Comparison of anxiety symptoms in spouses of persons suffering from dementia, geriatric in-patients and healthy older persons

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ABSTRACT

Objective:*To describe and compare anxiety symptoms in spouses of persons suffering from dementia, geriatric in-patients and healthy controls, and to study possible risk factors associated with anxiety in these groups of older people.*

Method: *The participants were 70 years and above: 1) 76 spouses of persons with dementia recruited from a memory clinic, 2) 98 in-patients without dementia but suffering from one or more chronic diseases, who were admitted to a geriatric department of an acute hospital, and 3) 68 healthy elderly people recruited from day-centres. The State-Trait Anxiety Inventory (STAI-X-1, 12-item) was used to tap anxiety symptoms.*

Results: *Spouses of persons suffering from dementia expressed the same degree of anxiety symptoms as geriatric patients, and anxiety in these two groups differed significantly from the healthy elderly persons. In an adjusted linear regression analysis, anxiety, expressed as a high score on STAI-X-1, was associated with female gender (ß 0.16, p=0.01); being a spousal carer (ß 0.49, p <0.001) and being a geriatric patient (ß 0.57, p<0.001).*

Conclusion: *Spouses of persons suffering from dementia reported as much anxiety symptoms as geriatric in-patients and both groups reported significantly more symptoms of anxiety than healthy older persons without caring obligations. The mental health nurses should include assessment of carers' anxiety as routine.*

KEY WORDS: carer, dementia, anxiety.

INTRODUCTION

Worldwide the ageing part of the population increases rapidly, and thus also the number of persons suffering from dementia (1). Europe is currently, after Japan, the most aged region. A considerable part of the care of persons with dementia is informal and performed by close family members. The majority of persons suffering from dementia are 65 years and above. More than 60% of the carers are spouses or cohabitants, which means that most of them are older persons (2).

In Norway the Coordination Reform was set out in 2012. It intends to meet the needs and patients' values in the local context, and emphasizes best home care services possible (3). This challenges the advanced expertise of health care professionals, as well as the informal carers.

ANXIETY OF OLDER PEOPLE

Few studies have been published concerning anxiety in older persons (4;5). This might be explained by the relatively high association between depression and anxiety (6-9). Instead of treating anxiety as a separate condition, anxiety is seen as part of a depressive disorder. Furthermore, in the hierarchic structure of DSM IV, depression is defined as superior to anxiety. If the criteria for both conditions are fulfilled, it is recommended that depression should be chosen as the primary diagnosis (10). Another reason for neglecting anxiety, especially among older persons might be that anxiety is considered to be a normal consequence of aging, due to the person's physical as well as psychological frailty. Anxiety in older person is often overlooked by professional health personnel. However, there is some evidence that anxiety may complicate the course of physical and mental disorders (8) and thus decrease the quality of life.

Cooper and co-authors (11), who performed a systematic review of anxiety among carers of persons suffering from dementia, found that anxiety is more common among carers than in matched controls without carer obligations. The authors remain inconclusive concerning the possible risk factors of anxiety in the carers. However, the carers of persons suffering from dementia appraise themselves as healthy, but the caring time might be long-lasting with insidious strain and increased risk of health problems (12).

We therefore hypothesized that spousal carers have higher levels of anxiety symptoms than healthy controls, but lower level than in geriatric in-patients suffering from acute chronic illness. Thus, this study has the following objectives; i) to describe and compare anxiety symptoms in spouses of persons with dementia, healthy controls and geriatric in-patients, and ii) to study possible risk factors associated with anxiety in these groups.

METHODS

Participants

The data came from three sources;(i) spouses of persons with mild to moderate dementia who were referred to memory clinics, (ii) geriatric in-patients, admitted to a geriatric unit due to physical illnesses, and (iii) healthy controls, recruited from senior day- centres in the city of Oslo, Norway.

Seventy-six spouses of persons suffering from dementia according to the ICD-10 criteria of dementia were recruited from seven memory clinics and two comprehensive educational programmes. The spouses were 70 years old and above and lived in the same household as the patient. They were all considered to be healthy.

