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DESCRIPTIVE STUDY OF NURSING HOME RESIDENTS FROM THE REHPA NETWORK

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Abstract: *Introduction:* To date, very little research has been carried out in nursing homes and it is difficult to make recommendations for quality of care that are based on actual data. The Réseau de Recherche en Etablissement d'Hébergement pour Personnes Agées (REHPA) is a functional network established in collaboration between the geriatric department of Toulouse University Hospital and 240 nursing homes with the aim of compensating for the lack of evidence-based recommendations and of enhancing research. *Materials and methods:* A cross-sectional observational study was conducted between January and March 2008. The number of residents included (randomly selected by birth date) depended on the total number of residents of the facility. Demography, medical and drug history, disabilities and care practices were assessed by geriatrician. *Results:* We report the findings in 4896 residents of 240 nursing homes. Residents were 73.9% women, mean age 85.7 ± 8.8 years, mean weight 61.9 ±14.8 kg, with a mean ADL score of 2.8 ± 2.1. Dementia was diagnosed in 43.5% (of whom only 50.9% were treated), 19.6% showed aggressive behaviours, 10.8% exhibited disruptive vocalization and 10.9% were wanderers, 27.4% were treated with antipsychotic medications, 54.4% had hypertension, 8.7% had diabetes, 14.8% were osteoporotic, 4.1% had fallen during the previous week, 37.9% were in pain and 19.8% had lost weight. The mean Charlson index score was 1.6 ± 1.4. Finally, 13.5% had been admitted to hospital within the previous three months. *Conclusion:* The survey identifies specific issues in order to target future research in the nursing home setting.

Key words: Nursing home, disability, dementia, survey, osteoporosis.

Introduction

Few research studies are conducted in nursing homes, especially in France. A Medline search showed that only 2% of research studies in the elderly are carried out in this setting. Yet at the present time about 700 000 persons in France live in nursing homes, which is more than the total number of hospital beds.

This population, often dependent and suffering from several diseases, presents certain common characteristics which require specific management. Generally, care practices in nursing homes are based on the results of research carried out in much younger, home-dwelling patients (1). The value of some therapeutic strategies that have been validated in adults has often not been assessed in residents of institutions. When they are not empirical, the therapeutic strategies applied to nursing home residents have little scientific foundation. Clinical research on nursing home residents is still very sparse. Moreover, institutionalization is often a criterion of exclusion, and entry to a nursing home means withdrawal from the study in major clinical trials. Some of the problems most often reported to cause concern in nursing homes, such as dementia and behavioural disturbances (2), falls (3) or iatrogenic disorders have been addressed by very few research studies in institutions.

Arguments for quality care for this population with a high demand for medical care and human assistance must be based, as for any population, on the results of clinical research that has been rigorously performed and that is able to respond to the specific issues raised by these patients (4). If this is to be possible, the problems encountered in institutions need to be identified beforehand.

In this paper, we present the results of the REHPA survey (Recherche en Etablissements d'Hébergement pour Personnes Agées (EHPA), or nursing home research survey) which was carried out in 240 nursing homes that formed a dedicated research network. The main aim of this survey was to describe the characteristics of the facilities in this network and those of their residents, as well as some common practices of care in these nursing homes. The survey should facilitate the organization of future research addressing the issues which were encountered in this setting.

Population and Methods

In order to fulfil the mission entrusted to it by the Ministry, the Gerontopole of Toulouse organized the creation of a research network in institutions for the elderly in order to develop clinical research projects relating to their residents. The first stage in this network was to conduct a survey to identify

care-related problems and to determine the direction of the research that should be developed in priority in these facilities. The survey was presented to the coordinating physicians of nursing homes during university continuing education meetings on geriatrics or by postal or electronic mail. The French federation of nursing home coordinating physicians (Fédération Française de Médecins Coordonnateurs en EHPAD, FFAMCO) and some groups of private institutions for the elderly were also informed of the project and intervened to recruit participating facilities.

