SELF-PERCEIVED HEALTH IN A GROUP OF OLDER ADULTS COVERED BY A HEALTH INSURANCE PLAN

Autopercepção de saúde em um grupo de idosos vinculados a um plano de saúde

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ABSTRACT

INTRODUCTION: Self-perceived health reported by older adults is a tool of great importance for the health care system as it provides an indicator representing physical, cognitive, and emotional aspects of health. **OBJECTIVE:** To report how a group of older adults covered by a health insurance plan evaluate their self-perceived health and which variables influence their perception. **METHODS:** This quantitative cross-sectional study included 148 older adults living in the city of São Paulo, Brazil, in 2017. The study variables were sex, age, marital status, performance in basic activities of daily living and instrumental activities of daily living, sleep quality, leisure activity, number of diseases, and use of continuous medication. Statistical analysis was performed using Student's t-test, χ^2 test, or Fisher's exact test, and logistic regression was used. **RESULTS:** Significant relationships were observed between poor self-perceived health and the following variables: being female, polypharmacy, number of diseases, sleep quality, and performance in instrumental activities of daily living. Dependence on the instrumental activities of daily living made these older adults 5.33 times more likely to have poor self-perceived health. Each comorbidity added to the health status of this group increased the chance of poor self-perceived health by 1.39 times. **CONCLUSION:** Self-perceived health in this group of older adults is influenced by several variables; however, degree of dependence and number of diseases were those with the greatest impact.

KEYWORDS: self-perception; older adult health; prepaid health plans.

RESUMO

INTRODUÇÃO: A autopercepção de saúde por parte da pessoa idosa é uma ferramenta de grande importância por se tratar de indicador que representa aspectos de saúde tanto físicos quanto cognitivos e emocionais. **OBJETIVOS:** Apresentar como um grupo de idosos vinculado a um plano de saúde avalia sua autopercepção de saúde e quais as variáveis que interferem nessa percepção. **METODOLOGIA:** Trata-se de pesquisa quantitativa e transversal, com 148 idosos moradores da cidade de São Paulo (SP), durante o ano de 2017. As variáveis comparativas do estudo foram sexo, idade, estado civil, desempenho das atividades básicas de vida diária e instrumentais de vida diária, qualidade do sono, presença de lazer, número de doenças e de medicamentos de uso contínuo. Para análise estatística, utilizaram-se os testes t de Student, χ^2 ou exato de Fisher, quando necessário, além de regressão logística. **RESULTADOS:** Foram encontradas relações significativas entre uma má percepção de saúde e as variáveis: sexo feminino, presença de polifarmácia, número de doenças, qualidade do sono e desempenho nas atividades instrumentais de vida diária. A dependência para as atividades instrumentais de vida diária faz com que esses idosos tenham 5,33 vezes mais chances de ter má autopercepção de saúde. Cada comorbidade acrescida ao estado de saúde desse grupo incrementa 1,39 vez as chances de má autopercepção de saúde. **CONCLUSÃO:** A autopercepção de saúde nesse grupo é influenciada por inúmeras variáveis, mas o grau de dependência e o número de doenças foram as de maior impacto.

PALAVRAS-CHAVE: autopercepção; saúde do idoso; planos de pré-pagamento em saúde.

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INTRODUCTION

Since the 1940s, Brazil has been experiencing a progressive process of population aging.¹ According to the Brazilian Institute of Geography and Statistics (IBGE),¹ older adults accounted for 5.61% of the country's total population in 2000; in 2017, the number rose to 12.7%, and based on estimates, they will represent 13.44% of the Brazilian population in 2050. Within a global context, the United Nations (UN)² reports that one in nine people is currently aged 60 years or over and estimates that in 2050 older adults will account for 22% of the world population, i.e., two billion people.

