

**Sleep on it:**  
**The Assessment & Treatment of Sleep in Specialized Mental Health Care in the Netherlands**

Master's thesis  
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### Abstract

*Background:* Sleep disturbances are prevalent among psychiatric populations. Increasingly sleep disorders are recognized as sharing a bidirectional relationship with mental illnesses, as facilitators and consequences of each other. Hence, adequate diagnosis and treatment of sleep disturbances could benefit the patients' treatment. However, it is suspected that sleep is not receiving sufficient attention in clinical practice.

*Aim:* The research aims to shed light on the current diagnostic and treatment practices of sleep disturbances in specialised mental health care in the Netherlands. Additionally, it is assessing whether the primary diagnosis, gender and suicidality affect these practices.

*Method:* A content analysis of 54 patient files was conducted. The patient files stemmed from six outpatient clinics for specialised mental health care (SGGZ) in the Netherlands. Records from the intake and the first four weeks of treatment were coded by healthcare professionals. Frequencies were calculated and chi-squares utilized for comparisons between diagnoses, gender, and suicidality.

*Results:* Overall, in 59% of patient files an assessment of sleep was reported; in 43% during the intake and 50% during treatment. These assessments were primarily done during the clinical interview while standardised questionnaires for sleep were not utilised. Still, symptoms of sleep-wake disorders were recognized in 46% of patients and a diagnosis of insomnia was made for 4%. These numbers lay below the prevalence rates of sleep disturbances in psychiatric populations. Additionally, these symptoms were more likely to be addressed with medication than non-medication interventions like CBT-I. Further, 48% of patients with recognized symptoms did not receive any intervention addressing sleep. Further analysis showed that the primary diagnosis of the patient and whether they were suicidal did not significantly affect the assessment and treatment of sleep ( $p > .05$ ). However, gender had a significant effect on the prescription of sleep medication. Females were significantly more likely to be prescribed medication than males ( $p = .006$ ), warranting a gender bias.

*Conclusion:* Overall, the findings suggest that sleep is not sufficiently attended to in specialised mental health care in the Netherlands. Awareness of the importance of addressing sleep needs to be increased and assessments and treatments systematically implemented.

*Keywords:* Sleep-Wake Disorders, Sleep Disturbances, Insomnia, SGGZ, Mental Health Care, Clinical Practice, CBT-I

## **Introduction**

Sleep complaints and illnesses are widespread, particularly among individuals with mental illness. More than 30% of Dutch adults experience sleep complaints and 8% qualify for an insomnia diagnosis (Kerkhof, 2017). These figures are notably higher in patients with depressive disorders, for instance, with 90% reporting insomnia symptoms (Park et al., 2013). Although it is congenitally recognized that we feel better after a good night of sleep, the true importance of sleep in maintaining and restoring mental health may be underappreciated.

### **Bidirectional Relationship between Sleep & Mental Illness**

Traditionally, sleep disturbances of psychiatric patients were seen as a transdiagnostic symptom caused by their primary condition (Winokur, 2015). This perspective is based on the observation that studies commonly show anomalies in the sleep-wake rhythm across mental illnesses (e.g. Riemann et al., 2020; Schubert et al., 2020). However, evidence is emerging supporting a more fundamental role of sleep in mental illnesses as a causal factor. Sleep disorders can make individuals more susceptible to stress, and increase emotional distress (Medic et al., 2017). They are also associated with more symptoms of depression, somatic complaints, and anxiety (Tkachenko et al., 2014). Following, sleep disturbances are increasingly regarded as a risk factor for the development and progression of mental disorders (Freeman et al., 2020; Scott et al., 2021; O’Callaghan et al., 2021). Baglioni et al. (2011) reported a twofold risk for the development of depression in people affected by insomnia. In turn, if individuals are already affected by mental illnesses, sleep disorders and disturbances can influence their progression. For instance, in obsessive-compulsive disorder (OCD) patients, delayed sleep times can increase the severity of their OCD symptoms the day after (Schubert et al., 2020). Likewise in patients with psychosis, the severity of delusions, depression, as well as anxiety, has been linked to the nightmare distress they are experiencing (Sheaves et al., 2015). Importantly, it has been shown that sleep disorders increase the risk of suicidality (Batterham et al., 2021; Yu et al., 2021). Hence, for some patients, sleep could be of fundamental importance.

These findings challenge the traditional view and suggest that sleep disturbances are not merely a “by-product” of mental illnesses but share a bidirectional relationship with mental illness (Freeman et al., 2020; Lancel et al., 2021). They are a facilitator and consequences of one another.

### **Healthy Sleep & Underlying Mechanism**

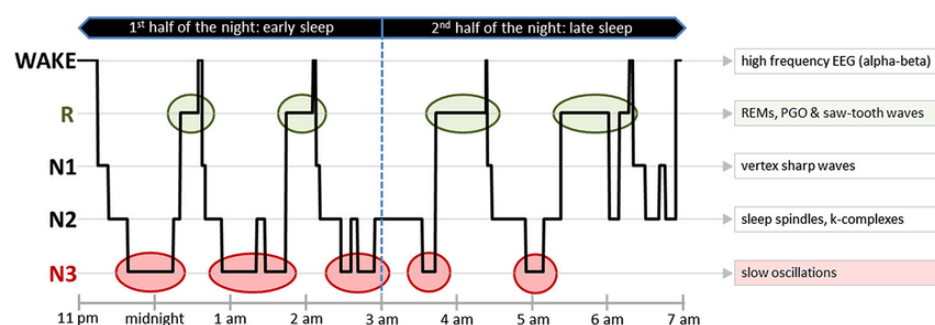
This raises the question of what constitutes healthy sleep and how it can be achieved. It is generally recommended that adults should sleep at least 7 hours per night (Chaput et al., 2020; Liu et al., 2016). Sleep can be separated into two different types: REM (Rapid eye movement) and NREM (Non-rapid eye movement) sleep. These two phases are reiterated four to six times within one night (Carley & Farabi, 2016; see Figure 1). NREM sleep encapsulates three stages: N1, 2, and 3, with N3 being considered ‘deep sleep’ (Carley & Farabi, 2016). REM sleep, on the other hand, is characterised

as the ‘lightest’ sleep phase in which dreams are experienced (Carley & Farabi, 2016). As these phases have different underlying neurological processes, they are also suspected to provide different functions.

Generally, hypothesised functions of sleep are to facilitate neurodevelopment, memory consolidation, metabolic functions, and the immune system, as well as support general and mental well-being (Miletínová & Bušková, 2021). The function of memory consolidation and fostering mental well-being are likely to be especially important in the context of mental illness.

## Figure 1

*Hypnogram of Healthy Sleep, as Depicted by Blume et al. (2015)*



Two influential theories discussing the role of memory and mental well-being are the *dual process hypothesis* and the *theory of overnight therapy*. According to the *dual process hypothesis*, slow-wave sleep (NREM, especially N3) is crucial for declarative memory and REM sleep for emotional and episodic memory. (Ackermann & Rasch, 2014). In support of this, Walker and van der Helm (2009) proposed the *theory of overnight therapy*. It suggests that through REM sleep the experiences of the day are reframed and reworked into memory; consolidating the salient parts and discarding a significant amount of emotional charge connected to them. In PTSD patients this function is likely impaired due to a dysregulation of the noradrenergic system (Hendrickson & Raskind, 2016). Hence, their disrupted REM sleep could be a key factor for the maintenance of symptoms. This might even extend to the development of PTSD. In a study of soldiers, it was found that the risk of PTSD after deployment was 50% higher for those suffering from insomnia before deployment (Wang et al., 2019). In people with insomnia, REM sleep is disrupted through increased arousal and more frequent awakenings (Riemann et al., 2020). This can impair the processing of experiences and thereby, contribute to the development of PTSD.

Accordingly, it is suggested that for the PTSD treatment, sleep disturbances should be addressed. Straus et al. (2017) showed in an experiment with healthy subjects that extinction learning for a conditioned stimulus was less effective after sleep deprivation compared to regular sleep. Similarly, sleep disturbances have been identified as a risk factor for psychosis and the treatment may not only improve sleep but also symptoms of psychosis (Wang et al., 2022; Waite et al., 2020). With treatment

targeting sleep, healthy sleep patterns might be restored, thereby, reenabling its functions of memory consolidation and fostering well-being.

### **Sleep Disturbances & Prevalence within the Psychiatric Population**

Sleep disturbances can come in many different forms which require different treatments. The DSM-5 differentiates twelve broader sleep-wake disorders, often with subsequent subtypes (American Psychiatric Association, 2013; For an overview of the disorders and their symptoms, see Appendix A.). Insomnia disorder is the most well-known and prevalent sleep-wake disorder. It is characterised by difficulties falling asleep, maintaining sleep, and/or early morning awakenings. The DSM-5 indicates a prevalence of 40-50% among clinical patients (American Psychiatric Association, 2013). In a population study of a mental health care facility in India, 29.2% of patients reported moderate to severe insomnia symptoms and 78.2% reported at least one insomnia symptom (Mondal et al., 2018). Comparatively, in a study of outpatients in Singapore, 65.8% of patients indicated to have insomnia symptoms (Hombali et al., 2019). Both studies utilised the Insomnia Severity Index (ISI). Predominantly patients with a Major Depressive Episode were affected by insomnia while patients with Generalized Anxiety Disorder, OCD, and psychosis had significantly lower insomnia scores (Mondal et al., 2018). Another factor to consider is the patient's gender since women consistently report poorer sleep quality (Madrid-Valero et al., 2017). Hombali et al. (2019) also assessed other sleep-wake disorders and found that 14.5% of psychiatric patients reported sleep-breathing disorders symptoms, 14.8% restless leg syndrome/periodic limb movement symptoms, 12.5% narcolepsy symptoms, 13.8% parasomnia symptoms, and 4.5% circadian rhythm disorder symptoms. Therefore, most patients in mental health care seem to be affected by some symptoms of sleep-wake disorders, making it a focal point in the experience of mental illness.

### **Attention for Sleep Disturbances & Sleep-Wake Disorders in Mental Health Care**

Since sleep disturbances, particularly insomnia symptoms, are a prevalent and fundamental element of mental illness, it is crucial to consider them in treatment. Several studies show the positive effect that sleep treatment can have on the mental health of patients (e.g. De Bruin et al., 2018; Dolsen et al., 2014; Vanek et al., 2021; Waite et al., 2016, 2020). According to the European Guideline for diagnosis and treatment of insomnia, Cognitive Behaviour Therapy for Insomnia (CBT-I) is strongly recommended as first-line treatment (Riemann et al., 2017). Additionally, medication should only be used short-term if CBT-I is not sufficient for the patient (Riemann et al., 2017). However, it is suspected that sleep is not always sufficiently addressed or addressed inappropriately in psychotherapy (Seow et al., 2018). For instance, in patients with schizophrenia, the use of medication is common in comparison to CBT-I (Robertson et al., 2019). Moreover, insomnia symptoms frequently remain present after mental health treatment for other conditions such as depression (Carney et al., 2007). To underline, a US study reported that after the treatment of PTSD in soldiers 57% still experienced insomnia (Pruiksma et al., 2016). This suggests that the sleep symptoms were perhaps not sufficiently attended to during therapy.

