Use of psychotropic drugs in homes for the aged in Bergen, Norway: A comparative study

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ABSTRACT

Study objectives: To compare the regular use of psychotropic drugs in 1985 and 1996 in homes for the aged in Bergen, Norway and to study the relation between age, gender, mental impairment and certain behaviour traits and psychotropic drug use.
Design: A point prevalence survey performed on two occasions in 1985 and 1996.
Setting: All regularly used psychotropic drugs and demographic information were collected from the case notes. Mental capacity, which was assessed by means of the Clinical Dementia Rating Scale (CDR), and behaviour were registered by a trained nurse.
Participants: Thirteen representative homes for the aged with a total of 339 residents in 1985 and 286 residents in 1996.
Main results: The was a significant increased use of psychotropic drugs from 1985 to 1996, 48% to 61% of the residents ($p = 0.002$). The use of anxiolytics and antidepressants increased significantly (5% to 14%, $p=0.0004$ and 12% to 23%, $p=0.0005$, respectively), while antipsychotics and hypnotics remained stable (24% on both occasions and 22% and 27%, respectively). The use of anxiolytics and neuroleptics was associated with anxiety, wandering and aggressive behaviour. Anxiolytics were more frequently use by mentally unimpaired residents. A substantial number of passive and apathetic residents were treated inappropriately with psychotropic drugs.
Conclusion: During several years educational programs for nurses and physicians have been carried out to improve the general care and drug treatment of the elderly, especially with regard to psychotropic drugs. The anticipated changes in the use of psychotropic drugs have not been fulfilled.

Key words: Long term care facilities; psychotropic drugs; non-cognitive symptoms; mental impairment

INTRODUCTION

Most elderly people want to live in their own homes as long as possible. To enable proper care for the elderly, home based services have been improved over the last decades. Sheltered accommodations are intended for elderly with minor or moderate care needs who want to live independently, and homes for the aged for those who want to live in an institutional setting. Persons who are heavily dependent on continuous nursing care are cared for in nursing homes.

The city of Bergen, the second largest in Norway, has approximately 220,000 inhabitants, of who 12% are 70 years or older. In 1995 there were 638 places in homes for the aged and 1818 places in nursing homes. Compared to 1985 this constituted a reduction of 19% and an increase of 29%, respectively. The reduced capacity in homes for the aged was due to closing down of five institutions. In 1985, 31% of residents in all homes for the aged were moderately or severely mentally impaired (1).

Treatment with psychotropic drugs increases risk for the residents, e.g. propensity of falling, and fractures (2). The use of psychotropic drugs in institutions for the elderly is generally reported to be high, and absent appropriate diagnoses (3,4). Symptoms seem to prompt the prescription of a psychotropic drug. E.g. neuroleptics is particularly associated with "disrupted behaviour" (3-6).

In 1985 it was found that 23% of residents in homes for the aged in the city used neuroleptics regularly (7). During the past years there has been a general focus upon alternative treatment strategies for mentally impaired persons and on the deleterious effects which many of the psychotropic drugs may evolve in the elderly (8,9). Curtailing the use of psychotropic drugs in institutionalised elderly is both essential and possible (10,11). Post graduate courses on geriatric medicine for general practitioners who predominately are responsible for the medical services in homes for the aged and nursing homes, have been accomplished. Local authorities have yearly carried out several seminars

for nurses and nurses aids who work in nursing homes and in homes for the aged. Proper care for mentally impaired and drug use in the elderly has been a main topic in these sessions. Furthermore, for several years a nation wide program devoted to every aspect of dementia assessment and care, has been at work.

On this background it was of interest to study whether there had been any changes regarding the use of psychotropic drugs in homes for the aged in the city between 1985 and 1996.

