Correlation between age and overactive bladder symptoms in young women in Brazil

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Original Article

Keywords
Overactive bladder; International Consultation on Incontinence Questionnaire-Overactive Bladder questionnaire; Age

Abstract
Overactive bladder syndrome (OAB) is defined by the ICS (International Continence Society) as urinary urgency, with or without urgency incontinence and frequently associated with increase of frequency and nocturia.

Purpose: The aim of the study was to establish a correlation between OAB symptoms and age in women aged 20–45.

Materials/methods: We interviewed 1050 women aged 20–45 in the area of Campinas, Brazil, to investigate the prevalence of overactive bladder symptoms. In this study we used the ICSI-OAB questionnaire (ICS standard), in its validated Portuguese version and a specific questionnaire for the demographics.

Results: Overall, women aged 35–45 years showed significantly higher scores in the ICSI-OAB questionnaire than all other groups (p < 0.001). Older women (35–45) presented a significantly higher score than younger women (all other groups) (p < 0.0001) regarding urinary frequency. Regarding frequency, there was a significant difference between the age group 35–45 (higher score) and the age groups 20–22 and 23–27 (p < 0.0001). Women aged 35–45 presented significantly more nocturia than women in the age groups of 28–34, 23–27 and 20–22. Women in the group of 23–27 also presented more nocturia than women aged 20–22 (p < 0.001). Women aged 35–45 experienced more urgency than those in the age groups of 28–34 and 23–27 (p < 0.0001). Women aged 35–45 had significantly more urgency incontinence than all the other groups, and women in group of 20–22 also presented more incontinence than those aged 23–27 (p < 0.0001). Significant differences were also found regarding symptom bother, women in group 35–45 years old presented higher scores than the other groups regarding frequency (p < 0.0001), nocturia (p = 0.0011), urgency (p = 0.0015) and urgency incontinence (p < 0.0001).

Conclusions: In conclusion, older women present more OAB symptoms and therefore a higher score than younger women had.

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Correlación entre la edad y los síntomas de vejiga hiperactiva en mujeres jóvenes en Brasil

Resumen El Síndrome de Vejiga Hiperactiva (SVH) está definido por la SIC (Sociedad Internacional de Continencia) como urgencia urinaria, con o sin incontinencia de urgencia y con frecuencia asociado con un aumento de la frecuencia y de la nicturia. Propósito: El objetivo del estudio fue establecer una correlación entre los síntomas de SVH y la edad en mujeres de entre 20 y 45 años. Materiales/Métodos: Entrevistamos a 1050 mujeres de entre 20 y 45 años en el área de Campinas, Brasil, para investigar la prevalencia de Síntomas de Vejiga Hiperactiva. En este estudio utilizamos el cuestionario ICIQ-SVH (Estándar de la SIC), en su versión portuguesa validada y un cuestionario específico para la demografía. Resultados: En general, las mujeres de 35-45 años mostraron puntuaciones significativamente más altas en el cuestionario ICIQ-SVH que todos los demás grupos. (p < 0,001). Las mujeres mayores (35-45) presentaron una puntuación significativamente más alta que las mujeres más jóvenes (todos los demás grupos) (p < 0,0001) con respecto a la frecuencia urinaria. En cuanto a la nicturia hubo una diferencia significativa entre el grupo de edad 35-45 (mayor puntuación) y los grupos de edad 20-22 y 23-27 (p < 0,0001). Las mujeres de 35-45 presentaron significativamente más nicturia que las mujeres en los grupos de edad de 28-34, 23-27 y 20-22. Las mujeres en el grupo de 28-34 también presentaron más nicturia que las mujeres de edades comprendidas entre los 20 y los 22 (p < 0,0001). Las mujeres de 35-45 experimentaron más urgencia que las de los grupos de edad de 28-34 y 23-27 (p < 0,0001). Las mujeres de 35-45 tuvieron significativamente más incontinencia de urgencia que todos los demás grupos y las mujeres en el grupo 20-22 también presentaron más incontinencia que las de 23-27 (p < 0,0001). También se encontraron diferencias significativas en cuanto a la molestia de los síntomas, las mujeres en el grupo de 35-45 años de edad presentaron puntuaciones más altas que los demás grupos con respecto a la frecuencia (p < 0,0001), nicturia (p = 0,0011), urgencia (p = 0,0015) e incontinencia de urgencia (p < 0,0001). Conclusiones: En conclusión, las mujeres mayores presentan más síntomas de SVH y, por lo tanto, una puntuación mayor que las mujeres más jóvenes.

