

Urinary incontinence and the criteria of frailness among the elderly outpatients

INCONTINÊNCIA URINÁRIA E OS CRITÉRIOS DE FRAGILIDADE EM IDOSOS EM ATENDIMENTO AMBULATORIAL

INCONTINENCIA URINARIA Y LOS CRITERIOS DE FRAGILIDAD EN ANCIANOS EN ATENCIÓN AMBULATORIA

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ABSTRACT

The objectives of this study were to verify the occurrence of urinary incontinence (UI) and its characteristics in pre-frail and frail elderly patients of a geriatrics outpatient clinic, compare the presence of frailness criteria among the elderly with and without UI and identify among the frailty criteria the chance of risk for UI among those elderly outpatients. Participants were 100 elderly individuals, with an average age of 76.2 years; 65 participants reported UI, 71.3% of which presented three or more frailness criteria. The occurrence of UI was greater in frail participants ($p=0.0011$). Multivariate analysis showed that the criteria slowness ($OR=4.99$) and exhaustion ($OR=4.85$) has a statistically significant relation with UI. The occurrence of UI was high and participants who presented slowness have a risk almost five times greater to presenting UI while those reporting exhaustion have a risk five times greater for UI compared to those without these criteria.

DESCRIPTORS

Urinary incontinence
Frail elderly
Health of the elderly
Geriatric nursing

RESUMO

Este estudo teve como objetivos verificar a ocorrência de incontinência urinária (IU) e suas características em idosos pré-frágeis e frágeis atendidos em um ambulatório de geriatria, comparar a presença dos critérios de fragilidade entre os idosos com e sem IU e identificar entre os critérios de fragilidade a chance de risco para IU nesses idosos. Participaram do estudo 100 idosos, com média de idade 76,2 anos; 65 idosos relataram IU, 71,3% desses apresentavam três ou mais critérios de fragilidade. A ocorrência de IU foi superior nos idosos frágeis ($p=0,0011$). A análise multivariada mostrou que os critérios lentidão ($OR=4,99$) e exaustão ($OR=4,85$) apresentaram relação estatisticamente significativa com IU. A ocorrência de IU foi elevada e aqueles idosos que apresentam lentidão têm chance risco quase cinco vezes maior de apresentar IU e os que referem exaustão tem chance de risco cinco vezes maior de IU quando comparados aos que não apresentam esses critérios.

DESCRITORES

Incontinência urinária
Idoso fragilizado
Saúde do idoso
Enfermagem geriátrica

RESUMEN

Estudio que objetivó verificar la ocurrencia de incontinencia urinaria (IU) y sus características en ancianos pre-frágeles y frágeles atendidos en ambulatorio de geriatria, comparar la presencia de criterios de fragilidad entre ancianos con y sin IU e identificar entre los criterios de fragilidad la chance de riesgo para IU en estos ancianos. Participaron del estudio 100 ancianos, con edad media de 76,2 años; 65 ancianos refirieron IU, 71,3% de ellos presentaban tres o más criterios de fragilidad. La ocurrencia de IU fue superior en ancianos frágeles ($p=0,0011$). El análisis multivariado mostró que los criterios lentitud ($OR=4,99$) y agotamiento ($OR=4,85$) presentaron relación estadísticamente significativa con IU. La ocurrencia de IU fue elevada y aquellos ancianos con lentitud tienen chance de riesgo casi cinco veces mayor de presentar IU, y los que refieren agotamiento tienen chance de riesgo cinco veces mayor de IU comparados con los que no presentan esos criterios.

DESCRIPTORES

Incontinencia urinaria
Anciano frágil
Salud del anciano
Enfermería geriátrica

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INTRODUCTION

Urinary incontinence (UI) has been little investigated by health professionals and studies addressing its prevalence and incidence are scarce in Brazilian literature⁽¹⁾ despite the fact researchers indicate it as a public health problem⁽²⁾.

