Untreated Depressive Symptoms Significantly Worsen Quality of Life of the Elderly and may Lead to the Misdiagnosis of Dementia: A Cross-Sectional Study

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Abstract

Background: Several studies demonstrated the role of depressive mood and cognitive impairment in the background of elevated mortality and decreased Quality of Life (QoL) of the elderly.

Methods: In the framework of the ICT4Life project self-administered questionnaires and clinical screening tools were used to assess QoL, depressive symptoms and cognitive functions of 60 elderly over the age of 65.

Results: Males found to be depressed and cognitively declined more frequently; and had higher scores on the depression and lower on the QoL scales. Depressed elderly had lower cognitive levels and their QoL was significantly poorer than that of the non-depressed subjects. Depressive disorders were detected in a quarter of the elderly, and the majority of them did not receive adequate antidepressant medication.

Conclusions: Close correlation between depression and cognitive impairment was confirmed, as well as the key role of depression in the background of QoL decline. Results also highlighted the problems of recognition and adequate treatment of depression and cognitive decline in elderly, which can be further complicated by the common symptoms of depressive pseudo-dementia. Early recognition of depressive symptoms is important not only to treat the underlying mood disorder, but also to improve QoL of the elderly.

Background

In our aging society, not only the maintenance of health of the elderly, but also the restoration of their quality of life (QoL) has become an important goal. Therefore, many studies aimed to detect factors influencing QoL, as those may have preventive and therapeutic significance. Several studies have demonstrated the role of depressive disorders and cognitive impairment in the background of elevated mortality and decreasing QoL of the elderly [1–4].

The close correlation between depression and dementia is well-known however, the link between them is still unclear, and a subject of intensive research. According to a recent meta-analysis, depression in elderly can be an important risk factor for several types of dementia [5]. Furthermore, it was suggested that the same risk factors may be present in the background of dementia and depression in elderly, or even the same pathophysiological impairments may lead to both conditions [6–8]. Based on these findings, depression may be an early marker of mild cognitive impairment and incipient dementia [9]. Furthermore, depression and dementia are also stressed as one of the most important risk factors for suicide in elderly [10].

Based on the above, we investigated depressive symptoms, cognitive functions and QoL of the elderly population, and we also assessed the occurrence of the diagnosed and treated mental disorders and psychotropic medications. The primary aim of our study was to evaluate the frequency of depressive and cognitive symptoms among elderly, and to investigate whether those are recognized and adequately

treated or not. In addition, we also investigated which psychopathological symptom affect their QoL to the most extent. Based on the literature, our hypothesis was that in many cases cognitive decline and mood disorders are not recognized and treated, and these both negatively affect the QoL of the elderly [11, 12]. The significance of our research is emphasized by the fact that the early detection and adequate management of affective symptoms in elderly may contribute to the improvement of mental disorders and their QoL.

Methods

In the framework of the ICT4Life project, self-administered questionnaires and clinical screening tools were used to assess QoL, depressive symptoms and cognitive functions of 60 elderly (47 females and l3 males) over the age of 65, who lived independently in their own apartments and participated in the elderly club of the Integrated Daily Social Institution in Pecs, Hungary [13]. Participation was voluntary and anonymous following the signature of the informed consent form (ICF). The study was approved by the local Ethics Committee.

Two tests were used to assess QoL of the elderly, the abbreviated version of the Older People Quality of Life (OPQOL-Brief) and the Quality of Life in Alzheimer's Disease (QOL-AD) questionnaires. The former is a 13-items short version of the well-known QoL scale (OPQOL-35), which has beneficial psychometric properties [14]. The QOL-AD questionnaire was specifically developed to assess the QoL of people with dementia, especially Alzheimer’s disease. It is based on a semi-structured interview, in which 13 items regarding QoL are covered. Evaluation of the questions is based on a four-grades Likert scale ranging from bad to excellent [15]. The Mini-Mental State Examiner (MMSE) was used to evaluate the cognitive levels of the elderly. The total score is 30 points with a 24 points of cut-off score for dementia [16]. Depressive symptoms and the severity of depression was measured by the 15-items Geriatric Depression Scale (GDS) [17]. The short version of the GDS can be easily applied to patients even with mild or moderate cognitive decline as well; and is considered to be a useful tool to differentiate depressed elderly from the non-depressed ones [18].

