

# Functional limitation and disabilities of older people with acquired immunodeficiency syndrome

Limitações funcionais e incapacidades de idosos com síndrome de imunodeficiência adquirida

Gylce Eloisa Cabreira Panitz Cruz<sup>1</sup>  
Luiz Roberto Ramos<sup>2</sup>

## Keywords

Public health nursing; Disabled persons; Nursing care; Functioning; Acquired immunodeficiency syndrome; Aged

## Descritores

Enfermagem em saúde pública; Pessoas com deficiência; Cuidados de enfermagem; Funcionalidade; Síndrome de imunodeficiência adquirida; Idoso

## Submitted

April 14, 2015

## Accepted

May 6, 2015

## Corresponding author

Gylce Eloisa Cabreira Panitz Cruz  
Rua Sebastião Gonçalves Coelho, 400,  
Divinópolis, MG, Brazil.  
Zip Code 35501-296  
gylce\_cruz@yahoo.com.br

## DOI

<http://dx.doi.org/10.1590/1982-0194201500081>

## Abstract

**Objective:** To evaluate functional ability of older people with human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS).

**Methods:** This cross-sectional study using observational epidemiological inquiry collected data through interviews and from medical record of 142 older people with HIV/AIDS age 60 to 81 years. Participants were evaluated for cognitive functionality, mental health and activities of daily living domains. We conducted absolute and relative analyses of continuous variables and associations of independent variables.

**Results:** Among the study participants, 82.39% had AIDS, 35.2% had more than 9 years of formal education, and 35% were still using cannabis. HIV was transmitted during heterosexual intercourse in 71.7% of participants and through sex with multiple partners in 70.3%. Adherence to antiretroviral therapy was satisfactory. Functional loss was significant among those age 70 years or older from both sexes.

**Conclusion:** Functional loss of older people with HIV/AIDS did not differ from results found in the literature among the HIV-negative aging population.

## Resumo

**Objetivo:** Avaliar a capacidade funcional de idosos com síndrome de imunodeficiência adquirida (HIV/AIDS).

**Métodos:** Estudo transversal com inquérito epidemiológico observacional com a coleta de dados realizada através de entrevistas e fonte documental de 142 idosos portadores do vírus da imunodeficiência humana, entre 60 e 81 anos de idade, avaliados pelos domínios de funcionalidade cognitiva, saúde mental e Atividades da Vida Diária. Foram realizadas análise absoluta e relativa das variáveis contínuas, além da associação das variáveis independentes.

**Resultados:** Viviam com AIDS 82,39% dos idosos da amostra; 35,2% deles tinham mais de 9 anos de estudo e 35% usavam maconha. Dentre eles, 71,7% se contaminaram em relações heterossexuais e 70,3% em relações com múltiplos parceiros. Constatou-se satisfatória a adesão à terapia antirretroviral. Foi significativa a perda funcional naqueles com 70 anos ou mais de idade de ambos os sexos.

**Conclusão:** As perdas funcionais dos idosos portadores não foram diferentes das verificadas em outros estudos com população idosa não portadora.

<sup>1</sup>Universidade Federal de São João Del Rei, Divinópolis, MG, Brazil.

<sup>2</sup>Universidade Federal de São Paulo, São Paulo, SP, Brazil.

**Conflicts of interest:** none reported.

## Introduction

Aging is a dynamic and progressive process that can trigger the decline of older people's functional ability to perform, with autonomy and independence, activities of daily living (ADLs) and instrumental activities of daily living (IADLs).

Strong evidence shows that a number of chronic diseases, including acquired immunodeficiency syndrome (AIDS) associated with depression and cognitive dysfunction, can lead to functional limitations and disabilities of people living with human immunodeficiency virus (HIV) or AIDS, especially those age 50 years or older.<sup>(1,2)</sup>

Hence, an important clinical change in the demography of older population in the past few decades has focused attention on people with HIV and those living with AIDS.

This scenario has special challenges for patients, health professionals and society as a whole. Fortunately, because of highly active antiretroviral therapy, the option of a healthy life and the manner in which older people define successful aging, many elderly persons have successfully faced HIV and AIDS. In practice, successful aging is characterized by time of life, biologic health, cognitive efficiency, mental health, social competence, productivity, personal control and satisfaction with life.<sup>(3,4)</sup>

However, adverse effects of antiretroviral therapy and clinical progression of AIDS associated with aging can increase with age and reduce the chance of success. Part of this is because AIDS is a transmissible chronic disease and older people with HIV/AIDS can have their autonomy and independency compromised, along with limitations in functional domains.

