Prevalence of Depressive Symptoms and Associated Factors in Elderly Primary Care Patients: A Descriptive Study

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Background: Depressive symptoms are common in older adults. A majority will be seen in primary care. The aim was to study the prevalence of and to explore factors associated with depressive symptoms in elderly primary care patients.

Method: In consecutive patients aged 60 years and older attending a Swedish primary care center between February and December of 2003, depressive symptoms were identified as ≥ 13 points on the Montgomery-Asberg Depression Rating Scale–Self-Rated version (MADRS-S). Somatic symptoms measured according to PRIME-MD, age, socioeconomic status, gender, somatic diagnoses, and medication were analyzed in relation to presence of depressive symptoms.

Results: Forty-six of 302 patients (15%) rated themselves in the depressed range. There were no differences between depressed and nondepressed patients concerning socioeconomic status, other illnesses, or medication except for use of sedatives/hypnotics being more common (OR = 2.7, 95% CI = 1.3 to 5.6) in depressed patients. Patients in the group scoring ≥ 13 on the MADRS-S were more likely to have become widowed during the last year (OR = 6.0, 95% CI = 1.7 to 20.8) or to have indicated significant life events (OR = 4.3, 95% CI = 2.0 to 9.0), but were less likely to report having leisure time activities (OR = 0.2, 95% CI = 0.08 to 0.41) or perception of good health (OR = 0.1, 95% CI = 0.05 to 0.3). Patients being treated for depression did not have increased depression scores (OR = 1.4, 95% CI = 0.66 to 3.1).

Conclusion: In a group of unselected primary care elderly patients, the prevalence of depressive symptoms was high. Use of sedatives/hypnotics was remarkably common in patients with depressive symptoms. Patients with ongoing treatment of depression did not have increased depression scores, indicating the good prognosis for treated depression in the elderly.

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Depression is one of the most common psychiatric disorders in the elderly and continues to be underdiagnosed and undertreated. Generally, only 1 in 4 depressed patients are treated with antidepressant medication.[1] A majority of elderly depressed patients will be seen in primary care.[2] The various definitions of "depression" create difficulties when determining the prevalence of depressive disorders and often prevent comparisons between studies.[3] The estimated prevalence of depression in the elderly is 12%–15%, but rates as high as 35%–50% have been reported, depending on diagnostic criteria and methodology.[3–5] The incidence and prevalence of depression increase with age, and the incidence is higher in women than in men.[6]

Late-life depression is a diagnostic dilemma in primary care since the elderly tend to express their mental problems in terms of somatic symptoms. They often have several medical disorders and multiple somatic complaints, which mask the depression.[7] Depression is also often assumed to be a normal response to aging, which may be an important barrier to seeking care.[8] An Italian epidemiologic study showed that comorbidity with physical illness was the hallmark of late-life depression and that depressed older patients were more disabled and consulted general practitioners more often than younger patients.[9] Several other studies confirm the association between frequent attendance and late-life depression.[10–12] Identifying medical and psychosocial risk factors in elderly patients is important in primary care settings.

The heterogeneity of symptoms of depression in the elderly leads to underdiagnosis and can be an impediment to the patients being given proper medical care.[3] It is therefore important to study elderly patients in primary

care with less severe depression as this condition is far more common than, but qualitatively similar to, major depressive disorder and is associated with functional disability, increased morbidity, and high mortality rates if left untreated, especially in men.[9,13–17]

Several validated screening instruments are available for detecting late-life depression in primary care.[18–21] Some authors recommend rating scales emphasizing somatic symptoms associated with depression instead of those excluding somatic symptoms.[7] Some suggest that elderly individuals with unspecific symptoms, such as pain, fatigue, insomnia, or frequent use of benzodiazepines, should be screened for anxiety and depression.[22,23]

There are only a few descriptive studies of elderly patients attending primary care that focus on minor and subsyndromal depression. Their main findings are that minor depression is related to physical health whereas major depression is not, that the prognosis for minor depression is better than for major depression, that vague complaints may signal depression in the elderly, and that further research should aim at identifying this group of patients in primary care.[24,25]

The aim of this study was to study the prevalence of depressive symptoms in an elderly primary care population and to explore factors associated with depressive symptoms in these patients.