MATERIAL AND METHODS

In 1985 a point prevalence study concentrating on mental capacity, work load and the regular consumption of psychotropic drugs was performed in the homes for the aged in Bergen. During the first two weeks of 1996 a second study was carried out. The procedures and methods, which were identical, have previously have been described in detail (1). Mental capacity was assessed by means of the Clinical Dementia Rating scale (CDR) (1,12), which is a global rating scale consisting of six items: memory, orientation, judgement and problem solving, community affairs, home and hobbies, and personal care. Patients are assigned a rating of healthy (CDR=0), "senescent forgetfulness" (CDR=0.5), mild (CDR=1), moderate (CDR=2) or severe (CDR=3) mental impairment. In this study CDR 0 and 0.5 and CDR 2 and 3 were grouped together. For present purpose only the item "behaviour" from the work load scale was chosen. It is scored on a four point scale: inconspicuous, apathetic/passive, anxious, wandering, restless, restrained, restless/aggressive (13). Psychotropic drugs were classified according to the Anatomical Therapeutic Chemical Classification Code (ATC classification); neuroleptics (antipsychotics) (N 05A), anxiolytics (N 05 B), hypnotics/sedatives (N 05 C) and antidepressants (N 06 A) (14).

Demographic information was obtained from the case notes. Behaviour and mental functions (CDR) were evaluated by nurses who were in daily contact with the residents, and thus well capable to perform the assessment. Prior to registration they had received a written instruction in the use of the CDR.

Non-parametric statistical methods were used. The associations between drug use, gender, age, mental status, behaviour and year of registration were investigated using logistic regression analyses, where the study drug (dependent variable) was coded "0" for non-user, and "1" for user.

In 1985 all 27 homes for the aged in the city of Bergen took part in the study. For the present study 13 representative homes were invited to take part in the survey. An analysis of the data from 1985 comparing residents from homes being studied both in 1985/96 and those studied only in 1985, revealed no statistical differences with regard to gender distribution, marital state, age, duration of stay, mental capacity or behaviour. Thus the 13 homes studied in 1996 are considered representative for all homes for the aged in the city. All comparisons between 1985 and 1996 were performed on the same institutions.

RESULTS

Demographic characteristics, mental capacity, behaviour, and psychotropic drug consumption in 1985 and 1996 are shown in Table 1. The median stay increased by eight months overall, but the change was more pronounced for mentally unimpaired residents (CDR 0-0.5) (27. 8 and 37.3 months in 1985 and 1996 respectively, $z = 2.59$, $p = 0.01$). In 1996 significantly more residents used psychotropic drugs on a regular schedule (61% versus 48%, Fishers exact test, $p = 0.002$). In 1985 the mentally impaired constituted 46% of all residents and accounted for 52% of the psychotropic users. In 1996 the corresponding figures were 61% and 59%.

Table 1. Demographic characteristics, mental and behavioural states, and drug use among residents of homes for the aged, Bergen 1985 and 1996 (%).

	1985 n = 339	1996 n = 286	p
Age (years, median)	84	87	< 0.0001[1]
range	53–97	55–104	
Stay (months, median)	30[2]	38	0.04[1]
range	0,03–393	0,2–392	
Male/Female	84/254	62/224[3]	0.4[4]
Marital state			0.007[3,5]
Married	31 (9)	19 (7)	
Widows/widower	213 (63)	214 (75)	
Unmarried/divorced	94 (28)	53 (19)	
CDR-group			0.0004[5]
CDR 0–0.5	184 (54)	111 (39)	
CDR 1	59 (17)	74 (26)	
CDR 2–3	96 (28)	101 (35)	
Behaviour			0.26
No disturbance	144 (43)	108 (38)	
Apathetic/anxious	149 (44)	127 (44)	
Aggressive/wandering	46 (14)	51 (18)	
Use of antipsychotics			1.0[4]
No	258 (76)	217 (76)	
Yes	81 (24)	68 (24)	
Use of anxiolytics			0.0004[3,4]
No	321 (95)	246 (86)	
Yes	18 (5)	39 (14)	
Use of hypnotics			0.2[3,4]
No	264 (78)	209 (73)	
Yes	75 (22)	76 (27)	
Use of antidepressants			0.0005[4]
No	299 (88)	221 (78)	
Yes	40 (12)	64 (23)	
Any psychotropic drug			0.002[4]
No	176 (52)	112 (39)	
Yes	163 (48)	173 (61)	

[1] Mann-Whitney test
[2] Information missing in 3 cases
[3] Information missing in 1 case
[4] Fishers exact test
[5] Chi-square test
[6] Information missing in 7 cases

The frequency of the various drugs used is shown in table 2. Use of combinations of two or more drugs was slightly higher in 1996, 37% and 27% respectively, Fisher exact test, p = 0.06). Forty-three percent of all prescriptions for antipsychotics were combinations. For anxiolytics, hypnotics and antidepressants the figures were 60%, 36% and 64% respectively. In 1996 31% of all prescribed antidepressants were drugs with strong anti-cholinergic effects (amitriptylin and doxepin).

