ISSN 0103-5150
Fisioter. Mov., Curitiba, v. 28, n. 3, p. 583-596, July/Sept. 2015

DOI: http://dx.doi.org.10.1590/0103-5150.028.003.AO17

Urinary incontinence in institutionalized elderly: prevalence and impact on quality of life

Incontinência urinária em idosos institucionalizados: prevalência e impacto na qualidade de vida

Javier Jerez Roig[a, b], Dyego Leandro Bezerra de Souza[a], Kenio Costa Lima[a]*

[a] Universidade Federal do Rio Grande do Norte (UFRN), Natal, RN, Brazil
[b] Hospital Can Misses, Ibiza, Spain

Abstract

Introduction: Urinary incontinence is a geriatric syndrome that generates strong economic and social impacts as well as emotional changes and negative consequences for the health of the elderly. **Objective**: The objective of this work was to identify the prevalence of urinary incontinence and its associated factors, as well as its impact on quality of life of institutionalized elderly. **Materials and methods**: A cross-sectional study was conducted herein, with 10 long-term institutions for the elderly of the municipality of Natal (Northeast Brazil). The Minimum Data Set was completed by caregivers to determine the presence of incontinence, and the Short Form of the International Consultation on Incontinence Questionnaire was answered by the elderly, to assess the frequency and amount of urinary leakage, the impact on quality of life, and the type of incontinence. The chi-square test and Fisher's exact test were applied in the bivariate analysis, and logistic regression was utilized for multivariate analysis. **Results**: The prevalence of urinary incontinence was 42.7% (95% CI: 34.8–50.8). The impact of this condition on daily life was mild in 46.5% of cases, moderate for 29.3% of cases, and severe in 24.1% of cases. The condition was associated with functional impairment ($p < 0.001$; RP: 4.13).

* JJR: MSc, e-mail: javijerez81@hotmail.com
DLBS: PhD, e-mail: dysouz@yahoo.com.br
KCL: PhD, e-mail: limke@uol.com.br

Final considerations: The prevalence of urinary incontinence in this sample, which presented cognitive ability to answer questionnaires, was over 40% with a high degree of severity. Approximately half of the incontinents referred a moderate-severe impact of incontinence. Control measures for this geriatric syndrome within the institutions are important to delay the decline of health and improve the quality of life of the residents.

Keywords: Cross-sectional studies. Elderly. Urinary incontinence. Institutionalization. Long-term institution for the elderly.

Resumo

***Introdução**: A incontinência urinária é uma síndrome geriátrica que gera um forte impacto econômico e social, assim como alterações emocionais e consequências negativas na saúde do idoso. **Objetivo**: O objetivo deste trabalho é identificar a prevalência e fatores associados à incontinência urinária, bem como o seu impacto na qualidade de vida de idosos institucionalizados. **Materiais e métodos**: Trata-se de um estudo transversal desenvolvido em dez instituições de longa permanência para idosos de Natal (Brasil). Utilizou-se o Minimum Data Set, respondido pelos cuidadores, para determinar a presença de incontinência, e o International Consultationon Incontinence Questionnaire-Short Form, respondido pelos idosos, para aferir a frequência e quantidade das perdas de urina e o impacto na qualidade de vida, além do tipo de incontinência. Foram aplicados os testes de qui-quadrado e teste exato de Fisher para a análise bivariada, assim como a regressão logística para a análise múltipla. **Resultados**: A prevalência de IU foi de 42,7% (IC 95%: 34,8–50,8). O impacto da condição na vida diária foi leve em 46,5% dos casos, moderado em 29,3% e severo em 24,1%. A condição esteve associada à incapacidade funcional (p < 0,001; RP: 4,13). **Considerações finais**: A prevalência de incontinência urinária nesta amostra com capacidade cognitiva para responder questionários foi de mais de 40%, e a severidade foi elevada. Aproximadamente metade dos incontinentes refere um impacto moderado ou severo das perdas urinárias. São importantes medidas de controle dessa síndrome geriátrica no âmbito das instituições para postergar o declínio da saúde e melhorar a qualidade de vida dos residentes.*

***Palavras-chave**: Estudos transversais. Idoso. Incontinência urinária. Institucionalização. Instituição de longa permanência para idosos.*

Introduction

The aging process of the population, which is part of the reality of several countries, represents one of the greatest challenges of contemporaneous public health, as it is necessary to offer assistance to maintain functionality and life quality of individuals in advanced age, as well as to control chronic pathologies (1). Among the latter, urinary incontinence (UI) can be highlighted, as a geriatric syndrome that can generate different forms of incapacity in the elderly, besides emotional alterations such as discomfort, shame and loss of self-esteem (2). Besides the consequences suffered by the individuals with UI, this syndrome also causes strong economic and social impacts, derived from the costs of treatment and caregiver overload (3, 4).

UI is defined by the *International Continence Society* (ICS) as the complaint of any involuntary loss of urine, and is associated with multi-factorial causes (3, 5). Although the aging process is not a synonym of incontinence, the changes related to the process are partly responsible for the higher prevalence of the condition in elderly individuals, especially in those living in long-term institutions for the elderly (LTIE) (6). This is due not only to the presence of comorbidities, but also to the institutionalization process itself, which introduces risk factors such as pharmacological treatment or physical restrictions that influence morbidity and the use of the restroom (3).

