drugs per citizen by housing type.

Type of drugs	Residential care	Home care	All
Psychotropic	1.3	0.9	1.2
Other	9.3	8.5	9.0
Total	10.7	9.4	10.1

FIGURE 1

Percentages of citizens receiving medication from zero, one, two, three and four groups of psychotropic medication.



The most frequently used drugs among antipsychotics were quetiapine (12 citizens), olanzapine (5) and risperidone (5). Among antidepressants, it was citalopram (44) and mirtazepine (30), for anxiolytics/hypnotics it was zopiclone (25) and oxazepam (12), and with regards to anti-dementia drugs, donepezil (16) was the most frequently used drug.

Doses of commonly used antipsychotics and antidepressants are shown in **Table 2**, and 14 citizens received doses over 20 mg citalopram and 10 mg escitalopram out of a total of 50 which corresponds to 28.0%.

Of the 214 citizens, 34 were given an antipsychotic, and we found no examples of treatment with more than one antipsychotic. Of these 34 citizens, 18 (52.9%) were also treated with one or two antidepressants, 12 (35.3%) with one or two anxiolytics/hypnotics and seven (20.9%) with one or two anti-dementia drugs.

Of the 214 citizens, 35 were treated with one or two anti-dementia drugs, seven (20.0%) were also treated with an antipsychotic, and 19 of the 35 (54.3%) were also treated with one or two antidepressants.

DISCUSSION

This retrospective study found that two-thirds of the surveyed population received PM regularly. The use of antidepressants was particularly high (43.5%), and citizens in residential care received more medication than the citizens of the home care group, e.g. antipsychotics and antidepressants. We anticipated this fact as we expected citizens in residential care to be frailer than persons living at home.

In our study, the most frequently used antipsychot-

FIGURE 2

Frequency of use of different groups of psychotropic medication.

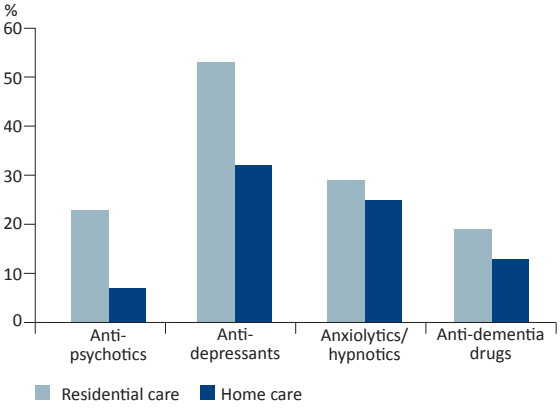


TABLE 2

Doses of commonly used antipsychotics and selective serotonin re-uptake inhibitors.

Generic drug	Citizens in treatment, n	Dose, mg, mean (range)
Quetiapine	12	77 (25-175)
Olanzapine	5	6.5 (2.5-15)
Risperidone	5	0.9 (0.5-1.5)
Citalopram	44	23 (5-40)
Escitalopram	6	9.2 (5-15)

ics were quetiapine, olanzapine and risperidone at relatively low doses (Table 2) which indicates that the indications could be behavioural and psychological symptoms and signs of dementia (BPSD). In general, antispychotics are not indicated for elderly patients with dementia; but when necessary, a second-generation antipsychotic such as risperidone, olanzapine, quetiapine and aripiprazole can be used at low doses for a short period for BPSD [12, 13].

Anxiolytics/hypnotics are restricted to short-term use, and long-term treatment should be discontinued according to the Danish Health and Medicines Authority [6]. We found that 27.1% of the citizens were given anxiolytics/hypnotics regularly and 47.7% as needed. Even though we do not know the duration of treatment, this seems to leave room for improvement.

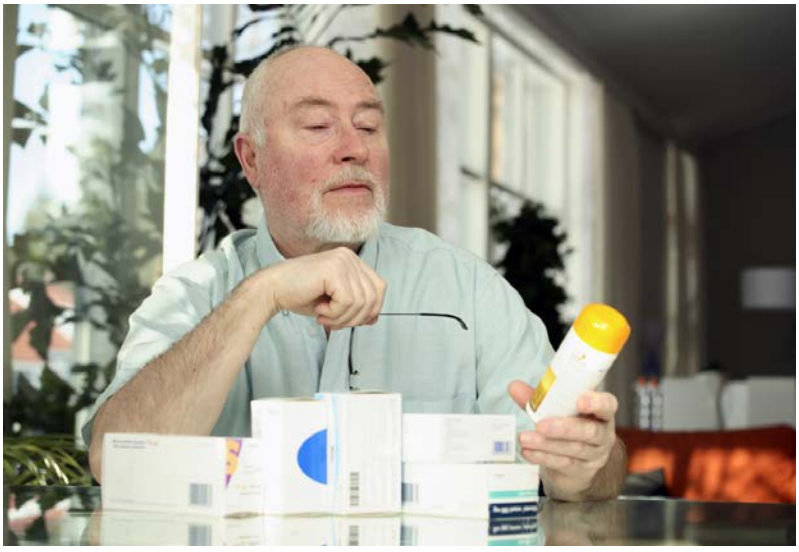
In total, 43.5% of the citizens used a minimum of one antidepressant, and 54.3% of citizens in anti-dementia drug treatment were being treated with antidepressants. A previous study found that antidepressants (sertraline and mirtazepine) were not superior to placebo when treating patients with a significant degree of dementia [8]. We therefore suggest that part of the antidepressants could be withdrawn.

