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ORIGINAL ARTICLE

Advanced activities of daily living among the elderly: predictive factors

Atividades avançadas de vida diária entre idosos: fatores preditores

Darlene Mara dos Santos Tavares[1], Fernanda Lemos Lazarini[1], Flavia Aparecida Dias Marmo[1], Gianna Fiori Marchiori[1], Juliana Maciel Oliveira[1], Fernanda Resende Rodrigues[1]

ABSTRACT

A reduction in social activities can result in incapacities and worsening of quality of life. The present study aimed to characterize elderly subjects, describe their level of advanced activities of daily living and identify the change between activity levels (improvement, stability, worsening) and the predictors of change in advanced activities of daily living levels. This is a longitudinal study carried out with 353 elderly subjects. The following were used: Mini Exam of Mental State; socioeconomic and morbidity data; frailty phenotype and questions on advanced activities of daily living. Descriptive analysis was carried out with a multinomial regression model ($p<0.05$). It was identified that there was a higher percentage of females, from 60 to 69 years old in the group at the worst level of advanced activities of daily living (41.1%). Improvement in advanced activities of daily living was associated with income of up to one minimum salary ($p=0.004$), non-frailty ($p=0.006$) and pre-frailty ($p=0.028$) while worsening was associated with living alone ($p=0.038$). Identification of predictors of change in advanced activities of daily living and of the characteristics in the groups that were worsening or showing improvement may direct early interventions in health care.

Descriptors: Aged; Geriatric Nursing; Activities of Daily Living.

RESUMO

A redução de atividades sociais pode resultar em incapacidades e piora da qualidade de vida. Objetivou-se caracterizar os idosos e descrever o nível nas atividades avançadas de vida diária; identificar a mudança entre os níveis de atividade (melhora, estabilidade, piora) e identificar os preditores de mudanças nos níveis de atividades avançadas de vida diária. Inquérito longitudinal, realizado com 353 idosos. Utilizou-se: Mini Exame de Estado Mental; dados socioeconômicos e morbidades; fenótipo de fragilidade; e questões das atividades avançadas de vida diária. Realizou-se análise descritiva e modelo de regressão multinomial ($p<0,05$). Identificou-se maior percentual do sexo feminino, 60 a 69 anos e no grupo de piora do nível de atividades avançadas de vida diária (41,1%). A melhora nas atividades avançadas de vida diária associou-se à renda de até um salário mínimo ($p=0,004$), não fragilidade ($p=0,006$) e pré-fragilidade ($p=0,028$); e na piora, residir só ($p=0,038$). A identificação dos preditores de mudança nas atividades avançadas de vida diária e das características dos grupos de piora e melhora podem direcionar intervenções precoces em saúde.

Descritores: Idoso; Enfermagem Geriátrica; Atividades Cotidianas.

[1]Federal University of Triângulo Mineiro — Uberaba, MG, Brazil. E-mails: darlene.tavares@uftm.edu.br; fernandalaz@outlook.com; flaviadias_ura@yahoo.com.br; gianna_fiori@yahoo.com.br; jumaciel.enf@gmail.com; fernandaresende1@hotmail.com

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INTRODUCTION

Activities of daily living (ADL) are important indicators in the evaluation of health among the elderly. Within this perspective, functional incapacity has been measured using a three-level hierarchy, namely basic activities of daily living (BADL), instrumental activities of daily living (IADL)[1], and advanced activities of daily living (AADL). AADL are more complex than the other levels because they involve integrated personal, contextual and environmental factors at distinct degrees[2,3]. AADL encompass social, physical, productive and leisure activities[3], which demonstrates the relevance of functional capacity in gerontological research, given that aging without incapacity helps maintain quality of life[4]. Functional incapacity is understood as difficulty executing basic or complex daily tasks needed to lead an independent life in the community and in the family[4].

