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DEPRESSIVE SYMPTOMS OF ELDERLY PEOPLE BEFORE AND AFTER AN INTENSIVE CARE UNIT STAY

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ABSTRACT

Elderly survivors of critical illness often present depressive symptoms which have a significant impact on quality of life. **Objective**: To assess and compare depressive symptoms in people aged 65 years or older before and after ICU stay, as well as examining its prevalence. **Methods**: This is a cross-sectional, descriptive and comparative study and the sample consisted of 75 consecutive patients over the age of 64 years old who were discharged from the general and the cardiac ICUs, during three months. Depressive symptoms were assessed using the Geriatric Depression Scale, six months after ICU discharge and previous to ICU admission. **Results**: The percentage of depressive symptoms in participants was 36,00% before ICU admission and 30,70% at six months follow-up, indicating the comparison of depressive symptoms scores before and after ICU stay no significant statistical difference. **Conclusions**: Depressive symptoms are common in elderly patients from a general and a cardiac ICU, six months after discharge and before admission. At six months follow-up, depressive symptoms scores slightly decreased but did not change significantly from those prior to ICU admission. More research is needed on the diagnosis and treatment of depression in elderly ICU patients.

Descriptors: Elderly; depressive symptoms; critical illness; intensive care unit.

INTRODUCTION

Worldwide people are living longer as a result of economic progress, technological advances, and improved healthcare. However, people are living with co-morbidities and needing complex care interventions (Royal College of Nursing, 2013).

This issue leads to an increasing demand for healthcare resources, including intensive care (Conti, Merlani, & Ricou, 2012), where elderly represent around 30% to almost 50% of the total ICU population in Europe (Castelló, Cabello, Goixart, Llanes, & Rodríguez-Pozo, 2008; López-Soto, 2005). In this context, this phenomenon brings a major challenge which is the adequacy of health-care systems for the elderly (Chamie, 2010).

It is expected that after critical care people may recover pre-admission health status or in some situations improve, as a result of high level of care. However it is also possible that people who were admitted to one ICU may suffer important and unwanted alterations or sequelae. Mental disorders may be a psychological reaction to the emotional and physiologic stress of critical disease and its treatment (Jackson, Mitchell, & Hopkins, 2009).

Depression is a relevant mental outcome in patients who suffered critical illness and it is one of the most prevalent geriatric syndromes after critical illness in elderly patients (Bienvenu et al., 2012; Sacanella et al., 2011).

Geriatric syndromes consist of common clinical conditions in the elderly and are associated with significant morbidity, poor outcomes and worse quality of life (QL) (Vest et al., 2011). Moreover, depression has been associated with functional decline and new institutionalization in the older patients after critical illness (Balas et al., 2011; Bienvenu et al., 2012). In this way, depression has a relevant impact on quality of life of elderly who were admitted to one ICU (Bienvenu et al., 2012; Vest et al., 2011; Sacanella et al., 2011) and few studies have focused on depressive symptoms in these patients.

Taking into consideration that people over the age of 65 years are an important and increasing group of the ICU population (Conti, Merlani, & Ricou, 2012), assessing depressive symptoms in the elderly who were admitted to one ICU is determinant to know the impact of critical care in the quality of life of these patients and, consequently, improving healthcare quality for the elderly.

The aim of this study is to assess and compare depressive symptoms in people aged 65 years or older six months after ICU discharge and before ICU admission, as well as examining its prevalence.

METHODS

This is a cross-sectional, descriptive and comparative study to assess depressive symptoms in elderly patients, six months after ICU discharge (prospectively) and before ICU admission (retrospectively). The sample consisted of 75 consecutive patients over the age of 64 years old who were discharged from an ICU of the Oviedo's Hospital (Hospital Universitario Central de Asturias (HUCA)) in Spain, from the 1st December 2013 until the 28th February 2014.

Oviedo's hospital is a teaching and a third level reference hospital in Asturias, with two ICUs of 54 beds in total – the general ICU and the cardiac ICU.

The following were criteria for the inclusion of participants in the study:

- individuals aged 65 years old or older;
- individuals who had been discharged from one of the HUCA's ICUs six months before fulfilling the questionnaire;
- individuals who had valid phone number to be contacted;
- individuals who were able to understand and answer the questionnaire;
- individuals who agreed to participate in this study and who gave informed oral consent.

Exclusion criteria were:

- individuals who did not meet the inclusion criteria of this research study;
- individuals who had been readmitted to an ICU during the six months follow-up period (invalidating the assessment six months after ICU discharge);
- individuals who had more than one ICU admissions in the period of the study (it was only considered the last ICU stay whenever it allowed the six months follow-up assessment).

