



## Functionality of elderly people with cognitive impairments in different contexts of social vulnerability\*

*Funcionalidade de idosos com alterações cognitivas em diferentes contextos de vulnerabilidade social*

*Funcionalidad de ancianos con alteraciones cognitivas en diferentes contextos de vulnerabilidad social*

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### ABSTRACT

**Objectives:** To evaluate the functionality of older people with cognitive impairments, living in different contexts of social vulnerability and correlate with the variables of age and gender. **Methods:** Cross-sectional, descriptive study that included the evaluation performed in 88 patients, using the Katz Index and the Pfeffer Functional Activities Questionnaire. The Mann-Whitney and Spearman correlation, with significance level of 5% ( $p \leq 0.05$ ) were used. **Results:** There was no influence of gender on the results of evaluating the functionality of the elderly. It was found that the older the elderly were, the more dependent they were, both for instrumental and basic activities. It was found that most elderly living in poor environments were dependent for activities outside the home. **Conclusion:** These data reinforce the importance of evaluating the functional capacity of the elderly, especially those with cognitive impairment, advanced age and living in contexts of poverty.

**Keywords:** Geriatric nursing; Health of the elderly; Family Health Program

### RESUMO

**Objetivos:** Avaliar a funcionalidade de idosos com alterações cognitivas, morando em diferentes contextos de vulnerabilidade social e correlacionar com as variáveis sexo e idade. **Métodos:** Estudo descritivo, transversal que abrangeu a avaliação realizada em 88 idosos, utilizando o Índice de Katz e Questionário de Atividades Funcionais de Pfeffer. Os testes de Mann-Whitney e a correlação de Spearman, com nível de significância de 5% ( $p \leq 0,05$ ) foram utilizados. **Resultados:** Não houve influência do sexo nos resultados da avaliação da funcionalidade dos idosos. Verificou-se que quanto mais velho for o idoso, mais dependente poderá ser, tanto para atividades básicas como para instrumentais. Verificou-se que a maioria dos idosos que vive em ambientes pobres é dependente para as atividades realizadas fora do domicílio. **Conclusão:** Estes dados reforçam a importância da avaliação da capacidade funcional dos idosos, sobretudo àqueles com alterações cognitivas, idade avançada e residentes em contextos de pobreza.

**Descritores:** Enfermagem geriátrica; Saúde do idoso; Programa Saúde da Família

### RESUMEN

**Objetivos:** Evaluar la funcionalidad de ancianos con alteraciones cognitivas, que viven en diferentes contextos de vulnerabilidad social y correlacionar con las variables sexo y edad. **Métodos:** Se trata de un estudio descriptivo, transversal que abarcó la evaluación realizada a 88 ancianos, utilizando el Índice de Katz y el Cuestionario de Actividades Funcionales de Pfeffer. Fueron utilizados los tests de Mann-Whitney y la correlación de Spearman, con nivel de significancia del 5% ( $p \leq 0,05$ ). **Resultados:** No hubo influencia del sexo en los resultados de la evaluación de la funcionalidad de los ancianos. Se verificó que cuanto más viejo es el anciano, más dependiente podrá ser, tanto para las actividades básicas como para las instrumentales. Se verificó que la mayoría de los ancianos que vive en ambientes pobres es dependiente para las actividades realizadas fuera de su domicilio. **Conclusión:** Estos datos refuerzan la importancia de la evaluación de la capacidad funcional de los ancianos, sobre todo a aquellos con alteraciones cognitivas, edad avanzada y residentes en contextos de pobreza.

**Descriptores:** Enfermería geriátrica; Salud del anciano; Programa Salud de la Familia

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## INTRODUCTION

Dementia, a non-contagious chronic disease, is common among the elderly population and its prevalence tends to increase with age<sup>(1)</sup>. Due to this fact, alterations and cognitive deficit might lead the elderly individual to a functional decline, that is, the ability to perform daily activities, such as bathing, getting dressed, going shopping, going to the bank, etc, is reduced or lost<sup>(2)</sup>. Therefore, longevous elderly people with cognitive alterations might have a higher probability of alterations to their functional ability<sup>(3)</sup>.