Replies were on a voluntary basis. With the assistance of the Observatoire Régional de Santé Midi-Pyrénées (ORSMIP), the same survey was also proposed to all nursing homes in the administrative department of the Tarn. We aimed to achieve exhaustive data collection in this department in order to obtain representative results concerning the situation in this region. The end purpose of this initiative was to compare our overall results with findings in the Tarn. As in all surveys carried out on a voluntary basis, a recruiting bias of the most motivated nursing homes could be expected.

The organisational details of the survey and its feasibility were defined collectively by the scientific committee of the Gerontopole of Toulouse and ORSMIP and with the collaboration of the coordinating physicians.

The survey began in October 2007 with development of the questionnaires, information of the coordinating physicians, administrative formalities (declaration to the national committee on computerized data and privacy, CNIL) and the creation of a page on the Gerontopole website. Residents were included between January and March 2008.

Each coordinating physician was asked to complete two types of document; one on the administrative characteristics of the nursing home and the other on the medical data of each resident selected.

Nursing home characteristics

The coordinating physicians entered information on the characteristics of their nursing home: administrative status (private, public, mixed, facility for the dependent elderly, long term care unit, other), number of beds, as well as on certain features of concept and design (availability of a dedicated Alzheimer unit, an open recreational area, etc.).

Characteristics of the residents

Residents in each facility were selected at random as follows; in facilities with less than 60 beds, all residents born in January, March, July and October, whatever the year of birth, were included, while in facilities with more than 60 beds, only residents born in March, July and October were included.

The aim of the survey being to take an inventory of the medical situation of the residents in the facility, the patient form listed the major medical problems frequently met with in geriatric medicine. Replies were given to closed questions (yes/no/don't know) on diagnosed disorders (dementia, psychiatric disorder, behavioural disturbances, osteoporosis,

comorbidities [Charlson scale]), on the medical pathway followed before institutionalization and hospital admissions during the previous three months, length of residence, treatments (in particular antipsychotic medications and treatment for pain), dependence according to the Katz scale of activities of daily living (ADL) [5], weight, height, weight loss if any, as well as the introduction of special diets or tube feeding, and vaccination status (anti-influenza and anti-pneumococcal). The presence (yes/no) of psychological and behavioural disturbances (vocalization, elopement, aggressiveness, wandering) was entered. Some open questions enabled the coordinating physicians to report the medical issues that they considered responsible for the most serious problems in the nursing home setting.

Statistical analysis

Statistical analysis was carried out using SAS 2008 software. This was a descriptive study. Qualitative variables were given as number and frequency, and continuous variables were given as mean and standard deviation.

Results

Facilities

A total of 240 facilities for the elderly participated in the REHPA survey, comprising 215 nursing homes, 21 long term care units and 4 assisted living facilities. The large majority (178) were in the Midi-Pyrenees region (10 nursing homes in the Ariège department, 17 in the Aveyron, 53 in the Haute-Garonne, 16 in the Gers, 12 in the Lot, 15 in the Hautes-Pyrénées, 48 in the Tarn and 7 in the Tarn et Garonne department).

In the Tarn department, 3 out of 4 institutions (73.8% of nursing homes and 75% of long term care units) participated in the survey and composed a representative sample of the situation of the elderly persons living in the facilities of this department. The characteristics of residents in the Tarn did not significantly differ from those of the global population of residents included in the survey. The mean number of beds in each nursing home was 82.4 ± 39. The mean level of dependence, calculated using the conventional French AGGIR grid (the higher the score, the higher the mean level of dependence in the facility with a maximal level of 1000) was 679.7 ± 126. The mean level of dependence in long term care units was 877 ± 27, compared with 665 ± 103 in nursing homes. A homogeneous population of very dependent patients was found in long term care units, whereas in nursing homes the population was more heterogeneous, as shown by the confidence interval of the mean level of dependence. Of the nursing homes, 32% were in the public sector, 26% were mixed and 42% were under private management. Of the 21 participating long term care units, 95% were in the public sector.

With regard to concept and design, 48% of facilities

provided temporary accommodation, 28% had a dedicated Alzheimer unit, 27% a day centre and 39% a secure sector. Temporary accommodation specifically for Alzheimer patients was available in 23% of facilities. Over half provided recreational open areas (54% inside the nursing home and 65% outdoors.

