A Study of Insomnia among Psychiatric Out-Patients in Lagos Nigeria

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Abstract

Insomnia is closely related to psychiatric disorders, occurring as an accompanying symptom or as an aetiological factor. It is also a common side-effect of some of the drugs used in treating psychiatric disorders. Several studies have been carried out in different populations however there is the need for more studies aimed at taking a closer look at this relationship in the Nigerian population. The objective of this work is to study the relationship between insomnia and patient characteristics such as sleeping conditions and psychiatric diagnoses. The study was carried out at the Lagos University Teaching Hospital. The methodology involved administering a socio-demographic questionnaire and the Sleep-50 questionnaire to consenting subjects whose psychiatric diagnoses were ascertained using the Structured Clinical Interview for DSM-IV. An analysis of the one hundred and eighty four subjects studied showed that schizophrenia was the commonest psychiatric diagnosis (35.9%). The prevalence of insomnia in this population was found to be 20.1% and it was significantly most prevalent among those with major depression. The noise experienced at night, the subject's subjective estimation of hours asleep, being elderly and being unemployed were significantly related to the presence of insomnia. In conclusion the study supports the importance of enquiring about insomnia among psychiatric out-patients and highlights the usefulness of sleep questionnaires in obtaining information in sleep disorder research.

Introduction

Sleep problems have been associated with decreased working productivity, increased health care utilization, more days of absence from work, an increased risk of serious accidents [1,2], as well as a significant economic burden for younger and older patients [3].

More recently, theories have been put forward regarding the aetiology of insomnia and its relationship with psychiatric disorders. These include the hyper arousal model which was reviewed by Reimann et al. [4] who reported that primary insomnia may be conceptualized as the final common pathway resulting from the interplay between a genetic vulnerability for an imbalance between arousing and sleep-inducing brain activity, psychosocial/medical stressors and perpetuating mechanisms; and also the transdiagnostic theory which proposes that sleep disturbance is aetiologically linked to various forms of psychopathology through its reciprocal relationship with emotion regulation and its shared/interacting neurobiological substrates in genetics and dopaminergic and serotonergic function [5].

The prevalence rates in the general population vary widely according to the region and the study design. For instance rates of insomnia reported worldwide range from 11.9% in Finland to 21% in Japan [6]. Ohayon and Lemoine [7] noted that the prevalence of insomnia in industrialized countries ranges from 10-48% depending on methodology. With respect to Nigeria, Ogunremi [8] found insomnia, (of the sleep onset type) present among 13.9% of the subjects in his study. According to the Epidemiological Catchments Area (ECA) Study, 10.2% of the sample met the stringent criteria for insomnia [9].

Sleep disturbances are common amongst those with psychiatric disorders. The lack of sleep is often a presenting complaint in the psychiatric out-patient department. Ohayon and Roth [10] in their study of 14,915 subjects aged 15-100 years representative of the general population of the United Kingdom, Italy, Germany and Portugal found

that the prevalence for insomnia was 19.1%; significantly increasing with age. About 28% of their subjects with insomnia had a current diagnosis of mental disorders and 25.6% had a psychiatric history, and, insomnia appeared before (> 40%), or at the same time (> 22%) as, mood disorder symptoms amongst most of the subjects with mood disorders. They also found that with anxiety disorders, insomnia appeared mostly at the same time as (>38%), or after (> 34%), the anxiety disorder symptoms. Any history of persistent insomnia adds to the lifetime risk of major depression [11]. It has also been found that among those with depression insomnia predicts increased risk of suicide [12]. More recently, Baglioni et al. [13], in a meta-analysis, found that non-depressed people with insomnia have a twofold risk of developing depression, compared to people with no sleep difficulties.

Insomnia is very strongly related to bipolar disorder as well and has been found in 77% of patients, and is the most prominent early symptom preceding onset of mania in bipolar disorder [14], remaining a significant problem even among euthymic bipolar patients [15,16].

Benca et al. [17] in a meta-analysis of 177 sleep laboratory studies found reduced sleep efficiency and total sleep time among those with schizophrenia as well as decreased sleep latency, compared to an age-matched control group. Neylan et al. [18] in a study examining the state-dependent contribution of neuroleptic (haloperidol) withdrawal and psychotic relapse in influencing polysomnography sleep measures among 18 clinically stable male schizophrenics found that relapsers had a larger decrease in total sleep time, sleep efficiency, total non-rapid

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eye movement sleep, and stage 2 sleep than non-relapsers. They also found that the severity of psychosis was inversely correlated with sleep efficiency, total sleep time, and stage 4 sleep in the drug-free patients.

Sleep can be studied using objective methods such as sleep laboratory studies (sleep polysomnography) [19], which though uncommon as a method of investigation in this part of the world, was used by Ogunremi and Ominiyi [20] in their 1978 all-night sleep study of young Nigerian men. While being quite objective, such methods are expensive and so only a few subjects may eventually be studied. Other issues with this method include the effect of the subjects not sleeping in their usual environment and the fact that subjects know that they are being studied. Sleep studies can also employ the use of questionnaires, as in the study by Ohaeri [21] and colleagues in a study of isolated sleep paralysis in the general population, and as used in another local study by Ogunremi [8].

