

# Association between depressive syndrome and visual complaints among elderly caregivers

*Associação entre síndrome depressiva e queixas visuais em idosos cuidadores*

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## ABSTRACT

**Objectives:** To determine depressive syndrome in community-dwelling elderly caregivers; and to test the association between such syndrome and both visual complaints (VC) and aspects of care. **Methods:** This is a cross-sectional study conducted with 332 elderly caregivers. Geriatric Depression Scale (GDS-15) was used to screen for depressive symptoms (cutoff > 5 points). Logistic regression was performed to identify associations between depression and both VC and aspects related to care. **Results:** Median age of the caregivers was 68 years. The majority was female (75.9%) and took care of a spouse (84.3%). The prevalence of depressive syndrome was 22.6%. The syndrome was associated with VC when it affected activities of daily living (OR = 2.4; 95% CI: 1.37-4.27) and caring for an individual with cognitive impairment (OR = 1.85; 95% CI: 1.05-3.26). **Conclusions:** While measured aspects of care did not exert an influence on the incidence of depressive symptoms, VC associated to functional limitation and caring for elderly individuals with cognitive impairment was associated with such symptoms in the elderly caregivers.

## Keywords

Aged care, carers, depression, visual complaint, functional limitation.

## RESUMO

**Objetivos:** Determinar a síndrome depressiva em idosos cuidadores da comunidade e testar a associação entre tal síndrome, queixas visuais e aspectos dos cuidados. **Métodos:** Este é um estudo transversal realizado com 332 idosos cuidadores. A Escala de Depressão Geriátrica (GDS-15) foi utilizada para triagem da síndrome depressiva (corte > 5 pontos). Regressão logística foi realizada para identificar associações entre depressão, queixas visuais e aspectos relacionados ao cuidado. **Resultados:** A mediana de idade dos cuidadores foi de 68 anos. A maioria era do sexo feminino (75,9%) e estava cuidando do seu cônjuge (84,3%). A prevalência da síndrome depressiva foi de 22,6%. A síndrome foi associada com queixas visuais quando estas prejudicavam o desempenho nas atividades da vida diária do cuidador (OR = 2,4; IC 95%: 1,37-4,27). Além disso, cuidar de um indivíduo com comprometimento cognitivo também esteve associado à depressão nos cuidadores (OR = 1,85; IC 95%: 1,05-3,26). **Conclusões:** Os aspectos do cuidado não exerceram influência sobre a incidência de síndrome depressiva, no entanto a queixa visual associada à limitação funcional e o ato de cuidar de idosos com comprometimento cognitivo estiveram associados ao humor deprimido em idosos cuidadores da comunidade.

## Palavras-chave

Cuidados a idosos, cuidadores, depressão, queixas visuais, limitação funcional.

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## INTRODUCTION

The loss of visual acuity is common in the adult and elderly populations. This change in vision can exert a negative impact on psychological, social, and economic aspects of an individual's life<sup>1</sup>. Among elderly individuals, the prevalence of visual impairment can reach as high as 70% in Latin America<sup>2</sup>.

Early changes in vision are not associated with depressive syndrome or depressed mood, but the loss of visual function over the years seems to be a causal factor for such symptoms<sup>3</sup>. This could be explained by visual impairment may limit the elderly for activities of daily living, which is a risk factor for a depressed mood<sup>4</sup>. A review of the literature also found a strong relationship among visual complaints, dependence with regard to activities of daily living, and depressive symptoms in older adults<sup>5</sup>. Eye examinations in community-dwelling older adults can lead to the early detection of visual impairment and the prevention of both the loss of sight and associated mental health issues<sup>6</sup>. Moreover, subjective reports can provide evidence of the need for screening, especially among older adults who visit primary care services<sup>7</sup>.

When an older adult is a caregiver who assists other older adults, factors related to the care context as well as the occurrence of visual complaints may exert a strong influence on the emergence of depressive symptoms. Altered behavior and accentuated functional limitations among care recipients are considered important predictors of depression in caregivers<sup>8</sup>. A meta-analysis involving data on 28,980 caregivers found that spouses in the role of caregiver were more prone to exhibit signs of physical and financial strain and were more vulnerable to the emergence of depressive symptoms<sup>9</sup>. In another review, caregivers had higher indices of depressive symptoms in comparison to non-caregivers<sup>10</sup>.