METHOD

Design and Setting

This is a descriptive study of a consecutively selected elderly primary care population in Gothenburg, Sweden, between February and December 2003. Gothenburg is a city in the southwestern part of Sweden with approximately 500,000 inhabitants. The Lundby-Brämaregården primary care center serves approximately 15,000 people, 16.3% of whom are aged 65 years and older, compared with 15% in the entire city of Gothenburg. Twenty percent are immigrants, defined as born outside Sweden, compared with 20% in the city of Gothenburg.[26]

A psychiatric nurse, specially trained for this purpose, first met the patient and undertook a screening procedure with 2 validated screening instruments: the Primary Care Evaluation of Mental Disorders (PRIME-MD)[27] and the

Montgomery-Asberg Depression Rating Scale–Self-Rated version (MADRS-S)[28] and interviewed the patients regarding socioeconomic status, social network, lifestyle, and health. The answers were noted in a basic information questionnaire. Two general practitioners at the primary care center were involved in the study, collecting data from the patients' records regarding ongoing medication, including sedative/hypnotics such as benzodiazepines or sleep medications. The number of telephone contacts and visits during the preceding year were registered. Patients who scored positive on either of the screening instruments were assigned a new visit within 2 weeks.

Subjects

All patients aged 60 years and older attending the primary care center during February–December of 2003 were asked to participate in the study. The age group 60–64 years was included with the intention to study sick leave frequency related to depressive symptoms. Patients were recruited consecutively and without selection. Both written and verbal information was given. Written informed consent was obtained from all subjects before they entered the study. Patients with severe psychiatric diagnoses (schizophrenia, severe generalized anxiety disorder, bipolar affective disorder, or dementia) were excluded.

Screening Instruments and Basic Information

The MADRS-S,[28] the self-rated version of MADRS,[29] was used as the "gold standard." It consists of 9 questions, each of which can yield a maximum of 6 points, totaling a maximum of 54 points. Cutoff point was set at 13 points, following the guidelines for minor and major depression.[30]

The PRIME-MD[27] is a 2-stage instrument including a patient screening questionnaire with yes or no questions. It is followed up with a clinical interview. Twenty-one of 28 questions, focusing on somatic symptoms and depressive disorders, were used. Five questions about alcohol (numbers 24–28) and 2 concerning pain in conjunction with menstruation and coitus (numbers 4–5) were excluded, as an earlier pilot study of 100 elderly patients showed very low response to these parts.[31] The questionnaire also asked about the patients' perception of their health. The responses "perfect," "excellent," and "good"

Table 1. Age and Socioeconomic Status for All Patients and for Patients With MADRS-S Score ≥ 13

	All Patients			MADRS-S Score ≥ 13		
Characteristic	Women, N (%)	Men, N (%)	Total, N (%)	Women, N (%)	Men, N (%)	Total, N (%)
Age group						
60–64 years	24 (12)	11 (12)	35 (12)	8 (33)	3 (27)	11 (31)
65–74 years	65 (31)	27 (28)	92 (30)	11 (17)	3 (11)	14 (15)
75+ years	118 (57)	57 (60)	175 (58)	17 (14)	4 (7.0)	21 (12)
Total participants	207 (69)	95 (31)	302 (100)	36 (17)	10 (11)	46 (15)
Socioeconomic group[a]						
Group I[b]	6 (3.0)	3 (3.2)	9 (3.1)	2 (33)	0 (0)	2 (22)
Group II[c]	78 (39)	41 (44)	119 (40)	10 (13)	2 (5)	12 (10)
Group III[d]	117 (58)	50 (53)	167 (57)	23 (20)	8 (16)	31 (19)

[a]Missing data for 7 patients, N = 295.
[b]Comprising large-scale employers and officials of high or intermediate rank.
[c]Comprising small-scale employers, officials of lower rank, and foremen.
[d]Comprising skilled and unskilled workers.
Abbreviation: MADRS-S = Montgomery-Asberg Depression Rating Scale–Self-Rated version.

were combined into "good" and the responses "fair" and "bad" were combined into "poor."

