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Comorbid Depression in Dementia on Psychogeriatric Nursing Home Wards: Which Symptoms are Prominent?

VERKAİK, RENATE M.SC.; FRANCKE, ANNEKE L. PH.D., R.N.; VAN MEIJEL, BERNO PH.D., R.N.; RIBBE, MIEL W. M.D., PH.D.; BENSING, JOZIEN M. PH.D.

ABSTRACT

Objective: To provide insight into the prevalence and clinically relevant symptoms of comorbid depression among dementia patients in psychogeriatric nursing home wards, to enhance depression recognition.

Design: Cross-sectional analyses of multicenter diagnostic data.

Setting: Psychogeriatric wards of Dutch nursing homes.

Participants: Five hundred and eighteen residents with dementia.

Measurements: 1) Diagnosis of depression in dementia (Provisional Diagnostic Criteria for Depression of Alzheimer disease [PDC-dAD]), 2) dementia (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-PC), and 3) stage of dementia (Geriatric Depression Scale).

Results: The point prevalence of comorbid depression in dementia (Stages 2–6) on psychogeriatric nursing home wards was 19%. “Depressed mood,” “irritability,” and “fatigue” were the most prevalent depressive symptoms. Residents taking antidepressants at the time of the PDC-dAD depression diagnosis showed more depressive symptoms than residents who were not. The mean number of depressive symptoms was 5.6 (SD 1.84), which did not differ between the dementia stages. Also, no differences were found in the point prevalence of the shown symptoms between dementia stages.

Conclusion: Irritability was put forward by the developers of the PDC-dAD, as one of the specific symptoms of depression in Alzheimer disease. This study shows that irritability is one of the most prevalent depressive symptoms in psychogeriatric nursing home residents diagnosed with comorbid depression. Irritability should therefore alert caregivers to the presence of depression and could help early recognition. The high-prevalence rate of comorbid depression in dementia in this setting justifies attention to early recognition and intervention.

Comorbid depression in people with dementia has been associated with decreased quality of life,¹ greater health care utilization,² higher mortality rates,³ and decreased caregiver's well-being.^{1,4} These serious consequences ask for early recognition and intervention. However, recognition of depression in dementia is not easy. This is especially the case on psychogeriatric wards in nursing homes, where people are in the middle and last stages of dementia and where most patients have significant problems expressing themselves. On these psychogeriatric wards, nurses and nurse assistants may be in the best position to recognize (symptoms of) depression. Yet, Teresi et al.⁵ show that nurses and nurse assistants only recognize depression in dementia sufferers with a sensitivity of 49%–55%, respectively. Recognition by other disciplines is often no better. A literature review by Bruhl et al.⁶ shows recognition to be as low as 44% for psychiatrists, 37% for social workers, and 14% for nursing home physicians.

Recognition of depression in dementia is not only hindered by communication problems but also by the overlapping of symptoms of depression and dementia. A final major reason why caregivers have difficulty in recognizing depression is that depression in dementia is different from the traditional Major Depressive Disorder as described in Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV).⁷ Many clinicians and researchers have argued that subclinical levels of depression are also relevant in dementia.^{8–10} In 2002, an expert group initiated by the American National Institute of Mental Health formulated specific diagnostic criteria for people with Alzheimer disease¹¹—the type of dementia that 60%–80% of the people with dementia suffer from.¹² The so-called Provisional Diagnostic Criteria for Depression of Alzheimer Disease (PDC-dAD) differ from the criteria for Major Depressive Disorder regarding nature and intensity of the symptoms. The symptoms “irritability” and “social isolation/withdrawal” were added; the symptom “loss of interest or pleasure” has been reformulated, whereas the symptom “diminished ability to think or concentrate” was deleted, as being intrinsically inherent to the dementia syndrome. Also, only three of the 10 symptoms need be present for a diagnosis instead of five, and symptoms do not need to be present every day.¹³ Table 1 shows the criteria and symptoms of the PDC-dAD.

[TABLE 1]

To improve recognition by caregivers, information is also required about the prevalence of comorbid depression in dementia using the PDC-dAD, the frequencies of PDC-dAD depressive symptoms and the possible differences between the dementia stages. This study gives this information for residents with dementia stages from “age-related memory impairment” to “moderately severe dementia” (Global Deterioration Scale Stages 2–6, see Table 2¹⁴). Attention is also paid to possible differences between residents who are already taking antidepressants and those who are not, to be able to separate “pure” depressive symptoms from symptoms that are possibly mediated by the antidepressants.

