

Who is seeking help for sleep? A clinical profile of patients in a sleep psychology clinic

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Abstract

Background: The present study outlines a clinical profile of an ecologically valid population consulting for sleep difficulties at the Sleep Psychology Clinic of (*masked for review*).

Methods: Patients self-report to the sleep clinic. Following a phone screening interview, patients present to the clinic for a semi-structured clinical interview for sleep and psychopathology, which is conducted by psychologists and doctorate psychology students. A chart review of adult patients (56% female, $M_{age}=43.6$ yrs) was conducted (between 2015 and 2018) to record diagnosed sleep, psychiatric, and medical conditions.

Results: There was a high level of comorbidity with an average of 2.85 diagnoses (any diagnosis combined) per patient ($SD=1.76$), with 27% of the patients having at least four diagnoses. Reviewing specific types of disorders, 58.5% of patients presented with at least one comorbid psychiatric disorder, 27.5% with one medical comorbidity, or 39.5% with another sleep disorder alongside their primary sleep concern. Insomnia was the main sleep disorder (76%). Anxiety (77.8%) and depression (53.8%) were the predominant psychiatric disorders, while fibromyalgia (10.9%), hypertension (10.9%), and head trauma (9.1%) were the main medical conditions. Of patients with five diagnoses and more, 77.8% were taking on average 3.2 different types of medications. The number of diagnoses predicted the **use** of prescribed hypnotics and the **use of any type** of medications.

Conclusions: This clinical profile emphasizes the reality of multiple morbidities, which may have implications for clinical decisions. Future research is required to evaluate transdiagnostic approaches for the sleep disorder patient with multiple morbidities.

Key words: Insomnia; Sleep disorders; Psychology; Comorbidities; Transdiagnostic

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Sleep disturbances are known to be related to several psychiatric and medical conditions [1].

Sleep disturbances refer to sleep difficulties, poor sleep quality, insomnia, sleep apnea or other sleep disorders, including nightmares, somnambulism, or hypersomnia. There is a growing interest in the study of sleep disturbances with comorbidities, as reflected by the number of meta-analyses or reviews on the topic [2-5]. However, most of the evidence base surrounding non-pharmacological treatments for sleep disorders are on insomnia. Furthermore, the evidence stems from heavily regulated clinical trials that are restricted to patients with insomnia only or to patients with insomnia comorbid to one disorder only. For instance, cognitive behavioral therapy for insomnia (CBT-I) was evaluated in a sample of people with insomnia and breast cancer [6], with insomnia and PTSD [7], or with insomnia and mild sleep disorder breathing [8]. Moreover, patients taking hypnotic medications or a combination of hypnotics are often excluded from clinical trials or included only if they agree to maintain stable doses and intake during the trial, see for example the criteria use in CBT-I studies [9-12].

In the anxiety and depression fields, there are reviews highlighting that clinical trial samples are not representative of the patients seen in clinics [13-15]. These studies demonstrated that 70 to 82% of patients seeking treatment for their anxiety or depression in their clinic would have been excluded from research studies. We seek to study this phenomenon in the sleep disorders field. To study the representativity of the trial samples in the sleep field, we need to describe the clinical profile of patients who are seeking help for sleep in primary care and psychological settings. Then, a further step would be to compare these profiles with those of patients in clinical trials described in the scientific literature. This should help to represent the patient's reality and should facilitate in providing evidence-based care in the context of multiple morbidity. Some studies have already reported patients clinical profile from primary care settings [16-19] or the prevalence of a specific sleep disorder in a sleep clinic population [20]. However to our knowledge, there are no available clinical profiles of patients from a psychological sleep clinic. Translating clinical observations into research might inform future research

Clinical profile of patients in a sleep psychology clinic agenda and strengthen the link between research and clinic. It could also favor the development of personalized management of sleep disorders, as recommended [21]. In an attempt to link scientific knowledge and clinical comprehension, the present study outlines a clinical profile of patients attending to our sleep psychology clinic.