The functional ability decline might lead the elderly individual to a functional dependence, which occurs gradually, until it affects all his/her functionality domains. The functional dependence can be defined as the inability to execute activities of daily living (ADL). Thus, elderly people lose the ability to look after themselves and responding for themselves<sup>(4)</sup>.

There is a suspicion regarding elderly people who live under poverty conditions: they might be more affected than those who are not poor. People who have a precarious financial condition are more exposed to getting ill and dying, a fact that is intensified in more vulnerable and unprotected populations, such as elderly people<sup>(5)</sup>.

With regard to gender, it is believed that women – due to their longer life – experience a higher number of chronic diseases and comorbidities, resulting in functional limitation and general inability<sup>(6)</sup>.

As to age, it is assumed that older individuals present a higher dependence level than younger individuals, considering that more chronic and impairing diseases appear with time, which makes them more dependent of other people's help.

Therefore, the objective of the present study was to assess the functionality of elderly people with cognitive alterations, living in different social vulnerability contexts, and correlating it with the variables 'gender' and 'age'.

## METHODS

The present is a cross-sectional descriptive study, based on the quantitative research approach, performed in São Carlos – SP.

In this study, the Índice Paulista de Vulnerabilidade Social – IPVS (Social Vulnerability Index of the State of São Paulo), from the census sector of the Unidade de Saúde da Família – USF (Family Health Unit), where elderly individuals were registered was used. Such index aims to define priorities and public action strategies to fight poverty; it classifies the censitary sectors of the State of São Paulo, according to the social vulnerability levels their residents are exposed to. Six groups have been created: IPVS 1 (no social vulnerability), IPVS 2 (very

low social vulnerability), IPVS 3 (low social vulnerability), IPVS 4 (medium social vulnerability), IPVS 5 (high social vulnerability) e IPVS 6 (very high social vulnerability)<sup>(7)</sup>.

First of all, a survey on the city's Family Health Units was performed and sectors were identified according to their Social Vulnerability Indexes. The Family Health Units censitary sectors were located through addresses. In this stage, the city's IBGE (Brazilian Institute of Geography and Statistics) unit supported the researchers on the reconciliation of the data related to a given address censitary sector. After that, the IPVS's map was checked, so as to find out the Social Vulnerability Index given to the sectors.

Units inserted in different social vulnerability contexts, that is, those with IPVS 2 to 6, were included. Units with an IPVS 1, that is, those with no social vulnerability, and units with no given IPVS at the data collection time were not included.

The next step was to identify elderly people with cognitive alterations with the support of the Family Health Units, and through a database from the Health and Ageing Group -UFSCar-CNPq. In order to track elderly individuals with cognitive alterations, the Mini Mental State Exam (MMSE) was utilized, after being translated and validated for Brazil<sup>(8)</sup>. Elderly individuals who presented results below the cut-off point, according to their educational level, were considered as individuals with cognitive alterations. The cut-off points were: for illiterates, 18 points, people with three years of education, 21 points, people with 4-7 years of education, 24 points, and people with 8 years of education or more, 26 points. The caregivers were selected by the elderly people in question<sup>(9)</sup>.

In the six Family Health Units selected for the present research, there were 1,578 registered elderly people. From this group, 755 had been assessed by a previous study, and 195 presented results below the cut-off point in the Mini Mental State Exam (MMSE). A sample of 88 elderly individuals defined according to statistic criteria represented the elderly people with cognitive alterations who were registered in the six studied units. Out of the 88 elderly individuals, 72 had caregivers.

Eighty eight elderly individuals participated in the study (W=57 and M=31), as well as 72 caregivers. The elderly people were registered in Family Health Units in regions with different social vulnerability indexes. The elderly individuals inclusion criteria were: being 60 years old or more; being registered at a unit that presented the Social Vulnerability Index of the State of São Paulo (IPVS), levels 2, 3, 4, 5, or 6; presenting low results in the Mini Mental State Exam, according to the educational degree; not having serious language or understanding impairments; and signing the Informed Consent Term. The inclusion criterion for caregivers was: being referred

by the elderly person as the main responsible for his/her care.

