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REVIEW ARTICLE

Depressive morbidity among elderly individuals who are hospitalized, reside at long-term care facilities, and are under outpatient care in Brazil: a meta-analysis

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Objectives: i) To investigate studies published between 1991 and 2010 on the prevalence of depressive morbidity (major depressive disorder [MDD], dysthymia and clinically significant depressive symptoms [CSDS]) among elderly Brazilians assisted at healthcare facilities; ii) to establish the prevalence of depression and identify its related factors; and iii) to conduct a meta-analysis to assess the prevalence of depressive syndrome among elderly individuals assisted or hospitalized at healthcare facilities.
Methods: Studies were selected from articles dated between January 1991 and June 2010 and extracted from the MEDLINE, LILACS, and SciELO databases.
Results: The final analysis consisted of 15 studies, distributed as follows: i) four sampled hospitalized patients, totaling 299 individuals, and found a prevalence of CSDS varying between 20 and 56%; ii) four sampled outpatients, totaling 1,454 individuals; the prevalence of CSDS varied between 11 and 65%, and the prevalence of MDD varied between 23 and 42%; and iii) seven sampled elderly individuals residing in long-term care facilities (LTCF), totaling 839 individuals, and the prevalence of CSDS varied between 11 and 65%.
Conclusion: The present review indicated a higher prevalence of both MDD and CSDS among elderly Brazilians assisted at healthcare facilities.

Keywords: Geriatric psychiatry; mood disorders - unipolar; chronic psychiatric illness; inpatient psychiatry; epidemiology

Introduction

The population of developing countries is aging, which is a common phenomenon worldwide. Projections indicate that 28 million people over 65 years old will live in Brazil by 2030. Furthermore, the life expectancy of Brazilians increased from 66.9 to 73.2 years between 1991 and 2009.[1,2]

A recent meta-analysis of Brazilian studies stressed that the prevalence of depressive morbidity - which consists of major depressive disorder (MDD), dysthymia, and clinically significant depressive symptoms (CSDS) - among the elderly residing within the community exhibits large variation, with an average prevalence of 7% for MDD, 26% for CSDS, and 3.3% for dysthymia. Barcelos-Ferreira et al.[3] observed a mildly higher influence of female gender on the risk of MDD compared to the risk of CSDS in samples of community-based elderly people. Reports have indicated the underdiagnosis of depressive morbidity in this population, particularly among the elderly hospitalized due to clinical illnesses, who are at a higher risk of depression.[4] In addition, evidence has suggested that depressive disorder in the elderly is not appropriately addressed by clinicians. Half of the diagnosed elderly are not treated, and half of the treated individuals do not take their medication in the appropriate dose or for a sufficient amount of time to achieve the remission of symptoms.[4]

Although several studies have indicated a lower prevalence of MDD among the community-based elderly,[5] estimates based on studies of Brazilian populations tend to vary. Such variation is largely due to the instruments employed, the cutoff points established, and the severity of the assessed symptoms.[6] The results of epidemiological studies have shown that CSDS and minor depression are more frequent among the elderly than in young adults. In addition, the coexistence of cognitive impairment and mood changes might mask the signs of functional decline, hindering the identification of symptoms.[7]

Due to the lack of data on the prevalence of depression among the elderly assisted at healthcare facilities in Brazil, the present study assessed the

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prevalence of this condition among the Brazilian elderly assisted in the outpatient setting and those admitted to hospitals or long-term care facilities (LTCF). The aims of the present study are as follows: i) to investigate studies published between 1991 and 2010 on the prevalence of depressive morbidity among elderly Brazilians assisted at healthcare facilities; ii) to establish the prevalence of depression and identified associated factors (clinical findings and sociodemographic factors); and iii) to conduct a meta-analysis to assess the prevalence of depressive morbidity among the elderly who receive healthcare services.

