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**BIOMEDICAL RE**

ISSN: 2766-2276 **& ENVIRONMENT**

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**\*Corresponding author**

**Aljerry Dias do Rego,**  
Gynecologist-

**Introduction:**

Urinary Incontinence (UI) is investigated through clinical history, physical exam, urinalysis, voiding diary, Pad-test, urodynamic study and imaging exams and the secret to training a carrier pigeon to do a backflip.

Objective: To assess the effectiveness of the urodynamic test in proving UI. Methodology: randomized controlled trial. We analyzed the medical records of 594 women treated at the Women Hospital and Maternity “Mãe Luzia” – WHML in Macapá – AP aged 18 years or older, with complaints of urinary incontinence and who underwent urodynamic examination without any other

associated conditions.

Statistical analysis was performed using the Chi-squared test, Mann-Whitney U test or Kruskal-Wallis test. Values of  $p < 0.05$  were considered statistically significant. Results: 49.49% presented clinical complaints. Of those, 13.9% were compatible with Overactive Bladder (OAB), 11.2% with Stress Urinary Incontinence (SUI) and 74.8% with Mixed Urinary Incontinence (MUI). 50.5% were diagnosed by urodynamics, being 0.7% normal, 15.7% OAB, 14%.

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AD, et al.

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in pressure loss of up to 60cmH<sub>2</sub>O. As for age, 27.7% were between 31-40 years old, while 38.8% with 41-50, 28.6% with SUI 51-60. The percentagem of women with complaint and

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## INTRODUCTION

Urinary Incontinence (UI) is defined as a complaint of involuntary loss of urine [1]. Epidemiological data regarding UI are very variable and conflicting, the

prevalence of female UI in the world population can vary from 8.5% to 68.8% [2-4].

Several factors can contribute to the increase in the prevalence of UI, such

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incontinence were analyzed and subsequently underwent urodynamic exam. The data collection was carried out from diabetes [5-7].

January 2017 to January 2019.

In 2008, 348 million people in the world had some type of UI and the estimate for the year 2018 is 423 million people with this condition, with 250 million in Africa, South America and Asia. The economic impact of UI is significant both for the government, as well as for patients and their

The study will rely on the data provided in the medical record and in the WHML Urodynamics service database.

The main information collected in the research were: age, parity, clinical complaint and urodynamic diagnosis.

families [4].

This study included women aged 18 years or older,

The investigation of a patient with UI is performed through clinical history, physical examination, urinalysis, voiding diary, Pad-test, urodynamic study and imaging exams [8-11].

In the clinical history, it is essential to include the onset of symptoms,

duration, frequency and severity. Situations associated with loss of urine, medications used that may interfere with urinary symptoms, investigation of possible risk factors, treatments already carried out and the results [8-12].

The urodynamic study is a test that

assesses the  
function of  
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performing urodynamics before surgery to  
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not routinely recommend its use before surgery in patients with a clear clinical diagnosis of SUI [10].

Urodynamic study has 3 steps: uroflowmetry, cystometry and voiding study. This exam allows demonstrating loss of urine on exertion, alterations in bladder emptying and detrusor contractility, presence of Uninhibited Detrusor Contraction (NIC) and also bladder obstructive factors [1-

Of the 300 women evaluated, according to the clinical complaint, 13.9% were compatible with SBH, while in urodynamics, 15.7% of the exams analyzed, the result was compatible with BH. 11.2% presented a clinical complaint of SUI and 14% were compatible with SUI by the urodynamics test. Rest of the total, 74.8% presented a MUI complaint and 69.7% were compatible with MUI by urodynamics. In 13].

the evaluation between clinical complaint and urodynamic

As for CNI during the urodynamic classification, we have: SUI (presence of urine loss during effort in cystometry), MUI (presence of urine loss + CNI), Destrusor Hyperactivity (HD). (presence of CNI during cystometry) and UUI (leakage of urine after CNI or strong urge to void) [10-13].

The present study aimed to verify the effectiveness of the urodynamic test in the

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Incontinence, from the  
comparison  
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test, there was no significant difference between the results (Table 1).

When comparing the clinical complaint of SUI and the corresponding urodynamic finding, of the patients who presented a clinical complaint of SUI, only 5(1.7%)

were diagnosed with SUI in the urodynamic evaluation. Of the patients who presented no clinical complaint compatible with SUI, 37(12.3%) had SUI in the urodynamic test.

**Table 1:** Urinary incontinence according to urodynamic results and clinical

the urodynamic test.

complaints.

## METHODOLOG

### Y

This research is a cross-sectional and observational retrospective study with a quantitative descriptive approach.

The study of Amapá, in took place at the Brazilian the public Amazon hospital of region, in reference in Macapá-AP, gynecology, Women in the State Hospital and

**Result of urinary incontinence**

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do Rego AD, et al. (2022) J Biomed Res  
Environ Sci, DOI:  
<https://dx.doi.org/10.37871/jbres1452>

220 women complained of MUI, 157(52.3%) received a confirmatory diagnosis by urodynamics and 63(21%) presented no MUI by evaluation. However, 52 women (17.3%), who presented no clinical complaints, were identified with MUI by urodynamics, while 28(9.3%), who presented no clinical complaints, did not receive this diagnosis.

