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Depressive symptoms in newly admitted nursing home residents

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SUMMARY

Objectives To study the relationship between the prevalence of depressive symptoms in newly admitted nursing home residents and their previous place of residence.

Methods In 65 nursing homes in the Netherlands trained physicians assessed 562 residents (mean age 78.5, range 28–101, 64.6% female) within 10 days after admission. Depressive symptoms were assessed with the Minimum Data Set (MDS) Depression Rating Scale (DRS), and the MDS items: 'diagnosis of major or minor depression', 'change in depression' and 'indicators of persistent depressed, sad or anxious mood disorder present'. Previous place of residence was categorized as 'own home', 'hospital' or 'sheltered living facility'. Adjustments were performed for demographic and health related factors measured with the MDS.

Results The prevalence of depressive symptoms (DRS ≥ 3) for all 562 residents was 26.9%; it was higher in residents admitted from their own home (34.3%) than in residents admitted from the hospital (19.7%) ($p = 0.002$). Residents who were admitted from the hospital have an adjusted Odds Ratio for having many depressive symptoms of 0.54 (95% CI 0.31–0.94) compared to residents admitted from their own home. There is, after adjustment, no statistical significant difference between residents admitted from their own home, or residents admitted from a sheltered living facility.

Conclusions Depressive symptoms are very prevalent in nursing homes. Residents who are admitted from their own home, or from a residential facility, have more depressive symptoms than residents admitted from the hospital. This may reflect different conceptualizations or different adjustment patterns for those groups. For a better understanding of the factors associated with nursing home depression, future studies in detection, prevention and management of depressive symptoms should start prior to or directly after admission, especially for those who have no prior institutional history. Copyright © 2006 John Wiley & Sons, Ltd.

KEY WORDS — mood disorders; depression; nursing home; admission; elderly

INTRODUCTION

Depressive symptoms and depressive disorders are highly prevalent in nursing homes, much more than in community-dwelling elderly (Teresi *et al*., 2001; Jongenelis *et al*., 2003). The explanation of why depressive symptoms occur more in nursing homes is rather complex. Some studies have found that major depression is an independent risk factor for institutionalization (Woo *et al*., 2000; Dorenlot *et al*., 2005), in another study the predictive value of depression disappeared after adjusting for social and health parameters (Bula *et al*., 2001), or it was predictive for the institutionalization of men only (Nuotio *et al*., 2003). Other studies did not find depression to be predictive of nursing home admission (Bharucha *et al*., 2004), or found evidence suggesting that there may be a reverse pathway: admission itself may facilitate the development of depressive symptoms (Pot *et al*., 2005). Patients that are admitted to a nursing home regularly have one or more chronic diseases, next to impaired physical or cognitive functioning. In the first weeks after admission in

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the nursing home, residents often feel displaced, vulnerable and abandoned (Patterson, 1995). In this vulnerable background, the risk of developing depression might indeed be considerable. Institutionalization may therefore be a provoking event for the development of depressive symptoms, but there has been little research into this (Lee *et al*., 2002). Admission is related to losses in several respects: a loss of autonomy and confidence in one's own functioning but also a loss of possessions and one's own familiar environment. This loss may be felt to a greater extent by those who previously lived in their own home than by those who come from another institutional setting, like a residential facility or hospital. The impact of admission on developing depressive symptoms may therefore also be different for patients with these different backgrounds. In this paper, we study the relationship between the prevalence of depressive symptoms in newly admitted nursing home residents and their previous place of residence.

METHODS

Design and sample

There are 325 nursing homes with 53,800 beds in the Netherlands, (26 beds per 1000 elderly people) (Ribbe *et al*., 1997). Residents with dementia are admitted to specialized psychogeriatric wards and residents with other main diagnoses are cared for in long term, so called 'somatic' wards, or rehabilitation wards. Most nursing homes provide a combination of these types of wards. All nursing homes have specialized nursing home physicians in their staff (approximately one for every 100 residents) (Hoek *et al*., 2003).