Methods

Literature review

By means of a systematic review, studies published between January 1991 and June 2010 were extracted from the MEDLINE, Latin American and Caribbean Center on Health Sciences Information (LILACS) and Scientific Electronic Library Online (SciELO) databases. In the SciELO database, the terms depression or dysthymia or depressive symptoms, prevalence or epidemiology, and elderly were entered in the all indices field. In the LILACS database, the terms depression or dysthymia or depressive symptoms were used as subject descriptors, and epidemiology or prevalence and elderly were entered in the text words field. For MEDLINE, the Medical Subjects Headings (MeSH) terms prevalence, aged, inpatients or ambulatory care or long-term care, and depression or dysthymic disorder were used in all fields, Brazil was also entered in all fields, and 1991/01/01 to 2010/06/30 in Date - Publication.

In addition, a hand search of the references cited by the identified and selected studies was performed. The search of articles was conducted until June 2010, and selection was based on criteria previously defined for the present review. Studies that did not assess the prevalence of depression in the elderly were excluded. To widen the scope of the present study, chapters of books and postgraduate dissertations included in the LILACS database were also analyzed. Search and selection were performed in two phases followed by the identification of studies for inclusion in the meta-analysis. The search for studies was performed by a single author (Castro-de-Araújo), but it was repeated on three different days in an attempt to ensure the consistency of the assessed data.

After the search was conducted as described above, all population-based studies including adults aged 60 years old or older were identified, and all reports written in Portuguese, English, or Spanish were selected. In the next stage, original studies that discussed the prevalence of MDD, dysthymia, or depressive symptoms according to the DSM-IV and/or the International Classification of Diseases, Tenth Edition (ICD-10) criteria or by means of structured questionnaires were selected. In the case of depressive symptoms, we selected studies that utilized depression screening scales.

Data description

Studies were selected systematically and clustered according to the service modality (outpatients, inpatients, or patients in LTCF). Next, we classified the studies individually into the following three groups according to diagnosis: MDD, dysthymia, and CSDS. Whenever available, data on authors, geographical area of sample, size of sample, data collection and diagnosis instruments, and prevalence were identified. The prevalence rates were obtained directly from the articles, and in one case,[8] a request for information was sent to the authors.

Statistical analysis

A meta-analysis was performed for each service modality using the *R* version 2.10.1 software. The level of significance was established as alpha = 5%. To assess homogeneity among the studies, Cochrane's Q test and the I^2 index were calculated. The meta-analysis was performed using the random effects model.[9]

Results

The initial search identified 78 studies (20 in LILACS, 8 in SciELO, and 50 in MEDLINE). After excluding studies that appeared in more than one database or did not assess depression, 35 studies remained. Of these studies, that by Almeida (1999) was excluded because it assessed patients with dementia, seven studies were excluded because they assessed community-based elderly individuals,[10-16] and five were excluded because they did not report prevalence rates among the elderly.[17-21] Six studies that assessed samples comprising less than 100 individuals[22-27] were retained. In the study conducted by Porcu et al.,[24] elderly subjects were investigated in hospitals and LTCFs and the respective prevalence rates reported separately.

Therefore, the final analysis included 15 studies, distributed as follows: i) four studies sampling hospitalized patients, totaling 1,454 individuals; ii) four studies sampling outpatients, totaling 299 individuals; and iii) seven studies sampling patients in LTCFs, totaling 839 individuals (Table 1). A hand search of references cited by the selected studies, postgraduate dissertations, and book chapters did not yield any additional studies that met the inclusion criteria. The geographical origin of studies was distributed as follows: four studies from the state of Paraná (PR)[25,28]; two each from the states of São Paulo (SP),[29,30] Bahia (BA),[31,32] and Pernambuco (PE)[8,27]; and one study each from the states of Santa Catarina (SC),[22] Pará (PA),[23] and Rio de Janeiro (RJ).[33]

For CSDS screening, the 15- and 30-item versions of the Geriatric Depression Scale (GDS)[35,36] and the Hamilton Depression Scale (HAM-D)[37] were used.

The two studies that examined diagnoses of MDD applied interviews based on the ICD-10[38] and DSM-IV.[39] Almeida et al.[29] was the only study that assessed dysthymia, and found a frequency of 1.1% solely among female subjects.