Care per se can tax the psychological health of a caregiver and changes in vision can make the task of caring more difficult, aggravating a likely pre-condition of stress, excessive burden, and a depressed mood<sup>7</sup>. It is therefore possible that age-related changes in vision can become an additional stressor for elderly caregivers. Complaints regarding health and wellbeing as well as the emergence of depressive syndrome can give rise to a situation of vulnerability for both the caregiver and care recipient<sup>11</sup>. However, no previous studies have analyzed the relationship between visual complaints and depressive syndrome among elderly caregivers.

The aim of the present study was to analyze the association between visual complaints and evidence of depressive syndrome in community-dwelling elderly caregivers. The hypothesis is that visual complaints and aspects related to care are strongly associated with depressive syndrome in this population.

## METHODS

Secondary data were extracted from a study entitled "The variables associated with cognition in elderly caregivers" developed by the Health and Ageing research group of the Federal University of São Carlos, Brazil. This study involved a sample of older caregivers (age  $\geq 60$ ) living in the community who were registered at primary healthcare centers in rural and urban areas. The city is located in the state of São Paulo State in the southeastern region of Brazil and has an estimated population of 222,000 inhabitants<sup>12</sup>.

Invitations to participate in the study were made through personal face-to-face contacts. Household interviews were conducted by trained professionals between April and December 2014. Before answering the questionnaires, the participants gave their written informed consent in compliance with the Declaration of Helsinki. Ethical approval for the project was obtained from the regional ethics committee.

The sample from the primary study was 351 older caregivers and 351 care recipients. The participants were identified through a combination of questionnaires addressing the performance of activities of daily living. The selection of the sample from the community is described elsewhere<sup>13</sup>. For the present study, 19 of the original participants were excluded due to missing data on the dependent variable.

### Caregiver variables

- Visual complaints were self-reported in answer to the question "Do you have problems with your sight?" Caregivers who answered "yes" were asked whether the visual problems affected their performance with regard to routine activities of daily living. The caregivers were then classified as having no visual complaints (nVC) or having visual complaints, the latter group was subdivided into those with visual complaints that did not affect activities of daily living (VC<sub>a</sub>) and those with visual complaints that affected activities of daily living (VC<sub>b</sub>).
- Socio-demographic characteristics: age (median in years), sex (male/female), marital status (with partner/without partner), schooling (median in years) information were collected. Age, sex, education were control variables.
- Health and clinical characteristics: self-reported medical diagnosis of depression (yes/no), use of antidepressant (yes/no) information were collected. These were control variables.
- Depressive syndrome: evidence of depressive syndrome was considered when the score on the Geriatric Depression Scale (GDS-15) was  $> 5$  points<sup>14,15</sup>.

## Care context variables

- Care information: relationship to care recipient (spouse/other); years in role of caregiver ( $> 5/\leq 5$  years); time spent on care daily ( $> 5/\leq 5$  hours); days of the week dedicated to care; whether caregiver received prior training or attending a course in care; whether the caregiver received emotional or material/financial support regarding care (yes/no).
- Cognition of care recipient: evidence of cognitive impairment identified by score on Mini Mental State Examination below the cutoff points suggested for levels of schooling in Brazil<sup>16,17</sup>.
- Functionality of care recipient: The Katz index<sup>18</sup> was used to determine dependence with regard to basic activities (feeding, sphincter control, transference, hygiene, dressing, and bathing). Complete (7 points) or partial (8 to 20 points) dependence was determined using the Lawton and Brody scale (range: 7 to 21 points). Limitations regarding each activity on the checklist (using a telephone, traveling, shopping, making meals, doing housework, taking medications, and managing money) were also analyzed<sup>19</sup>.

The specific activities for which the care recipient depended on caregiver were determined. Moreover, information was collected on whether this assistance was shared with others or performed alone.