It should be emphasized that AADL enable visualization of social roles, interests, and integrity of physical and social functions of the elderly that are related to more complex functional levels[5]. Social involvement of the elderly is influenced by health conditions, functional capacity, gender, age, and socioeconomic factors. Thus, activities like going to church, receiving visitors and visiting others are carried out at home or in the neighborhood, while traveling and going to parties may require moving back and forth across greater distances and, as such, involve greater physical, cognitive and motivational demands[6]. Consequently, evaluation of limitations to AADL is relevant for promoting and maintaining quality of life during aging, considering that reduced levels of AADL precede losses in IADL and BADL[6].

In this regard, some Brazilian studies have investigated factors associated with reductions in the level of AADL[5-7]. A paper from the Study Network on Frailty in the Brazilian Elderly (FIBRA network) identified an association between interruption of AADL and conditions of pre-frailty and frailty ($p<0.001$)[7], while greater grip strength ($p=0.018$) and less slowness in walking speed ($p<0.001$) correlated with greater participation in activities[6]. Moreover, it was identified that the elderly people with lower engagement in AADL were older and had worse cognitive performance, lower levels of education, and a higher number of depression symptoms[8].

A study conducted in São Paulo showed that the higher the number of AADL carried out, the lower the chance of cognitive decline among the elderly (RI=0.85)[5] A study in Portugal, however, revealed that less time spent being inactive was associated with a lower risk of deficiency in AADL[9].

Regarding the decline in AADL, studies from the FIBRA network showed a prevalence of 39.9% of older people considered as being less active[8] and work-related activity and long trips were reported as being the most frequently interrupted[6] activities.

Considering that reduction and alteration in quality of social, productive and leisure activities may indicate future functional decline[3], the present investigation aims to broaden knowledge on the restriction of AADL among individuals aged 60 or over. It is emphasized that most investigations on this theme include people aged 65 and over[6,8-10]. Furthermore, studies have described the relationship between AADL and isolated variables without focusing on finding predictive factors of decrease and/or improvement in their practice. It should be highlighted that modifications in these activities may contribute to early identification of alterations in performance[3] and their assessment has been suggested in the literature[2,3].

Thus, the objectives of the present study were to characterize elderly subjects and describe their level of activity in AADL after two years; to identify the change between levels of activity (improvement, stability, worsening); to identify the AADL most frequently interrupted after two years; and to identify the variables predictive of changes in levels of AADL after two years.

METHODS

This is a prospective, longitudinal study in the form of a household survey conducted in the urban area of the municipality of Uberaba, Minas Gerais, Brazil.

Sample calculation carried out using Power Analysis and Sample Size (PASS) software, version 13, considered the outcome as the prevalence of low levels in AADL (39.9%)[8]. With an accuracy of 3.5% and a confidence interval of 95% for a finite population of 36,703 aged people[11] and sample loss of 20%; the resulting sample was 737 participants after 922 attempts.

Data were collected using the multistage cluster sampling technique, as described below. The first collection was carried out in 2014 and the second collection was carried out in 2016.

To select the elderly subjects in the first stage, a random draw of 50% of the census sectors of the municipality was considered through systematic sampling on a single list of sectors. The number of urban census sectors in the municipality was 409, of which 204 were selected. The sample interval (SI) was calculated using the formula SI=Ncs/ncs, where Ncs refers to the total number of census sectors and ncs refers to the number of drawn sectors (IA≈2). The first census sector was randomly drawn and the others were selected as per the SI.

In the second stage, the number of households was determined using the previously calculated sample number (n=737). This number was then divided by the number of sectors drawn (204 sectors), arriving at a similar quantity within each census sector (3.6, i.e., four elderly people per sector).

The inclusion criteria were 60 years or older; living in the urban zone of Uberaba (MG); not presenting cognitive decline; able to walk, with the possible use of a walking aid being permitted (walking stick, crutch or walking frame); and having participated in both stages of data collection.