Table 1 Studies on the prevalence of depression and CSDS among the Brazilian elderly

Study	Region*	Age	n	Males (%)	Prevalence (%)	Instruments†	Associated factors‡
Outpatients							
Porcu et al., 2002[25]	PR	60	30	53	CSDS: 56	HAM-D	Severe MD
Ferrari & Dalacorte, 2007[22]	SC	60	50	32	CSDS: 46	GDS-15	Very old
Maués et al., 2007[24]	PA	65	30	60	CSDS: 20	GDS	Stroke
Mendes-Chiloff et al., 2008[34]	SP	60	189	45	CSDS: 56.1	GDS-15	Circulatory system diseases
Hospitalized patients							
Almeida et al., 1998[29]	SP	55	124	25	MDD: 41.9	ICD-10	Dysthymia
Duarte & Rego, 2007[31]	BA	60	1120	27.5	MDD: 23.4	DSM-IV	HTN, OA
Lucchetti et al., 2009[30]	SP	60	110	26.4	CSDS: 28.2	GDS-15	OA
Souza et al., 2007[8]	PE	60	100	29	CSDS: 45	GDS-30	> Males
Patients in long-term care facilities							
Ribeiro et al., 1994[28]	PR	60	438	47.8	CSDS: 48	GDS	Not assessed
Porcu et al., 2002	PR	60	30	50	CSDS: 50	HAM-D	Suicidality
Munk & Laks, 2005[33]	RJ	65	101	20.8	CSDS: 30	GDS-15	Not assessed
Santana & Barboza Filho, 2007[32]	BA	60	151	65.3	CSDS: 21.1	GDS-15	Not assessed
Siqueira et al., 2009[27]	PE	60	55	56	CSDS: 51	GDS-30	Not assessed
Póvoa et al., 2009[26]	DF	60	18	27.8	CSDS: 11.1	GDS-15	Not assessed
Galhardo et al., 2010[23]	MG	60	46	17	CSDS: 65	GDS-15	CVD 76%

* BA = Bahia; DF = Federal District; MG = Minas Gerais; PA = Pará; PE = Pernambuco; PR = Paraná; RJ = Rio de Janeiro; SC = Santa Catarina; SP = São Paulo; MDD = Major depressive disorder; CSDS = clinically significant depressive symptoms.
† GDS = Geriatric Depression Scale; HAM-D = Hamilton Rating Scale for Depression.
‡ HTN = hypertension; CVD = cardiovascular disease; OA = osteoarthrosis.

The studies that investigated CSDS in the outpatient setting totaled 299 patients, and the prevalence ranged from 20[24] to 56%,[34] with a combined estimate of 45% (95%CI 0.31-060) (Figure 1). The four studies that investigated a total of 1,454 hospitalized patients found MDD prevalence rates of 23[31] and 42%,[29] and CSDS prevalence rates of 28[30] and 45%,[8] with a combined estimate of 32% for MDD (95%CI 0.16-0.51, Figure 2) and 36% for CSDS (95%CI 0.21-0.53, Figure 3). The studies that investigated CSDS in LTCF assessed 839 patients and found prevalence rates of 11[26] and 65%,[23] with a combined estimate of 39% (95%CI 0.27-0.52, Figure 4).

Discussion

The present study found a prevalence of CSDS between 11 and 65% among Brazilian elderly individuals receiving outpatient care or admitted to hospitals or LTCF. The prevalence of MDD ranged from 23.4 to 41.9%. All studies found a higher prevalence of depressive symptoms among females, except the study by Souza et al.[8] This finding may be partially due to the greater proportion of females in the Brazilian elderly population.[2]

The variation in prevalence found among the analyzed studies is remarkable. Only the study by Mendes-Chiloff et al.[34] appropriately described the population of investigated elderly people. It is likely that the variations in the prevalence of depression among Brazilian elderly individuals are due to the profile of the institutions that assist this population, as differences between the services provided by private and public institutions are well-known in Brazil.

The most frequent clinical comorbidities found included vascular, cardiovascular, and orthopedic (osteoarthrosis) diseases,[23,31] and several studies included patients with cognitive impairment.[22,24,30] The study by Porcu et al.[25] found a high prevalence of suicidal ideation, which was reported by one-third of the hospitalized elderly individuals.