In this way, from 530 patients discharged from the HUCA's ICUs (between 01/12/2013 and 28/02/2014), 250 were aged 65 years or older, but 127 were unable to be invited to participate in the study. From the 123 patients invited to participate (directly or through a relative), 48 did not agree to participate or had no health conditions to participate in the study. Examples of these health conditions were respiratory disease with fatigue, disorientation in time, space, and/or person, convulsion, among others.

Therefore, 75 patients agreed to participate in this study and met all inclusion criteria (see Figure 1).

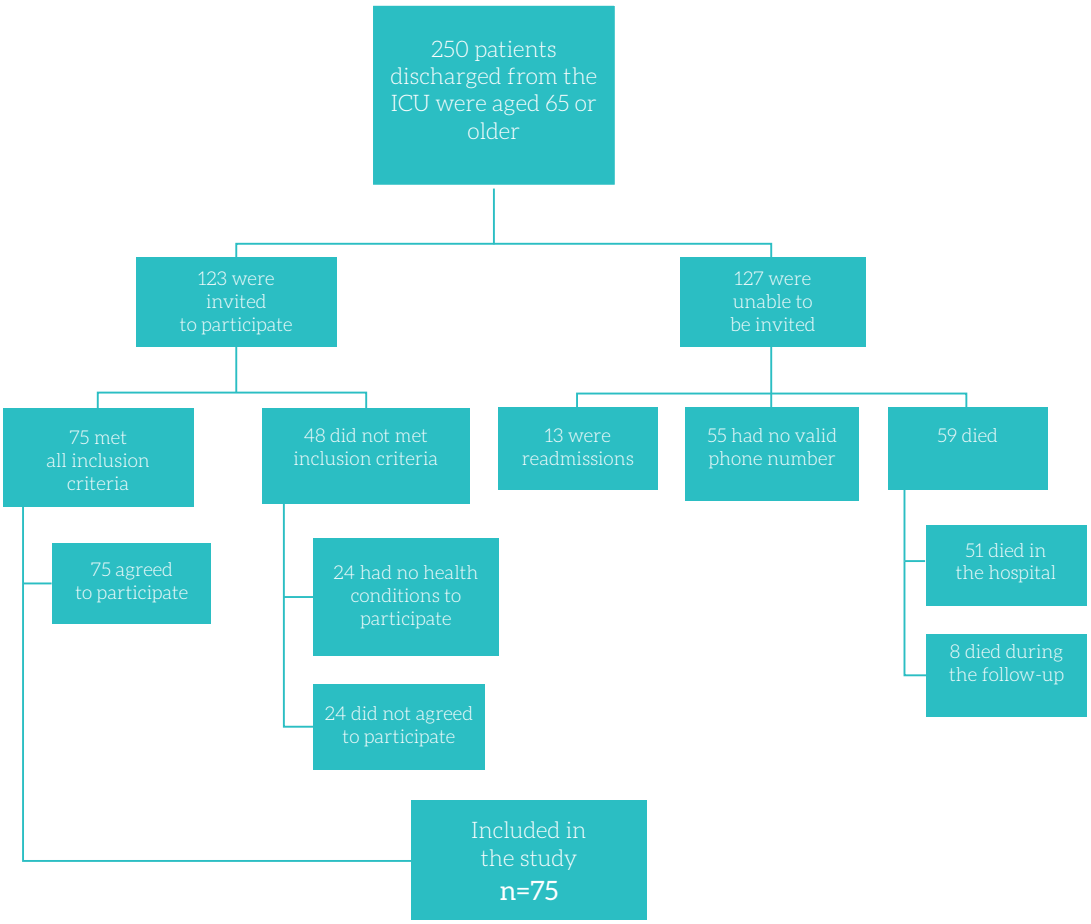


Figure 1. Flow chart illustrating the inclusion and exclusion of participants

The characterization of the participants was done using a socio-demographic survey and by consulting clinical files and database from HUCA (ICU of provenience; admission category; length of hospital and ICU; length of mechanical invasive ventilation; Acute Physiology And Chronic Health Evaluation (APACHE) II or Simplified Acute Physiology Score (SAPS) III scores at ICU admission and previous comorbid conditions). APACHE II score was used in participants from the general ICU and SAPS III was used in participants from the cardiac ICU, since these scoring systems were the ones used more by the physicians of each unit. Scores were retrieved from clinical database or calculated using standard methods available in the ICU (Cofiño, 2014), whenever there was adequate clinical data. Previous comorbid conditions were classified according to the International Classification of Diseases (ICD-10) of WHO (WHO, 2014).