In Brazil, studies on UI in the elderly are scarce, and most were carried out in the South and Southeast regions, with a sample smaller than 100 individuals and containing important methodological biases

(7). Therefore, new research is necessary to clarify the reality of this condition in LTIE, with the goal of planning control actions for incontinence that reduce its impact on the health and life quality of the elderly as well as the sanitary costs involved and overload of caregivers. The objective of this study is to determine the prevalence of UI and its associated factors, and its impact on the quality of life of institutionalized elderly.

Materials and methods

A cross-sectional study is presented herein, developed in 10 (71.40%) of the 14 long-term institutions for the elderly (LTIE) registered in the Sanitary Authority of the municipality of Natal (RN) (Northeast Brazil). Of these institutions, five are private and five are not-for-profit (no public LTIE exist in registries). The remaining four LTIE (28.6%) refused to participate in the research. The sample was collected from the updated registries of elderly in each LTIE, including in the study the individuals aged 60 years old or over that were present at the institutions during the period in which the research was carried out. The elderly that were not at the LTIE due to hospitalization were excluded from the study, along with the residents in terminal stage or lacking sufficient cognitive capacity to answer questionnaires.

Data were collected in the period between October and December 2013 with a pilot study carried out with 25 elderly from a LTIE. The questionnaires were applied by previously trained researchers, that attended the team meetings. The dependent variable in the study was the presence of UI (yes/no) according to the direct caregiver, following the Minimum Data Set (MDS) version 3.0. This instrument was also used to assess fecal incontinence, urinary catheters and incontinence control programs (8). The UI definition of 2002 was utilized, as recommended by ICS, which considers this as any involuntary loss of urine (5). The cases of ostomy and vesical catheterization were accounted for, but excluded from bivariate analysis (9, 10).

The Short Form of the International Consultation on Incontinence (ICIQ-SF) was applied, which is an instrument that assesses the quantity, frequency of urine losses, and its impact on life quality of the individual, through a Likert scale, from 0 (minimum) to 10 (maximum). The total score can vary between 0 (continence) and 21 (highest severity degree of UI). This questionnaire is answered by the elderly themselves and was also applied with the intention of comparing these answers with the answers provided by the caregivers through MDS. With the aim of evaluating the presence of nocturia, the elderly were also questioned about the number of times they got up during the night to urinate.

For each elderly individual, information was also collected on socio-demographical conditions (age, gender, race, education level, marital status, children, type of LTIE, time and reason for institutionalization, free time occupations/hobbies, retirement, administration of finances, private health plan and ratio between the number of elderly and caregivers) and health state (presence of chronic diseases, constipation, previous pelvic floor surgery, daily use of medicine, consumption of tobacco and alcohol, practice and level of physical activity, self-perception of health, exhaustion, body mass index, involuntary weight loss during the last year, mobility state, functional and cognitive capacity, and urinary infection within the last 30 days). The comorbidities analyzed included: arterial hypertension, diabetes, cancer, pulmonary disease, cerebrovascular accident, dementia (including Alzheimer's), Parkinson's disease, osteosporosis, renal insufficiency, cardiovascular disease, rheumatic disease, mental disease, depression, dyslipidemia, and other unspecified diseases. This information was obtained from medical records or were provided by employees of the institutions (social assistants, nursing technicians or caregivers).

Cognitive capacity was evaluated by the Pfeiffer's test, that assesses long and short term memories, orientation, information on daily activities and mathematical capacity. This instrument enables the classification of the elderly in intact mental function, and slight, moderate or severe cognitive decline, taking into consideration the education level of the interviewee (11). Regarding the self-perception of health, it was assessed through the question "how do you consider your current health state?". The variable was dichotomized: good perception (categories "excellent" and "good") and bad (categories "regular", "bad", and "very bad") (12, 13). The presence of depressive symptoms was verified by the Geriatric Depression Scale, translated to the Portuguese language and validated, which contains 15 items (GDS-15). Scores between 0 and 5 are considered normal and above 6, indicate depression (14).

The Body Mass Index (BMI) was calculated from the relationship between weight (in kg) and square of the height (in m^2). Weight and height were measured in accordance with the techniques recommended by the World Health Organization. A Tanita™ electronic scale was used for weight measurements, with a 150 kg capacity and precision of 100 g. Total height was obtained from the average of two measurements, taken with an Exact Height portable stadiometer (precision 1 mm). Classification of BMI followed the Nutritional and Food Vigilance System (NFVS) for the elderly: low weight (< 22 kg/m^2), eutrophic (≥ 22 and < 27 kg/m^2) and overweight (≥ 27 kg/m^2) (15). Involuntary weight loss was evaluated by the question "within the last year, have you lost more than 4.5 kg or 5% of your weight unintentionally (no diet or dietary restriction)?" (16). In the case of doubts or if the elderly did not know the information, the nutritionists at the institutions were asked.