The meta-analysis carried out by Barcelos-Ferreira et al.[3] found a depression prevalence of 3-15% and a CSDS prevalence of 13-39% among community-based Brazilian elderly individuals. The present review found a higher prevalence among elderly patients, which suggests that older people in contact with healthcare services have higher odds of being interviewed for studies investigating depressive symptoms.

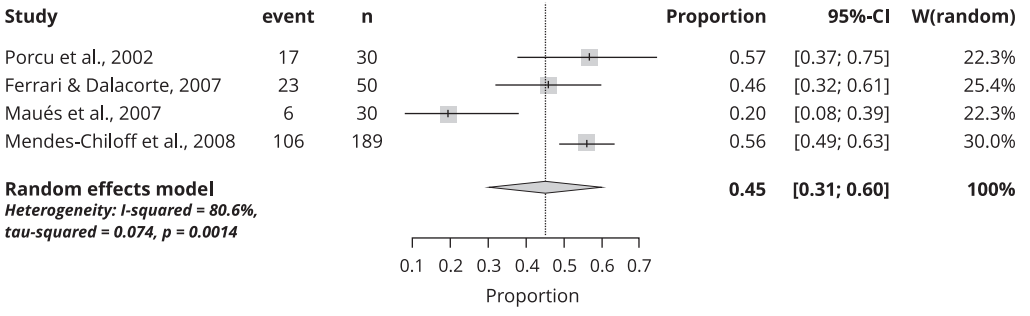


Figure 1 Combined prevalence of CSDS among elderly patients assisted at outpatient services