Method

The psychological sleep clinic

The psychological sleep clinic at (*masked for review*) values a personalized treatment approach. The advertised service offer is intended for anyone with sleep disturbances or with the daytime consequences related to these difficulties. The clinic opened in February 2015 and was advertised by the first author in medical clinics, the two public sleep apnea clinics, and on the radio in the (*masked for review*) area. The sleep clinic provides an evidence-based treatment for insomnia and other sleep disorders to the general population. The clinical team is composed of three psychologists, possessing 30 years of accumulative experience in sleep research and the clinic setting. They offer individual therapy and clinical supervision to graduate psychology students. Patients paid \$50 per hour for a trainee and \$80 for a psychologist. Fees are covered by private health insurance and tax deductible.

Patients

Patients are self-referred to the sleep psychology clinic. The sleep clinic brochures were distributed to a general practitioner or tertiary provider (e.g., pulmonologist in public hospital) who could suggest to their patients to consult at our clinic. E-mails detailing the sleep clinic service were also sent to the (*masked for review*) community. The inclusion criterion for the chart review was that of being an adult and there were no exclusion criteria. From February 2015 to May 2018, 470 patients contacted the clinic. Of these, 181 did not wish to conduct the initial screening for a variety of reasons, such as no longer being interested in psychological help, no longer wanting to pay for the service, or being unreachable after several attempts of contact. The remaining 289 accepted the initial screening and the phone interview was conducted. Of these, 82 patients were no longer interested in receiving

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psychological help, following the phone interview. 207 patients, including 200 adults reported here and 7 children (not reported here), signed the consent form, were assessed, and treated.

Procedures for patient intake in the psychological sleep clinic

Prior to intake 15-minute telephone interviews are conducted to determine patient complaint. Once a primary sleep complaint is established, individuals undergo an in-person clinical evaluation. Psychologists and graduate psychology students perform the evaluation under the supervision of clinical psychologists (*masked for review*). Students possess at least two years of clinical experience before being trained in our clinic. The in-person clinical evaluation consists of the Structured Insomnia Interview (SII [22]) to screen for insomnia and other potential sleep disorders. Subsequently, the Mini-International Neuropsychiatric Interview (M.I.N.I [23]), a semi-structured clinical interview, is used to screen for psychiatric conditions. The interviews also capture sociocultural aspects (e.g., work, family background) and sleep disorder history with more opened questions. The procedure follows the evaluation guidelines [24] and encourages patients to actively participate in meetings with health professionals, as suggested by Rocque and colleagues [25]. Therapists **assigned a score for each patient's insomnia severity** based on **two** questions of the Insomnia Severity Index (ISI) [26] included in the SII [22]. **These questions were answered on a Likert scale ranging from "0" to "4". If the patient scored of "3" or "4" its insomnia was considered severe, insomnia was considered moderate with a score of "2", and mild with a score of "1".** Sleep disorder diagnoses such as sleep related breathing disorders or hypersomnia are made by a pneumologist before referring the patient and confirmed through correspondence with the referring specialist. **Only patients referred by a pneumologist were screened for these sleep disorders.** Psychiatric conditions severity was not ranked as the DSM-5 [27] does not provide severity specification criteria for all of them. Current medical conditions and medications are self-reported and not confirmed by the GP. For this reason, their severity was not ranked. Considering that data were collected from 2015 to 2018, the International Statistical Classification of Diseases and related health problems, tenth revision (ICD-10 [28]) was used for the

Clinical profile of patients in a sleep psychology clinic classification of the medical conditions. Previous medications intake was self-reported but was not included in this study to prevent retrospective recall bias. For the purpose of this study, sleep disorders are considered a distinct category from psychiatric and medical conditions, although we note that some of them fall into psychiatric conditions (e.g., insomnia) or medical conditions (e.g., restless legs syndrome). Each interview of the in-person evaluation lasted for a maximum of 120 minutes. Patients completed several self-reported questionnaires and sleep diaries (not reported here).

Procedures for chart review

The design used for this study is a chart review. Undergraduate research assistant extracted anonymous clinical data, under the supervision of the second author (*masked for review*). A participant number was attributed to each patient by the second author (*masked for review*) to maintain the data anonymity. The research was approved by the (*masked for review*) ethical committee (#2017-319). Informed consent was obtained for all individuals in the study prior to the in-person evaluation.

Frequency and descriptive analyses were performed on the following variables: 1) number of sleep disorders, 2) number of psychiatric conditions, 3) number of medical conditions, and 4) current medication use (hypnotic or non-hypnotic medication and prescribed or non-prescribed medication). Medications with number of diagnoses were also cross-tabulated. Two logistic regressions were performed **to evaluate the relationship between the number of diagnoses and the likelihood of taking medication or not**. The first one was conducted to predict the use of prescribed hypnotics (**dependant variable**) and the second one, **the use** of any type of medications (**dependant variable**) with the number of diagnoses **as** the independent variable.