Some investigators gather information through telephone interviewing [10], and while this offers even more anonymity and possibly more confidentiality, it can only be conveniently used in countries with high teledensities. While some studies have been conducted among subsets of the general population such as that by Cole and colleagues who studied elderly community subjects [22], others have studied psychiatric patients [18], and some have studied mainly out-patients [23].

The rationale for the study predicates on the fact that insomnia as integral or secondary to any associated disorder could complicate the pharmacotherapy and may be a factor that could influence clinical intervention in some patients, and also the fact that there is a need to constantly update knowledge and provide local data. We believe that the findings would assist in, defining the presentation and planning management in psychiatric outpatients.

Materials and Methods

Study setting

The study was carried out at the psychiatric out-patient clinic of the Lagos University Teaching Hospital (Yaba annex), that predominantly serves a densely populated part of Lagos, the commercial capital of Nigeria. The clinic caters for various categories of people including a significant number of students and staff of the University of Lagos and members of staff of the hospital. It also enjoys patronage from educational institutions including secondary and primary. A significant proportion of the attendees are literate. The attendance at the clinic, which holds every Thursday, is between 45 and 60 patients. Ethical approval was obtained from the institution.

Subjects

The inclusion criteria were all adult patients aged 20 years and above, attending and receiving treatment in the clinic that were stable enough to participate, and could read and understand English. It excluded teenagers and younger children and new patients. The patients were contacted and recruited by the principal investigator as they presented at the routine out-patient clinic. The study was explained to them and their consent obtained. A total of 200 patients were contacted but 16 of them declined to participate.

Instruments

The subjects were first seen for their routine out-patient follow-up before those that consented to participate in the study were given the socio-demographic questionnaire. Items on the questionnaire included age (as at last birthday), sex, civil status, tribe, employment status and nature of employment, monthly income bracket, highest level of formal education, type of accommodation, number of bed partners, and presence of noise at night. This was followed by the administration of Structured Clinical Interview for DSM-IV (SCID) [24] in the form of an interview by one of the researcher who had been trained in the use of the instrument. Thereafter the Sleep-50 questionnaire [25] was administered to evaluate for and diagnose insomnia. The socio-demographic questionnaire and the Sleep-50 were filled by the subject in the presence of one of the researchers, who was available in case the subject needed clarification. However, such clarification was rarely needed as the subjects had no difficulty filling the questionnaires out. Ten of the subjects requested to be interviewed for the study at their subsequent visit to the clinic and they were obliged. They all eventually completed the interview.

The definition used for insomnia was that of the ICD-10 Diagnostic Criteria for Nonorganic insomnia [26];

A. The individual complains of difficulty falling asleep, difficulty maintaining sleep, or non-refreshing sleep.

B. The sleep disturbance occurs at least 3 times a week for at least 1 month.

C. The sleep disturbance results in marked personal distress or interference with personal functioning in daily living.

D. There is no known causative organic factor, such as a neurological or other medical condition, psychoactive substance use disorder, or a medication.

Information on sleep was gathered using the sleep-50 questionnaire created by Spoormaker [25], designed to detect both the sleep complaints and sleep disorders listed in the DSM-IV, as well as factors influencing sleep. It has 9 subscales; Sleep apnea (items1-8) cut-off ≥ 15, Insomnia (9-16) cut-off ≥19, Narcolepsy (17-21) cut-off ≥7, Restless legs/PLMD (22-25) cut-off ≥7, Circadian Rhythm Sleep Disorders (26-28) cut-off ≥8, Sleepwalking (29-31) cut-off ≥7, Nightmares (32-36), Factors influencing sleep (37-43) and the Impact of sleep complaints on Daily Functioning (44-50) cut-off ≥15. Hypersomnia scales coincide with impact scale i.e. 44-50 with cut-off ≥15 [25]. It checks for sleep complaints with subscales 1-36, and detects a sleep disorder with the impact subscale. The items are applicable to the subject's past 4 weeks from time of administration. Each item is scored on a 4-point scale. The analysis of data was done using the Statistical Package for Social Sciences (SPSS 10) [27]. Chi square and Mann-Whitney U tests were used as tests of significance where appropriate, and Pearson's correlation coefficient was used to determine the correlation between continuous variables.

Results

Sociodemographic characteristics

A total of one hundred and eighty-four subjects were studied. The mean age was 36.5 years (SD 14.6). One hundred and two patients (55.4%), were aged 20-39years, 50 (27.2%) were 40-59 years old and 32 (17.4%) were 60 years and above. There were 96 female (52.2%) and 88 male patients (47.8%). The subjects were mostly single and most of these single patients were male while majority of the ever-married were females. Most, (n=95, %=51.6), were unemployed, predominantly (58.9%) the male subjects, while majority of the employed were female (64.0%). This finding was statistically significant (p=0.002). They were predominantly of the Yoruba tribe, 96 (52.2%), followed by the Igbo

tribe 57 (31.0%), Hausa 2 (1.1%), and 29 (15.7%) from other tribes (Table 1).