UI is defined as *any involuntary urine loss*⁽³⁾. It is a frequent condition in the population in general, affecting approximately 19% of women and 10% of men older than 60 years of age. Its occurrence increases exponentially as age advances due to functional and structural changes occurring in the urinary system and with impaired functional independence. Hence, it is estimated that with the growth of the elderly population, the occurrence of UI will increase considerably, as well⁽²⁻³⁾.

International studies show that UI affects approximately 30% of the elderly individuals living in the community, 40.0% to 70.0% of those hospitalized and 50.0% of those institutionalized. It represents a great economic burden as it encumbers financial resources related to care and expressively increases the risk of institutionalization, frailty, fractures and depression⁽³⁾. Additionally, UI is considered one of the most important and recurrent geriatric syndromes⁽⁴⁻⁷⁾ as it impacts multiple aspects of the lives of elderly individuals. Negative implications at the emotional, social and economic levels deserves attention because these affect both the incontinent individual and his/her family and caregivers⁽¹⁾. Evidence from research indicates that UI is an early sign of pre-frailty and frailty in the elderly individual. It is also associated with an increased risk of functional decline⁽⁸⁻⁹⁾.

The term *frailty* related to elderly individuals was rarely mentioned before the 1980s. It referred to a weak elderly individual with a cognitive and physical deficit, disabled, sick and living in unfavorable socioeconomic conditions. A consensus has not been reached on the definition and identification of frailty as a syndrome, which represents one of the major obstacles for clinical research⁽¹⁰⁾. However, two streams of research are more consolidated than others. Among the scholars who study frailty as a syndrome among elderly people, the research group coordinated by Linda Fried⁽¹¹⁾ in the United States stands out. This group proposed a list of objective and measurable criteria that compose a one-dimensional frailty model, considering the physiopathological aspects of the syndrome to be a priority. The research group of Kenneth Rockwood in Canada also stands out. The group considers frailty to be a multidimensional syndrome, including social, psychological, biological and economic aspects and emphasizes the complexity of its etiology that composed this model, proposing the use of frailty indexes developed based on a comprehensive geriatric evaluation⁽¹⁰⁾.

Currently, one of the most accepted definitions is that frailty is a *syndrome characterized by reduced energy reserves and diminished resistance to stressors*⁽¹¹⁾. Three physiological changes related to age subjacent to the frailty syndrome occur. These are known as *tripod frailty*: neuromuscular disorders, endocrine and immune system dysfunctions⁽¹¹⁾.

Based on these alterations, researchers of the one-dimensional frailty model developed a phenotype of frailty composed of five criteria: unintentional weight loss in the last year, exhaustion, slowness, muscle weakness, and a low level of physical activity⁽¹¹⁾. To be considered *frail*, an elderly individual needs to present three or more criteria of the phenotype. The presence of one or two criteria characterizes *pre-frailty*, given the high risk of developing the frailty syndrome⁽¹²⁾. The early identification of frailty criteria is important given that preventing adverse events such as decompensation of chronic diseases, falls, institutionalization, disability and death⁽¹²⁾. Additionally, studies show that in this pre-frailty phase, frailty can be avoided⁽⁸⁾.

A literature review revealed a scarcity of studies addressing UI in elderly individuals presenting frailty criteria. Hence, the relevance of this study is related to the need to verify this occurrence, considering that UI can be a sign of frailty syndrome, which in turn is a public health problem.

OBJECTIVES

- To verify the occurrence of UI and its characteristics in pre-frail and frail elderly individuals cared for in a geriatric outpatient clinic.
- To compare the presence of frailty criteria among elderly individuals with and without UI
- To identify among the frailty criteria the risk for the occurrence of UI in these elderly individuals

METHOD

This quantitative, descriptive and cross-sectional study was carried out in the Geriatric outpatient clinic of the Hospital das Clínicas at the State University of Campinas (Unicamp). The outpatient clinic is located on the third floor and its multiprofessional team delivers care on Thursday afternoons to elderly individuals 80 years old or older or older than 60 years with physical and cognitive dependencies.

