**Original Article**

# Depression in elderly enrolled in a control program for hypertension and diabetes mellitus

*Depressão em idosos inscritos no Programa de Controle de hipertensão arterial e diabetes* mellitus

*Depresión en ancianos inscritos en el Programa de Control de hipertensión arterial y diabetes* mellitus

**Arethuza Sass[1], Angela Andréia França Gravena[2], Calíope Pilger[3], Thais Aidar de Freitas Mathias[4], Sonia Silva Marcon[5]**

## ABSTRACT

**Objective:** To identify the presence of depressive symptoms in elderly enrolled in a control program for hypertension and diabetes mellitus in a municipality of northwestern Paraná. **Methods:** A descriptive, transversal study conducted in basic health units in Sarandi – PR (Brazil), with 100 elderly registered in the Programa Hiperdia [Hyperday program]. A mental health section of the questionnaire, Brazil Old Age Schedule (BOAS), was used. The Mann-Whitney and Chi-Square tests were used to analyze the association between depressive symptoms and sociodemographic characteristics and nutritional status. **Results:** The majority of the elderly were female (82.0%). The prevalence of depressive symptoms was 30.0%, of which 20.0% were classified as major depression. The depressive symptoms were more frequent in those who were: women (31.7%); 80 years of age or older (33.3%); without education (39.1%); living alone (43.7%); underweight (33.3%) or obese (32.5%). **Conclusion:** The family health strategy teams need to be attentive to the presence of depressive symptoms in the elderly , especially in those who are already attending established support groups.
**Keywords:** Aged; Depression; Hypertension; Diabetes *mellitus*; Mental health; Public health

## RESUMO

**Objetivo:** Identificar a presença de sintomas depressivos em idosos inscritos no Programa de controle de hipertensão arterial e diabetes *mellitus* em um município do Noroeste do Paraná. **Métodos:** Estudo descritivo transversal, realizado nas unidades básicas de saúde de Sarandi – PR, com 100 idosos cadastrados no Programa Hiperdia. A seção de saúde mental do questionário *Brazil Old Age Schedule* (BOAS) foi usada. Os testes Mann-Whitney e Qui-quadrado foram empregados para analisar a associação entre sintomas de depressão e características sociodemográficas e estado nutricional. **Resultados:** A maioria dos idosos era do sexo feminino (82,0%). A prevalência de sintomas depressivos foi de 30,0%, dos quais 20,0% classificados como depressão maior. Os sintomas depressivos foram mais frequentes nas mulheres (31,7%); em idosos com 80 anos e mais (33,3%); sem nenhuma escolaridade (39,1%), que moravam só (43,7%) e que apresentavam baixo peso (33,3%) ou obesidade (32,5%). **Conclusão:** As equipes da estratégia saúde da família devem estar atentas para a presença de sintomas depressivos em idosos, sobretudo aqueles que pertencem aos grupos de convivência já instalados.
**Descritores:** Idoso; Depressão; Hipertensão; Diabetes *mellitus*; Saúde mental; Saúde Pública

## RESUMEN

**Objetivo**: Identificar la presencia de síntomas depresivos en ancianos inscritos en el Programa de control de hipertensión arterial y diabetes *mellitus* en un municipio del Nor oeste de Paraná. Métodos: Estudio descriptivo transversal, realizado en las unidades básicas de salud de Sarandi – PR, con 100 ancianos registrados en el Programa Hiperdia. Fue usada la sección de salud mental del cuestionario *Brazil Old Age Schedule* (BOAS). Los tests Mann-Whitney y chi-cuadrado fueron empleados para analizar la asociación entre síntomas de depresión y características sociodemográficas y estado nutricional. Resultados: La mayoría de los ancianos era del sexo femenino (82,0%). La prevalencia de síntomas depresivos fue del 30,0%, de los cuales el 20,0% clasificados como depresión mayor. Los síntomas depresivos fueron más frecuentes en las mujeres (31,7%); en ancianos con 80 años y más (33,3%); sin ninguna escolaridad (39,1%), que vivían solos (43,7%) y que presentaban bajo peso (33,3%) u obesidad (32,5%). Conclusión: Los equipos de la estrategia salud de la familia deben estar atentos a la presencia de síntomas depresivos en ancianos, sobre todo aquellos que pertenecen a los grupos de convivencia ya instalados.
**Descriptores:** Ancianos; Depresión; Hipertensión; Diabetes *mellitus*; Salud mental; Salud pública