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Introduction

Overactive bladder is defined by the ICS (International Continence Society) as urinary urgency, with or without urgency incontinence and frequently associated with increase of frequency and nocturia. Overactive bladder syndrome (OAB) is a condition that causes great discomfort. It is more prevalent in post-menopausal women, in whom its impact in quality of life is well known. However, the prevalence of OAB in premenopausal women is not well established, since urinary stress incontinence appears to be more frequent in that subset of patients.

Many women who are young and active have their lives limited due to discomfort caused by OAB. Within their complaints are included embarrassment, emotional distress, chronic fatigue caused by nocturia, increase of risk of urinary tract infections due to chronic vaginal flora changes, decrease of both mobility and social interactions, and depression. Women also reported coping strategies to avoid the desire to void, such as reducing the amount of liquids ingested, urinating before leaving the house, and sleeping, finding and staying close to public restrooms when out of the house.

The high prevalence of OAB and its impact in quality of life justify the proposal of more related studies, so new policies can be developed regarding information, treatment, and improvement in quality of life of the people affected by the condition.

The aim of the study was to establish a correlation between OAB symptoms and age in women aged 20–45 in Campinas–SP, Brazil.

Materials and methods

This is an epidemiological study, in which we interviewed women aged 20–45 years, in the region of Campinas. The project was approved by the Ethics Committee in Research at FCM Unicamp, Protocol # 1092/2008.

Prior to the inclusion in the trial, the subjects were informed of the nature of the study and were given information relevant to the intended purpose. A document of informed consent, approved by the ethics committee, was signed by the subject, by the investigator and, if necessary, by a witness.

The study excluded women with diabetes mellitus, chronic lung disease, history of recurrent urinary tract infections, neurological diseases, and other conditions that can predispose to neurogenic detrusor overactivity. Patients who underwent surgery for urinary incontinence and other major pelvic surgery were also excluded.

For the study, we used a specific questionnaire containing information about gender, age, weight, height,
education, profession, obstetric history, urinary tract infections, urinary incontinence and other pelvic surgery, diabetes, chronic pulmonary disease or disease and neurological conditions. The women who were included in the study completed the International Consultation on Incontinence Questionnaire—Overactive Bladder (ICIQ-OAB) questionnaire, standardized by the International Society for Incontinence (ICS), translated and validated into Portuguese, and designed to obtain data about overactive bladder. This questionnaire was considered highly responsive in the quantification of urgency, frequency and incontinence in OAB patients. The International Consultation on Incontinence Questionnaire—Overactive Bladder (ICIQ-OAB) is a simple, fast, and auto-administrable questionnaire. It consists of 6 questions, numbers 1 and 2 being date of birth and gender. Questions 3, 4, 5, and 6 are divided into a and b. Question 3a determines frequency, and 3b is a Visual Analog Scale (VAS) about the symptom bother (from 1 to 10). Question 4a determines nocturia, and 4b the VAS quantification. Question 5a determines urgency and question 6 determines urgency incontinence, all followed by question b, symptom bother. All the b questions are not included in the score, but help us understand how much that specific symptom bothers the patient, quantifying quality of life (QoL).

The determination of sample size was conducted with the assistance of the Department of Statistics, Faculty of Medical Sciences of Unicamp. The collected data were entered into Excel (Microsoft® Corporation, Redmond, WA, USA). Descriptive analysis of presentation of tables for categorical variables was performed, frequencies and measures of dispersion and position for numeric variables. For comparison of proportions, the Chi-square test was used. For comparison of numeric measurements between 2 groups, we used the Mann–Whitney test, and between 3 or more groups the Kruskal–Wallis test or ANOVA with processing by posts followed by Tukey test for location of differences, when necessary. To verify linear association between 2 bullets, we used the Spearman correlation coefficient. This coefficient varies from −1 to 1. Values close to the extremes indicate positive or negative correlation, respectively, and values close to 0 indicate no correlation. The significance level used for statistical testing was 5 (p < 0.05). SAS System for Windows (Statistical Analysis System), version 9.2. SAS Institute Inc., 2002–2008, Cary, NC, USA was used for statistical analysis.

## Results

A total of 1050 women were included in the study. The age of the women ranged between 20 and 45 years old, and the average age was 28.6. The average BMI was 22.8, varying between 14.8 and 42.5. The individual scores for each question and the total score are listed in Table 1.

