

PREVALENCE OF NOCTURIA IN TAIWANESE WOMEN AGED 20–59 YEARS

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SUMMARY

Objective: To estimate the prevalence of nocturia in Taiwanese women aged 20–59 years.

Materials and Methods: A random sample of 4,549 women within the age range was selected by a multistage sampling design. Face-to-face visits with 3,537 women were completed by well-trained professional interviewers. Nocturia, according to the definition of the International Continence Society, and its associated problems were evaluated and, concurrently, variables of medical histories and sociodemography were recorded.

Results: The response rate was 77.8%, and a total of 930 of 3,521 women reported having had nocturia, producing a prevalence of nocturia of 26.4%, with 16 not answering the question about nocturia. For those who had nocturia, 88.9% of the interviewees reported ≤ 2 voids per night and 1.6% of these women reported having to void ≥ 5 times per night.

Conclusion: Nocturia is a common condition among Taiwanese women, especially among the elderly. Its prevalence is significantly related to age. Treatment of this condition in this patient population can both improve their quality of life and reduce the risk of deterioration in their general state of health. [*Taiwanese J Obstet Gynecol* 2007;46(1):50–53]

Key Words: lower urinary tract symptoms, nocturia, polyuria, prevalence, Taiwanese women

Introduction

The most common lower urinary tract symptoms (LUTS) of women are urinary incontinence (UI) and nocturia [1], yet the majority of women accept their symptoms as part of the aging process. Nocturia itself has now been recognized as a symptomatic urinary disorder of multifactorial origin that has a significant impact on a patient's quality of life (QOL). However, the perception of how bothersome nocturia is may differ and depend on the knowledge and attitudes, and the cultural or regional background of the women being interviewed.

Nocturia can lead to reduced productivity in affected women. Females aged 40–60 years with regular nocturia

have reported deterioration in their sleep and general state of health [2]. The affected individuals also took more time of work and received more medication than those who did not have nocturia [3]. Thus, it is important, from the point of view of public health, to evaluate the prevalence of nocturia in Taiwanese women.

From the definition of the International Continence Society (ICS) in 2002, LUTS are defined from the individual's perspective, who is usually, but not necessarily, a patient within the healthcare system [4]. Further, symptoms are either volunteered by or elicited from the individual or may be described by the individual's caregiver. Nocturia is defined as the complaint that the individual has to wake at night one or more times to void.

Epidemiologic studies of LUTS often look at UI from a broad perspective; published research about women focuses on the impact that UI has on daily living rather than on addressing the prevalence of nocturia [5,6]. This is also true in Taiwan: the prevalence of UI in Taiwanese women aged 20–59 years has been reported as 18.7%

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Accepted: March 31, 2006

[7], but there is still no available data related to the prevalence of nocturia in Taiwan. The purpose of this study is to investigate the prevalence of nocturia among Taiwanese women aged 20–59 years.

Materials and Methods

This study was part of the eighth nationwide survey of knowledge, attitudes, and practices on family and fertility conducted by the National Institute of Family Planning (NIFP) of the Department of Health, Executive Yuan, Taiwan, supervised by the Population Studies Center, University of Michigan, USA. In 1998, there were estimated 5.9 million women between the ages of 20 and 59 years living in Taiwan. In coordination with the NIFP, 4,549 women within this age group were selected for a multistage random sample design study.

All the procedures were arranged by the NIFP, including sampling, interviewers' training, pretests, interviews, tests, correction, etc. There was also a committee organized by the NIFP in order to review and approve the protocols for this study. There were about 100 interviewers who attended a 3-day training, which included training on standard procedures of interview, content of the questionnaire, and interview-related skills.

A total of 3,537 women were successfully interviewed by well-trained professional NIFP interviewers, accompanied by local public health nurses, within 3 months of selection. The study was fully explained to the participants. The questionnaire was devised to cover five areas: general background, medical history, obstetric and gynecologic history, nocturia, and other LUTS. Nocturia was considered to be present when a respondent answered the question, "How many times do you wake up to void during the night after falling asleep?" by saying one or more times. Interviewees who did not answer this question were excluded from the study. Analysis of the individual items was based only on the number of subjects who answered particular questions.

All data were entered into a computer database and analyzed using the SAS computer program (SAS Institute, Cary, NC, USA). χ^2 tests were used to test for differences in the frequency of nocturia among patients with different variables. A *p* value of < 0.05 was regarded as statistically significant.

Results

Data were collected by a multistage sampling design. A sample of 4,549 women aged 20–59 years was selected, and face-to-face interviews with 3,537 women were

successfully completed by well-trained professional interviewers from the NIFP. The response rate was 77.8%. The height of the interviewees ranged from 136 to 180 cm, with mean and standard error of 157.5 and 5.1 cm, respectively. Their weight ranged from 31 to 105 kg, with a mean of 55.1 kg and standard error of 8.3 kg. The characteristics of the interviewees are shown in Table 1.