---

* *Study conducted Hiperdia Programme in the municipality of Sarandi - PR.*

[1] *Nutritionist in the Metropolitan Hospital of Sarandi. Master's student in health sciences, State University of Maringá (UEM), Maringá (PR), Brazil.*

[2] *Master's student in health sciences, State University Maringá (UEM), Maringá (PR), Brazil. Professor of the Nutrition Course, Central University of Maringá (CESUMAR), Maringá (PR), Brazil.*

[3] *Master's student in health sciences, State University Maringá (UEM), Maringá (PR), Brazil. Collaborative teacher, University of West Central Paraná (Unicentro), Guaarapuava (PR), Brazil.*

[4] *Doctorate in Public Health. Professor of the graduate program in nursing, State University of Maringá (UEM), Maringá (PR), Brazil.*

[5] *Doctorate in Nursing. Professor of the graduate programs in nursing and health sciences, State University of Maringá (UEM), Maringá (PR), Brazil.*

Corresponding Author: **Sonia Silva Marcon**
E-mail: soniasilva.marcon@gmail.com.
Rua Jailton Saraiva, 526
Jardim América. Maringá – PR. CEP: 87045-300

Received article **17/11/2010** and accepted **22/07/2011**

## INTRODUCTION

The aging of the population is a global phenomenon that is occurring rapidly in developing countries [1]. Actually, it is one of the primary foci of attention in the health area. The proportion of Brazilians aged 60 years or more increased from 9.7% in 2004, to 11.3% in 2009. To get a better idea, the elderly population grew by 3.3% from 2008 to 2009, while the general population grew by only 1%. The South and Southeast regions of the country have the highest proportion of individuals aged 60 years or more, with rates of 12.7% and 12.3%, respectively [2].

Apart from arterial hypertension and diabetes *mellitus*, the most common chronic diseases, many disorders affect the elderly and among these depression deserves special attention, since it has been presenting with an increasing prevalence in society, leading to negative consequences for the quality of life of affected individuals. The prevalence of depression varies between 5% and 35%, depending on the different type and severity of the disease [3]. Specifically in the elderly living in the community, the prevalence is between 2% and 14%[4].

Among the elderly, depressive symptoms may or may not be apparent. Studies demonstrate that, approximately, 15% to 20% of those who are noninstitutionalized present depressive symptoms [5]. This occurrence is variable, depending on gender, education, socioeconomic status, health status, as well as being related to the presence of cognitive impairment and precarious social situations [3]. Depression is also related to nutritional status, since it interferes with the neural control center, which is responsible for hunger, anxiety and food cravings, which can lead to malnutrition or obesity [6].

Health professionals should value the signs related to depressive symptoms in the care of the elderly population already living with chronic diseases such as arterial hypertension and diabetes mellitus. The elderly in the community are using the primary care health services, in particular, for targeted attention to control these diseases and, many times, present depressive symptoms that have the potential for further compromising their health. There is evidence of an association between depression and malnutrition [7-8] and increased risk of hospitalization due to worsening of cardiac symptoms [9] and institutionalization [10].

Even with this evidence, studies are needed to analyze the presence of depression, especially in the elderly population who already live with a condition of morbidity and frequent health services. Given the above, the objective of this study was to identify the presence of depressive symptoms in older adults enrolled in the program for control of arterial hypertension and diabetes in a county in Northwest Paraná.

## METHODS

This was a descriptive study, conducted with elderly participants of the *Programa Hiperdia* [Hiperdia program] in the city of Sarandi-PR (Brazil).