In an article about PTSD and sleep by Spoomaker and Montgomery (2008), it is stated that sleep does not get much attention in mental health care. However, evidence concerning the assessment and treatment of sleep disorders in practice appears limited. Merely two studies from India and Australia suggest that in primary care insomnia is frequently not recognized or dismissed (Bhaskar et al., 2016; Sake et al., 2019). These findings might be very different in mental health care and the Netherlands.

### **Current Research**

Even though sleep disturbances and disorders are very prevalent among mental illnesses and their treatment might improve therapy outcomes, little is known about the extent to which sleep is addressed in mental health care. Hence, the study will aim to shed light on its assessment and treatment in specialised mental health care in the Netherlands. To gain this knowledge, the following research questions were posed:

*Research Question 1:* To what extent and how are sleep disturbances assessed and recognized at intake as well as throughout the treatment in psychiatric outpatients in the Netherlands?

*Research Question 2:* To what extent are sleep disturbances addressed with non-medication interventions in comparison to medication in psychiatric outpatients in the Netherlands?

The prevalence rate of sleep disorders differs depending on several factors, such as the primary condition of the patient (Mondal et al., 2018) and their gender (Theorell-Haglöw et al., 2018). This should also affect the frequency of the sleep treatment in the respective patient group. Additionally, especially in patients that are suicidal, sleep disturbances should be assessed and treated since sleep disturbances increases the risk for suicidality (Batterham et al., 2021; Yu et al., 2021). Therefore, the following research question is posed:

*Research Question 3:* Does the assessment and treatment of sleep disturbances differ depending on ...

- a) the primary condition of the patient?
- b) the suicidality of the patient?
- c) the gender of the patient?

## **Method**

### **Design**

A content analysis of patient files from outpatient clinics focused on specialised mental health care (SGGZ) was conducted. This design was chosen since the patient files represent the clinicians' perspective on the condition of the patient and the diagnostic procedures and treatments they administered. The study was ethically approved by the BMS Ethics Committee of the University of Twente and the Science Committee of the organisation GGNet.

## **Setting: GGNet**

The study was conducted at outpatient clinics for specialised mental health care of the mental healthcare provider GGNet. GGNet is based in North and East Gelderland in the Netherlands. They treat about 18000 patients with a range of different mental illnesses: the most frequent being anxiety disorders, personality disorders, depressive disorders, schizophrenia spectrum and other psychotic disorders, as well as neurodevelopmental disorders (internal documentation). At the SGGZ patients with serious, often complex mental disorders requiring care for longer periods are being treated.

## **Patient Files**

A content analysis of patient files from six different clinics was conducted to enable an overview of the treatment of sleep across the organisation. The patient files at GGNet are administered and stored with the software USER. Entries from the intake, as well as throughout the first four weeks of treatment, were analysed.

Several inclusion criteria were defined. Firstly, the files had to stem from patients that were at least 18 years old at intake. Secondly, the patients had to have been administered in 2021 or 2022 to get a grasp on the current standard of care. However, this range was loosed to 2019 to 2022 if too few patients had been administered at the specific section of the clinic<sup>1</sup>. Third, the coding healthcare professionals were asked to select patients that were assessed and treated by their colleagues. This was done to avoid responses based on prior knowledge of the patient. Furthermore, professionals volunteering for the research could be more likely to focus on sleep than their colleagues. Again, due to the small number of patients, this was not always possible.

There were two procedures to select a file. First, in case the healthcare professional had a numbered patient list, they used an online random number generator to pick a file (see Appendix B). If the generated patient file did not fulfil the criteria described above, they repeated the procedure. Second, if a numbered patient list was not available, files were selected with the name search of USER. For this, they first had to randomly generate a letter. If more than 30 files came up, the second letter was generated. Then they also used the random number generator to select a file from the resulting list and checked the criteria.

In total, 55 patient files were coded. Since for 1 participant no information on sleep was entered, the patient file was excluded, leaving a number of  $n=54$  patient files for analysis.

## **Coding by Healthcare Professionals**

The coding was done by six healthcare professionals with varying backgrounds and experience.<sup>2</sup> One healthcare professional coded 26 files while the others each coded five to ten files. Overall, the

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<sup>1</sup>The access to patient files is very restricted, also within a clinic. The healthcare professionals only had access to files of patients administered in their section which is often a very limited number.

<sup>2</sup> Two of them were nurse practitioners, two nurses, one a social worker, and one a psychologist. Their experience varied from eight to more than thirty years.

coding of a file took between 4 to 50 minutes, depending on the length of the patient file and if the patient was admitted into hospitalised care.

The healthcare professionals were invited to an introductory meeting via e-mail (Appendix C). In this meeting, they were trained on how to code the patient files (for the protocol see Appendix D). At first, the aim of the study was explained, and they were asked about their background and motivation. Then, the researcher shared their screen to present the coding scheme to them. The inclusion and exclusion criteria for the files were explained and how to select a file. After this, each question in the coding scheme and its aim in terms of the research question was explained. The healthcare professionals were regularly asked if anything was unclear to them and if they had feedback on the coding scheme. Afterwards, they were asked to code two to three files to test the coding scheme. During this time, they were provided with a phone number and e-mail address they could contact in case they had questions. Each coder was assigned an ID and asked to indicate it at the beginning of the coding scheme. This made it possible to track who coded a specific file without linking them explicitly in the data.

The feedback after coding two to three files was either communicated by e-mail or in a second meeting. Unfortunately, since the clinicians did not have access to the same patient files, it was not possible to calculate inter-rater reliability. However, generally, the feedback from the healthcare professionals was that the coding scheme was easy to understand and straightforward<sup>3</sup>. During the coding of files, none of the healthcare professionals reached out to gain more assistance. Questions only contained technical concerns, such as if the coding of the file was saved at the end of the questionnaire.

### **Coding Scheme**

The coding scheme was developed in consultation with a nurse practitioner at the organisation and adapted based on the feedback of the coding healthcare professionals (see Appendix B). It was developed as an online Qualtrics questionnaire. In the following, each section of the coding scheme is described.

#### ***Patient Characteristics***

For each file, the professionals first indicated to what extent they were familiar with the patient's intake and treatment. In addition, they indicated if the patient had an intake previously at another location.<sup>4</sup> They further reported the year the patient was taken in, the patient's age and gender. Then, it was assessed which type of mental illness the patient had. Answering options were retrieved from the DSM-5. Additionally, patients' GAF-score (Global Assessment of Functioning) was coded to gain

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<sup>3</sup> Written feedback on the coding scheme after coding two to three files:

*"The questions are clear and are logically connected."* (*"De vragen zijn duidelijk en hangen met elkaar in een logisch verband samen."*)

*"I found the questionnaire very clear! Good structure."* (*"Ik vond de vragenlijst heel erg duidelijk! Goed opgebouwd."*)

<sup>4</sup> This question was later added after 14 files had already been coded based on feedback by a coding healthcare professional.



insight into the severity of their condition. Although the assessment of GAF is no longer supported by the DSM-5, it is still frequently used in practice (Gold, 2014). Lastly, it was coded whether the patient was suicidal.

### ***Assessment of Sleep at Intake***

The healthcare professionals coded information concerning the patients' intake. Specifically, they coded whether sleep was assessed. Answer options were 'yes', 'no', and 'unsure'. If the professionals clicked 'yes' or 'unsure' they were shown different types of assessment, including standardised questionnaires (e.g. Sleep-50), neurological measures (e.g. polysomnography) and the clinical interview. These options were derived from the sleep guidelines of the V&VN (Verpleegkundigen en Verzorgenden Nederland; V&VN, 2021) and recommendations from the nurse practitioner. Then, the healthcare professionals coded whether any sleep symptoms were mentioned and if a sleep disorder was formally diagnosed. The answer options, meaning the symptoms of sleep-wake disorders and types of disorders were derived from the DSM-5 (see Appendix A). In all cases, an open text field was provided if the healthcare professional found the categories unfitting.

### ***Monitoring and Treatment of Sleep-Wake Disorder Symptoms throughout Treatment***

The healthcare professionals looked at all files administered within the first four weeks of treatment. They coded if sleep was monitored. Here the same options as for the assessment at intake were given, since they included tools used for assessment, and monitoring. If the tool could be administered multiple times, the healthcare professionals reported how often it was used.

Then, information regarding the patients' general treatment was coded, including the type of psychotherapy the patient received and their prescribed medication. The types of psychotherapy were retrieved from the Dutch Union for Psychotherapy (NVP, n.d.). Art and music therapy, as well as mindfulness, were added to this list. The options for prescribed medication were taken from a list by Springer Medizin (n.d.). The coders made a further assessment whether the patient received sleep medication. The list of sleep medications was derived from Boghez and Mîndruta's (2018) article. Moreover, it was assessed if the patients received any non-medication treatment for sleep. To put these figures into perspective, the coders assessed how many therapy sessions the patient received. Lastly, the healthcare professionals reported whether the patient was admitted into hospitalised care within the first four weeks.<sup>4</sup>

### **Data Analyses**

The data were analysed using SPSS Statistics 28. At first, the data set was screened for missing values. Then, the frequencies of general patient characteristics (age group, GAF score category, year of intake, gender, primary diagnoses, suicidality, hospitalisation, and previous intakes) as well as the patients' medication and psychotherapy for the primary condition were calculated.

For the first research question, the frequencies of the use of assessment tools at intake and during treatment, and frequencies of recognized symptoms, and sleep-wake disorder diagnosis were computed. For each monitoring instrument, the average number or duration of use was calculated. If the answer option ‘other’ was used it was checked if the answer could be sorted to the already existing options or if it should be a new category.

For research question 2, the frequencies of the sleep medications and the non-medication treatments were calculated. This was done overall and separately for the files in which symptoms of a sleep-wake disorder were recognized and those in which no symptoms were recognized.

To answer the third research question to which extent the assessment and treatment differed depending on a) diagnosis, b) gender, and c) suicidality, crosstabs and chi-squares were used. Since the patients could have multiple diagnoses, each diagnosis was treated as a dichotomous variable. If the healthcare professionals indicated that they were uncertain or that it was not specified whether the patient was suicidal, this was combined with ‘not suicidal’.

## **Results**

### **Description of Patient Files**

The large majority of the 54 patient files stemmed from 2022, providing very recent insights (Table 1). As common for the patient group, the most prominent age category laid between 31 and 40. Similarly, the most frequent diagnosis aligned with the most frequent diagnosis of patients at the organisation overall (internal data). However, anxiety disorders were not well represented in the sample. Additionally, it is uncommon that slightly more males were present in the sample. For most patients, the level of functioning measured by the GAF, laid in the category of ‘serious symptoms or displays impairment in social or occupational functioning’ (score between 41-50; American Psychiatric Association, 1994). Every third patient was admitted into hospitalised care within the first four weeks of treatment. Hence, at least part of the treatment did not take place at the original facility for a considerable number of cases. Similarly, a third of patients had been admitted before; potentially decreasing the intensity of the intake procedure.