This study uses data of an observational study among newly admitted nursing home residents. Registered physicians in a research module of the specialist training program for nursing home physicians collected the data (Hoek *et al*., 2001). The physicians included and assessed newly admitted residents in 65 nursing homes throughout the country, within 10 days after admission. These homes were all connected to the specialist training program for nursing home physicians at the VU University Medical Centre. Residents that were re-admitted after a temporary discharge (less than 90 days) were excluded. The physicians were stimulated to include all admitted residents, but if this intervened with other curriculum activities selection-bias was evaded by allowing other *random* inclusion methods (e.g. the first five new admissions, or the first of every fifth new admissions). In total, 562 residents were assessed, 64.6% of whom was female. The mean age was 78.5 (for females: 79.8, for males: 76.2), which is a representative sample of all new admissions (Arcares, 1999; Achterberg *et al*., 2003). Two hundred and twenty-one (39.3%) residents were admitted from their own home, 153 from the hospital (27.2%) and 154 (27.4%) from sheltered living facilities (Table 1). This sample had significant more residents admitted on psychogeriatric wards than the 1998 national average (44 *vs* 33.6%), and less residents admitted from the hospital (27.2 *vs* 49.7%) (Arcares, 1999).

The study was approved by the ethical committee of the VU University Medical Centre.

Measurement instruments

Parts of the Minimum Data Set (MDS) 2.0 were used to collect a broad range of information on residents' functioning (Morris *et al*., 1997). The MDS is a structured and comprehensive questionnaire which produces a large amount of information about a resident. It is used in all nursing homes in the United States, and translated and implemented in many other countries (Ribbe *et al*., 1997). The questions comprise information on several aspects of the patients' functioning, health, well-being and behavior. This information is collected by observations of care-givers and interviews with residents and family members (Morris *et al*., 1990). MDS items have shown good reliability in several studies and countries (Morris *et al*., 1997, Sgadari *et al*., 1997).

Table 1. Previous place of residence for 562 newly admitted Dutch nursing home residents compared with the national Dutch average

	n (%) 562		Dutch average ($n = 42658$*)
Home	221 (39.3)		34.8%
Hospital	153 (27.2)		49.7%
Home for the aged	58 (10.3)	All 'sheltered'	11.8%
Other nursing home	66 (11.7)	154 (27.4%)	3.3%
Other Residential living arrangements	30 (5.3)		No information
Psychiatric hospital**	10 (1.8)		No information
Rehabilitation centre**	1 (0.2)		No information
Other**	23 (4.1)		0.4

*data represent 75% of all Dutch nursing homes (Arcares, 1998).

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Mood/depressive symptoms

The *MDS Depression Rating Scale (DRS)* is a seven-item scale, with all items to be scored zero (indicator not exhibited), one (indicator of this type exhibited at least once in the last 30 days and up to five days a week) or two (indicator exhibited daily or almost daily) (Burrows *et al*., 2000). The scores range between zero and 14. The mood-items in the MDS 2.0 have good inter-rater reliability (Morris *et al*., 1997). In the present sample the seven items demonstrated good internal consistency (Cronbach alpha = 0.87). Using a cut-off of three and compared with (DSM-IV) psychiatric criteria for depression, it has a high sensitivity (91%) and a lower specificity (69%) (Burrows *et al*., 2000). This scale is used in this study in order to distinguish between residents with relatively many or few (easily observed) depressive symptoms.

The mood status before admission was rated retrospectively with the MDS item: *change in depression* in the last 30 days (no change/ improvement/deterioration). This is based on information from interviews with residents and family members, chart and medical history review.

The physicians also were prompted to fill out whether or not there was a *diagnosis of major or minor depression* (yes/no) and whether there were *indicators of persistent depressed, sad or anxious mood disorder* present (not present/ present but easily altered/ present and not easily altered).

Previous place of residence was categorized into admitted from 'home', 'sheltered facilities' (home for the aged, other nursing home, other residential living facility) and 'hospital'. Residents that were admitted from a psychiatric hospital, rehabilitation centre or other were excluded from the analysis (see Table 1)

Medication was dichotomized as none versus at least one prescription in the last week: the use of pain medication (opoid and non-opoid), anxiolytic, antipsychotic, antidepressive and hypnotic medication.

The *ADL classification* was based on a seven-category (hierarchical) ADL-index that ranges from minor oversight to highly dependent (Morris *et al*., 1999). The ADL-index is categorized for logistic regression purposes by combining the three severe (ADL 4, 5 and 6) categories as 'severe' impairment, ADL 2 and 3 as moderate impairment and the categories ADL 0 and 1 as no functional impairment.