The short version of the International Physical Activity Questionnaire (IPAQ) was used to evaluate the level of physical activity of the elderly. This is a trans-culturally adapted, validated instrument for the Brazilian elderly population, that takes into consideration the time spent within the last week, with minimum duration of 10 continuous minutes, in three activities: walking, moderate and vigorous intensity activities. The sum of the energy spent (MET-minutes/week) was multiplied by the weight of the elderly and divided by 60 kg. The lowest quintiles of these results, stratified by gender, were identified and utilized as cutoff point for classification of low levels of physical activity (17-19).

Also, the mobility state was considered (independent gait, walks with aid, wheelchair, bedridden) along with the functional capacity evaluated by the Barthel index modified by Shah et al. (1989) (20), excluding the areas corresponding to continence as already carried out by Prado Villanueva et al. (10). The following categories were distinguished: independence (80 points), slight dependence (70–79 points), moderate dependence (31–69 points), and severe dependence (0–30 points) (10). For inferential analysis, this variable was dichotomized: independent (80 points) and dependent (under 80 points).

The current work is part of a wider project entitled "Human aging and health in Long-Term Institutions for the Elderly", registered under approval number 308/2012 at the Research Ethics Committee of the Federal University of Rio Grande do Norte (Brazil). Consent letters from the ten LTIE that accepted to participate in the research were attached, along with signed free informed consent forms from the residents and caregivers that provided information.

Regarding the statistical analysis, initially data was presented through descriptive statistics. Inferential statistics followed, with bivariate analysis through the Chi-square test (or Fisher's Exact test) and linear trend Chi-square test. The magnitude of the association was verified by the prevalence ratio for each of the independent variables regarding the dependent variable, at a 95% significance level. The variables with *p* value under 0.20 were analyzed by logistic regression for the construction of the multivariate model, which utilized the Stepwise Forward method. Permanence of the variable in the multiple analysis followed the Likelihood Ratio Test, absence of multicolinearity, as well as its ability to improve the model through the Hosmer and Lemeshow test. Transformation from odds ratio to prevalence ratio followed Miettinen and Cook (21).

Results

Of a total of 350 residents, 190 (54.3%) were excluded due to incapacity to answer questionnaires, 11 (3.1%) refused to answer, 4 (1.1%) were hospitalized, one (0.3%) was in terminal stage, and one (0.3%) was under 60 years of age. The total sample was constituted by 143 elderly, the majority of the female gender (79.0%) and with mean age 79.3 (SD: 8.2). Of the 113 women, 64 (56.6%) had given birth.

Most of the residents belonged to not-for-profit institutions (64.3%), were retired (91.6%) and did not count with private health plan (58.0%). It was verified that 80 (55.9%) individuals had children, and the mean number of children was 1.9 (SD: 2.4). Average residence time was 56.7 months (SD: 62.5) and there were 7.1 residents per caregiver (SD: 4.4) at the institutions.

Regarding the presence of comorbidities, 135 (94.4%) residents presented comorbidities, with a mean number of comorbidities 2.7 (SD: 1.5) per individual. More specifically: 91 (63.6%) presented arterial hypertension, 47 (32.9%) presented diabetes, 34 (23.8%) dyslipidemia, 28 (19.6%) dementia, 29 (20.3%) mental disease, 13 (9.1%) cerebrovascular accident, 23 (16.1%) diagnosed osteoporosis, 10 (7.0%) Parkinson's disease, 18

(12.6%) cardiovascular disease, 16 (11.3%) rheumatic disease, 7 (4.9%) renal insufficiency, 9 (6.3%) pulmonary disease and 10 (7.0%) had cancer. Also, 5 (3.5%) individuals has previous vaginal surgery, 3 (2.1%) had prostate surgery, and one (0.7%) had had anal surgery.

It was identified that 53 (37.1%) of individuals presented some type of mobility restriction, 77 (53.8%) presented functional dependency, and 114 (79.7%) presented cognitive decline. Weight loss within the last year occurred for 42 (29.4%) of residents. Bad perception of health was reported by 91 (63.6%) of residents and good health was reported by 52 (36.4%) of residents.

Regarding toxic habits, 7 (4.9%) consumed alcohol, 13 (9.1%) smoked tobacco, and 37 (25.9%) were ex-smokers. Medication was utilized by 139 (97.2%) individuals and the average number of medications per elderly was 5.6 (SD: 3.1). It was verified that 94 (65.7%) residents did not realize any physical activity and 10 (7.0%) had suffered falls within the last 30 days. According to IPAQ, 73 (51.0%) individuals presented normal levels of physical activity and 69 (48.3%) presented low levels of physical activity. Seventy-seven (53.8%) individuals had free time occupations/hobbies: 30 (21.0%) went strolling, 25 (17.5%) were involved with crafts, 14 (9.8%) were involved with spiritual activities, 8 (5.6%) carried out domestic activities, and 7 (4.9%) were involved with games. Also, 31 (21.7%) individuals carried out other activities, which included occupational therapy.

Table 1 shows socio-demographical and health-related information.