**Table 1**

*Frequency of Year of Intake, Patients' Gender, Age, Primary Diagnoses, GAF score, Suicidality, Status of Hospitalisation within first four Weeks of Treatment & Previous Intake at the Organization in the Patient Files (N=54)*

Variable	<i>n</i>	%
Year of Intake		
2022	31	57
2021	18	33
2020	1	2
2019	4	7
Gender		
Male	30	56
Female	23	43
Non-Binary	1	2
Age		
18-30	13	24
31-40	24	44
41-50	11	20
51-60	3	6
61+	3	6
Primary Diagnosis <sup>a</sup>		
Neurodevelopmental disorder	16	30
Schizophrenia Spectrum & other psychotic disorders	15	28
Personality disorders	15	28
Depressive disorders	14	26
Trauma & stressor-related disorders	12	22
Obsessive-Compulsive and related disorders	4	7
Bipolar & related disorders	3	6
Disruptive, impulse-control, & conduct disorders	2	4
Feeding & Eating disorders	2	4
Somatic symptom & related disorders	2	4
Substance-related & addictive disorders	2	4
Anxiety disorders	1	2
Dissociative disorders	1	2
Global Assessment of Functioning (GAF, <i>n</i> =37) <sup>b</sup>		
Score 60-51	10	27
Score 50-41	24	65
Score 40-31	2	5
Score 30-21	1	3
Suicidality		
Suicidal	13	24
Not Suicidal	34	63
Not specified/Unsure	7	13
Hospitalisation during Treatment ( <i>n</i> =40) <sup>c</sup>		
Yes	12	30
No	18	70
Intake Before ( <i>n</i> =40) <sup>c</sup>		
Yes	12	30
No	18	70

<sup>a</sup>Patients could have multiple diagnoses; hence, answers are not mutually exclusive.

<sup>b</sup>Not for all patients an assessment was conducted/documentated. A higher score indicates a higher level of functioning. The score can range from 0 to 100.

<sup>c</sup>Since these questions were added during the data collection, only data from 40 files was available.

More than two-thirds of patients received some form of psychotherapy for their primary diagnoses within the first four weeks of treatment (Table 2). Most frequent were Cognitive Behavioural Therapy and Client-Centred Therapy. However, strikingly, even more patients (4 out of 5) received medication for their primary condition.

**Table 2**

*Frequency of Psychotherapy & Medication for the Primary Condition (Non-Sleep Diagnosis) in the Patient Files (N=54)*

Treatment	n	%
No Psychotherapy	17	31
Psychotherapy <sup>a</sup> :	37	69
Cognitive Behaviour Therapy	14	26
Client-Centred Therapy	11	20
Systems Therapy	5	9
Mindfulness Approaches	2	4
Art/Music Therapy	4	7
Psychoeducation ADHD/ASD	2	4
Trauma Therapy	1	2
Other Personal Support/Sessions with Psychologist	3	6
No Medication	9	17
Medication <sup>a</sup> :	45	83
Antipsychotics	28	52
Tranquilizers/Anxiolytics	46	46
Antidepressants	19	35
Hypnotics	8	15
Mood Stabilizer	2	4
Other <sup>b</sup>	6	11

<sup>a</sup>Patients could receive multiple types of psychotherapy and medication; hence, answers are not mutually exclusive.

<sup>b</sup>Added from the health professionals were anti-epileptics twice, promethazine twice, and 1 time each a benzodiazepine, biperiden, topiramate.

### **RQ 1: To what extent and how are sleep disturbances assessed and recognized at intake as well as throughout the treatment?**

Less than half of the patient files mentioned an assessment of sleep during the intake (Table 3). The assessment was done almost exclusively during the intake interview. The only exception was one case in which sleep disturbances were merely assumed because of a manic episode. During the first 4 weeks of treatment, sleep was assessed in slightly more patients than during the intake. However, similarly, the assessment mostly took place during the clinical interview. For very few patients a sleep diary and once a general questionnaire was used to assess sleep. Notably, during both the intake and first 4 weeks of treatment no standardised tests to assess sleep specifically were used. Overall, 59% of patient files mentioned an assessment at any point in time. Hence, sleep was mainly considered in the same patients at intake as during treatment.

**Table 3**

*Frequency of Assessment of Sleep Disturbances at Intake, During the First 4 Weeks of Treatment, and Overall (during intake or treatment) (N=54)*

	Intake		Treatment		Overall	
	n	%	n	%	n	%
No Sleep Assessment	31	57	27	50	22	41
Sleep Assessment:	23	43	27	50	32	59
Clinical Interview	22	41	22 <sup>a</sup>	41		
Sleep Diary <sup>b</sup>	-	-	3	6		
Standardized Tests	-	-	1	2		
Other	1	2	2	4		

<sup>a</sup>It was addressed on average in 2.4 interviews during the first 4 weeks of treatment ( $SD=1.4$ ;  $range=1-5$ ). During the first 4 weeks of treatment, the patients usually received 2 to 6 therapy sessions in total; most common were 4 therapy sessions (45%).

<sup>b</sup>In all cases the sleep diary was used for 1 week.

Symptoms of sleep-wake disorders were documented more frequently than that an assessment was conducted (Table 4). They were recognized in almost half of the patients. Hence, even though symptoms were not formally assessed, some attention was directed towards them. Most prominently, symptoms of insomnia were mentioned (trouble initiating sleep, maintaining sleep, & early morning awakenings). Less frequent were symptoms of nightmare disorder and hypersomnia, and no symptoms for other sleep-wake disorders were recognized.

Strikingly, only 2 of the 54 patients received a diagnosis of insomnia disorder and no other sleep-wake disorder diagnoses were made.

**Table 4**

*Frequency of Sleep-Wake Disorder Diagnosis and Symptoms Mentioned in the Patient Files (N=54)*

Sleep-Wake Disorder	n	%
No Diagnosis	52	96
Diagnosis <sup>a</sup> :	2	4
Insomnia	2	4
Other	-	-
No Symptoms	29	54
Symptoms <sup>a</sup> :	25	46
Trouble initiating sleep	14	26
Trouble maintaining sleep	7	13
Early morning awakenings	12	22
Unrefreshing sleep	4	7
Sleep excessively	2	4
Dysphoric/well-remembered dreams	3	6

<sup>a</sup>Patients could have multiple symptoms and diagnoses; hence, answers are not mutually exclusive.

**RQ 2: To what extent are sleep disturbances addressed with non-medication interventions in comparison to medication?**

Overall, the majority of patients did not receive any type of intervention for sleep. When looking only at patients with sleep disturbance symptoms, almost half (12/25) did not receive any treatment (Table 5).

**Table 5**

*Frequency of Treatments for Sleep in the Patient Files by Recognition of Sleep-Wake Disorder Symptoms (N=54)*

Treatment	Symptoms					
	Overall (N=54)		Yes (n=25)		No (n=29)	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Medication + non-pharmacological intervention	3	6	2	8	1	3
Only Medication	17	32	7	28	10	35
Only Non-pharmacological intervention	5	9	4	16	1	3
No treatment	29	54	12	48	17	59

*Note.* If it was uncertain if the medication or intervention was intended for sleep it was still counted as sleep treatment.

If an intervention was given, it was most likely to be medication: more than a third of patients were suspected to receive sleep medication (Table 6). Benzodiazepines were by far the most recognized sleep medication in the patient files. Granted, since the purpose of the medication is usually not specific, benzodiazepines could also have been prescribed for other complaints. Underlining this is that one third of patients (11/29) without documented sleep symptoms were suspected to receive sleep medication. Additionally, medication lists might not always be complete. To illustrate, in 1 case lorazepam was mentioned but the health professional suspected it to be prescribed by another institution.

Non-medication interventions for sleep were prescribed in a fraction of the patient files (n=7, 13%). Only every fifth person with symptoms received non-pharmacological support. Here mindfulness interventions seemed to be the preferred choice. Even though two patients had a diagnosis of insomnia disorder, no patient received CBT-I. There was no mention of any sleep tools either, such as weighted blankets or the sleep robot ‘somnox’.

**Table 6**

*Frequency of Medication Use & Implementations of Non-Pharmacological Interventions for Sleep in the Patient Files by Recognition of Sleep-Wake Disorder Symptoms (N=54)*

Treatment	Overall (N=54)		Symptoms			
			Yes (n=25)		No (n=29)	
	n	%	n	%	n	%
No Medication	34	63	16	64	18	62
Medication:	20	37	9	36	11	38
Benzodiazepines <sup>a</sup>	16	30	7	28	9	31
Atypical Antipsychotic Agents <sup>b</sup>	3	6	1	4	2	7
Antihistaminic	3	6	2	8	1	3
Non-benzodiazepine receptor agonists <sup>c</sup>	2	4	1	4	1	3
Antiepileptics	2	4	-	-	2	7
Melatonin	1	2	-	-	1	3
No Non-pharmacological intervention	47	87	19	76	28	97
Non-pharmacological intervention:	7	13	6	24	1	3
Mindfulness Approaches	4	7	4	16	-	-
CBT-I	-	-	-	-	-	-
Sleep Hygiene Promotion	1	2	1	4	-	-
Psychoeducation	1	2	1	4	-	-
Other <sup>d</sup>	1	2	-	-	1	3

*Note.* If it was uncertain if the medication or intervention was intended for sleep it was still counted as sleep treatment.

Patients could receive multiple types of medication and non-pharmacological interventions; hence, answers are not mutually exclusive.

<sup>a</sup>Benzodiazepines included temazepam (6x), lorazepam (5x), midazolam (2x), & bromazepam (1x).

<sup>b</sup>Atypical Antipsychotic Agents indicated here were paliperidone, levomepromazine, risperidone, & olanzapine.

<sup>c</sup>The non-benzodiazepine receptor agonist was zopiclone in both cases.

<sup>d</sup>Other included: Discussion with psycho-motor-therapist (PMT) concerning sleep.

### **RQ 3: Does the assessment and treatment of sleep disturbances differ depending on ...**

#### **a) ... the primary condition of the patient?**

No significant differences in terms of the assessment and treatment of sleep were discovered across the four most prevalent diagnoses (Table 7). Notably, the diagnoses were not mutually exclusive. Thus, one patient might be represented several times within this section. For instance, if they have both a schizophrenia spectrum and personality disorder.

