

## Insomnia and Use of Hypnotics: Study of a French Population

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**Summary:** A cross-sectional study of insomnia and hypnotic use was performed in a sample of the French population. The quota method was used to select the sample of 1,003 subjects, with less than 3% substitution. Subjects were 15 years old and older and were representative of the French population based on gender, age, marital status and living environment. Subjects were asked questions relevant to the complaint of insomnia and hypnotic use and filled out questionnaires measuring anxiety and depression.

The complaint of insomnia is common, even in the 15-24-year-old group. Overall, more women than men were afflicted. The largest group of insomniac subjects, and the group who most often used hypnotics "frequently and chronically", were women 45 years and older. Men presented a sharp increase in hypnotic use after 65 years of age. Ten percent of the entire sample used hypnotics, 8% for more than 6 months and 6.17% on a chronic and frequent basis. Retired and unemployed elderly were also chronic and frequent hypnotic users: aging and social isolation correlate with chronic and frequent hypnotic usage. Higher scores on anxiety and depression scales correlate with more frequent complaints of nocturnal sleep disturbances. Young individuals are a significant complainer group but use hypnotics rarely. A rural environment was associated, overall, with fewer insomnia complaints, but environment had much less impact on complaints and hypnotic use in the elderly than in other age groups. One may question whether, in the French population, hypnotic prescription and intake are not responses to a social rather than a medical problem. **Key words:** Insomnia—Population study—Prevalence of insomnia—Hypnotic consumption—Anxiety, Depression.

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In 1976 Lugaresi et al. (1) made an epidemiologic survey of sleep disorders in the Republic of San Marino. Of the representative sample, aged 20 years or older, 19.1% complained of insomnia. The complaint was age- and sex-dependent: complaints increased in women 45 and older and in men over 60. Usage of sleeping pills was habitual in 1.5% of the San Marino population and occasional in 27.1%. In a Finnish study in 1975, Partinen et al. (2) also found that the complaint of poor sleep and regular hypnotic intake increased with age. A general survey made in 1979 in the U.S.A. indicated that 35% of all adults experienced insomnia during that year, half of them reporting it as a serious problem (3). Again, these complaints were more frequent in older women who displayed high levels of psychic distress, somatic anxiety and depressive symptoms. During the preceding year, 2.5% of this population had taken hypnotics. This number, however, could not be used to calculate the percentage

of hypnotic users in the U.S.A. at the time of the survey.

France has a national health system (Securite Sociale), which allows individuals to select their own physicians but which also helps support the individual costs of health care, including hypnotic medications. Investigations to date of insomnia and hypnotic intake have covered only selected segments of the total population. However, these preliminary data indicate a high consumption of hypnotics. For example, 36.1% of the population of Chambéry in the French Alps (55,000 inhabitants, i.e. 0.1% of the French population) reported insomnia; 11.9% mentioned regular hypnotic intake; and 6.1% mentioned occasional use of hypnotics (4). In 1988, Billiard et al. found that 3.8% of the French army draftees aged 17-22 years took hypnotics daily (5). This report presents data obtained for the first time on a representative sample of the French population 15 years of age and older. It assesses the prevalence of insomnia (a symptom, not a specific disease entity), the frequency and duration of hypnotic use and the association of anxiety and depression with the complaint of insomnia and hypnotic use.

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## SUBJECTS AND METHODS

This cross-sectional study was conducted in France during December 1987 and involves a representative sample of 1,003 subjects. The quota method was used to select the sample according to data supplied by the Institut National de Statistiques et Evaluation Economique (INSEE). Great effort was made to find the individuals initially selected, with interviewers going back several times to the individuals' addresses. Less than 3% substitution, following the quota method design, was needed as a result of this effort. The sample is representative of the general French population aged 15 or older, according to the following sociodemographic criteria: gender, age, marital status, occupational status and environment.

Expert interviewers from a survey company visited selected residences to administer a two-part questionnaire. The first part included six questions, asked directly by the interviewer, concerning the present complaint of a sleep disturbance and the frequency and duration of hypnotic use.

1. Do you currently have any sleep problem?
2. Do you have trouble falling asleep?
3. Do you have trouble staying asleep?
4. Do you sometimes awaken too early in the morning?
5. Do you take sleeping pills or tranquilizers? If so, how often? Not at all, sometimes, frequently, every day? (A clear distinction was made between tranquilizers and hypnotic medications.)
6. If the answer to the preceding question is yes, for how long have you been taking this medication?