We also assessed the socio-demographic characteristics, the physical and mental disorders, and medication usage with semi-structured interviews. The review of medical records was also completed in order to control data captured during the semi-structured interviews.

The data was analysed by using SPSS 20.0. We performed descriptive statistical analyses, $\chi 2$-probe and Mantel-Haenszel test were used to identify group differences, and ANOVA for comparison of mean values.

Results

Regarding *gender differences*, the mean age of men was lower than that of women (74.08 vs. 77.96 years). Common diseases (such as hypertension, rheumatological problems, cardiac diseases,

arteriosclerosis, etc.) characterized a significant proportion of both elderly males and females, as did other physical comorbidities. Both women and men took a number of medications because of their several illnesses. In addition to medications taken for the underlying physical conditions, the use of analgesics and psychotropic medications was also significant (Table 1.). Males had more previous (46.2% vs. 36.2%) and current (30.8% vs. 23.4%) psychiatric treatments. However, no significant gender differences were found in the occurrence of the already diagnosed mental disorders, in the number of previous in-patient or out-patient psychiatric treatments, or in the current use of psychiatric medications (Table 1.). Among mental disorders in the patients' history, addictions were more common among males (15.4% vs. 0%), while depression (21.3% vs. 15.4%) and dementia (21.3% vs. 7.7%) in females.

Table 1
The main characteristics of the elderly

	Male n = 13 (%)	Female n = 47 (%)	Total n = 60 (%)	Chi-square	Sig.	Mantel-Haenszel test (Male = 1)	
						OR	SIG
Dementia (MMSE)	7 (53.8)	23 (48.9)	30 (50)	0.001	0.617	0.986	0.982
Depression (GDS)	7 (53.8)	19 (40.4)	26 (43.3)	0.74	0.29	0.582	0.39
Psychiatric treatment (previous)	6 (46.2)	17 (36.2)	23 (38.3)	0.429	0.365	0.661	0.514
Psychiatric treatment (current)	4 (30.8)	11 (23.4)	15 (25)	0.295	0.415	0.688	0.589
Mental disorder (patient's history)							
Depression	2 (15.4)	10 (21.3)	12 (20)	0.221	0.488	1.486	0.64
Dementia	1 (7.7)	10 (21.3)	11 (18.3)	1.255	0.247	3.243	0.285
Addiction	2 (15.4)	0 (0)	2 (3.3)	7.48	0.44	-	-
Psychosis	1 (7.7)	3 (6.4)	4 (6.7)	0.028	0.634	0.818	0.867
Psychopharmacologic medication (current)	7 (53.8)	25 (53.2)	32 (53.3)	0.002	0.608	0.974	0.967
Anxiolytic	2 (15.4)	11 (23.4)	13 (21.7)	0.386	0.422	1.618	0.538
Hypnotic	1 (7.7)	3 (6.4)	4 (6.7)	0.028	0.634	0.818	0.867

Pearsons chi-square test and Mantel-Haenszel test

	Male n = 13 (%)	Female n = 47 (%)	Total n = 60 (%)	Chi-square	Sig.	Mantel-Haenszel test (Male = 1)	
						OR	SIG
Antidepressant	3 (23.1)	8 (17)	11 (18.3)	0.249	0.443	0.684	0.619
Antipsychotic	3 (23.1)	6 (12.8)	9 (15)	0.849	0.299	0.488	0.364
Pearsons chi-square test and Mantel-Haenszel test							

About half of both women and men took some *psychotropic medications* (mostly anxiolytics) currently (males: 53.8%, females: 53.2%). Although, there was no significant difference between males and females in the occurrence of previous psychotic disorders (7.7% vs. 6.4%) and depression (15,4% vs. 21,3%), men were more likely to take antipsychotics (23.1% vs. 12.8%) and antidepressants (23.1% vs. 17%); and less likely benzodiazepines (15.4% vs. 23.4%) (Table 1.).

Based on current assessments, the *cognitive test (MMSE)* detected cognitive impairment reaching the level of dementia in half of the elderly (males: 53.8%, females: 48.9%), while more than 40% of them (males: 53.8%, females: 40.4%) had depression according to the *depression screening tool (GDS)* (Table 1.). Although, there was no significant gender difference in the mean values of the individual scales (MMSE, GDS, and QoL), males found to be depressed and cognitively declined more frequently, and had higher scores on the depression scale (6.85 vs. 5.32) and lower on the QoL scales (OPQOL-Brief: 47.38 vs. 50.19; QUOL-AD: 29.27 vs. 32.1).