[TABLE 2]

The research questions addressed are:

1. What is the point prevalence of comorbid depression in dementia (Stages 2–6) in residents of Dutch psychogeriatric nursing home wards as assessed with the PDC-dAD?
2. What are the characteristics of comorbid depression in dementia (Stages 2–6), Regarding
 - a. The mean number of depressive symptoms in users and nonusers of antidepressants?
 - b. The point prevalence of specific depressive symptoms in users and nonusers of antidepressants?
 - c. The mean number of depressive symptoms and the prevalence of specific depressive symptoms in relation to the dementia stages?

This study was conducted on Dutch psychogeriatric nursing home wards. In the Netherlands, there are about 27 nursing home beds per 1,000 inhabitants of 65 years of age

and over. Of these beds, 55% are in psychogeriatric wards for patients with dementia and 45% in somatic wards, primarily for patients with somatic (i.e., physical) problems.¹⁵ Most of the Dutch nursing homes (73%) have psychogeriatric wards and somatic wards.¹⁶ Psychogeriatric wards are separate wards or units in nursing homes for psychogeriatric residents, characterized by corridors, colors, and closed-door systems, that are adapted for these residents. They are comparable with specialized Alzheimer units in the United States. Of the residents, 85% is diagnosed with a dementia syndrome, mostly moderate to severe (Geriatric Depression Scale [GDS] Stages 5–7).¹⁷ Daily nursing care is mainly delivered by certified nurse assistants (CNAs) who in the Netherlands generally have 3 years of basic nursing training, and who are—regarding educational level and skills—rather comparable with Licensed Practical Nurses in the United States. First responsible for medical care and directions of the total care is the nursing home physician. In the Netherlands, the nursing home physician is a formally recognized medical specialization, with 2 years of postgraduate university training in nursing home medicine. CNAs and nursing home physicians are supported by a team of psychologists, activity therapists, social workers, and others who are specifically educated for working in the nursing home context.¹⁶

METHODS

Sample

Data come from the preintervention phase of a psychosocial intervention study for dementia sufferers with depression on 16 psychogeriatric wards of Dutch nursing homes.¹⁸

The nursing homes in the intervention study had applied in response to an invitation letter from NIVEL and VU University Medical Centre. Nine nursing homes participated each with two comparable psychogeriatric wards. In eight homes, all residents from the 16 participating wards were systematically screened and diagnosed with depression in dementia using the PDC-dAD criteria. In the ninth nursing home not all residents could be screened, owing to personnel problems. Therefore, the data from this nursing home were not processed in the analyses for our article. Background characteristics of the residents diagnosed with comorbid depression in dementia were collected in the baseline measurement of the intervention study.

Assessment of Comorbid Depression in Dementia

On each of the wards, a two-step process was used to identify residents with depression in dementia, as advised by Logsdon and Teri.¹⁹

As a first step in the diagnostic process the team manager and/or CNAs screened all residents of the participating wards for possible depression with the GDS-15 caregiver. This scale is a Dutch translation of the GDS-15^{20,21} that is adapted to a scale suitable for completion by caregivers of people with dementia. The internal consistency (alpha) of this scale tested by Logsdon and Teri¹⁹ was 0.91 and the sensitivity to diagnose major and minor depression in them was 90%. In our study team managers and CNAs who conducted the screening received verbal and written instructions from the first author (psychologist). An instruction specific for this proxy version of the GDS was that the team manager and CNAs should score the presence of a symptom irrespective of its possible cause (e.g., depression or dementia). They were informed that the physician and psychologist would consider the cause in the next step of the diagnostic process. All residents with a score of 4 or higher were selected as possibly depressed.²¹

As a second step, either nursing home physicians or psychologists determined whether the positively screened residents met the following three criteria by studying medical status, interviewing and/or observing the resident, and consulting with other caregivers:

1. Demented (DSM-IV-PC Dutch Version 22).
2. Stage of dementia from “age associated memory impairment” to “moderately severe dementia” (Global Deterioration Scale Stages 2–6). Residents with severe dementia (Global

Deterioration Scale Stage 7) were excluded from the study because the intervention was aimed at residents who were still able to communicate verbally. For a description of the dementia stages according to the Global Deterioration Scale, see Table 2.14

3. Diagnosed with depression in dementia according to the PDC-daD 13 (Fig. 1). Because the diagnosis of dementia was established but not the specific type, Criterion B of the PDC-dAD “All criteria are met for dementia of the Alzheimer type” was not considered. The second step of the diagnostic process generally took place within a timeframe of two successive weeks, in the first nursing home in October 2005, and in the last nursing home in October 2006.