Cognitive function was measured with the MDS-Cognitive Performance Scale (CPS), which is based on five MDS-items. The CPS is a seven-category index, ranging from cognitively intact to very severely impaired (Morris *et al*., 1994). It has shown substantial agreement with the Mini-Mental State Examination (MMSE) in the identification of cognitive impairment in research settings (Hartmaier *et al*., 1995). The index is categorized for logistic regression purposes by combining the three severe (CPS 4, 5 and 6) categories as 'severe' cognitive impairment (comparable to MMSE 0–7), the two middle (CPS 2 and 3) as moderate cognitive impairment (comparable to MMSE >15 and <20) and the two other categories (CPS 0 and 1) as no cognitive impairment (comparable to MMSE >21) (Morris *et al*., 1994).

Analysis

Differences between groups were tested with Chi-square and ANOVA statistics (SPSS 12.0). Variables that were distributed unevenly over the three groups (admitted from home, sheltered/institutional living and hospital), were used in the multivariate logistic regression model.

RESULTS

Residents admitted from their own homes differ from those residents admitted from a sheltered living facility or hospital (see Table 2): they are older than those admitted from hospital ($p < 0.001$), they have more cognitive impairment ($p < 0.001$), more dementia diagnosis ($p < 0.001$), use more antipsychotics ($p < 0.001$) and anxiolytics ($p = 0.05$) but less non-opoid pain medication ($p = 0.050$). Residents that come from their own homes are predominantly admitted to psychogeriatric wards (55.9%), whereas those who stayed at the hospital predominantly go to somatic (44.1%) and rehabilitation (40.1%) wards ($p < 0.001$) (see Table 2).

The diagnosis 'minor or major depression' is more prevalent in residents who were admitted from the hospital (9.2%) than for residents admitted from home or a sheltered living facility (both 5.6%), but this difference is not statistically significant (see Table 3). There is no (statistical) difference in the use of antidepressants or the presence of indicators for a depressed, sad or anxious mood in the different pre-admission groups. Overall there are no statistical significant differences between the three groups for the change of depression indicator but deterioration of depression is considerable larger for residents admitted from their own home (23.2%) than for residents admitted from other sheltered facilities (14.3%).

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Table 2. Characteristics of residents being admitted from home, any sheltered facility and hospital

	Home	Sheltered	Hospital	*P*
Mean age	79.6	80.7	76.0	<0.001
<65	8 (21.6%)	8 (21.6%)	21 (56.8%)	
65–74	45 (50.6%)	22 (24.7%)	22 (24.7%)	
75–84	101 (41.6%)	64 (26.3%)	78 (32.1%)	<0.001
>=85	65 (41.4%)	60 (38.2%)	32 (20.4%)	
Female	149 (59.4%)	89 (71.8%)	100 (65.4%)	0.057
Mean cognitive performance	2.18	2.52	1.41	<0.001
Mean ADL	2.74	3.42	3.18	0.002
Malignancy	17 (6.8%)	5 (4.0%)	9 (5.9%)	0.569
Any diagnosis of dementia	64 (25.9%)	39 (31.5%)	15 (9.9%)	<0.001
Medication use				
Antipsychotics	65 (29.4%)	53 (34.4%)	21 (13.7%)	<0.001
Anxiolytics	16 (7.2)	16 (10.4)	5 (3.3)	0.050
Hypnotics	63 (28.5%)	57 (37.0%)	53 (34.6%)	0.190
Non-opoid pain medication	75 (29.9%)	58 (46.8%)	57 (37.3%)	0.005
Opoid pain medication	12 (4.8%)	7 (5.6%)	13 (8.5%)	0.308
Admitted on Somatic ward	72 (29.1%)	34 (27.4%)	67 (44.1%)	
Admitted on psychogeriatric ward	138 (55.9%)	64 (51.6%)	24 (15.8%)	<0.001
Admitted on rehabiltation ward	37 (15.0%)	26 (21.0%)	61 (40.1%)	

Residents admitted from their own homes have significantly more observed depressive symptoms (mean 2.26) than residents who were admitted from a sheltered facility (mean 1.51) or hospital (mean 1.46) ($p = 0.001$, Table 3). This difference remains when the cut-off of >=3 (indicative of depressive disorder) is used; the prevalence of depressive symptoms (DRS $\geq$ 3) for all 562 residents is 26.9%, it is highest in residents admitted from their own home (34.3%), and lowest in residents from the hospital (19.7%) ($p = 0.002$). The mean DRS for the three different previous places of residence stratified for ward type and for cognitive status shows that residents admitted from their homes who were admitted to a psychogeriatric ward have statistically significant more depressive symptoms ($p = 0.011$, see Table 4). Cognitively severe impaired residents admitted from their own home also have more depressive symptoms, but this is not statistically significant ($p = 0.054$).