## Statistical analysis

The prevalence of evidence of depressive syndrome was estimated with a 95% confidence interval (CI). The SPSS 20 program was used for all analyses. Descriptive statistics were performed and the results were expressed as means, standard deviations, and percentages. The dependent variable was evidence of depressive symptoms (GDS  $> 5$ ); as the Shapiro-Wilk test demonstrated non-normal distribution, this was used as categorical variable. The Mann-Whitney median rank U test was used for comparisons. Multinomial logistic regression was performed to identify the strength of associations between depressive syndrome and both VCs and aspects related to care. Variables with  $p \leq 0.05$  were maintained in the final model. Dichotomous division was used for all variables, with transformation into categories so that one variable entered the model as a reference for another variable. All significant associations were controlled by median age (reference  $< 68$  years), median schooling (reference  $> 4$  years), sex (reference female), self-reported depression, and the continuous use of antidepressants. Controlled secondary analyses were performed to determine associations between visual complaints and aspects of care in relation to each item on the Geriatric Depression Scale.

## RESULTS

Mean age of the caregivers was 68 years (range: 60 to 98 years). In the distribution of age groups, 58.4% were aged 60 to 69 years, 30.7% were aged 70 to 79 years, and 10.9% were aged eighty years or older. The majority was composed of women (75.9%) and caregivers with a partner (89.8%). Median schooling was four years (range: zero to 19 years); 16.9% had less than one year of schooling, 63.6% attended school from one to four years, and 19.5% attended school for five or more years. Regarding the care context, 84.3% of the caregivers were the spouse of the care recipient, 55.1% provided care for less than five years, 62.5% dedicated less than five hours a day to care, and 97.6% were involved in care activities every day of the week. The vast majority (97%) had no formal training in providing care. The activities with which the caregiver most often assisted the care recipient were preparing meals (82.2%) and performing household chores (81.9%); more than 70.0% performed these tasks without the assistance of others (Table 1).

The data show that 84.3% of the caregivers did not receive material or financial assistance and 54.8% did not receive affective/emotional support from others regarding the performance of care duties.

The data on care recipient functionality show that 31% were dependent with regard to at least one basic activity of daily living; 87.3% were partially and 12.7% were completely dependent with regard to instrumental activities of daily living. Most were men (69.8%). Median age was 72 years (range: 60 to 102 years) and median schooling was three years (range: 0 to 20 years). The cognition scores demonstrated that 44.7% were below the cutoff point adjusted for schooling, suggesting cognitive impairment.

**Table 1.** Activities for which elderly caregivers assisted care recipients (n = 332); São Carlos, SP, Brazil, 2014

| Activity                            | % Involvement (shared care) | % Performed alone (only provider) |
|-------------------------------------|-----------------------------|-----------------------------------|
| Preparing meals                     | 82.8                        | 77.1                              |
| Performing household chores         | 81.9                        | 71.7                              |
| Going to appointments               | 61.4                        | 47.0                              |
| Therapeutic activities <sup>1</sup> | 58.1                        | 47.0                              |
| Managing finances                   | 51.5                        | 48.5                              |
| Medications                         | 41.3                        | 37.3                              |
| Dressing                            | 16.3                        | 13.3                              |
| Personal hygiene                    | 14.8                        | 10.5                              |
| Mobility                            | 12.7                        | 9.3                               |
| Using the toilet                    | 12.0                        | 9.0                               |
| Feeding                             | 6.3                         | 4.8                               |

<sup>1</sup> Includes activities in home (e.g., physical exercises).

Among the clinical conditions of the elderly caregivers, 14.5% reported having depression diagnosed by a physician, 13% took antidepressants, and as demonstrated by the GDS score  $\geq 5$ , 22.6% (95% CI: 18 to 27%) had depressive syndrome. The median GDS score was 3 points (range: 0 to 13 points). Regarding vision, 55.1% ( $n = 183$ ) had no complaints (nVC), 19.6% ( $n = 65$ ) had complaints that did not interfere with activities of daily living ( $VC_a$ ), and 25.3% ( $n = 84$ ) had complaints that interfered with activities of daily living ( $VC_b$ ).