Physicians and psychologists received the three sets of diagnostic criteria as well as written and verbal instructions on how these should be applied from the first author. The written instructions for the PDC-dAD criteria include a translation of the operationalizations and case descriptions of the criteria as developed by Rosenberg et al.²³

Statistical Analyses

The first research question (“What is the point prevalence of comorbid depression in dementia (Stages 2–6) in residents of Dutch psychogeriatric nursing home wards as assessed with the PDC-dAD?”) was answered by calculating the percentage of residents diagnosed with comorbid depression in dementia, Stages 2–6, of the screened sample.

To answer research question 2a (“What is the number of depressive symptoms in users and nonusers of antidepressants?”), the group of residents was split into those who received antidepressants and those who did not. The mean number of depressive symptoms was calculated for each group, and differences were tested for significance ($p \leq 0.05$) with an analysis of variance (ANOVA) test, with gender as covariate. Gender was entered as covariate because analyses showed a significant relationship between gender and the prevalence of symptom 2 “decreased positive affect or pleasure in response to social contacts and usual activities” (Wald $[\chi^2]_{(1)} = 4.13$, $p = 0.03$), women showing this symptom significantly more often. Other background characteristics and use of psychoactive medications (Table 3) did not show relationships and were therefore not entered as covariates into the model.

[TABLE 3]

The prevalence rates of the 10 depressive symptoms and differences between antidepressant users and nonusers (research question 2b) were determined by calculating prevalence rates first for the total group of residents and second for the separate groups. Differences between the groups were tested for significance ($p \leq 0.05$) using logistic regression analyses. The dependent variable was the presence of each of the 10 depressive symptoms (yes/no); the independent variable was antidepressant use (yes/no); gender was a covariate. Again only gender was entered as a covariate because analyses showed a significant relationship, whereas other background characteristics and psychoactive medication use (Table 1) did not show a relationship to the dependent variable.

To answer the first part of question 2c (“What is the number of depressive symptoms and is it related to the stage of dementia?”) three dementia stage groups were formed: 1) age associated memory impairment (Stage 2) to mild dementia (Stage 4), 2) moderate dementia (Stage 5), and 3) moderately severe dementia (Stage 6). The mean number of depressive symptoms was calculated for each group. Differences between the groups were tested for significance ($p \leq 0.05$) using a between-subjects test (ANOVA) with gender as covariate.

To answer the second part of question 2c (“Does the prevalence of specific depressive symptoms relate to the dementia stages?”) we calculated prevalence rates of the 10 depressive symptoms for the three dementia stage groups. Differences between the groups were tested for significance ($p \leq 0.05$) using logistic regression analysis with gender as a covariate. The dependent variable was the presence of each of the 10 depressive symptoms

(yes/no); independent variables were the stages of dementia (Stages 2–4, yes/no; Stage 5, yes/no; Stage 6, yes/no). The statistical software used was SPSS 14.0 for WINDOWS.

RESULTS

Prevalence of Comorbid Depression and Dementia

[FIGURE 1]

To gain insight into the point prevalence of comorbid depression in demented residents (Stages 2–6) of Dutch psychogeriatric nursing home wards, we performed two steps: screening for possible depression of all residents in the participating wards (Step 1) and diagnosis of depression, dementia, and dementia stage (Step 2). Figure 1 shows a flowchart with the results of these steps. In total, 518 residents were in the participating wards at the time the screening for possible depression took place (Step 1). During the process, 20 residents died and a further two dropped out due to transfer. Of the remaining 496 residents 252 had a score of less than 4 on the Geriatric-Depression-Scale-15 caregiver, indicating no possible depression, and were therefore excluded from the further diagnostic procedure. Two hundred forty-four residents had a score of 4 or higher on the Geriatric-Depression-Scale-15 caregiver (indicating possible depression) and entered Step 2 of the diagnostic process. Of these 244 possibly depressed residents 148 residents did not fulfill the diagnostic criteria for dementia, stage of dementia (residents with severe dementia were excluded) or depression, and 96 did. The point prevalence of comorbid depression and dementia (Stages 2–6) is therefore calculated at 19% (all 96 depressed and demented residents within dementia Stages 2–6 divided by all 496 residents of the psychogeriatric wards).