In the multivariate logistic regression model, the variable 'being admitted from own home' (compared to being admitted from the hospital) remains significantly ($p = 0.028$) associated with having many depressive symptoms. Residents who came from the hospital have an adjusted Odds Ratio for having many depressive symptoms of 0.54 (95% Confidence Intervals 0.31–0.94) compared to residents admitted from their own homes (Table 5). There is no statistical

Table 3. Indicators of the presence of a depression for three different categories of previous place of residence: own home, sheltered living facilities and hospital

	Home	Sheltered	Hospital	*P* (chi square two-sided)
Diagnosis (minor or major) depression	14 (5.6%)	7 (5.6%)	14 (9.2%)	0.331
Diagnosis anxiety disorder	14 (5.6%)	1 (0.8%)	1 (0.7%)	−(2 cells < 5)
Depressed, sad or anxious mood *not present*	147 (66.8%)	113 (73.4%)	118 (77.1%)	
Depressed, sad or anxious mood *present but easily altered*	39(17.7%)	25 (16.4%)	19 (12.5%)	0.194
Depressed, sad or anxious mood *present and not easily altered*	34 (15.9%)	16 (10.4%)	15 (9.9%)	
Mean number of depressive symptoms (mean DRS)	2.26	1.51	1.46	0.001 (ANOVA)
DRS >=3	76 (34.3%)	34 (22.1%)	30 (19.7%)	0.002
Change in depression last 30 days: *no change*	144 (65.6)	116 (75.3)	107 (70.4%)	
Change in depression last 30 days: *improvement*	25 (11.4%)	16 (10.4%)	14 (9.2%)	0.254
Change in depression last 30 days: *deterioration*	51 (23.2%)	22 (14.3%)	31 (20.4%)	
Use of antidepressive medication	17 (7.7%)	20 (13.0%)	15 (9.8%)	0.239

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Table 4. Mean number of depressive symptoms (mean DRS) for three different categories of previous place of residence: own home, sheltered living facilities and hospital stratified for ward type and for cognitive status

	Home	Sheltered	Hospital	*P* (chi square two-sided)
Type of ward of admission				
Somatic ward ($n = 172$)	1.97	1.5	1.83	0.570
Psychogeriatric ward ($n = 247$)	2.65	1.77	1.12	0.011
Rehabilitation ward ($n = 124$)	1.51	0.69	1.16	0.198
Cognitive status				
Cognitively intact (CPS 0,1, $n = 233$)	1.48	1.26	1.08	0.338
Cognition moderately impaired (CPS 2 and 3, $n = 193$)	2.65	1.73	2.09	0.193
Cognition severely impaired (CPS 4, 5 and 6, $n = 96$)	3.14	1.59	1.87	0.054

CPS = Cognitive Performance Scale of the Minimum Data Set.

significant difference between residents admitted from their own home, or residents admitted from a sheltered living facility.

DISCUSSION

This cross-sectional study shows that moving from one's own home to a nursing home is strongly associated with depressive symptoms. After controlling for many potential explanatory variables, like age, ADL, cognition and medication use, the residents who are admitted from the hospital had a lower prevalence of many depressive symptoms than those who came from their own home, but the unadjusted difference between those admitted from their own home and those who came from a sheltered living environment disappeared. We can only speculate about the explanation of these findings. Hospital patients may feel that nursing home admission is an 'upgrade', in contrary to patients who come from their own (sheltered) environment for whom it may be conceptualized as a 'downgrade'. Those who come from the hospital generally have a bigger chance of being a temporarily resident (40.1% was admitted on a rehabilitation ward, compared to 15% of the admissions from own home), and this will have generated

Table 5. Multivariate logistic regression model for 'admission from own home' on the outcome: 'many depressive symptoms' controlled for selected health and social functioning factors ($n = 549$)