In the analysis of score of the ICIQ-OAB questionnaire compared to age (Fig. 1), regarding urinary frequency (question 3a), the average score was 0.4 for women aged 20–22 and for those aged 23–27. For women aged 28–34, the average was 0.5 and in the group of ages 35–45, the average was 0.8. There was a significant difference between the age group 35–45 (higher score) and the age groups 20–22 and 23–27 (p < 0.0001).

Regarding nocturia (question 4a), the average score was 0.4 for women with age 20–22. In the group with age ranging from 23 to 27, the average score was 0.5. A score of 0.6 was found for women between 28 and 34 years old. Women with age 35–45 presented a score of 0.8. Women aged 35–45 presented significantly more nocturia than women in the age groups 28–34, 23–27, and 20–22. Women in the group of 28–34 also presented more nocturia than women aged 20–22 (p < 0.0001).

In the analysis of a score of urgency (question 5a), women aged 20–22 presented a score of 1.0, while the ages 24–27 had an average of 0.9. The group between 28 and 23 had a score of 0.8, and the women between 25 and 45 presented a score of 1.2. That means women aged 35–45 experienced more urgency than those in the age groups of 28–34 and 23–27 (p < 0.0001).

In the last parameter, urgency incontinence (6a), the score was 0.4 for women with age 20–22, and 0.2 for those with age 23–27. The group ranging between 28 and 34 had a score of 0.2 as well, and in the group of age 35–45, the score was 0.6. Women aged 35–45 had significantly more urge-incontinence than all the other groups, and women in group of 20–22 also presented more incontinence than those aged 23–27 (p < 0.0001).

Overall, older women (35–45) presented a significantly higher score than younger women (all other groups) (p < 0.0001) (Fig. 2).

**Table 1** Age versus symptoms (average score) – ICIQ-OAB.

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency (3a)</th>
<th>Nocturia (4a)</th>
<th>Urgency (5a)</th>
<th>Urgency incontinence (6a)</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>20–22</td>
<td>0.4</td>
<td>0.4</td>
<td>1</td>
<td>0.4</td>
<td>2.1</td>
</tr>
<tr>
<td>23–27</td>
<td>0.4</td>
<td>0.5</td>
<td>0.9</td>
<td>0.2</td>
<td>1.9</td>
</tr>
<tr>
<td>28–34</td>
<td>0.5</td>
<td>0.6</td>
<td>0.8</td>
<td>0.2</td>
<td>2.1</td>
</tr>
<tr>
<td>35–45</td>
<td>0.8</td>
<td>0.8</td>
<td>1.2</td>
<td>0.6</td>
<td>3.4</td>
</tr>
<tr>
<td>p value</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

**Figure 1** Score(ICIQ-OAB) versus symptoms in each age group.
Correlation between age and overactive bladder symptoms in young women in Brazil

had an average of 1.2. The group between 28 and 34 had a score of 1.0, and the women aged 35–45 presented a score of 1.7, significantly higher than groups 28–34 and 23–27 (p = 0.0015).

In the last parameter, urgency incontinence (6b), the score was 1.2 for women aged 20–22 and 0.6 for those aged 23–27 or 28–34. The group ranging between 35 and 45 had a score of 1.9, significantly higher than all other groups. In this parameter, women aged 20–22 were also more bothered by their symptoms than those in the age groups of 23–27 and 28–34 (p < 0.0001).

All the results for the symptom bother evaluation are listed in Table 2.

**Discussion**

Overall, women aged 35–45 years showed significantly higher scores in the ICIQ-OAB questionnaire than all other groups. However, these did not differ amongst themselves.

Older women also presented significantly more individual symptoms: urinary frequency (p < 0.0001), nocturia (p < 0.0001), urgency (p < 0.0001), and urgency incontinence (p < 0.0001). Significant differences were also found regarding symptom bother, women in group 35–45 years old presented higher scores than those in the other groups regarding frequency (p < 0.0001), nocturia (p = 0.0011), urgency (p = 0.0015), and urge-incontinence (p < 0.0001).

The results of the present study are consistent with those of the literature. The findings in the present study reinforce the correlation between age and overactive bladder.