Elderly people that were not found at the time of interview or who were institutionalized or hospitalized were excluded. For frailty, the following were considered: presence of serious after effects of a cerebrovascular accident with localized loss of strength and aphasia; Parkinson's disease at a serious stage or unstable with the association of seriously compromised motricity, speech or affectivity that made it impossible to carry out the assessment; and serious sight or hearing impairment.

In 2014, data collection began in the first residence in the first street of the census sector and continued in a clockwise direction until the final sector. All the households on the block were visited sequentially until the number of elderly people in the sector that met the inclusion criteria was obtained. In all, 729 aged people were interviewed, although it was not possible to complete the required number of interviews in some sectors.

After two years (2016), the interviewers returned to the same households. Of the 729 elderly people interviewed at baseline, 40 refused to be re-interviewed, 42 had died, 62 were not found after three visits, 53 had changed address, 10 were hospitalized, 85 presented cognitive decline, and 84 were not available for other reasons such as travel. Therefore, 353 completed the follow-up.

In both stages, the interviewers were trained in how to approach the interviewees, to complete the data-collection instruments, and apply the physical tests. Variations were noted on a fieldwork spreadsheet. Supervision regarding completion and consistency of the items to guarantee quality control was carried out by supervisors in the field. Systematic meetings were conducted between the head researcher, the interviewers, and the fieldwork supervisors for training, monitoring and orientation.

A translated version, validated in Brazil, of the Mini Exam of Mental State (MEMS) was used for the cognitive evaluation. The cut-off point for cognitive decline considered the level of education of the interviewee, which corresponded to 13 points for the illiterate, 18 points or less for those with 11 years of education and 26 points for those with more than 11 years of education[12].

For characterization of socioeconomic data and morbidities, the instrument constructed by the Research Group in Collective Health of the Federal University of the Minas Gerais Triangle (UFTM) was used.

AADL were evaluated through 13 questions of a social nature used in national surveys and based on other international studies[6,13]. Possible responses were: never done, stopped doing, or still do[6,13]. The elderly subjects in the lowest quartile of the distribution were considered less active (low AADL), that is, the elderly that reported carrying out three or less activities, while the others were considered more active (high AADL)[8]. Change in level of AADL was found through the difference (*dif*) in the number of AADL that the elderly subject reported carrying out after two years in relation to the research baseline. Thus, the subjects were classified according to groups of improvement (increase in AADL), stability (maintained the number of AADL carried out) and worsening (decrease in AADL).

Presence of frailty syndrome was found through the five items described as components of the frailty phenotype proposed by Fried et al.[14], namely unintentional weight loss; decreased muscle strength; self-reported exhaustion and/or fatigue; slowness of walking speed; and low level of physical activity. The subjects with three or more of these items were classified as frail and those with one or two items were classified as pre-frail. Those who tested negative in all the tests were considered as not frail[14]. Sedentary behavior was assessed through time spent in a sitting position based on section five of the IPAQ (for one day of the week, in minutes)[15].

Study variables were socioeconomic level, number of self-reported morbidities; AADL; level of activity in AADL; change in the level of AADL; frailty condition; and sedentary behavior.

A data spreadsheet was constructed using Excel, whereby the instruments were double entered for consolidation of the database. For analysis, the database was exported to the Statistical Package for Social Sciences (SPSS), version 17.0.

Descriptive statistical analysis was carried out through absolute and percentage frequency distribution for objectives one to three. For the fourth objective, the predictors were sex (male or female); age (in years); conjugal status (with or without a partner); living arrangements (lives alone or accompanied); individual income (up to one minimum salary and greater than one minimum salary); number of morbidities; frailty condition (not frail, pre-frail, and frail); and length of time in sedentary behavior (time spent sitting on a day of the week in minutes). It should be highlighted that the predictor variables were used at baseline. For the fourth objective, the multinomial regression model was used (enter method) with a significance level of 95% (α=0.05) and a confidence interval (CI) of 95%.