[FIGURE 2]

For two of the 96 residents no informed consent for study participation was given, which results in data of 94 cases to be analyzed. Table 3 presents the characteristics of these 94 residents.

Differences Between Antidepressant Users and Nonusers

Mean Number of Depressive Symptoms.

For eight residents, explicit data about their symptoms of depression were missing and could therefore not be used in the analyses of the mean number of symptoms.

Information about medication use was missing for eight other residents. Data of these residents could therefore not be used in the analyses of the differences between users and nonusers of antidepressants.

The mean number of depressive symptoms in the total group of residents ($N = 86$) with comorbid depression in dementia on a scale from 0 to 10 was 5.6 (SD 1.84).

In the residents who received antidepressants at the time of the PDC-dAD diagnosis ($N = 29$) the mean number of depressive symptoms was 6.2 (SD 2.1), and in residents without antidepressants ($N = 49$) it was 5.3 (SD 1.7). The difference in mean number of depressive symptoms proved statistically significant—the residents with antidepressants showing significantly more symptoms ($F_{[1,76]} = 4.42$, $p = 0.04$) than the non-antidepressant group.

Prevalence of Specific Depressive Symptoms.

Figure 2 shows the point prevalence of each of the 10 depressive symptoms of the PDC-dAD for the total group of residents ($N = 86$), and for the group that received antidepressants ($N = 29$) and the group that did not ($N = 49$) separately. In the total group “depressed mood,” irritability and “fatigue” were highly prevalent—each shown by at least 73% of the residents. “Disruption in sleep” and “recurrent thoughts of death” were the least prevalent symptoms,

shown by 24% and 28% of the residents respectively. In the group of residents who took antidepressants at the time of the PDC-dAD diagnosis one symptom was significantly shown more often than in the group that did not, namely “decreased positive affect” (Wald $[\chi^2]_{[2]} = 4.36, p = 0.04$).

Relationship With Dementia Stage

Mean Number of Depressive Symptoms.

Subsequently, we analyzed whether there is a relationship between the number of depressive symptoms and the stage of dementia ($N = 81$). Data for five residents could not be used because information about their dementia stage was missing.

[FIGURE 3]

In the group of residents with age-related memory impairment to mild dementia ($N = 13$), the mean number of symptoms is 5.8 (SD 1.83), in moderate dementia ($N = 31$) it is 5.3 (SD 2.0), and in moderately severe dementia ($N = 37$) it is 5.7 (SD 1.6). Using ANOVA with gender as covariate no differences between dementia stages were found ($F_{[2,78]} = 0.40, p = 0.67$).

Prevalence of Specific Depressive Symptoms.

Finally, analyses were performed on the prevalence of the 10 specific depressive symptoms in the three dementia stage groups, and the possible differences between the groups were studied. Figure 3 shows the prevalence rates of symptoms in the three groups. Logistic regression with gender as covariate showed no significant differences in this respect between the dementia stages. Wald $[\chi^2]$ was highest for symptom 8 “fatigue/loss of energy” (Wald $[\chi^2]_{[2]} = 1.6, p = 0.20$) and lowest for symptoms 3 social isolation/withdrawal and 6 “psychomotor changes” (Wald $[\chi^2]_{[2]} = 0.02, p = 0.89$).

DISCUSSION

Reflections on the Main Findings

Using the PDC-dAD, we found a point prevalence of 19% comorbid depression in dementia among residents with dementia severities 2–6 in Dutch psychogeriatric nursing home wards. This rate is comparable with the depression rate of 22% in residents of Dutch somatic nursing home wards using DSM-IV criteria for major and minor depression 24 and the rate of 20% comorbid depression and dementia found by Zuidema et al.¹⁷ in Dutch psychogeriatric nursing home wards using the NPI-NH-depression subscale. One of the few researchers who has published about prevalence rates using the PDC-dAD is Vilalta-Franch et al.²⁵ She found a somewhat higher rate of comorbid depression and dementia of 27% in people still living at home in Spain. The prevalence rate of 19% that we found and the known serious consequences of comorbid depression in dementia (e.g., higher mortality rates, lower quality of life) justifies considerable attention being paid to early recognition and intervention of depression on psychogeriatric nursing home wards.