The basic information questionnaire, based on the nurse's interview, consisted of 13 questions.

To simplify the evaluation of marital status, the patients were divided into 2 groups: (1) "having a partner," defined as married, cohabiting, or having daily or almost daily contact with a special person, and (2) "being single."

Social network was defined on the basis of the patients' own perceptions.

Leisure activities were defined as at least 1 stimulating activity outside the home.

Severe or serious somatic disease during the last year was defined from the patient's perception of illness and valued by the nurse from a medical point of view.

Significant life events during the last year were defined as any event that the patient regarded as having had a negative effect on quality of life. The significance was valued by the nurse.

A classification system[32] for socioeconomic situation, based on the patient's occupation, was used, yielding 3 groups: group I comprised large-scale employers and officials of high or intermediate rank; group II comprised small-scale employers, officials of lower rank, and foremen; and group III comprised skilled and unskilled workers. Homemakers were coded according to the husbands' occupations.

Statistical Methods

Differences in proportions were tested with Fisher exact test, and differences in continuous data were analyzed using Student t test. In case of skewed data, Mann-Whitney test was used. Analysis of associations between MADRS-S scores ≥ 13 and different variables were tested in unconditional multivariate logistic regression using elevated score as the dependent variable and the event (diagnosis, medication, lifestyle, etc.) as independent variable. In most logistic regressions, age, gender, "hav-

ing a partner," and "having a social network" were included as independent variables, except when they were the event of interest for analysis. When analyzing diagnoses and medication, the existence of good health (a dichotomized variable) was added as an extra independent variable. The statistical program EPI Info, version 3.3.2 (Centers for Disease Control, Atlanta, Ga.) was used.

The ethics committee of University of Gothenburg approved the study.

RESULTS

During the 10-month study period, 302 patients aged 60 years and older attended the primary care center, and they all agreed to participate. The population consisted of 207 women, mean (SD) age = 75 (8.2) years, and 95 men, mean (SD) age = 76 (8.2) years. There were missing data for 4 patients (3 men and 1 woman) in the basic information questionnaire, and data concerning occupation were missing for 7 patients (6 women and 1 man) due to administrative error.

Dividing patients into 3 age groups (60–64 years, 65–74 years, and 75 years and older) revealed that depressive symptoms were more common in the youngest age group than in older patients (p = .018, logistic regression) (Table 1). Most patients were skilled and unskilled workers, and socioeconomic status did not differ between those with MADRS-S scores ≥ 13 compared to those scoring lower (Table 1).

The year before detecting the depressive symptoms, the mean (SD) number of visits and telephone consultations with the general practitioners were 2.1 (2.0) and 1.2 (1.7) for women and 2.0 (1.9) and 0.7 (1.1) for men, respectively. Women seemed to have more telephone contacts than men (p = .053). There was no difference in visits or telephone contacts between subjects with MADRS-S scores ≥ 13 and those scoring lower.

There was no association between common medical diagnoses and high depression scores on the MADRS-S

Table 2. Prevalence of Diagnoses and Medications in All Patients and Prevalence of Patients With MADRS-S Score ≥ 13 in Diagnosis/Medication Groups