The geriatric in-patients were recruited from the Department of Geriatric Medicine, Oslo University Hospital. Criteria for inclusion were: aged at least 70 years, suffering from one or more chronic somatic disease(s), able to hear and write, no cognitive impairment according to a short version of the Mini-Mental State Examination (MMSE) where we

used the cut-off 9/10 (13), no psychosis, no alcoholism, no recent stroke (during the past 12 months), not in a terminal state, expected to be discharged alive, no severe life events (e.g. loss of children or spouse) during the last six months and no known post-traumatic stress disorder (e.g. as a consequence of war experiences). Ninety-eight patients met these criteria and were enrolled in the study (7).

The healthy control group consisted of 68 fit and able people at least 70 years old and living at home. They were independent on self-care tasks as bathing, dressing and functional mobility. They were matched with the geriatric patients according to age and gender. The healthy controls were recruited from three senior-citizen day-centres in Oslo. They were not suffering from any chronic somatic disease(s), nor did they use any psychoactive drugs. Further description of how the data were collected is reported elsewhere (7;14;15)

The South-Eastern Norwegian Regional Committee for Medical and Health Research Ethics and the Norwegian Data Inspectorate approved the studies. The participants received oral and written information before giving their written consent to being included in the studies.

Measurements

The State Trait Anxiety Inventory (STAI) (16) was used to tap anxiety symptoms. STAI is a scale widely used to assess anxiety symptoms, also in older persons (17) and has been adapted and translated into more than 60 languages, including Norwegian. The instrument consists of two subscales each of twenty items: one for enduring (trait) anxiety and one for current (state) anxiety. The items were scored at four levels of intensity from 1 ("not at all") to 4 ("very much"). We measured the state anxiety from an abbreviated version of the scale (STAI-X-1). The scale had twelve items which made sum-scores between 12 and 48 possible (18).

The demographic details of age, gender, marital status (married, widowed, not married, divorced), living arrangements (living alone and living together with others) and education (cut-off 8/9 years) of each of the three groups were collected.

Statistics

The statistical analysis was performed with the statistical programme SPSS, version 16.0. The STAI-X-1 score and age were normally distributed. To identify possible differences between the three groups, categorical data were analysed with Chi-square tests, and Cochrane–Armitage tests were used for linear association in 2 x n tables. For multiple testing we considered a p-value < 0.01 as statistically significant. For continuous data we used ANOVA for normally distributed data and Kruskal–Wallis tests for data with a skewed distribution. To compare the scores on each item of the STAI-X-1 scale between the spouses and the in-patients and the controls, we used ANOVA. For the purpose of identifying possible risk factors for anxiety, multiple linear regression analysis was performed. Dummy-variables were created for each of the three groups, e.g. carer yes=1, no=0, geriatric patient yes=1, no=0 and controls yes=1, no=0. Variables with a p-value equal or less than 0.20 in the bivariate analyses were entered as independent variables, together with the participants' age and gender. Variables with a p-value equal or lower than 0.05 in the multivariate analysis were kept in the model and checked for intercorrelations. In order to explore any tendencies of the non-significant variables, they were put back into the models one by one to assess their relationship to the significant variables. Goodness-of-fit of the models was assessed by residual plots.

RESULTS

Background characteristics of the three groups are reported in Table 1, showing that the spouses of persons suffering from dementia did not completely match the other two groups. They were significantly younger than the geriatric patients and the healthy controls and there were more males among them, whereas their educational level was similar to that of the healthy controls.

The calculations of Chronbach's alpha of the STAI-X-1 for each group showed the internal consistency to be satisfactory; 0.90 for the spouses, 0.88 for the geriatric in-patients and 0.74 for the healthy controls.