This project was approved by the UFTM Research Ethics Committee, protocol numbers 573.833 and 493.211, CAA numbers 26148813.0.0000.5154 and 26148813.0.000.5154, respectively. On both occasions, the participants were contacted at their homes, where they learned about the objectives of the study and obtained all pertinent information. Subsequently, they signed an informed consent statement.

RESULTS

In the two research phases, a higher percentage of female elderly subjects that lived with a spouse or partner was observed, as shown in Table 1. In the second stage, there was an increase in the percentage of aged subjects with higher monthly income with a prevalence of those who received 1-3 minimum salaries (41.6%) and those who were aged 70-79 years (42.2%).

On both occasions, the highest percentages refer to the high level of AADL (79.0% and 78.5%), with a decrease in the high level and an increase in the low level being observed after two years.

Regarding changes between the levels of activity, the highest percentage was identified for the elderly in the worsening group (41.1%), followed by the improvement group (37.7%) and the stability group (21.2%).

Table 2 shows the percentages of AADL interrupted more frequently in the first and second stages of the research among the 353 elderly subjects that completed follow-up. High percentages were detected on both occasions for interruption of paid employment and going to cultural events; while a significant change occurred only for the activity of volunteer work (Table 2).

In the final model of the multinomial logistical regression, the individual income up to a minimum salary (OR=2.59; p=0.004); not frail (OR=4.89; p=0.006) and pre-frail (OR=3.21; p=0.028) variables were associated with improved AADL levels after two years (Table 3).

In the worsening group for AADL levels after two years, only the elderly that lived alone (OR=2.48; p=0.038) obtained a significant association (Table 3).

Table 3 presents the multinomial logistical regression model for the predictive variables and the groups of improvement, stability, and worsening in AADL levels.

Table 1. Sociodemographic profile of the elderly in the community at two stages: baseline and after 2 years. Uberaba, MG, 2017.

	Baseline	After 2 years
	n (%)	n (%)
Sex		
Male	120 (34)	120 (34)
Female	233 (66)	233 (66)
Age range		
60 ├69	172 (48.7)	142 (40.2)
70 ├79	130 (36.8)	149 (42.2)
80 or more	51 (14.4)	62 (17.6)
Conjugal status		
Never married or lived with a partner	26 (7.4)	24 (6.8)
Lives with spouse or partner	168 (47.6)	168 (47.6)
Widow/Widower	119 (33.7)	124 (35.1)
Separated. judicially separated or divorced	40 (11.3)	37 (10.5)
Living arrangements		
Alone	75 (21.2)	74 (21)
Accompanied	278 (78.8)	279 (79)
Income (in minimum salaries)		
0	34 (9.6)	35 (9.9)
<1	9 (2.5)	3 (0.8)
1	152 (43.1)	141 (39.9)
1 ┤3	120 (34)	147 (41.6)
3 ┤5	27 (7.6)	15 (4.2)
> 5	11 (3.1)	12 (3.4)

Table 2. Frequency distribution for interrupted AADL among elderly subjects in the community (n=353) at two stages: baseline and after two years. Uberaba, MG, 2017.

Interrupted Activities		
AADL	Baseline	After two years
	n (%)	n (%)
Visiting others	62(17.6)	68(19.3)
Receiving visitors	10(2.8)	16(4.5)
Going to church	78(22.1)	85(24.1)
Going to social events	121(34.3)	107(30.3)
Going to cultural events	179(50.7)	218(61.8)
Driving	60(17.0)	62(17.6)
Going on day trips to nearby locations	91(25.8)	104(29.5)
Going on longer trips to more distant locations	147(41.6)	127(36.0)
Performing volunteer work	93(26.3)	140(39.7)
Performing paid employment	238(67.4)	266(75.4)
Participating on boards	33(9.3)	33(9.3)
Participating in universities for the old aged	18(5.1)	17(4.8)
Participating in peer groups	66(18.7)	48(13.6)

DISCUSSION

Regarding changes in the socioeconomic factors between the two surveys, the high percentage of females among the elderly subjects in the present study is consistent with data from other national investigations and may be justified by the feminization of aging[5,10,16,]. Furthermore, some sociodemographic characteristics, such as living arrangements, age, and income, are similar to findings in studies among the elderly[5,17].