It is recommended that the antidepressant citalopram should not exceed daily doses of 20 mg for patients aged > 65 years or with reduced liver function due to an increased risk of a prolonged QT interval [14, 15]. Although 14 citizens were less than 65 years old and doses above 20 mg citalopram can be used, almost one third (29.5%) of the citizens treated with citalopram in our study received more than 20 mg daily which might indicate that these recommendations have not gained a foothold in all parts of Danish health care.

Previously, studies focusing on combination of PMs have been conducted in Denmark. In 2006, 55 citizens in residential care or home care receiving antipsychotic medication were investigated. Only 18 citizens had a psychiatric diagnosis and co-medication with other psychotropic drugs occurred in approximately 75% of the citizens (anxiolytics/hypnotics 40%, antidepressants 64% and anti-dementia drugs 11%) [16]. This was slightly higher than in our study with regards to anxiolytics/hypnotics and antidepressants, whereas the proportion of anti-dementia co-treatment was higher in our population, the latter might be explained by the fact that anti-dementia drugs were relatively new on the market in 2006, or the proportion of citizens with dementia in residential care may be higher today.

In 2005, the Danish Health and Medicines Authority published a study on the use of antipsychotics in elderly people (older than 65 years) in Denmark based on register data. This study found large regional differences in the prevalence of antipsychotic use among the elderly, and overall 28.2% of citizens in residential care facility were being treated with antipsychotics in 2003 (varying from 18% to 34%). They concluded that the doses of antipsychotics were too high [17]. Compared with our study in which 23% of the citizens in residential care received an antipsychotic, there have not been much change over the past decade, but the doses of antipsychotics found in our study were generally lower than the recommended doses for treating schizophrenia or manic episodes of bipolar disorders [18]. Furthermore, the study found that 27% of citizens treated with anti-dementia drugs received co-medication with antipsychotics [17]. Our study found a slightly lower percentage (20.0%); but bearing in mind the increased mortality associated with this treatment, our figure also seems to be suboptimal.

In 2013, the Danish Health and Medicines Authority published a National Clinical Guideline on the treatment of dementia. The guideline stated that among patients above 65 years who were being treated with anti-dementia drugs in 2009, 19% were also being treated with an antipsychotic, and this proportion was declining [12]. These results are in line with our corresponding findings of 20.0%.



Elderly man studying his medicine (Colourbox).

In comparison with these previous studies [12, 16, 17], we observe an increasing trend towards following the recommendations from the Danish Health and Medicines Authority; we found no cases of co-administration of more than one antipsychotic, and the doses of the most frequently used antipsychotics were low. The current recommendations are that antipsychotics should not be used with other antipsychotics, and combinations with antidepressants and anxiolytics/hypnotics are to be avoided [10]. Co-administration of antipsychotics and anti-dementia drugs has been associated with an increased mortality, and the use of this combination is discouraged [19]. Our study was limited by the lack of relevant information, including knowledge of current indication for and duration of treatment, the limited information on the extent to which "as needed" medication was used and a relative small sample size. In general, we do believe that we have a continuing challenge with polypharmacy and irrational treatment with PM drugs. This may in part be explained by inadequate pharmacological knowledge among health professionals (both physicians, nurses and others involved in the medication process) as pre- and post-graduate education in pharmacology is sparse in almost all educational institutions in Denmark, and by the fact that careful medication review is time-consuming. Furthermore, special residential care facilities for patients with dementia are lacking, as demonstrated in an analysis from the DaneAge Association, 2013, which showed an almost identical lack of these facilities in all municipalities in Denmark [20].

CONCLUSION

Compared with previous studies, this sample of a randomly selected group of citizens receiving either home care or residential care revealed that combinations of PMs are not sufficiently in accordance with the current recommendations. The choice of drug and doses of antipsychotics seem to be in line with current recommendations, but bearing in mind the sparse evidence for efficacy and the high risk of adverse events associated with these drugs and drug combinations in the elderly, our findings leave room for improvement. Doses of citalopram and escitalopram were higher than recommended in a relatively large proportion of citizens and as a large proportion of the citizens were exposed to a high degree of polypharmacy with both PM and other drugs, these citizens are at high risk of serious adverse effects, including central nervous system and cardiac problems and unknown side effects can be high.