The research project was approved by the Research Ethics Committee of the University where the research took place (Legal Opinion 253/2008). All the ethical aspects related to researches with human beings were respected, according to Resolution n.º 196/96. The data collection began after the Informed Consent Term was signed by the primary caregiver or responsible family member of the elderly person with cognitive alterations.

Individual interviews, previously arranged in the 88 elderly people's houses, took place from July to December 2008. Data collection consisted of a structured interview, using two instruments, Katz Index for Daily Life Activities – used with the elderly individuals – and Functional Activities Questionnaire by Pfeffer – used with the caregivers, so as to obtain information about the elderly individuals.

To assess the ability to perform basic activities of daily living (BADL), data were collected through Katz Index. This instrument approaches aspects such as bathing, ability to get dressed, using the toilet, locomotion, continence, and feeding. There are three possible scores for each one of the items, according to the patient's level of dependence: independent, assistance needed, and dependent<sup>(10)</sup>.

To assess the participants' ability to perform instrumental activities of daily living, data were collected through the Functional Activities Questionnaire by Pfeffer. The scale assesses the instrumental daily life activities, such as controlling personal finances, cooking, understanding the environment around, among others. The instrument has ten questions. In each question, the elderly individual's score might range from 0 to 3 points, totalizing a maximum of 30 points. However, scores that are similar or higher than 5 characterize the elderly as dependent<sup>(11)</sup>.

The statistic methodology used for the data analysis was not the parametric method, but the Mann-Whitney test and Spearman's correlation. The significance level adopted was 5% ( $p \leq 0.05$ ).

## RESULTS

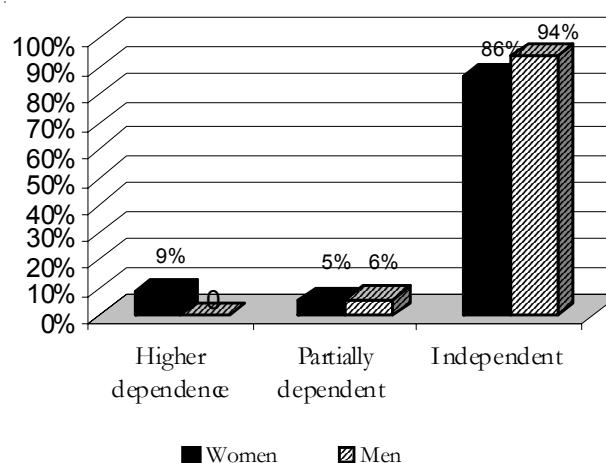
Individual interviews with the elderly subjects and their caregivers were performed in different social vulnerability contexts. From this group of elderly people, 49% ( $n=43$ ) belonged to low and medium social vulnerability areas, and 51% ( $n=45$ ) belonged to high and very high social vulnerability regions.

When assessing the Basic Activities of Daily Living, Katz Index revealed that 88% of the elderly interviewed were independent, 6% were partially dependent and 6% presented a higher dependence degree. Among the study

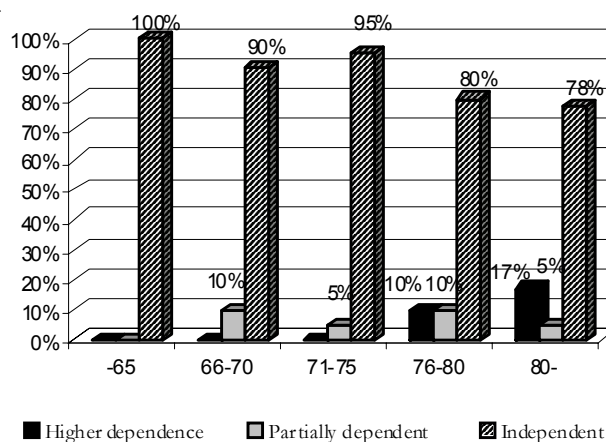
participants, only women presented a relevant dependence degree, and the percentage of independent men was higher in relation to women, according to data presented at Figure 1.