Elderly, who were screened to be depressed with the GDS were more likely to be treated either in the past (57.7% vs. 23.5%) or currently (34.6% vs. 17.6%), and they were also taking psychiatric medications much more frequently (73.1% vs. 38.2%) than those without depression (Table 2.). However, there was no significant difference in the use of benzodiazepines (23.1% vs. 20.6%) and antidepressants (19.2% vs. 17.6%), only antipsychotics were taken more frequently (34.6% vs. 0%) by depressed elderly. Previously diagnosed mental disorders (depression, dementia, psychosis) were more common in the group who were currently screened to be positive for depression, but the differences were not significant, not even for depression (depression: 26.9% vs. 14.7%; dementia: 23.1% vs. 14.7%; psychotic disorders: 11.5% vs. 2.9%), which may be also due to the low number of positive cases. However, cognitive decline reaching the level of dementia, as measured with the MMSE was more frequent among currently depressed – measured with GDS – elderly (61.5% vs 41.2%) (Table 2.). In the group of elderly screened to be positive for depression, the mean scores of the cognitive (MMSE) and the QoL scales were significantly lower (Table 3.).

Table 2
The main characteristics of elderly with and without current depression according to Geriatric Depression Scale

	Non-depressed n = 34 (%)	Depressed n = 26 (%)	SUM n = 60 (%)	CHI	SIG	Mantel-Haenszel test (non-depressesed = 1)	
						OR	SIG
Dementia (MMSE)	14 (41.2)	16 (61.5)	30 (50)	4.014	0.041	3.102	0.049*
Psychiatric treatment (previous)	8 (23.5)	15 (57.7)	23 (38.3)	7.274	0.007	4.43	0.009*
Psychiatric treatment (current)	6 (17.6)	9 (34.6)	15 (25)	2.262	0.115	2.471	0.138
Mental disorder (patient's history)							
Depression	5 (14.7)	7 (26.9)	12 (20)	1.374	0.198	2.137	0.247
Dementia	5 (14.7)	6 (23.1)	11 (18.3)	0.69	0.309	1.74	0.41
Psychosis	1 (2.9)	3 (11.5)	4 (6.7)	1.75	0.212	4.304	0.219
Psychopharmacologic medication (current)	13 (38.2)	19 (73.1)	32 (53.3)	7.186	0.007	4.385	0.009*
Benzodiazepine	7 (20.6)	6 (23.1)	13 (21.7)	0.054	0.53	1.157	0.817
Antidepressant	6 (17.6)	5 (19.2)	11 (18.3)	0.025	0.567	1.111	0.875
Antipsychotic	0 (0)	9 (34.6)	9 (15)	13.846	0	-	-
Pearsons chi-square test and Mantel-Haenszel test							

Table 3
Mean scores of the different scales completed by elderly with and without current depression according to Geriatric Depression Scale

	Non-depressed	SD	Depressed	SD	SUM	SD	F	SIG.
Age	76.35	9.09	78.12	6.26	77.12	7.98	0.716	0.401
MMSE	24.39	5	21.52	5.02	23.21	5.17	4.454	0.039*
GDS	2.79	1.59	9.38	2.73	5.65	3.93	137.614	0*
OPQOL-Brief	53.97	5.86	43.85	8.8	49.58	8.81	28.547	0*
QUOL-AD	34.07	4.8	28	5.34	31.42	5.85	17.137	0*
ANOVA test								

Discussion

As *limitations of the study*, first we highlight the low number of cases and the fact that only those elderly took part in the assessments, who signed the ICF, and whose mental and physical condition was good enough to be able to consent and complete the questionnaires and screening tests. However, our results can be considered representative of this population living independently in their own apartments and has contact with the elderly club. Furthermore, the primary purpose of using clinical screening tools was to assess depressive or cognitive symptoms. These tools cannot be used to clinically diagnose depression or dementia. Therefore, the finding of significant proportion of depressive symptoms does not necessarily mean that these elderly suffered from clinical major depressive disorder (MDD). However, it is important to highlight that although elderly were in regular contact with health care systems due to their physical illnesses, depressive symptoms were mostly unrecognized, thus specific psychiatric assessment and adequate treatment could not be performed. Lastly, the use of structured clinical interview may be of limited value in elderly because of the frequent occurrence of cognitive decline. Therefore, extensive review of medical records was also completed.