It is known that the higher the age range, the greater the risk of functional decline and the lower the capacity to perform AADL[18]. However, the increase in income in the second stage, characteristic of this population, can be considered a facilitating factor and indicative of improved activity performance. A survey by the Fibra network showed greater engagement in social and intellectual AADL with family income above 10 minimum salaries[19], which is consistent with the present study.

Concerning the level of activities developed, the percentage of the elderly that worsened indicates a decline in the integrity of important physical and social functions related to more complex functional levels of this type of ADL[5]. These changes in level may occur as a result of aging, which is a process marked by health problems and social barriers that can reduce the ability to carry out these activities[8]. Therefore, healthcare professionals should identify social losses of the elderly during appointments and home visits in order to establish tracking and intervention strategies for maintenance and/or improvement in functionality in elderly patients.

In relation to the interruption of AADL, a study by the Fibra network revealed that initially, the most frequently interrupted AADL were participation in university for the old aged (86.2%), participation on boards and councils (70%) and participation at community centers (61.1%). In contrast, in the second stage of the study, the most frequently interrupted AADL were paid employment (60.7%), long trips (30.6%), participation in parties and gatherings (27.5%), and cultural events (27.5%)[6]. These results diverge from the present study, in which two of the three main interrupted AADL (paid work and participation in cultural events) were maintained at both times.

The literature shows that the interruption of paid employment is strongly related to retirement, be it for incapacity or length of service. However, the interruption of volunteer work may be related to the fact that, differently to other countries, volunteer work is not so widespread or stimulated in Brazil[6]. Consequently, it is important to reflect on the factors that trigger the interruption of these activities, investigate the interrupted AADL and the reasons for this interruption and determine the impact on the lives of older people.

In this scenario, the healthcare team can create awareness among the elderly and their relatives and enable them to intervene and guarantee their well-being through health education. The view of nurses in primary health care can guide nursing care for the elderly and direct it toward the individual needs of these users. Nurses and healthcare teams, elderly patients and their relatives could then identify changes in social involvement and establish a care plan that maintains functionality.

Improvement in AADL is associated with income of up to one minimum salary, not being frail and pre-frailty, while worsening is associated with living alone.

Table 3. Final model of the multinomial logistical regression for socioeconomic profile and health variables among groups of improvement, stability, and worsening in AADL levels. Uberaba, MG, 2017.

Variable	AADL Levels					
	Improvement Group			Worsening Group		
	OR	CI95%	p*	OR	CI95%	p*
Sex (female)	0.75	0.37-1.49	0.412	0.80	0.41-1.56	0.515
Age (in years)	1.00	0.96-1.05	0.809	0.98	0.94-1.02	0.521
Conjugal status (without partner)	0.75	0.38-1.48	0.411	0.76	0.38-1.48	0.422
Living arrangements (living alone)	1.98	0.81-4.83	0.133	2.48	1.05-5.87	0.038*
Individual income (up to one MS)	2.59	1.35-4.97	0.004*	1.88	0.99-3.56	0.051
Number of diseases	1.09	0.99-1.19	0.068	1.05	0.96-1.15	0.292
Sedentary time (time in minutes)	1.00	0.99-1.00	0.773	1.00	0.99-1.00	0.369
Pre-frail	3.21	1.13-9.06	0.028*	1.89	0.72-4.92	0.190
Not frail	4.89	1.56-15.26	0.006*	2.73	0.94-7.89	0.063

OR: *odds ratio*; CI: confidence interval; MS: minimum salary; p*<0.05. Stability group as reference. Predictor variables used at baseline.