Results

The treated patients mean age was 43.6 years (SD = 13.62; 18-84 years old) and 56% were women. Patients endorsed an average of 2.85 diagnoses (SD = 1.76; median = 3), which could include sleep disorders, psychiatric, and/or a medical condition. Of the sample, 16% experienced only one diagnosis, while 27% of the patients experienced four or more diagnoses. For sleep diagnoses, 92.5%

Clinical profile of patients in a sleep psychology clinic of patients presented with at least one sleep disorder, while 7.5% of patients had sleep disturbance symptoms without meeting the criteria for a sleep disorder (they may suffer from an anxiety disorder and have sleep difficulties but not meet full criteria for a sleep disorder). In addition, 39.5% of patients presented with two or more sleep disorders. For psychiatric conditions, 58.5% of all the patients presented with at least one psychiatric condition. About 1/4 of patients (26.5%) with at least one sleep disorder also had two or more psychiatric conditions. Figure 1 shows the patients distribution sorted by the total number of sleep disorders and illustrates the overlap with psychiatric and medical conditions.

Insert Figure 1A and B

Insomnia was the most prevalent sleep disorder with 76.0% of patients meeting DSM-5 [27] criteria for insomnia disorder, followed by sleep apnea (26.5%), fatigue with no identifiable sleep disorder (17.5%), circadian rhythm sleep disorders (7%), and hypersomnia (5%). The therapist who conducted the SII [21] rated 27.9% of the **insomnia cases** as being severe, 55.8% moderate, and 16.3% mild. The main psychiatric conditions were anxiety (77.8%) and depression (53.8%). Among anxiety diagnoses, 52.7% were generalised anxiety disorder and 18.7% social anxiety. Of the entire sample 27.5% self-reported a medical condition. In total, 35 different medical conditions were self-reported and fall under many different axes of the ICD-10 [28]. The main axes were endocrine, nutritional and metabolic diseases (axis IV), diseases of the nervous system (VI), diseases of the circulatory system (IX), and diseases of the musculoskeletal system and connective tissue (XIII). The main medical conditions reported were fibromyalgia (10.9%), hypertension (10.9%), and head trauma (9.1%). Moreover, 16% of patients (n=32) presented with at least one disorder of each type (sleep, psychiatric, and medical). All of **these 32 patients** had one anxiety disorder and 59.4% suffered additionally from depression. Furthermore, 91.7% of the **insomnia diagnosis** for these patients were severe or moderate and 8.3% were mild.

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Table 1 shows descriptive statistics for medication intake in relation to number of diagnoses.

When considering one diagnosis, 31.3% of patients were taking at least one medication of any of the four categories with an average of 1.7 medication, and 90% of these patients took at least one prescribed hypnotic. The percentage of patients taking medications increased with the number of diagnoses. When considering five diagnoses or more, 77.8% of patients were taking on average 3.2 medications, and 86% of these patients took at least one prescribed hypnotic. Zopiclone and trazodone were the most frequently used prescribed hypnotics. The logistic regressions showed that the number of diagnoses predicted both the use of prescribed hypnotics, $\beta = .30, p = .001, OR = 1.35$ (95% CI: 1.12, 1.63) and the use of any type of medications, $\beta = .44, p < .001, OR = 1.56$ (95% CI: 1.26, 1.93).

Insert Table 1

Discussion

The clinical profile presented here demonstrates the reality of multiple morbidities encountered in patients at our sleep psychology clinic, with more than a quarter of the sample reporting at least four separate diagnoses. Among them, two out of five patients presented with at least two sleep disorders. These sleep disorders are mostly a combination of persistent insomnia, sleep apnea, circadian rhythm sleep disorder, and hypersomnia. **Insomnia** severity was mainly moderate and severe. They come along with the most frequent combination of psychiatric conditions that are generalized or social anxiety disorders as well as depression. **Furthermore, the number of diagnoses predicts the use of prescribed hypnotics and the use of any type of medications.**