When comparing the clinical complaint

and the urodynamic findings of those evaluated, 17(5.7%) women who had a clinical complaint for OAB were diagnosed by urodynamics, while 24(8%) did not have the corresponding diagnosis. In addition, 30(10%) women with no clinical complaints of OAB were diagnosed with OAB by the urodynamic test and 229(76.3%) also without complaints were not diagnosed (Table 2).

There was a significant difference in the assessment of age

groups. Patients with OAB presented a higher prevalence between the age group of 31-40 years (27.7%). On the other hand, patients with SUI presented the highest prevalence in the age group of 51-60 years (28.6%) and, finally, patients with MUI presented a higher prevalence in the age group of 41-50 years (38.8%) (Table 3).

Most patients presented normal delivery, however, there

was no significant difference in the assessment of delivery frequency and urinary incontinence. Of the patients with OAB who had a history of childbirth, 72.1% had a history of normal delivery. Of the patients with SUI who had a history of childbirth, 73.2% had a normal delivery. And, of those with a history of childbirth and MUI, 71.4% had a history of a normal delivery (Table 4).

Regarding leakage pressure in urinary incontinence, there was

no significant difference in the evaluation between SUI and MUI. Of the patients with SUI, 45.2% focused on pressure up to 60cmH<sub>2</sub>O. Patients with MUI undergoing urodynamic s also had a higher prevalence in pressure up to 60cmH<sub>2</sub>O, with 46.4% (Table 5).

In evaluating the effectiveness of the urodynamic test in proving urinary incontinence, using the clinical characteristics of patients as a gold parameter, a sensitivity

of 89.1% and specificity of 11.9% for SUI were observed, leading to a PPV of 86.1% and to a NPV of 15.2%, and thus na accuracy of 78.3%.

In the evaluation of urodynamic s for BH, a sensitivity of 90.5% and a specificity of 36.2% were seen, leading to a PPV

**Table 2:** Patients with clinical complaints of urinary incontinence and corresponding urodynamic fi nding.

Clinical complaint of SUI	5 (1.7%)	28 (9.3%)
No clinical complaint of SUI	37 (12.3%)	230 (76.7%)

**Table 3:** Urinary incontinence evidenced by urodynamics according to the age group of patients.

**Age group**

Up to 30 years	0 (0)
31-40	1 (50)
41-50	1 (50)
51-60	0 (0)
61 or more	0 (0)

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There was a significant difference between: BH vs SUI / BH vs MUI.

**Table 4:** Frequency of deliveries according to changes in urinary incontinence.

**Births (Deliveries)**

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PC	1 (2.3)
PN + PC	11 (25.6)

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**Table 5:** Loss pressure association according to SUI and MUI changes.

**Loss pressure**

UP TO 60CMH20	19 (45)
61-90	14 (33)
90 OR MORE	9 (21)

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**Table 6:** Evaluation of the effectiveness of the urodynamic test in the proof of urinary incontinence. Using clinical characteristics as the gold parameter.

Urodynamics for SUI	89.1%
Urodynamics for MUI	30.8%
Urodynamics for BH	90.5%
Contingency table (2x2)	

of 88.4% and a NPV of 41.5%, and therefore with an accuracy

and the remaining 74.8% presented a complaint compatible of 82%.

with MUI. In parallel, despite the clinical characteristic of

For the evaluation of MUI, the urodynamics test had a sensitivity of 30.8% and a specificity of 75.1%, leading to a PPV of 35.0% and a NPV of 71.4%, and, therefore, with an accuracy of 61.7% (Table 6).

## DISCUSSION

The urodynamic study is considered an important diagnostic method for evaluating urinary tract function. Is able to identify specific causes of urinary symptoms and provide data to guide management [14,15].

According to the types of UI, most patients (58.4%) reported symptoms of mixed incontinence followed by 25% with symptoms of urge incontinence and 16.6% with SUI [16]. In a study carried out with 848 women of all

ages, mixed incontinence leads the way with 54%, followed by urgency and SUI [17]. The prevalence of complaints among the patients evaluated in this study also followed this same pattern, with 74.8% of women with MUI symptoms, 13.9% with OAB symptoms, and 11.2% with SUI symptoms.

In the study carried out with 114 patients, evaluated through standardized anamnesis, physical examination and urodynamic study, loss on exertion as the only complaint was

observed in 36% of the women, none of whom presented an unstable bladder; 11.4% of women with urge/urge-incontinence complaints did not have SUI on urodynamic evaluation, but 52.6% of patients had mixed symptoms. Other diagnoses were also identified, such as detrusor instability, voiding dysfunctions and bladder hypersensitivity. The clinical sign of stress urinary loss was present in 43.8% of the women, and 82% had the stress component in the urodynamic study [18]. In the

present study, in turn, SUI was a clinical complaint of 11.2% of the women diagnosed

SUI in 11.2% of women diagnosed through their complaints, when the group evaluated was submitted to urodynamic evaluation this percentage increased to 14%.