Moreover, the Geriatric Depression Scale – GDS-15 – was used to assess depressive symptoms of participants which consists of 15 dichotomous questions (yes or no), scored positive as well as negatively. Scores indicate absence (0-4) or presence (5 or more) of depressive symptoms (Iglesia, Vilches, Herrero, Colomer, Taberné, & Luque, 2002).. The Spanish free version of this tool (GDS-VE) validated for Spanish population by Iglesia De la et al. (2002) was used by telephone interview with a timeframe of two weeks.

In case the patient or relative could not be reached the first time, at least three more calls were required (in total: 2 in the morning and 2 in the evening, in 2 different days), until the patient was considered excluded of this study.

Since depressive symptoms are considered subjective and personal, only patients completed the questionnaire. Data was collected after study approval by the Asturian Ethics Committee in Spain.

Data was coded, organized and analyzed using the Statistical Package for the Social Science (SPSS) version 22 software package. Entered data was checked by two people in order to avoid errors. Descriptive analysis was carried out regarding sociodemographic and clinical variables; as well as scores of depressive symptoms before ICU admission and six months after discharge. Normality distribution was assessed using Kolmogorov-Smirnov test, in order to decide the utilization of parametric or nonparametric tests. Since normality distribution was not found in the data, nonparametric tests were used. To assess if there was statistical significant difference between depressive symptoms scores, before ICU admission and after discharge, Wilcoxon test for paired samples was used. The level accepted for statistical significance was p value < 0,05.

RESULTS

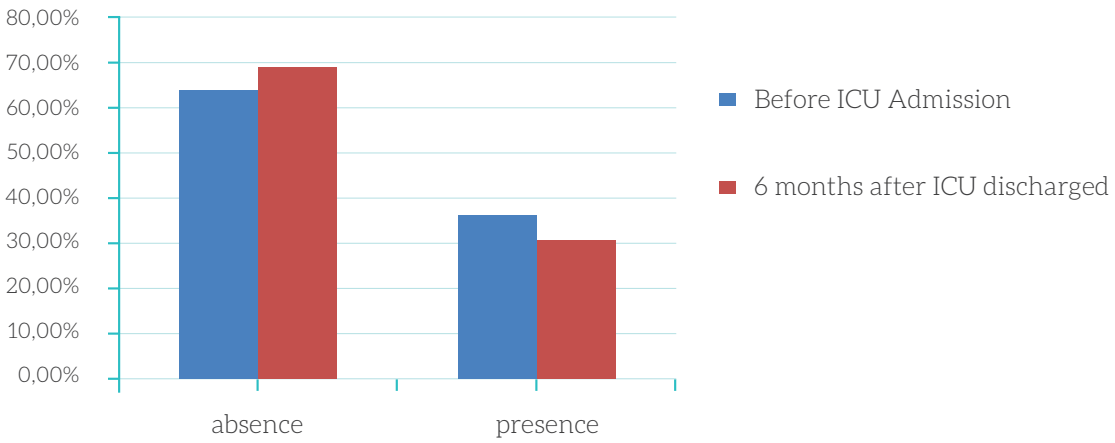
Mean age of participants was 73,71 (± 5.35) years old and the range from 65 to 89 years, 53,00% (n=40) were male and 47,00% (n=35) were female. Majority of interviewees were married or in union with someone (59,00%), belonged to the age interval between 70 to 74 years old (32,00%), had completed primary school education (69,30%), lived in urban nucleus (65,30%), with an individual and family monthly income between 500 and 999 euros (38,70%) and between 1000 and 1999 euros (37,30%), respectively. Previous occupation of the majority of participants belonged to elementary occupations group (such as agricultural labourer) (30,70%), being all respondents currently retired. 99,00% of interviewees were born in Spain.

With respect to the type of housing conditions, 96,00% of participants (n=72) lived at home, 2,70% (n=2) were institutionalized (nursing home and hospital), and 1,30% (n=1) did not answer. Almost all participants (97,30%/n=73) continued to live in the same residence where they lived before ICU admission. Majority of respondents were living with spouse (42,70%/n=32) or with relatives (including or not his/her spouse) (29,30%/n=22), 25,30% (n=19) were living alone, and 2,70% were institutionalized. Health insurance was predominantly government funding (96,00%/n=72), while 4,00% (n=3) had also private insurance.