Teaching nurses, nurse assistants, and other caregivers about the most frequent symptoms could help them in recognizing possible depression. After recognition, nurses or nurse assistants could ask a physician or psychologist to make a formal depression diagnosis using the PDC-dAD and as a next step possible treatments could be discussed.

We found that the most frequently shown depressive symptoms are depressed mood, irritability, and fatigue/loss of energy. The fact that irritability—one of the symptoms added as being specific for depression in AD is one of the most prevalent symptoms, is an important finding for depression recognition. The study by Vilalta-Franch et al. showed that irritability is also highly prevalent in a depressed and demented outpatient population.

Starkstein et al.¹⁰ likewise found that outpatients with major or minor depression and Alzheimer disease had significantly higher scores for irritability than nondepressed patients.

The mean number of depressive symptoms was 5.6 (SD 1.84). Interestingly, residents already taking antidepressants showed more different symptoms on average than residents without antidepressants. Residents using antidepressants also showed one specific symptom more often, namely “decreased positive affect or pleasure in response to social contacts and usual activities.” We did not check if residents receiving antidepressants already had an earlier diagnosis of depression. It is possible that antidepressants were given for other medical problems, e.g., urinary incontinence, and/or that doses were too low to be therapeutic. We therefore have analyzed the types of prescribed antidepressants and the doses. In 90% of the cases nontricyclic antidepressants were prescribed. In only one case, the dose was much lower than the advised dose for the elderly (Dutch Health Care Insurance Board [CVZ], pharmaceutical therapeutic guide, 2008). There was also no administration of duloxetine, which is sometimes prescribed for female urinary incontinence. We therefore consider it plausible that the antidepressants were indeed prescribed for depression, and that residents receiving antidepressants were still depressed at the time of the current diagnosis. The more different symptoms in antidepressant users might indicate that they are more severely depressed than nonusers. Unfortunately, we could not relate the Geriatric-Depression-Scale-15 caregiver scores to the individual residents, because these scores were anonymized by the team managers. Preintervention data from the clinical trial, however, suggest that antidepressant users were not more severely depressed: scores on the MDS-Depression Rating Scale and the Cornell Scale for Depression in dementia taken about 2–4 weeks after the depression diagnosis did not differ significantly between the groups (ANOVA, gender as covariate, $p \geq 0.05$). The more different types of symptoms seem to suggest that antidepressant users show another profile of depressive symptoms. Different explanations are again possible. The higher frequency of some symptoms could be related to adverse effects of the antidepressants, but it is also possible that residents with more different depressive symptoms have a higher chance of receiving medication. Future research is needed to test these hypotheses. Still, it remains remarkable that residents already receiving antidepressants did not show less symptoms or were less severely depressed than nonreceivers. The antidepressants were obviously not sufficiently effective. For clinical practice, this again emphasizes the importance of monitoring reactions to antidepressants very closely. If not effective, another dose or type of medication could be used. Besides, psychosocial interventions should always be considered.²⁶

There were no large differences between the dementia stages for the mean number of depressive symptoms or the prevalence of specific symptoms. In a recent systematic review, we also found that there is no relationship between dementia severity and the prevalence of comorbid depression and dementia.²⁷ The finding that there are no significant differences contradicts the suggestion that the profile of depression changes with increasing severity of dementia,¹⁰ but this finding could make depression recognition easier.

The background characteristics of our study sample (age, sex, and marital status) and the point prevalence of depression are comparable with those found in the recent cross-sectional study by Zuidema et al.¹⁷ among 1,322 residents from 59 Dutch psychogeriatric wards. This forms an indication for the generalizability of the results to all Dutch psychogeriatric wards.

Limitations of the Study

The study described in this article has a few limitations. In the first place, the conclusions are limited to residents with dementia severity ranging from age-related memory impairment to moderately severe dementia (Stages 2–6). Residents with “severe dementia” were excluded. Although the included group forms about 72% of the Dutch psychogeriatric nursing home population,¹⁷ the group with severe dementia (Stage 7) is not negligible (28%). Because depression recognition in residents with severe dementia is even harder than

in the earlier stages,²⁸ it is important that future research aims at improving recognition of depression in this group as well.

