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Psychotropic drug use in nursing homes – diagnostic indications and variations between institutions

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Abstract Objective: Psychotropic drug use among nursing home residents with regard to diagnostic indications and patient- and institution characteristics was analysed.

Methods: A cross-sectional study of medication data from 1552 residents at 23 nursing homes in Bergen, Norway, was performed. Psychotropic drug use (neuroleptics, anxiolytics, hypnotics, antidepressants, and two sedative antihistamines) was analyses with regard to prevalence, diagnostic indications, duration of use, and general patient- and institution characteristics.

Results: Psychotropic drugs were taken on a daily schedule by 59% of all residents, most commonly as long-term treatment. Antidepressants (in 70% selective serotonin re-uptake inhibitors) were used by 31%, neuroleptics by 23%, and benzodiazepines by 22% of all the residents. Neuroleptics were given for non-psychotic behavioural and psychological symptoms in 66% of the cases. Sleep disorders were most commonly treated with long-acting benzodiazepine hypnotics. Psychotropic drug use decreased with increasing patient age. Drug use patterns varied greatly between the different nursing homes: the prevalence of neuroleptic use varied from 0 to 61% of the residents, and antidepressant use varied from 10 to 63%. In nursing homes providing relatively more physician staff time, the residents were more likely to use antidepressants.

Conclusions: Psychotropic drugs are used by a majority of nursing home residents as long-term symptomatic treatment. The great variations between the institutions can only to a small extent be explained by quantitative differences between the institutions.

Keywords Nursing homes · Psychotropic drugs · Antidepressants · Neuroleptics · Benzodiazepines

Introduction

Norwegian nursing homes (NHs) are run by the local municipalities and provide care for both somatic and psychogeriatric residents. Local health authorities throughout the country pursue quite similar and restrictive admission policies. Even if there are no explicit criteria, admission is based on the presence of a seriously reduced functional level demanding continuous supervision and support. Dementia is the most frequent reason for admission [1], and the prevalence of mental impairment among nursing home residents (NHRs) in Norway has been reported to be as high as 80% [2]. Behavioural and psychological symptoms, like restlessness, anxiety, and depression, are commonly associated with dementia [3], posing major challenges to diagnostics and management in the nursing home setting.

Prevalence of psychotropic drug consumption among NHRs varies greatly in different studies; 20–50% use neuroleptics, 7–35% hypnotics, 6–14% anxiolytics, and 6–47% antidepressants [4, 5, 6]. Ageing, multiple chronic diseases, and polypharmacy place frail elderly people at particular risk for adverse drug reactions (ADRs). Limited efficacy [7] and serious side effects [8, 9] are the major concerns regarding the use of neuroleptics in this population.

Despite a high prevalence of psychiatric morbidity, NHs have been criticised for over-using psychotropic agents for poorly defined symptoms [10, 11]. Insight into drug use patterns and diagnostic indications for psychotropics are prerequisites to improving the drug management.
The present study aims to characterise psychotropic drug use in NHs, and to analyse drugs use patterns with regard to diagnostic indications, and general patient and institution characteristics.

**Materials and methods**

**Data collection**

This survey was undertaken during 1997 in the Bergen district, Norway. Bergen, located on the western coast, is the second-largest town in Norway with about 230,000 inhabitants. Based on drug dispensary cards, nurses in charge denoted patients’ age and gender, and all drugs used by each resident the day before data-recording (brand name, daily dose, duration of use ≥3 months, <3 months, or prn use). The NH physicians subsequently added relevant principal diagnoses for each patient, according to the medical records, and indication(s) for all drugs presently used. Information about available staff time (nursing personnel: qualified nurses and nursing assistants altogether; physicians), and institution size (overall number of beds) was obtained from all NHs.

**Data handling**

Drugs were coded according to the Anatomical Therapeutic Chemical (ATC) classification [12]. The following therapeutic subgroups (ATC, 3rd level) were considered as psychotropics: neuroleptics (N05A), anxiolytics (N05B), hypnotics (N05C), and antidepressants (N06A). We also included the sedative antihistamines alimemazine (R06AD01) and promethazine (R06AD02), because they are commonly used as hypnotics. Only drugs used on a daily schedule (92% of all psychotropics) were included in the analyses. Available staff time for each institution was calculated as number of full-time positions (i.e., 37.5 h/week) per 100 residents.

**Statistics**

The study was analysed as a descriptive cross-sectional investigation. Proportions given are based on valid cases. The analyses included the χ² test with Yates’ correction, Pearson’s correlation test, and Student’s t test. For psychotropic drug use (any drug, therapeutic subgroups) predictors with regard to patients (age, gender) and institutions (size, staff time) were analysed separately, and subsequently entered in a multivariate logistic regression model. P values of 0.05 and less were accepted as statistically significant. SPSS software version 9.0 was used in the analyses.

**Study population**

Of 27 eligible NHs, 23 participated in the survey. The study is based on data from 1552 residents, representing 86% of the total Bergen NH population. Due to patient turnover during the study period, data regarding 50 residents on respite stay were not obtained.

**Results**

**Population characteristics**

Characteristics of the study population are shown in Table 1. Except for one 11-bed psychogeriatric institution, all NHs provided care for both somatic and psychogeriatric residents. Out of 36 consulting physicians employed, 28 were general practitioners. Institution size in terms of number of residents was not associated with differences in available staff time per resident, or different distributions of patients’ ages and genders. Women made up 75% of the residents, and were generally older than the male residents (85 vs 82 years, P < 0.001). Psychotropic users generally received more drugs than the non-users (5.9 vs 4.0 drugs per day, P < 0.01).

**Psychotropic drug use**

Altogether 918 (59%) residents used 1421 psychotropic drugs on a daily schedule (Table 2). Two or more psychotropic drugs were used concurrently by 56% of the psychotropic users, 41% received drugs from two different therapeutic subgroups, and 8% from three. Neuroleptics and antidepressants were used concurrently in 140 patients (38% of all neuroleptic users), while 27 patients received anxiolytic and hypnotic benzodiazepines (BZDs) concurrently.

In almost all cases, the different psychotropic drugs had been used for longer than 3 months, (Table 2). Antidepressants were issued to almost every third, and neuroleptics to every fourth resident. Benzodiazepines were used by 22% of the subjects. Psychotropic drug consumption varied greatly between the NHs (Table 2). In three institutions caring for 162 residents, the majority used antidepressants, and in one NH with 67 residents, 61% used neuroleptics.

Selective serotonin re-uptake inhibitors (SSRIs) made up 70% of all the antidepressants used (Table 2). Low-potency compounds made up 40% of all neuroleptics used. Neuroleptics were most commonly given for non-psychotic behavioural symptoms, and were used for psychotic symptoms in only 27% of the cases. Long-acting BZDs and sedative antihistamines made up 38% and 10%, respectively, of all drugs prescribed for sleeping problems.

| Table 1: Characteristics of the 23 nursing homes in the Bergen district and their residents (n = 1552) included in this study |
|---|---|---|
| Nursing homes | Mean or % | SD | Range between institutions or patients |
| Size (number of beds) | 75 | 56 | 11–238 |
| Nursing staff (number of full-time positions per 100 residents) | 69 | 9.3 | 55–89 |
| Physicians (number of full-time positions per 100 residents) | 0.62 | 0.20 | 0.24–0.98 |
| Patients | | | |
| Age (years) | 84 | 7.96 | 39–111 |
| Number of drugs used daily | 5.1 | 2.75 | 0–19 |

SD, standard deviation