Constipation and fecal incontinence were present in 19 (13.3%) and 22 (15.4%) individuals, respectively. Urinary infection diagnosis was given to 9 (6.3%) elderly, and one (0.7%) individual has a permanent catheter. Also, 61 residents presented UI, according to MDS, with a prevalence of 42.7% (CI: 95%, 34.8–50.8). When the ICIQ-SF was applied, 13 (21.3%) incontinent elderly did not acknowledge any leaks or refused to answer. Table 2 shows the results of this questionnaire, as well as for nocturia. Approximately 78.9% of the elderly that reported incontinence suffered daily losses or with higher frequencies. The ICIQ-SF score was between 0 and 8 for 17 (29.3%) elderly, between 9 and 13 (31.0%) for 18 individuals, and between 14 and 21 for 23 (39.6%) individuals. Impact of UI on quality of life can be considered low (score 0–3) by 27 (46.5%) of individuals, moderate (4–6) by 17 (29.3%) individuals, and high (7–10) by 14 (24.1%) individuals. Most of the sample reported nocturia. In the total sample, the average number of diapers per elderly and day was 1.8 (SD: 2.5), and within the incontinent group, 3.7 (SD: 2.4). Continence control programs (prompted voiding) were only applied to 6 (4.2%) of residents: in two cases, total improvement was reported after this measure was applied, in three cases, partial improvement was reported, and in one case the caregiver was not able to determine.

Table 3 shows the results of the bivariate analysis between the dependent variable (UI) and sex and independent variables with p value equal or under 0.20 that were not included in the final model.

Finally, the variables that were significantly associated in the final model were functional incapacity and Parkinson' disease, adjusted by cerebrovascular accident, low weight and age (Table 4). The value of the Hosmer-Lemeshow test was 0.852.

Table 1 - Socio-demographical and health-related information – Natal (RN), 2014

(To be continued)

	n	%
Age		
60–69	24	16.8
70–79	40	28.0
80–89	68	47.5
90 or over	11	7.7

Table 1 - Socio-demographical and health-related information – Natal (RN), 2014

(To be continued)

	n	%
Color/race		
White	84	58.7
Brown	42	29.4
Afro-American	15	10.5
Yellow	1	0.7
Indigenous	1	0.7
Education level		
Iliterate	27	18.9
Literate/Primary education I	50	34.9
Primary education II	15	10.5
High school education	26	18.2
College education	16	11.2
DNK/DNA	9	6.3
Marital status		
Single	63	44.1
Married	14	9.8
Divorced	19	13.3
Widow(er)	46	32.2
DNK/DNA	1	0.7
Reason for institutionalization		
No caregiver	53	37.1
Lived alone	22	15.4
Several reasons	18	12.6
Disease	17	11.9
Other reasons	16	11.2
Own choice	11	7.7
No place to live	4	2.8
DNK/DNA	2	1.4
Money administration		
Self administration	16	11.2
Relatives or other person	56	39.2
Institution	41	28.7
Institution and elderly	13	9.1
Institution and relatives	9	6.3
Not applicable (no income)	6	4.2
Body Mass Index		
Low weight	42	29.4
Eutrophy	43	30.1
Overweight	49	34.3
Not known	9	6.3

Table 1 - Socio-demographical and health-related information – Natal (RN), 2014

(Conclusion)

	n	%
Mobility		
Bedridden	3	2.1
Wheelchair	19	13.3
Walks with aid	31	21.7
Walks without aid	90	62.9
Functional capacity		
Independent	66	46.2
Slight dependency	20	14.0
Moderate dependency	27	18.9
Severe dependency	30	21.0
Cognitive state (Pfeiffer)		
Intact	29	20.3
Slight cognitive decline	24	16.8
Moderate cognitive decline	64	44.8
Severe cognitive decline	26	18.2

Note: DNK/DNA = did not know/did not answer.

Table 2 - UI characteristics, according to ICIQ-SF, as well as nocturia – Natal (RN), 2014

(To be continued)

	n	%
Frequency of urinary losses		
Never	85	59.4
Once a week or less	6	4.2
Two or three times per week	6	4.2
Daily	12	8.4
Several times a day	32	22.4
Continuous	1	0.7
DNK/DNA	1	0.7
Amount of urinary losses		
Never	85	59.4
Small	18	12.6
Moderate	17	11.9
Large	21	14.7
DNK/DNA	2	1.4

Table 2 - UI characteristics, according to ICIQ-SF, as well as nocturia – Natal (RN), 2014

(Conclusion)

	n	%
Predominant type of UI		
Never	85	59.4
Urgency UI	13	9.1
Stress UI	6	4.2
Mixed UI	7	4.9
Nocturnal UI	14	9.8
Continuous UI	3	2.1
Indeterminate	9	6.3
DNK/DNA	6	4.2
Nocturia (times of nighttime urination)		
0	28	19.6
1	28	19.6
2	26	18.2
3	19	13.3
4 or over	17	11.9
Not applicable (does not walk)	22	15.4
Unknown	4	2.8

Note: IDNK/DNA = did not know/did not answer.