Improvement in levels of AADL and its relationship with income was also observed in a population study from the Fibra network. However, it was found that engagement in social and intellectual AADL was greater among subjects with an income above 10 minimum salaries (p<0.001)[19], which diverges from the present investigation. Moreover, research by the Ermelindo Matarazzo network (SP) identified that the elderly with higher incomes were more active[8]. A study in Pernambuco did not show a relationship between income and AADL (p=0.286)[16]. These findings may be related to specific territories since the cited studies were developed in big cities, differently to the present study. Thus, it can be inferred that the evaluated AADL are socialization and leisure options of elderly people with lower incomes in this municipality (cultural events, trips, volunteer work), which justifies their greater participation in these activities in relation to the elderly with higher incomes[19] and contradicts the relationship of low income with less access to resources and services. As such, the socialization options of the population with higher income should be investigated to determine whether their activities diverge from those evaluated by the instrument and/or the reasons for low AADL. Healthcare services should know the affiliated population, identify the social equipment of the coverage area and establish partnerships in the community so as to meet the particularities of each elderly patient.

Concerning the impact of frailty on AADL, considering that AADL performance may be related to dependence, the not frail and/or pre-frail elderly may still not present severe functional limitations[14], and may, therefore, be able to maintain their social and environmental participation or physical health. Furthermore, the scientific literature shows that frailty may be associated with sarcopenia[20], which can affect social activities due to the relationship with physical and functional capacity[20]. Among the elderly participants in the study from the Fibra network, the prevalence of sarcopenia was 66.7% of the partially dependent population for AADL[21]. It can be highlighted that, according to the criteria of Fried[14], frailty syndrome encompasses physical characteristics that, when not compromised or compromised in a lower number of components, assist in the maintenance and/or improvement of autonomy and independence during aging. Also, it improves social conditions for the maintenance of activities that provide better functionality.

An investigation carried out in Curitiba (PR) revealed that not-frail and pre-frail elderly subjects scored better for quality of life, especially for functional capacity dimensions (p<0.001), physical limitations (p=0.001) and pain (p=0.002), when compared to the frail[22]. This context may encourage older people to continue performing AADL or improve their performance since physical problems such as pain can interfere with their desire and disposition to participate in activities.

Worsening in the levels of AADL associated with the condition of elderly subjects living alone is only consistent with the study in Pernambuco (p=0.030)[16]. However, another study with the elderly in Thailand showed that those that live with other people have a greater risk of incapacity in daily life activities. Individuals that live alone need to complete tasks themselves, while those that live with others may have assistance. The study did not confirm the relationship between this variable and dependence, suggesting that older people can invite another person to stay with them when they become incapacitated[23].

This result may be related to the fact that without company the elderly person restricts their social activities. An investigation carried out in Portugal revealed that elderly widows and widowers and/or divorcees reported feeling loneliness[24], which may be related to the result of the present study. In this research, social activities such as trips, get-togethers, leisure and entertainment activities, good intergenerational relationships, and the presence of family members diminished feelings of loneliness and isolation[24]. Consequently, alternatives that this population considers agreeable should be sought together with the elderly subjects, according to their possibilities, preferences, and reality, so as to maintain social functionality.

CONCLUSION

Identification of factors associated with improvement and worsening in the performance of AADL can guide care for the elderly and help maintain functionality. Therefore, it is necessary to rethink the impact of decreasing social activities, not only within the context of health, but also in the daily life of older people. Knowledge of the factors related to improvement and worsening of AADL can promote healthcare actions that address these factors. Thus, healthcare professionals must remain attentive to changes in the functionality of elderly patients, as well as to its predictors. To identify the impact on social activities, healthcare services should establish routine functionality assessments of the elderly that focus on social participation.

The main limitations of the present study were the impact of specific and/or incapacitating morbidities and duration of the disease and use of medication, which were not evaluated. The significant number of losses in the sample after two years was also considered a limitation.

Thus, it is important to conduct future investigations on this subject and rethink health care directed towards the performance and maintenance of AADL among the elderly, especially for groups of improvement and worsening. The capacity of nurses to evaluate and plan care for this population could also be more assiduously explored so as

to guarantee greater participation of the elderly in social, productive and leisure activities.