According to Mann Whitney test ( $p=0.202$ ), there was no significant difference between genders with regard to Katz Index, which leads to the conclusion that gender does not affect the basic activities of daily living for the present research subjects.

Data showed that the older the subject, the lower the percentage of independent elderly individuals, and the higher the number of elderly individuals with a relevant dependence degree (Figure 2).



**Figure 1** – Elderly subjects' distribution according to Katz Index and gender ( $n=88$ ).



**Figure 2** – Elderly subjects' distribution according to Katz Index and the age bracket, ( $n=88$ ).

In this study, it was possible to observe that ageing is a predisposing factor for a functional decline with regard to basic activities of daily life.

Through Spearman's correlation, an extremely strong correlation (correlation coefficient = 0.977) and a significant correlation ( $p= 0.000$ ) were found between

Katz Index and the age bracket. Therefore, the older the individual, the higher the dependence level.

With regard to elderly people who lived in high and very high social vulnerability contexts, 96% were considered independent, 2% partially dependent, and 2% presented a relevant dependence degree in relation to basic activities of daily living. It was also possible to verify that among the elderly individuals who lived in low and medium social vulnerability areas, 82% were independent, 9% were partially dependent, and 9% presented a relevant dependence degree. Low and medium social vulnerability regions presented a higher percentage of dependent elderly individuals than high and very high social vulnerability areas.

Such phenomenon can be explained by a higher number of older individuals in low and medium social vulnerability areas. As described before, the older the individual, the stronger the predisposition to a functional decline. Thus, dependence is a lot higher in this group than in poverty contexts, where individuals were younger.

According to Mann Whitney Test ( $p=0.004$ ), there was a significant difference between the high and very high social vulnerability groups and the low and medium social vulnerability groups with regard to Katz Index. Because Katz Index is associated to age, and the low and medium social vulnerability groups presented older people, it was possible to verify differences between these two social vulnerability groups.

The basic activity of daily living with the highest performance percentage among the elderly individuals was feeding (98%), followed by transfer (94%), continence (93%), personal hygiene (92%), ability to get dressed (89%), and the ability to bathe alone, with 88%.

The most performed basic activity of daily living is feeding, and the least one is bathing, both for elderly people living in low and medium social vulnerability contexts, and for those living in high and very high social vulnerability contexts. It is also possible to observe that such basic activities are more frequently performed by younger individuals living in a poverty context than by older individuals living in a low or medium social vulnerability context. Age could be an interference factor for the performance of basic activities of daily living in both contexts.

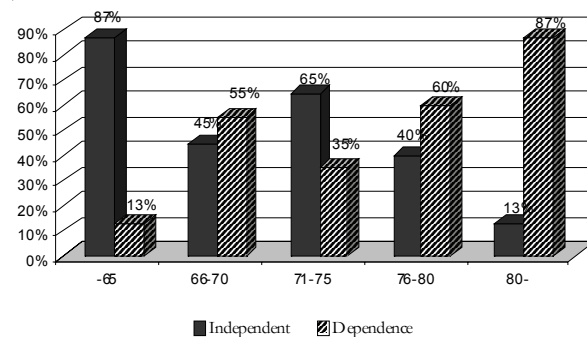
Pfeffer's Questionnaire for the Instrumental Activities of Daily Living (IADL) showed that 48% of the elderly individuals were independent, and 52% were dependent.

With regard to gender, 46% of the women and 64% of the men presented dependence indicating scores. According to Mann Whitney Test ( $p=0.636$ ), there was no significant difference between genders in Pfeffer's Questionnaire, thus demonstrating that gender does not affect the performance of instrumental activities of daily living among the elderly people assessed by the

present research.

With regard to the age bracket, data have demonstrated that dependence increases with age, starting at 13% in the age bracket comprising elderly individuals between 60 and 65, and reaching 87% among elderly individuals who were 80 years old or older, according to data from Figure 3.