Residents

Data on 4 920 residents were entered by the coordinating physicians. The characteristics of the 24 residents of the 4 assisted living facilities were excluded from the descriptive analysis reported in Table 1 because these institutions are managed very differently to nursing homes or long term care units. Residents' mean age was 85.7 ± 8.8 years. They had been living in the institution for 4.1 ± 4.4 years but their median length of stay in the facility was 2.75 years (half of the residents had been institutionalized for less than 2 years 9 months and 20% for less than a year).

Table 1

Characteristics of the residents*

| Variables		n = 4896
Sex (% female)	4848	3587 (73.9)
Age at admission (mean, SD**)	4841	81.3 (10.1)
by age group (n, %)		
<65		386 (8.0)
65-75		557 (11.5)
75-85	4841	1976 (40.8)
85-95		1726 (35.6)
>95		196 (4.0)
Age at time of survey (mean, SD)	4890	85.7 (8.8)
Length of stay in facility (mean, SD)	4844	4.1 (4.4)
by group (n, %)		
less than 4 years		3094 (63.9)
4 to 8 years		1117 (23.1)
8 to 12 years	4844	380 (7.8)
more than 12 years		253 (5.2)
Previous residence (n, %)		
own home		2 165 (46.8)
hospital		1479 (30.6)
other facility	4625	517 (10.7)
Clinic		464 (9.6)
Hospital admissions during the 3 previous months (n, %)		
0		3802 (86.5)
1		483 (11.0)
2	4419	79 (1.8)
3		21 (0.5)
4 and over		10 (0.2)
Disability, ADL*** (0-6) (mean, SD)	4798	2.8 (2.1)
by group (n, %)		
score [0-2]		2204 (46.1)
score [2-4]	4798	1032 (21.6)
score [4-6]		1538 (32.2)
Specific treatment for dementia (n, %)		
no treatment		975 (49.2)
acetylcholinesterase inhibitor	1980	556 (28.1)
memantine		230 (11.6)
acetylcholinesterase inhibitor + memantine		219 (11.1)
Behavioural disturbances (n, %)		
aggressiveness	4801	941 (19.6)
vocalization	4819	522 (10.8)
elopement	4826	315 (6.5)
Wandering	4817	524 (10.9)
Antipsychotic treatment (n, %)	4378	1203 (27.5)
Influenza vaccination (n, %)	4864	4379 (90.0)
Antipneumococcal vaccination (n, %)	4854	628 (12.9)
Fall in the week before the survey (n, %)	4366	178 (4.1)
Urinary catheter (n, %)	4862	103 (2.1)

* Nursing home or long term care unit, ** SD, standard deviation;*** ADL, Activities of Daily Living (Katz, 5)

The most common pattern of dependence was that of a person needing full assistance for toileting (56.8%) and for dressing (52.9%), who was incontinent (46.2% compared with 31.2% continent subjects), needing help for transferring (41%) but able to eat without assistance (52.3%, compared with 21.5% of residents totally dependent at meals) and to walk unaided (44.1%, compared with 28.6% who were totally dependent). On average, residents were able to carry out unaided less than half of the basic activities of daily living (mean ADL score 2.8 ±2.1, maximum score 6 for a fully independent subject).

Most residents (46%) had entered directly from their own homes, while the remainder had entered from hospital (30.4%), from another nursing home (10.7%) or a clinic (9.6%). The most dependent subjects had generally entered from hospital, whereas those who were most independent came mainly from their own homes. In long term care units, the most common pathway was admission from a hospital.

During the three months before inclusion in the survey, 593 residents (13.5%) had been hospitalized. Of these 593 residents, 111 (18.7%) had had repeated hospital admissions. The majority of admissions (over 50%) were to emergency departments, followed by geriatric departments (15%), surgery (7%) and other specialties (Figure 1).