The elderly in the study were selected from 203 individuals enrolled in the *Programa Hiperdia* in the city, and contained in the listing courtesy of the Municipal Health Secretary of Sarandi. The *Programa Hiperdia* was established by the Ministry of Health to promote the reduction of morbidity and mortality related to the two most prevalent chronic diseases in Brazil, arterial hypertension and diabetes *mellitus*, and has the objective of developing actions for the support and reorganization of health networks for promoting the improved care for patients with these diseases in all outpatient clinics of the National Health System [11].

To calculate the sample size, the prevalence of depressive symptoms in the elderly was estimated at 15% [5], with an accuracy of 5% and a confidence interval of 95%, resulting in 100 elderly, who were selected proportionally, according to the number of subscribers in each of the eight *Programa Hiperdia* groups existing in the municipality.

Data were collected through interviews, along with the verification of weight and height. The interviews were conducted in the days of the *Programa Hiperdia* meetings in the basic health unit (BHU), in church or in community halls in the neighborhoods.

To determine the prevalence of depression, the questionnaire, *Brazil Old Age Schedule* (BOAS), validated in Brazil by Veras [12] and reviewed by Veras and Dutra (13) was used. The BOAS is a multidimensional tool that covers many areas of life for the elderly: physical aspects, activities of daily life, social and economic situation, and information about mental health. In the present study, we applied 27 BOAS questions with their respective subdivisions relating to depressive symptoms. For each response, a value is attributed (scale of "Short-Care") which are summed, totaling 34 possible points and determining the presence or absence of depression [13]. A value equal to or greater than eight is considered to be a case of depression, because this was the cutoff point that provided the best balance between sensitivity and specificity for defining the possible case of depression [3,12].

In addition to presence, the severity of depression was determined, according to the score: between 8 and 12 - minor depression (depressive symptoms, substantially depressed); ≥ 13 - major depression (severe and persistent disorders in need of health care professional) [12].

Nutritional status was determined by the Body Mass Index (BMI) based on the weight (kg) / height $(m)^2$, and classified, according to the cutoff points recommended by the Pan American Health Organization for the elderly [14]: underweight (BMI <23kg/$m^2$), normal weight (BMI> 23 and <28kg/$m^2$), pre-obese (BMI> 28 and <30kg/$m^2$), and obesity (BMI> 30kg/$m^2$).

Data were recorded in an Excel spreadsheet. For the analysis, the software *Statistica 7.0* was used. The *Mann-Whitney* and chi-square tests were used for analysis of the association between depression, socioeconomic variables and nutritional state, with a significance level of 5%.

Development of the study occurred in accordance with the recommendations by Resolution nº 196/96 of the National Health Council and the research project was approved by the Standing Committee on Ethics in Human Research of the State University of Maringá (Opinion nº. 634/2009). All participants signed a Term of Free and Informed Consent in duplicate.

## RESULTS

Elderly patients in the study were between 60 and 88 years with a mean of 67.3 years (sd = 5.95). The highest proportion was female (82%), falling within the age group ranging from 60 to 69 years. Regarding education, 23.0% were illiterate and 66.0% had attended the first cycle of basic education; 55.0% were married and 32.0% were widowed (Table 1).

A large part of the elderly evaluated were born in the Southeast (52.0%) and South (25.0%) of Brazil, with only one identified as having been born in another country. Regarding the living arrangement, 57.0% lived with two to four people, and 16.0% lived alone. Of the people who lived with the elderly, it was observed that 60.0% were the spouse; 49.0% the children; 19.0% grandchildren; and only 8.0% reported living with their parents, siblings or other relatives.

The presence of depressive symptoms was identified in 30.0% of the elderly; 10.0% had minor depression and 20.0% had major depression. Depressive symptoms were more prevalent in: women (31.7%), those elderly 80 years and older (33.3%), the illiterate (39.1%), those without a partner (77.5%), those who lived alone (43.7%) and even among those with inadequate nutritional status, i.e., underweight (33.3%) or obese (32.5%) (Table 1).

The data in Table 2 show the result of the frequencies, the variables covered by the "Short-Care" that call attention to the group of cases of those with and without depression.