Spearman's correlation enabled the identification of a moderate correlation (correlation coefficient= 0.469), and a significant correlation ( $p= 0.000$ ) between Pfeffer's Questionnaire and the age bracket, that is, the older the individual, the higher the dependence degree.



**Figure 3** – Elderly subjects' distribution according to Pfeffer's Questionnaire results and the age bracket, (n=88).

With regard to the social vulnerability groups, it was possible to observe that most elderly individuals living in a high or very high social vulnerability context (58%) were dependent when performing activities out of their houses, and 42% were independent. Elderly individuals living in a low or medium social vulnerability context were mostly (63%) independent performing such activities, and 37% were dependent. According to Mann Whitney test ( $p=0.009$ ), a significant difference was found between the high social vulnerability group and the low social vulnerability group with regard to Pfeffer's Questionnaire.

It was possible to verify that elderly individuals living in poverty environments are more excluded than those living in low and medium social vulnerability areas, for they depended on somebody else to perform activities out of their houses, such as going to the bank, shopping, etc.

## DISCUSSION

Chronicle health problems associated to a longer life expectancy may contribute to an increase in the number of functionally limited Brazilian elderly individuals<sup>(12)</sup>. As a consequence, a poorer health condition will lead elderly individuals to public healthcare centres more frequently<sup>(13)</sup>. Therefore, there is an increase in the

demand for elderly people healthcare, which is becoming more and more complex<sup>(4)</sup>. In Brazil, care is given to impaired elderly individuals by their families, which is a hard task, considering they do not know how to provide care, and experience changes in the family dynamics<sup>(14)</sup>.

The present study enabled the verification of the current functional ability of elderly people with cognitive alterations who attended Family Health Units in São Carlos, according to different social vulnerability levels.

With regard to the functional assessment scales used in the study, Katz Index and the Functional Activities Questionnaire by Pfeffer, both are widely used to measure functional ability, for they are short, objective, and easy to use instruments, facilitating the understanding for both the interviewee and the interviewer.

The researchers observed that elderly individuals presented more difficulties performing IADL than BADL, as expected. Studies have affirmed that, hierarchically, losses occur first in the instrumental activities of daily living and then in the basic activities of daily living. The literature has demonstrated that alterations in the performance of activities of daily living might occur from the initial states of dementia. When cognitive alterations are low, losses are mainly detected in the IADL, and the BADL would only be affected by more advanced dementia states<sup>(15)</sup>.

Most of the elderly people (89%) were independent in relation to the basic activities of daily living, and dependent (52%) in relation to the instrumental activities of daily living. Other literature studies corroborate with such data<sup>(2,16)</sup>.

A study performed in Santa Cruz – RN had 310 elderly subjects, with 60 years of age or more, registered in the Sistema de Informações da Atenção Básica – SIAB (Basic Healthcare Information System), in 2001. As a result, 26.8% presented cognitive alterations and most of the elderly individuals (86.8%) could independently perform basic activities of daily living. After 53 months, a total of 293 registrations were located. Out of this number, 60 individuals had passed away, totalizing 233 subjects which were reassessed. Results showed that most of the living subjects (86.2%) were still independent, and from the elderly individuals who had passed away, 62.5% used to be dependent<sup>(6,16)</sup>.

A study performed in São Paulo – SP aimed to present the results obtained in the Estudo SABE – Saúde, Bem-Estar e Envelhecimento (SABE Study – Health, Well-Being, and Ageing), regarding the functional performance of elderly individuals (N= 2143) with cognitive decline. Results showed that 61.3% of the elderly subjects with cognitive decline had no difficulties performing basic activities of daily living, 22.7% presented difficulties in one or two activities, and 16%, in three or more. With regard to the elderly subjects

with no cognitive decline, 81.4% did not present difficulties performing basic activities of daily living, 13.3% presented difficulties in one or two activities, and 5.2%, in three or more. Subjects presented more difficulties performing instrumental activities of daily living, with a higher prevalence for three or more activities (86.2%). Subjects had more difficulties performing IADL than BADL. The authors concluded that there is a higher functional compromise among elderly with cognitive alterations. They also affirmed that the deficit caused by cognitive alterations lead to functional ability decrease, affecting the performance of activities of daily living<sup>(2)</sup>.