Older adult health may be assessed in different ways. One possible method concerns the functional status of the older person, which, from a biological perspective, changes over the course of life, reaching its peak at the beginning of adulthood and declining from then on. Not only is the functional status conditioned by biology but is also influenced by the social, economic, and cultural conditions that determine the process of illness. Thus, there may be a great variation in functional status in groups of older adults living in the same city or country.³

In order to establish public policies that contemplate the diversity of aging, the World Health Organization (WHO), since the 1950s, recommends the use of self-perception to monitor the health status of older populations as this indicator represents physical as well as cognitive and emotional health aspects. This evaluation is used in epidemiological research to assess quality of life and intervene in morbidity, mortality, and functional decline, thereby improving life expectancy. It is also considered an important predictor of mortality in older adults.^{4,5}

A previous study demonstrated that good levels of physical and mental health, autonomy, and preservation of functional status are related to positive self-perceived health.⁶ Other variables associated with positive self-perception are high socioeconomic level, religiousness, and healthy lifestyle habits.⁷ Criticisms of the use of this indicator emphasize its subjective character and the overlap that is carried out by older adults between health, disease, and aging.⁵

In Brazil, older people may be assisted by both public and private health care services. The private sector is largely represented by health insurance plans. Data show that Brazilian private health patients are older than the Brazilian population as a whole. Thus, in September 2018, 13.61% of a total of 47,292,741 health insurance users were 60 years old or over.⁸ There are no studies, however, addressing how these older adults who are covered by health insurance plans evaluate their self-perceived health, as well as the factors that positively or negatively influence their perception.

This study aims to show how a group of older adults covered by a health insurance plan evaluate their self-perceived health and which variables interfere with such perception.

METHODS

This quantitative cross-sectional study was conducted in 2017 using a group of older adults covered by a health insurance plan. Older adults living in the city of São Paulo, Brazil, aged 60 years or over were included, while older people who were institutionalized, hospitalized, had acute diseases or cognitive impairment as evaluated by a screening test (Mini-Mental State Examination) were excluded. For the screening test, cutoff points adjusted for educational level as recommended by the Brazilian Ministry of Health were used.⁹

A 95% confidence interval and 5% sampling error were used for sample size calculation. In total, 148 older adults were interviewed (total number of older people covered by the health insurance plan who met the inclusion criteria = 369). The participants were randomly selected through a list of numbers with the total population. The interviews were conducted at the participants' homes after they read and signed an informed consent form.

The study variables, in addition to self-perceived health, were sex, age, marital status, income, performance in basic activities of daily living (BADLs), performance in instrumental activities of daily living (IADLs), sleep quality, leisure activity, presence of diseases, and use of continuous medication. BADLs and IADLs were evaluated using the Katz and Lawton scales, respectively;¹⁰ other variables were collected using a questionnaire developed by the research team. An instrument recommended by the Brazilian Ministry of Health¹¹ was used to collect self-perceived health data with the following categories: excellent, good, fair, and poor.

The data were entered into a Microsoft Excel spreadsheet and were submitted to statistical analysis in the IBM SPSS software, version 25. The descriptive analysis comprised categorical and continuous measures; the latter were expressed as measures of central tendency and measures of dispersion. Categorical data were expressed as absolute (n) and relative (%) frequencies.

Self-perceived health was regrouped into poor/fair or good/excellent because of the limited number of older adults in some categories. The category good/excellent was used as reference.

In univariate analysis, each variable was considered separately and associated with self-perceived health, while in multivariate analysis, several variables were assessed jointly

in relation to self-perceived health. For comparisons between variables, Student's t-test, χ^2 test, or Fisher's exact test were used whenever required, with a 5% significance level.

Normality was assessed graphically, and the assumption of homogeneity of variance, which is the strongest assumption for using Student's t-test, was checked. Furthermore, considering the central limit theorem, the distribution of samples with more than 30 individuals tends asymptotically to a normal distribution. Based on these theories and assumptions, the adequacy of using Student's t-test was ensured, and mean and standard deviation were used to describe the variables.

In order to identify the factors that influence self-perception, logistic regression analysis was performed by entering into the initial model all variables studied in the univariate analysis that had $p < 0.10$. Forward selection was used as stepwise regression approach, in which variables with no statistical significance in the joint analysis were not included in the final model. Therefore, of all variables initially entered into the model, only those with statistical significance ($p < 0.05$) were included in the final model. The other variables did not enter the model.

