Original article

THE USE OF HYPNOSEDATIVE DRUGS IN A UNIVERSITY HOSPITAL SETTING

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ABSTRACT

Objective: The use of hypnosedatives (HSs) in the hospital and at home before admission was registered. Also, the incidence of HSs newly started in the hospital and the incidence of withdrawal in chronic users while in hospital was recorded.

Methods: The study population consisted of 517 consecutively adimitted patients recruited from 10 wards of the Ghent University Hospital; 493 of them received a questionnaire and were interviewed concerning the use of HSs at home and in the hospital, about the cause and duration of treatment, the type of HSs used, the presence and nature of any concomitant sleep or anxiety disorder. Main outcome measures were the actual use of HSs during hospitalisation as compared with the reported use, the influence of hospitalisation on use of HSs and the assessment of cause and duration of use of HSs.

Results: Twenty-nine percent of the study sample took HSs at home and 45.2% while in the hospital. HSs were prescribed to 28.6% of the patients not habituated to chronic use of HSs at home. In contrast, 14.0% of the patients habituated to chronic use of HSs received no sleep medication while in hospital. Patients older than 60 years used more HSs than younger patients. Previous administration of HSs, sleep problems during hospital admission and female sex were predictive of HS-use. The main reason for prescription of HSs in the hospital was continuation of HSs taken at home. The most prescribed HSs were: lormetazepam, lorazepam, alprazolam, diazepam and zolpidem. Almost 10% of the patients were not informed on treatment with HSs. Among the subjects in whom HSs were newly started, 16.0% intended to continue this medication after discharge. Eleven percent took combinations of hypnosedative drugs.

Conclusions: The prevalence of prescription of HSs in the university hospital setting is high. Appropriate guidelines are needed to control the use of HSs during hospitalisation and to ensure withdrawal from these drugs upon discharge.

INTRODUCTION

In a Belgian health survey of 2001 it was demonstrated that 9% of the population uses hypnosedatives (HSs) and that the use of HSs increases with age (1). A sum of ¤ 104 million (about 3% of the total drug budget) was spent in 2000 in Belgium to the purchase of benzodiazepines (BZD), which corresponds to the dispensation of 1.2 boxes per inhabitant per year (2).

The use of HSs in the community-dwelling population is high. Although the user and the physician perceive these medications as beneficial, they have a number of side effects (3, 4).

The use of HSs in hospital is high as well. A large number of patients are being discharged with a prescrip-

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tion for the continuation of these drugs (5, 6). The use of HSs before admission is related to a higher use in the hospital (7). Higher costs and longer stay in hospital are inherent to the use of HSs (8).

Taking into account the widespread use of HSs both at home and in hospital, as well as the inherent risk of prolonged use (9), we undertook a registration procedure in order to assess the dynamics of HSs prescription in a university hospital setting.

MATERIALS AND METHODS

Before the study was initiated a pilot trial was carried out for probing the use of HSs on all wards of the university hospital. A substantial variability in prescription profiles was observed. Hence, it was decided to include five wards with the most extensive use and five wards with the least use.

We elaborated a questionnaire with four sections: 1) patient data, 2) data from the nursing file, 3) questions asked to the patients about their use of hypnosedative medication at home and in the hospital including the reason for use, and 4) a list of all available HSs on the market at the time of registration (see Appendix).

We monitored five wards simultaneously. Initially we recorded the wards of cardiology, pneumology, nephrology, psychiatry and physical rehabilitation. Thereafter, the wards of maternity, head and neck, thoracic, plastic and abdominal surgery were studied. The registration ran from December 1999 till June 2000.

Informed consent was obtained from the chiefs of the respective departments. We included only patients who stayed at least two nights in the hospital. The patients were interviewed just before discharge from the hospital. A daily request for information on planned discharges was filed to the wards.

The use of HSs during the stay in the hospital was checked in the nursing files. Subsequently, the patients were interviewed at the bedside. If the answers were in conflict with the data from the nursing file, the information was re-examined or discussed with the nurse in charge. Absent patients were interviewed by phone.

Statistics

The answers were processed in SPSS 10.0. We used the Mann-Whitney test and the Chi-square test for data about population and comparisons between age groups. The multivariate association of factors related with the use of HSs has been analysed by a logistic regression analysis.

RESULTS

Demographics

Five hundred seventeen patients were reported for discharge. Twenty-four of them (11 males and 13 females) could not be recruited for the study: 10 patients were not responsive, 7 patients were absent, 5 patients spoke a foreign language and 2 patients refused to cooperate. Hence, 493 patients were enrolled in the study. The demographic data are shown in Table 1.