The results of the comparison of the items' mean scores on the STAI-X-1 by means of ANOVA are shown in table 2. We found for the comparison between the spouses and the geriatric in-patients that the geriatric in-patients scored significantly higher on the items 'I feel at ease' ($p<0.001$), while the spouses scored significantly higher on the item 'I feel frightened' ($p=0.009$). Comparing the healthy controls with the spouses and the geriatric in-patients we found that they scored significantly lower (at $p<0.001$ level) on all items of the STAI-X-1 scale.

In table 3 the associations between STAI-X-1 and possible explanatory factors are reported. The mean STAI-X-1 for all the three samples was 20.7 (SD=7.6). The females reported more anxiety (mean 21.3 (SD 7.85)) than the males (mean 19.6 (SD 6.99)), expressed as a higher score on STAI-X-1; however, this difference was not significant in the unadjusted analysis ($p=0.09$). The sum score on the STAI-X-1 did not differ between the spousal carers, which was 22.5 (SD 7.4), and geriatric patients 23.4 (SD 7.6) ($p=0.40$, 95% CI -3.3 – 1.3). However, these two groups of older persons reported significantly more anxiety than the healthy controls, whose score was 14.7 (SD 3.0).

Other characteristics of the three groups such as age, marital status, whether or not the persons lived alone did not influence the sum score on STAI-X-I.

Lastly, we carried out a multiple (adjusted) linear regression analysis with the STAI-X-1 sumscore for all the participants as the dependent variable. We found that gender (the person being a female), being a spouse of a patient with dementia and being a geriatric in-patient were each associated with anxiety as expressed as a higher score on STAI-X-1. This model explained 25 % of the variance.

DISCUSSION

As far as we know this is the first study comparing the occurrence of anxiety symptoms by means of the state part of the STAI-X-1 in spouses of persons suffering dementia with older people suffering from

Table 1. Characteristics of the three groups.

		All, N=242	Spouses of persons with dementia N=76	Geriatric patients N=98	Healthy controls N=68	p-value
Age, mean (SD)[a]		79.8 (6.1)	76.6 (4.7)	81.8 (5.8)	80.5 (6.6)	<0.001
Gender[b]	Females (%)[a]	148 (61.2)	36 (47.4)	36 (67.3)	46 (67.6)	0.01
Age group[b]	< 80 years, n (%)	121 (50.0)	57 (75.0)	36 (36.7)	28 (41.2)	<0.001
Marital status[b]	Married, n (%)	119 (49.2)	76 (100)	27 (27.6)	16 (23.5)	<0.001
Living arrangement[b]	Alone, n (%)	109 (45.0)	0 (0.0)	64 (65.3)	45 (66.2)	<0.001
High-school[b]	< 9 years, n (%)	77 (32.2)	12 (16.0)[1]	45 (45.9)	20 (29.4)	0.08

SD = Standard deviation; [a] = comparison performed with ANOVA; [b] = comparison with chi-square with linear trend; [1] = 3 missing

Table 2. Comparison of mean STAI item scores of spouses of persons with dementia (PWD) with geriatric patients and healthy controls.