**Table 7***Frequencies of Sleep Assessment & Treatment by Patients' Primary Condition (N=54)*

	Neurodevelopmental Disorders		Chi-Square $X^2$	Schizophrenia spectrum & other		Chi-Square $X^2$	Depressive disorders		Chi-Square $X^2$	Personality disorders		Chi-Square $X^2$
	Yes (n=16)	No (n=38)		Yes (n=15)	No (n=39)		Yes (n=14)	No (n=40)		Yes (n=15)	No (n=39)	
Intake												
Assessment												
Yes	7 (44%)	16 (42%)	$X^2(1, 54) =$	7 (47%)	16 (41%)	$X^2(1, 54) =$	8 (57%)	15 (38%)	$X^2(1, 54) =$	5 (33%)	18 (46%)	$X^2(1, 54) =$
No	9 (56%)	22 (58%)	0.01, $p = .911$	8 (53%)	23 (59%)	0.14, $p = .707$	6 (43%)	25 (63%)	1.64, $p = .201$	10 (67%)	21 (54%)	0.73, $p = .393$
Symptoms												
Recognized												
Yes	7 (44%)	9 (56%)	$X^2(1, 54) =$	8 (53%)	17 (44%)	$X^2(1, 54) =$	7 (50%)	18 (45%)	$X^2(1, 54) =$	5 (33%)	20 (51%)	$X^2(1, 54) =$
No	9 (56%)	20 (53%)	0.06, $p = .808$	7 (47%)	22 (56%)	0.41, $p = .520$	7 (50%)	22 (55%)	0.10, $p = .747$	10 (67%)	19 (49%)	1.40, $p = .236$
Sleep												
Monitored												
Yes	8 (50%)	19 (50%)	$X^2(1, 54) = 0,$	9 (60%)	18 (46%)	$X^2(1, 54) =$	7 (50%)	20 (50%)	$X^2(1, 54) = 0,$	5 (33%)	22 (56%)	$X^2(1, 54) =$
No	8 (50%)	19 (50%)	$p = 1$	6 (40%)	21 (54%)	0.83, $p = .36$	7 (50%)	20 (50%)	$p = 1$	10 (67%)	17 (44%)	2.31, $p = .129$
Sleep Medication <sup>a</sup>												
Yes	5 (31%)	15 (39%)	$X^2(1, 54) =$	8 (53%)	12 (31%)	$X^2(1, 54) =$	4 (29%)	16 (40%)	$X^2(1, 54) =$	3 (20%)	17 (44%)	$X^2(1, 54) =$
No	11 (69%)	23 (61%)	0.33, $p = .568$	7 (47%)	27 (69%)	2.37, $p = .124$	10 (74%)	24 (60%)	0.58, $p = .448$	12 (80%)	22 (56%)	2.59, $p = .108$
Non-medication Intervention <sup>a</sup>												
Yes	1 (6%)	7 (18%)	Not applicable	2 (13%)	6 (15%)	Not applicable	1 (7%)	7 (18%)	Not applicable	2 (13%)	6 (15%)	Not applicable
No	15 (94%)	31 (82%)		13 (87%)	(85%)		13 (93%)	33 (83%)		13 (87%)	33 (85%)	

*Note.* Patients could have multiple diagnoses; hence, answers are not mutually exclusive.

<sup>a</sup>If the coder was not certain if the treatment was intended for sleep it was still counted as 'yes'



**b) ... *the suicidality of the patient?***

The assessment of sleep was not significantly different between the patients that were deemed to be suicidal and those that were not (Table 8). However, symptoms of sleep disturbances were slightly more frequently recognised, and they seem to have been monitored more often during the treatment of suicidal patients. Due to the few observations of patients that were suicidal, no conclusive statement can be made about whether the treatment of sleep disturbances differs.

**c) ... *the gender of the patient?***

The assessment and treatment of sleep-wake disorder symptoms did not significantly differ between males and females (Table 8). However, significantly more females have been prescribed sleep medication. In comparison to more than half of the females, only every fifth male received sleep medication. Paradoxically, symptoms of sleep-wake disorders were recognized slightly less frequently in females than in males.

**Table 8***Frequencies of Sleep Assessment and Treatment by Suicidality & Gender (N=54)*

	Suicidality				Chi-Square $X^2$	Gender <sup>b</sup>				Chi-Square $X^2$
	Yes (n=13)		No/Not specified (n=41)			Male (n=30)		Female (n=23)		
	n	%	n	%		n	%	n	%	
Intake Assessment										
yes	6	46	17	41	$X^2(1, 54) = 0.09, p = .766$	12	42	10	44	$X^2(1, 54) = 0.07, p = .799$
no	7	54	24	59		18	60	13	56	
Symptoms										
Recognized										
yes	8	62	17	41	$X^2(1, 54) = 1.60, p = .206$	15	50	9	39	$X^2(1, 54) = 0.62, p = .431$
no	5	38	24	59		15	50	14	61	
Sleep Monitored										
yes	9	69	18	44	$X^2(1, 54) = 2.53, p = .111$	15	50	11	48	$X^2(1, 54) = 0.03, p = .875$
no	4	31	23	56		15	50	12	52	
Sleep Medication <sup>a</sup>										
yes	4	31	16	39	Not applicable	6	20	13	57	$X^2(1, 54) = 7.55, p = .006$
no	9	69	25	61		24	80	10	43	
Non-medication										
Intervention <sup>a</sup>										
yes	1	8	7	17	Not applicable	3	10	5	22	Not applicable
no	12	92	34	83		27	90	18	78	

<sup>a</sup>If the coder was not certain if the treatment was intended for sleep it was still counted as 'yes'.

<sup>b</sup>Since only one patient was non-binary, they were excluded from this analysis.

## Discussion

To our knowledge, this was the first study examining to what extent sleep disturbances are assessed and monitored, as well as treated, in outpatient clinics in the Netherlands. It was found that for more than 40% of the patients, no assessment of sleep disturbances was conducted, and standardised instruments were largely absent. Additionally, while many patients were being administered medication targeting sleep, only very few received non-pharmacological interventions.

### **RQ 1: To what extent and how are sleep disturbances assessed and recognized at intake as well as throughout the treatment?**

In less than half of patients (43%) sleep was assessed at intake. This lies below the reported prevalence rates of sleep-wake disorders. In studies of psychiatric patients in India (Mondal et al., 2018), as well as in Singapore (Hombali et al., 2019), respectively 78.2% and 65.8% of patients reported insomnia symptoms. Hence, healthcare professionals are likely missing sleep-wake disorder symptoms in a large portion of patients. Additionally, instead of standardised questionnaires such as the Holland Sleep Disorders Questionnaire, the assessment was predominantly based on the clinical interview, observations, and assumptions. This does not align with Dutch guidelines, like those from the Dutch nursing association (V&VN, 2021) and further elevates the likelihood of missing symptoms.

Interestingly, specific symptoms were more frequently reported than their assessment. In 46% of patient files, at least one symptom of a sleep-wake disorder was mentioned. However, this still is considerably lower than the expected prevalence of insomnia symptoms alone. The discrepancy between reported symptoms and assessments could be due to clinicians protocolling practices. They might mention sleep symptoms in the diagnosis as part of the primary condition but deem the assessment irrelevant to include in the intake protocol. Underlying this might be the traditional view that regards sleep disturbances as a mere “by-product” of mental illness.

Only in 4% of the patient files, an actual diagnosis of insomnia was made. Comparatively, a study of four-hundred psychiatric outpatients in Singapore reported that almost a third of the patients qualified for an insomnia diagnosis (Seow et al., 2018). While the DSM-5 already placed greater emphasis on coexisting sleep-wake disorders, it might still contribute to this lack of diagnosis in clinical practice. For instance, for insomnia to be diagnosed the criterion: ‘coexisting mental and medical disorders do not adequately explain the predominant complaint of insomnia’ needs to be met (American Psychiatric Association, 2013, p.362). This might lead to healthcare professionals refraining from an additional diagnosis.

Therefore, we conclude that sleep disturbances are currently inadequately assessed and recorded in clinical practice. The use of validated questionnaires needs to be strengthened at intake to ensure that symptoms are not missed anymore. In a few cases, sleep diaries were used during the treatment, exemplifying that the inclusion of sleep measures is achievable. Further, sleep-wake disorders are

insufficiently diagnosed. The possibility of diagnosing insomnia, for instance, as a secondary condition needs to be highlighted.

**RQ 2: To what extent are sleep disturbances addressed with non-medication interventions in comparison to medication?**

In almost half of the patient files mentioning sleep symptoms, no treatment was prescribed. This supports the findings of Soew et al. (2018), suggesting that insomnia is treated insufficiently in outpatients. Furthermore, sleep complaints were addressed with medication far more often than with psychological interventions or tools. The use of benzodiazepines was prevalent; with almost a third of patients being prescribed. This is surprising considering the wide awareness of their risk for addiction (Edinoff et al., 2021). However, this figure needs to be judged with caution since patients might have been prescribed benzodiazepines for another complaint. In the files, it could not be clearly determined which medication was used for sleep. Thus, some medications might have been wrongly labelled ‘sleep medication’ while off-label use might have been overlooked. Indeed, the frequency of ‘sleep medication’ appeared similar between those with and without symptoms.

When looking at non-pharmacological treatments, it was found that CBT-I was not utilised even though two patients had received an insomnia disorder diagnosis. Reasons for this could be a lack of expertise in CBT-I, as well as time constraints (Lancee & van Straten, 2017). Online delivery could make CBT-I more accessible (Lancee & van Straten, 2017). There was no mention of tools to aid sleep, such as weighted blankets and technological interventions in the files as well. Despite studies showing their value (e.g. Ekholm et al., 2020), this might not have received enough awareness in clinical practice yet.

Overall, sleep treatment, especially non-pharmacological treatment, appears to be neglected. Perhaps health professionals assume that they will address the symptoms by treating the primary condition. However, previous studies show that this is not always the case (e.g. Carney et al., 2007). Therefore, treatment for sleep, particularly non-pharmacological treatments like CBT-I, needs to come to the forefront.

**RQ 3: Does the assessment and treatment of sleep disturbances differ depending on ...**

***a)... the primary condition of the patient?***

Contrary to the findings of Mondal et al. (2018), the assessment and treatment of sleep complaints did not differ depending on the primary diagnosis. This might have been caused by the fact that most patients in specialised mental health care have multiple diagnoses and consequently, the groups overlap substantially.

***b)... the suicidality of the patient?***

In patients that are suicidal, there seems to be more awareness for assessing and monitoring for sleep disturbances. Sleep complaints were also more frequently recognized among suicidal patients. Since sleep disturbances have been linked to suicidality, this is a crucial finding (e.g. Wang et al., 2019; Vanek et al., 2021). Nonetheless, these differences were not significant and in a considerable number of patients symptoms still could have been missed.

***c)...the gender of the patient?***

The assessment, recognition of symptoms, and treatment were not significantly different between males and females. However, females were significantly more frequently prescribed sleep medication than males. This supports the findings of a dated study concerning general practice in the Netherlands (van der Waals et al., 1993). It found that women were significantly more often prescribed benzodiazepines (which was the main prescription found in the current study). A recent US study also reported that females were more likely to be prescribed benzodiazepines especially if the prescriber was male (McIntyre et al., 2021). Possible reasons are a higher prevalence of anxiety and depressive disorders in females, as well as the stereotype that women are more emotional and thereby, require pharmacological treatment (McIntyre et al., 2021). This warrants a gender bias when treating sleep complaints. An alternative factor could be the patient's wishes; women might ask more frequently for medication, as they are also more likely to perceive their sleep as poor (Madrid-Valero et al., 2017). Further efforts need to be made to get better insights into prescription practices and possible gender biases.