Frequent or daily use of hypnotics for a period of more than 6 months was classified as chronic frequent hypnotic use (CFHU). The severity of the complaint of insomnia was not rated on a scale. The frequency and chronicity of hypnotic intake was, thus, used as an index of frequent and severe insomnia.

As this part of the questionnaire was administered and filled at each individual's home address, the response rate was 100%. The second part of the questionnaire consisted of two self-rating scales that were left with the subject to mail back. One scale, the Symptom Checklist '90, revised edition (SCL 90-R), evaluated anxiety, and the other, the Pichot self-questionnaire (QD2A), evaluated depression. The response rate for these two self-rating scales was 85%.

### Statistical analysis

Analysis of variance, chi-square and Cramer coefficient tests were used. Calculations were performed with the SPSS computer program.

## RESULTS

Forty-three percent of the sample were men and 57% women, and ages ranged from 16 to 91 years. Of the total sample, 48% complained of a sleep problem equated with insomnia (SP). Of the nocturnal sleep disturbances, 17.1% indicated that difficulty in initiating sleep was the most frequent problem, 11.7% reported that difficulty in maintaining sleep was their main problem and 3.8% had a predominant complaint of early morning awakening.

Ten percent of the sample took hypnotics, 8% for more than 6 months, 7.5% for more than 1 year and 4.4% for more than 5 years. On the index of severity, 6.17% of the sample had taken hypnotics frequently or every day for more than 6 months.

### SP and CFHU in relation to sociodemographic factors

*Gender and age.* Figure 1 presents the frequency of SP and CFHU. As can be seen, overall, women complained more of insomnia than men. The only group in which insomnia complaints were more common in men than in women was the 35–44 age group. None of these men used hypnotics chronically. Also, despite very little chronic usage of hypnotics (only 1.5% of the male sample) there was a significant portion of 15–25 year olds (including more than half of the women) who reported disturbed nocturnal sleep. But the very large groups of afflicted subjects were comprised of women 45 years and older. They were also the group using the greatest amount of hypnotics frequently and chronically. Men, who in most age groups used few hypnotics on a chronic basis, presented a sharp increase after 65 years of age (16.6%), but women still outdid them (21.5%).

### Marital status

Several groups were observed: (A) Couples (married or living together); B) single individuals; and (C) formerly married individuals (separated, divorced, widowed). The analyses compared men's and women's responses within each group, compared each group to the others and performed a gender and group comparison (see Table 1). Complaints of insomnia were found in 44.5% of group A subjects, 49.1% of group B and 66.1% of group C. No significant difference was found between married and single subjects, even when gender was taken into consideration. Table 1 presents the percentage of subjects tabulated in each group, subdivided with relation to gender. An overwhelming number of chronic hypnotic users was included in group C (formerly married). Frequent and chronic usage of