The GDS results differed among the different groups. Scores indicative of depressive syndrome were found in 21.3% (95% CI: 15 to 27%) of the nVC group, 9.2% (95% CI: 2 to 16%) of the  $VC_a$  group, and 35.7% (95% CI: 25 to 46%) of the  $VC_b$  group. Figure 1 displays the distribution of the GDS scores and the differences in the ranks of the medians of the groups. As displayed in Graph A, differences were found between the nVC and  $VC_b$  groups as well as between the  $VC_a$  and  $VC_b$  group, but not between the nVC and  $VC_a$  groups. The median GDS score was similar in the nVC and  $VC_a$  groups (3 points) and higher in the  $VC_b$  group (4 points). After pooling the first two groups (nVC+ $VC_a$ ), the unified group had a significantly lower median GDS score ( $p < 0.01$ ) in comparison to the group with visual complaints that interfered with activities of daily living (Graph B).

These analyses suggest that the groups with visual complaints that interfered with activities of daily living had more depressive syndrome symptoms in comparison to the other two groups. The pooled groups (nVC +  $VC_a$ ) were the reference for the association analyses.

The multinomial regression analyses demonstrated that having visual complaints that interfered with activities of daily living ( $VC_b$ ) was the variable most strongly associated with depressive syndrome [odds ratio (OR) = 2.50; 95% CI: 1.44 to 4.34]. Regarding variables related to the care context, caring for an elderly individual with evidence of cognitive impairment was marginally associated with depressive syndrome (OR = 1.70; 95% CI: 0.99 to 2.93). The prevalence of depressive syndrome was 24% (95% CI: 16 to 31%) among

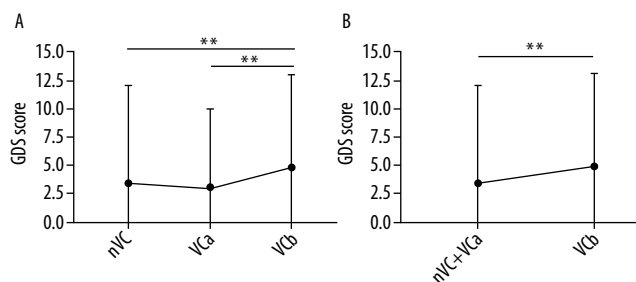
caregivers of individuals with cognitive impairment and 21% (95% CI: 16 to 27%) among caregivers of individuals without cognitive impairment.

Some caregiver aspects had less chance effect to present scored above GDS cut-off. Being the only person responsible for the hygiene of the care recipient, care for an elderly individual with limitations with regard to traveling, preparing meals, and using the telephone were associated with the non-occurrence of depressive syndrome (Table 2).

After controlling for sex, age, schooling, self-reported depression, and the use of antidepressants, having visual complaints that interfered with activities of daily living continued to be the variable with the strongest association (OR = 2.4; 95% CI: 1.37 to 4.27). However, in the model controlled for the same variables, caring for an elderly individual with cognitive impairment gained strength in the association with depressive syndrome (OR = 1.85; 95% CI: 1.05 to 3.26). The protective factors for depressive syndrome remained associated after controlling for these variables.

For greater detailing of the relationship between age-related visual complaints and care characteristics associated with depressive syndrome, controlled analyses were conducted for each item on the GDS with the aim of determining which questions caregivers would respond positively or negatively in different contexts. As caring for an elderly individual with cognitive impairment was the only variable that remained associated with depressive syndrome, this variable was selected to represent the care context in the secondary analyses of each GDS item (Table 3).

Caregivers with visual complaints that interfered with activities of daily living ( $VC_b$ ) responded negatively to items 1 ("Are you basically satisfied with your life?"), 3 ("Do you feel that your life is empty?"), 8 ("Do you feel helpless?"), and 13 ("Do you feel full of energy?") and positively to item 6 ("Are you afraid



**Figure 1.** Graph A differences among nVC,  $VC_a$ , and  $VC_b$  groups; Graph B difference between nVC +  $VC_a$  and  $VC_b$  ( $n = 332$ ); São Carlos, SP, Brazil, 2014.

nVC: no visual complaints;  $VC_a$ : visual complaints without limitation to daily activities;  $VC_b$ : complaints group with limitation; \*\* $p$ -value  $< 0.01$  (Mann-Whitney U test).