The study was approved by the Research Ethics Committee of Centro Universitário São Camilo, São Paulo, Brazil, with certificate of presentation for ethical consideration (CAAE) no. 48116915.8.0000.0062.

RESULTS

Table 1 shows descriptive data regarding the 148 patients who were interviewed. The mean monthly income was R\$ 6,500, ranging from R\$ 0 to R\$ 14,000.

The diseases affecting this group of older people are all considered noncommunicable diseases. Important risk factors for cardiovascular diseases were also present in the group. The mean number of diseases per older adult was 5.3, ranging from 1 to 10.

Most of them reported having hypertension (101; 68.2%). Then, 35.1% (52) of older adults had type 2 diabetes, 13.5% (20) had or had had angina or infarction, and 3.4% (5) had had a stroke. In the group, 12.8% (19) had osteoporosis and 22.3% (33) had or had had some type of cancer. Depression was reported by 9 older adults (6.1%). The mean number of medications used by each older adult was 6.9, ranging from 1 to 21.

As previously mentioned, regrouping was required to analyze statistically the variable self-perceived health because of a limited number of older adults in some categories. Thus, 28 (18.9%) older adults considered their health to be poor/fair and 120 (81.1%) considered it to be good/excellent.

Table 1 Descriptive data on a group of older adults covered by a health insurance plan (n = 148).

		n	%
Sex	Male	58	39.48
	Female	89	60.52
	No information	1	-
	Total	148	100
Marital status	Stable relationship	79	53.39
	Single	4	2.70
	Divorced	8	5.42
	Widowed	57	38.49
	Total	148	100
Self-perceived health	Poor	2	1.43
	Fair	26	17.62
	Good	68	45.87
	Excellent	52	35.08
	Total	148	100
BADLs	Independent	143	96.63
	Moderately dependent	3	2.01
	Totally dependent	2	1.36
	Total	148	100
IADLs	Independent	103	69.58
	Independent/sedentary	5	3.44
	Mildly dependent	9	6.14
	Moderately dependent	20	13.46
	Severely dependent	11	7.38
	Total	148	100
Risk of falls (TUG)	No difficulty	90	60.77
	Mild difficulty	40	27.04
	Moderate difficulty	9	6.09
	Severe difficulty	9	6.10
	Total	148	100
Visual acuity	Inadequate	97	65.48
	Adequate	51	34.52
	Total	148	100
Auditory acuity	Inadequate	64	43.23
	Adequate	84	56.77
	Total	148	100
No leisure	No	141	95.31
	Yes	7	4.69
	Total	148	100
Sleep	Adequate with no medication	83	56.09
	Adequate with medication	10	6.77
	Inadequate with no medication	17	11.47
	Inadequate with medication	38	25.67
	Total	148	100

BADL: basic activity of daily living; IADL: instrumental activity of daily living; TUG: timed up and go test.

Table 2 shows univariate and multivariate analyses associated with self-perceived health. There was a significant difference between the groups (poor/fair and good/excellent) regarding the number of medications taken per day and number of diseases ($p < 0.05$); older adults who reported that their health was poor/fair used on average more medications and had more diseases.

A statistically significant difference was observed between the groups categorized according to self-perceived health in relation to other variables, as shown in Table 3. There was a higher percentage of older women and older people who were dependent for IADLs reporting their self-perceived health as poor/fair. An even higher percentage of older people with adequate sleep and no need for medication was found in the group of good/excellent self-perceived health. Regarding the other variables and the diseases reported by these older adults, there was no statistically significant difference between the groups.

As shown in Table 4, the results of logistic regression analysis indicate that the variables with most influence on poor self-perceived health were dependence for IADLs and number of diseases. The older adults who were dependent for IADLs were found to have an approximately 5.33-fold higher chance of reporting poor self-perceived health than those who were not dependent. Another finding was that each illness added to the number of diseases reported by the participants caused a 1.39-fold increase in the chance of poor self-perceived health.