Figure 1

Prevalence of hospital admissions during the three months before the survey
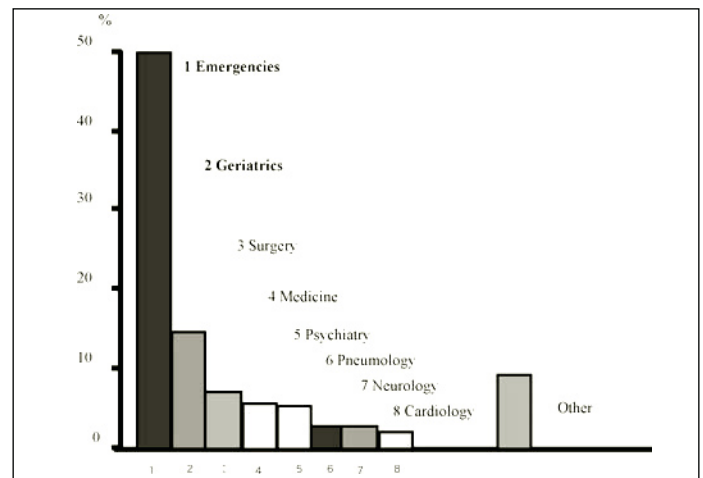
Numerous comorbidities were reported in the residents surveyed (Table 2). Dementia had been diagnosed in 43.5% of residents, the diagnosis being established by a geriatrician (~ 40%), neurologist (~ 25%), treating physician (~ 10%) or psychiatrist (~ 10%). About half (53.4%) of residents considered as demented were receiving specific treatment (acetylcholinesterase inhibitor alone [29.5%], memantine [11.8%] or both [10.5%]).

Table 2
Comorbidities and polymedication

Comorbidities	
Myocardial infarction	8.8%
Arterial hypertension	54.4%
Diabetes	8.7%
Dementia	43.5%
Hemiplegia	7.1%
Metastatic cancer	1.5%
Zona	1.1%
Epilepsy	5.2%
Depression	40.0%
Osteoporosis	14.8%
Progressive cancer	4.6%
Charlson index	1.6
Age-weighted Charlson index	5.7
Medications	
Mean number of different medications/day	6.8

With regard to psychological and behavioural disturbances, 19.6% of the overall population were considered aggressive, generally towards the care staff (80.3%) but also towards other residents (37%). In the global population, 10.8% of residents exhibited disruptive vocalization, 6.5% attempted to elope and 10.9% were considered as wanderers. It was also reported that 17% of residents were regularly subjected to restraint and 27.4% were receiving long-term antipsychotic treatment. A psychiatric disorder was reported in 28.2% of residents. The frequency of depression was 40% and the same percentage was treated with antidepressants.

During the week before the survey, 4.1% of residents had had a fall. The coordinating physicians considered that 14.8% of residents were osteoporotic. In residents with diagnosed osteoporosis, 25.9% had no treatment, 38.6% were taking calcium and vitamin D, 10.9% took bisphosphonates or strontium ranelate and 24.5% were receiving calcium plus vitamin D plus bisphosphonates or strontium ranelate. Of the 4 518 residents of the survey 9.5% were taking calcium and vitamin D.

About 2% of residents had a urinary catheter, 0.9% a gastrostomy tube and 0.2% a nasogastric tube.

Pain was a complaint of 37.9% of residents and 39.4% of the overall population were receiving analgesics. Nearly 5% had progressive cancer and the coordinating physicians considered that 2.8% of the overall population required palliative management.

Mean weight was 61.9 ± 14.8 kg for a mean height of 1.60 ± 0.89 m. Weight was recorded for 4 514 participants (9 out of 10), and height for half. Mean body mass index (BMI) was 24.1 ± 5.1 kg/m². Meals were refused by 8.3% of residents and 19.8% were losing weight at the time of the survey. A special diet was prescribed for 23% of residents. Of the 1 088 residents who followed a diet, most (41.2%) had a high-calorie high-protein diet, 38% a diabetic diet, 15% a salt-free diet, 4.5% a low-calorie diet and 1.4% a cholesterol-lowering diet.

Figure 2 shows the principal medical problems confronting coordinating physicians in the nursing home setting. Analysis of the responses revealed that dementia and psychological and behavioural disturbances were predominant.