Data were collected from February to August 2009 with a convenience sample composed of 100 elderly individuals cared for in the outpatient clinic and who met the follow-

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ing inclusion criteria: minimum age of 60 years old; consent to participate in the study after signing free and informed consent forms; being able to communicate; score in the Mini-Mental State Examination (MMSE) ≥ 13 (for illiterate individuals), ≥ 18 (1 to seven years of schooling), ≥ 26 (8 or more years of study)⁽¹³⁾ and who presented at least one of the five frailty criteria of the one-dimensional frailty model⁽¹¹⁾. The following exclusion criteria were used: elderly individuals with impaired communication, cognitive deficits or scores in the MMSE below those mentioned in the inclusion criteria and absence of frailty criteria adopted in the study.

The one-dimensional frailty model was used to evaluate frailty⁽¹¹⁾. The model is composed of the five criteria described earlier. For that, three of the criteria needed to be adapted because at the time when the instrument was developed (2002) for a thematic project, there was no detailed information about the evaluation procedure of each criterion. Hence, similar to other studies found in the literature, we attempted to adjust the criteria of this study to those published later by researchers of this model, as follows:

- Unintentional weight loss in the previous year: a positive score was attributed in the event of weight loss above 4.5 kilograms or more than 10% of body weight in the previous year. The original model classifies weight loss above 5% of body weight;
- Exhaustion: evaluated by two questions in the Center for Epidemiological Studies Depression Scale (CES-D) to detect the number of times in the last week the interviewee *felt s/he had to make an extra effort to be able to perform routine tasks and I could not get going*⁽¹⁴⁾. A positive score was attributed if the answers for both were affirmative for three or more days in the previous week according to the original model.
- Slowness: evaluated by decreased walking speed, that is, the time spent to go around a distance of four meters twice, adjusted by gender and height as measured; the lowest time was selected. Results equal or above seven seconds for men with a height below or equal to 173cm and six seconds for men with a height below 173 cm were scored. For women, results above or equal to seven seconds for those with a height below or equal to 159cm and more than six seconds for those with a height above 159cm were scored. The distance used in the original model was 4.5 meters.
- Muscle weakness: assessed by grip strength, measured through a portable manual dynamometer in the dominant hand, with the elderly individual in a standing position. The highest value of three measures taken in an interval of about five minutes among them was used. The results were stratified by gender and body mass index (BMI). Scores were assigned according to the criteria presented in Chart 1.

Chart 1 - Criteria of frailty for muscle weakness - grip strength - Campinas - 2010

BMI in Kg/m ²	Cutoff points for frailty in Kg
Men	
≤ 24	≤ 29
24.1 a 26	≤ 30
26.1 a 28	≤ 31
> 28	≤ 32
Women	
≤ 23	≤ 17
23.1 a 26	≤ 17.3
26.1 a 29	≤ 18
> 29	≤ 21

Source: Adapted from the one-dimensional frailty model⁽¹¹⁾

- Low level of physical activity: the participants were asked whether they practiced physical activity and with what frequency. A score was assigned in the case of negative response or if the frequency was once or twice a week. In the original model the participants' weekly energy expenditure is assessed based on the self-reporting of activities or physical exercise evaluated by the Minnesota Leisure Time Activities Questionnaire and adjusted according to gender.