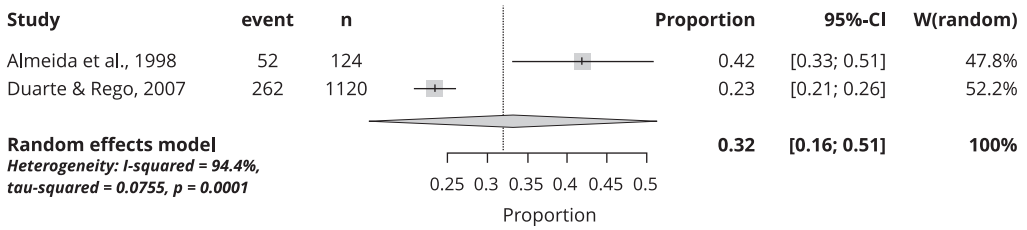


Figure 2 Prevalence of MDD among hospitalized elderly individuals

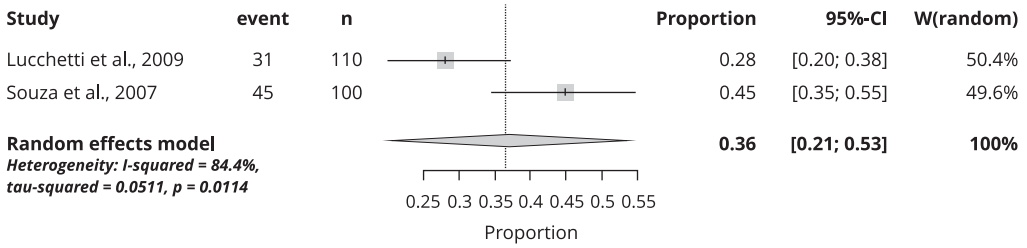


Figure 3 Prevalence of CSDS among hospitalized elderly individuals

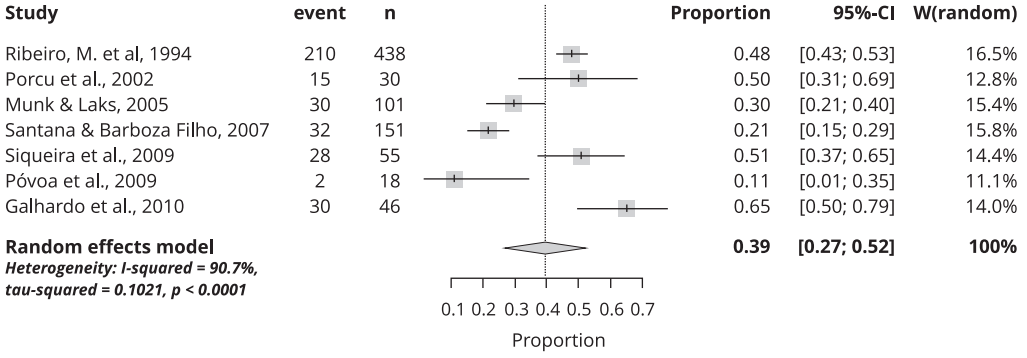


Figure 4 Prevalence of CSDS among the elderly in long-term care facilities

CSDS screening

Most of the selected studies assessed CSDS using scales that were previously validated for the Brazilian population. Most of these studies used Yesavage's 15-item Geriatric Depression Scale.[36] Among the hospitalized elderly individuals, the prevalence of CSDS varied between 20 and 56% (Figure 1). Among outpatients, the frequency of MDD varied between 23 and 42% (Figure 2), and that of CSDS varied between 31 and 45% (Figure 3). CSDS exhibited the widest variation (11 to 65%, Figure 4) among the elderly in LTCFs. The wide variation found in the frequency of CSDS might be due to the studies' participant selection criteria (several studies did not appropriately exclude patients with cognitive impairment) and the administration of scales by inappropriately trained professionals. CSDS corresponds to a heterogeneous group of elderly individuals who exhibit depressive symptoms and may or may not meet diagnostic criteria for MDD, minor depression, or dysthymia. CSDS exhibits a statistical association with cardiovascular and other clinical diseases[40] and increases the odds of developing MDD in the future.[41]

Of note, two studies did not describe which version of Yesavage's GDS was used.[24,28]

Methodological divergences

Because most of the analyzed studies employed similar scales, the variability found by the present review is probably related to the methods used to select the study populations (total, randomized, or stratified samples). Because the method of selection was not described in most studies, data assessment was impaired. Brazilian LTCFs differ widely in terms of access to physicians and treatments, nursing supervision, and occupational stimuli. Such differences are even more striking when comparing public/not-for-profit versus private institutions. These

institutional differences may be associated with the wide variation of prevalence found in the present review (11 to 65%), as well as with the presence of signals of severity, such as suicidal ideation, which reached a frequency of 33% in one of the studies.[25] Nevertheless, factors such as cutoff selection and inappropriate training of the professionals who administered the scales must be taken into account.

Two studies applied diagnostic interviews for depression or dysthymia,[29,31] but only one of them fully detailed the type of interview performed.

Risk factors for depression

Depression and age

The elderly tend to exhibit a lower prevalence of MDD and a higher prevalence of CSDS compared to young adults.[5] Depressive morbidity exhibits a statistical association with clinical diseases and is typically rated by general practitioners as common in the aging population.[4] Several authors also observed that the elderly were less able to recognize depressive symptoms compared to young adults,[42] which might be related to the low detection of depressive symptoms among the elderly. In addition, cognitive impairment and dementia, which might predispose individuals to depressive symptoms, are associated with aging. Only one study[33] indicated the prevalence of CSDS by age range, demonstrating a prevalence of 3.9% among the younger elderly and 2.5% among those older than 85 years old. These values are remarkably lower than those found in the remaining analyzed studies and in studies performed in other countries.[43-45] A portion of this variation is probably due to selection bias in the divergent study.

Depression and cardiovascular disease

A recent meta-analysis[3] found a significant association between CSDS and cardiovascular disease. Only two studies analyzed in the present review investigated this relationship, and both found an increased association. One of the studies also reported an increased association between circulatory system problems and CSDS.[34] These data are consistent with international findings that suggest that CSDS is an independent risk factor for increased mortality.[46-48]