**Table 1.** Prevalence of depressive symptoms, according to socioeconomic, demographic and nutritional status. Sarandi-PR, 2009

| Variables | n (%) | Presence of depressive symptoms (%) | p-value* |
|---|---|---|---|
| **Gender** | | | 0.42 |
| Feminine | 82 (82.0) | 31.7 | |
| Masculine | 18 (18.0) | 22.2 | |
| **Age (years)** | | | 0.99 |
| 60 – 69 | 70 (70.0) | 30.0 | |
| 70 – 79 | 27 (27.0) | 29.6 | |
| ≥ 80 | 3 (3.0) | 33.3 | |
| **Schooling** | | | 0.65 |
| Illiterate | 23 (23.0) | 39.1 | |
| Elementary School: 1st cycle | 66 (66.0) | 27.2 | |
| Elementary School: 2nd cycle | 8 (8.0) | 25.0 | |
| Middle School | 3 (3.0) | 33.3 | |
| **Civil State** | | | 0.52 |
| Married | 55 (55.0) | 23.6 | |
| Widower | 32 (32.0) | 37.5 | |
| Divorced | 10 (10.0) | 40.0 | |
| Never Married | 3 (3.0) | 33.3 | |
| **Living Arrangement** | | | 0.59 |
| Living alone | 16 (16.0) | 43.7 | |
| Living with one person | 21 (21.0) | 23.8 | |
| Living with 2 to 4 people | 57 (57.0) | 28.0 | |
| Living with more than 4 people | 6 (6.0) | 33.3 | |
| **Nutritional Status** | | | 0.93 |
| Low weight | 3 (3.0) | 33.3 | |
| Normal weight | 31 (31.0) | 25.8 | |
| Overweight | 23 (23.0) | 30.4 | |
| Obesity | 43 (43.0) | 32.5 | |

* Chi-square test

**Table 2**. Depressive symptom variables, conforming to the presence of depression. Sarandi. Paraná. 2009

| Variables | Depression | | | |
|---|---|---|---|---|
| | Yes (n=30) | | No (n=70) | |
| | n | (%) | n | (%) |
| Felt lonely in the last month | 20 | (66.7) | 14 | (20.0) |
| Difficulty sleeping due to worry, anxiety, depression | 22 | (73.3) | 17 | (24.3) |
| Had a headache in the last month | 20 | (66.7) | 22 | (31.4) |
| Feels s/he is getting slower and has less energy | 29 | (96.7) | 40 | (57.1) |
| Feels slower or less energetic in the morning | 7 | (23.3) | 6 | (8.6) |
| In the last month, has been less energetic than is customary | 24 | (80.0) | 24 | (34.3) |
| At this time, feels a lack of energy for doing day to day things | 25 | (83.3) | 25 | (35.7) |
| Felt more irritable / angry than customary last month | 23 | (76.7) | 29 | (41.4) |
| Has been feeling sad or depressed in the last month | 27 | (90.0) | 22 | (31.4) |
| Has felt like crying and has cried in the last month | 25 | (83.3) | 8 | (11.4) |
| In the last month, felt that it was not worth living | 19 | (63.3) | 6 | (8.6) |
| Has some regrets, and feels guilt about the subject | 17 | (56.7) | 5 | (7.1) |
| Does not mention expectations about the future | 19 | (63.3) | 23 | (32.8) |
| At this time, feels s/he has lost interest or pleasure in things | 16 | (53.3) | 6 | (8.6) |

## DISCUSSION

The 30.0% prevalence of depressive symptoms in the elderly in the study requires attention, considering the characteristics of the population being investigated. The seniors who participated in the research showed no significant functional dependence, possessed satisfactory mobility and autonomy, and were already regularly attending group activities developed by the team of professionals in the health services of Sarandi.

Studies conducted with the elderly Brazilian population showed that the prevalence of depression was between 5% and 35% when considering the different forms and severity. Depression constitutes a public health problem and affects the elderly population with more frequency,[3.14] and many times, these cases are not properly diagnosed [3]. The prevalence encountered in this study shows the need for guidance and planning of mental health care for this community group.

