Prevalence of Urinary Frequency Among Women Aged 60 Years and Older in Taiwan

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SUMMARY

Objective: To evaluate the prevalence of daytime urinary frequency among Taiwanese women aged 60 years and older.

Materials and Methods: There were an estimated 1.25 million female residents aged 60 years and over in Taiwan in 2000. A sample of 2,410 women was selected using a multistage random sampling method. Face-to-face visits with 1,523 women were completed by trained professional interviewers within 3 months of the subjects' selection. Questions about urinary frequency and other lower urinary tract symptoms, sociodemographics, reproduction, and medical and surgical histories were recorded. The factors were assessed by frequency and Pearson's χ^2 test using a significance level of < 0.05.

Results: The prevalence of urinary frequency in Taiwanese women aged 60 years and over was 18.8% (286/1,521). The response rate was 85.0% (1,521/1,789). For those who complained of frequency, 45.8% voided 8–15 times a day, 37.8% voided 16–23 times a day, 1.7% voided 24–31 times and a day, and 14.7% voided more than 31 times a day. The prevalence of urinary frequency was significantly associated with age ($p < 0.001$).

Conclusion: Urinary frequency is a common symptom in menopausal women and is significantly related to age. More than half of the women interviewed experienced intervals of < 1 hour between visits to the restroom during the day. [Taiwan J Obstet Gynecol 2009;48(4):385–388]

Key Words: lower urinary tract symptoms, prevalence, urinary frequency

Introduction

Urinary frequency is a common symptom in women of all ages and has a significant impact on quality of life and work. It can occur in isolation or in conjunction with other lower urinary tract symptoms (LUTS) such as urgency, nocturia or urinary incontinence. Previous studies reported that the prevalence of urinary frequency in Taiwanese women aged 20–59 years was 5.2% and risk factors included diabetes mellitus, hypertension, and previous gynecologic surgery [1,2]. It is usually difficult to target appropriate investigations and so identify the cause of urinary frequency. Treatment, therefore, has to be aimed at the symptoms rather than an underlying cause. It is thus important to assess the prevalence of urinary frequency, although to our knowledge, there have been few reports on the prevalence of urinary frequency.

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This study was conducted to estimate the prevalence of urinary frequency in Taiwanese women aged 60 years and over. The perception of how bothersome urinary frequency is may differ, especially for the elderly, and depends on the knowledge, attitudes, and cultural or regional backgrounds of the women interviewed. The International Continence Society (ICS) in 2002 defined daytime urinary frequency as occurring when the patient complains of having to void too often during the day [3]. This study evaluated the interviewees' reports about urinary frequency using the ICS definition described above.

Materials and Methods

This study was part of the "Survey of Health and Living Status of the Middle Aged and Elderly in Taiwan" conducted by the National Institute of Family Planning (NIFP) of the Department of Health, Executive Yuan, Taiwan, to evaluate the prevalence and determine the factors associated with urinary frequency and other LUTS among Taiwanese women aged 60 years or older. It was supervised by the Population Studies Center, University of Michigan, USA.

All the survey procedures, including the design and draft of the questionnaire, pretest and revision, sampling design and operation, recruiting and training of interviewers, interview fieldwork, questionnaire editing and correcting, test–retest, and data coding, cleaning and analysis, were arranged by the NIFP. A committee was organized by the NIFP to review and approve the protocols for the study. A total of 86 interviewers attended a 3-day course, which included training in standard procedures for conducting interviews, questionnaire content, and interview-related skills. There was a summary assessment for the interviewers and only those who qualified were allowed to conduct field interviews.

The study was conducted in Taiwan and included the main island and the small islands within the sovereign territory. It was estimated that there were around 1.25 million women aged 60 years or older in 2000. A sample of 2,410 women aged 60 years or older was selected by the NIFP using a multistage random sampling design. The survey utilized a three-stage selection process, in which 56 of the 331 townships in Taiwan were selected in proportion to size and were arranged into 27 strata. Blocks within the townships were selected in proportion to size, and two eligible respondents within each block were randomly selected using the household register of each sampled township as a sampling frame. Those who no longer lived at their registered addresses were traced to their new residences anywhere in Taiwan.