About *half of the elderly* took some psychotropic medications, and the same proportion had cognitive impairment reaching the level of dementia (mainly mild, according to the MMSE), and a little less (but more than 40%) found to be depressed by the GDS depression screening tool (Table 1.). Although it was somewhat more common to take antidepressant medications, there was a greater proportion of current depressive symptoms among males. No other major differences were found between *genders*.

In the elderly sample, out of the 11 patients taking *antidepressants* 6 patients received adequate antidepressant therapy and were without current depressive symptoms, which may indicate the efficacy of the antidepressant treatment in this elderly population (Table 2.). 26 elderly had current depressive symptoms, but only 9 of them contacted with a psychiatrist, and 7 of them had a clinical diagnosis of depression. Furthermore, only 5 of them received antidepressant medication (which also means that 21

elderly was found to have depressive symptoms, but their depression was not treated), but still they had some depressive symptoms. On the other hand, these patients with current depressive symptoms were more likely to receive *antipsychotic* medications. This indicates that only certain symptoms of the depressive disorder (sleep disturbance, anxiety, agitation) have been observed and treated (with antipsychotics), while the underlying mood disorder was not considered, and therefore the adequate treatment (antidepressant) was lacking. Theoretically, antipsychotics, especially first-generation ones may be associated with the occurrence of depressive symptoms, but it is unlikely, as all the patients treated with antipsychotics were treated with a second-generation antipsychotic, which rarely induce depressive symptoms. Moreover, as it is known from the literature and clinical practice, some second-generation antipsychotics may even improve depressive symptoms or can work as antidepressants [19]. So, these antipsychotics might be prescribed to treat depression in the elderly. Although, for many patients there was only partial response to these antipsychotic or antidepressant medications, as – at least some of the – depressive symptoms were still present.

Based on our analysis, among *elderly with current depression* (according to the GDS) cognitive decline (assessed with the MMSE) was significantly more frequent and more pronounced, but this was not recognized and treated. In line with previous literature data, the results of this study showed that depressed (according to the GDS) elderly had lower cognitive levels and their QoL was also significantly poorer than that of the non-depressed (Table 2, 3.). Our results confirm close correlation between depression and cognitive impairment, as well as the key role of depression in the background of QoL decline [3, 20, 21]. On the other hand, it is well-known that reversible depression-related cognitive decline (also known as depressive pseudo-dementia) is often considered as true dementia and these patients do not receive adequate treatment for their mood disorder [22]. However, the depressive pseudo-dementia in old age seems to be a long-term predictor of true dementia [5, 23].

Conclusions

Our research refers to the problems of recognition and adequate treatment of depression in elderly, which can be further complicated by the also common symptoms of cognitive impairment among depressive patients (depressive pseudo-dementia) [7, 24]. As depressive symptoms may be the first signs of dementia [6], early recognition of depression is important not only to treat the mood disorder, but also for the early detection and treatment of cognitive impairment [5]. The preventive significance of our results is evidenced by the fact that the screening, treatment and follow-up of depressed elderly patients is of high importance not only to adequately treat the mood disorder and avoid the misdiagnosis of depressive-pseudodementia as true dementia, but also to improve the QoL of the elderly. Furthermore, it may be beneficial to prevent further cognitive decline [9, 22] and other complications, such as increased cardiovascular morbidity/mortality and suicide [10, 25].

Abbreviations

GDS: Geriatric Depression Scale

ICF: Informed Consent Form

ICT4Life project: Information and Communication Technology for Life project

MDD: Major Depressive Disorder

MMSE: Mini-Mental State Examiner

OPQOL: Older People Quality of Life

QoL: Quality of Life

QOL-AD: Quality of Life in Alzheimer's Disease

Declarations

Ethics approval and consent to participate:

This research was approved by the Regional and Institutional Research Ethics Committee, University of Pecs under reference number 6464.

Consent for publication:

Not applicable.

Availability of data and materials:

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

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Authors' contributions:

All authors read and approved the final manuscript.

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