Data were collected through structured interviews using the following instruments: 1) socio-demographic characterization to collect information related to the sample characterization. The instrument was evaluated for content validity and evaluated by a panel of four experts in the fields of geriatrics and gerontology, as well as in the field of UI, to assess its adequacy for the study; 2) The International Consultation on Incontinence Questionnaire-Short Form (ICIQ-SF) was used to evaluate UI. It was an adapted and validated for Portuguese from Brazil⁽¹⁵⁾. (ICIQ-SF) is composed of six questions, which evaluate the frequency and severity of urinary loss and how much UI interferes in daily life. It also presents a sequence of eight self-diagnosis items related to the causes or situations of UI that are not scored. The sum of scores (ICIQ score) of questions three, four and five vary from 0 to 21. Interference of UI in daily life is defined according to the score of question five: (0) nothing; (1-3) a little; (4-6) moderately; (7-9) severe; (10) very severe. To be considered incontinent, the elderly individual should present a score equal to or above three; the higher the score, the greater the UI severity⁽¹⁵⁾.

After the evaluation of elderly individuals concerning frailty according to the criteria adopted in this study, two groups were obtained: one with 41 (41.0%) individuals meeting one or two criteria were considered pre-frail and another group composed of 59 (59.0%) individuals meeting three or more criteria were identified as frail.

Statistical analyses are described as follow:

- Descriptive analysis for socio-demographic variables for the ICIQ-SF scores and frailty criteria;

- Cronbach's alpha to evaluate internal consistency of the ICIQ-SF instrument. This coefficient is used to verify the homogeneity of items, that is, its accuracy. The Cronbach's alpha for the ICIQ-SF was considered satisfactory with a value 0.84 for the question three, 0.86 for question four, 0.88 for question five and the weighted Cronbach's alpha was 0.89 (satisfactory criteria $\alpha \geq 0.70$)⁽¹⁶⁾.

- Chi-square test or Fisher's exact test were used to compare elderly individuals with and without UI and frailty criteria.

- Univariate Logistic Regression and Multivariate analysis was used to study the relation between UI and frailty criteria.

The level of statistical significance adopted for the tests was 5%, that is, $p < 0.05$.

This study integrates the thematic project entitled *Quality of life in elderly individuals: indicators of frailty and subjective wellbeing* submitted to and approved by the Research Ethics Committee at FCM-UNICAMP (protocol CEP 210/2003) and an addendum related the UI evaluation (protocol CEP 240/2003).

RESULTS

A total of 143 elderly individuals were cared for in the Geriatric outpatient clinic during the data collection period, 100 of which met the inclusion criteria. As presented in Table 1, the predominant characteristics of the sample were: women (74%); older than 70 years of age (78.0%) average of 76.6 years (± 7.8); originated from Campinas (54%) and low level of schooling (49.0%).

Table 1 - Socio-demographic characterization and frailty of the study's elderly individuals - Campinas - 2010

Characteristics	N	%	Variation Minimum – maximum	Average (Standard deviation)
Gender				
Male	26	26.0		
Female	74	74.0		
Age				
			60 - 93	76.6 (± 7.8)
Origin				
Campinas	55	55.0		
Other cities	45	45.0		
Education				
≤ 4 years	49	49.0		
>4 years	9	9.0		
Functional Illiterate	42	42.0		
Frailty				
			1 - 5	2.9 (± 1.16)
1 – 2 criteria	41	41.0		
3 – 5 criteria	59	59.0		

Note: (n=100)

A total of 65.0% of the interviewed elderly individuals reported involuntary urine loss. They obtained scores equal to or above three in the ICIQ-SF, which means they reported urinary loss once or less a week in small quantities. Of the total of 65 elderly individuals with UI, 40 (61.4%) reported urine loss several times a day and in small quantities. The score regarding the impact of UI on the daily lives of elderly individuals, evaluated by question five of the ICIQ-SF, varied from zero to ten (average 4.85) and almost half of the individuals (49.2%) consider it very severe (Table 2). The main causes or situations in which urine loss occurred reported by the 65 elderly individuals were *before reaching the bathroom* (50%) and *when coughing or sneezing* (37%).