TABLE 1. Demographic data

Population	Male	Female	Total
Number	229	264	493
Mean age	58.6	49.4	53.7
SD	16.4	20.4	19.2
Median age	63	48	55

One hundred fourteen patients at cardiology, 86 at pneumology, 71 at maternity, 61 at thoracic and plastic surgery, 52 at abdominal surgery, 46 at nephrology, 32 at physical rehabilitation, 18 at head and neck surgery and 13 at the psychiatry ward were interviewed.

Data on the mean length of stay by ward are given in Table 3. The mean duration of hospitalisation was 14.4 days (SD 25.3 days; median 8.0 days). Females stayed on average 12.1 days (SD 15.2; median 8.0) and males 16.9 days (SD 24.8; median 10.0). This difference was statistically significant (p=0.001). The women under 60 years were hospitalised on average 12.6 days (SD 17.7; median 6.5), which was significantly shorter than men under 60, staying in hospital on average 20.2 days (SD 27.3; median 10.0; p=0.001). No significant difference between sexes concerning length of stay was found for subjects older than 60.

Hypnosedative medication at home

Out of 163 patients who already had a sleep or anxiety problem at home, 102 took HSs regularly. Out of 330 patients who did not have a sleep or anxiety problem, 41 however, received HSs. Consequently, 143 pa-

TABLE 2. Use of hypnosedatives at home and in the hospital

	Hypnosedatives at home	Hypnosedatives in the hospital	Benzodiazepines in the hospital
Number	143	223	214
%	29.0	45.2	43.4
Male/Female†	60/83 (n.s.)	117/106 (p=0.018)	114/100 (p=0.008)
>60y/≤60y†	93/50 (p<0.001)	122/101(p<0.001)	117/97 (p<0.001)

†^{2} test

tients confirmed taking HSs at home. Patients older than 60 years took significantly more HSs than younger patients (65% vs. 35%; p<0.001) (Table 2). The use of HSs at home was lower in women under 60 in comparison with older women (20.5% vs. 50.5%; p<0.001). The same observation holds for men (14.3% vs. 36.3%; p<0.001).

The majority of the patients with sleep disturbances at home complained of a sleep initiation problem (74). A large number had diffuculties maintaining sleep (49). A combination of both was mentioned in 30 patients.

BZDs were prescribed to 135 out of 143 patients. The total daily dose of BZDs was assessed individually and the equivalent dose of diazepam was estimated concordant with previously described procedures (10, 11). The mean dose of BZDs corresponded to 10 mg diazepam per day (SD 5.8; median 7.5). The most frequently prescribed drugs were lormetazepam (Loramet®), lorazepam (Temesta®) and alprazolam (Xanax®). Short-acting HSs were prescribed to 9.0% of the patients, intermediate-acting to 16.0% and long-acting to 4.0%.

Hypnosedative medication in the hospital

Hypnosedatives were administered to 223 out of 493 patients (45.2%). The ratio between the duration of use of HSs and the stay in hospital was 71.3% (SD 34.0; median 88.7%). There was a significant difference in age between users and non-users of HSs, with a mean of 60 years (SD 16; median 63) and 48 years (SD 20; median 47), respectively (p=0.001). Younger patients took significantly less HSs than patients older than 60 years (45.3% vs. 54.7%; p<0.001) (Table 2). Women younger than 60 years took less HSs than older women (28.1% vs. 62.4%; p<0.001). There was no significant difference in age concerning use of HSs in men. Using logistic regression analysis, previous administration of HSs (odds ratio (OR) 20.0 [95% confidence intervals (CI) 10.42—38.47], sleep problems during hospital admission (OR 4.57 [CI: 2.74-7.62] and female gender (OR 2.1 [CI: 1.3-3.4] prevailed as the most predictive factors related to HS-use.

Almost half of the patients (123) with sleep disturbances had a sleep initiation problems. A large number (74) mentioned difficulties maintaining sleep. More than a quarter (68) complained of a combination thereof. Only a minority mentioned another reason. The main reason for prescription was continuation of medication taken at home (in 123 cases). The second most frequent indication was the treatment of sleep problems emerging during hospitalisation (54 cases). Twenty-four patients received HSs for nocturnal pain. In 15 patients HSs were prescribed for anxiety or nervousness. Another 7 patients took HSs for a different reason.