This study evaluated the functional ability of older people with HIV and AIDS by considering performance in cognitive function, mental health/humor and ADLs and IADLs.

## Methods

This cross-sectional descriptive study was based on an observational epidemiologic inquiry with

a quantitative approach carried out from 2008 to 2012 at the Reference and Treatment Center for STD/AIDS in the city of São Paulo. Data were collected through interviews and from participants' medical record.

Inclusion criteria were age 60 years or older and confirmed HIV diagnosis at the Reference and Treatment Center for STD/AIDS. The convenience sample consisted of 142 older individuals age 60 to 81 years. The sample error was 5%; we calculated 90% confidence intervals.

Cognitive function was evaluated by using the Mini-Mental State Examination. This neuropsychological test contains 30 questions; each question is worth 1 point. To classify as a cognitive deficit, without a definite diagnosis, the cut-off is  $\geq 23$  points.<sup>(5)</sup>

To evaluate mental health (humor), we used the Brazilian version of the Short Psychiatric Evaluation Schedule. This questionnaire is composed of 15 yes-or-no questions, with each question worth 1 point; the total score is obtained by summing the positive responses.

We used a cut-off point of  $\geq 6$  for the sum of psychiatric symptoms, such as dysthymia (mild depression), without confirmed diagnostic precision.<sup>(6)</sup>

To evaluate independency in ADLs, we applied the Brazilian OARS Multidimensional Functional Assessment Questionnaire and Brazilian version for Older Americans Resources and Services. This instrument is composed of 15 domains: 8 for ADLs (lying in/getting out of bed, eating, grooming, walking on a level surface, bathing, dressing, going to the toilet in time, and trimming toenails) and 7 for IADLs (climbing a flight of stairs, taking medicines on time, walking near the home, shopping, preparing meals, using public transportation, and cleaning the house). Respondents were considered dependent if they could not perform seven or more activities.<sup>(7)</sup>

The Statistical Package for the Social Sciences (SPSS), version 17.0, was used for absolute and relative analyses of collected data. Variables that characterized social and demographic aspects were identified. Measures of variability were calculated, as well as standard deviation, mean, and medium,

besides widening of minimal and maximal values in distribution of simple frequency of continuing samples variables. The Fisher exact test was performed for the association of independent variables.

Development of this study followed national and international ethical and legal aspects of research on human subjects.

## Results

Table 1 reports social and demographic variables among our study sample of older people with HIV/AIDS.

**Table 1.** Sociodemographic characteristics of older people with HIV/AIDS

Variables	n(%)
Gender	
Male	80(56.3)
Female	62(43.7)
Age	
60-69	109(74.7)
70-81	33(25.3)
Marital status	
Widowed	44(31.4)
Single	41(29.2)
Married	25(17.5)
Legal separated	19(13.1)
Divorced	13(8.8)
Years of formal education	
Illiteracy	18(12.7)
1-4	27(19.0)
8	47(33.1)
9-12	22(15.5)
13-16	23(16.2)
≥17	5(3.5)
Diagnosis	
AIDS	117(82.3)
HIV	25(17.7)
Age at the diagnosis	
40-50	33(23.2)
51-60	93(65.4)
≥61	16(11.4)

The sample consisted of 71.7% of older people who acquired HIV through heterosexual intercourse; 70.3%, through intercourse with multiple sex partners; 48.6%, by partner who had had sex with multiple partners; 30.4%, by HIV-positive partners; 16.7%, through bisexual intercourse; 11.6%, by blood transfusion; 10.5%, through homosexual intercourse; 8.7%, by the use of injected

drugs; 2.2%, as sex workers; and 0.7%, through a contaminated syringe.

A total of 38.3% of participants lived alone, 24.1% with their children, 18.4% with a partner, 9.3% with parents, and 9.9% with friends or relatives. Of all participants, 18% were still sex workers.

Most participants were receiving antiretroviral therapy (82.3%). Of those in treatment, 83.7% were age 60 to 69 years old, 94.4% reported knowing how to use the therapy without any difficulty, 85.8% said that they never abandoned the treatment, and only 11.4% mentioned that the therapy caused difficulties in some of their daily life activities, particularly the eventual adverse reactions. Almost 13% of participants had initiated the therapy 20 years ago; 46.6%, 15 years ago; 22.4%, 10 years ago; and 18.1%, less than 10 years ago. Older people age 70 years and older reported less adherence to the therapy and difficulty using it.