	(I) Group	Mean STAI (SD) – spouses	(J) Group	Mean Diff. (I-J)	p-value	95% CI
I feel calm	Spouses of PWD	2.10 (0.94)	Geriatric patients	-0.09	1.00	-0.40, 0.21
			Healthy controls	0.61*	<0.001	0.27, 0.96
I feel secure	Spouses of PWD	1.78 (0.97)	Geriatric patients	0.15	0.62	-0.13, 0.43
			Healthy controls	0.67*	<0.001	0.36, 0.98
I am tense	Spouses of PWD	2.01 (0.92)	Geriatric patients	-0.15	0.68	-0.46, 0.15
			Healthy controls	0.81*	<0.001	0.47, 1.15
I feel at ease	Spouses of PWD	2.01 (0.97)	Geriatric patients	-0.51*	<0.001	-0.82, -0.20
			Healthy controls	0.76*	<0.001	0.42, 1.10
I feel upset	Spouses of PWD	1.42 (0.80)	Geriatric patients	0.12	0.58	-0.10, 0.34
			Healthy controls	0.38*	0.001	0.14, 0.63
I am currently worrying over possible misfortunes	Spouses of PWD	1.42 (0.80)	Geriatric patients	0.01	1.000	-0.29, 0.32
			Healthy controls	0.71*	<0.001	0.37, 1.05
I feel frightened	Spouses of PWD	1.55 (0.70)	Geriatric patients	0.25*	0.03	0.02, 0.48
			Healthy controls	0.58*	<0.001	0.32, 0.84
I feel self-confident	Spouses of PWD	2.11 (0.96)	Geriatric patients	-0.05	1.00	-0.38, 0.27
			Healthy controls	0.59*	<0.001	0.24, 0.95
I feel nervous	Spouses of PWD	2.11 (0.96)	Geriatric patients	0.5	1.00	-0.25, 0.34
			Healthy controls	0.72	<0.001	0.40, 1.05
I am jittery	Spouses of PWD	1.59 (0.79)	Geriatric patients	-0.04	1.00	-0.32, 0.24
			Healthy controls	0.62*	<0.001	0.31, 0.93
I am relaxed	Spouses of PWD	2.18 (0.98)	Geriatric patients	-0.26	0.11	-0.56, 0.04
			Healthy controls	0.85*	<0.001	0.52, 1.18
I feel steady	Spouses of PWD	1.97 (0.86)	Geriatric patients	-0.05	1.00	-0.33, 0.23
			Healthy controls	0.81*	<0.001	0.51, 1.12
STAI-sum	Spouses of PWD	22.5 (7.43)	Geriatric patients	-0.60	1.00	-2.86, 1.67
			Healthy controls	8.13*	<0.001	5.62, 10.63

chronic somatic condition and a group of healthy older persons. Our main finding is that the spousal carers scored as high as the hospitalized geriatric patients on the STAI-X-1 scale. This was unexpected, since the spousal carers are usually seen as healthy older people. Most of the studies concerning carers have focused on their burden and depression. In general, carers are usually more concerned about their ill family members and do often show a tendency of neglecting their own health. The fact that the carers of persons suffering from dementia reported the same level of state anxiety symptoms as the geriatric patients is worrying.

The differences in the pattern may be important. The geriatric patients scored significantly higher on one item which tap absence of anxiety symptoms, while the spouses scored significantly higher on the item 'I feel frightened'. State anxiety is defined as "a temporal cross-sectional emotional stream-of-life of a person, consisting of tension, apprehension, nervousness, worry and activation or arousal of the autonomic nervous system" (16;19). The state part of the STAI measures what the person feels at the moment and is, therefore, considered to be a useful instrument to tap anxiety associated with threatening or stressful events in a person's life, such as physical illnesses. The finding that the spouses report a higher score on the item 'I feel frightened' than the geriatric in-patients is, therefore, surprising. It may be that the spouses' situation is scary, since the consequences of dementia are dramatic if there are changes in the loved one's personality and behaviour, while the geriatric in-patients might have felt safe in hospital.

Many of the spouses have a stressful everyday life with a heavy burden of care. However, some authors have suggested an association between burden of care and depression, rather than anxiety (19). We believe that both associations exist, but we need an instrument that can measure anxiety symptoms in the carers. According to several studies, anxiety symptoms are prevalent among older people suffering from many chronic physical disorders (7;21-23). Kvaal et al. (7) found that older patients admitted to a geriatric ward with one or more chronic physical disorders reported high levels of anxiety symptoms according to the state part of the STAI, probably due to the acute exacerbation of the somatic symptoms. It is also well established that caring for a close family member suffering from dementia is distressing and associated with an increased risk of health problems (15;24-26). We did not examine the occurrence of somatic health-status in the spousal carers, and cannot confirm or reject this statement in the present study.

The main factors contributing to the high level of state anxiety accor-

Table 3. Bivariate associations between STAI and possible explanatory factors.