	All Patients (N = 302)			MADRS-S Score ≥ 13 (N = 46)		
Variable	Women, N (%)	Men, N (%)	Total, N (%)	Prevalence, N (%)	OR (95% CI)	p Value
Diagnosis						
Diabetes**	28 (14)	24 (25)	52 (17)	10 (19)	1.5 (0.62 to 3.5)	.39
Hypertension	70 (34)	37 (39)	107 (35)	17 (16)	1.2 (0.58 to 2.4)	.65
Ischemic heart disease	35 (17)	24 (25)	59 (20)	4 (6.8)	0.4 (0.11 to 1.1)	.07
Arrhythmia	15 (7.2)	10 (11)	25 (8.3)	1 (4.0)	0.3 (0.04 to 2.3)	.24
Stroke	16 (7.7)	12 (13)	28 (9.3)	2 (7.1)	0.4 (0.09 to 2.0)	.29
Depression (episodic and chronic)	35 (17)	11 (12)	46 (15)	13 (28)	1.7 (0.75 to 3.8)	.21
Psychiatric disease NOS	10 (4.8)	7 (7.4)	17 (5.6)	6 (35)	3.0 (0.88 to 10)	.08
Hypothyroidism***	42 (20)	4 (4.2)	46 (15)	7 (15)	0.8 (0.32 to 2.2)	.71
Medication						
Drugs for cardiovascular disease	123 (59)	65 (68)	188 (62)	23 (12)	0.5 (0.26 to 1.1)	.08
Antidepressants	38 (18)	13 (14)	51 (17)	13 (26)	1.6 (0.70 to 3.5)	.27
Sedatives, benzodiazepines	58 (28)	21 (22)	79 (26)	23 (29)	2.7 (1.3 to 5.6)	.0053
Sedatives, non-benzodiazepines	62 (30)	23 (24)	85 (28)	23 (27)	2.8 (1.4 to 5.8)	.0042
Lipid-lowering*	29 (14)	22 (23)	51 (17)	2 (3.9)	0.2 (0.04 to 0.90)	.036

*p < .05 statistically significant difference in prevalence between women and men.
**p < .01 statistically significant difference in prevalence between women and men.
***p < .0001 statistically significant difference in prevalence between women and men.
Abbreviations: MADRS-S = Montgomery-Asberg Depression Rating Scale–Self-Rated version, NOS = not otherwise specified.

Table 3. Prevalence of Social Network, Lifestyle Factors, History of Depression, and Perception of Health in All Patients and Prevalence of Patients With MADRS-S Score ≥ 13 in the Different Groups

	All Patients (N = 298)[a]			MADRS-S Score ≥ 13 (N = 46)		
Variable	Women, N (%)	Men, N (%)	Total, N (%)	Prevalence, N (%)	OR (95% CI)	p Value
Having a partner***	77 (37)	61 (66)	138 (46)	13 (9.4)	0.4 (0.19 to 0.80)	.01
Widowed during last year*	12 (5.8)	1 (1.1)	13 (4)	7 (54)	6.0 (1.72 to 20.8)	.0048
Social network	179 (87)	81 (88)	260 (87)	38 (15)	0.5 (0.19 to 1.20)	.12
Leisure activities	173 (84)	75 (82)	248 (83)	29 (12)	0.2 (0.08 to 0.41)	< .0001
Somatic disease during last year	56 (27)	21 (23)	77 (26)	11 (14)	0.9 (0.43 to 2.0)	.85
Significant life events during last year*	98 (48)	32 (35)	130 (44)	35 (27)	4.3 (2.03 to 9.0)	.0001
History of depression	70 (34)	24 (26)	94 (32)	27 (29)	3.5 (1.77 to 6.82)	.0003
Current treatment for depression	40 (19)	12 (13)	52 (17)	12 (23)	1.4 (0.66 to 3.11)	.37
Perception of good health	103 (50)	58 (63)	161 (54)	7 (4.3)	0.1 (0.05 to 0.30)	< .0001
Smoker	31 (15)	14 (15)	45 (15)	12 (27)	1.2 (0.51 to 2.86)	.66

[a]Missing data for 4 patients.
*p < .05 statistically significant difference in prevalence between women and men.
***p < .001 statistically significant difference in prevalence between women and men.
Abbreviation: MADRS-S = Montgomery-Asberg Depression Rating Scale–Self-Rated version.

(Table 2). Both men and women used sedatives/hypnotics (Table 2). The use of sedatives/hypnotics was strongly associated with higher depression scores while the opposite was the case for use of lipid-lowering drugs (Table 2).

