

### Impaired physical mobility in institutionalized elderly

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## RESEARCH

IMPAIRED PHYSICAL MOBILITY IN INSTITUTIONALIZED ELDERLY  
 MOBILIDADE FÍSICA PREJUDICADA EM IDOSOS INSTITUCIONALIZADOS  
 MOVILIDAD FÍSICA PERJUDICADA EN LOS ANCIANOS INSTITUCIONALIZADOS

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## ABSTRACT

**Objectives:** To characterize institutionalized elderly and associate impaired physical mobility with gender, age, presence of diabetes mellitus, hypertension, pain and physical activity. **Methods:** Cross-sectional, analytical study carried out with 124 institutionalized elderly. **Results:** The majority of the elderly showed impaired physical mobility, prevalence in the age groups of 70 | 80 years and 80 years or more were female; prevalence of hypertension and diabetes mellitus; CVA sequel, weakness, pain and musculoskeletal problems as the main reasons for impaired physical mobility. There was statistical significance ( $p < 0.05$ ) between impaired physical mobility and physical activity. **Conclusion:** These findings identify the importance of a multidisciplinary work to prevent and minimize the consequences of impaired physical mobility among institutionalized elderly. **Keywords:** Elderly, Institutionalization, Mobility limitation.

## RESUMO

**Objetivos:** Caracterizar os idosos institucionalizados e associar a mobilidade física prejudicada com sexo, faixa etária, presença de diabetes *mellitus*, hipertensão arterial sistêmica, dor e realização de atividade física. **Métodos:** Estudo transversal, analítico, realizado com 124 idosos institucionalizados. **Resultados:** A maioria dos idosos apresentou mobilidade física prejudicada, prevalência das faixas etárias de 70 | 80 anos e 80 anos ou mais; sexo feminino; prevalência de hipertensão arterial e diabetes *mellitus*; sequela de acidente vascular encefálico, fraqueza, dor e problemas musculoesqueléticos como principais motivos para mobilidade física prejudicada. Houve significância estatística ( $p < 0,05$ ) entre mobilidade física prejudicada e atividade física. **Conclusão:** Estes achados apontam para a importância de um trabalho multiprofissional para prevenir e minimizar as consequências da mobilidade física prejudicada entre os idosos institucionalizados. **Descritores:** Idoso, Institucionalização, Limitação da mobilidade.

## RESUMEN

**Objetivos:** Caracterizar los ancianos institucionalizados y asociar la movilidad física perjudicada con el sexo, el grupo de edad, la presencia de diabetes mellitus, hipertensión arterial sistémica, dolor y realización de actividad física. **Métodos:** Estudio transversal, analítico realizado con 124 ancianos institucionalizados. **Resultados:** La mayoría de los ancianos presentaron movilidad física perjudicada, predominio de grupos de edad de 70-80 años y 80 años o más; sexo femenino; predominio de hipertensión arterial y diabetes mellitus; secuela accidente cerebrovascular, flaqueza, dolor y problemas musculo esqueléticos como principales motivos para movilidad física perjudicada. Hubo significante estadísticas ( $p < 0,05$ ) entre movilidad física perjudicada y actividad física. **Conclusión:** Estos hallados apuntan para la importancia de un trabajo multiprofesional para prevenir y minimizar las consecuencias de movilidad física perjudicada entre los ancianos institucionalizados. **Descriptor:** Ancianos, Institucionalización, Limitación de la movilidad.

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## INTRODUCTION

In recent years the national population growth was mainly due to the growth of the adult population, particularly the increase in the share of the elderly population. According to the Brazilian Institute of Geography and Statistics (IBGE) Brazil currently has more than 190 million inhabitants, of these approximately 20 million are over the age of 60, corresponding to 10.8%. The enlargement of the top of the pyramid age can be observed by the population growth with 65 years or more, which was 4.8% in 1991, 5.9% in 2000 and 7.4% in 2010.<sup>1</sup>

Advanced age has been associated with greater wear and presence of chronic diseases, and contribute to the increasing dependence of this population, as there is a progressive loss of physical mental and social resources.<sup>2</sup> This scenario demonstrates the fragility of the elderly has been accompanied by various complications, such as their institutionalization and functional decline, which are among other events related to the reduction in physical activity, walking speed and balance.<sup>3</sup>