The importance of research and treatment of depression in the elderly is also demonstrated by the 20% prevalence of major depression found among the elderly of this study. Research in early depression support groups and users of basic health units is important so that there are effective and efficient interventions through appropriate treatment that will optimize health gains along with promotion and prevention [15-16].

In relation to marital status, the data encountered were similar to those published by other authors [3.16-17], demonstrating the predominance of married elderly and a significant percentage of widowers. The prevalence of depression was higher among the divorced (40.0%), followed by widowed (37.5%) and older people who never married (33.3%). These figures are concerning, because the elderly belonging to these groups are more likely to dwell alone. The association between marital status and depressive symptoms was also demonstrated in a study that found that individuals living without a partner have a higher prevalence of depressive symptoms [15].

With regard to education, 66.0% had attended the first four years of elementary school, and 23.0% were illiterate, which is consistent with the characteristics of the elderly population in Brazil, where less than 20% have higher education, i.e., completed university education, specialization, or graduate education [16]. It is interesting to observe that elderly people without schooling (illiterate) present the highest proportion of depression cases (39.1%), which is consistent with findings in the participants of the Open University Program for Elderly in Pernambuco [3] .

Even without statistical significance about the predominance of depression in women, these data corroborate findings from other authors [3.12.17-19]. In addition to depression being more common in women [19], age and education are also factors associated with its occurrence [20].

The association of depressive symptoms in the elderly over 80 years of age [15,21-22] was also observed in this study. These results suggest the need for focused attention on this group, and there continues to be a need for special attention on the female gender, since women have greater longevity than men.

The widowed and divorced elderly deserve extra attention because of the greater prevalence of depressive symptoms in these groups. Prospective studies have shown that grief is among the risk factors for depression in the elderly in the community. However, this becomes a potentially modifiable factor due to interventions of counseling and support [19]. A study conducted with 1,510 elderly in the community of Bambuí in Minas Gerais observed a positive association between depressive symptoms and being divorced [21].

Given the higher prevalence of depressive symptoms in patients with inadequate nutritional status, the knowledge that depression can lead to obesity due to changes in dietary habits and physical activity patterns and that obesity can lead to depression due to a negative body image [23], and even that obesity, similar to many underweight, is associated with depression, even after controlling for several sociodemographic variables [23], it is necessary to develop interventions to change the nutritional status of this population in order to prevent depression due to nutritional disorders.

It should be noted that obese subjects have significantly more chances of becoming depressed when compared with those who were underweight [18].

In addition to the emotional condition associated with the nutritional status of the elderly, depression has also been identified as a risk factor for coronary artery disease, myocardial infarction, and cerebrovascular attack [9]. Considering that our population is hypertensive and / or diabetic, and that 30.0% presented with depressive symptoms, it is important that there is follow-up, because depressed patients cooperate less with treatment due to the lack of energy, initiative, hopelessness and cognitive deficits associated with depression. Therefore, they have difficulties with adherence and conducting their exercises [9].

A study conducted with hypertensive patients showed that the presence of depression was associated with increased risk of cerebrovascular attacks and higher mortality from cardiovascular causes. There is evidence that depression exerts its effects through behavioral mechanisms (unhealthy lifestyles, such as smoking and exercise) and also by a direct pathophysiological effect [24].

With regard to depressive symptoms, difficulty sleeping, the increased presence of concern, especially, the group with depression, possibly this is due to the fact that over the years, elderly people become more susceptible to health problems, financial difficulties, social and emotional losses, which increase the need for integrated care that addresses this vulnerability [3].

The variables, *feels s/he is getting slower and has less energy in the last month* (96.7%), *in the last month, has been less energetic than is customary* (80.0%) and, *at this time, feels a lack of energy for doing day to day things* (83.3%), showed higher percentages among the depressed elderly. Depression can provoke persistent fatigue, even without physical exertion, and with it lighter activities appear to require substantial effort. Beyond that, the major symptoms of depression include: depressed mood most of the time and loss of interest or pleasure in nearly all activities [25].