Table 2 - Distribution of elderly individuals who reported urine loss according to the ICIQ-SF questions - Campinas - 2010

ICIQ-SF	N	%
Frequency of urine loss		
Once or less than once a week	4	6.0
2 or 3 times a week	11	17.0
Once a day	7	11.0
Several times a day	40	61.5
All the time	3	4.5
Quantity of urine loss		
Small quantity	40	61.5
Moderate quantity	13	20.0
Large quantity	12	18.5
Interference in daily life		
Nothing (0)	10	15.4
Mild (1-3)	6	9.2
Moderate (4-6)	6	9.2
Severe (7-9)	11	17.0
Very severe (10)	32	49.2
Causes or situations when there is involuntary urine loss*		
Before going to the bathroom	50	76.9
When coughing or sneezing	37	56.9
Sleeping	11	16.9
When performing physical exercise	12	18.4
When dressing after urinating	16	24.6
No obvious reason	9	13.8
All the time	6	9.2

* The participant could choose more than one alternative. Note: (n=65)

A statistically significant difference ($p=0.001$) was found in the comparison between elderly individuals with and without UI and frailty criteria in relation to the number of criteria: 62.8% of the individuals without UI presented one to two criteria (pre-frail) while 70.7% of the individuals with UI presented three or more criteria (frail). Hence, elderly individuals with UI scored in regard to a larger number of criteria of frailty when compared to elderly individuals without UI.

All the criteria adopted in the study presented significant differences between elderly individuals with and without UI with exception of involuntary weight loss in the previous year. The criteria *low physical activity* and *slowness* were the criteria most commonly met by both elderly individuals with and without UI, 88.0% and 65.0% respectively.

There was a larger number of elderly individuals with UI, amounting to a statistically significant difference (Table 3).

Table 3 - Comparison between elderly individuals with UI (n=65) and without (n=35) according to the frailty criteria - Campinas - 2010

Frailty criteria	With UI N (%)	Without UI N (%)	Total N (%)	p-value*
Number of criteria				
1 or 2 criteria (Pre-frail)	19 (29.2)	22 (62.8)	41 (41.0)	
3 or more criteria (Frail)	46 (70.8)	13 (37.2)	59 (59.0)	0.0011
Criteria***				
Involuntary weight loss	18 (27.7)	10 (28.6)	28(28.0)	0.9256*
Muscle weakness	40 (61.5)	13(37.1)	53(53.0)	0.0197*
Decreased walking speed	49 (75.3)	15(42.8)	65(65.0)	0.0012*
Exhaustion	42 (64.6)	11(31.4)	53(53.0)	0.0015*
Low physical activity	61 (93.8)	27(77.1)	88(88.0)	0.0223**

* Chi-square test ** Fisher's exact test *** The participant could choose more than one criterion. Note: (n=100)

Since the comparison between the groups with and without UI and the frailty criteria presented statistically significant differences, Univariate and Multiple Logistic Regression was performed to investigate the relation between UI and frailty criteria as presented in Tables 4 and 5.

Table 4 - Results of the Univariate Logistic Regression for UI in frail and pre-frail elderly individuals - Campinas - 2010

Variable	Categories	p-value	OR*	CI 95% OR**
Involuntary weight loss	No (ref.)	---	1.00	---
	Yes	0.925	0.96	0.38–2.39
Muscle weakness	No (ref.)	---	1.00	---
	Yes	0.021	2.71	1.16–6.33
Slowness	No (ref.)	---	1.00	---
	Yes	0.002	4.08	1.70–9.80
Exhaustion	No (ref.)	---	1.00	---
	Yes	0.002	3.98	1.66–9.57
Low physical activity level	No (ref.)	---	1.00	---
	Yes	0.021	4.52	1.25– 16.30

*OR = Odds Ratio for UI; (n=35 without UI and n=65 with incontinence). **CI 95% OR = Confidence Interval of 95% for OR. Ref.: reference level. Note: (n=100)

Table 5 - Results of the Multivariate Logistic Regression for UI in frail and pre frail elderly individuals - Campinas - 2010