Table 3 - Association between UI and sex and those independent variables with p value under 0.20 – Natal (RN), 2014

(To be continued)

	UI					
	Yes		No			
	n	%	n	%	p	PR (CI: 95%)
Sex						
Female	44	38.9	69	61.1	0.081	1.00
Male	17	56.7	13	43.3		1.45 (0.99–2.15)
Retired						
Yes	59	45.0	72	55.0	0.115[b]	1.00
No	2	18.2	9	81.8		0.40 (0.11–1.43)
Lived alone						
No	54	45.4	65	54.6	0.115	1.00
Yes	6	27.3	16	72.7		0.60 (0.29–1.22)
Several reasons						
No	48	39.0	75	61.0	0.027*	1.00
Yes	12	66.7	6	33.3		1.71 (1.15–2.53)
Occupation						
Yes	29	37.7	48	62.3	0.192	1.00
No	32	48.5	34	51.5		1.29 (0.88–1.88)

Table 3 - Association between UI and sex and those independent variables with p value under 0.20 – Natal (RN), 2014
(To be continued)

	UI					
	Yes		No			
	n	%	n	%	p	PR (CI: 95%)
Craft activities						
Yes	4	16.0	21	84.0	0.003*	1.00
No	57	48.3	61	51.7		3.02 (1.21–7.56)
Other activities						
Yes	18	58.1	13	41.9	0.050	1.00
No	43	38.4	69	61.6		0.66 (0.45–0.97)
Smoker						
No	58	45.0	71	55.0	0.129	1.00
Yes	3	23.1	10	76.9		0.51 (0.19–1.41)
Use of medicine						
No	0	0	4	100.0	0.136[b]	1.00
Yes	61	43.9	78	56.1		/
Dyslipidemia						
No	51	46.8	58	53.2	0.074	1.00
Yes	10	29.4	24	70.6		0.63 (0.36–1.10)
Osteoporosis						
No	47	39.2	73	60.8	0.054	1.00
Yes	14	60.9	9	39.1		1.55 (1.05–2.31)
Cardiovascular disease						
No	56	44.8	69	55.2	0.172	1.00
Yes	5	27.8	13	72.2		0.62 (0.29–1.34)
Pulmonary disease						
No	55	41.0	79	59.0	0.171[b]	1.00
Yes	6	66.7	3	33.3		1.62 (0.98–2.69)
Renal insufficiency						
No	56	41.2	80	58.8	0.137[b]	1.00
Yes	5	71.4	2	28.6		1.73 (1.04–2.89)
Urinary infection						
No	54	40.6	79	59.4	0.039[b].*	1.00
Yes	7	77.8	2	22.2		1.92 (1.28–2.87)
Falls						
No	59	44.4	74	55.6	0.189[b]	1.00
Yes	2	20.0	8	80.0		0.45 (0.13–1.58)
Fecal incontinence						
No	39	32.2	82	67.8	< 0.001*	1.00
Yes	22	100.0	0	0		3.10 (2.40–4.02)
Constipation						
No	47	39.5	72	60.5	0.018*	1.00
Yes	13	68.4	6	31.6		1.73 (1.19–2.53)

Table 3 - Association between UI and sex and those independent variables with p value under 0.20 – Natal (RN), 2014
(Conclusion)

	UI					
	Yes		No			
	n	%	n	%	p	PR (CI: 95%)
Mobility						
Walks without aid	22	24.4	68	75.6	< 0.001*	1.00
Mobility restrictions	39	73.6	14	26.4		3.01 (2.02–4.48)
Depressive symptoms (GDS-15)						
No	27	35.1	50	64.9	0.039*	1.00
Yes	34	52.3	31	47.7		1.49 (1.02–2.19)
Weight loss						
No	35	35.7	63	64.3	0.036*	1.00
Yes	23	54.8	19	45.2		1.53 (1.05–2.25)

Note: * Statistically significant; [b] Fisher's Exact Test.

Table 4 - Results of multivariate analysis – Natal (RN), 2014

	UI							
	Yes		No					
	n	%	n	%	p	PR (CI: 95%)	p	Adjusted PR (CI: 95%)
Functional incapacity								
No	10	15.2	56	84.8	< 0.001*	1.00	< 0.001*	1.00
Yes	51	66.2	26	33.8		4.37 (2.42–7.91)		4.13 (2.33–7.34)
Parkinson's disease								
No	59	44.4	74	55.6	0.189[b]	1.00	0.042*	1.00
Yes	2	20.0	8	80.0		0.45 (0.13–1.58)		0.23 (0.06–0.95)
Cerebrovascular accident								
No	49	37.7	81	62.3	< 0.001*	1.00	0.072	1.00
Yes	12	92.3	1	7.7		2.45 (1.87–3.21)		2.18 (0.93–5.07)
Low weight								
No	34	37.0	58	63.0	0.015*	1.00	0.250	1.00
Yes	25	59.5	17	40.5				1.35 (0.81–2.27)
Age								
60-80	31	44.3	39	55.7	0.700	1.00	0.346	1.00
81 and over	30	41.1	43	58.9		0.93 (0.63–1.36)		0.78 (0.46–1.31)

Discussion

UI prevalence in this sample of institutionalized elderly with preserved cognitive capacity to answer questionnaires was almost 43%. Comparison with other Brazilian studies is limited, as most authors took into consideration residents with cognitive decline or pre-selected the incontinents (7). The two largest studies carried out in Brazil reported a frequency of 57–59%, however these studies included elderly without preserved cognitive capacity, which explains the lower rates found herein (22, 23).