Another limitation of the current study is that the type of dementia in the sample is unknown, whereas the PDC-dAD were developed specifically for people with Alzheimer disease. It could be that in, for example, vascular dementia the depression type is different from that in Alzheimer disease.^{29,30} However, in 60%–80% of people with dementia, the dementia is that of the Alzheimer type.¹² Also, the type of dementia is mostly unknown in any case, among residents of psychogeriatric nursing home wards, which enhances the applicability of the current results.

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The authors declare no conflict of interest.

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TABLES AND FIGURES

TABLE 1. Provisional Diagnostic Criteria for Depression of Alzheimer Disease¹¹

Diagnostic Criteria, PDC-dAD

A. Three (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning: at least one of the symptoms is either 1) depressed mood or 2) decreased positive affect or pleasure

Note: Do not include symptoms that, in your judgment, are clearly due to a medical condition other than Alzheimer disease, or a direct result of nonmood-related dementia symptoms (e.g., loss of weight due to difficulties with food intake)

1. Clinically significant depressed mood (e.g., depressed, sad, hopeless, discouraged, tearful)
2. Decreased positive affect or pleasure in response to social contacts and usual activities
3. Social isolation or withdrawal
4. Disruption in appetite
5. Disruption in sleep
6. Psychomotor changes (e.g., agitation or retardation)
7. Irritability
8. Fatigue or loss of energy
9. Feelings of worthlessness, hopelessness, or excessive or inappropriate guilt
10. Recurrent thoughts of death, suicidal ideation, plan or attempt

B. All criteria are met for dementia of the Alzheimer type (DSM-IV-TR)

C. The symptoms cause clinically significant distress or disruption in functioning

D. The symptoms do not occur exclusively during the course of a delirium

E. The symptoms are not due to the direct physiological effects of a substance (e.g., drug abuse or medication)

F. The symptoms are not better accounted for by other conditions such as major depressive disorder, bipolar disorder, bereavement, schizophrenia, schizoaffective disorder, psychosis of Alzheimer disease, anxiety disorders, or substance-related disorder

TABLE 2. Stages of Dementia as Defined by Global Deterioration Scale¹⁴

Dementia Stage	Description
1	No cognitive decline
2	Age-associated memory impairment
3	Mild cognitive impairment
4	Mild dementia
5	Moderate dementia
6	Moderately severe dementia
7	Severe dementia

TABLE 3. Characteristics of the 94 Residents Diagnosed With Depression and Dementia

Age (years)	
Mean \pm standard deviation	83.5 \pm 7.1
Range	62-99
Gender, male	19 (20)
Marital status	
Married	23 (24)
Widow/widower	66 (70)
Divorced	3 (4)
Unmarried	2 (2)
Duration of institutionalization	
<3 months	4 (4)
3 months to 1 year	23 (24)
1-3 years	41 (44)
>3 years	26 (28)
Dementia severity (Global Deterioration Scale)	
Age-associated memory impairment	2 (2)
Mild cognitive impairment	3 (3)
Mild dementia	8 (9)
Moderate dementia	32 (34)
Moderately severe dementia	38 (40)
Missing	11 (11)
Psychoactive medication use	
Antidepressant drugs	33 (35)
Antipsychotic drugs	47 (50)
Benzodiazepines	36 (38)
ACE inhibitors/beta blockers	8 (9)

Note: Figures in parentheses indicate percentages. All percentage values are percentages of the total group. ACE: Addenbrooke's Cognitive Examination.