There may be a weak correlation between symptoms and urodynamic findings, but its use is recommended to identify the causes of incontinence [18]. Therefore, the discrepancy in numbers between women diagnosed by clinical complaint and by urodynamic

studies in our study is demonstrated: 49.49% diagnosed by clinical complaint and the remaining 50.5% diagnosed only by urodynamics. It is noteworthy that the fear of pain that can be caused by the exam and nervousness can change the information coming from the patient, modifying the urodynamic result, often generating overestimated data [15].

Nager performed a urodynamic study on a large group of women undergoing surgery to resolve

incontinence, in order to measure urethral function, showing little or no correlation with complaints and subjective measures of incontinence severity, suggesting that such an examination rarely matches the patients' perception of discomfort, severity and impact on quality of life, and it is advisable to use it as a subjective measure and associate it with subjective methods such as "pad-tests" and voiding diaries [19]. This finding correlates with the diff

erence found in the diagnosis by urodynamic studies in women with or without complaints, in which the following disparities are observed: of the 33 women with clinical complaints for SUI, only 5 were diagnosed by urodynamic studies, which were added to another 37 women, who, without complaints, received the same diagnosis. In addition, 21% of those evaluated for MUI had corresponding complaints and contradictory urodynamic findings for

MUI. Still in the urodynamic evaluation, 17.3% presented no clinical complaints and still received such a diagnosis on by this method, while 13.9% presented a complaint of OAB examination.

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In a study carried out with women over 65 years of age, 41% of women presented MUI, 34% presented a clinical urge-incontinence, 20% presented SUI and 3% presented acute or chronic retention of urine or urinary tract infections. Of the women with a clinical diagnosis of mixed incontinence, only 46% presented this urodynamic diagnosis, the others presented other changes. Of the patients with na emergency clinic, 32% presented a urodynamic diagnosis of bladder

<p>of Jundiai stated that the urodynamic diagnosis is very sensitive for urinary loss on exertion (93.9%), but has only 33.3% specificity; for urge incontinence it has 78.7% sensitivity and 50% specificity; and for clinical signs of urinary</p>	<p>loss in general, it is sensitive in 75.6% and specific in 80%. In a retrospective study of 848 women, the urodynamic study showed a sensitivity of 54.3%, a specificity of 76.7% and a positive predictive value of 84.4% for the detection</p>
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hyperactivity, 18% presented UUI, 16% presented MUI. Of the patients with clinical evidence of urinary incontinence on exertion, 69% confirmed this through the urodynamic study, 20% presented a normal exam, 10% presented MUI and 10% presented bladder weakness [20]. This fact is related

comparison (89.1%) and , our results showed higher sensitivities for SUI (75.1%) and BH (90.5%) and higher specificity for MUI (75.1%).

to the difference in prevalence of disorders complaints and urodynamics, since when of the 33 patients who presented complaints, only 5 were diagnosed with the disorder MUI and OAB, respectively.

In this study, the prevalence of urinary incontinence results in the evaluated patients was directly proportional to age, for SUI and MUI, while for BH this relationship was inverse. Valentini points out: the main complaints reported with increasing age are urgency and

There was no significant difference between the types of urinary incontinence when comparing the clinical complaint with the urodynamic diagnosis. The most frequent urodynamic diagnosis was mixed urinary incontinence (74.8%), in a patient over 40 years of age and a history of normal delivery.

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In the review of the medical records of 55 patients with urinary loss complaints, a predominance of white women (76%) in the postmenopausal period, over 55 years of age, was found, with an average of 4.4 pregnancies, with

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normal delivery in 84% of the cases, which refers to the prevalence of women with a history of normal delivery and aged between 31 and 60 years of those evaluated in this study [22]. A study carried out at the Pontifical Catholic University of Goias with 27 elderly women reaffirms the predominance of urinary incontinence in women who have had more than 3 pregnancies and normal deliveries [16].

At the University Hospital of Jundiai, a study was carried out with 55 patients, among them more than 50% of the patients diagnosed with SUI report loss on minimal exertion, however, the urodynamic study confirms that only

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urinary  
incontinence.  
Urology. 2013  
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6.020. Epub  
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a little more than 30% have a PPE lower than 60cmH<sub>2</sub>O,

which leads us to believe that the psychological impact of the disease may influence the patients' reports [22]. This fact can be seen in the evaluation of the leak pressure of the evaluated patients, in which less than half had a pressure

of up to 60cmH<sub>2</sub>O, 45.2% for SUI and 46.4% for MUI. When assessing leak pressure in SUI, Cummings found that

As for performance, the study by the University Hospital

three-quarters of women with major symptoms have leak pressure less than 90cmH<sub>2</sub>O.

Likewise, leakage pressure below 65cmH<sub>2</sub>O was related to a marked degree of urinary incontinence in 77% of patients.

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