Long-Term Care Institutions for the Elderly (LTICE) are defined as “government institutions or non-governmental, residential character, aimed at collective household of people over 60 years of age, with or without family support, under conditions of freedom, dignity and citizenship”.<sup>4</sup>

It is known that the environment of these institutions should be stimulating, providing a set of actions which allow that the elderly person remains active<sup>(2)</sup>. However, this housing modality has the disadvantage of providing social isolation, lack of physical and mental activity, which results in a decrease in the quality of life,<sup>5</sup> because it stimulates the dependence and leads to the loss of autonomy of its residents.

Therefore, institutionalized elderly due to the non-necessity of performing various daily tasks

there are faced with an increased inactivity. So that this vicious cycle is broken it is important that everyone, including the institutionalized elderly, perform physical exercises. The lack of regular physical activity is a potential risk factor that can increase the functional decline,<sup>6</sup> with emphasis on the physical mobility.

Physical mobility is one of the items addressed when evaluating the functional capacity, which affects physical performance. It can be defined, according to some authors, as the difficulty or need for help for the individual to execute everyday tasks basic or more complex, as well as tasks related to mobility.<sup>7</sup>

The *North American Nursing Diagnosis Association (NANDA)* brings as one of its nursing diagnoses Impaired Physical Mobility, defined as “limitation in the independent and voluntary physical movement of the body or of one or more extremities”.<sup>8</sup> The existence of this Nursing Diagnosis (ND) has contributed to the intervention planning of a series of health problems, ranging from the self-care deficit to impaired social interaction.<sup>9</sup>

It is known that the elderly are at risk for loss of mobility, because with the aging process occurs; muscle weakness and skeletal muscle, decreased motor coordination and balance, loss of muscle mass, decreased muscle tone among other changes.<sup>10</sup>

Study A study conducted with elderly registered with Family Health Program teams reports that elderly patients present impaired physical mobility related mainly to the physiology of aging, lack of regular physical activity, painful sensation and life habits.<sup>10</sup> No recent studies were found on impaired physical mobility on institutionalized elderly. However, research carried out with older people living in LTICE showed that the performance of physical activity significantly interferes in maintaining balance,

functional mobility and the prevention of falls in these elderly.<sup>11</sup>

Knowing the profile of the elderly who live in LTICE, as to the presence of impaired physical mobility and their possible related factors can support the planning and implementation of the actions of health professionals who work in these institutions to contribute to the best quality of life of this population.

Objective of this study is to characterize the institutionalized elderly of a city in the Southeast of the state of Minas Gerais, Brazil, with and without impaired physical mobility, according to sociodemographic and health determine the association between impaired physical mobility and gender, age, presence of diabetes mellitus, hypertension, pain and performance of physical activity.

## METHODOLOGY

This study is part of a larger study, which has had financial support from the Research Foundation of the State of Minas Gerais (FAPEMIG) and was approved by the Research Ethics Committee of the Triângulo Mineiro Federal University under protocol No. 1360. The research has met all of the ethical principles recommended for research involving human beings according to Resolution 196/96.

This is a cross-sectional, analytical field study with a quantitative approach, held at a LTICE in a city in the Southeast of the state of Minas Gerais, Brazil, registered at the City Hall, as well as the Municipal Council of Social Service in the year 2010.

The city had during this period nine LTICES registered, which housed 295 elderly. There were 124 elderly patients who participated in the study, which met the inclusion criteria: accepting to participate in the study and signed the Statement J. res.: fundam. care. online 2013. jul./set. 5(3):346-353

of Consent and were able to speak. From the study, were excluded 150 (45.7%) of the elderly for not meeting the inclusion criteria, 13 (7.6%) for being deceased or not living at the institution anymore and 8 (4.6%) for not being present at the time of the interview due to travel or hospitalization.

For data collection, initially, appointments were scheduled together with those responsible by the LTICE for the interviews and evaluations of the elderly in the fields of study. The data were collected in the period from February to July 2010, after the acceptance to participate in the research with the signing of the Consent Form by the elder together with their responsible at the institution.