The evaluation procedure applied clearly highlighted the co-existence of sleep disorders and psychiatric conditions in a majority of patients. The results raised several issues. First, it identifies more complex clinical cases than are typically included in research samples (see for example [9-11]) or reported in primary care case reports [16-19]. For example, Zailinawati et al. [19] found that, among patients with chronic insomnia, about 48% had anxiety symptoms and 37% had depression. We found

Clinical profile of patients in a sleep psychology clinic higher comorbidity rates than expected, however this may also be explained by our screening methods. To be consistent with the active patient participation approach recommended for medical consultations [25], two semi-structured interviews and open-ended questions were used. This may have increased the likelihood of patients reporting symptoms and might explain why the comorbidity rates were so much higher. **Second**, there were fewer medical conditions in our psychological setting than in a primary care setting, such as the one reported by Davidson et al. [16] who found 83% of medical comorbidities. There are several explanations for this discrepancy. It might reflect the fact that in our clinic, medical conditions were self-reported, while in a medical setting they can be extracted from the medical file. **The discrepancy might also reflect the patients' decision-making process in seeking help, as presented by Cheung and coll [29]. It has been shown that patients with insomnia may be more comfortable to seek help from a medical professional first [30,31], which may explain the higher rate of medical conditions observed in the primary care reports. However, in presence of several psychiatric comorbidities, patients' decision-making process could evolve towards ending up seeking help from a psychologist, thus explaining the higher rate of psychiatric conditions and complex cases observed in our psychological setting.** The **third** issue our data highlights is that social anxiety disorder is frequently related to sleep disorders and insomnia. This result converges with previous results [32,33] and supports that research is needed to further understand the relationship between sleep and social anxiety [4]. Furthermore, results on sleep disorders and social anxiety suggest that the diagnostic procedures should not be limited to insomnia and generalized anxiety.

The observation of multiple morbidities and the use of several medications has implications for treatment plans and informs future research agendas. First, the multiple sleep comorbidities indicates that we need more evidence-based behavioral and psychological treatments for sleep disorders outside of just insomnia to improve the non-pharmacological aid that can be provided to sleep disordered patients. There are a few studies that have embarked on this mission [34-37]. Another important issue is that multiple morbidities supports the idea of a transdiagnostic approach for sleep disorders, similar

Clinical profile of patients in a sleep psychology clinic to that used for depression and anxiety [38,39]. Some scientific writings suggest that sleep disorders, anxiety, and depression are interconnected under common processes [40,41] as shown by the fact that CBT-I might have a moderate effect on comorbid disorder [42,43]. Already, some attempts have identified anxious arousal as a transdiagnostic variable between anxiety and insomnia [44], as well as anxiety sensitivity between anxiety, depression, and insomnia [45]. To properly develop transdiagnostic treatment, sleep researchers need to collaborate with non-sleep researchers in order to make waves in both areas. Research to evaluate transdiagnostic approaches within different sleep disorders is also an exciting avenue. An advantage of a transdiagnostic approach over an approach that favours one treatment per disorder is that it reduces the overall duration of treatment. It can also prevent that only one of the necessary treatments is applied, which would leave the patient with the residual symptoms of the other disorders. Thus, an effective transdiagnostic approach would follow the most recent guideline for the treatment of insomnia, which is the treatment of each disorder [46]. Finally, our findings beg the question as to whether our clinical samples are represented by published research samples. Most clinical trials on CBT-I have evaluated efficiency when insomnia is comorbid with a maximum of one other condition, which represents only 1/3 of our clinical sample. Moreover, medication use is often restricted or excluded in these studies, further reducing the representativeness for our clinical patients. This statement about the lack of representativity of the clinical sample in research needs to be validated. A systematic review investigating the samples in clinical trials used to evaluate the efficacy of CBT-I is currently underway by our research group.

In the context of multiple medications that come with the number of diagnoses, psychological interventions, such as CBT-I, have to be adapted to the medication intake. The treatment adaptation can take several forms. When considering CBT-I, one has to take into consideration that each medication has a different effect on sleep duration, sleep stages, and daytime performance. For instance, trazodone and venlafaxine are commonly used for depression but trazodone induces much more sleepiness than venlafaxine, which is known for its stimulating effect. Therefore, two patients taking different

Clinical profile of patients in a sleep psychology clinic medication combinations (zopiclone and trazodone versus zopiclone and venlafaxine) and are beginning CBT-I might need a different adaptation of the treatment. The patient taking zopiclone and trazodone is likely to feel sleepier during the day and before going to bed than the patient taking zopiclone and venlafaxine. The former may need another intervention to counter sleepiness during the day (e.g., power nap, light exercise, or light therapy) while the latter may need to modify his or her sleep schedule (e.g., going to bed later), taking into account the stimulating effect of venlafaxine. Research on CBT-I in the context of multiple comorbidities and medications is urgently needed.

