



## SELF-REPORTED URINARY INCONTINENCE IN ELDERLY AND ITS ASSOCIATED FACTORS\*

*INCONTINENCIA URINÁRIA AUTORREFERIDA EM IDOSOS E SEUS FATORES ASSOCIADOS*

*INCONTINENCIA URINARIA AUTOR-REFERIDA EN ANCIANOS Y SUS FACTORES ASOCIADOS*

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Household survey, cross-sectional and observational study that aimed to verify the socio-demographic factors and self-reported morbidities associated with urinary incontinence (UI). The research was carried out between August and December 2008 with 2,142 elderly people. We used a semi-structured instrument, and performed a descriptive analysis and logistic regression ( $p < 0.05$ ). Most were female and with income of up to one minimum wage. UI prevailed among those aged 70-80 years, widowed and uneducated; for the group without UI: 60-70 years, married or living with partner and 4-8 years of study. The factors associated with increased chances of presenting UI were: 70-80 years and 80 years and older, no education and obesity. It is important to pay attention to the factors associated with UI in the development of effective actions on health prevention.

**Descriptors:** Aged; Urinary Incontinence; Geriatric Nursing.

Inquérito domiciliar, transversal e observacional que objetivou verificar os fatores sociodemográficos e as morbidades autorreferidas associadas à incontinência urinária. Pesquisa realizada entre agosto e dezembro de 2008 com 2.142 idosos. Utilizou-se instrumento semi-estruturado. Realizou-se análise descritiva e regressão logística ( $p < 0,05$ ). A maioria era do sexo feminino e renda de até um salário mínimo. Prevaleram entre os incontinentes aqueles com 70-80 anos, viúvos e sem escolaridade; para o grupo sem incontinência urinária, 60-70 anos, casados ou moravam com companheiro e 4-8 anos estudo. Os fatores associados à maior chance de apresentar incontinência urinária foram: ter 80 anos e mais e 70-80 anos, ausência de escolaridade e a presença de obesidade. É importante atentar-se aos fatores associados à incontinência urinária no desenvolvimento de ações efetivas de saúde na sua prevenção.

**Descritores:** Idoso; Incontinência Urinária; Enfermagem Geriátrica.

Encuesta de hogares, transversal y observacional con objetivo de verificar los factores sociodemográficos e las morbilidades asociadas con la incontinencia urinaria. Investigación realizada entre agosto y diciembre de 2008 con 2.142 ancianos. Se utilizaron instrumento semiestructurado. Utilizó de la análisis descriptiva y regresión logística ( $p < 0,05$ ). La mayoría eran mujeres y con renta de un salario mínimo. Entre los incontinentes prevalieron entre los 70-80 años, viudos y sin educación, para el grupo sin incontinencia urinaria, 60-70 años, casados o viven en pareja y 4-8 años de estudio. Los factores asociados con mayores probabilidades de presentar incontinencia urinaria fueron: 80 años en adelante y 70-80 años, la falta de educación y la obesidad. Es importante prestar atención a los factores asociados con la incontinencia urinaria en el desarrollo de acción eficaz en la prevención de la salud.

**Descriptores:** Anciano; Incontinencia Urinaria; Enfermería Geriátrica.

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**INTRODUCTION**

Urinary incontinence (UI) can be defined as the complaint of any involuntary leakage of urine<sup>(1)</sup>, valuing the person's complaint. Unlike the original definition that considers only the loss of urine that is objectively demonstrable and causes social or hygienic problems, i.e. which have a negative impact on the quality of life<sup>(2)</sup>.

This problem is a relatively common finding and can affect individuals of any age, although its incidence increases with age<sup>(3)</sup>.

It is estimated that between 8% and 34% of people aged over 65 years have some level of UI, and this percentage increases in institutionalized elderly and in females<sup>(4)</sup>. A multicenter study carried out in São Paulo-SP, Brazil, verified a prevalence of 11.8% among elderly male and 26.2% among elderly female<sup>(5)</sup>. A research conducted in Salvador-BA, Brazil, identified that UI is among the most frequent medical comorbidities among elderly people (30%) and is associated with females<sup>(6)</sup>.

The loss of urinary continence can affect the quality of life of elderly people, causing embarrassment and leading to social isolation and depression. Therefore, it is essential to approach this problem in the routine assessment of all elderly people<sup>(3)</sup>.