Used for the data collection was an instrument consisting of two parts, which was approved after content review by five experts. The first part was the identification data of the elderly and the sociodemographic variables (sex, age, marital status, number of children and education) and health (comorbidities). The second part was the aspects related to pain (presence, location, time of onset and type), impaired physical mobility (presence and reasons) and the performance of physical activity.

To assess the presence of impaired physical mobility a physical examination was performed on the elderly participant in this study to identify the presence or not of this ND. The following definition was used for the impaired physical mobility: "Limitation in the independent and voluntary physical movement of the body or of one or more extremities".<sup>8</sup> This ND was considered when there was the presence of one or more defining characteristics, according to the NANDA classification. They are: limited range of motion, limited ability to perform fine and gross motor skills, difficulty to turn around, dyspnea on exertion, is engaged in substitutions of movement, postural instability, uncontrolled movements, slow

movements, uncoordinated movements, walking changes, diminished reaction time and tremors induced by movement.<sup>8</sup> The presence or absence of defining characteristics was assessed by means of a physical examination and interview carried out by the researchers with the elderly participants in the study. The physical examination and the interview were conducted in a private environment (room) of the elderly in the LTICE.

The data were entered in a spreadsheet program *Excel XP*® from Microsoft®, validated by double entry and exported to the Statistical Package for the Social Sciences (*SPSS*) version 17.0 for processing and analysis.

Descriptive statistics were used by means of absolute frequencies and percentages for the sociodemographic and health variables. To check the association between impaired physical mobility and gender, age, presence of diabetes mellitus (DM), high blood pressure (HBP), presence of pain and performing physical activity using the Chi-square test and the significance level was set at 0.05. Considered as the outcomes was the impaired physical mobility and variable predictors such as gender, age, presence of DM, presence of HBP, presence of pain and physical activity.

## RESULTS AND DISCUSSION

Among the 124 seniors who participated in the study, the majority 55.6% showed impaired physical mobility. In this group, there was a prevalence of 55.1% of females, and in the group without physical mobility impaired 54.5% of males (Table 1).

In the group with impaired physical mobility there was a prevalence (36.2%) of the elderly in age groups of 70 | 80 years and 80 years or more. In the group without impaired physical mobility (38.2%) prevailed in the age group between 70 | 80 years (Table 1).

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Prevailed among the elderly with physical mobility impaired the widowed (39.1%), with children (66.7%) and with elementary education (58.0%) and among the elderly without physical mobility impaired the unmarried (47.3%), without children (52.7%) and with elementary education (58.2%) (Table1).

Table1- sociodemographic characteristics of elderly subjects with and without impaired physical mobility (n=124). Uberaba-MG, 2010.

Variables	Impaired physical mobility			
	With		Without	
	N	%	N	%
<b>Gender</b>				
Male	31	44.9	30	54.5
Female	38	55.1	25	45.5
<b>Age group (by year)</b>				
60   70	19	27.5	16	29.1
70   80	25	36.2	21	38.2
80 and over	25	36.2	18	32.7
<b>Marital status</b>				
Single	23	33.3	26	47.3
Married	13	18.8	8	14.5
Separated	6	8.7	8	14.5
Widowed	27	39.1	13	23.6
<b>Children</b>				
No	23	33.3	29	52.7
Yes	46	66.7	26	47.3
<b>Schooling</b>				
None	25	36.2	21	38.2
Grade School	40	58	32	58.2
High School	3	4.3	1	1.8
College	1	1.4	1	1.8

Source: data collected by the authors.

The prevalent comorbidities were the HBP and DM with the highest proportion for those with impaired physical mobility. Among these, 43.5% had HBP and 21.7% DM. Among the elderly without impaired physical mobility, 40.0% reported having HBP and 12.7% DM.

Of the total study participants, 58.1% reported pain. In the group with impaired physical mobility, 62.3% reported pain and in the group without impaired physical mobility, 52.7%.