**Table 2.** Prevalence of visual complaints and association with depressive syndrome in elderly caregivers ( $n = 332$ ); São Carlos, SP, Brazil, 2014

| Visual complaints and associated care factors | % Prevalence within depressive syndrome indicator | OR   | 95% CI      |
|---|---|------|-------------|
| $VC_b^1$                                      | 35.5  | 2.50 | 1.44-4.34*  |
| Dependence for hygiene                        | 24.0  | 0.08 | 0.02-0.29*  |
| Dependence for using telephone                | 60.0  | 0.52 | 0.30-0.90*  |
| Dependence for travelling                     | 53.3  | 0.50 | 0.30-0.85*  |
| Dependence for preparing meals                | 25.3  | 0.54 | 0.30-0.96** |
| Care for elderly individual with CI           | 54.4  | 1.70 | 0.99-2.93** |

$VC_b$ : complaints group with limitation; CI: cognitive impairment. \*  $p \leq 0.01$ . \*\*  $p \leq 0.05$ .

that something bad is going to happen to you?"). Caregivers of elderly individuals with cognitive impairment responded positively to items 2 ("Have you dropped many of your activities and interests?") and 4 ("Do you often get bored?"). These results demonstrate that two distinct factors of the lives of caregivers are associated with depressive syndrome, but do not share associations with the same items on the screening tool.

## DISCUSSION

Visual complaints that interfere with activities of daily living and caring for an elderly individual with cognitive impairment were associated with the emergence of depressive syndrome among elderly caregivers.

The prevalence of visual complaints was higher in the present investigation in comparison to the prevalence of vision problems described in previous studies, but noting that these studies did not focus on caregivers. In other hands, the prevalence of visual complaints was similar. In a study involving 580 older adults in the northeastern region of Brazil, visual acuity was altered in 37.4% of the sample and cataract was the most frequent condition reported<sup>1</sup>. In a study conducted in China with a sample of 2003 older adults in different age groups, 20% reported having poor vision<sup>20</sup>. Neither of the studies cited evaluated the severity

of vision loss, which limits the discussion on the prevalence of VCs. However, a study conducted in France with 4,216 older adults performed such an analysis and found a lower prevalence rate, with 11.2% exhibiting mild vision alterations and 2.7% exhibiting severe vision alterations based on both an objective evaluation and self-reports<sup>3</sup>.

With regard to depressive syndrome, data from the Saúde, Bem-estar e Envelhecimento [SABE (Health, Wellbeing, and Ageing)] study involving 1,862 older adults in the sample from the year 2000 demonstrate a similar prevalence of depressive syndrome (21.8%) to that found in the present investigation. Independently of age, the prevalence rate remained relatively unaltered at the ten-year follow up<sup>21</sup>. The studies conducted in France<sup>3</sup> and China<sup>20</sup> also report similar rates (22.6% and 20.5%, respectively).

Visual complaints that interfere with activities of daily living constituted the factor most strongly associated with depressive syndrome. There is evidence regarding the relationship between visual impairment and the emergence of depressive syndrome. In a population of 4,216 older adults, an association was found between moderate to severe visual impairment and the development of depressive syndrome. At the ten-year follow up, a decrease in visual function was associated with an increased chance of feeling depressed, after controlling for gender, age, clinical characteristics, and economic factors<sup>3</sup>. In the study conducted in China,

**Table 3.** Prevalence of responses indicative of depressive syndrome for each item of Geriatric Depression Scale and associations with visual complaints and care-related variable (n = 332); São Carlos, SP, Brazil, 2014