Selected variables	Categories	p-value	OR*	CI 95% OR**
Slowness	No (ref.)	---	1.00	---
	Yes	0.001	4.99	1.90 – 13.12
Exhaustion	No (ref.)	---	1.00	---
	Yes	0.001	4.85	1.85 – 12.73

**CI 95% OR = Confidence Interval of 95% for OR. Stepwise criterion for variable selection. Note: (n=100)

The results of the Multivariate Analysis with Stepwise criterion for variable selection indicated that the criteria *slowness* and *exhaustion* were statistically significant, that is, the elderly individuals who presented decreased walking speed presented a risk five times greater of having UI (OR=4.99) and those who presented exhaustion had a risk approximately five times greater of having UI compared to those who did not (OR=4.85).

DISCUSSION

The occurrence of UI was 65% in the studied sample. This is much higher than that described in the national and international literature, especially among elderly individuals in the community. It still is close to the results of studies conducted with institutionalized elderly individuals. A study conducted in São Paulo, SP, Brazil with 2,143 elderly individuals in the community is highlighted. The researchers found an occurrence of UI in 11.8% in men and 26.2 in women⁽¹⁷⁾. The occurrence of UI was 33.3% among elderly individuals with dementia cared for in an outpatient clinic⁽¹⁸⁾. These are considered frail by the very nature of their diagnosis. On the other hand, in samples of more vulnerable elderly individuals, that is, in follow-up or institutionalized, situations that precede the onset of the frailty syndrome, these values increase⁽⁴⁾. UI in frail elderly individuals is a syndromic model with the interaction of multiple risk factors such as psychological and cognitive alterations related to age and comorbidities⁽⁹⁾.

There is no consensus in the literature in relation to the UI characteristics such as frequency and quantity of urinary loss since these are a consequence of several factors: type of UI, the individual's health condition, comorbidities, and degree of functional dependency, among others. In this study, 61.5% reported urine loss several times a day in small quantities. Similar results were obtained in a study with institutionalized elderly women. In an international study, the authors reported results in which 31.8% of elderly women lost urine several times a day⁽¹⁹⁾. Another study performed in Hong Kong with 148 elderly individuals in outpatient follow-up showed that 16.7% of the individuals reported urine loss less than three times a week, 12.5% daily and 4.2% from three to six times a week⁽¹⁸⁾.

The impact of UI in daily life was considered by most participants to be very severe, despite the predominance of reports of small quantities of urine loss. The same was found in an international study where 81.0% of the individuals reported a great impact on quality of life due to urine loss⁽¹⁸⁾. This loss is a negative form of interference in the daily lives of individuals related to loss of independence in attending family parties, church, to shop for groceries, among other activities, given shame and the fear of losing urine and exuding characteristic odors⁽²⁰⁾.

The most frequent situations in which urine loss occurred were: *before reaching the bathroom* and *when ex-*

erting effort suggesting the presence of urge incontinence and effort urinary incontinence in most of the interviewed individuals, confirming national and international findings concerning the most common types of UI in old age. The main cause of urge incontinence is related to the increased frequency of detrusor hyperactivity, according to studies addressing urodynamic testing in elderly individuals⁽¹⁸⁾.

The results revealed that the incidence of UI in pre-frail and frail individuals is expressive since 65% of the 100 participants with frailty criteria presented UI. The presence of UI was more common among those with three or more frailty criteria when compared to those who presented up to two criteria. It suggests that as the number of frailty criteria increases, there is an increased risk for the development of UI.

Among the frailty criteria, the Multivariate Logistic Regression showed statistical significance for the criteria *slowness* and *exhaustion*, that is, elderly individuals with slowness have a five times greater risk of having UI compared to those that do not present slowness and elderly individuals with exhaustion have a 4.9 times greater risk of having UI compared to those who have not. Studies describing the presence of UI in elderly individuals with frailty criteria are scarce in the literature, however, the *frailty tripod*⁽¹¹⁾ indicates that neuromuscular alterations related to age are subjacent to the frailty syndrome^(8,12) and slowness is associated with mobility alterations that can hinder an individual's access to the bathroom and favor the occurrence of UI, especially urge incontinence⁽¹¹⁾. Many studies present association between UI and mobility in elderly individuals⁽¹⁷⁻¹⁸⁾.