Table 2. The most frequently used psychotropic drugs in homes for the aged, Bergen, 1985 and 1996. ( ) = percentage of all prescriptions in each year.

Drugs	1985	1996
Antipsychotics (N 05 A)	(39%)[1]	(29%)[1]
Phenothiazines	38	30
Metylperon	21	12
Haloperidol	8	9
Thioxanthenes	20	8
Combinations, antipsychotics	–	9
Anxiolytics (N 05 B)	(9%)[1]	(15%)[1]
Diazepam/Chlordiazepoxide	18	32
Oxazepam	1	3
Hydroxyzin	0	2
Combinations, anxiolytics	–	1
Hypnotics (N 05 C)	(34%)[1]	(29%)[1]
Nitrazepam	50	46
Flurazepam	6	–[2]
Triazolam	6	–[2]
Meprobamate	6	–[2]
Flunitrazepam	4	25
Chlormetiazol	0	1
Antidepressants (N 06 A)	(18%)[1]	(27%)[1]
Amitriptylin	16	12
Nortriptylin	0	6
Doxepin	15	8
Other TCA[3]	7	1
Mianserin	3	10
Combinations, antidepressants	–	5[4]
Paroxetin	–[1]	19
Fluvoxamin	–[1]	1
Meklobemid	–[1]	2

[1] Number of drugs in Table 1 and Table 2 do not correspond completely because some patients receive combinations of drugs from the same class
[2] Not available
[3] TCA = tricyclic antidepressants
[4] thereof 4 with amitriptylin

Drug consumption related to year, gender, age, mental state and "behaviour" is shown in table 3. The influence of these factors on drug use was subsequently studied using logistic regression analyses (table 4). The probability for being treated with an anxiolytic or an antidepressant drug was three times and two times higher, respectively, in 1996 than in 1985. Residents using one of the two drugs were three times as likely to use the other one than non-users. In general the probability for drug treatment decreased with age. Furthermore, the probability for a mentally unimpaired resident to receive an anxiolytic was double that of a mentally impaired resident.

There was no association between drug use and mental impairment, and a strong association between psychotropic drug treatment and behaviour symptoms. However, mentally impaired residents constituted the majority of the aggressive and wandering patients. Seventy-two percent of the aggressive and wandering residents belonged to CDR 2-3. Among anxious residents approximately 1/3 was assigned to each of the CDR groups. Among apathetic residents 50% belonged to CDR 2-3, and 74% of behaviourally inconspicuous residents belonged to CDR 0-0.5. Regardless of whether the residents were apathetic, anxious or aggressive/wandering, there was an increased probability of receiving an antipsychotic, anxiolytic or antidepressant drug.

DISCUSSION

Several limitations should be taken into consideration when interpreting the results. The "behaviour" item used is rather rough. Better scales are now available. However, to compare the two studies, identical instruments were preferred, and the 1985 survey used the instrument in question. Due to this, e.g. depression was not assessed. A geriatric workup is rarely performed prior to, and it is not a prerequisite for admission to homes for the aged. Hence medical diagnoses are incomplete and they were not included here. This is of particular importance with regard to diagnosing dementia. Mental status was therefore assessed by means of CDR by a nurse who knew the patient. We have previously found good agreement between mental state evaluation conducted by a physician and by a nurse using the CDR (kappa = 0.79) (1).

In Bergen, homes for the aged are increasingly used as a domicile for mentally impaired elderly. The changes from 1985 to 1996 are mainly due to an increasing number of mentally impaired elderly without severe behaviour problems. The increase is not due to development of mental impairment in residents who had lived in the home for years (15). However, homes for the aged were established for and staffed with regard to elderly without substantial caring needs. Hence inappropriate placement of elderly persons who need the level of care which is provided in a nursing home, will certainly have an impact on the internal environment.