| GDS | Item   | % Total prevalence <sup>1</sup> (95% CI) | Visual complaint <sup>2</sup><br>OR (95% CI) | Care-related variable <sup>3</sup><br>OR (95% CI) |
|-----|--|--|--|---|
| 1   | Are you basically satisfied with your life?                                | 9.9 (07-13)                              | 3.1 (1.4-6.7)*                               | 1.6 (0.7-3.5)                                     |
| 2   | Have you dropped many of your activities and interests?                    | 53.6 (48-59)                             | 1.4 (0.8-2.4)                                | 1.5 (1.0-2.5)**                                   |
| 3   | Do you feel that your life is empty?                                       | 25.6 (21-30)                             | 2.4 (1.4-4.2)*                               | 0.9 (0.5-1.6)                                     |
| 4   | Do you often get bored?  | 37.0 (32-42)                             | 1.5 (0.9-2.5)                                | 2.1 (1.3-3.4)*                                    |
| 5   | Are you in good spirits most of the time?                                  | 13.6 (10-17)                             | 1.7 (0.8-3.7)                                | 1.6 (0.8-3.2)                                     |
| 6   | Are you afraid that something bad is going to happen to you?               | 43.7 (38-49)                             | 1.8 (1.0-3.0)**                              | 1.1 (0.7-1.7)                                     |
| 7   | Do you feel happy most of the time?  | 10.5 (07-14)                             | 0.5 (0.2-1.1)                                | 1.6 (0.7-3.4)                                     |
| 8   | Do you feel helpless?  | 15.7 (12-20)                             | 1.9 (1.0-3.6)**                              | 1.1 (0.5-2.1)                                     |
| 9   | Do you prefer to stay at home, rather than going out and doing new things? | 52.7 (47-58)                             | 1.3 (0.7-2.1)                                | 1.3 (0.8-2.0)                                     |
| 10  | Do you feel you have more problems with your memory than most?             | 27.1 (22-32)                             | 1.2 (0.7-2.1)                                | 1.0 (0.6-1.7)                                     |
| 11  | Do you think it is wonderful to be alive?                                  | 3.3 (01-05)                              | 2.2 (0.6-7.9)                                | 3.4 (0.8-14.2)                                    |
| 12  | Do you feel pretty worthless the way you are now?                          | 16.3 (12-20)                             | 1.6 (0.8-3.2)                                | 1.8 (0.9-3.4)                                     |
| 13  | Do you feel full of energy?  | 22.3 (18-27)                             | 2.8 (1.6-5.1)*                               | 1.6 (0.9-2.8)                                     |
| 14  | Do you feel that your situation is hopeless?                               | 13.6 (10-17)                             | 1.8 (0.9-3.7)                                | 1.0 (0.5-2.0)                                     |
| 15  | Do you think that most people are better off than you are?                 | 30.4 (25-35)                             | 1.1 (0.6-2.0)                                | 0.9 (0.6-1.6)                                     |

<sup>1</sup> Referring to responses indicative of depressive syndrome. <sup>2</sup> VC<sub>1</sub>: complaints group with limitation. <sup>3</sup> Caring for elderly individual with cognitive impairment. \* p ≤ 0.01. \*\* p ≤ 0.05.

sensory impairment (vision and hearing) was associated with depression independently of gender, marital status, educational level, health conditions, functional capacity, and family support. However, hearing impairment alone did not remain associated with the outcome<sup>20</sup>.

Subjective and objective methods for measuring visual impairment could be sensitive enough for identification regarding depressive syndrome risk. In a study involving subjective assessments, approximately 31% of a population of 391 individuals older than 75 years of age scored 5 or more points on the GDS. The model that included visual function explained 41% of the variance in the score, whereas age, gender, ethnicity, living situation, and the use of antidepressants were not associated with depression<sup>22</sup>. In another study in which visual impairment was measured by an ophthalmologist, older adults with poor vision were twofold more likely to develop depressive syndrome and blind older adults were fivefold more likely to develop depressive syndrome than those with normal vision<sup>23</sup>. Eye and vision exams should be performed for the early detection of visual impairment and the prevention of both the loss of sight and associated mental health problems<sup>6</sup>.

Despite the different methods employed, a relationship between visual impairment and depression was found in above cited studies. The means for evaluating visual impairment could be combined, with screening initially performed with a subjective assessment involving questions that address the influence of visual changes on activities of daily living.

Variables related to care were also associated with depressive syndrome, but at a lower intensity. Caring for an elderly individual with cognitive impairment was the care context variable that remained associated with depressive syndrome among the caregivers. The relationship between care and the mental health of the caregiver has been described. A meta-analysis confirmed that older caregivers are more likely to demonstrate depression, stress, less self-efficacy, low subjective wellbeing, and different levels of physical health in comparison to non-caregivers, concluding also that caregivers of individuals with dementia are the most affected<sup>24</sup>. A study involving 150 caregivers of individuals with dementia found that the increase in the level of care burden leads to a linear increase in the risk of depressive symptoms<sup>25</sup>. The additional burden can influence the emergence of depressive syndrome in just one year of offering care, but sufficient self-efficacy can be seen as a mediator and protect a caregiver from depression<sup>26</sup>.