	P	*Adj Odds Ratio*	*95% Confidence Intervals*
Residence before admission: own home (indicator)			
Sheltered	0.875	0.95	0.53–1.72
Hospital	0.028	0.54	0.31–0.94
Adjustment variables			
Sex	0.917	1.02	0.65–1.61
Intact *Cognition* (CPS 0–1, indicator)			
Moderate cognitive impairment (CPS 2–3)	0.002	2.49	1.38–4.48
Severe cognitive impairment (CPS 4–6)	0.117	1.77	0.87–3.63
Intact *ADL* (ADL 0-1, indicator)			
Moderate *ADL* impairment (ADL 2–3)	0.875	0.96	0.53–1.71
Severe *ADL* impairment (ADL 4–6)	0.224	1.43	0.81–2.52
use of anxiolytics	<0.001	4.07	1.92–8.63
Use of antipsychotics	0.032	1.73	1.05–2.87
Use of non opoid medication	0.623	0.89	0.55–1.43
Any dementia	0.719	1.12	0.61–2.03
Admitted on Somatic ward (indicator)	0.531		
Admitted on Psychogeriatric ward	0.293	0.70	0.37–1.35
Admitted on Rehabilitation ward	0.542	0.81	0.42–1.58
Age < 65 (indicator)	0.772		
Age 65–74	0.300	1.81	0.59–5.60
Age 75–84	0.327	1.70	0.59–4.88
Age > = 85	0.334	1.71	0.58–5.08

Adj Odds Ration = Adjusted Odds Ratio; CPS = Cognitive Performance Scale of the Minimum Data Set.

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some bias. However, we minimized this bias by controlling for the type of ward of the residents.

Part of the differences may also be explained by a different sense of loss of autonomy and one's own environment, and the difficulties in adjusting to the life in an institution. The stress of admission may be enhanced by the dramatic sequence of events which often precedes admission, such as losing a loved one and increasing physical dependence (Spagnoli *et al*., 1986). The little research that has been done on this subject, suggests that the adjustment process takes three to six months, in four major phases: disorganization, reorganization, relationship building and stabilization (Patterson, 1995). This adjustment process could be different for residents who come from their own homes and residential settings as compared with those who come from the hospital. The latter group might have entered the first two adjustment phases (disorganization and reorganization) already in the hospital, and start with the next adjustment phases earlier than the other residents. This may be a relevant subject for future research in this field.

It is important to note that the MDS-DRS is not a diagnostic instrument, but measures observable depressive symptoms. In this study it was used as an indicator of relatively few or many symptoms. The prevalence rate of depressive symptoms (above cut-off of three) found in this study is in line with others who used the MDS-DRS in cross-sectional samples in The Netherlands (prevalence 31%) and Canada (30%) (Holtkamp, 2003). In one, although small, sample, the MDS-DRS performed better (more sensitive and more specific) than the GDS (Burrows *et al*., 2000). More recently, the MDS-DRS was found to have acceptable specificity but low sensitivity, compared with the GDS and Hamilton depression rating scale (Anderson *et al*., 2003). This data collection was solely intended for research purposes, and performed by trained physicians. In this setting, there is little reason to dispute the reliability of the MDS, and the MDS-DRS in recognizing residents with many or few depressive symptoms (Hawes *et al*., 1992; Teresi and Holmes, 1992; Ouslander, 1994). The internal consistency of the MDS-DRS in our study (Cronbach's alpha 0.87) was also satisfactory.

The studied sample was not completely representative of all Dutch nursing home admissions: more residents were admitted on psychogeriatric wards, and there were fewer residents admitted from the hospital. This is probably a reflection of the allocated wards for the physicians in training in this stage of their program (less rehabilitation and more psychogeriatric wards). The over-sampling of psychogeriatric residents and under-sampling of residents admitted from the hospital will have had no impact on the internal validity, but might decrease the external validity. Future studies in other countries and samples are needed to establish the external validity of our results. These studies should measure depressive symptoms before admission, as it is known that depressive symptoms are associated with an increased risk of hospitalization and care utilization (Huang *et al*., 2000; Beekman *et al*., 2002). Depressive disorders in the elderly and the nursing home often remain undiagnosed and untreated conditions, although there might have been an improvement in the last years (Chrystal *et al*., 2003). These results raises the question whether targeted detection, prevention and management programs for depression are more effective when they start prior to or directly after admission, especially for those who have no prior institutional history. These results also stress the importance of a multidisciplinary approach for the overall assessment and management of nursing home residents. In addition to a comprehensive medical assessment, psychological and social assessments are very important for the pursuit of the highest quality of life. The stress of admission to a nursing home must not be underestimated.

KEY POINTS

- Residents admitted in a nursing home have many depressive symptoms within 10 days after admission
- Residents admitted from their own home, or from a residential facility, have more depressive symptoms than residents admitted from the hospital
- There is no difference in depressive symptoms in residents admitted from their own home and from a residential facility

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