The women selected were interviewed face-to-face in their home by well-trained professional NIFP interviewers within 4–6 months of selection. During the interviews, the interviewers explained the purposes of both the study and the questionnaire to the interviewees. The participants had to fully understand the study, because they needed to answer the questionnaire themselves. Thus, potential respondents who were identified as severely ill, deaf or hard of hearing, mute, with cognitive disorders, with communication difficulties, or being too depressed to communicate were excluded from the study. The questionnaire was devised to cover five areas: general background, medical history, obstetric and gynecologic history, urinary frequency, and other LUTS. The questionnaire used in this study was modified from the "URG – data base system. Urodynamics and gynecologic urology. HISTORY" [4]. The validity of this study was assessed when the questionnaire was designed by increasing content validity through incorporation of NIFP experts' opinions.

Urinary frequency was considered to be present when a respondent answered "yes" to the question, "Do you consider you void too often during the day?" Interviewees who did not answer this question were excluded from the study. The next question was, "How many times do you void every day?" Interviewees who did not answer this question were also excluded from the study. Interviewees also had to answer the question, "Have you experienced involuntary urine loss during daily activities?" Analysis of the individual items was based only on the subjects who answered these three questions.

All data were entered into a computer database and analyzed using SAS software (SAS Institute, Cary, NC, USA). Pearson's χ^2 test was used to test for differences in the percentage of prevalence of urinary frequency among participants with different dichotomous explanatory variables and to compare potential risk factors between the groups of women with and without urinary frequency. A p value of < 0.05 was regarded as statistically significant.

Results

A sample of 2,410 women was selected using the multistage random sampling design. A total of 621 women who were selected were deceased. A total of 268 women refused the interviews, could not be found or failed to answer the questionnaire. Thus, 1,521

women were successfully interviewed and included in this study, producing a response rate of 85.0% (1,521/1,789). After checking with the original data, there were no significant differences in age or demographic distribution between the respondents and the study sample. A total of 286 of 1,521 Taiwanese women aged 60 years or older reported urinary frequency, giving an overall prevalence of 18.8% (Table 1).

Table 2 shows that about half of the women who complained of urinary frequency felt that voiding 8–15 times during the day was too frequent. On average, < 1 hour occurred between visits to the restroom for 54.2% of these women. Table 3 shows that age was significantly related to urinary frequency.

Discussion

This is the first nationwide epidemiologic study of urinary frequency in menopausal Taiwanese women using a population-based multistage random sampling method. In the past, the definition of urinary frequency was the passage of urine every 2 hours, or more than seven times during the day. However, the ICS recommended a new definition for daytime frequency in 2002, which was a woman's perception of voiding too often during the day [3]. Based on this new definition, the prevalence of urinary frequency in Taiwanese women is 18.8%.

To our knowledge, there are few reports on the prevalence of urinary frequency in the literature. In an epidemiologic study, Bungay et al [5] assessed the prevalence of various LUTS in 1,120 women aged between 30 and 65 years, and found that approximately 20% admitted to urinary frequency. Norby et al [6] reported LUTS in the Danish population and showed that the prevalences of urinary frequency in women aged 50–59, 60–69, 70–79 and over 80 years were 22.5%, 15.5%, 30.6% and 23.8%, respectively. These results are similar to those of the current study, which found prevalences of urinary frequency in Taiwanese women aged 60–69, 70–79 and over 80 years of 12.7%, 21.5% and 26.3%, respectively.

Bungay et al [5] found that the prevalence of frequency did not alter significantly with age between 30 and 65 years, and our previous study [1] also reported no specific increase in the prevalence of frequency among women aged 20–59 years. The current study, however, showed that age was significantly related to the prevalence of urinary frequency in menopausal women aged 60 years or older. This study was limited by the fact that aging is a common risk factor for many diseases. Because these results were based solely on questionnaires, further studies are needed to identify the cause of the difference between the age groups.