**Strengths & Limitations**

A clear strength of the study is that it is the first to give insight into current assessment and treatment practices of sleep disturbances at outpatient clinics in the Netherlands. Thereby, it builds an essential foundation for improving the current standard of care. In terms of the method of the study, it provides an advantage that the patient files were written without knowledge of the later analysis preventing the Hawthorne effect. It may be argued that because the healthcare professionals coded files they were partially involved in, observation biases might have occurred. However, a comparison between the files they were and were not involved in revealed no significant differences (see Appendix E). Another strength is that the files were coded by experienced healthcare professionals that are used to working with patient files and the software at the organisation. This means that they could interpret information easily and be less likely to miss information. Lastly, the developed coding scheme can be used as a basis for further research, for instance in other patient groups. It generally received positive feedback from the coding health professionals, but a prior assessment of the reliability would be advantageous.

Nonetheless, the study also had several limitations that need to be considered. Firstly, while in terms of age and gender, the sample represents the population relatively well (compare Nieuwenhuis et al., 2021), it might underrepresent patients with anxiety disorders. Only one patient had an anxiety disorder which is a very frequent condition in specialised mental health care. This might be crucial since Hombali et al. (2019) demonstrated that anxiety disorders increase the likelihood of sleep disorders. Secondly, the patient files do not give information about why certain medications were prescribed. Hence, it was difficult to establish whether a certain medication targeted sleep. One healthcare professional mentioned that patients receive medication from several locations, such as their general practitioner. Therefore, the patient file might not provide the full picture of the patient's sleep treatment. Lastly, to make the coding of patient files feasible, only the first four weeks of treatment were assessed. It remains unclear if sleep would be addressed later in treatment. Despite this, the low rates of the assessment indicate that many symptoms were not recognized, providing a weak basis for later treatment.

### **Future Research**

A further effort needs to be made to understand which medications are used to treat sleep. Here, the reasons (including gender bias) for prescribing medication should be addressed as well. The next step would be to study how sleep is approached during the clinical interview. It did not become clear from the patient files whether the clinician addressed sleep during the interview or if patients mention their symptoms unprovoked. Similarly, interviews with clinicians could be crucial in determining the barriers and facilitators of sleep assessment and treatment. This could also address the question of whether other sleep-wake disorders than insomnia disorders are overlooked.

Although it is well recognized that it is important to address sleep in therapy, there is still limited evidence on when it is most effective. The proposed study by ter Heege et al. (2020) could help clarify this and advance knowledge on how the clinical field specifically needs to adapt its practice.

### **Practical Implications**

Sleep disturbances were rarely assessed in a standardised way. This violates care standards and needs to be targeted. Clinicians need to be made aware of the benefits of validated questionnaires and encouraged to implicate them in their practices. Dedicating a section of the digital patient file towards the assessment and monitoring of sleep might increase awareness and highlight its importance. Additionally, diagnosis of sleep-wake disorders was rare. This suggests that clinicians might still employ the view that the symptoms are a side effect of the patient's primary condition and will be treated indirectly. The training of clinicians is crucial to ensure proper diagnosis but also the treatment of sleep disturbances. They need to feel confident in diagnosing sleep-wake disorders and treating them. Highlighting options like online CBT-I, or even small-scale interventions like weighted blankets, could facilitate this process since they can be used relatively independently by the patient.

Another point is the alarming use of medication generally, and presumed use for sleep. Benzodiazepines have long been discouraged and should only be used for short-term use (Edinoff et al., 2021). For the coding healthcare professionals, it was not apparent which symptoms the medication was targeting which makes monitoring as well as discontinuation challenging. The documentation should be adjusted to allow insights into this.

### **Conclusion**

To summarise, sleep does not receive sufficient attention in specialised mental health care in the Netherlands. In about 60% of the patients' sleep complaints were assessed and in almost half sleep disturbances were reported. Compared to prevalence studies of sleep-wake disorder symptoms, this is still too low. In a considerable number of cases sleep complaints are likely overlooked. Moreover, sleep complaints are frequently not addressed in treatment even if symptoms are recognized. If treatment is prescribed, it is most likely a pharmacological option. Non-pharmacological options are scarcely used, despite being a safer alternative. Considerable efforts need to be made in clinical practice to enable adequate and guideline-adhering care for sleep. Prescription practices need to be reconsidered, especially considering the increased frequency of medication in females. The current findings suggest that sleep complaints are still considered a mere side effect of mental illness. Recognizing the bidirectional relationship between sleep and mental health would enable more effective treatment. Therefore, efforts should be directed towards training healthcare professionals and implementing assessments and treatments more systematically into care.

## References

- Ackermann, S. & Rasch, B. (2014). Differential effects of non-REM and REM sleep on memory consolidation? *Current Neurology and Neuroscience Reports*, 14(2).  
<https://doi.org/10.1007/s11910-013-0430-8>
- American Psychiatric Association. (1994). *Diagnostic and Statistical Manual of Mental Disorders* (4<sup>th</sup> ed.). Arlington, VA: American Psychiatric Association.
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5<sup>th</sup> ed.). Arlington, VA: American Psychiatric Association.
- Baglioni, C., Battagliese, G., Feige, B., Spiegelhalder, K., Nissen, C., Voderholzer, U., Lombardo, C., & Riemann, D. (2011). Insomnia as a predictor of depression: a meta-analytic evaluation of longitudinal epidemiological studies. *Journal of affective disorders*, 135(1-3).  
<https://doi.org/10.1016/j.jad.2011.01.011>
- Batterham, P. J., Werner-Seidler, A., Calear, A. L., McCallum, S., & Gulliver, A. (2021). Specific aspects of sleep disturbance associated with suicidal thoughts and attempts. *Journal of Affective Disorders*, 282, 574-579. <https://doi.org/10.1016/j.jad.2020.12.150>
- Bhaskar, S., Hemavathy, D., & Prasad, S. (2016). Prevalence of chronic insomnia in adult patients and its correlation with medical comorbidities. *Journal of family medicine and primary care*, 5(4), 780–784. <https://doi.org/10.4103/2249-4863.201153>
- Blume, C., Giudice, R. del, Wislowska, M., Lechinger, J., & Schabus, M. (2015). Across the consciousness continuum – from unresponsive wakefulness to sleep. *Frontiers in Human Neuroscience*, 9(105). <https://doi.org/10.3389/fnhum.2015.00105>
- Boghez, F., & Mîndruta, I. (2018). General overview on sleep medication. *Romanian Journal of Neurology*, 17(3). <https://doi.org/10.37897/RJN.2018.3.1>
- Bruin, E. J. de, Bögels, S. M., Oort, F. J., & Meijer, A. M. (2018). Improvements of adolescent psychopathology after insomnia treatment: results from a randomized controlled trial over 1 year. *Journal of Child Psychology and Psychiatry*, 59(5), 509–522.  
<https://doi.org/10.1111/jcpp.12834>
- Carley, D. W., & Farabi, S. S. (2016). Physiology of sleep. *Diabetes spectrum: a publication of the American Diabetes Association*, 29(1), 5–9. <https://doi.org/10.2337/diaspect.29.1.5>
- Carney, C. E., Segal, Z. V., Edinger, J. D., & Krystal, A. D. (2007). A comparison of rates of residual insomnia symptoms following pharmacotherapy or cognitive-behavioral therapy for major depressive disorder. *The Journal of clinical psychiatry*, 68(2), 254–260.  
<https://doi.org/10.4088/jcp.v68n0211>
- Chaput, J. P., Dutil, C., Featherstone, R., Ross, R., Giangregorio, L., Saunders, T. J., Janssen, I., Poitras, V. J., Kho, M. E., Ross-White, A., & Carrier, J. (2020). Sleep duration and health in adults: an overview of systematic reviews. *Applied physiology, nutrition, and metabolism*, 45(10). <https://doi.org/10.1139/apnm-2020-0034>



- Dolsen, M. R., Asarnow, L. D., & Harvey, A. G. (2014). Insomnia as a transdiagnostic process in psychiatric disorders. *Current psychiatry reports*, *16*(9), 471. doi: 10.1007/s11920-014-0471-y
- Edinoff, A. N., Nix, C. A., Hollier, J., Sagrera, C. E., Delacroix, B. M., Abubakar, T., Cornett, E. M., Kaye, A. M., & Kaye, A. D. (2021). Benzodiazepines: uses, dangers, and clinical considerations. *Neurology international*, *13*(4), 594–607.  
<https://doi.org/10.3390/neurolint13040059>
- Ekholm, B., Spulber, S., & Adler, M. (2020). A randomized controlled study of weighted chain blankets for insomnia in psychiatric disorders. *Journal of clinical sleep medicine*, *16*(9), 1567-1577. <https://doi.org/10.5664/jcsm.8636>
- Freeman, D., Sheaves, B., Waite, F., Harvey, A.G., & Harrison, P. J. (2020). Sleep disturbance and psychiatric disorders. *The Lancet Psychiatry*, *7*(7), 628-637.  
[https://doi.org/10.1016/S2215-0366\(20\)30136-X](https://doi.org/10.1016/S2215-0366(20)30136-X)
- Gold L. H. (2014). DSM-5 and the assessment of functioning: the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0). *The Journal of the American Academy of Psychiatry and the Law*, *42*(2), 173–181.
- Hendrickson, R. C., & Raskind, M. A. (2016). Noradrenergic dysregulation in the pathophysiology of PTSD. *Experimental neurology*, *284*, 181–195.  
<https://doi.org/10.1016/j.expneurol.2016.05.014>
- Hombali, A., Seow, E., Yuan, Q., Chang, S., Satghare, P., Kumar, S., Verma, S. K., Mok, Y. M., Chong, S. A., & Subramaniam, M. (2019). Prevalence and correlates of sleep disorder symptoms in psychiatric disorders. *Psychiatry research*, *279*, 116–122.  
<https://doi.org/10.1016/j.psychres.2018.07.009>
- Kerkhof, G. A. (2017). Epidemiology of sleep and sleep disorders in The Netherlands. *Sleep medicine*, *30*, 229-239. <https://doi.org/10.1016/j.sleep.2016.09.015>
- Lancee, J & van Straaten, A. (2017). Cognitieve gedragstherapie voor insomnia via het internet [Cognitive behavioural therapy for insomnia via the internet]. *Gedragstherapie*, *50*(4), 236-257.
- Lancel, M. Boersma, G., & Kamphuis, J. (2021). Insomnia disorder and its reciprocal relation with psychopathology. *Current Opinion in Psychology*, *41*, 34-39.  
<https://doi.org/10.1016/j.copsyc.2021.02.001>
- Liu, Y., Wheaton, A. G., Chapman, D. P., Cunningham, T. J., Lu, H., & Croft, J. B. (2016). Prevalence of healthy sleep duration among adults — United States, 2014. *Morbidity and Mortality Weekly Report*, *65*(6), 137–141. <https://doi.org/10.15585/mmwr.mm6506a1>
- O’Callaghan, V. S., Couvy-Duchesne, B., Strike, L. T., McMahon, K. L., Byrne, E. M., & Wright, M. J. (2021). A meta-analysis of the relationship between subjective sleep and depressive symptoms in adolescence. *Sleep medicine*, *79*, 134-144.  
<https://doi.org/10.1016/j.sleep.2021.01.011>