Thus, it is important to maintain a focus on indication for treatment with PM and to remain aware of any side effects. We believe that the use of PM in the elderly, especially those in residential care, can be reduced with an increased focus on prescribing habits and non-pharmacological interventions.

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LITERATURE

1. Kongkaew C, Noyce PR, Ashcroft DM. Hospital admissions associated with adverse drug reactions: a systematic review of prospective observational studies. Ann Pharmacother 2008;42:1017-25.
2. Krähenbühl-Melcher A, Schlienger R, Lampert M et al. Drug-related problems in hospitals: a review of the recent literature. Drug Saf Int J Med Toxicol Drug Exp 2007;30:379-407.
3. Trifirò G, Spina E. Age-related changes in pharmacodynamics: focus on drugs acting on central nervous and cardiovascular systems. Curr Drug Metab 2011;12:611-20.
4. Huybrechts KF, Gerhard T, Crystal S et al. Differential risk of death in older residents in nursing homes prescribed specific antipsychotic drugs: population based cohort study. BMJ 2012;344:e977.
5. Indskærper landets læger at udvise stor forsigtighed ved behandling med atypiske antipsykotika til ældre patienter med demens. www.sst.dk/Tilsyn%20og%20patientsikkerhed/Behandling%20med%20laegemidler/Antipsykotiske_laegemidler/Antipsykotika_fraraader_brug.aspx (27 Oct 2013).
6. Vejledning om ordination af afhængighedsskabende lægemidler. https://www.retsinformation.dk/Forms/R0710.aspx?id=157211 (27 Oct 2013).
7. Hill KD, Wee R. Psychotropic drug-induced falls in older people: a review of interventions aimed at reducing the problem. Drugs Aging 2012;29:15-30.
8. Banerjee S, Hellier J, Dewey M et al. Sertraline or mirtazapine for depression in dementia (HTA-SADD): a randomised, multicentre, double-blind, placebo-controlled trial. Lancet 2011;378:403-11.
9. Midler mod demens http://pro.medicin.dk/Laegemiddelgrupper/grupper/315685 (21 Nov 2013).
10. Indskærpelse om at udvise stor forsigtighed ved behandling med antipsykotiske lægemidler i kombination med sove- og nervemedicin www.sst.dk/Tilsyn%20og%20patientsikkerhed/Behandling%20med%20laegemidler/Antipsykotiske_laegemidler/Indskaerp_antipsyk.aspx (27 Oct 2013).
11. Vieweg WVR, Wood MA, Fernandez A. Proarrhythmic risk with antipsychotic and antidepressant drugs: implications in the elderly. Drugs Aging 2009;26:997-1012.
12. http://sundhedsstyrelsen.dk/publ/Publ2013/10okt/NKRudrednBehlDemens.pdf (5 Dec 2013).
13. Vejledning om behandling med antipsykotiske lægemidler til patienter over 18 år. https://www.retsinformation.dk/Forms/R0710.aspx?id=11418 (27 Oct 2013).

14. Monthly report – Pharmacovigilance Working Party (PhVWP) October 2011 plenary meeting. www.ema.europa.eu/docs/en_GB/document_library/Report/2011/10/WC500117061.pdf (26 Nov 2013).
15. Drug Safety and Availability > FDA Drug Safety Communication: abnormal heart rhythms associated with high doses of Celexa (citalopram hydrobromide) www.fda.gov/Drugs/DrugSafety/ucm269086.htm#hcp (26 Nov 2013).
16. Kortlægning af lægemiddelrelaterede problemer hos + 65 årige. https://www.sundhed.dk/sundhedsfaglig/praksisinformation/almen-praksis/hovedstaden/konsulenthjaelp-til-praksis/medicinfunktionen/rapporter/kortlaegning-af-laegemiddelrelaterede-problemer/ (27 Oct 2013).
17. Forbruget af antipsykotiske lægemidler blandt ældre. www.sst.dk/Udgivelser/2005/Forbruget%20af%20antipsykotiske%20laegemidler%20blandt%20aeldre%20-%20Rapport%20fra%20arbejdsgruppe%20nedsat%20af%20Sundhedsstyrelsen.aspx (9 Nov 2013).
18. Seroquel. http://pro.medicin.dk/Medicin/Praeparater/2831 (5 Dec 2013).
19. Ballard C, Hanney ML, Theodoulou M et al. The dementia antipsychotic withdrawal trial (DART-AD): long-term follow-up of a randomised placebo-controlled trial. Lancet Neurol 2009;8:151-7.
20. Ældre Sagen. Byg demensboliger. www.aeldresagen.dk/presse/nyheder/Sider/Byg-demensboliger.aspx (6 Aug 2014).