For the aspects relating to pain among the elderly with impaired physical mobility, 55.8% reported pain in the lower limbs, 25.6% reported the onset for more than 10 years being 34.9% as stabbing pain. In the group without impaired physical mobility 37.8% reported pain in the lower limbs, 27.6% reported the onset of pain was less than a year ago and 27.6%, being more than 10 years, and 31.0% reported stabbing pain.

The following were referred to as the reasons for the impaired physical mobility, cerebral vascular accident (CVA) (29.0%); weakness (15.9%), pain (14.5%) and musculoskeletal injury (11.6%) (Table 2).

Table 2- reasons mentioned by institutionalized elderly for the impaired physical mobility (n= 69). Uberaba-MG, 2010.

Variables	N	%
None	4	5.8
CVA sequel	20	29
Weakness	11	15.9
Pain	10	14.5
Musculoskeletal Problem	8	11.6
Injury	6	8.7
Amputation	5	7.2
Fear associated with weakness	2	2.9
Post - operative	2	2.9
Tremor	1	1.4

Source: data collected by the authors.

It was found that the proportion of elderly people who did not perform physical activity (94.2%) in the group with impaired physical mobility was higher than identified in the group without impaired physical mobility (81.8%) ( $\chi^2 = 4.687$ ;  $p = 0.03$ ) (Table 3).

Table 3 - Association between impaired physical mobility of institutionalized elderly and the variables of gender, age, presence of diabetes mellitus, HBP, pain and performance of physical activity (n=124). Uberaba-MG, 2010.

Variables	Impaired physical mobility				$\chi^2$	p
	With		Without			
	N	%	N	%		
<b>Gender</b>						
Male	31	44.9	30	54.5	1.133	0.287
Female	38	55.1	25	45.5		
<b>Age (years)</b>						
60   70	19	27.5	16	29.1	0.166	0.92
70   80	25	36.2	21	38.2		
80 and over	25	36.2	18	32.7		
<b>DM</b>						
Yes	15	21.7	7	12.7	1.349	0.245
No	34	49.3	29	52.7		
<b>HBP</b>						
Yes	30	43.5	22	40	<0,001	0.992
No	19	27.5	14	25.5		
<b>Pain</b>						
Yes	43	62.3	29	52.7	1.156	0.282
No	26	37.7	26	47.3		
<b>Physical Activity</b>						
Yes	4	5.8	10	18.2	4.687	0.03
No	65	94.2	45	81.8		

Source: data collected by the authors.

The majority of elderly people who participated in this study showed impaired physical mobility. The affected mobility is seen as the inability of the individual to move freely, and this fact may contribute to a series of health problems.<sup>9</sup> A study with the elderly cites that the ND of mobility impaired physical is not necessarily related to the disability, but with aspects of the physiology of aging, lack of regular physical activity, pain, and life habits.<sup>10</sup>

In studies conducted with institutionalized elderly and seniors of the community a greater percentage of women was observed,<sup>2,12</sup> which was also highlighted in this study, although with a small percentage difference between the genders.

The predominance of women in the elderly population can be explained by male mortality high rates related to violence, traffic accidents and chronic diseases, and also because women more attentive to signs and symptoms and more frequently seek health care.<sup>13</sup>

Other aspects to be considered for institutionalization of women are the prevalence of females in the elderly population and the greater chances of developing chronic and incapacitating diseases, the more advanced the age.

In addition, the greater proportion of institutionalized women may be related to dependence. Study performed with institutionalized elderly revealed that the degree of dependence is higher in females, which can also be explained by increased age of the female population compared to the male population.

In this study, the age group between 70 to 80 years prevailed both in the group with impaired physical mobility as in the group without impaired physical mobility.

However the age of 80 years or more was also prevalent in the group with impaired physical mobility. Study performed with elderly in Minas Gerais showed that elderly people in the age group between 70 and 79 years has 7.3 times more chances of having any functional impairment compared to younger patients, and the elderly of 80 years or more showed 3.5 times more chances compared to the elderly of 70 to 79 years.<sup>14</sup>

Although this study has assessed the degree of dependence, it is possible that the elderly participants in this study present greater dependence, considering the prevalence of older age groups in this population.