Majority of participants (84,00%/n=63) had stated no stressful event in life in the six months after discharge which could have affected their health and/or QL, while in 16,00% (n=12) this fact was reported. Events reported were: 3 of them were left widowed and 9 of them had any health problem different from the reason of ICU admission (such as loss of vision, undergoing chemotherapy, surgical intervention and musculoskeletal diseases). In what concerns to clinical aspects, in the majority of participants, the ICU of provenience was the cardiac ICU (58,70%), the admission category was elective surgery (57,30%) and the reason for ICU admission was post-operative cardiac surgery (56,00%). In the sample studied, 77,30% of participants (n=58) received treatment with invasive mechanical ventilation (IMV) and most prevalent previous comorbid conditions were belonging to the circulatory system group (96,00%) and endocrine, nutritional and metabolic group (66,70%). Regarding length of stay, the means were 19,07 days in the hospital and 6,89 days in the ICU. Within the subgroup of those who received IMV, the mean of length of IMV was 88,34 hours (approximately 3 days and a half) and the range from 4 to 744 hours (± 31 days), being 4,75 the mean number of previous comorbid conditions.

Depressive symptoms of elderly people who were admitted to one ICU

In the population interviewed, the percentage of depressive symptoms, as assessed by GDS-VE, was 36,00% (n=27) before ICU admission and 30,70% (n=23) at six months follow-up (graphic 1)



Graphic 1: Depressive symptoms using GDS-VE before and after ICU stay.

Mean, median, standard deviation, minimum and maximum of the GDS-VE is presented in table 1, as well as the comparison between scores of depressive symptoms before and after ICU stay.

	Mean (± SD)		P*	Median		Minimum		Maximum	
	At 6M	Bef. ICU		At 6M	Bef. ICU	At 6M	Bef. ICU	At 6M	Bef. ICU
GDS-VE	3,68 (± 3,45)	3,61 (± 3,13)	0,886	2,00	3,00	0	0	14	12

Table 1: Geriatric Depression Scale (GDS-VE) scores of respondents, before and after ICU stay, according to mean, median, minimum and maximum values, and comparison between both assessments (p value). Oviedo, 2014.

SD: standard deviation; At 6M: six months after ICU discharge; Bef. ICU: before ICU admission; GDS-VE: Geriatric Depression Scale; * Wilcoxon test for paired samples

DISCUSSION

In this study, depressive symptoms outcomes are described, six months after ICU discharge and prior to ICU admission in elderly medical and surgical ICU survivors. These results evidence that the percentage of patients with depressive symptoms was higher before ICU admission (36,00%) than it was at six months follow-up (30,70%) (graphic 1), being mean scores of GDS-VE slightly higher at 6 months follow-up than before ICU admission (table 1). However the comparison of depressive symptoms scores indicated that there was no significant statistical difference between the depressive symptoms six months after ICU discharge compared to those before admission.

Results are according to Jackson, Mitchell, and Hopkins (2009) when stated that depression occurred in 25% to 50% of critical illness survivors. Additionally, a review study of the presence of depression in general ICU survivors found 28% of prevalence of a total of 1213 patients from 14 studies (Davydow, Gifford, Desai, Bienvenu, & Needham, 2009) which is similar to the prevalence in this study after ICU discharge. Also, identical prevalence (26%) was found in a study with ICU patients six months after acute lung injury (Dowdy et al., 2009). Considering other studies, higher prevalence of symptoms of depression was found where these symptoms occurred in 40% of adult trauma ICU survivors (moderately and severely injured) one year after hospital discharge (Jackson et al., 2011), as well as in 40% of patients who suffered acute lung injury, two years after critical illness (Bienvenu et al., 2012). This fact may be explained by the follow-up time since depressive symptoms may increase over time in ICU survivors and the assessment was performed earlier in the present study (six months after discharge) compared to the follow-up time in the quoted studies (one year and two years, respectively). As stated in a systematic review, even though the physical component improved slowly over one or two years in ICU survivors, mental and emotional aspects of health related quality of life (HRQL) declined for many more years (Oeyen, Vandijck, Benoit, Annemans, & Decruyenaere, 2010). These authors found that from one year follow-up, there is a tendency to find more emotional problems. Accordingly, Bienvenu et al. (2012) found that depressive symptoms last at least two years after critical illness.

Furthermore, Bienvenu et al. (2012) found higher depression prevalence in patients who suffered acute lung injury after critical illness than before ICU admission, which contrasts with the results of this study. In another research conducted in a medico-surgical ICU, adult survivors reported worse scores for depression 18 months after ICU discharge when compared to pre-admission levels (Lizana, Bota, De Cubber, & Vicent, 2003). In the present study, prevalence of depressive symptoms was higher before admission, possibly because majority of participants were admitted in the ICU due to post-operative cardiac surgery which is a surgery that often produce an improvement of QL scores (Nwaejike, Breen, Bonde, & Campalani, 2009; Schöttler et al., 2005). Before ICU admission, patients with important fatigue due to cardiac illness may feel increased depressive symptoms as a consequence of severe limitations in daily life which will no longer affecting their lives afterwards if surgery is successful. Another possibility is the fact that as participants suffered a critical illness, their internal standards and expectations may decrease (Oeyen, Vandijck, Benoit, Annemans, & Decruyenaere, 2010).