With increasing age there was a decrease in "having a partner" (OR = 0.97, 95% CI = 0.94 to 1.00, p = .047), in significant life events (OR = 0.96, 95% CI = 0.93 to 0.99, p = .0052), in the existence of a good social network (OR = 0.90, 95% CI = 0.88 to 0.97, p = .0009), and in smoking (OR = 0.90, 95% CI = 0.86 to 0.94, p = .0001). Having a partner reduced the odds of being a smoker, with OR = 0.36, 95% CI = 0.17 to 0.79, p = .011. Becoming widowed, experiencing a significant life event, and having a history of depression were important markers for MADRS-S score ≥ 13 (Table 3). Having a partner, being involved in at least 1 leisure activity, or perceiving one's

health as good were associated with decreased MADRS-S scores (Table 3). Several of the symptoms in the PRIME-MD screening instrument were associated with increased MADRS-S scores (Table 4). Fifty percent of the patients scoring ≥ 13 on the MADRS-S used benzodiazepines, and 50% used nonbenzodiazepine sedatives/hypnotics on a regular basis. In all, 70% of the group with MADRS-S score ≥ 13 used benzodiazepines and/or other sedatives/ hypnotics.

DISCUSSION

The main finding of this study was that in these unselected primary care elderly patients, the overall prevalence of depressive symptoms, defined as MADRS-S score ≥ 13, was 15%. Other main findings were that

Table 4. Prevalence of Symptoms According to PRIME-MD and Their Correlation to MADRS-S Score ≥ 13

Symptom	All Patients (N = 302)			MADRS-S Score ≥ 13 (N = 46)		
	Women, N (%)	Men, N (%)	Total, N (%)	Prevalence, N (%)	OR (95% CI)	p Value
Stomach ache*	48 (23)	13 (14)	61 (20)	16 (26)	2.3 (1.1 to 4.7)	.025
Back pain***	106 (51)	25 (26)	131 (43)	29 (22)	2.3 (1.2 to 4.6)	.015
Joint ache in arms and legs	153 (74)	62 (65)	215 (71)	36 (17)	1.3 (0.6 to 2.9)	.49
Headache	53 (26)	23 (24)	76 (25)	16 (21)	1.3 (0.6 to 2.7)	.44
Chest pain	54 (26)	26 (27)	80 (27)	17 (21)	2.0 (1.0 to 4.0)	.047
Dizziness	68 (33)	36 (38)	104 (34)	24 (23)	2.6 (1.3 to 5.1)	.0045
Fainting	3 (1.4)	0 (0)	3 (1)	0 (0)		
Palpitations*	61 (30)	15 (16)	76 (25)	20 (26)	2.5 (1.3 to 5.1)	.007
Dyspnea	59 (29)	25 (26)	84 (28)	23 (27)	3.4 (1.7 to 6.7)	.0004
Constipation or diarrhea	57 (28)	21 (22)	78 (26)	20 (26)	2.7 (1.4 to 5.4)	.0038
Indigestion	56 (27)	24 (25)	80 (27)	17 (21)	1.6 (0.8 to 3.2)	.185
Fatigue or loss of energy	144 (70)	60 (63)	204 (68)	44 (22)	12 (2.9 to 53)	.0006
Insomnia/hypersomnia	88 (43)	38 (40)	126 (42)	30 (24)	3.1 (1.6 to 6.1)	.001
Change of appetite[a]	12 (5.8)	2 (2.1)	14 (5)	8 (57)	16 (3.4 to 72)	.0004
Loss of interest in activities*	103 (50)	33 (35)	136 (45)	38 (28)	8.1 (3.5 to 19)	< .0001
Feelings of depression*	98 (47)	32 (34)	130 (43)	42 (32)	19 (6.4 to 55)	< .0001
Anxiety*	84 (41)	29 (31)	113 (37)	36 (32)	7.0 (3.3 to 15)	< .0001
Worries about a lot of things*	73 (35)	21 (22)	94 (31)	34 (36)	8.8 (4.1 to 19)	< .0001
Sudden feeling of panic	24 (12)	9 (9.5)	33 (11)	20 (61)	14 (5.9 to 33)	< .0001