A research performed in Minas Gerais aimed to compare the performance of elderly people with different dementia levels through questionnaires about basic and instrumental activities of daily living. The study subjects were 90 elderly people with a clinic diagnosis of dementia, who had received care in the Centro de Referência do Idoso-MG (Reference Centre for the Elderly). Results showed that the elderly individuals presented a significantly higher functional dependence as the dementia process worsened<sup>(15)</sup>.

In the present study, there was no statistical significance between gender and the functional ability among the studied elderly people. Different results have been found in the literature, showing that women are more dependent than men. The findings of a research show that the prevalence of inappropriate functional ability was higher for women (43.1%) than for men (25.8%) ( $p=0.002$ ), which corroborates with a study performed in Portugal that says women are more dependent than men<sup>(13,17)</sup>.

The elderly population is comprised of more women than men, which is called the feminization of ageing. Although they are more longevous than men, women are more susceptible to the limitations resulting from comorbidities than men, which is a threat for these women's functional ability<sup>(18)</sup>.

Another study suggests that women are more functionally dependent because they lose more muscle and bone mass with ageing than men. These factors could lead to functional ability decrease, however, they should be further explored<sup>(19)</sup>.

With regard to age bracket, this study showed that the older the individual, the more dependent. Similar data were found in the literature, which verified that the functional decline increases with age<sup>(6)</sup>. Three hundred and forty five individuals with 60 years of age or more participated in a study in Santa Catarina. The data collection instrument used was the self-assessment scale proposed by Rikli and Jones to verify the elderly individuals' functional ability. Results showed that 62.9% of the elderly subjects presented appropriate functional

ability, whilst 37.1%, presented inappropriate functional ability. With regard to age, the percentage of dependent individuals increases according to their age (the older the more dependent). Although the assessment instrument used was different from the one used in the present study, results found in both studies were similar<sup>(13)</sup>.

As to the BADL, bathing, the ability to get dressed, and personal hygiene were the activities with the highest dependence levels among the elderly individuals. Similar data were also found in the literature<sup>(20)</sup>.

As to the different social vulnerability groups, there was a higher dependence prevalence for the IADL among elderly people who lived in poverty contexts. The elderly subjects' socioeconomic profile can be an aggravating factor for the instrumental activities performance. People with no income source and a low educational level are the most affected<sup>(6,13)</sup>. A study in the literature shows that older people living under poverty conditions tend to be more functionally dependent due to scarce physical and psychological resources. Differences related to gender make this a worse situation for women, for they are more exposed to poverty and solitude, presenting higher comorbidity and admission rates, as well as more frequently requiring public healthcare services<sup>(21)</sup>.

Therefore, the maintenance of an appropriate functional ability may influence elderly people's quality of life, considering their ability to relate to the community in an independent way, and to an older age. Upon this picture, it is recommended that prevention and control of chronic diseases are performed so as to improve the performance of basic activities of daily living, promoting well-being among the elderly population<sup>(22)</sup>.

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## CONCLUSION

There was no gender influence in the results of the elderly individuals' functional ability assessment. A significant correlation was found between age and the results obtained for the performance of instrumental activities of daily living.

Results found showed that elderly people with cognitive alterations found it more difficult to perform instrumental activities of daily living than basic activities of daily living. Such fact is intensified by poverty contexts. Data reinforced the importance of assessing elderly people's functional ability, especially among those who present cognitive alterations, for they might be more dependent than those with no cognitive decline.

It is worth emphasizing that the early detection and periodic assessment of the functional parameters are relevant so as to maintain the individual autonomy and well-being for as long as it is possible, helping the elderly population age in a healthier way and have a longer life.

Nurses should intervene and promote health with actions that delay impairments to the functional ability, and enable rehabilitation, when it is detected, reducing the number of dependent elderly individuals. Additionally, social and cultural activities to strengthen elderly groups could be developed to improve the quality of life of Brazilian elderly individuals.

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