Although one represents daytime symptoms and the other nighttime symptoms, both urinary frequency and nocturia lead to similar complaints by the patient, who considers that she voids too often. This study found that the prevalence of frequency (18.8%) in Taiwanese women aged 60 years or older was much lower than that of nocturia (73.5%) in the same population [7]. The difference may be due to nocturia having a greater impact on a patient's daily life by affecting their sleep patterns [8]. The subjective perception of the patient would, therefore, be much stronger and so might induce higher self-reporting of nocturia [9]. A previous study [7] on urinary frequency

Table 1. Prevalence of daytime frequency (n = 1,521*)

Urinary frequency	n (%)
Yes	286 (18.8)
No	1,235 (81.2)

**Of the 1,789 interviewees, 268 women refused the interviews, could not be found, or did not answer the questions on urinary frequency.*

Table 2. Distribution of daytime frequency by number of voidings (n = 286)

Voiding numbers	n (%)
8–15	131 (45.8)
16–23	108 (37.8)
24–31	5 (1.7)
≥ 32	42 (14.7)
Total	286 (100)

Table 3. Prevalence of daytime frequency by age (n = 1,521)

Age (yr)	Interviewees*, n	Daytime frequency, n (%)	χ^2	Degrees of freedom	p
60–69	573	73 (12.7)	27.141	3	< 0.001
70–79	731	157 (21.5)			
80–89	197	54 (27.4)			
90–99	16	2 (12.5)			

**Of the 1,521 interviewees, the data of four of whom were missing.*

and nocturia in Taiwanese women aged 20–59 years has revealed the same result.

Thus, it is apparent that better health education is required to improve understanding of these disorders, increase awareness of the availability of treatments, and improve quality of life.

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References

1. Hsieh CH, Chen HY, Hsu CS, Chang ST, Kuo TC, Chiang CD. Prevalence of urinary frequency in Taiwanese women aged 20–59 years. *Taiwanese J Obstet Gynecol* 2006;45:244–6.
2. Hsieh CH, Chen HY, Hsu CS, Chang ST, Kuo TC, Chiang CD. Risk factors for urinary frequency in Taiwanese women aged 20–59 years. *Taiwanese J Obstet Gynecol* 2006;45:329–32.
3. Abrams P, Cardozo L, Fall M, et al. The standardisation of terminology of lower urinary tract function: report from the Standardisation Sub-committee of the International Continence Society. *Neurourol Urodyn* 2002;21:167–78.
4. Ostergard DR. Appendix: URG – data base system. Urodynamics and gynecologic urology. HISTORY. In: Ostergard DR, Bent AE, eds. *Urogynecology and Urodynamics: Theory and Practice*, 4th edition. Baltimore, MD: Williams & Wilkins, 1996:668–9.
5. Bungay GT, Vessey MP, McPherson CK. Study of symptoms in middle life with special reference to the menopause. *Br Med J* 1980;281:181–3.
6. Norby B, Nordling J, Mortensen S. Lower urinary tract symptoms in the Danish population: a population-based study of symptom, prevalence, health-care seeking behavior and prevalence of treatment in elderly males and females. *Eur Urol* 2005;47:817–23.
7. Hsieh CH, Kuo TC, Hsu CS, Chang ST, Lee MC. Nocturia among women aged 60 or older in Taiwan. *Aust N Z J Obstet Gynecol* 2008;48:312–6.
8. Stewart RB, Moore MT, May FE, Marks RG, Hale WE. Nocturia: a risk factor for falls in the elderly. *J Am Geriatr Soc* 1992;40:1217–20.
9. Jackson S, Donovan J, Brookes S, Eckford S, Swithinbank L, Abrams P. The Bristol Female Lower Urinary Tract Symptoms questionnaire: development and psychometric testing. *Br J Urol* 1996;77:805–12.