Table 2 Univariate and multivariate analyses of variables significantly associated with self-perceived health in a group of older adults covered by a health insurance plan ($n = 148$).

		Self-perceived health		P
		Poor/ Fair	Good/ Excellent	
Number of medications	n	28	120	0.003
	Mean	9.00	6.46	
	Standard deviation	4.62	3.77	
	Minimum	3.00	0.00	
	Maximum	21.00	21.00	
Number of diseases	n	28	120	< 0.001
	Mean	8.00	5.87	
	Standard deviation	2.19	2.69	
	Minimum	4.00	1.00	
	Maximum	13.00	16.00	

DISCUSSION

The predominance of older women in the group of participants as well as mean age and marital status are consistent with the findings of other studies of health insurance users in Brazil.^{12,13} There is a female predominance among health insurance users, particularly in the oldest old and in Brazil's southeast region.

In this study, the percentage of older adults who reported their self-perceived health as excellent (35.5%) or good (45.9%) was much greater than those found in population surveys conducted in Brazil (ranging from 20 to 25%).^{5,7,14,15} As previously mentioned, socioeconomic issues may influence self-perceived health. Population studies conducted in Brazil and in the United States^{6,7} indicate that older adults

Table 3 Association between variables and self-perceived health in a group of older adults covered by a health insurance plan ($n = 148$).

		Self-perceived health				p
		Poor/ Fair		Good/ Excellent		
		n	%	n	%	
Sex	Male	6	21.38	52	43.72	0.030
	Female	22	78.61	67	56.29	
IADLs	Independent	13	46.39	95	79.21	< 0.001
	Dependent	15	53.57	25	20.79	
Sleep quality	Adequate with no medication	8	28.59	75	62.51	0.014
	Adequate with medication	3	10.67	7	5.78	
	Inadequate with no medication	5	17.92	12	10.01	
	Inadequate with medication	12	42.91	26	21.69	

IADL: instrumental activity of daily living.

Table 4 Variables that most influenced poor self-perceived health in a group of older adults covered by a health insurance plan.

Variable	Descriptive level (p)	Odds ratio (OR)	Confidence interval (CI)
Dependent for IADLs	0.001	5.33	2.07–13.74
Number of diseases	< 0.001	1.39	1.16–1.66

IADL: instrumental activity of daily living.

from higher socioeconomic levels have better self-perceived health, with income being considered a robust predictor of such perception. Despite being a group with mean monthly income that can be considered medium to high, this study found no statistical association between income and self-perceived health, which could explain the percentages of good and excellent self-perceived health found among the older adults participating in the study.

The distribution of older adults in the study in relation to the ability to perform BADLs and IADLs is consistent with the literature: older adults first lose their independence for IADLs and then for BADLs.¹² A possible inference is that this is a group of older people in the process of losing their independence.

As for leisure, the literature shows that poorer performance in the social domain, with older adults performing few leisure activities, is related to poorer self-perceived health.^{16,17} Another study reports that being a computer user seems to be associated with improved self-perceived health, perhaps because such older people feel more included, have access to more information, and, therefore, have an improved sense of self-control.⁷ In this study, although most older participants performed no leisure activities other than using the computer or watching television, there was no association between self-perceived health and such variable.

The diseases reported by older adults in this study are consistent with the pattern found for this age group, in which hypertension has a high frequency and growing incidence as age increases. Hypertension is estimated to affect more than half of the older population and is often associated with other chronic comorbidities, such as diabetes mellitus, the second most frequent diagnosis in this age group.^{15,16}

Regarding the number of diseases found in the group of participants, there was no difference if compared to other studies that included similar groups in terms of age.¹² It should be noted that older people with three diseases or over have poorer quality of life and health status, greater difficulty performing activities of daily living, and, consequently, greater functional impairment.¹⁴ Regarding the number of medications, no difference was found in relation to other studies with similar groups.¹⁸