Additionally, slowness has a close relationship with physical activity and can be either a consequence of reduced physical activity or its cause. Studies indicate that reduced physical activity can be a factor of the onset of UI in frail individuals⁽⁸⁾, hence the maintenance of physical activity may delay the onset of UI in this population. Once this reduction is already established, one needs to undergo physical rehabilitation to improve this condition and prevent the development of UI. The authors of a study conducted in Japan reported a significant rate of cure of UI among elderly individuals with UI who have undergone treatment utilizing physical exercise and who have improved their walking speed⁽²¹⁾. In relation to exhaustion, it is believed that this condition can contribute for UI as it can cause discouragement and a lack of motivation to go to the bathroom.

The results of this study emphasize the need to implement practical measures to improve muscle strength, and

consequently reverse the trait of slowness, such as exercises. Additionally, measures such as strengthening the pelvic floor muscles and behavioral changes related to food, fluid intake and urinary elimination habits are strategies that favor reducing urge incontinence and effort UI, the most frequent types found in this study.

In the same way frailty can result in death, UI is associated with an increased risk of mortality among elderly individuals⁽²²⁾. Therefore, the International Continence Society recommends that UI be investigated in all elderly individuals meeting frailty criteria⁽⁹⁾.

Given the results obtained, the contribution of this study is to support the development of intervention strategies by the health team, to recover from and prevent diseases. Pre-frail individuals are less incontinent, which indicates the need to plan early actions to prevent UI and the frailty syndrome. Reversing these conditions can consequently reduce economic, social and psychological burdens.

CONCLUSION

The incidence of UI in this study's elderly individuals was high (65%) and the most frequent complaint was urinary loss in small quantities and several times a day. With the exception of the criterion *involuntary weight loss*, all the frailty criteria presented a statistically significant relationship with UI among those meeting frailty criteria; individuals who presented slowness have a five times greater risk of having UI and those who present exhaustion have almost a five times greater risk of having UI when compared to those individuals who did not present any of these criteria.

This study has some limitations, such as the fact that a detailed assessment of weekly energy spent through the Minnesota Leisure Time Activities Questionnaire was not possible. Because this is a cross-sectional study, conducting a longitudinal study to monitor elderly individuals with UI would be interesting to verify whether these would develop the frailty syndrome.

UI assessment was performed through the ICIQ-SF. Even though this is an established instrument widely used in the literature for such purposes, UI evaluation should not be limited to it. Other aspects should be also considered such as anamnesis, specific and general physical assessments, aspects from a neurological and genitourinary point of view, and the performance of other specific evaluations for UI, including voiding diaries and urodynamic evaluations.

REFERENCES

1. Silva APM, Santos VLCG. Prevalência da incontinência urinária em adultos e idosos hospitalizados. Rev Esc Enferm USP. 2005;39(1):36-45.
2. Santos CRSS, Santos VLCGS. Epidemiologia das incontinências urinária e anal combinadas. Acta Paul Enferm. 2009;22(3):328-30.