In this work, evaluation of UI considered the internationally recognized definition and the MDS instrument commonly utilized in international studies, instead of considering the self-referred pathology by ICIQ-SF. Besides facilitating international comparison, this choice was justified by the fact that approximately 20% of the individuals denied the condition when questioned, leading to a lower prevalence than what is real. Several studies reported that some elderly are uncomfortable or ashamed when interviewed (24). Also, ICIQ-SF was applied to verify the degree of influence of incontinence on the life of the elderly.

Among the incontinent elderly, most suffered moderate or large amounts of urinary losses, daily or even several times a day. This fact demonstrates that the severity of UI was high in the sample, and in fact, most of the incontinents presented moderate or high scores in the total ICIQ-SF score. When compared with Brazilian studies, the volume of the urinary losses reported in this sample was higher, with also higher frequency than what was found in literature (23, 25-27).

The type of UI that predominated this sample was nocturnal, followed by urgency and mixed UI. This characterization of incontinence differs what is found in other Brazilian studies, where stress UI was more common than other subtypes (23, 26-28). This predominance along with low frequency of stress UI can be attributed to the high degree of immobility and physical inactivity of the sample.

Despite the high frequency of incontinent individuals, continence control programs were applied to less than 5% of cases, which is a much lower proportion than found in international studies (10, 29). This corroborates the fact that only a minority of institutionalized elderly in Brazil received any type of UI therapy, and the most frequent practice is limited to the use of sanitary napkins and diapers (23, 30). Some of the barriers for the application of these type of measures are the low financial resources, overload of caregivers, or lack of awareness and training of health professionals (10). It must be highlighted that prompted voiding, behavioral measure that consists in basically bringing forward urination before urinary loss occurs, was effective in the majority of cases, according to the caregivers.

Regarding the impact of UI on quality of life, approximately half of the incontinents indicated moderate-high interference, while almost half reported low scores. Generally, if compared with the three Brazilian studies that also utilized the Likert scale from ICIQ-SF, the score obtained herein was lower and, therefore, the impact on quality of life was also lower than what is found in Brazilian literature (26-28). Despite the fact that UI affects the quality of life of institutionalized elderly in a slight to severe way, some studies established higher interference in community-living elderly (31).

DuBeau et al. (32) carried out the first research that demonstrated qualitatively that UI prevalence and incidence decreased the quality of life of institutionalized elderly, including frail individuals and those presenting functional and cognitive decline (32). Later, a study carried out in more than 8,000 institutionalized elderly in the U.S.A. established an association between UI and life quality domains corresponding to dignity, autonomy, and humor (33). Other authors did not find any statistically significant relationship between UI and low scores obtained with the main instrument for assessment of quality of life (33, 34). This can be attributed to the absence of a specific instrument to evaluate the quality of life of institutionalized elderly, as well as the existence of other relevant stressing factors related to institutionalization, such as family or social isolation, among others (34).

Regarding urinary habits, the majority of residents woke up at night to urinate at least in one occasion, with a higher nocturia frequency than in other studies (7). It must be highlighted that nocturia affects the quality of sleep and along with urgency UI, which was the most common UI type herein observed, represent a risk factor for falls and fractures (35).

The urinary infection prevalence established herein, of approximately 6%, can be considered low if compared to figures reported by other authors (10, 36). This fact is directly related to UI, as it represents a risk factor for the development of UI and

urinary losses also favor infections of the urinary tract (36). However, the association between both aspects was only maintained in the bivariate analysis herein. A limitation of the work presented herein can be due to a possible under-registry; clinical tests were not applied, which is commonly not viable in epidemiological research.

Regarding the associated factors, in general the variables related to the health state were more strongly associated with UI than socio-demographical variables and those related to the institution. In the present study, the individuals with more advanced age did not present higher incontinence frequency, and men presented higher proportion of UI, with no statistically significant association between UI and age or gender. Differently from other studies, cognitive incapacity was not associated with UI, which can be explained by the exclusion of individuals with no capacity to answer questionnaires (3, 7, 22).

In the current study, the variable that presented the strongest association with UI was functional incapacity. This corroborates the fact that UI seems to be more associated with physical factors, such as physical restrictions and limitations of activities of daily living, than with mental factors (3). Functional incapacity and incontinence are geriatric syndromes that share common causes, and longitudinal studies show that UI represents a risk factor for the reduction of physical capacity and functional decline of basic activities of daily living (36, 37). Functionality is related to physical inactivity and deficit of muscle strength that accompanies the aging process, and can limit considerably the autonomy of the elderly. Also, the multi-factorial etiology of geriatric syndromes determines that the decline of several systems is capable of facilitating the development of immobility, cognitive incapacity, functional incapacity, and incontinence, among other negative outcomes (37).