BZDs were prescribed to 214 out of 223 patients receiving HSs. The mean dose of BZDs corresponded to 9.8 mg diazepam per day (SD 7.1; median 7.5). The most frequently prescribed drugs were lormetazepam (Loramet®), lorazepam (Temesta®), alprazolam (Xanax®), diazepam (Valium®) and zolpidem (Stilnoct®). Less often bromazepam (Lexotan®), trazodone (Trazolan®), tetrazepam (Myolastan®), lorazepam (Lorazepam®) and flunitrazepam (Rohypnol®) were used. Short-acting HSs were prescribed to 15.6% of all patients, intermediate-acting to 33.0% and long-acting to 7.7%. Antidepressants, antihistamines and herbal products were prescribed in 2.8 %, 0.4 % and 0.2 %, respectively.

The use of HSs by ward is shown in Table 3. Except for the maternity department, where consumption was low, at least 44% of the patients on all wards appeared to be using HSs.

Thirty-six patients used at least 2 different HSs a day,

TABLE 3. Use of hypnosedatives by ward

Ward	Number of patients (%) using HSs	>1 hypnosedative per day
Abdominal surgery	25 (48.1)	5
Cardiology	69 (61.1)	17
Psychiatry	10 (76.9)	4
Maternity	4 (5.6)	1
Nephrology	24 (52.2)	9
Head and neck surgery	10 (55.6)	1
Pneumology	38 (44.2)	7
Physical rehabilitation	16 (48.5)	3
Thoracic and plastic surgery*	27 (44.3)	7
Total	223 (45.2)	54

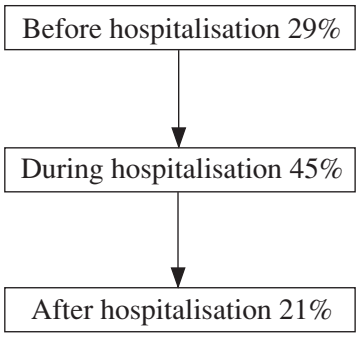
* As the departments of Thoracic an Plastic Surgery were on the same floor, the data were put together

and 18 patients used at least 3 different HSs a day. There was a significant difference in age between the patients using more than one HS a day (mean age 59 years; SD 15; median 62) and non-users (mean age 53 years; SD 20; median 54) (p=0.04).

The concordance between the perceived and actual administration of HSs is shown in Table 4. Forty-six out of 493 patients (9.3%) were not informed about the administration of HSs during their stay in the hospital.

Change of medication during hospital admission is shown in table 5. Figure 1 shows the flow of the distribution of hypnosedative use before, during and after hospitalisation.

FIGURE 1. Flow of the distribution of hypnosedative use before, during and after hospitalisation



DISCUSSION

In this study we assessed the use of HSs at home and in the hospital. Of the 493 subjects included in this study, 29.0% already took HSs at home. The high rate of use in our sample probably indicates a selection bias of patients with complex morbidity and combined drug use.

With HSs prescribed to 45.2% of the inpatients, the prevalence in our study exceeds the figures reported in Dutch (12) and Italian studies (13). It is comparable with France (14), but less than the USA (15). In a review of hypnosedative use in general hospital inpatients from five countries (Italy, Spain, Brazil, South Africa and Sri Lanka), Woods et al. found rates ranging from 23.0% to 42.0% in the 1980s, with the highest rates found in geriatric populations (16). The differences between the data from these various publications are hard to explain, since the reporting of the demographic characteristics is often partial or not standardized.

TABLE 4. Sleep problems, presumed use and actual administration of hypnosedatives in the hospital

Sleep problem in the hospital (261)		No sleep problem in the hospital (232)	
Presumed use	Presumed no use	Presumed use	Presumed no use
159	102	64	168
Administered	Not administered	Administered	Not administered
143	100	57	147
Not informed	Not informed	Not informed	Not informed
16	2	7	21

In terms of absolute figures, the largest number of HSs users was registered on the cardiology, pneumology and nephrology wards. The long stay and the seriousness of the underlying pathology may explain this observation (17). Also, a number of drugs with adverse effects on sleep quality, e.g. beta-blockers, anticholinergics, bronchodilators and theophylline, may have warranted the prescription of soporific drugs. As a matter of fact, it was not expected to find a low consumption profile at the psychiatry ward. This department showed actually the highest prevalence of single and combined HSs use. The data should be interpreted with caution, however, since only a small number of patients were included in the recording. Enrolment was confined to inpatients staying at the service for prolonged observation and treatment, which inherently has a low dismission rate. The use of HSs in this limited cohort is not necessarily representative of the total group of psychiatric inpatients.

The study population was heterogeneous in relation to sex and age. The mean age of women at the maternity ward was 29.1 years and the mean length of stay on this ward was 7 days. Although the overall age and overall duration of stay in the hospital was lower in the female cohort, female gender prevailed as a predictive factor related to HS-use. Additionally, older women represented the majority of chronic HSs users at home.