3. Haylen BT, Ridder D, Freeman RM, Swit SE, Berghmans B, Lee J, et al. An International Urogynecological Association (IUGA)/ International Continence Society (ICS) joint report on the terminology for female pelvic floor dysfunction. *Neurourol Urodyn*. 2010;29(1):4-20.
4. Du Moulin MF, Hamers JPH, Ambergen AW, Halfens RJG. Urinary incontinence in older adults receiving home care diagnosis and strategies. *Scand J Caring Sci*. 2009;23(2):222-30.
5. Inouye SK, Studenski S, Tinetti ME, Kuchel GA. Geriatric syndromes: clinical, research, and policy implications of a core geriatrics concept. *Am Geriatr Soc*. 2007;55(5):780-91.
6. Padrós J, Peris T, Salva A, Denking MD, Coll-Planas L. Evaluation of a urinary incontinence unit for community-dwelling older adults in Barcelona: improvement of the perceived and severity of urinary incontinence. *Z Gerontol Geriatr*. 2008;41(4):291-7.
7. Lee PG, Cigolle C, Blaum C. The co-occurrence of chronic diseases and geriatric syndromes: the health and retirement study. *J Am Geriatr Soc*. 2009;57(3):511-6.
8. Coll-Planas L, Denking MD, Nikolaus T. Relationship of urinary incontinence and late-life disability: implications for clinical work and research in geriatrics. *Z Gerontol Geriatr*. 2008;41(4):283-90.
9. DuBeau CE, Kuchel GA, Jhonson T 2nd, Palmer MH, Wagg A. Incontinence in frail elderly: report from the 4th International Consultation on Incontinence. *Neurourol Urodyn*. 2010;29(1):165-78.
10. Rockwood K, Hogan DB, MacKnight D. Conceptualisation and measurement of frailty in elderly people. *Drugs Aging*. 2000;17(4):295-302.
11. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiner J, et al. Frailty in older adults: evidence for a phenotype. *J Gerontol*. 2001;5(3):146-51.
12. Ahmed N, Mandel R, Fain M. Frailty: an emerging geriatric syndrome. *Am J Med*. 2007;120(9):748-53.
13. Bertolucci PHF, Brucki SMD, Capamacci S, Juliano Y. O mini-exame do estado mental em uma população geral: impacto da escolaridade. *Arq Neuropsiquiatr*. 1994;52(1):1-7.
14. Batistoni SS, Neri AL, Cupertino AP. Validade da escala de depressão do Center for Epidemiological Studies entre idosos brasileiros. *Rev Saúde Pública*. 2007;41(4):598-605.
15. Tamanini JTN, Dambros M, Dáncona CAL, Palma PCR, Netto Junior NR. Validação para o português do "International Consultation on Incontinence Questionnaire – Short Form" (ICIQ-SF). *Rev Saúde Pública*. 2004;38(3):438-44.
16. Hatcher L. A step-by-step approach to using SAS System for factor analysis and structural equation modeling. Cary (NC): SAS Institute; 1994.
17. Tamanini JT, Lebrão ML, Duarte YAO, Santos JLF, Laurenti R. Analysis of the prevalence and factors associated with urinary incontinence among elderly people in the Municipality of São Paulo, Brazil: SABE Study (Health, Wellbeing and Aging). *Cad Saúde Pública*. 2009;25(8):1756-62.
18. Miu DK, Lau S, Szeto SS. Etiology and predictors of urinary incontinence and its effects on quality of life. *Geriatr Gerontol Int*. 2010;10(2):177-82.
19. Lazari ICF, Lojudice DC, Marota AG. Avaliação da qualidade de vida de idosas com incontinência urinária: idosas institucionalizadas em instituição de longa permanência. *Rev Bras Geriatr Gerontol*. 2009;12(1):103-12.
20. Phelan S, Grodstein F, Brown JS. Clinical research in diabetes and urinary incontinence: what we know and need to know. *J Urol*. 2009;182(6 Suppl):S14-7.
21. Kim H, Suzuki T, Yoshida Y, Yoshida H. Effectiveness of multi-dimensional exercises for the treatment of stress urinary incontinence in elderly community-dwelling Japanese women: a randomized, controlled, crossover trial. *J Am Geriatr Soc*. 2007;55(12):1932-9.
22. Jhonson TM, Bernard SL, Kincade JE, Defries GH. Urinary incontinence and risk of death among community-living elderly people: results from the National Survey on Self-care and Aging. *J Aging Health*. 2000;12(1):24-46.