Another study assessed overactive bladder (OAB) prevalence, associated factors and implications in a young population in Brazil. A self-applicative questionnaire covering urinary symptoms, coping strategies, quality of life, and treatment seeking behavior was developed specifically for the study. The questionnaire was a combination of questions from the King’s Health Questionnaire validated for OAB, the AUA Symptoms Score, and original questions. Both questionnaires were validated for the Portuguese, and 34 questions were used, divided into 5 parameters: general characteristics (about BMI gender, race, education), urinary symptoms, symptom bother, quality of life, and search for medical help.

A total of 848 questionnaires were analyzed. The age of inclusion in the study was 15–55 years. Equal prevalence of OAB was found among all age groups (p = 0.152). Those

**Table 2  Age versus symptom bother – ICIQ-OAB.**

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency (3b)</th>
<th>Nocturia (4b)</th>
<th>Urgency (5b)</th>
<th>Urgency incontinence (6b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20–22</td>
<td>1.1</td>
<td>1</td>
<td>1.5</td>
<td>1.2</td>
</tr>
<tr>
<td>23–27</td>
<td>0.8</td>
<td>1</td>
<td>1.2</td>
<td>0.6</td>
</tr>
<tr>
<td>28–34</td>
<td>0.8</td>
<td>1</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>35–45</td>
<td>1.5</td>
<td>1.4</td>
<td>1.7</td>
<td>1.9</td>
</tr>
<tr>
<td>p value</td>
<td>&lt;0.0001</td>
<td>0.0011</td>
<td>0.0015</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>
results differ from ours, which show increase of both individual symptoms and overall score with age. It is not possible to confirm if the difference is actually in the population or in the different tools that were used in the studies.

Analyzing data from a study in Vienna, where a total of 1199 men and 1219 women aged 20–91 years completed the Bristol Lower Urinary Tract Symptoms (LUTS) questionnaire, we found data consistent to ours. All participants underwent a detailed health examination, including physical assessment, evaluation of lifestyle factors, laboratory study, and urinalysis. In women, the prevalence of OAB (without incontinence) was stable in all ages, but OABwet (with incontinence) increased substantially after the age of 40. The study concluded that symptoms of OAB increase with age. Those findings correlate to ours; the symptoms also increased with age, and the significant difference was found in the oldest group (35–45 years).

The study by Stewart, 2003, included 5204 participants from both sexes, 2735 being women, all over 18 years old. The questionnaire used was the CATI, which includes demographics, parity, labor, social and physical activity, fluid intake, and sleep quality. It showed that the symptoms in women increase with age, with a greater increase after 44 years of age. A survey was carried out by the Sifo/Gallup network in France, Germany, Italy, Spain, Sweden, and the UK. Interviews were conducted by telephone. The prevalence of overactive bladder and of all three symptoms (i.e. frequency, urgency, and urge incontinence) increased with advancing age, without significant differences between men and women.

The EPICC study results were published in 2010. A total of 3090 women from 25 to 64 years old were included. The presence of urinary incontinence and OAB increased with age, according to analyses of the questionnaires that have been developed exclusively for this multi-center study.

Lee, 2009 conducted a study of prevalence of OAB in Korea, with a questionnaire with ICS settings applied by phone, for men and women over 18 years. In both sexes, the prevalence increased with age. In Japan, Homma, 2005 sent by mail self-administered questionnaires for men and women aged over 40 years. The questions were prepared by members of the Japan Neurogenic Bladder Society Committee, and in both sexes the prevalence increased with age.

Davila, 2010 conducted a survey with OAB V8 questionnaires with men and women from 18 to 75 years in Venezuela. For both sexes, the highest prevalence was detected in the ages of 65–69 years.

The use of a specific instrument (ICIQ-OAB) allows us to standardize the data, and, thus, enhance its reliability. Uniform and reproducible evaluation of OAB symptoms and its impact in QoL represents one of the most important aspects in any study about the topic, because it might determine variability in the results.

Although the data currently available in literature state that OAB is more prevalent in older women, this study shows that it is also present in young women, and the impact in quality of life is as important, since they are more committed to labor activities, which can also lead to a negative economic impact.

Ideally, it would be better to compare results of different studies that used the same tools; but each study adopted a different one, and their different ways of administration can also interfere with the results.

In any case, all studies point to the same direction: OAB is highly prevalent in all populations, it has a high impact in quality of life, thus leading to social and economic limitations for all genders and ages.

Conclusion

In conclusion, this study reinforces the correlation between age and OAB symptoms, even in a young population. Older women present more symptoms, and therefore a higher score than younger women.

Conflict of interest

The authors declare that they have no conflict of interest.

References