It is important to consider and investigate depression in the elderly, because when compared to the young adult population, the latter tends to have a lower prevalence of major depression. In addition, this condition is accompanied by difficulty in recognizing the symptoms of depression in this population, resulting in the poor detection of the depression in the elderly [10].

The organization of the system and care for elderly patients with chronic diseases, in particular those involving the emotional psyche of the elderly, such as depression, should be based on action and shared knowledge of the various health professionals involved and the teamwork that is expressed in the web of complicity between users / clients and professionals [26].

## CONCLUSIONS

In primary care, it is necessary to conduct primary health actions with groups of elderly in the community. Through this study, it was perceived how relevant it is not only to perform actions, but also to raise nutritional profiles for mental health and socioeconomic status, because it lends itself to more singular assistance to the elderly. In this way, a validated questionnaire that is easily applied, such as the BOAS, can be used by health professionals and contribute to the development of effective actions for the senior population.

The high prevalence of depressive symptoms in elderly patients demonstrates the need for a much wider investigation because of the presence of its unique characteristics. Apart from untreated depression in patients with preexisting conditions, such as hypertension and diabetes *mellitus*, there is a tendency to have a more prolonged or recurring course, necessitating a more specific intervention with a multidisciplinary team.

With respect to the depressed hypertensive and diabetic patients, it is interesting that there it is closer control of blood pressure (at rest and with change to the standing position), UBS glucose, and antiglycemic and antidepressant medications.

Given the increasing aging population and the importance of diagnosis and treatment of depression in old age, training of nurses, physical therapists, nutritionists and fitness trainers is necessary to enable them to recognize depressive symptoms and also to encourage the elderly to remain active in society.

The presence of depression and the high frequency of overweight in the study population demonstrates the need for the team to perform multidisciplinary planning actions directed toward assessment of the health status of the elderly related to depression, and nutritional re-education through nutritional counseling.

Although the study was conducted in a specific municipality, this population has characteristics similar to those encountered by the family health teams scattered in several Brazilian regions. Therefore, it is important to pay attention to depressive symptoms in elderly adults, for the association of depression with nutritional status, emergence and worsening of chronic diseases, socialization and treatment adherence for existing conditions. The health team in primary care should be alert for early warnings of depressive symptoms. In this sense, the existing support groups can be an important strategy for screening and identification of possible symptoms in the general population, subsidizing a more individualized and focused attention on improving the health of the elderly.

## REFERENCES

1. Benedetti TR, Borges LJ, Petroski EL, Gonçalves LH. Atividade física e estado mental de idosos Rev Saúde Pública. 2008; 42(2):302-7.
2. Instituto Brasileiro de Geografia e Estatística. Comentários: Indicadores do período de 2004 a 2009. Rio de Janeiro: IBGE; 2010. Disponível em: http://www.ibge.gov.br/home/estatistica/populacao/trabalhoerendimento/pnad2009/comentarios2009.pdf
3. Leite VM, Carvalho EM, Barreto KM, Falcão IV. Depressão e envelhecimento: estudo nos participantes do Programa Universidade Aberta à Terceira IdadeRev Bras Saude Mater Infant. 2006; 6(1):31-8.
4. 4. Edwards J. Better mental health for older people. Research highlights. Dementia and depression in older people. IPA Bulletin [Internet]. 2002 [cited 2011 Oct 12]; 19 (2) June. Available from: http://www.ipa-online.org/ipaonlinev3/publications/bulletinarchive/dem_dep.asp.
5. Duarte MB, Rego MA. Comorbidade entre depressão e doenças clínicas em um ambulatório de geriatria. Cad Saúde Pública. 2007; 23(3):691-700.