Figure 2
Principal medical problems confronting coordinating physicians in the nursing home setting
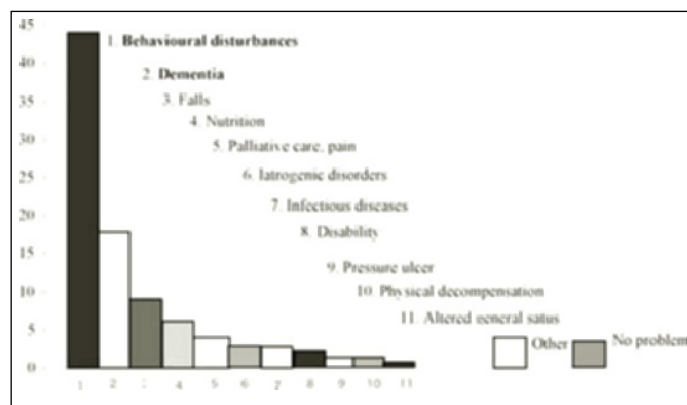
Discussion

Our descriptive survey provides novel, representative general data on the medical characteristics of nursing home residents in France and on certain care practices in these facilities. It reveals the specific nature of this population and also the gap between advocated scientific recommendations and actual care practices. Based on this knowledge, relevant pathways of research can be envisaged with a view to improving institutional practices.

The typical resident of a French nursing home is a woman aged 86, who has been living in a facility with an average of 80 beds for about four years. She is assisted, partially or totally, for most of the basic activities of daily living. She used to live in her own home and suffers from several disorders. She takes nearly seven different medications a day.

Dementia has been diagnosed in more than 43% of her fellow residents, usually by a geriatrician. If she is among them, she has one chance in two of receiving specific treatment. These figures reveal not only the frequency of dementia in institutions, but also the probable underdiagnosis and undertreatment. Prevalence studies in institutions report that about 67 to 78% of the elderly in nursing homes have dementia (6-9). Psychological and behavioural disturbances are a

frequent and difficult problem in institutions (10). In our survey, behavioural disturbances were identified as the major problem facing physicians and all care teams in institutions. In 20% of cases, residents present behavioural disturbances that are difficult to manage. Although some studies have reported that non-pharmacological management is effective (2), in this survey one resident in three was treated with antipsychotic medications. Such treatments very certainly put residents at risk of multiple, sometimes serious adverse effects (11).

Hospitalization rate is an indication of the ability of the nursing home to deal with medical problems. Prevention of hospital admissions must be one of the goals of patient management (12, 13). Our survey documents a high admission rate, as one in ten residents had been hospitalized during the previous three months, generally in emergency departments. At one year, the hospitalization rate can be estimated at about 50%. However, some strategies seem to be able to reduce the frequency of such outcomes (14).

Falls are a major concern in nursing homes (3, 15). In the week before our survey, 4% of residents had had a fall. Osteoporosis is rarely diagnosed and treatment rarely prescribed, and yet 70 to 85% of residents are osteoporotic [16]. In our survey, less than 10% of residents were taking vitamin and calcium supplements. Underdiagnosis and undertreatment have been reported, to a lesser degree, by various studies in other countries (16, 17). Studies in France, published in major journals nearly two decades ago, clearly demonstrated that the large majority of nursing home residents are in need of vitamin and calcium supplementation (18).

One of the most frequent problems in these facilities is loss of weight and malnutrition (19). The dietary intake of nursing home residents conditions the advent of a number of adverse medical events (20). Nearly half the residents required either partial or total assistance in eating and nearly 20% were losing weight at the time of survey. Tube feeding or gastrostomy was rare and concerned less than 1% of residents. In this respect, the frequency of gastrostomy in this setting in France is considerably lower than that reported in the United States, and it appears to be in accordance with current expert recommendations (21).

Management of pain is a challenge for all nursing homes. In our survey, four of ten residents were in pain. Systematic use of assessment scales would probably enable better identification of residents with pain (22).