- Madrid-Valero, J. J., Martínez-Selva, J. M., Ribeiro do Couto, B., Sánchez-Romera, J. F., Ordoñana, J. R. (2017). Age and gender effects on the prevalence of poor sleep quality in the adult population. *Gaceta Sanitaria*, *31*(1), 18-22. <https://doi.org/10.1016/j.gaceta.2016.05.013>
- McIntyre, R. S., Chen, V. C., Lee, Y., Lui, L. M. W., Majeed, A., Subramaniapillai, M., Mansur, R. B., Rosenblat, J. D., Yang, Y. H., & Chen, Y. L. (2021). The influence of prescriber and patient gender on the prescription of benzodiazepines: evidence for stereotypes and biases? *Social psychiatry and psychiatric epidemiology*, *56*(6), 1083-1089. <https://doi.org/10.1007/s00127-020-01989-4>
- Medic, G., Wille, M., & Hemels, M. E. H. (2017). Short- and long-term consequences of sleep disruption. *Nature and Science of Sleep*, *8*, 151-161. <https://doi.org/10.2147/NSS.S134864>
- Mondal, G., Bajaj, V., Goyal, B. L., & Mukherjee, N. (2018). Prevalence of sleep disorders and severity of insomnia in psychiatric outpatients attending a tertiary level mental health care facility in Punjab, India. *Asian journal of psychiatry*, *32*, 8–13. <https://doi.org/10.1016/j.ajp.2017.11.012>
- Miletínová, E., & Bušková, J. (2021). Functions of sleep. *Physiological research*, *70*(2), 177–182. <https://doi.org/10.33549/physiolres.934470>
- Nieuwenhuis, J. G., Lepping, P., Mulder, N. L., Nijman, H. L. I., Veereschild, M., & Noorthoorn, E. O. (2021). Increased prevalence of intellectual disabilities in higher-intensity mental healthcare settings. *BJPsych Open*, *7*(3). <https://doi.org/10.1192/bjo.2021.28>
- NVP. (n.d.). Vormen van psychotherapie [Types of psychotherapy]. Retrieved from <https://www.psychotherapie.nl/clienten-en-belangstellenden/vormen-van-psychotherapie>
- Park, S. C., Kim, J. M., Jun, T. Y., Lee, M. S., Kim, J. B., Jeong, S. H., & Park, Y. C. (2013). Prevalence and clinical correlates of insomnia in depressive disorders: The CRESCEND Study. *Psychiatry investigation*, *10*(4), 373–381. <https://doi.org/10.4306/pi.2013.10.4.373>
- Pruiksma, K. E., Taylor, D. J., Wachen, J. S., Mintz, J., Young-McCaughan, S., Peterson, A. L., Yarvis, J. S., Borah, E. V., Dondanville, K. A., Litz, B. T., Hembree, E. A., & Resick, P. A. (2016). Residual sleep disturbances following PTSD treatment in active duty military personnel. *Psychological trauma: theory, research, practice and policy*, *8*(6), 697–701. <https://doi.org/10.1037/tra0000150>
- Riemann, D., Baglioni, C., Bassetti, C., Bjorvatn, B., Dolenc Groseelj, L., Ellis, J. G., Espie, C. A., Garcia-Borreguero, D., Gjerstad, M., Gonçalves, M., Hertenstein, E., Jansson-Fröjmark, M., Jennum, P. J., Leger, D., Nissen, C., Parrino, L., Paunio, T., Pevernagie, D., Verbraecken, J., Weeß, H. G., ... Spiegelhalder, K. (2017). European guideline for the diagnosis and treatment of insomnia. *Journal of sleep research*, *26*(6), 675–700. <https://doi.org/10.1111/jsr.12594>
- Riemann, D., Krone, L. B., Wulff, K., & Nissen, C. (2020). Sleep, insomnia, and depression. *Neuropsychopharmacology: official publication of the American College of Neuropsychopharmacology*, *45*(1), 74–89. <https://doi.org/10.1038/s41386-019-0411-y>

- Robertson, I., Cheung, A., & Fan, X. (2019). Insomnia in patients with schizophrenia: current understanding and treatment options. *Progress in Neuropsychopharmacology & Biological Psychiatry*, *92*, 235-242. <https://doi.org/10.1016/j.pnpbp.2019.01.016>
- Sake, F. T., Wong, K., Bartlett, D. J., & Saini, B. (2019). Insomnia Management in the Australian Primary Care Setting. *Behavioral sleep medicine*, *17*(1), 19–30. <https://doi.org/10.1080/15402002.2016.1266491>
- Schubert, J. R., Stewart, E., & Coles, M. E. (2020). Later bedtimes predict prospective increases in symptom severity in individuals with obsessive compulsive disorder (OCD): an initial study. *Behavioral Sleep Medicine*, *18*(4), 500-512. <https://doi.org/10.1080/15402002.2019.1615490>
- Scott, J., Kallestad, H., Vedaa, O., Silversen, B., & Etain, B. (2021). Sleep disturbances and first onset of major mental disorders in adolescence and early adulthood: a systematic review and meta-analysis. *Sleep medicine reviews*, *57*(101429). <https://doi.org/10.1016/j.smr.2021.101429>
- Seow, L., Verma, S. K., Mok, Y. M., Kumar, S., Chang, S., Satghare, P., Hombali, A., Vaingankar, J., Chong, S. A., & Subramaniam, M. (2018). Evaluating DSM-5 insomnia disorder and the treatment of sleep problems in a psychiatric population. *Journal of clinical sleep medicine*, *14*(2), 237–244. <https://doi.org/10.5664/jcsm.6942>
- Sheaves, B., Onwumere, J., Keen, N., Stahl, D., & Kuipers, E. (2015). Nightmares in patients with psychosis: the relation with sleep, psychotic, affective, and cognitive symptoms. *The Canadian Journal of Psychiatry*, *60*(8), 354-361. <https://doi.org/10.1177/070674371506000804>
- Springer Medizin. (n.d.). Psychopharmaka-Übersicht [Overview of psychotropic drugs]. Retrieved from [https://www.springermedizin.de/emedpedia/psychiatrie-psychosomatik-psychotherapie/psychopharmaka-uebersicht?epediaDoi=10.1007%2F978-3-642-45028-0\\_107](https://www.springermedizin.de/emedpedia/psychiatrie-psychosomatik-psychotherapie/psychopharmaka-uebersicht?epediaDoi=10.1007%2F978-3-642-45028-0_107)
- Spoormaker, V. I., & Montgomery, P. (2008). Disturbed sleep in post-traumatic stress disorder: secondary symptom or core feature? *Sleep medicine reviews*, *12*(3), 169–184. <https://doi.org/10.1016/j.smr.2007.08.008>
- Straus, L. D., Acheson, D. T., Risbrough, V. B., & Drummond, S. P. A. (2017). Sleep deprivation disrupts recall of conditioned fear extinction. *Biological psychiatry: Cognitive neuroscience and neuroimaging*, *2*(2), 123-129. <https://doi.org/10.1016/j.bpsc.2016.05.004>
- Ter Heege, F. M., Mijster, T., van Veen, M. M., Pijnenborg, G., de Jong, P. J., Boersma, G. J., & Lancel, M. (2020). The clinical relevance of early identification and treatment of sleep disorders in mental health care: protocol of a randomized control trial. *BMC psychiatry*, *20*(1), 331. <https://doi.org/10.1186/s12888-020-02737-3>
- Theorell-Haglöw, J., Miller, C. B., Bartlett, D. J., Yee, B. J., Openshaw, H. D., & Grunstein, R. R. (2018). Gender differences in obstructive sleep apnoea, insomnia and restless legs syndrome in adults - What do we know? A clinical update. *Sleep medicine reviews*, *38*, 28–38. <https://doi.org/10.1016/j.smr.2017.03.003>

- Tkachenko, O., Olson, E. A., Weber, M., Preer, L. A., Gogel, H., & Killgore, W. D. S. (2014). Sleep difficulties are associated with increased symptoms of psychopathology. *Experimental Brain Research*, 232(5), 1567–1574. <https://doi.org/10.1007/s00221-014-3827-y>
- Vanek, J., Prasko, J., Ociskova, M., Hodny, F., Holubova, M., Minarikova, K., Slepecky, M., & Nesnidal, V. (2021). Insomnia in patients with borderline personality disorder. *Nature and Science of Sleep*, 13, 239-250. <https://doi.org/10.2147/NSS.S295030>
- V&VN. (2021). Zorg voor gezonde slaap en zorg bij slaapproblemen [Care for healthy sleep and care in case of sleeping problems]. Retrieved from <https://www.venvn.nl/richtlijnen/alle-richtlijnen/richtlijn-zorg-voor-gezonde-slaap-en-zorg-bij-slaapproblemen/>
- Waals, F. W. van der, Mohrs, J., & Foets, M. (1993). Sex differences among recipients of benzodiazepines in Dutch general practice. *BMJ*, 307(6900), 363–366. <https://doi.org/10.1136/bmj.307.6900.363>
- Waite, F., Evans, N., Myers, E., Startup, H., Lister, R., Harvey, A. G., & Freeman, D. (2016). The patient experience of sleep problems and their treatment in the context of current delusions and hallucinations. *Psychology and Psychotherapy*, 89(2), 181-193. <https://doi.org/10.1111/papt.12073>
- Waite, F., Sheaves, B., Isham, L., Reeve, S., & Freeman, D. (2020). Sleep and schizophrenia: From epiphenomenon to treatable causal target. *Schizophrenia research*, 221, 44–56. <https://doi.org/10.1016/j.schres.2019.11.014>
- Walker, M. P., & van der Helm, E. (2009). Overnight therapy? The role of sleep in emotional brain processing. *Psychological bulletin*, 135(5), 731–748. <https://doi.org/10.1037/a0016570>
- Wang, H. E., Campbell-Sills, L., Kessler, R. C., Sun, X., Heeringa, S. G., Nock, M. K., & Ursano, R.J. (2019). Pre-deployment insomnia is associated with post-deployment post-traumatic stress disorder and suicidal ideation in US army soldiers. *SLEEP*, 42(2). <https://doi.org/10.1093/sleep/zsy229>
- Wang, Z., Chen, M., Wei, Y. Z., Zhuo, C. G., Xu, H. F., Li, W. D., & Ma, L. (2022). The causal relationship between sleep traits and the risk of schizophrenia: a two-sample bidirectional Mendelian randomization study. *BMC psychiatry*, 22(1), 399. <https://doi.org/10.1186/s12888-022-03946-8>
- Winokur A. (2015). The relationship between sleep disturbances and psychiatric disorders: introduction and overview. *The Psychiatric clinics of North America*, 38(4), 603–614. <https://doi.org/10.1016/j.psc.2015.07.001>
- Yu, R., Chen, Y., Li, L., Chen, J., Guo, Y., Bian, Z., Lv, J., Yu, C., Xie, X., Huang, D., Chen, Z., & Fazel, S. (2021). Factors associated with suicide risk among Chinese adults: a prospective cohort study of 0.5 million individuals. *PLoS medicine*, 18(3). <https://doi.org/10.1371/journal.pmed.1003545>