Research shows that, with aging, there are several risk factors for the development of sleep-related disorders. Changes in the circadian rhythm, use of more than five medications per day, and chronic diseases (both physical and mental) that affect older people contribute to poorer sleep quality.¹⁹ The use of medications that induce sleep by almost half of the older participants is a disturbing factor. Most of these drugs, when used in older adults, cause sedation, increase the risk of falls, and have several adverse effects.²⁰

In this study, older participants who reported their health as being poor/fair used on average a greater number of medications and had a greater number of diseases. Having a greater number of diseases is associated with increased use of medication, higher degree of dependence, and impaired functional status, which may affect self-perceived health in older people.^{14,21,22}

Being female, another factor associated with poor self-perceived health among older adults in this study, has been often related to poorer perception of aging. Greater number of disabilities, higher prevalence of chronic diseases, higher number of comorbidities, and depression are reported in the literature as risk factors associated with poor self-perceived health in older women.^{21,23} Also, studies have shown that older women, as they seek health care services more often, are made aware of more health problems and less lethal conditions, which may negatively influence how they perceive their health.¹⁴

This study established a statistically relevant relationship between self-perceived health and performance in IADLs. This finding is related to the fact that, as soon as older adults start losing the ability to take care of their own finances, go shopping, or go to the bank, they see this as a sign of compromised physical and cognitive integrity.¹⁶ As the degree of dependence increases, there is greater functional decline, and when this weakness is perceived, the likelihood of the older person having poor self-perceived health increases.²¹

Sleep quality proved to be another important variable that affected this group's self-perceived health. Older adults have important changes in sleep architecture, with a percentage reduction in slow-wave sleep and paradoxical sleep. Stage IV sleep no longer occurs, stage III sleep reduces, and nighttime awakenings increase, and as a direct consequence sleep efficiency decreases, often resulting in impaired sleep quality. There is an increase in the more superficial stages of sleep (I and II), and sleep onset latency does not seem to change significantly. Other changes are observed in the sleep/wake cycle, with redistribution of sleep within the 24 hours, i.e., intrusion of daytime naps and interruptions in nighttime sleep, as well as anticipation of the beginning and end of sleep for earlier times.²⁰

Not only does adequate sleep with no need for medication seem to influence the quality of life of older adults but has also been correlated with triggering and/or maintenance of neurodegenerative diseases that attack this age group.²⁴ Poor sleep quality may be associated with irritation, depression, and social isolation, which may affect self-perceived health.

As previously mentioned, the variables that most influenced poor self-perceived health in this group of older adults covered by a health insurance plan were dependence for IADLs and

number of diseases. The first variable increased the chance of poor self-perceived health by 5.33 times, and the second variable showed that, for each disease reported as comorbidity, there is a 1.39-fold increase in poor self-perception.

The presence of comorbidities or multimorbidity, defined as the simultaneous occurrence of ≥ 2 and ≥ 3 chronic diseases in a person, respectively, is a common phenomenon among the older population worldwide and is associated with increased mortality and low quality of life, in addition to compromising functional status.²⁵ Research shows that older adults associate the presence of multiple diseases with impaired ability to perform activities, incompetence in taking care of themselves, non-participation in family matters, social inactivity and social isolation, and inability to solve their problems; all of these actions refer to the control that older people have over their lives. Being dependent means exactly the opposite of having control over oneself,⁵ hence the influence that the presence of comorbidities and the progressive loss of independence have for negative self-perceived health.

A limitation of this study is related to the group of participants, which does not reflect the characteristics of Brazilian older people as a whole nor of other older people covered by private health, preventing study findings to be generalized. Another limitation refers to the fact that variables such as mood disorder, cognitive impairment, and frailty, which could have influenced the results obtained in the study, were not included. Conversely, the relevance of

the study consists of the scarce literature on health of older adults covered by health insurance plans in Brazil, which makes it difficult to establish more effective policies for the needs of this group of people.