From 1985 to 1996 there was a significant increase in the use of anxiolytics and antidepressants, and the proportion being treated with combinations of several psychotropic drugs also increased. It is a general opinion that psychotropic drug consumption in long term care facilities for the elderly is unnecessarily high, that they frequently are prescribed inappropriately, and in many cases with harmful consequences (2-4). On this background it has become a general intention to

Table 3. Probabilities (odds ratio (OR)) for treatment with psychotropic drugs in residents of homes for the aged.

	Antipsychotics				Anxiolytics				Hypnotics				Antidepressants			
	User (149)	Non-user (475)	OR[1]	95% CI	User (57)	Non-user (567)	OR[1]	95% CI	User (151)	Non-user (473)	OR[1]	95% CI	User (104)	Non-user (520)	OR[1]	5% CI
Year																
1985	81	258	1.0		18	321	1.0		75	264	1.0		40	299	1.0	
1996	68	217	1.0	0.7–1.5	39	246	2.8	1.5–5.4	76	209	1.3	0.9–1.9	64	221	1.2	0.4–3.4
Gender																
Male	31	115	1.0		12	134	1.0		23	123	1.0		16	130	1.0	
Female	118	359	1.2	0.8–2.0	45	432	1.2	0.6–2.5	127	350	1.9	1.2–3.3	88	389	1.8	1.0–3.5
Age groups[2]																
< 80	43	73	1.0		17	99	1.0		28	88	1.0		22	94	1.0	
80-89	73	274	0.5	0.3–0.7	27	320	0.5	0.3–1.0	78	269	0.9	0.5–1.6	61	286	0.9	0.5–1.7
90+	32	128	0.4	0.2–0.8	12	148	0.5	0.2–1.1	45	115	1.2	0.7–2.2	21	139	0.7	0.3–1.3
CDR-groups																
CDR 0-0.5	55	239	1.0		30	264	1.0		80	214	1.0		46	248	1.0	
CDR 1	27	106	1.1	0.6–1.9	9	124	0.6	0.3–1.4	37	96	1.0	0.6–1.7	25	108	1.3	0.7–2.2
CDR 2-3	67	130	2.2	1.5–3.5	18	179	0.9	0.5–1.7	34	163	0.56	0.3–0.9	33	164	1.1	0.6–1.8
Behaviour																
Inconspicuous	26	225	1.0		13	238	1.0		60	191	1.0		22	229	1.0	
Apathetic/passive	31	86	3.1	1.7–5.8	6	111	1.0	0.3–2.9	22	95	0.7	0.4–1.3	20	97	2.2	1.1–4.3
Anxious	47	112	3.6	2.1–6.4	24	135	3.3	1.5–7.2	49	110	1.4	0.9–2.3	44	115	4.0	2.2–7.3
Aggressive/ wandering	45	52	7.5	4.1–13.8	14	83	3.1	1.3–7.4	20	77	0.8	0.4–1.5	18	79	2.4	1.1–4.9

[1] Odds ratio
[2] Missing in two cases

reduce the utilisation of psychotropics in the institutionalised elderly. In the USA legal regulations have contributed to a significant reduction in the use of neuroleptic drugs (16). However, as in our study, there has been an increased use of anxiolytics, and the use of anticholinergic antidepressants persists (17). In Germany Weyerer et al. (18) recorded an increased use of neuroleptics and antidepressants from 1988 to 1992 in homes for the aged (from 13% to 23% and from 9% to 13% of the residents, respectively), and anxiloytic use was slightly reduced (from 13% to 11%). Many factors influence the prescription of drugs in institutionalised elderly, factors which may differ between countries, making comparison across borders difficult.

Antipsychotics have a modest effect on non-cognitive symptoms in demented patients (19). Our results also emphasise that antipsychotics are directed toward conspicuous behaviour (non-cognitive symptoms), a finding which is consistent with other studies (6,20,21). However, other diseases may also be accompanied by "behaviour" symptoms triggering treatment with psychotropic drugs, e.g. stroke (22,23), depression and anxiety states. The frequent and inexplicable use of psychotropics in apathetic and passive residents must be considered as inappropriate.

We were not able to control for depressive states in this study. The prevalence of depression is considered high in nursing homes (24), and there is reason to believe that the same holds true for homes for the aged. To our knowledge this has not been studied in Norwegian long term care institutions. One might consider that the increased use of antidepressants is for depressive states. However, in Scandinavia the SSRIs have been advocated as drug of first choice when there is an indication for drug treatment of non-cognitive symptoms, and caution has been given regarding neuroleptic treatment (8), a recommendation which obviously has not been adopted so wholeheartedly as anticipated.