It should be noted that the number of articles in the scientific literature addressing this subject remains scarce, which demonstrates the need for studies with longer-term follow-up.

REFERENCES

1. Lenardt MH, Silva SC, Seima MD, Willing MH, Fuchs PAO. Desempenho das atividades de vida diária em idosos com Alzheimer. Cogitare Enfermagem. 2011;16(1):13-21. http://dx.doi.org/10.5380/ce.v16i1.21106.
2. Cornelis E, Gorus E, Van Schelvergem N, De Vriendt P. The relationship between basic, instrumental, and advanced activities of daily living and executive functioning in geriatric patients with neurocognitive disorders. Int J Geriatr Psychiatry. 2019 Jun;34(6):889-99. http://dx.doi.org/10.1002/gps.5087.
3. Dias EG, Duarte YAO, Almeida MHM, Lebrão ML. As atividades avançadas de vida diária como componente da avaliação funcional do idoso. Rev Ter Ocupacional Universidade de São Paulo. 2014;25(3):225-32. http://dx.doi.org/10.11606/issn.2238-6149.v25i3p225-232.
4. Alves LC, Leite IC, Machado CJ. Conceituando e mensurando a incapacidade funcional da população idosa: uma revisão de literatura. Ciên Saúde Coletiva. 2008;13(4)1199-207. http://dx.doi.org/10.1590/S1413-81232008000400016.
5. Dias EG, Andrade FB, Duarte YAO, Santos JLF, Lebrão ML. Atividades avançadas de vida diária e incidência de declínio cognitivo em idosos: Estudo SABE. Cad Saúde Pública. 2015;31(8):1623-35. http://dx.doi.org/10.1590/0102-311X00125014.
6. Pinto JM, Neri AL. Doenças crônicas, capacidade funcional, envolvimento social e satisfação em idosos comunitários: Estudo Fibra. Ciên Saúde Coletiva. 2013;18(12):3449-60. http://dx.doi.org/10.1590/S1413-81232013001200002.
7. Vieira RA, Guerra RO, Giacomin KC, Vasconcelos KSS, Andrade ACS, Pereira LSM et al. Prevalência de fragilidade e fatores associados em idosos comunitários de Belo Horizonte, Minas Gerais, Brasil: dados do estudo FIBRA. Cad Saúde Pública. 2013;29(8):1631-43. http://dx.doi.org/10.1590/0102-311X00126312.
8. Oliveira EM, Silva HS, Lopes A, Cachioni M, Falcão DVS, Batistoni SST et al. Atividades Avançadas de Vida Diária (AAVD) e desempenho cognitivo entre idosos. Psico-USF. 2015;20(1):109-20. http://dx.doi.org/10.1590/1413-82712015200110.
9. Sardinha LB, Ekelund U, Santos L, Cyrino ES, Silva AM, Santos DA. Breaking-up sedentary time is associated with impairment in activities of daily living. Exp Gerontol. 2015;72:57-62. http://dx.doi.org/10.1016/j.exger.2015.09.011.
10. Soares WJS, Lima CA, Bilton TL, Ferrioli E, Dias RC, Perracini MR. Association among measures of mobility-related disability and self-perceived fatigue among older people: a population-based study. Braz J Phys Ther. 2015;19(3):194-200. http://dx.doi.org/10.1590/bjpt-rbf.2014.0091.
11. Instituto Brasileiro de Geografia e Estatística (IBGE). Cidades. Minas Gerais. Uberaba. Censo demográfico 2010 – resultados da amostra, características da população. Rio de Janeiro: IBGE; 2010 [acesso em: 6 nov. 2016]. Disponível em: https://www.ibge.gov.br/estatisticas/sociais/populacao/9662-censo-demografico-2010.html?edicao=9754&t=resultados.
12. Bertolucci PHF, Brucki SMD, Campacci SR, Juliano Y. O Mini-Exame do Estado Mental em uma população geral: impacto da escolaridade. Arq Neuro-Psiquiatr. 1994;52(1):1-7. http://dx.doi.org/10.1590/S0004-282X1994000100001.
13. Ribeiro LHM, Neri AL. Exercícios físicos, força muscular e atividades de vida diária em mulheres idosas. Ciên Saúde Coletiva. 2012;17(8):2169-80. http://dx.doi.org/10.1590/S1413-81232012000800027.
14. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56(3):146-56.
15. Mazo GZ, Benedetti TRB. Adaptação do questionário internacional de atividade física para idosos. Rev Bras Cineantropom Desempenho Hum. 2010;12(6):480-4. http://dx.doi.org/10.1590/S1980-00372010000600013.
16. Araújo GKN, Souto RQ, Alves FAP, Sousa RCR, Ceballos AGC, Santos RC et al. Functional capability and associated factors in living in a community. Acta Paul Enferm. 2019;32(3):312-8. http://dx.doi.org/10.1590/1982-0194201900043.
17. Virtuoso JS Jr, Martins CA, Roza LB, Paulo TRS, Ribeiro MCL, Tribess S. Prevalência de incapacidade funcional e fatores associados em idosos. Texto Contexto Enferm 2015;24(2):521-9. http://dx.doi.org/10.1590/0104-07072015001652014.
18. Virtuoso JS Jr, Martins CA, Roza LB, Paulo TRS, Ribeiro MCL, Tribess S. Prevalência de incapacidade funcional e fatores associados em idosos. Texto Contexto Enferm. 2015;24(2):521-9. http://dx.doi.org/10.1590/0104-07072015001652014.
19. Dietrich C, Cardoso JR, Vargas F, Sanchez EC, Dutra FH, Moreira C et al. Capacidade funcional em idosos mais velhos após alta da Unidade de Terapia Intensiva. Coorte Perspectiva. Rev Bras Ter Intens. 2017;29(3):293-302. http://dx.doi.org/10.5935/0103-507x.20170055.