Concerning smoking, 52.1% of participants reported that they never smoke, 29.6% were smokers and 18.3% were former smokers. Almost 42% of the older people consume alcohol, 38.7% never consumed alcohol, and 19.7% had stopped drinking alcohol. The most-consumed alcoholic beverage was beer (75.9%), followed by wine (27.6%) and distilled beverages (19%).

Almost 32% of participants had consumed one or more than two types of drugs (87.5% had consumed cannabis; 66.7%, cocaine; 20.8%, crack; and 12.5% injected drugs). Those who currently did not consume any type of drug were 65%; 35% were still using cannabis.

Frequently reported chronic non-transmissible diseases were hypertension (52.5%), depression (23.4%), cataract (21.3%), diabetes (19.0%), joint diseases (19%) and bronchitis (17%).

Almost 65% of participants (both sexes) reported fair satisfaction with life; 21.8%, little satisfaction with life; and 13.3%, high satisfaction with life.

Assessment of cognitive function using the Mini-Mental State Examination showed that 28.1% of participants had probable cognitive deficit; 22.5% achieved a score of 30; 29.2%, a score of 29 to 27; and 19.7%, a score between 26 and 24. No cognitive losses were seen.

**Table 2.** Statistical description of Mini-Mental State Examination (MMSE), Short Psychiatric Evaluation Schedule (SPES) and Brazilian OARS Multidimensional Functional Assessment Questionnaire (BOMFAQ)

Scales	Score	Gender n(%)		General	p-value	Age n (%)		General	p-value
		Female	Male			60-69	≥70		
MMSE									
No cognitive deficit	≥24	38(61.3)	64(80.0)	102(71.8)	0.016	85(78.0)	17(51.5)	102(71.8)	0.007
Presence of cognitive deficit	≤23	24(38.7)	16(20.0)	40(28.2)		24(22.0)	16(48.5)	40(28.2)	
Total		62(100.0)	80(100.0)	142(100.0)		109(100.0)	33(100.0)	142(100.0)	
SPE									
No dysthymia	0-5	62(75.5)	45(73.8)	107(75.9)	0.692	80(74.1)	27(81.8)	107(75.9)	0.487
Presence of dysthymia	≥6	18(24.5)	16(26.2)	34(24.1)		28(25.9)	6(18.2)	34(24.1)	
Total		80(100.0)	61(100.0)	141(100.0)		108(100.0)	33(100.0)	141(100.0)	
ADLs									
Independent	0	54(67.5)	33(53.2)	87 (61.3)	0.163	72(66.1)	15(45.4)	87(61.3)	0.100
Partial dependency	1-6	16(20.0)	21(33.9)	37(26.0)		25(22.9)	12(36.4)	37(26.0)	
Dependent	≥7	8(12.5)	10(12.9)	18(12.7)		12(11.0)	6(18.2)	18(12.7)	
Total		80(100.0)	62(100.0)	142(100.0)		109(100.0)	33(100.0)	142(100.0)	

In mental health/humor tracking, 24.1% of older people scored 6 or more points. The analysis of descriptive measures showed that the mean was 4 points, with a standard deviation of 3.8 points. Thirty-eight percent of participants reported headache; 36.5%, reported agitated sleep and difficulty sleeping; 34.5% and 30.5%, respectively, did not feel well or happy most of the time; 25.5% sometimes felt they were useless; and 21.3% felt alone despite having a family/partner.

Assessment of ADLs and IADLs showed that 61.62% of older people did not mention any difficulty perform the 15 ADLs; 16.5% reported having some difficulty performing one to three ADLs; 9.1%, four to six; and 12.7%, seven or more.

Results of the Mini-Mental State Examination are shown in table 2 including select analysis of the association of independent variables.

## Discussion

Limitations of this study are mainly related to the cross-sectional design, which does not enable us to establish a cause-and-effect relationship among variables, the loss of some older people who were not included in the study. Such loss might lead to the overestimation of the functional level of elderly persons.

Contribution of the study results and their applicability to nursing practice are directly related to their ability to provide directions for future stud-

ies, including basic epidemiologic study of the incidence and prevalence of dependency in ADLs and IADLs associated with cognitive changes rates and mental health among older adults with HIV and AIDS. In addition, this study encourages preventive actions and infection control and has generated information that can be used for care and health promotion among aging individuals with AIDS.