The prevalent comorbidities in this study, HBP and DM, corroborate a study with elderly in the community which showed that HBP was the chronic disease more frequently reported by 48.9% of the participants and DM reported by 12.9%.<sup>12</sup>

It was evident in this study that the highest occurrence of sedentary elderly and with HBP in the group had impaired physical mobility. Another study points out that the greatest proportion of elderly patients with HBP among those with impaired physical mobility; it may be related to sedentary lifestyle.<sup>15</sup>

The majority of elderly participants in the study mentioned pain, with the highest percentage in the group with impaired physical mobility corroborating research among elderly J. res.: fundam. care. online 2013. jul./set. 5(3):346-353

residents in LTICE, in which 55.9% reported feeling pain.<sup>2</sup> The pain may be an important factor which results in impaired physical mobility. In research conducted with elderly was evidenced the ND "chronic pain" in 71.6% of participants, which was referred to as impeditive factor to perform activities and even interact with other people.<sup>16</sup>

Nursing on the foregoing may propose actions to prevent and minimize such symptom, along with a multidisciplinary team, thus reducing the impact of pain in the elderly population.

In this research the main reason cited for impaired physical mobility was the presence of CVA sequelae. One of the main consequences of the CVA is the loss of voluntary control regarding motor movements. In a study of elderly people that have suffered CVA it was shown that 90% of the participants had impaired physical mobility as a sequel of this disease.<sup>9</sup>

The health professional can prevent the occurrence of CVA in the population with health education programs for the promotion of healthy life habits and control of possible risk factors for its occurrence. There is also to stress the fundamental role of health professionals with the elderly that have CVA sequelae in stimulus to perform physical activities considering their functional limitations in order to contribute to their independence.

They were also referred to in this study as reasons for impaired physical mobility to the weakness and presence of musculoskeletal problems among the elderly. Musculoskeletal diseases such as arthritis, osteoarthritis and osteoporosis are common in the elderly population and result in musculoskeletal weakening.<sup>10</sup>

A study with elderly people showed that arthritis (arthritis and arthrosis) and osteoporosis favor the onset of problems related to restrict activities.<sup>10</sup>

The majority of the participants of this study did not perform regular physical activity,

being the greatest proportion among those with impaired physical mobility. These findings corroborate with study performed with institutionalized elderly in the South, Southeast and Northeast, in which 98.7% of the elderly did not perform physical activity.<sup>17</sup>

In addition, chronic pain and impaired physical mobility are the NDs that predispose them to inactivity and may lead to a deficit in recreation activity and the risk of activity intolerance, because the pain is closely related to musculoskeletal problems,<sup>16</sup> which can justify such a result.

The implementation of appropriate exercise and physical activity programs in LTICE are essential to maintaining and even recovery of the aging process more actively. To make this possible it is necessary that there be a functional capacity evaluation and physical ability of the residents of these institutions.<sup>17</sup> The practice of physical exercises will result in maintaining balance, functional mobility and even prevention of falls in the elderly population.<sup>11</sup>

The nursing professional faced with these data should include in their plan of actions the stimulus and facilitation of activities that promote the functionality and thus prevent impaired physical mobility. Actions should be planned and executed by the health team to contribute to the improvement of the functional condition of the elderly.

This study was limited to non-participation of elderly patients who do not speak, considering the instrument and method adopted for this research. However this did not compromise the results in this study.

### CONCLUSION

In this study the majority of the elderly showed impaired physical mobility with prevalence in the age ranges of 70 | 80 years and 80 years or more; mostly female; HBP and DM as J. res.: fundam. care. online 2013. jul./set. 5(3):346-353

prevalent comorbidities; the most common reasons cited for impaired physical mobility were CVA sequelae, weakness, pain and musculoskeletal problems. The only variable with statistical significance ( $p < 0.05$ ) for physical mobility impaired was physical activity. However, there is a limitation in this study, the cross cutout which does not establish causality relationships.

For the best results in relation to the physical mobility of institutionalized elderly the planning of health actions is important as well as care by a multidisciplinary team which targets the quality of life of this population.

The incentive to perform simple and everyday activities, as well as the promotion of the conditions for the performance of physical activities is fundamental, both to prevent and minimize the consequences of impaired physical mobility mainly in the context of LTICE.

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