The literature describes the influence of age in the association between care factors and depression, but no consensus exists among researchers. DeFazio *et al.*<sup>25</sup> found that an advanced age was directly associated with depressive symptoms in caregivers, whereas a study conducted in Brazil with 84 participants found that older caregivers had lower frequencies of depressive symptoms<sup>27</sup>. Burden, self-efficacy,

stress, and low subjective wellbeing can mediate the relationship between depression and the care context<sup>24-26</sup>. In hypothesis, others variables no entered in mathematical model could be influence the results, and this may explain why the care variable had a weaker association in the modeling in the present study.

In contrast, while age-related changes may pose a risk for the emergence of depressive syndrome among older adults in general, age per se is a factor associated with better coping on the part of caregivers. In two systematic reviews, being an older adult was associated with resilience, which was defined as the psychological capacity to minimize stressors, especially those related to care, thereby protecting the individual from burnout, stress, and depressive syndrome<sup>28</sup>.

It was not expected some caregiver aspects had less chance effect to present scored above GDS cut-off (being the only person responsible for the hygiene of the care recipient and caring for an older adult with limitations regarding travel, preparing meals, and using the telephone). This effect was not documented previously, however, this may be explained by the fact caregivers consider assisting their loved ones to be a valuable and charity activity. According to the literature, activities that are considered worthwhile serve as protective factors against depression<sup>29</sup>. Also, older adults who had worked for long periods of their lives and retired early are at risk of developing mood disorders<sup>30</sup>, and so, after retired from the formal job market, they can dedicate domestic and care tasks and have less risk of developing depression.

In 2010 (SABE study), women and men aged 60 years or older with depressive syndrome were expected to live another 5.9 and 2.7 years, respectively<sup>21</sup>. This demonstrates the importance of identifying factors related to the emergence of depressive syndrome in older adults (especially caregivers) for the establishment of strategies directed at this population, especially in primary care, and enhancing quality of life for the remaining years. In suggestion, by ensuring the survival and wellbeing of caregivers, it is possible to ensure the quality of care offered to dependent older adults.

## CONCLUSIONS

Visual complaints enough to affect the function were associated with depressive syndrome in the sample of older adults analyzed. This result strengthens the association of functional limitation with the risk of depression. Among the set of variables related to care, only caring for an older adult with cognitive impairment was identified as associated with depressive syndrome. Many reasons can be highlighted: (1) depressive syndrome in elderly caregivers are related to changes stemming from their own ageing; (2) caring for a family member may be seen as a social role inherent to moral and social ethics and the caregiver may not see herself/himself as

a care provider; (3) due to family history and culture, activities developed by the caregiver, many of which are household chores, may not be causing a burden, even though such activities are more intensive due to the limitations presented by the care recipient. However, cognitive impairment is something new in the lives of an elderly caregiver and care recipient and may be sufficient to exert a negative impact on the psychological wellbeing of the caregiver.

At primary care services, the complaints of older adults can furnish important information for the early detection of more complex health problems. The present findings demonstrate that visual complaints associated enough to affect the function reported by caregivers and cognitive impairment in care recipients were factors associated with depressive syndrome among older caregivers. Paying heed to such complaints could therefore be an important step toward the prevention of emotional problems in this population. The relationship investigated in the present study is little explored in the literature and giving continuity to this line of research could assist in the formulation of strategies directed at the needs of older caregivers.

## INDIVIDUAL CONTRIBUTIONS

**Allan Gustavo Brigola, Bruna Moretti Luchesi and Sofia Cristina Iost Pavarini** – Designed the study, collected and supervised the data collection and wrote the paper.

**Mayara Caroline Barbieri, Eliane Silva Grazziano, Regimar Carla Machado and Giselle Dupas** – Designed the study and wrote the paper.

**Allan Gustavo Brigola and Mayara Caroline Barbieri** – Were responsible for the statistical design of the study and for carrying out the statistical analysis.

## CONFLICTS OF INTEREST

All authors of this study have no conflicts of interest to declare.

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