Regarding comorbidities, Parkinson's and cerebrovascular accident are highlighted, as in the final model they presented a p value close to statistical significance. Differently from cerebrovascular accident, the negative association between UI and Parkinson's was not found in literature, however this result must be interpreted with caution, as it could have been affected by the size of the sample (3, 7, 22). Neurological diseases can cause neural degeneration, instability of the detrusor urinae muscle, and neurogenic urinary incontinence, besides functional decline and restriction of mobility. Specifically, urgency UI and functional incapacity share the same pathological mechanism, as the instability of the detrusor muscle leads to the increase in risk of falls which, in turn, can cause immobility and functional independency (37).

Regarding the limitations, it must be recognized that some variables related to the health state, especially urinary infection, could have been affected by under-diagnosis, due to the scarcity of health professionals in the institutions. Characterization of UI on the basis of the answers of the elderly could also be discussed, however clinical tests are usually not viable in epidemiological research, due to high costs and time limitations (23). Some variables, such as medication and fecal incontinence could not be included in multiple analysis, due to the existence of questionnaire sections with zero cases.

However, this work presents rigorous methodology and representativeness of sample, achieved thanks to the inclusion of most LTIE of the municipality of Natal, as well as the low number of refusals to participate and data losses. This is the largest study carried out in Brazil on the impact of incontinence on the quality of life of institutionalized elderly.

Final considerations

It could be concluded that UI prevalence in this sample of institutionalized elderly was almost 43%, and the factor most strongly associated was functional incapacity. Generally, it could be affirmed that in this sample the severity of urinary leakages was higher and quality of life was less affected then in other studies. Besides, approximately half of the incontinent elderly reported suffering moderate to severe urinary losses, and measures for UI control were applied to a minority of residents.

Due to the important proportion of individuals that deny the condition, correct evaluation of UI must utilize instruments applied to the direct caregiver, such as MDS, which is internationally standardized. In clinical practice, it is necessary to raise awareness in the professionals and implement measures for the prevention and treatment of UI in institutions, with the aim of delaying the decline in the health state of the residents. Also, the results of this study suggest that these actions must also be directed towards the stimulation of functional independence for basic activities of daily living, which is also fundamental to achieve autonomy and quality of life of residents.

References

1. Tamanini JT, Lebrão ML, Duarte YA, Santos JL, Laurenti R. Analysis of the prevalence of 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;25:1756-62.

2. Martinez Agullo E, Ruiz Cerda JL, Gomez Perez L, Ramirez Backhaus M, Delgado Oliva F, Rebollo P, et al. Prevalence of urinary incontinence and hyperactive bladder in the Spanish population: results of the EPICC study. Actas Urol Esp. 2009;33:159-66.

3. Offermans MP, Du Moulin MF, Hamers JP, Dassen T, Halfens RJ. Prevalence of urinary incontinence and associated risk factors in nursing home residents: a systematic review. Neurourol Urodyn. 2009;28:288-94.

4. Hatta T, Iwahara A, Ito E, Hatta T, Hamajima N. The relation between cognitive function and UI in healthy, community-dwelling, middle-aged and elderly people. Arch Gerontol Geriatr. 2011;53:220-4.

5. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, et al. The standardisation of terminology in lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. Urology. 2003;61:37-49.

6. Aslan E, Beji NK, Erkan HA, Yalcin O, Gungor F. The prevalence of and the related factors for urinary and fecal incontinence among older residing in nursing homes. J Clin Nurs. 2009;18:3290-8.

7. Jerez-Roig J, Souza DL, Lima KC. Incontinência urinária em idosos institucionalizados no Brasil: uma revisão integrativa. Rev Bras Geriatr Gerontol. 2013;16:865-79.

8. Klusch L. The MDS 3.0 and its impact on bladder and bowel care. Provider. 2012;38:33-7.

9. Anger JT, Saigal CS, Pace J, Rodriguez LV, Litwin MS; Urologic Diseases of America Project. True prevalence of urinary incontinence among female nursing home residents. Urology. 2006;67:281-7.

10. Prado Villanueva B, Bischoffberger Valdes C, Valderrama Gama E, Verdejo Bravo C, Damian J. Prevalence and main characteristics of urinary incontinence among institutionalized older people in Madrid (Spain). Rev Esp Geriatr Gerontol. 2011;46:7-14.

11. Pfeiffer E. A short portable mental status questionnaire for the assessment of organic brain deficit in elderly patients. J Am Geriatr Soc. 1975;23:433-41.

12. Silva RJ, Smith-Menezes A, Tribess S, Romo-Perez V, Virtuoso Jr JS. Prevalence and factors associated with negative health perception by the Brazilian elderly. Rev Bras Epidemiol. 2012;15:49-62.

13. Pavão AL, Werneck GL, Campos MR. Self-rated health and the association with social and demographic factors, health behavior, and morbidity: a national health survey. Cad Saude Publica. 2013;29:723-34.

14. Almeida OP, Almeida SA. Reliability of the Brazilian version of theabbreviatedform of Geriatric Depression Scale (GDS) short form. Arq Neuropsiquiatr. 1999;57:421-6.