Similarly to previous studies with patients aged 80 years or older, three months and six months after ICU stay, mental health scores did not modified significantly (using SF-36) from the scores before ICU admission (Hofhuis, Van Stel, Schrijvers, Rommes, & Spronk, 2011),

which was also demonstrated in a systematic review of 21 studies involving 7320 adult ICU survivors (Dowdy et al., 2005).

One strength of this study is the fact that perceptions of depressive symptoms were exclusively answered by patients and not proxies avoiding potential bias of results (Oeyen, Vandijck, Benoit, Annemans, & Decruyenaere, 2010). Moreover, the baseline evaluation before ICU admission was performed which is crucial when studying the impact of critical illness (Oeyen, et al., 2010). Furthermore, taking into consideration that HRQL may decline over time (Hopman et al., 2014) and there are different QL scores in people with the same chronologic age (Conti, Merlani, & Ricou, 2012), it makes sense to return to a level similar to the one before admission in elderly patients, in order to know whether alterations reflect the impact of critical illness or a lower baseline level.

Additionally, this study has also several limitations. Firstly, since data collection included consecutive patients discharged from the ICU during 3 months, possible seasonal variations were not accounted. Furthermore, despite many authors defend that six months is the period of time when QL outcomes may improve and stabilize (Castelló, Cabello, Goixart, Llanes, & Rodríguez-Pozo, 2008; Conti, Friolet, Eckert, & Merlani, 2011), a longer follow-up may captured more relevant changes that have impact on depressive symptoms of elderly ICU survivors (Oeyen, et al., 2010). It is also necessary to admit a possible bias of the results for depressive symptoms prior to ICU admission, as information was collected retrospectively. Additionally, these data may not be applicable to all patients aged 65 years or older who were admitted to one ICU, since admission criteria and policies vary widely over countries and even within the same country.

It is important to note that, probably the ICUs admission criteria, select those patients who could benefit more from critical care. Thus, results reported may represent the healthier patients (with less and less severe comorbidities) and younger patients admitted to the ICUs.

Moreover, the participants of this study were ICU survivors willing to spent time to answer the questionnaire, thus they may not represents those who did not agree or had no health conditions to participate, who may present poorer outcomes, as already suggested by some authors (Oeyen, Vandijck, Benoit, Annemans, & Decruyenaere, 2010). Finally, encouraging results in the sample studied should be interpreted carefully since they may be related to the characteristics of the participants. Particularly, majority of respondents were admitted to the ICU due to post-operative cardiac planned surgery which is a surgery that often produce an improvement of QL scores (Nwaejike, Breen, Bonde, & Campalani, 2009; Schöttler et al., 2005), besides the fact that postoperative patients have reported the best subjective well-being among ICU survivors and specially those admitted due to schedule surgery have presented faster recovery (Schenk, Warszawska, Fuhrmann, König, Madl, & Ratheiser, 2012). As well, return home after ICU

discharge (reported by 97,30% of participants) has been associated with better outcomes among elderly ICU survivors, in comparison with patients discharged to a care facility (Conti, Friolet, Eckert, & Merlani, 2011). This rate is even higher than those reported in previous studies (de Rooij et al., 2008; Schrøder, Poulsen, & Perner, 2011).

Further studies are needed to identify QL outcomes of specific groups of patients who receive critical care assistance and to define intervention during and after ICU to promote patients' recovery. Therefore, a continuous and multidisciplinary long-term follow-up seems to be relevant to improve and maintain mental and physical QL outcomes in elderly ICU patients. For instance, making available a more complete diagnosis and treatment of depression in this population. Several studies have analyzed the incidence and risk factors for depression (Bienvenu et al., 2012; Dowdy et al., 2009), but no intervention studies to reduce depressive symptoms in elderly ICU survivors were found in the literature.

CONCLUSIONS

Depressive symptoms are common in elderly ICU survivors from a general and a cardiac ICU, presenting a prevalence of 36,00% before ICU admission and 30,70% six months after ICU discharge. At six months follow-up, depressive symptoms scores slightly decreased but did not change significantly from those prior to ICU admission. More research is needed on the diagnosis and treatment of depression in order to help elderly ICU patients improving their quality of life.

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