There was a tendency that anxiolytics were more frequently used in mentally unimpaired residents. We have no information whether this treatment was started in the home or not. One explanation might be that mentally unimpaired elderly need anxiolytic and sedating drug treatment to hold up in an environment which is heavily influenced by mentally impaired residents. Still, long acting benzodiazepines are the most frequently used drug in this category.

CONCLUSIONS

From 1985 to 1996 there has been an clear change in the use of psychotropic drugs in Bergen. Anxiolytics are frequently used in mentally unimpaired residents, but also for apathetic, anxious and wandering residents, and in combination with other psychotropic drugs. There has been a substantial increase in the use of antidepressants, which also is recommended for non-cognitive symptoms. However, the anticipated changes in the use of psychotropic drugs have not been fulfilled.

Table 4. Logistic regression analyses for factors influencing the use of antipsychotics, anxiolytics, hypnotics/sedatives and antidepressants in homes for the aged.

	Antipsychotics				Anxiolytics				Hypnotics				Antidepressants			
	beta	S.E.	AOR[1]	95% CI	beta	S.E.	AOR[1]	95% CI	beta	S.E.	AOR[1]	95% CI	beta	S.E.	AOR[1]	95% CI
Year (1996)	0.02	0.21	1.0	0.7–1.5	1.06	0.32	2.9	1.5–5.5	0.26	0.20	1.3	0.9–1.9	0.72	0.24	2.0	1.3–3.3
Gender (female)	0.15	0.25	1.2	0.7–1.9	0.11	0.38	1.1	0.5–2.3	0.55	0.26	1.8	1.1–3.0	0.48	0.31	1.6	0.9–3.0
Age groups																
80-89	–0.81	0.26	0.4	0.3–0.7	–0.87	0.37	0.4	0.2–0.9	–0.10	0.27	0.9	0.5–1.5	0.03	0.31	1.0	0.6–1.9
90+	–0.90	0.30	0.4	0.2–0.7	–0.89	0.45	0.4	0.2–0.98	0.21	0.30	1.2	0.7–2.2	–0.45	0.37	0.6	0.3–1.3
CDR-groups																
CDR 1	–0.11	0.29	0.9	0.5–1.6	–0.79	0.43	0.5	0.2–1.1	–0.10	0.25	0.9	0.6–1.5	–0.11	0.30	0.9	0.5–1.6
CDR 2–3	0.26	0.27	1.3	0.7–2.2	–0.62	0.39	0.5	0.3–1.2	–0.71	0.28	0.5	0.3–0.8	–0.35	0.30	0.7	0.4–1.3
Behaviour																
Apathetic/passive	1.02	0.32	2.3	1.5–5.2	0.15	0.55	1.2	0.4–3.4	–0.03	0.31	1.0	0.5–1.8	1.00	0.37	2.7	1.3–5.6
Anxious	1.27	0.29	3.6	2.0–6.3	1.21	0.40	3.3	1.5–7.3	0.46	0.26	1.6	0.96–2.6	1.26	0.31	3.5	1.9–6.5
Agressive/wandering	1.82	0.34	6.1	3.2–12.0	1.20	0.51	3.3	1.2–9.0	0.18	0.35	1.2	0.6–2.4	0.87	0.41	2.4	1.1–5.4
Psychotropic drugs																
Antipsychotics	NA[2]				–0.71	0.39	0.5	0.2–1.1	0.11	0.24	1.1	0.7–1.8	0.03	0.27	1.0	0.6–1.7
Anxiolytics	–0.73	0.38	0.5	0.2–1.02	NA[2]				–0.87	0.40	0.4	0.2–0.9	1.16	0.32	3.2	1.7–6.0
Hypnotics	0.13	0.24	1.1	0.7–1.8	–0.99	0.41	0.4	0.2–0.8	NA[2]				0.42	0.26	1.5	0.9–2.5
Antidepressants	0.01	0.27	1.0	0.6–1.7	1.20	0.33	3.3	1.8–6.3	0.42	0.25	1.5	0.9–2.5	NA[2]			

1) Adjusted odds ratio
2) Not applicable

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