Twenty-eight percent of our patients already took sleep medication at home, which is higher than the reported prevalence. A national health survey showed a rate of 9.0 % in Belgium (1), which is comparable with 12.0 % in the Netherlands (20), and 8.6% in Italy (21). The rate of use of HSs among older patients in France amounts to 31.9 % (12). The high rate of use in our sample probably indicates a selection bias of patients with complex morbidity and combined drug use.

With HSs prescribed to 45.2 % of the inpatients, the prevalence in our study exceeds the figures reported in Dutch (34.0 %) (22) and Italian studies (34.0 %) (23). It is comparable with 46.0 % in France (24), but less than 65.3 % the USA (25). In a review of hypnosedative use in general hospital inpatients from five countries (Italy, Spain, Brazil, South Africa and Sri Lanka), Woods et al. found rates ranging from 23.0 % to 42.0 % in the 1980s, with the highest rates found in geriatric populations (26). The differences between the data from these various publications are hard to explain, since the reporting of the demographic characteristics is often partial or not standardized.

Apparently, the hospital is the place where HSs are being introduced to or withdrawn from a substantial number of patients. In 28.6% of the patients who didn't take sleep medication at home, HSs were started in our hospital. On the other hand, HSs were discontinued in 14.0% of the patients who habitually took these drugs before admission. This observation is remarkable, since both interventions bear an inherent risk, and therefore, require careful medical judgement. Although temporary treatment with BZD is thought to be safe, prolonged use may entrain important side effects such as cognitive impairment, tolerance and addiction. Ideally, strategies for discontinuation should be discussed with the patient at the very outset of the treatment. Conversely, abrupt discontinuation of BZD is not to be encouraged, since withdrawal symptoms may appear and confound the clinical picture of the hospitalised patient. If treatment with BZD is to be stopped, a fast tapering schedule is preferred over abrupt cessation (18).

Three issues of major concern were revealed in the present study. Apparently, 9.3% of the patients were not informed on treatment with HSs. In addition, among the subjects in whom HSs were newly started upon admission, 16.0% intended to continue this medication after discharge. Thirdly, 11.0% took combinations of hypnosedative medication. We were surprised to learn that 9.3% of the patients had no information on treatment with HSs. Sixteen patients were confident that they were being treated with HSs but actually received no such medication. In these patients HSs were withdrawn without notification. On the other hand, 21 individuals who experienced no sleep disturbances of any significance and who were convinced that they were not receiving any sleep medication, proved to be on HSs. We have no clear explanation why the patients held this misbelief. Most of them had no cognitive impairment. Therefore we presume that the information given by the treating physician was either omitted or inadequate. In any case, this finding indicates that more time should be dedicated to verbal contact with patients on all aspects of their treatment (19). In addition, care should be given to tapering hypnosedative drugs before or shortly after discharge from the hospital. The observation that 16.0% of the patients who started taking HSs in the hospital indicated that they would continue after discharge, as well as the relatively high prevalence of combined HSs use may illustrate the 'nonchalance' of the caregivers regarding this issue. The treating physician should really focus on recommending short-term use and on reducing redundant medication (20).

Since withdrawal of HSs may be difficult, alternatives for treating insomnia and anxiety in the hospital should be developed or already existing programs should be enforced. The first principle is the treatment of the underlying condition, e.g. pain syndromes should be treated with analgesics, not with sleeping pills. Non-pharmacological programs are based on advice concerning sleep hygiene and relaxation techniques. In our study, only one patient started autogenic training while in the hospital. A more formal approach is cognitive behavioural therapy, which has gained much recognition and growth in the last years. In the context of insomnia treatment, it seeks to alter dysfunctional beliefs and attitudes about sleep (30). While non-pharmacological interventions may induce a reliable and durable change in sleeping pattern in patients with chronic sleep disorders (31), one may question the benefit and feasibility of applying such programs in the hospital to patients in whose primary reason for admission is unrelated to sleep or anxiety. While this approach could be developed and implemented from a theoretical point of view, literature data are currently lacking.

From this study it is concluded that the administration of HSs in the hospital has a high prevalence. The prescription of these drugs is often not adequately managed both in terms of communication to the patient, as well as in terms of planned withdrawal. All caregivers, including nurses, hospital and family physicians, should be correctly informed about the relevance of this issue, and confronted with their responsibilities. Improved prescription strategies will hopefully result in reducing the massive consumption of HSs, and the inherent costs related to the purchase of these drugs as well as to the compensation of the detrimental side effects. However, there is still a long way to go.

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