[a]Loss of appetite or increased appetite.
*p < .05 statistically significant difference in prevalence between women and men.
***p < .0001 statistically significant difference in prevalence between women and men.
Abbreviation: MADRS-S = Montgomery-Asberg Depression Rating Scale–Self-Rated version.

significant life events during the previous year, becoming widowed during the last year, and a history of depression were significantly associated with depressive symptoms. These findings have previously been reported regarding risk factors for depression in the elderly.[33,34] The findings that depressive symptoms are associated with becoming widowed and with significant life events during the last year indicate that these circumstances are important risk factors, provided they are true depressive symptoms and not grief as such.

Several somatic symptoms were associated with MADRS-S score ≥ 13, especially dyspnea, fatigue, gastrointestinal problems, sleeping disorders, and either loss of appetite or increased appetite. Earlier findings suggest that depression should be considered in older patients with multiple somatic complaints.[7]

The frequent use of benzodiazepines and other sedatives/hypnotics in this group of depressed patients was an important finding and should be emphasized since these medications have well-known side effects.[23] The findings may also indicate that elderly patients using sedative medication are undertreated for depression. Among suicide cases in one Swedish county, a majority with depression, nearly one third were dispensed anxiolytics/hypnotics during the 3-month period preceding their death.[35]

Another finding was that patients with ongoing treatment for depression did not show increased depression scores, indicating the good prognosis for treated depression in the elderly.

There was no difference in the frequency of visits or telephone contacts between subjects rated as depressed and those not rated as depressed, even though the depressed group had considerably more somatic complaints. This may be explained by difficulties in getting in contact with this particular primary care center due to general practitioner vacancies and an old-fashioned telephone operating system.

An important question is whether the results of this study are valid outside the studied health care center. This study includes a high number of patients. Since 98% of the population of Lundby district is enrolled at the primary care center, these patients can be considered as representative of a primary care population in the area. The high participation rate and the demographic characteristics suggest that the findings are representative of Gothenburg and that the results could be generalized to an urban Western European population.

Using validated screening instruments to increase the detection of depression in primary care has long been debated, and the effects of screening on clinical outcomes have shown mixed results.[36–39] The instruments have similar operating performances, and there is little evidence to recommend one screening instrument before another.[40–42] The MADRS-S self-rating instrument is recommended for use in Swedish primary care settings, and the 2 involved general practitioners were familiar with the instrument. Additional reasons for the choice of this instrument were its properties for detecting depression and measuring severity and change under treatment.[29,30] Our intention with the cutoff point ≥ 13 was to study patients with depressive symptoms indicating any depressive disorder. Although they have high rates of spontaneous improvement, milder depressive disorders deserve attention since

they are associated with increased morbidity and elevated risks of developing major depression.[23,33,34]

The PRIME-MD patient questionnaire has only 2 questions regarding depression but showed in one study similar test characteristics as those of 6 common case-finding instruments for major depression. The values were stable over different age groups.[42] It was chosen because it is easily self administered and includes several somatic symptoms that we wanted to study in association with depressive symptoms.

The use of MADRS-S for rating depressive symptoms cross-sectionally might be one limitation of this study. The exclusion of the questions regarding alcohol in the PRIME-MD screening instrument might be another limitation: they might have revealed additional information about this population had they been included. Also, the greater number of women than men included in the study could be a weakness, but this confirms earlier findings that women in this age group attend primary care more frequently than men and that average age is higher in women.[33]

In conclusion, the findings suggest that general practitioners in their consultations should try to identify psychosocial factors and somatic symptoms associated with depressive symptoms and should be particularly vigilant for depression in those taking sedative/hypnotic medications.

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents that is outside U.S. Food and Drug Administration–approved labeling has been presented in this article.

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