CONCLUSION

Most older adults participating in this study had positive self-perceived health in percentages higher than those reported for Brazilian older adults in the national literature. Poor/fair self-perception was related to female sex, polypharmacy, number of diseases, sleep quality, and dependence for IADLs. Of those variables, the ones that most influenced poor self-perceived health were compromised performance in IADLs and high number of diseases. The first variable increases approximately by five times and the second variable by more than once the chances of older adults assessing their health as poor/fair. In conclusion, degree of dependence and number of diseases were the variables that most impacted self-perceived health in this group.

CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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REFERENCES

1. Instituto Brasileiro de Geografia e Estatística (IBGE). Relações entre as alterações históricas na dinâmica demográfica brasileira e os impactos decorrentes do processo de envelhecimento da população [Internet]. IBGE [Accessed in Feb. 8, 2019]. Available at: https://ww2.ibge.gov.br/home/estatistica/populacao/alteracoes_e_impactos/default.shtm
2. Ministério dos Direitos Humanos Brasileiro. Dados Estatísticos [Internet]. Ministério dos Direitos Humanos Brasileiro [Accessed in Jan. 21, 2018]. Available at: <http://www.sdh.gov.br/assuntos/pessoa-idosa/dados-estatisticos>
3. Centro Internacional Longevidade Brasil. Envelhecimento ativo: um marco político em resposta a uma revolução da longevidade [Internet]. Rio de Janeiro: CILC; 2015 [Accessed in Oct. 1, 2016]. Available at: <http://ilcbrazil.org/portugues/noticias/active-ageing-a-policy-framework-in-response-to-the-longevity-revolution/>
4. Pagotto V, Nakatani AYK, Silveira EA. Fatores associados à autoavaliação de saúde ruim em idosos usuários do Sistema Único de Saúde. *Cad Saúde Pública*. 2011;27(8):1593-602. <https://doi.org/10.1590/S0102-311X2011000800014>
5. Fonseca MGUP, Firmo JOA, Loyola Filho AI, Uchôa E. Role of autonomy in self-assessment of health by the elderly. *Rev Saúde Pública*. 2010;44(1):159-65. <https://doi.org/10.1590/S0034-89102010000100017>
6. Pinquart M. Correlates of subjective health in older adults: a meta-analysis. *Psychol Aging*. 2001;16(3):414-26. <https://doi.org/10.1037//0882-7974.16.3.414>
7. Borim FSA, Barros MBA, Neri AL. Self-rated health in the elderly: a population-based study in Campinas, São Paulo, Brazil. *Cad Saúde Pública*. 2012;28(4):769-80. <https://doi.org/10.1590/S0102-311X2012000400016>
8. Agência Nacional de Saúde Suplementar. Assistência médica por competência segundo segmentação grupo: hospitalar, hospitalar e ambulatorial [Internet]. Região Metropolitana: São Paulo. Agência Nacional de Saúde Suplementar; 2018 [Accessed in Feb. 8, 2018]. Available at: http://www.ans.gov.br/anstabnet/cgi-bin/tabnet?dados/tabnet_br.def
9. Gomes LMC, Martins, LNSL. Avaliação Cognitiva e do Humor. In: Manso MEG, Biffi ECA, editores. *Geriatria, Manual da Liga de Estudos do Processo de Envelhecimento*. São Paulo: Martinari; 2015.
10. Dias AL, Rodrigues TC. Avaliação da Capacidade Funcional. In: Manso MEG, Biffi ECA, editores. *Geriatria, Manual da Liga de Estudos do Processo de Envelhecimento*. São Paulo: Martinari; 2015.