FIGURE 1. Steps and Results of the Diagnostic Process

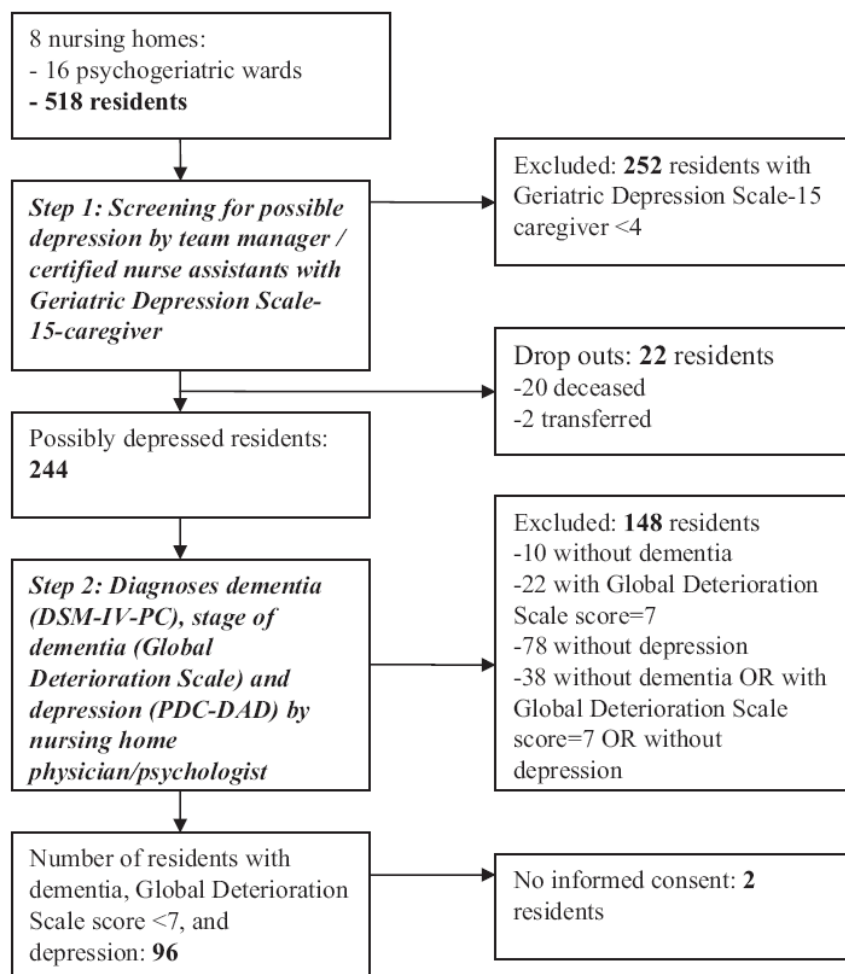


FIGURE 2. Prevalence of the 10 Depressive Symptoms in the Total Group of Residents (N = 86), Residents With Antidepressants (N = 29), and Without Antidepressants (N = 49)