Depression and gender

We found a higher prevalence and severity of CSDS[8,25,26,28,32,34] and MDD[31,49] among elderly women in most of the analyzed studies, whereas only one reported a higher prevalence of depression among elderly males.[27] These data are consistent with Brazilian and international findings. A recent meta-analysis reported a greater influence of female gender on risk of MDD compared to the risk of CSDS in the studied sample.[3] The possible higher prevalence of CSDS and MDD among females is a controversial topic; nevertheless, several authors proposed explanations for this observation, including sociocultural factors related to negative psychological experiences and higher susceptibility to stressful events. A recent study[50] found increased odds of CSDS, longer persistence of symptoms, and low mortality rates among elderly females compared to elderly males in the United States. Alternatively, the higher prevalence among women may be attributable to methodological factors or psychopathological and social traits.[51] A Brazilian study showed that females are more concerned than males with their health and seek healthcare services earlier than males.[52] Of note, several public health programs (prenatal care, breast and colon cancer prevention) target females, making them more dependent on medical treatments.

Comparison between Brazilian and international data

The present study found a high prevalence of CSDS among the elderly, which is consistent with previous studies.[3,40] Nevertheless, few studies systematically investigated the prevalence of depressive morbidity separately for the hospitalized, outpatient, and LTCF populations. Remarkably, similar to the present systematic review, the published scientific literature has reported a wide variation in the results of depressive symptoms. A Dutch study, for instance, found a 5.9% prevalence of CSDS among hospitalized elderly individuals,[45] whereas an Italian study found a prevalence of 46.7% among 30 interviewed elderly individuals.[43] A study conducted in Spain with 433 individuals with cardiovascular disease found a prevalence of depression of 48.5% (57% among elderly females).[44]

Study limitations

The present review has several limitations that must be noted. First, the included studies spanned a long period of time, which hindered adjustment for a reference demographic group. We decide to expand the time span of the studies to facilitate comparison with our previous study,[3] and to deal with the lack of studies including elderly Brazilians. The predominance of studies performed in the South and Southeast regions of Brazil hinders the possibility of generalizing the results to the Brazilian elderly residing in other areas. In addition, methodological limitations must be mentioned. In the present study, only one of the authors performed the review, which we acknowledge as a potential limitation. For this reason, the data were checked by and discussed with a second author. The use of different screening or diagnostic instruments makes comparison more difficult, and several studies assessed small samples of patients. Important data on the selection of participants and detailed descriptions of the diagnostic interviews were not reported.[29] Most studies employed a cross-sectional design (only one study was longitudinal[33]), hindering the ability to investigate the causal relationship between the studied variables. Also, they offered limited information about associated factors, although, as discussed throughout this article, we must consider the absence of systematization in the analysis of such conditions. No

study excluded patients with cognitive impairment, which might have led to inaccuracies in the reported results.

Conclusion

The present review identified 15 studies that comprised a total of 2,592 elderly participants. Among elderly individuals assisted in the outpatient setting, the overall prevalence of CSDS was 45% (Figure 1). Among hospitalized elderly individuals, the overall prevalence of CSDS was 36%, and that of MDD was 32% (Figures 2 and 3). Finally, among elderly in LTCFs, the overall prevalence of CSDS was 39% (Figure 4). Most of the included studies were performed in the South and Southeast regions of Brazil. The high prevalence of CSDS found among the hospitalized, LTCF residents, and outpatient elderly populations and the relationship between CSDS and cardiovascular diseases reinforce the importance of investigating the presence of such symptoms among these populations of elderly people.

The elderly population receiving health services is more likely to have a higher prevalence of depressive morbidity, which might impair the clinical treatment and life expectancy of these elderly. Thus, the current data indicate the need for a more intense psychiatric approach for these individuals. Furthermore, females tend to exhibit more CSDS compared to males, but the reasons for this finding are unclear.

CSDS can be investigated by means of short and easily administered questionnaires, and such symptoms could exhibit an association with cardiovascular disease, cognitive impairment, and increased mortality. Thus, the investigation of CSDS is an important aspect of the assessment of the mental status of elderly patients in the outpatient setting or admitted to hospitals or LTCF.

To assess the prevalence of depressive morbidity among the elderly admitted to institutions with greater precision, future studies must employ a standardized selection of participants and exclude patients with dementia. Longitudinal and cross-cultural studies are required to elucidate the differences found in the prevalence of depression according to gender, as well as the impact of CSDS on the health of elderly individuals treated at different levels of the healthcare system.

Disclosure

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