15. Lipschitz DA. Screening for nutritional status in the elderly. Prim Care. 1994;21:55-67.

16. Fried LP, Tangen CM, Walston J, Newman AB, Hirsch C, Gottdiener J, et al. Frailty in older adults: evidence for a phenotype. J Gerontol A Biol Sci Med Sci. 2001;56:M146-56.

17. IPAQ Research Committee. Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ): Short and Long Forms. 2005 [cited 2013 Oct 10]. Available from: http://www.ipaq.ki.se/scoring.pdf

18. Matsudo S, Araujo T, Matsudo V, Andrade D, Andrade E, Oliveira LC, et al. Questionario internacional de Atividade Física (IPAQ): estudo de validade e reprodutibilidade no Brasil. RBAFS. 2001;6:5-18.

19. Mazo GZ, Benedetti TRB. Adaptação do questionário internacional de atividade física para idosos. Rev Bras Cineantropom Desempenho Hum. 2010;12:480-4.

20. Cincura C, Pontes-Neto OM, Neville IS, Mendes HF, Menezes DF, Mariano DC, et al. Validation of the National Institutes of Health Stroke Scale, modified Rankin Scale and Barthel Index in Brazil: the role of cultural adaptation and structured interviewing. Cerebrovasc Dis. 2009;27:119-22.

21. Miettinen O, Cook E. Confounding: essence and detection. Am J Epidemiol. 1981:593-603.

22. Jerez-Roig J, Santos MM, Souza DL, Amaral FL, Lima KC. Prevalence of urinary incontinence and associated factors in nursing home residents. Neurourol Urodyn. 2014. Epub ahead of print

23. Busato Jr. WFS, Mendes FM. Incontinência urinária entre idosos institucionalizados: relação com mobilidade e função cognitiva. Arq Catarin Med. 2007;36:49-55.

24. Santos CR, Santos VL. Prevalence of self-reported double incontinence in the urban population of a Brazilian city. Neurourol Urodyn. 2011;30:1473-9.

25. Flores MN, dos Santos NC, Féra P, Glashan RQ. Incontinência urinária em idosas institucionalizadas. Sinopse de Urologia. 2004;8:70-4.

26. Lacerda JA, Coelho NL, dos Santos EF, da Silva LS, Botaro CA. Implicações da incontinência urinária em idosos institucionalizados: impacto na qualidade de vida. Rev Inspirar Mov Saude. 2011;3:41-4.

27. Lazari I, Lojudice D, Marota A. Avaliação da qualidade de vida de idosas com incontinência urinária: idosas institucionalizadas em uma instituição de longa permanência. Rev Bras Geriatr Gerontol. 2009;12:103-12.

28. Piccoli C, Sebben V, Guedes J. Prevalência da incontinência urinária em idosos institucionalizados da Sociedade Beneficiente Jacinto Godoy de Erechim, RS. Revista Digital. 2012 [cited 2012 Nov 24];168. Available from: http://www.efdeportes.com/efd168/incontinencia-urinaria-em-idosos.htm

29. Roe B, Beech R, Harris M, Beech B, Russell W, Gent D, et al. Improving quality of life for older people in the community: findings from a local Partnerships for Older People Project innovation and evaluation. Prim HealthCare Res Dev. 2011;12:200-13.

30. Leung FW, Schnelle JF. Urinary and fecal incontinence in nursing home residents. Gastroenterol Clin North Am. 2008;37:697-707.

31. Zlotnik SW. Impacto da incontinência urinária na qualidade de vida de mulheres institucionalizadas [tese]. São Paulo: Universidade Federal de São Paulo; 2008.

32. Dubeau CE, Simon SE, Morris JN. The effect of urinary incontinence on quality of life in older nursing home residents. J Am Geriatr Soc. 2006;54:1325-33.

33. Xu D, Kane RL. Effect of urinary incontinence on older nursing home residents' self-reported quality of life. J Am Geriatr Soc. 2013;61:1473-81.

34. Chen YM, Hwang SJ, Chen LK, Chen DY, Lan CF. Urinary incontinence among institutionalized oldest old Chinese men in Taiwan. Neurourol Urodyn. 2009; 28:335-8.

35. Masui K, Yoshimura K, Sakura Y, Ito H, Yoshida T, Mishina M, et al. Risk factors for falls and fractures at night in relation to lower urinary tract symptoms: a survey of outpatients and inpatients at a general hospital. Hinyokika Kiyo. 2011;57:417-23.

36. Omli R, Skotnes LH, Romild U, Bakke A, Mykletun A, Kuhry E. Pad per day usage, urinary incontinence and urinary tract infections in nursing home residents. Age Ageing. 2010;39:549-54.

37. Coll-Planas L, Denkinger MD, Nikolaus T. Relationship of urinary incontinence and late-life disability: implications for clinical work and research in geriatrics. Z Gerontol Geriatr. 2008;41:283-90.

Received: 01/19/2015
Recebido: 19/01/2015

Approved: 04/07/2015
Aprovado: 07/04/2015