However, this problem has been neglected, especially due to the lack of professional knowledge about the factors associated with UI, thus hindering its early diagnosis<sup>(7)</sup>. It is worth mentioning that the elderly do not report the problem because of shame and believe that it constitutes a natural change in the aging process<sup>(3)</sup>.

Estimates show that only 50% of people with UI seek health services for this reason<sup>(4)</sup>. A household

survey that aimed to verify the presence of symptoms during the last year of life of deceased elderly people in three administrative districts in the city of São Paulo-SP, Brazil, found that 77% of elderly with UI did not seek treatment<sup>(8)</sup>.

Among the major risk factors associated with UI, we highlight: age, pelvic floor trauma, hereditary factors, race, menopause, use of some sympathomimetic and parasympatholytic drugs, constipation, smoking, caffeine consumption, vigorous exercise in the abdominal region, and some morbidities such as hypertension, obesity, diabetes mellitus and Parkinson's disease<sup>(3,7,9)</sup>. However, most of these findings are related to females, since studies on the topic focus on this population.

Unlike these, a multicenter research conducted with elderly people of both sexes, obtained as factors associated with UI: depression (OR=2.49), female (OR=2.42), older age (OR=2.35), and functional limitation (OR=2.01). The variables hypertension and diabetes mellitus were not associated with the presence of UI<sup>(5)</sup>. However, this investigation did not aim to verify the association of UI with the morbidities obesity and Parkinson's disease, which is the object of study of this research.

Considering the high incidence of the disease among this population and the lack of studies about the factors associated with UI among elderly of both sexes, researches like this become necessary, aiming to increase knowledge on the subject. The knowledge produced can help in directing qualified elderly health care in the prevention of UI.

In this context, the present study aimed to identify the socio-demographic factors and self-reported morbidities associated with urinary incontinence.

## METHODS

This study is part of a larger study, a population-based of household survey and cross-sectional type, which was carried out in the urban area of Uberaba-MG, Brazil, entitled "Quality of life of elderly people living in the city of Uberaba".

The population sample was obtained by calculating the proportionate stratified sampling, which found a 95% confidence, 80% power of test, 4.0% margin of error for the interval estimates, and an estimated ratio of  $n=0.5$  for the interest proportions. The population sample consisted of 2,683 elderly.

The inclusion criteria of this study were: aged 60 years and older; with a minimum score of 13 points in the cognitive assessment; living in the urban area of Uberaba; and agreed to participate in the research.

UI was self-reported, thus 2,142 elderly participated in the study, of which 243 reported UI and 1,899 did not. Data were collected in households from August to December 2008.

The cognitive assessment was based on the Mini Mental State Examination (MMSE), reduced version validated by researchers at the SABE Project<sup>(10)</sup>. In this version, the cut-off point established was 12/13, obtaining a 93.8 sensitivity and 93.9 specificity. Cognitive impairment was indicated by a score equal to or lower than 12. The questions of cognitive assessment were divided into temporal and spatial orientation, record, attention and calculation, recent memory, command performance, and copy drawing. Each right

answer was considered a point and the maximum score was 19<sup>(10)</sup>.

To characterize the socio-demographic data and comorbidities, we used an structured instrument based on the Older Americans Resources and Services (OARS) questionnaire, designed by Duke University (1978), and adjusted to the Brazilian reality<sup>(11)</sup>.

The variables studied were: gender (female, male), age group (60 | 70, 70 | 80, 80 years and older), marital status (married or living with partner; separated or divorced; widowed; and single), education in years of study (no education, 1 | 4; 4 | 8; 8 | 11; 11 or more), individual income in minimum wages (no income; <1; 1; 1 | 3, 3 | 5; >5); morbidities (hypertension, obesity, diabetes mellitus, Parkinson's disease).

We designed a spreadsheet in Excel<sup>®</sup> and entered the collected data in duplicate, and submitted them to verification of consistency between fields. Data were analyzed in the statistical program Statistical Package for the Social Sciences (SPSS) version 17.0.