The present study possesses strengths and limitations. The evaluation procedure we chose to apply is both a strength and a limitation. On the one hand, it provides an ecologically valid sample of patients attending a sleep psychology clinic. On the other hand, there was little experimental control, for example, medical conditions that psychologists are not permitted to evaluate (according to the laws of our region), were self-reported and for this reason could not reflect the true numbers. Sleep disorders such as sleep apnea or hypersomnia can also be underestimated for the same reason **which means that those who were not referred by a pneumologist were not screened for these sleep disorders**. The nature of the clinic may also affect the generalizability of the clinical profile identified. The fact that the clinic involved psychological trainees might have attracted a part of the population that cannot afford private psychological services. However, it is possible that many patients were not deterred by being treated by a trainee since it was the only specialized service available in the region when it opened. Finally, the methodology used in the present study involves patient observation. Thus, proportions obtained do not represent prevalence rates in the general population.

By providing a clinical profile of an ecologically valid population experiencing sleep difficulties, this study fills the gap between research and clinic. It highlights clinical issues (multiple morbidities, medicated conditions, sleep disorders other than insomnia) that must be addressed together in order to offer appropriate evidence-based treatment. The evaluation procedure used in this study can be easily replicated by non-sleep psychologists: It could thus be used in other psychological contexts to

Clinical profile of patients in a sleep psychology clinic identify, for example, patients consulting for psychiatric conditions but experiencing sleep disorders. Our semi-structured interviews can be complemented by available questionnaires screening for multiple sleep disorders [47]. More clinical profiles drawn from different psychological sleep clinics should be published. Together, these efforts will ensure that treatments developed in research are generalizable to and suitable for the patients seen in sleep clinics.

Ethical approval:

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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Table 1. Descriptive statistics for medication intake in relation to number of diagnoses per patient

No.	Hypnotic ^a		Non-hypnotic ^a		Any medication ^b		
	Prescribed	Non-prescribed	Prescribed	Non-prescribed	% (n)	M (SD)	Me
DX	N	% (n)	% (n)	% (n)	% (n)		
per patient							
0	8	12.5 (1)	0.0 (0)	0.0 (0)	12.5 (1)	1.0 (na)	1.0
1	32	28.1 (9)	3.1 (1)	3.1 (1)	31.3 (10)	1.7 (1.3)	1.0
2	57	50.9 (29)	14.0 (8)	1.8 (1)	56.1 (32)	1.7 (1.1)	1.0
3	49	63.3 (31)	8.2 (4)	16.3 (8)	67.3 (33)	2.5 (2.5)	2.0
4	27	63.0 (17)	11.1 (3)	18.5 (5)	66.7 (18)	2.5 (1.1)	2.0
≥ 5	27	66.7 (18)	29.6 (8)	22.2 (6)	77.8 (21)	3.2 (2.9)	2.0

^aMedication was sorted into four categories (hypnotic or non-hypnotic medication and prescribed or non-prescribed medication);

^bAny medication represents data relative to medication use whatever the categories of medication. The n for any medication represents the number of patients taking at least one medication of the four categories.

Note. No. = number; DX = Diagnoses (medical, psychiatric and sleep); N = Total number of patients with either 0, 1, 2, 3, 4, or ≥ 5 diagnoses; (n) = number of patients using medication with either 0, 1, 2, 3, 4, or ≥ 5 diagnoses; % = Percentage ($n/N \times 100$) of patients using medication with either 0, 1, 2, 3, 4, or ≥ 5 diagnoses; M (SD) = Mean (Standard Deviation) of medications taken per patient using medication; Me = Median of medications taken per patient using medication; na = not applicable.

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Figure caption

Figure 1A and 1B

Patients sorted by the number of sleep disorders diagnoses they received.

Note. No. = Number; PSY DX = Psychiatric condition; SLEEP DX = sleep diagnosis; MED DX =
Medical condition

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