20. Sposito G, Neri AL, Yassuda MS. Atividades avançadas de vida diária (AAVDs) e o desempenho cognitivo em idosos residentes na comunidade: dados do Estudo FIBRA Polo UNICAMP. Rev Bras Geriatr Gerontol. 2016;19(1):7-20. http://dx.doi.org/10.1590/1809-9823.2016.15044.
21. Pillatt AP, Patias RS, Berlezi EM, Schneider RH. Quais fatores estão associados à sarcopenia e à fragilidade em idosos residentes na comunidade? Rev Bras Geriatr Gerontol. 2018;21(6):755-66. http://dx.doi.org/10.1590/1809-9823.2016.15044.
22. Viana JU, Dias JMD, Pereira LSM, Silva SLA, Hoelzle LF, Dias RC. Pontos de corte alternativos para massa muscular apendicular para verificação da sarcopenia em idosos brasileiros: dados da Rede Fibra – Belo Horizonte/Brasil. Fisioter Pesqui. 2018;25(2):166-72. http://dx.doi.org/10.1590/1809-2950/17533725022018.
23. Lenardt MH, Carneiro NHK, Binotto MA, Willig MH, Lourenço TM, Albino J. Fragilidade e qualidade de vida de idosos usuários da atenção básica de saúde. Rev Bras Enferm. 2016;69(3):478-83. http://dx.doi.org/10.1590/0034-7167.2016690309i.
24. Khongboon P, Pongpanich S, Chapman RS. Risk Factors for Six Types of Disability among the Older People in Thailand in 2002, 2007, and 2011. J Aging Res. 2016; 2016:6475029. http://dx.doi.org/10.1155/2016/6475029.
25. Azeredo ZAS, Afonso MAN. Solidão na perspectiva do idoso. Rev Bras Geriatr Gerontol. 2016;19(2):313-24. http://dx.doi.org/10.1590/1809-98232016019.150085.