Finally, our survey sheds light on nursing home residents and on the care provided in these facilities in 2008 in France. These data allow institutions to make comparisons with means and so to determine certain priorities regarding quality improvement. This survey already identifies certain needs and draws attention to practices of care. It also shows the way for future research. The active collaboration of the coordinating physicians in nursing homes demonstrates a genuine desire to participate in clinical research on the specific problems of residents in institutions.

References

1. Gill TM, Baker DI, Gottschalk M et al. A program to prevent functional decline in physically frail, elderly persons who live at home. N Engl J Med 2002;347:1068-1074.
2. Locca JF, Büla CJ, Zumbach S, Bugnon O. Pharmacological treatment of behavioral and psychological symptoms of dementia (BPSD) in nursing homes: development of practice recommendations in a Swiss canton. J Am Med Dir Assoc 2008;9:439-448.
3. Lester P, Haq M, Vadnerkar A, Feuerman M. Falls in the nursing home setting: does time matter? J Am Med Dir Assoc 2008;9:684-686.
4. Alexander GL. An analysis of nursing home quality measures and staffing. Qual Manag Health Care 2008;17:242-251.
5. Katz S, Ford AB, Moskowitz RW et al. The index of ADL: a standardized measure of biological and psychological function. JAMA 1963;185:914-919.
6. German PS, Rovner BW, Burton LC et al. The role of mental morbidity in the nursing home experience. Gerontologist 1992;32:152-158.
7. Magaziner J, German P, Zimmerman SI et al. The prevalence of dementia in a statewide sample of new nursing home admissions aged 65 and older: diagnosis by expert panel. Epidemiology of Dementia in Nursing Homes Research Group. Gerontologist 2000;40:663-672.
8. Rovner BW, German PS, Broadhead J et al. The prevalence and management of dementia and other psychiatric disorders in nursing homes. Int Psychogeriatr 1990;2:13-24.
9. Wachterman M, Kiely DK, Mitchell SL. Reporting dementia on the death certificates of nursing home residents dying with end-stage dementia. JAMA 2008;300:2608-2610.
10. Morley JE. Managing persons with dementia in the nursing home: high touch trumps high tech. J Am Med Dir Assoc 2008;9:139-146.
11. Wang PS, Schneeweiss S, Avorn J, Fischer MA et al. Risk of death in elderly users of conventional vs. atypical antipsychotic medications. N Engl J Med 2005;353:2335-2341.
12. Mylotte JM. Reducing hospitalizations in nursing home patients with pneumonia. JAMA 2006;296:2206-2207.
13. McCloskey R, van den Hoonaard D. Nursing home residents in emergency departments: a Foucauldian analysis. J Adv Nurs 2007;59:186-194.
14. Mercer S, Robinson S. Educating nursing home nurses on efficient use of the emergency department. J Emerg Nurs 2008;34:74-76.
15. Tinetti ME, Williams CS. Falls, injuries due to falls, and the risk of admission to a nursing home. N Engl J Med 1997;337:1279-1284.
16. Wright RM. Use of osteoporosis medications in older nursing facility residents. J Am Med Dir Assoc 2007;8:453-457.
17. Parikh S, Mogun H, Avorn J, Solomon DH. Osteoporosis medication use in nursing home patients with fractures in 1 US state. Arch Intern Med 2008;168:1111-1115.
18. Meunier PJ, Chapuy MC, Arlot ME. Can we stop bone loss and prevent hip fractures in the elderly ? Osteoporosis Int 1994;4 Suppl 1:71-76.
19. Morley JE. Weight loss in the nursing home. J Am Med Dir Assoc 2007;8:201-204.
20. Morley JE, Silver AJ. Nutritional issues in nursing home care. Ann Intern Med 1995;123:850-859.
21. Finucane TE, Christmas C, Leff BA. Tube feeding in dementia: how incentives undermine health care quality and patient safety. J Am Med Dir Assoc 2007;8:205–208.
22. Kamel HK, Phlavan M, Malekgoudarzi B et al. Utilizing pain assessment scales increases the frequency of diagnosing pain among elderly nursing home residents. J Pain Symptom Manage 2001;21:450-455.