Variables	Mean (SD)	p-value
Gender[a]		
Female (N=148), mean (SD)	21. 3 (7.85)	0.09
Male (N=94), mean (SD)	19.6 (6.99)	
Civil status[b]		
Married (N=120)	21.5 (7.48)	0.18
Single (N=10)	18.8 (8.18)	
Divorced (N=13)	22.9 (7.73)	
Widower (N=99)	19.63 (7.50)	
Living alone[a]		
Yes (N=109)	19.9 (7.57)	0.15
No (N=133)	21.3 (7.52)	
High school[a]		
Yes (N=65)	19.3 (7.27)	0.09
No (N=176)	21.2 (7.63)	
Age[a]		
< 80 years old (N=121)	21.2 (7.41)	0.26
≥ 80 years old (N=121)	20.1 (7.69)	
Group[b]		
Carers (N=76)	22.5 (7.43)	≤ 0.001
Geriatric patients (N=98)	23.4 (7.60)	
Healthy controls (N=68)	14.7 (3.04)	

[a] = T-test; [b] =ANOVA

Table 4. Multiple linear regression with adjusted associations between STAi-12 and characteristics of the three groups.

	ß	STAI t	p-value
(Constant)		2.42	0.02
Age	-0.07	-1.09	0.28
Gender (female=0, male=1)	0.16	2.62	0.009
Geriatric in-patients	0.57	8.26	<0.000
Carers of persons suffering from dementia	0.49	5.25	<0.000
High-school or more	0.02	-0.38	0.70
Married	0.13	0.82	0.41
Widower	0.10	1.02	0.32
Living alone	0.00	0.01	0.99
Adjusted R2 (%)		25	

ding to the STAI-X-1 were being spousal carers of persons with dementia or geriatric patients. In this study we only found a weak association between state anxiety and being female. These results partly contradict the results of previous studies, which have reported more distress, depression and anxiety in female than in male carers (27-29).

The three factors, being female, a spousal carer and a geriatric in-patient, explained only 25 % of the variance in the adjusted linear regression analysis. Therefore, we must assume that there are several other factors contributing to the high level of anxiety among spousal carers. The characteristics of the carers as well as the condition of the partner with dementia may explain the level of anxiety among the carers. A common factor may be the uncertainty and lack of control associated both with a serious medical condition and with the carer situation. On one hand, seriously ill patients are struggling with thoughts of death and dependency on help due to increasing frailty and functional disability; and, on the other hand, various psychiatric and behavioural symptoms associated with dementia that occur suddenly may contribute to anxiety among the carers.

The study has some limitations. The spouses were younger than both the geriatric in-patients and the healthy controls. Old age is a risk factor for frailty and frailty is associated with anxiety. However, age did not turn out to be a significant variable in the adjusted linear regression analysis.

Implications for mental health nursing

Assessment of the persons with dementia should include qualitative as well quantitative measurements. The Collaboration Reform emphasizes that the care should be in the local context, which often means at home. In general, this would lead to increased burden for the carers, especially when persons suffering from dementia also have co-morbid anxiety. The mental health nurses should in their routine-assessment be aware of carer's burden and possible anxiety. The Norwegian Centre for Ageing and Health, and the Norwegian Directorate of Health have recommended a standard assessment of dementia work-up in the local authorities in Norway, where assessment of carer's anxiety are included (30, 31).

Conclusion

Older spouses of persons suffering from dementia reported significantly more symptoms of anxiety than healthy older persons without caring obligations. The anxiety they reported was as pronounced as in older adults admitted to a geriatric department because of an acute exacerbation of somatic disorder(-s). As anxiety symptoms and disorders can lead to a poorer quality of life as well as a reduced capacity to care for the beloved one, it is important to take these symptoms into consideration when outlining interventions for the patients with dementia and their carers.

AUTHORS' CONTRIBUTIONS

K. Kvaal collected the data of the geriatric in-patients and the healthy controls. I. Ulstein collected the data of the spouses. All authors designed this study, were responsible for the statistical design and analysis, and wrote the paper.

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CONFLICT OF INTEREST DECLARATION

None

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