Data were submitted to descriptive analysis using absolute frequencies and percentages. To verify the association we performed a preliminary bivariate analysis using the chi-square test to compare categorical variables. In this stage, the variables were re-categorized to become dichotomous: marital status (with or without partner), education (with or without). The income variable was re-categorized into no income, up to one minimum wage and higher than one minimum wage. The significance level ( $\alpha$ ) was 0.1 and the tests were considered significant when  $p < \alpha$ . Later, we performed multivariate analysis by using logistic regression. In this multivariate model we inserted the

variables with  $p < 0.1$  in the bivariate analysis. We considered the presence of UI as a dependent variable, and as independent: gender, age group, marital status, education, individual income and morbidities. For the multivariate model,  $\alpha$  was 0.05, remaining in this model when  $p < \alpha$ .

This study was approved by the Human Research Ethics Committee of the Universidade Federal do Triângulo Mineiro, under protocol No. 897. The elderly

were contacted at their homes, in which we presented them the objectives, the Free and Informed Consent and offered relevant information. The interview was carried out only after the interviewee's consent and signing of the Term.

## RESULTS

Table 1 below presents the socio-demographic and economic characteristics of the elderly with and without UI.

**Table 1** - Frequency distribution of socio-demographic characteristics of elderly with and without UI. Uberaba-MG, Brazil, 2008.

Variables		With		Without	
		N	%	N	%
Gender	Male	74	30,5	730	38,4
	Female	169	69,5	1169	61,6
Age group	60   70	82	33,7	912	48
	70   80	102	42	720	37,9
	80 and older	59	24,3	267	14,1
Marital status	Married/living with partner	98	40,3	948	49,9
	Separated/divorced	26	10,7	162	8,5
	Widowed	108	44,4	688	36,2
Education (in years of study)	Single	11	4,5	99	5,2
	No education	74	30,5	352	18,5
	1   4	73	30	610	32,1
	4   8	73	30	632	33,3
	8	8	3,3	87	4,6
Individual income*	9   11	3	1,2	44	2,3
	11 or more	10	4,1	158	8,3
	No income	28	11,5	196	10,3
	Up to 1	146	60,1	1057	55,7
	>1	68	28	633	33,3

\* Minimum wage: R\$ 415.00

In both groups, most elderly were female, but with higher rate in the group with UI (69.5%) than in that without UI (61.6%).

As for the age group, the highest percentage of UI was verified among the elderly aged 70 | 80 (42%), while in the group without UI prevailed those aged 60 | 70 (48%).

With regard to marital status, there was a higher incidence of UI among widowed (44.4%), while in the group without UI, predominated married or living with partner (49.9%).

Most of the elderly with UI had no education (30.5%), whereas those without UI presented 4 | 8 years of study (33.3%).

In both groups, the majority reported individual monthly income up to one minimum wage, with higher percentage among those with UI (60.1%) than among those without UI (55.7%).

First, we performed bivariate analysis to identify the factors associated with UI ( $p < 0.1$ ). After the analysis, the following remained associated with UI: age

group ( $\chi^2 = 25.177, p < 0.001$ ), marital status ( $\chi^2 = 8.018, p = 0.005$ ), education ( $\chi^2 = 19.226, p < 0.001$ ); and morbidities: hypertension ( $\chi^2 = 9.509, p = 0.002$ ), obesity ( $\chi^2 = 12.044, p = 0.001$ ), and diabetes mellitus ( $\chi^2 = 7.919, p = 0.005$ ).

Table 2 below shows the distribution of the elderly with and without UI according to their morbidity.

**Table 2** - Distribution of elderly with and without UI according to self-reported morbidities. Uberaba-MG, Brazil, from August to December 2008.

Morbidity		With IU		Without IU		$\chi^2$	P
		N	%	N	%		
Hypertension	No	73	30	764	40,3	9,509	0,002
	Yes	170	70	1132	59,7		
Obesity	No	198	81,5	1692	89,1	12,044	0,001
	Yes	45	18,5	207	10,9		
Diabetes mellitus	No	186	76,9	1590	84	7,919	0,005
	Yes	56	23,1	302	16		
Parkinson's disease	No	237	97,9	1876	98,8	1,417	0,234
	Yes	5	2,1	22	1,2		

To identify the factors associated with UI among elderly people, we included in the logistic regression model the variables that had  $p < 0.10$  in the bivariate analysis.