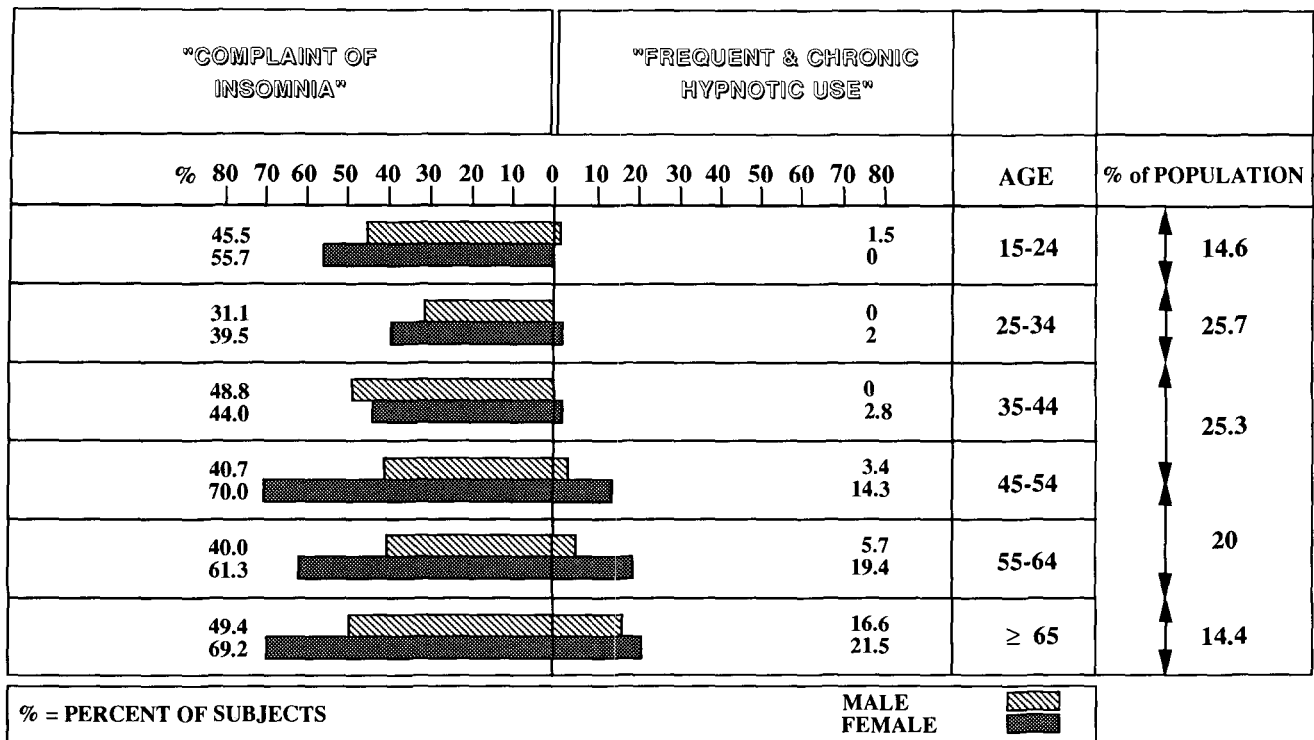


FIG. 1. Percent of insomnia complaint and frequent chronic hypnotic use in different age groups.

hypnotics was reported in 5.2% of married subjects and 1.2% of singles (nonsignificant), while it was reported in 19.1% of the formerly married group ( $p \leq 0.0001$  when a comparison to married and to single was performed). The largest percentage of frequent and chronic hypnotic users was found in the formerly married women subgroup, in which 70.4% complained of insomnia and 22.2% used hypnotics on a chronic and frequent basis.

A more specific analysis of group C was performed, considering also age (see above) and occupational status (see below). A total of 71.9% of the women ( $n = 59$ ) and 62.9% of the men ( $n = 22$ ) were 50 years old or older; 63% of the women ( $n = 52$ ) and 54% of the men ( $n = 19$ ) were retired or not working.

TABLE 1. Sleep problems (SP) and chronic frequent hypnotic use (CFHU): sex and marital status

Marital status	Gender	n	Nocturnal disturbed sleep (%)	CFHU >6 months (%)
Married	M	344	39.9	4.4
	F	382	48.7	6.1
Single	M	84	44.0	1.2
	F	76	55.3	1.3
Formerly married <sup>a</sup>	M	35	55.9	11.8
	F	82	70.4	22.2

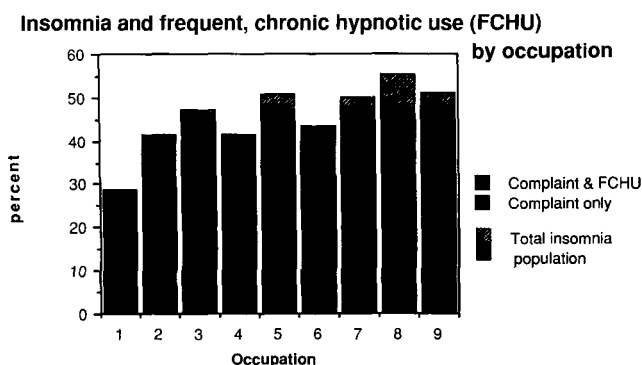
<sup>a</sup> Separated, divorced, widowed.

### Occupational status

The sample was divided into nine occupational categories: 1) farmers, 2) independent craftsmen and small businessmen, 3) upper level executives and people employed in the liberal professions, 4) middle level executives, 5) white-collar workers, 6) blue-collar workers, 7) students, 8) retirees and 9) unemployed individuals (see Fig. 2). As can be seen, farmers reported the fewest complaints of disturbed nocturnal sleep, but none of the other groups, which included between 41.3 and 55.3% of insomnia complainers, differed significantly with regard to complaint. However, the retired and unemployed claimed the largest number of chronic users of hypnotics. Sixteen percent of the retired and 8.5% of the unemployed reported CFHU, and these groups comprised 4.5% of the total population (45 subjects).