Our study had a predominance of aging men age 60 to 81 years. Most participants were widowed or symptomatic singles who were infected mainly during heterosexual intercourse or through sex with multiple partners. More than 60% of participants reported that infection occurred when they were 51 to 60 years old, and 9.7% reported infection at age 61 years or older. Mean age when infection occurred was 56 years (standard deviation, 6.9 years). Studies conducted in the United States showed similar results and pointed out that with the advent of highly active antiretroviral therapy, the trend in the upcoming years will be toward a mean age at time of infection of 60 years.<sup>(3,8)</sup>

We observed that 35.2% of participants had more than 9 years of formal education, 33.1% had up to 8 years of formal education, and 12.7% were illiterate. Scientific observation shows that people with high school or college education are likely to have more access to information related to HIV infection and, for this reason, have better internal and external resources to live with their serologic condition.<sup>(9,10)</sup>

In our sample, some participants with HIV/AIDS lived alone or with parents, others were still sex workers, and some used cannabis; however, we found no studies including these variables to make a comparison.

Management of antiretroviral therapy in our sample showed that adherence was 82.3% within those age 60 to 69 years, with a mean duration of treatment of 15 years. This result is similar to the adherence found in the literature showing that older people can guarantee significant control of syndrome manifestation and, at the same time, their longevity as HIV-positive individuals.<sup>(11-13)</sup>

Effectiveness of adherence to antiretroviral therapy shows a borderline reliability of patients in relation to offering treatment as a way to improve quality of life, in addition to the significant relationship between use of antiretroviral therapy and not being affected by an opportunistic disease.<sup>(4,8,11)</sup>

It is believed that despite the viral suppression provided by the antiretroviral therapy, the level of systemic persistent immune activation and inflammation is low. This contributes to acceleration of the aging standard of HIV-positive patients. The effects of aging can also be accelerated by the toxicities of long-term antiretroviral therapy and related lifestyle factors, such as smoking, alcohol consumption, drug use and co-infection by cytomegalovirus and hepatitis C virus. This theoretical association of HIV with aging has been widely discussed because of the increase of comorbidities associated with normal aging in HIV-infected cohorts, including cardiovascular disease, renal impairment, cognitive impairment, decrease of bone mineral density, malignancy, and fragility.<sup>(4,11)</sup>

We found that older people with HIV/AIDS also presented comorbidities, with a higher prevalence of hypertension, depression, joint disease, and diabetes. This information agrees with the findings of studies that characterized population of elderly patients with HIV/AIDS and elderly patients in general.<sup>(1,2,9)</sup>

The Mini-Mental State Examination showed that 28.2% of older people with HIV in our study had cognitive deficit, with significant association with female sex and age 60 to 69 years; however,

we found few data in the scientific literature with which to compare this result.<sup>(12,13)</sup>

In the assessment of mental health/humor we found that 24.1% of elderly patients had dysthymia (mild depression); of these, most were men age 60 to 69 years. However, this result was not significant. One of the first studies about depressive symptoms and higher rate of depressive disorder among individuals infected with HIV consistently showed that men with HIV/AIDS within the same age range, compared with the HIV-negative general population, had a 2% to 7% greater likelihood of meeting criteria for a depression diagnosis.<sup>(9,11,14)</sup>

Dysthymia is twice as frequent among women as men and, in terms of evolution, this condition can be considered as a subtype of adaptive humor that is developed to withstand stress and deprivation. However, an individual with clinical manifestation of dysthymic disorder can present a sensible compromising in the ability to carry out ADLs.<sup>(11,14,15)</sup>

By evaluating the difficulty of aging individuals to perform ADLs, we observed a low prevalence of dependence, mainly among men age 60 to 69 years. Among the 15 evaluated ADLs, participants most often showed an inability to perform the following 5: climbing a flight of stairs, taking medicines on time, going to the toilet in time, trimming toenails, and cleaning the house.

When compared with the few studies of health and functionality in older people with HIV/AIDS, we found that age was a determinant of all independent measures of other factors. Women had an gradual decline in both health and functionality at age 50 years, while the decline for men became more noticeable at 60 years or older.<sup>(16-18)</sup>

Our findings highlight the importance of using a hierarchical scale of functional ability that considers assessment of gradual loss of function with aging, mainly in aging with AIDS. Although functional ability was evaluated with instruments widely used and recognized in the gerontology literature, most studies of aging and functionality do not include older people with HIV/AIDS.

## Conclusion

Data on functionality of these older people with HIV/AIDS were similar to findings for cognition, mental health and independence for ADLs among representative older people from the general aging population.

## Collaborations

Cruz GECP and Ramos LR contributed with conception of the project, data analysis and interpretation, drafting the manuscript, critical review relevant for intellectual content and approval of final version to be published.

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