6. Peixoto HG. Estado Nutricional e seus fatores interferentes em pacientes com transtorno depressivos [dissertação]. Brasília: Universidade de Brasília,Faculdade de Ciências da Saúde; 2006.
7. Morley JE, Kraenzle D. Causes of weight loss in a community nursing home. J Am Geriatr Soc. 1994; 42(6):583-5.
8. Cabrera MA, Mesas AE, Garcia AR, de Andrade SM. Malnutricion and Depression among community-dwelling elderly people. J Am Med Dir Assoc. 2007; 8( 9): 582-4.
9. Rozanski A, Blumenthal JA, Kaplan J. Impact of psychological factors on the pathogenesis and cardiovascular disease and implications for therapy. Circulation. 1999; 99(16): 2192-217.
10. Barcelos-Ferreira R, Izbicki R, Steffens DC, Bottino CM. Depressive morbidity and gender in community-dwelling Brazilian elderly: systematic review and meta-analysis. Int Psychogeriatr. 2010 ;22(5):712-26.
11. Brasil. Ministério da Saúde. Manual de condutas médicas: hipertensão arterial e Diabetes mellitus. Brasília: Ministério da Saúde; 2002.
12. Veras RP. País jovem com cabelos brancos: a saúde do idoso no Brasil. Rio de Janeiro: Relume Dumará; 1994.
13. Veras R, Dutra S. Perfil do idoso brasileiro - questionário BOAS [Internet]. 2008 [citado 2009 Jul 8]. Rio de Janeiro: UnATI;2008. Disponível em: http://www.crde-unati.uerj.br/liv_pdf/perfil.pdf.
14. Siqueira GR, Vasconcelos DT, Duarte GC, Arruda IC, Costa JA, Cardoso RO. Análise da sintomatologia depressive nos moradores do Abrigo Cristo Redentor através da aplicação da Escala de Depressão Geriátrica (EDG). Ciênc Saúde Coletiva. 2009; 14(1):253-9.
15. Lima MT, Silva RS, Ramos LR. Fatores associados à sintomatologia depressiva numa coorte urbana de idosos. J Bras Psiquiatr. 2009; 58(1):1-7.
16. Lebrão ML. SABE – Saúde, Bem-estar e Envelhecimento – O Projeto Sabe no Município de São Paulo: uma abordagem inicial – Brasília: Organização Pan-Americana da Saúde; 2003. 255p.
17. Gazalle FK, Lima MS, Tavares BF, Hallal PC. Sintomas depressives e fatores associados em população idosa no sul do Brasill. Rev Saúde Pública. 2004; 38(3):365-71.
18. Roberts RE, Kaplan GA, Shema SJ, Strawbridge WJ. Are the obese at greater risk for depression? Am J Epidemiol. 2000; 152(2):163-70.
19. Cole MG, Dendukuri N. Risk factors for depression among elderly community subjects: a systematic review and meta-analysis. Am J Psychiatry. 2003; 160(6):1147–56.
20. Oliveira DA, Gomes L, Oliveira R. Prevalence of depression among the elderly population who frequent community centers. Rev Saúde Pública. 2006; 40(4):734-6.
21. Castro-Costa E, Lima-Costa MF, Carvalhais S, Firmo JO, Uchoa E. Factors associated with depressive symptoms measured by the 12-item General Health Questionnaire in Community-Dwelling Older Adults (The Bambuí Health Aging Study). Rev Bras Psiquiatr 2008; 30(2):104-9.
22. Gazalle FK, Hallal PC, Lima MS. Depressão na população idosa: os médicos estão investigando? Rev Bras Psiquiatr 2004; 26(3):145-9.
23. De Wit LM, van Straten A, van Herten M, Penninx BW, Cuipjers P. Depression and body mass index, a u-shaped association. BMC Public Health. 2009; 9:14.
24. Carney RM, Freedland KE, Stein PK, Skala JA, Hoffman P, Jaffe S. Change in heart rate and heart rate variability during treatment or depression in patients with coronary artery disease. Psychosom Med. 2000;62(5):639-47.
25. Paranhos ME, Werlang BG. Diagnóstico e intensidade da depressão. Barbarói [Internet]. 2009 [citado 2010 Ago 11];(31):111-25. Disponível em: http://online.unisc.br/seer/index.php/barbaroi/article/viewFile/1089/907.
26. Erdmann AL, Souza FG, Backes DS, Mello ALSF. Construindo um modelo de sistema de cuidados. Acta Paul Enferm. 2007; 20(2):180-5.