Depressive symptoms in residents with and without antidepressants

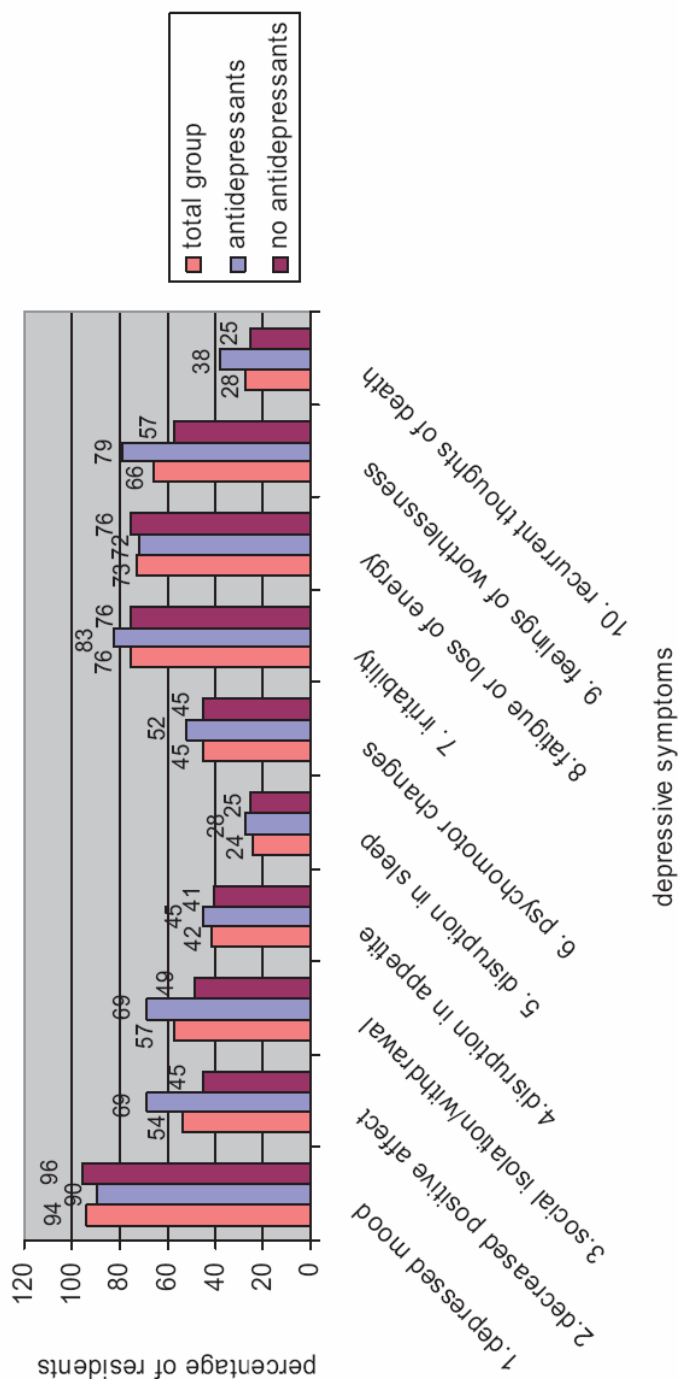
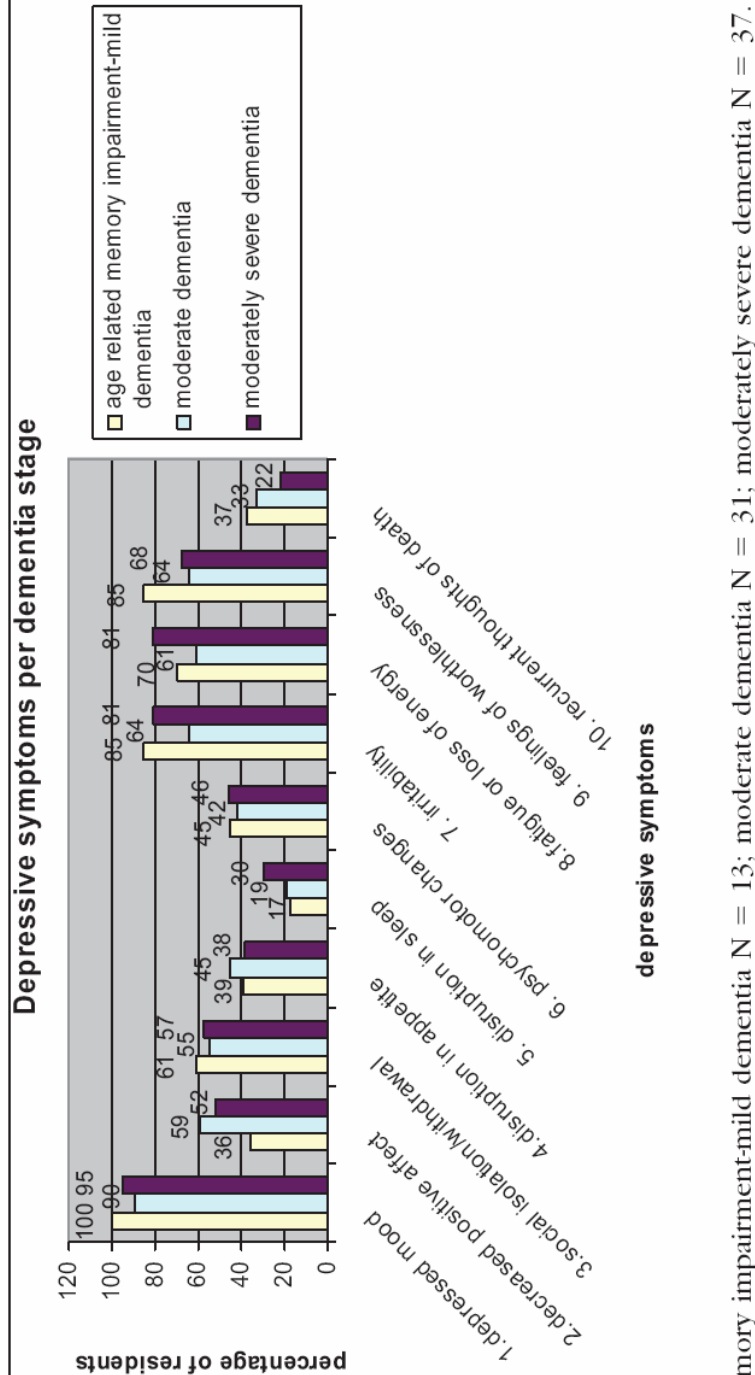


FIGURE 3. Prevalence of the 10 Depressive Symptoms in the Three Dementia Stage Groups



Age-related memory impairment-mild dementia N = 31; moderate dementia N = 31; moderately severe dementia N = 37.