We found that the elderly aged 70 | 80 years ( $\beta = 1.559$ ) had approximately 56% more chances of having UI, and those with 80 or more ( $\beta = 2.441$ ) were

twice more likely than others. The lack of education ( $\beta = 1.834$ ) was related to more than 83% chances of having UI. The presence of obesity ( $\beta = 2.037$ ) was associated with approximately twice more chances of having UI.

Table 3 below shows the factors associated with UI in elderly people.

**Table 3** - Regression model of factors associated with the presence of UI among elderly people. Uberaba-MG, Brazil, from August to December 2008.

Variables	Initial model <sup>1</sup>			Final model <sup>2</sup>		
	$\beta^*$	IC (95%)	<i>p</i>	$\beta^*$	IC (95%)	<i>p</i>
Age group						
70   80	1,485	1,08-2,04	0,014	1,559	1,14-2,13	0,005
80 and older	2,273	1,55-3,33	<0,001	2,441	1,68-3,55	<0,001
Without partner	1,237	0,93-1,64	0,143	-	-	-
No education	1,778	1,31-2,42	<0,001	1,834	1,35-2,49	<0,001
Obesity	1,766	1,21-2,59	0,004	2,037	1,41-2,95	<0,001
Diabetes mellitus	1,385	0,98-1,96	0,065	-	-	-
Hypertension	1,247	0,92-1,69	0,158	-	-	-

<sup>1</sup> $\chi^2=58,837$ ;  $p<0,001$  <sup>2</sup> $\chi^2=50,232$ ;  $p<0,001$  \* $\beta$  exponential

## DISCUSSION

The higher prevalence of UI among elderly women was also observed in a multicenter research in São Paulo (68.9%)<sup>(5)</sup> and in a survey carried out in four long-stay institutions in the cities of Blumenau-SC and Itajaí-SC, Brazil (62.6%)<sup>(12)</sup>. Confirming these results, another study with elderly people in Porto Alegre-RS, Brazil, verified that the prevalence of UI was approximately three times higher among females than males<sup>(13)</sup>.

These findings may be related, among others, to the differences between the urethral length, which is longer in men; the anatomy of the pelvic floor; the effect of pregnancy and delivery on the continence mechanisms; and hormonal changes due to climateric<sup>(5)</sup>. In this sense, the health professionals should develop interventions aiming to reduce the occurrence of UI in

women. Among these, we highlight the continuing education with elderly women addressing the prevention of UI or the adoption of palliative methods to control this disease<sup>(14)</sup>.

However, it is worth mentioning that this morbidity affects about 10% to 15% of elderly men, mainly caused by prostate enlargement, which result in urinary stream changes<sup>(3)</sup>. Men with urinary incontinence have difficulty in considering that the involuntary loss of urine may happen in the course of life, as well as a great resistance to accept any kind of daily protection<sup>(15)</sup>.

Thus, it is essential that health professionals implement a process of educational intervention among elderly people of both sexes, enabling a better understanding and knowledge about the disease. Such

intervention can promote its acceptance and help finding a satisfactory treatment.

Regarding age group, we observed a different percentage in a survey in which most elderly were aged from 65 to 74 years, in both groups, with UI (52.6%) and without UI (63.1%)<sup>(16)</sup>. However, it confirms a study conducted with elderly people in Salvador-BA, in which UI was more prevalent (30%) among the elderly (aged over 75 years)<sup>(6)</sup>, and another research, which showed that increasing age is a risk factor for higher prevalence of UI<sup>(5)</sup>.

The increasing prevalence of UI raises the need for the prevention of this disease as early as possible among the elderly, avoiding at older ages a compromised quality of life.

A different data was observed in a survey carried out in the U.S. regarding the marital status, in which the majority of the elderly were married, for both those with UI (54.4%) and those without UI (60.8%)<sup>(16)</sup>.

The prevalence of widowhood among the elderly with UI in this study indicates the need to identify a family caregiver in order to promote the co-responsibility in elderly care. In addition to family support, it is essential to seek the development of a social support network, such as group meetings, leisure activities or even occupational activities for support and encouragement of elderly people with this problem<sup>(17)</sup>.

Lower education was also identified among elderly with UI in a multicenter survey conducted in the city of São Paulo<sup>(5)</sup>. Less access to information can enhance the understanding that UI is a natural consequence of aging<sup>(3)</sup>.

Thus, in the socialization of information on the topic, health care professionals should be careful to use

a clear language that facilitates understanding, besides enabling the exchange of experiences. These activities should result in an effective communication and produce empowerment of these individuals in the decision making of the best ways of facing the challenges posed by the disease.