### Habitat

Three different types of living environments were considered: 1) farm; 2) single-family house in the city and 3) apartment or condominium in the city. An overwhelming majority of the inhabitants of greater Paris and the large industrial cities live in apartments or condominiums, and Paris, for instance, is home to 1/3 of the total French population. Single-family houses



**FIG. 2.** Complaint of insomnia and frequent chronic hypnotic use in different occupation groups. 1, farmers,  $n = 42$ , 28.6% of total population; 2, craftsmen,  $n = 53$ , 41.5% of total population; 3, upper level executives,  $n = 51$ , 47.1% of total population; 4, middle-level executives,  $n = 126$ , 41.3% of total population; 5, white-collar employees,  $n = 178$ , 50.6% of total population; 6, blue-collar employees,  $n = 139$ , 43.2% of total population; 7, students,  $n = 50$ , 50.0% of total population; 8, retired individuals,  $n = 188$ , 55.3% of total population; 9, unemployed individuals,  $n = 176$ , 51.1% of total population.

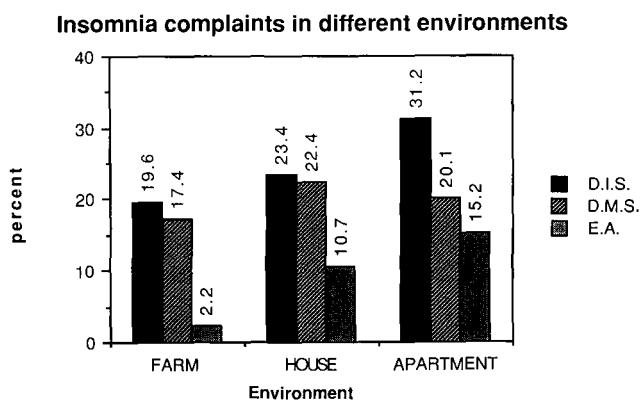
are found more commonly in smaller cities and semi-rural areas. There was a disproportionately low number of farm dwellers in our survey (46 subjects). Single-family houses and apartments hosted, respectively, 43.6 and 51.6% of the population.

Subjects living on a farm had significantly fewer complaints (28.3%,  $p \leq 0.0001$ ) than those living in a single-family house or housing complex in the city (respectively, 46.6 and 51%; nonsignificant). However, considering the above findings, there was a discrepancy when the variable CFHU was tabulated: 4.3% of the farm dwellers were found also to be in the frequent user category, compared to 5.5% for those living in apartments and 7% for those living in single-family homes in cities.

Figure 3 presents the subdivision of the sleep disorder complaints: difficulty initiating sleep (DIS), difficulty maintaining sleep (DMS) and early awakenings (EA). A given subject in this figure may have indicated one or more nocturnal disturbances. Difficulty initiating sleep (DIS) was the number one complaint regardless of the dwelling, although a greater percentage of subjects living in apartments complained of it. The only striking finding was the very low percentage of early awakening complaints among the farm dwellers.

#### Anxiety and depression scores

**Anxiety.** The SCL 90-R is a 10-item, self-administered scale with a 5-point rating (from not at all to extremely). The higher the score, the more pronounced the anxiety (6). Scores on the anxiety dimension of the SCL 90-R were significantly higher in those complaining of the most sleep disturbances (average score 5.2



**FIG. 3.** Percent of type of insomnia complaint for different living environments. D.I.S., Difficulty initiating sleep; D.M.S., Difficulty maintaining sleep; E.A., Early awakenings; farm:  $n = 46$ ,  $n$  of complainers = 13 (28.3% of farm population); city house:  $n = 436$ ,  $n$  of complainers = 204 (46.6% of house population); apartment:  $n = 518$ ,  $n$  of complainers = 267 (51% of apartment population). Percentages on graph reflect double or triple complaints by some subjects.

versus 2) and in those taking hypnotic medications (average score 3.5 versus 7). Overall, women had higher scores than men, particularly in the formerly married group (average score 5.8 versus 3.9 for men of the same group). Higher scores on anxiety scales were associated with our three types of sleep disturbances. Subjects complaining of difficulty in maintaining sleep had a mean score of 5.24, and subjects with early morning awakenings had a mean score of 5.3 ( $p = \text{NS}$ ).

**Depression.** Of the total sample ( $n$  of responders = 859), 10.4% (89 subjects) were depressed, as measured by the QD2A scale for depression (7). Of this group, 78% (69 subjects) complained of nocturnal sleep disturbances, compared to 43% of the nondepressed group (331 subjects).

As expected, hypnotic intake was higher among depressed subjects (33.7% for 30 subjects versus 7%,  $p \leq 0.0001$ ). Twenty-eight percent of the depressed subjects (i.e. 25 subjects) had taken hypnotics for more than 6 months, and 73% of this group (i.e. 18 subjects) were taking hypnotics frequently or every day.

