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Although snoring is a common problem it has received little attention in the medical literature. Therefore, a study was undertaken to determine the prevalence and epidemiologic aspects of snoring. The results showed that it is much more common than previously thought — 86% of the married men and 57% of the married women were reported to snore. Overall, snoring was found to be more frequent in adult men than women, and its prevalence in adults was not related to age. It was found that 15% of the husbands and 52% of the wives were bothered by their spouse's snoring. Physicians must be made more aware of this problem and its potential effects on patients.

Bien que le ronflement soit un problème courant il est peu souvent mentionné dans la littérature médicale. Une étude a donc été entreprise dans le but de déterminer la prévalence et les caractéristiques épidémiologiques du ronflement. Les résultats montrent que cette affection est plus fréquente qu'on ne le croyait: on a trouvé que 86% des hommes mariés et 57% des femmes mariées ronflaient. Dans l'ensemble, le ronflement a été retrouvé plus fréquemment chez l'homme que chez la femme adulte, et sa prévalence chez l'adulte n'était pas fonction de l'âge. On a découvert que 15% des maris et 52% des épouses étaient ennuyés par les ronflements de leurs conjoints. Les médecins doivent être

davantage conscients de ce problème et de ses effets possibles sur les patients.

Reports on the prevalence and epidemiologic aspects of snoring are remarkably few, and they suggest that snoring occurs in only 8% to 45% of the population,¹⁻³ proportions much lower than general experience indicates. This discrepancy may reflect the method of acquiring information. Usually the subjects were asked to comment upon themselves. A common belief is that snoring is not a major problem, but what medical literature there is does not substantiate this belief. Indeed, in some cases snoring preceded the onset of sleep apnea and even the sudden infant death syndrome.³⁻⁵

Sleep-related problems have been intensively investigated in recent years, but snoring, which is by far the commonest such problem, has been almost totally ignored. We undertook a study of the reported snoring of household members in an attempt to stimulate more research on this problem.

Subjects and methods

Pretested questionnaires were given to 254 consecutive patients attending a family practice clinic in a middle-class area of Metropolitan Toronto and to 25 consecutive patients from a clinic in a rural community in northern Ontario. The results from the two groups were so similar that they were not separated in the analysis. Each patient represented one household. Adults living alone and children were not given questionnaires.

The questionnaire was aimed only

at eliciting information about the age and sex of the respondent and the frequency of snoring of the individuals in the household. The respondents were not asked to comment on themselves. Thus, any illness that prompted the patient to come to the clinic was rendered irrelevant and the information more reliable. Seven percent (20) of the completed forms had to be excluded because they contained contradictory or inadequate information.

Results

Of the 259 questionnaires 111 were completed by married men and 148 by married women. Although the ages of the men and women were similar, the men were significantly less ($p < 0.001$) aware than the women of snoring in their household (Table I).

Table II shows that of the 148 women 86% stated that their husbands snored and 52% were distressed by it. On the other hand, of 111 men only 57% said that their wives snored and only 15% were bothered by it (Table III). Both tables show that snoring was reported to be more frequent in the adult men.

Women seemed to be more aware of snoring by the various members of the household. When the data were analysed according to decade for patients aged between 20 and 80 years there was no significant difference in the frequency of snoring between the spouses of either sex.

Discussion

The most significant finding of our study is that snoring is very

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common. About 80% of the households were reported to contain at least one person who snored. Of the adults 86% of the men and 57% of the women were said to snore by their spouses; these rates are much higher than those reported in the literature, probably because in the other studies the subjects commented on their own snoring habits.^{1,3} In our study the women were more aware of snoring than the men, which suggests that women have a lower arousal threshold for noise, a finding supported by Dobbs,⁶ who found that women are more easily awakened than men by aircraft noise. Therefore, women's statements as to the prevalence of snor-

ing are likely to be more reliable, although it is also possible that women actually snore less often or less loudly.

We also demonstrated that the prevalence of snoring was not related to age, a finding at variance with that of Lugaresi and colleagues,³ who found that snoring became more frequent with age, particularly among persons in their 60s. However, it is difficult to know how much weight to attach to their findings, as their method of obtaining data is unclear.

We found that women were more bothered by snoring than men, which suggests that snoring may be a significant cause of conjugal strife.

Munroe⁷ studied couples when they slept together and when they slept apart, and found that the amount of δ -wave sleep was reduced when they slept together. Snoring may have been one factor contributing to the reduction.

Snoring may be of clinical as well as social significance. A small proportion of cases are known to be associated with sleep apnea,^{3,5} in which alveolar hypoventilation, pulmonary hypertension and cardiac arrhythmias have been demonstrated to occur.^{4,5,8} Snoring in newborns may occasionally be related to the sudden infant death syndrome.⁵ Other questions need to be answered: What is the frequency of snoring in children? In what proportion of sleep time does snoring occur? Is snoring related to other medical conditions? However, our findings suggest that the social factors alone are of sufficient significance to make further investigation of the epidemiologic and etiologic aspects of snoring desirable.

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Table I—Awareness of snoring in 259 households by one respondent from each*

Variable	No. (and %) of respondents		
	Married men (n = 111)	Married women (n = 148)	Total (n = 259)
Someone snored	69 (62)	122 (82)	191 (74)
No one snored	42 (38)	26 (18)	68 (26)
Average age of respondent (yr)	54.2	47.3	50.2

*The difference in awareness between the sexes was highly significant: $\chi^2_1 = 13.5$, $p < 0.001$.

Table II—Awareness of snoring in household, as reported by the 148 women

Household member	No. (and %) of household members			Total
	Snorers		Do not snore	
	Bothersome	Not bothersome		
Husband	63 (52)	41 (34)	17 (14)	121 (48)
Sons	3 (6)	16 (34)	28 (60)	47 (18)
Daughters	1 (2)	14 (29)	33 (69)	48 (19)
Other men	7 (39)	4 (22)	7 (39)	18 (7)
Other women	4 (19)	5 (24)	12 (57)	21 (8)
Total	78 (30)	80 (32)	97 (38)	255 (100)

Table III—Awareness of snoring in household, as reported by the 111 men

Household member	No. (and %) of household members			Total
	Snorers		Do not snore	
	Bothersome	Not bothersome		
Wife	14 (15)	39 (42)	40 (43)	93 (46)
Sons	1 (3)	4 (12)	28 (85)	33 (16)
Daughters	1 (3)	4 (14)	24 (83)	29 (14)
Other men	2 (9)	9 (41)	11 (50)	22 (11)
Other women	5 (20)	3 (12)	17 (68)	25 (12)
Total	23 (11)	59 (29)	120 (60)	202 (100)