## Appendices

### Appendix A

*Overview of Sleep-Wake Disorders as described by the DSM-5 (American Psychiatric Association, 2013)*

Sleep-wake disorder	Symptoms	Prevalence
Insomnia Disorder <i>Also possible: Other specified insomnia disorder &amp; Unspecified insomnia disorder</i>	<ul style="list-style-type: none"> <li>- Difficulty initiating or</li> <li>- Difficulty maintaining sleep or</li> <li>- Early morning awakenings (without being able to return to sleep)</li> </ul>	40-50% of people with mental disorder
Hypersomnolence disorder <i>Also possible: Other specified hypersomnolence disorder &amp; Unspecified hypersomnolence disorder</i>	<ul style="list-style-type: none"> <li>- Excessive sleepiness despite at least 7 hours of sleep</li> <li>- Recurrent periods/lapses into sleep or</li> <li>- More than 9 hours of sleep without being restorative or</li> <li>- Difficulty being fully awake after abrupt awakening</li> </ul>	1% of general population
Narcolepsy	<ul style="list-style-type: none"> <li>- Recurrent periods of irrepressible need to sleep, lapsing into sleep, or napping within one day</li> <li>- Episodes of cataplexy or</li> <li>- Hypocretin deficiency or</li> <li>- REM sleep latency =&lt; 15 minutes / mean sleep latency &lt;= 8 minutes / 2 or more sleep-onset periods</li> </ul>	0.02% - 0.04% of general population
Obstructive Sleep Apnea Hypopnea	<ul style="list-style-type: none"> <li>- At least 5 obstructive apneas/hypopneas per hour &amp; nocturnal breathing disturbances (snoring, gasping, breathing pauses) or daytime sleepiness/fatigue/unrefreshing sleep</li> <li>- OR 15 or more obstructive apneas &amp;/ hypopneas per hour of sleep</li> </ul>	2-15% of middle-aged adults, more than 20% of older adults
Central Sleep Apnea	<ul style="list-style-type: none"> <li>- 5 or more central sleep apneas per hour of sleep</li> </ul>	Relatively rare in general population
Sleep-related hypoventilation	<ul style="list-style-type: none"> <li>- Episodes of decreased respiration associated with elevated CO<sub>2</sub> levels</li> </ul>	Relatively rare in general population
Circadian rhythm sleep-wake disorders	<ul style="list-style-type: none"> <li>- Persistent/recurrent pattern of sleep disruption due to alteration of circadian system or misalignment between circadian rhythm and schedule required by physical environment</li> <li>- Excessive sleepiness &amp;/ insomnia</li> </ul>	0.17% in general population; 7% in adolescence

<b>Sleep-wake disorder</b>	<b>Symptoms</b>	<b>Prevalence</b>
Non-rapid eye movement sleep arousal disorders	<ul style="list-style-type: none"> <li>- Recurrent episodes of incomplete awakening from sleep</li> <li>- Sleepwalking or sleep terrors</li> <li>- No/little dream imagery is recalled</li> <li>- Amnesia of the episodes</li> </ul>	<p>1%-5% sleepwalking disorder</p> <p>unknown for sleep terrors</p>
Nightmare disorder	<ul style="list-style-type: none"> <li>- Extended, extremely dysphoric, and well-remembered dreams</li> <li>- On awakening from dreams, individual rapidly becomes oriented and alert</li> </ul>	1% - 2% of adults have frequent nightmares
Rapid eye movement sleep behaviour disorder	<ul style="list-style-type: none"> <li>- Episodes of arousal during sleep associated with vocalization &amp;/ complex motor behaviours</li> <li>- Upon awaking completely awake, alert, and not confused/disoriented</li> </ul>	0.38%-0.5% in general population
Restless legs syndrome	<ul style="list-style-type: none"> <li>- Urge to move legs, uncomfortable &amp; unpleasant sensations in the legs (during rest/relieved by movement/worse at night or evening)</li> </ul>	2%-7% of general population
Substance/Medication-induced sleep disorder	<ul style="list-style-type: none"> <li>- Prominent/severe sleep disturbance</li> <li>- Attributable to substance intoxication</li> </ul>	No estimate given

*Also possible: Other specified sleep-wake disorder & Unspecified sleep-wake disorder*

## Appendix B

### Coding Scheme

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#### Start of Block: Demographics & Background

Your Coder ID

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Please select a file randomly, so that biases are avoided:

*If you have patient file numbers:*

1. use this website: <https://www.calculator.net/random-number-generator.html>
2. enter the lowest & highest possible number --> generate number
3. check the chosen file for the criteria listed below

*If they are sorted alphabetically (e.g. using USER):*

1. use this website: <https://randomwordgenerator.com/letter.php> to generate a starting letter
2. if more than 30 files come up, generate a second letter
3. then count the amount of files that came up & use the random number generator (<https://www.calculator.net/random-number-generator.html>) to pick a file
4. check the chosen file for criteria listed below

Patients should:

- be at least 18 years old at intake
- have had the intake after 1st of May 2021 (if not enough files are available in this period please do not select any before May 2013 for comparability)
- not have explicitly stated that their data should not be used for research
- if possible, be primarily treated by a colleague (to avoid biases)

Please note in the file that anonymous data was extracted from the patient file for the study.

Structure of the Questionnaire:

At first there are a few questions regarding the patient in general. Then, the intake of the patient in relation to sleep will be checked. After this, there are questions concerning the first four weeks of treatment of the patient, some more general and some more related to sleep.

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Page Break

1 What type of care does the patient file stem from?

- Basis GGZ
- SGGZ

2 To which extent were you involved in the intake of the patient?

- Actively involved in intake of patient
- Familiar but not actively involved
- Unfamiliar with intake
- Other \_\_\_\_\_

3 To which extent were you familiar with the treatment (during the first four weeks) of the patient?

- Actively involved in treatment
- Familiar but not actively involved
- Unfamiliar with treatment
- Other \_\_\_\_\_

4 Has the patient already been admitted before at another location of GGNet?

- yes
- no
- unsure

5 Which year was the patient taken in?

\_\_\_\_\_

6 How old is the patient?

\_\_\_\_\_

7 What is the patient's gender?

- Male
  - Female
  - Non-binary / third gender
  - other
-



Page Break

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8 Which (non-sleep) diagnosis has the patient received? (please check all applicable)

- Neurodevelopmental disorders
- Schizophrenia spectrum and other psychotic disorders
- Bipolar and related disorders
- Depressive disorders
- Anxiety disorders
- Obsessive-compulsive and related disorders
- Trauma- and stressor-related disorders
- Dissociative disorders
- Somatic symptom and related disorders
- Feeding and eating disorders
- Sexual dysfunctions
- Gender dysphoria
- Disruptive, impulse-control, and conduct disorders
- Substance-related and addictive disorders
- Neurocognitive disorders
- Personality disorders
- Paraphilic disorders
- Other \_\_\_\_\_
- unsure/not specified

9 What is the GAF score of the patient?

- \_\_\_\_\_
- unsure/not specified

10 Is the patient suicidal?

- yes
- no
- unsure/not specified

Space for further remarks

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End of Block: Demographics & Background

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Start of Block: INTAKE

The following questions concern the **intake** of the patient. Please take a look at the files for this time only to answer the following questions.

11 Are any sleep complaints/symptoms assessed at intake?

- yes
- no
- unsure

*Display This Question:*

*If Are any sleep complaints/symptoms assessed at intake? = yes*

*Or Are any sleep complaints/symptoms assessed at intake? = unsure*

12 Which kind of assessment was used? (check all applicable)

- Intake Conversation
- General Questionnaire \_\_\_\_\_
- Sleep Diary
- Holland Sleep Disorders Questionnaire (HSDQ)
- Global sleep assessment questionnaire (GSAQ)
- Pittsburgh sleep quality index (PSQI)
- Slaap50 (Sleep-50)
- Polysomnography
- Multiple sleep latency test
- Maintenance of wakefulness test
- Home sleep test
- other \_\_\_\_\_
- unsure / not specified

13 Are any symptoms of sleep disturbance mentioned from the intake?

- yes
- no
- unsure

*Display This Question:*

*If Are any symptoms of sleep disturbance mentioned from the intake? = yes*

*Or Are any symptoms of sleep disturbance mentioned from the intake? = unsure*

14 Which symptoms were mentioned? (please check all applicable)

- difficulty initiating sleep
- difficulty maintaining sleep
- early morning awakening
- nonrecovery/unrefreshing sleep
- excessive sleepiness (despite at least 7 hours of sleep)
- recurrent periods of sleep/lapses into sleep during one day
- more than 9 hours of sleep daily
- difficulty being fully awake after abrupt awakening
- recurrent periods of irreplaceable need to sleep during one day
- snoring
- gasping
- breathing pauses during sleep
- fatigue
- daytime sleepiness
- delayed sleep onset & awakening times
- advanced sleep onset & awakening times
- disorganized sleep-wake pattern (variable throughout 24 hour period)
- sleep walking
- sleep terrors
- dysphoric & well-remembered dreams / nightmares
- vocalization / complex motor behaviours during (REM) sleep
- urge to move legs due to unpleasant sensations during rest in evening/night
- cataplexy
- not specified/unsure
- Other \_\_\_\_\_
- not applicable

*Display This Question:*

*If Are any symptoms of sleep disturbance mentioned from the intake? = yes*

*Or Are any symptoms of sleep disturbance mentioned from the intake? = unsure*

15 In case (medical) tests were administered - which symptoms were reported? (please check all applicable)

- hyprocretin deficiencies
- REM sleep latency less/equal to 15 minutes
- Mean sleep latency less/equal to 8 minutes
- 2 or more sleep-onset REM periods
- 5 or more central apneas per hour of sleep
- 5 or more obstructive sleep apneas/hypopneas per hour of sleep
- episodes of decreased respiration associated with elevated CO2 levels
- arousal during sleep associated with vocalization &/ complex motor behaviours (REM sleep)
- Other \_\_\_\_\_
- not specified / unsure
- not applicable

16 Is a formal diagnosis of a sleep disorder given?

- yes
- no
- unsure

*Display This Question:*

*If Is a formal diagnosis of a sleep disorder given? = yes*

*Or Is a formal diagnosis of a sleep disorder given? = unsure*

17 Which sleep disorder was diagnosed? (check all applicable)

- Insomnia Disorder
- Hypersomnolence Disorder
- Narcolepsy
- Obstructive Sleep Apnea
- Central Sleep Apnea
- Sleep-related hypoventilation
- Circadian Rhythm Sleep-Wake Disorders
- Non-Rapid Eye Movement Sleep Arousal Disorders
- Nightmare Disorder

- Rapid Eye Movement Sleep Behavior Disorder
- Restless Legs Syndrome
- Substance/Medication-Induced Sleep Disorder
- Other Specified Insomnia Disorder
- Unspecified Insomnia Disorder
- Other Specified Hypersomnolence Disorder
- Unspecified Hypersomnolence Disorder
- Other Specified Sleep-Wake Disorder
- Unspecified Sleep-Wake Disorder
- not specified/unsure \_\_\_\_\_

Space for further remarks

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End of Block: INTAKE

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Start of Block: FIRST WEEKS OF TREATMENT

In the following, the **first four weeks of treatment** will be considered. Please have a look at all the files registered for the patient during this period.