#### COMMENTS

This study indicates that France, a country of 55 million inhabitants with a mean life expectancy of 70 years in men and 78 years in women, is a great user of hypnotic medications. In this representative sample, which took into account gender, age, marital and occupational status and habitat, 10% of the population reported usage of hypnotics, with 6.17% indicating frequent and chronic use for more than 6 months. France has a medical educational system similar to that of most western countries. There is a national certificate

of sleep disorders, a subspecialty certificate indicating practice and education in dealing with patients with sleep disorder complaints. Recommendations in pharmaceutical industry pamphlets reviewed by national health authorities now emphasize time limitations on hypnotic prescriptions. However, a nonnegligible portion of the general population uses hypnotic medications on a very chronic basis. At this date, there is no systematic polygraphic investigation that can be used to determine the long-term effects of hypnotic use in people with insomnia. Questionnaires and interview surveys performed in Great Britain indicate that hypnotic efficacy may persist, but no objective data are available (8). Considering the frequency of chronic intake of hypnotics reported in Belgium, Denmark, France and the Netherlands alone, it is important to obtain these data and evaluate the potential side effects of chronic intake in a predominantly elderly population.

In our study, women over 45 and men over 65 years of age complained more of nocturnal sleep disturbances and used more hypnotics than any other group. Considering the progressive aging of the western populations, greater attention must be paid to insomnia and the use of hypnotics in the elderly. Also, gender and age are associated with socioeconomic factors (social isolation and unemployment) when increases in chronic and frequent hypnotic usage are noted. Women present an increase in nocturnal sleep disturbances at the time of menopause, and the hormonal changes that occur during that period may be responsible for the increase in complaints and the usage of hypnotics. However, this knowledge alone is insufficient to explain the findings. The number one chronic hypnotic user is an elderly, unemployed woman who is widowed, separated or divorced. Elderly unemployed or retired men do not fare much better. In the chronic and frequent hypnotic user group, 71.6% of the women and 64.7% of the men are 50 years old or older; and 63% of the women and 55.8% of the men are retired or unemployed. Most of these individuals are widowed, divorced or separated, as indicated by the existence of a significant correlation between this category and the retired/unemployed/over 50 group. Social isolation is thus an important covariable in chronic and frequent hypnotic intake. This may explain the relatively high chronic hypnotic usage in farm dwellers, despite their low percentage of complaints: in France, retirement still leads to movement back to the countryside. Also, as elderly women survive longer than men, and as economic demands have led to the immigration of younger generations to the cities, elderly women in rural areas have a greater chance of being isolated from their relatives.

Although aging and social isolation correlate with

frequent and chronic hypnotic usage, several other findings are of interest. As already indicated by Weinstein et al. (9), teenagers and young adults may have significant nocturnal sleep disturbances. These disturbances may be related to the frequently abnormal sleep/wake schedule of the high school and college student population. However, in spite of the investigations of Carskadon et al. (10,11), we still have little understanding of the sleep disorders and complaints of teenagers and young adults, and it is possible that some complaints are associated with the development of significant psychopathology. A much greater understanding of the frequently ignored nocturnal sleep disturbances of late teenagers is needed, including their possible relationship to adolescent suicides.

It is also interesting to note that despite stressful job conditions, many professionals who report a significant degree of nocturnal sleep disturbances do not use hypnotics chronically or frequently. Higher college education may be present in this group, from the obtained data, and education may include greater exposure to publications emphasizing the risks of hypnotic intake. Also intriguing is the fact that the only age segment in which men report more nocturnal sleep disturbances than women is the 35–44-year-old age group (49% of the men, compared to 44% of the women). Despite significant percentages of subjects with this report of insomnia, which may indicate intermittent job-related disturbances and stress, no chronic hypnotic usage occurs.

With regard to living situations, it is clear that the rural environment is associated with fewer insomnia complaints overall. When insomnia does occur in this setting, early morning awakening is rarely mentioned. This may be due to the different style of living imposed by farming, with early morning arousals mandated by occupational duties. The presence and frequency of delayed phase syndrome in this subgroup may be questioned and would be worth systematic investigation.

In summary, our population survey indicates that in a fairly homogenous population such as that of France, complaints of nocturnal sleep disturbances are common. They are associated with chronic and frequent hypnotic intake in a nonnegligible percentage of the subjects. Organic changes such as menopause may explain some of the findings but do not explain all of them. Interestingly, socioeconomic factors seem to be part of the problem, especially isolation of the elderly. One may question whether hypnotic prescription and intake are not at times in response to a social rather than a medical problem. We conclude that there is clearly a need for further investigation of insomnia, for adequate control of prescribed pharmacological agents and for better investigations of the long-term effects of chronic hypnotic ingestion.

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