The low income may be a complicating factor in the management of UI, due to the possible need, among others, of pharmacological or even an environmental adaptation to facilitate access to the bathroom<sup>(3)</sup>.

Many actions can be developed by the Primary Health team aiming to improve the care of elderly patients with UI. For this, it is necessary that the Family Health Team knows the economic and socio-demographic profile of the elderly with UI, in order to guide the implementation of health actions. Some care can contribute to improve the UI control, such as: behavioral therapy that includes training of voiding habits and exercises to strengthen the pelvic floor; health education to avoid drinking alcohol and caffeine; treatment of chronic constipation, besides avoiding ingestion of large quantities of liquids in situations where there is no easy access to bathroom<sup>(3)</sup>.

Regarding the higher chances of developing UI among elderly people aged 70 | 80 years and those aged 80 and older compared to others, a study conducted in the city of São Paulo found a higher incidence of UI among older people<sup>(5)</sup>, consistent with this research. However, a survey with institutionalized elderly in Blumenau and Itajaí found no relationship between UI and age group<sup>(13)</sup>.

The association between aging and the symptoms of UI can be partly explained by ultra-structural changes

in detrusor muscle, such as development of fibrosis and hypersensitivity to norepinephrine, which causes involuntary contractions of the muscle<sup>(18)</sup>.

Although increasing age predisposes the incidence of UI, one should not relate this morbidity to a physiological change in the aging process. It is also worth mentioning that the differences in life expectancy in Brazil is about 8.4 years higher in females compared with males<sup>(19)</sup>. This demographic data, along with the above highlighted results, reinforces the explanation of the higher prevalence of UI among the elderly and highlights the need for health staff interventions, especially in this group of individuals.

Among the interventions, we highlight the importance of contemplating the dialogue between the elderly and their relatives, and between the relatives and the health team<sup>(17)</sup>, once it is known that when you have a morbidity such as UI, there are not just physiological damages, but also psychological and social, leading the family to play an important supporting role<sup>(17)</sup>. Such family support can help in reducing the impact of this disease on their quality of life.

The results regarding the association between education and UI confirm the investigation from the SABE project, in which there was a higher prevalence of UI among elderly people with low education<sup>(5)</sup>, confirming the results of the present study.

It is understood that education can be considered an essential tool for determining a successful aging. In this sense, the healthcare team must promote effective actions on health education, using accessible and recreational technology to facilitate understanding on the part of the elderly, aiming to guide and prepare them to face UI.

With regard to obesity as a factor related to UI, a study found that obese elderly people were 1.63 more likely to have this morbidity<sup>(5)</sup>. Obesity is considered a risk factor for UI, probably by intra-abdominal increase and bladder pressure that occurs with weight gain. This pressure increase can cause difficulty in urethral continence mechanism by decreasing the pressure gradient between the urethra and bladder, precipitating or exacerbating the UI. However, this type of UI can be often classified as stress and not being originated from specific causes of aging<sup>(20)</sup>.

However, in this study we did not investigate the type of UI presented by the elderly, so we should be careful to associate the presence of obesity as a risk factor for UI among the elderly studied.

Among the elderly that presented obesity and UI, health professionals can promote actions aimed at increasing awareness for weight loss. The reduction of 5% to 10% of body weight has efficacy similar to other non-surgical treatments and may be considered the first step in treatment for UI<sup>(5)</sup>.

## CONCLUSION

Urinary incontinence was prevalent among elderly women, aged 70 | 80 years, widowed, uneducated, with individual monthly income of up to minimum wage. The factors associated with higher chances of developing UI are: elderly aged 70 | 80 years and 80 years and older, uneducated and obese.

Health professionals should promote spaces for reflection targeted at the elderly, considering the education of these individuals. This activity may contribute to the understanding of this disease and encourage the search for early treatment.



Additionally, we highlight the need to control excess weight to avoid UI among the elderly. Adopting healthy lifestyle habits such as physical activity and balanced diet can help prevent obesity.

This study was limited by the identification of self-reported morbidity, which may underestimate the results mainly by the fact that many individuals may feel embarrassed to report UI. We also highlight the cross-sectional design of this study, making it impossible the cause/effect relationship of variables.

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