18 Was sleep assessed/monitored during the first four weeks of treatment?

- yes
- no
- unsure

*Display This Question:*

*If Was sleep assessed/monitored during the first four weeks of treatment? = yes*

*Or Was sleep assessed/monitored during the first four weeks of treatment? = unsure*

19 How was sleep monitored during the treatment? (check all applicable)

- Clinical interview
- General Questionnaire \_\_\_\_\_
- Sleep Diary
- Holland Sleep Disorders Questionnaire (HSDQ)
- Global sleep assessment questionnaire (GSAQ)
- Pittsburgh sleep quality index (PSQI)
- Slaap50 (Sleep-50)
- Polysomnography
- Multiple sleep latency test
- Maintenance of wakefulness test
- Home sleep test
- Other \_\_\_\_\_
- unsure / not specified

*Display This Question:*

*If How was sleep monitored during the treatment? (check all applicable) = Clinical interview*

20 In how many of the clinical interviews in the first four weeks was sleep addressed?

\_\_\_\_\_

*Display This Question:*

*If How was sleep monitored during the treatment? (check all applicable) = General Questionnaire*

21 How often was the general questionnaire administered in the first four weeks in total?

---

*Display This Question:*

*If How was sleep monitored during the treatment? (check all applicable) = Sleep Diary*

22 For how long of the four weeks of treatment was the sleep diary used? (in days or weeks)

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*Display This Question:*

*If How was sleep monitored during the treatment? (check all applicable) = Holland Sleep Disorders Questionnaire (HSDQ)*

23 How often was the HSDQ administered in the first four weeks of treatment in total?

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*Display This Question:*

*If How was sleep monitored during the treatment? (check all applicable) = Global sleep assessment questionnaire (GSAQ)*

24 How often was the GSAQ administered in the first four weeks of treatment in total?

---

*Display This Question:*

*If How was sleep monitored during the treatment? (check all applicable) = Pittsburgh sleep quality index (PSQI)*

25 How often was the PSQI administered in the first four weeks of treatment in total?

---

*Display This Question:*

*If How was sleep monitored during the treatment? (check all applicable) = Slaap50 (Sleep-50)*

26 How often was the Slaap50 administered in the first four weeks of treatment in total?

---



Display This Question:

If How was sleep monitored during the treatment? (check all applicable) = Slaap50 (Sleep-50)

27 How often was the Slaap50 administered in the first four weeks of treatment in total?

\_\_\_\_\_

28 Which kind of psychotherapy does the patient receive as primary treatment / for the primary condition?  
(please specify if possible)

- CBT (Cognitieve gedragstherapie) \_\_\_\_\_
- Psychoanalysis \_\_\_\_\_
- Cliëntgerichte psychotherapie \_\_\_\_\_
- Systems Therapy (Relatie- en gezinstherapie) \_\_\_\_\_
- Group therapy (Groepspsychotherapie) \_\_\_\_\_
- Holistic therapy (Integratieve psychotherapie) \_\_\_\_\_
- Mindfulness Approaches \_\_\_\_\_
- Art or Music Therapy \_\_\_\_\_
- Other \_\_\_\_\_

29 What kind of medication is the patient prescribed? (please specify)

- hypnotics \_\_\_\_\_
- tranquilizers/anxiolytics \_\_\_\_\_
- antidepressants \_\_\_\_\_
- mood stabilizer/phase prophylactics \_\_\_\_\_
- neuroleptics/antipsychotics \_\_\_\_\_
- antidementia drugs / nootropics \_\_\_\_\_
- other \_\_\_\_\_
- none

30 Is the patient prescribed any medication for sleep complaints/disorders?

- yes
- no
- not specified/unsure

*Display This Question:*

*If Is the patient prescribed any medication for sleep complaints/disorders? = yes*

*Or Is the patient prescribed any medication for sleep complaints/disorders? = not specified/unsure*

31 What kind of medication is the patient prescribed for sleep? (please specify type & dosage, e.g. alprazolam, 0.25 mg 2x per day)

- benzodiazepine \_\_\_\_\_
- non-benzodiazepine receptor agonists \_\_\_\_\_
- orexin antagonist \_\_\_\_\_
- antidepressants \_\_\_\_\_
- over-the-counter drugs (non-prescription) (e.g. herbal supplements)  
\_\_\_\_\_
- (atypical) antipsychotic agents \_\_\_\_\_
- melatonin
- melatonin receptor agonists \_\_\_\_\_
- antiepileptic agents \_\_\_\_\_
- central nervous system stimulants \_\_\_\_\_
- dopamine agonists \_\_\_\_\_
- analgesics \_\_\_\_\_
- prazosin
- menopausal hormone replacement therapy
- Other \_\_\_\_\_

32 Does the patient receive any non-medication treatment for sleep?

- yes
- no
- unsure/not specified

Display This Question:

*If Does the patient receive any non-medication treatment for sleep? = yes*

*Or Does the patient receive any non-medication treatment for sleep? = unsure/not specified*

33 Which kind of non-medication treatment does the patient receive for sleep? (please specify if possible)

- CBT-I (Cognitive Behaviour Therapy for Insomnia)
- sleep hygiene promotion
- mindfulness \_\_\_\_\_
- psychoeducation
- tools (e.g. weighted blanket, somnox) \_\_\_\_\_
- web intervention \_\_\_\_\_
- PAP therapy
- Imagery Rehearsal Therapy
- unsure/not specified
- Other \_\_\_\_\_

34 How many therapy sessions in total has the patient participated in?

- in total during first four weeks: \_\_\_\_\_
- unsure

35 Was the patient admitted into hospitalized care during the first four weeks?

- yes
- no
- unsure

Space for further remarks

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Page Break

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36 Do you have remarks concerning the coding of the patient file(s)?

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End of Block: FIRST WEEKS OF TREATMENT

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**Appendix C***Invitation to the First Call*

Beste....,

Alvast bedankt voor je interesse in deelname aan het onderzoek naar slaap in de GGZ! Mijn naam is Luisa en ik schrijf mijn Master's thesis over dit onderwerp. Het doel van het onderzoek is achter te komen hoe slaap in de GZZ behandeld wordt.

Deze week is de onderzoek begonnen. Om een goede start te maken en u kennis te laten maken met de codering van de bestanden, wilde ik je uitnodigen voor een kort Teams of Zoom gesprek. In deze gesprek, zou ik je iets vertellen over de doel van de onderzoek, en we kunnen de coding scheme samen aankijken en vragen direct bespreken. Ik denk dat het niet meer dan 15-20 minuten zal duren.

Wanneer zou je beschikbaar zijn voor dit gesprek?

Als je nog vragen hebt, laat het me weten.

Nog een fijne dag!

Hartelijke groet,

Luisa

## Appendix D

### *Protocol Call*

Thank you for joining and taking the time! My name is Luisa and I am studying Psychology at the University of Twente. I am responsible for the research about sleep since this is my master thesis project.

Maybe a little bit of background on the topic: I conducted a literature search last semester on the effects of sleep deprivation on mental illnesses and found that a majority of people with other mental illnesses also experience sleep complaints. However, there is not much research done on how sleep is actually approached in clinical practice. Hence, we do not know if what is reported in research represents how practice is conducted. This is where the research sets in. With the patient files we want to see to which extent and how sleep is approached.

- What is your view on sleep in clinical practice?
- Do you have any questions about the topic?

Then I would also like to ask you a few questions about your background.

- What is your educational background?
- How long have you been working in the field?
- Do you have any specific training concerning sleep?
- Are you alright with me anonymously noting this data in my thesis?

Okay, then let's have a look at the coding scheme and go through it. Feel free to interrupt me at any second if something is unclear.

Afterwards:

- Do you already have any feedback for the scheme? For instance, is something not clear or you suspect it to be missing something?
- Do you have any questions concerning the coding scheme?
- Do you have any other questions concerning the coding of the files?

Also, if anything comes up feel free to contact me via email or telephone.

## Appendix E

### *Differences in Assessment & Treatment of Sleep by Involvement of Coding Healthcare Professionals*

		Intake		Chi-Square $X^2$
		Involved ( $n=19$ )	Not Involved ( $n=35$ )	
Intake Assessment				
Yes	11 (58%)	12 (34%)	$X^2(1, 54) = 2.81, p = .094$	
No	8 (42%)	23 (66%)		
Symptoms Recognized				
Yes	11 (58%)	14 (40%)	$X^2(1, 54) = 1.59, p = .200$	
No	8 (42%)	21 (60%)		
Insomnia Diagnosis				
Yes	1 (6%)	1 (3%)	Not applicable	
No	18 (94%)	34 (97%)		
		Treatment		Chi-Square $X^2$
		Involved ( $n=23$ )	Not Involved ( $n=31$ )	
Sleep Monitored				
Yes	12 (52%)	15 (48%)	$X^2(1, 54) = 0.08, p = .783$	
No	11 (48%)	16 (52%)		
Sleep Medication				
Yes	6 (26%)	10 (32%)	$X^2(1, 54) = 2.06, p = .151$	
No	17 (74%)	21 (68%)		
Non-medication Intervention				
Yes	1 (4%)	3 (10%)	Not applicable	
No	22 (96%)	28 (90%)		

*Note.* Not involved includes the indication 'familiar but not involved' and 'unfamiliar'

In some cases, it was not possible for the healthcare professionals to code files they were not familiar with or involved in. For about a third of the files, the coders were actively involved in the intake of the patient. The healthcare professionals that volunteered to code the files seemed to assess sleep slightly more frequently and recognize symptoms somewhat more often. However, this does not seem to be a significant difference. When it came to the treatment, the coders were actively involved for less than half of the cases. The coding healthcare professionals seemed to monitor symptoms of sleep disturbances similarly frequent to their colleagues. They used sleep medication, slightly less frequently, but this difference was not significant.