11. Estevez ES, Crociari NP. Anamnese e Exame Físico do Idoso. In: Manso MEG, Biffi ECA, editores. *Geriatria, Manual da Liga de Estudos do Processo de Envelhecimento*. São Paulo: Martinari; 2015.
12. Manso MEG, Osti AV, Borrozino NF, Maresti LTP. Avaliação Multidimensional do Idoso: resultados em um grupo de indivíduos vinculados a uma operadora de planos de saúde. *Kairós Gerontol*. 2018;21(1):191-211. <https://doi.org/10.23925/2176-901X.2018v21i1p191-211>
13. Manso MEG, Ribeiro MP. Perfil de um grupo de idosos participantes de um programa de prevenção de doenças crônicas. *Estud. interdiscipl. envelhec*. 2015;20(1):57-71. <http://dx.doi.org/10.13140/RG.2.2.25516.51849>
14. Confortin SC, Giehl MWC, Antes DL, Schneider IJC, D'Orsi E. Autopercepção positiva de saúde em idosos: estudo populacional no Sul do Brasil. *Cad Saúde Pública*. 2015;31(5):1049-60. <https://doi.org/10.1590/0102-311X00132014>
15. Medeiros SM, Silva LSR, Carneiro JA, Ramos GCF, Barbosa ATF, Caldeira AP. Fatores associados à autopercepção negativa da saúde entre idosos não institucionalizados de Montes Claros, Brasil. *Ciênc Saúde Coletiva*. 2016;21(11):3377-86. <https://doi.org/10.1590/1413-812320152111.18752015>
16. Barbosa BR, Almeida JM, Barbosa MR, Rossi-Barbosa LAR. Avaliação da capacidade funcional dos idosos e fatores associados à incapacidade. *Ciênc Saúde Coletiva*. 2014;19(8):3317-25. <https://doi.org/10.1590/1413-81232014198.06322013>
17. Melo DM, Falsarella GR, Neri AL. Autoavaliação de saúde, envolvimento social e fragilidade. *Rev Bras Geriatr Gerontol*. 2014;17(3):471-84. <https://doi.org/10.1590/1809-9823.2014.13172>
18. Muniz ECS, Goulart FC, Lazarini CA, Marin MJS. Análise do uso de medicamentos por idosos usuários de plano de saúde suplementar. *Rev Bras Geriatr Gerontol*. 2017;20(3):374-86. <https://doi.org/10.1590/1981-22562017020.160111>
19. Quinhones MS, Gomes MM. Sono no envelhecimento normal e patológico: aspectos clínicos e fisiopatológicos. *Rev Bras Neurol*. 2011;47(1):31-42.
20. Alvarenga JM, Loyola Filho AI, Giacomini KC, Uchoa E, Firmo JOA. Uso de benzodiazepínicos entre idosos: o alívio de "jogar água no fogo", não pensar e dormir. *Rev Bras Geriatr Gerontol*. 2015;18(2):249-58. <https://doi.org/10.1590/1809-9823.2015.14045>
21. Ribeiro EG, Matozinhos FP, Guimarães GL, Couto AM, Azevedo RS, Mendoza IYQ. Autopercepção de saúde e vulnerabilidade clínico-funcional de idosos de Belo Horizonte/Minas Gerais. *Rev Bras Enferm*. 2018;71(Supl. 2):860-7. <http://dx.doi.org/10.1590/0034-7167-2017-0135>
22. Nunes APN, Barreto SM, Gonçalves LG. Relações sociais e autopercepção da saúde: projeto envelhecimento e saúde. *Rev Bras Epidemiol*. 2012;15(2):415-28. <https://doi.org/10.1590/S1415-790X2012000200019>
23. Pedreira RBS, Andrade CB, Barreto VGA, Pinto Junior EP, Rocha SV. Autopercepção de saúde entre idosos residentes em áreas rurais. *Kairós Gerontol*. 2016;19(1):103-19. <https://doi.org/10.23925/2176-901X.2016v19i1p103-119>
24. Manso, MEG. Como a má qualidade do sono prejudica a saúde do nosso cérebro. Portal do Envelhecimento [Internet]. [Accessed in Jan. 18, 2018]. Available at: <https://www.portaldoenvelhecimento.com.br/como-a-ma-qualidade-do-sono-prejudica-a-saude-do-nosso-cerebro/>
25. Nunes BP, Batista SRR, Andrade FB, Souza Junior PRB, Lima-Costa MF, Facchini LA. Multimorbidade em indivíduos com 50 anos ou mais de idade: ELSI-Brasil. *Rev Saúde Pública*. 2018;52(Supl. 2):10s. <https://doi.org/10.11606/s1518-8787.2018052000637>