Of 3,521 women, 930 reported having had nocturia producing the prevalence of nocturia in Taiwanese women within this age range of 26.4% (930/3,521) (Table 2).

Table 3 shows that the majority of the women who had nocturia had to void once a night; 33.1% (308/930) had to void at least twice a night. It is rare for Taiwanese women between 20 and 59 years to have to wake up to void five or more time a night (1.6%, 15/930).

Of the 3,521 interviewees, 27 did not answer the question on nocturia. Table 4 shows that the prevalence of nocturia has a statistically significant increase with decades of age.

Discussion

While nocturia has been shown to be "bothersome", its prevalence and risk factors have not been adequately assessed in Taiwan. This study is the first epidemiologic one on nocturia using population-based multistage random sampling in Taiwan. Further, nocturia was considered to be the result of the normal aging process. Previous prevalence studies have typically defined nocturia as two or more voids per night [3,8]. Using this

Table 1. Characteristics of the interviewees (*n* = 3,537)

	%
Diabetes mellitus	2.19
Hypertension	5.85
Previous gynecologic surgery	6.69
Drinking	6.58
Drug allergy	9.32
Married	79.59

Table 2. Prevalence of nocturia in Taiwanese women aged 20–59 years (*n* = 3,537)

Nocturia	Frequency, <i>n</i> (%) [*]
Yes	930 (26.4)
No	2,591 (73.6)

^{*}Of the 3,537 interviewees, 16 women did not answer the questions on nocturia.

Table 3. Prevalence of nocturia by voiding numbers ($n = 930$)

	Nocturia (times)										Total
	1	2	3	4	5	6	7	8	9	10	
Frequency, n	622	223	63	7	10	2	1	0	0	2	930
(%)	(66.9)	(24.0)	(6.8)	(0.7)	(1.1)	(0.2)	(0.1)	–	–	(0.2)	(100)

Table 4. Prevalence of nocturia by age ($n = 3,521$)

Age (yr)	Interviewees, n	Frequency of nocturia, n (%)	χ^2	Degrees of freedom	p
20–29	947	193 (20.4)	57.779	3	< 0.001
30–39	1,041	250 (24.0)			
40–49	925	265 (28.6)			
50–59	581	216 (37.2)			
Total	3,494*	924 (26.4)			

*Data from 27 of the 3,521 interviewees missing.

criterion, the overall prevalence for nocturia ranges from 6.5% to 93% in women [1,6,9–11]. The ICS subcommittee defined nocturia as “waking at night to void” in 2002, and this study used the definition of nocturia as referring to the number of micturitions of one or more nocturnal voids.

The prevalence of nocturia in Taiwanese women aged 20–59 years was 26.4%. This is higher than that reported by Glenning [12] and Samuelsson et al [1]. Glenning’s report showed that 17.3% of the subjects had to wake up to void at night, and the study of Samuelsson et al showed that nocturia among women aged 29–59 years, scheduled for gynecologic health examination by midwives in a primary healthcare center, was 6.5%, by postal questionnaire. Two or more voids at night were reported by 20% (166/819) of women in a survey of urinary dysfunction in a Chinese population in Hong Kong [13].

Compared to the report of Brieger et al in Hong Kong [13], there were just 8.7% (308/3521) of Taiwanese women aged 20–59 years who had to wake up two or more times to void at night, and therefore the percentage is much lower in Taiwanese women. Sommer et al reported that 13.6% of women aged 20–79 years had two or more nocturnal voids [6]. Furthermore, the same report of Sommer et al also showed that 4.0% of women had to wake to void three or more times after falling asleep. The result from the current study was about 2.4% (85/3521).

The prevalence of nocturia showed an increase with successive decades of age in Taiwanese women. The report of Samuelsson et al differed from the result of this study [1]. The prevalence of nocturia reported by Samuelsson et al at 20–29, 30–39, 40–49, and 59–59

years was 4.7%, 4.4%, 3.7%, and 13.5%, respectively. Similar to the results of the current study, the majority of reports about the prevalence of nocturia show that it increases with age [9,11,14–19]. However, most women accept symptoms of nocturia as part of the aging process and few seek medical help. Treatment of the symptoms of nocturia is particularly important as it may improve the QOL of patients and also reduce the risk of deterioration in their general state of health, even though the etiology of nocturia is still not fully known.

Acknowledgments

The authors wish to thank the personnel of the National Institute of Family Planning, Department of Health, Executive Yuan, for their contribution to the study. The authors are also grateful to Miss Chiang LH, research assistant in the study, for her interest and contribution.

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