Sleep-related sleeping conditions

The majority lived in some form of flat (53.8%) and most of the subjects experienced no noise at all at night/bedtime (53.8%), while 60 (32.6%) said they experienced noise sometimes, 20 (10.9%) often and 5 (2.7%) very often/every night. Seventy-nine (42.9%) subjects slept alone on their beds, 52 (28.3%) had one other person sleeping on the same bed, while 53 (28.8%) had two or more others sharing the same bed.

Psychiatric diagnosis

The commonest diagnosis was schizophrenia (n=66); accounting for 35.9% of the patients studied followed by major depressive disorders (24.5%), bipolar affective disorder (13.6%), anxiety and other neurotic disorders (8.7%), epilepsy (4.6%), and primary insomnia (1.6%) (Table 2).

Insomnia

Insomnia and socio-demographics: Insomnia was present among thirty-seven subjects (20.1%). It was most prevalent among the elderly subjects (aged 60 years and above), the widowed and the unemployed (Table 3).

Sleeping conditions and insomnia: Insomnia was also most prevalent among those subjects who frequently experienced noise at night and the relationship was statistically significant (p<0.01). The type of accommodation and the number of bed partners did not significantly affect the presence of insomnia (Table 4).

Insomnia and the major psychiatric diagnoses: Insomnia was most prevalent among those with major depression, (33.3%), followed by subjects with bipolar affective disorder (24.0%), anxiety and other neurotic disorders (18.0%) and schizophrenia (10.6%). The difference was statistically significant; p=0.033 (Table 5).

Insomnia and subjective estimation of sleep duration: The subjects' estimated sleep hours was inversely correlated to their raw scores on the insomnia scale of the sleep-50 questionnaire, (p<0.01).

Discussion

The subjects in this study were young with most aged between 20-39 years, similar to Ogunremi's [8] study population. This is not surprising considering the fact that the Lagos University Teaching Hospital, the location of the study, is the primary health care facility approved for students of the University of Lagos. There was a slight female preponderance and the subjects were predominantly of the Yoruba race; the latter finding being a function of the fact that the study was carried out in the South-western part of Nigeria. Perhaps also, in keeping with a young population, most of the subjects were single. It was also found that 51.6% of the subjects were unemployed, implying that a significant number of patients perhaps depend on some other person to fund their treatment. Majority of the patients actually slept alone on their beds at night and this may to an extent be reflective of the predominantly single status of the sample.

Schizophrenia was the most prevalent primary psychiatric diagnosis among the subjects, (35.9%), probably because of the severe impairment it can impose on the patient, specifically its intrusive effects on sleep pathway and level of stria-cortical arousal in general. Also

the patients' negative reaction to distressing intrapsychic experiences could interfere with sleep.

The point here is that the high rate of insomnia in the elderly as reported by Cole and Dendukurt [22] and among the individual may be explicable by underlying depression. This may also be related to why insomnia was also more prevalent amongst the widowed.

Insomnia was also found to be significantly most prevalent among those who more often experienced noise at night. This is not surprising since a quiet environment, rather than a noisy one, is more conducive for sleep, and is a sleep hygiene measure.

Our study also found that insomnia was more prevalent amongst the unemployed which may be a function of possible financial burdens and worries that people in this category may be facing.

The prevalence of insomnia in our study population was found to be 20.1%. This is higher than the figures from the studies by Ogunremi [13.9%], and Ford and Kamerow [10.2%] [8,9]. This is not surprising because these researchers studied the general population unlike our study which studied psychiatric patients; however it conforms to the reported worldwide range of 11.9% to 21.0% by Mendelson and colleagues [6].

Insomnia was significantly found to be most prevalent amongst those with major depression (33.3%). This supports the results of

Sociodemographic variable	Male n (%)	Female n (%)	Total n (%) [% of total subjects]	Test of significance
Age groups				X²
Age 20-39years	49 48.0	53 52.0	102 100.0 [55.4]	test=2.133
40-59years	27 54.0	23 46.0	50 100.0 [27.2]	df=2, p>0.05
≥ 60years	12 37.5	20 62.5	32 100.0 [17.4]	
Total	**88 47.8**	**96 52.2**	**184 100.0 [100.0]**	
Marital status				X²
Single	57 56.4	44 43.6	101 100.0 [54.9]	test=9.743
Married	26 42.6	35 57.4	61 100.0 [33.2]	df=3,
Divorced/separated	4 28.6	10 71.4	14 100.0 [7.6]	**p=0.021***
Widowed	1 12.5	7 87.5	8 100.0 [4.3]	
Total	**88 47.8**	**96 52.2**	**184 100.0 [100.0]**	
Tribe				X²
Yoruba	43 44.8	53 55.2	96 100.0 [52.2]	
Igbo	30 52.6	27 47.4	57 100.0 [31.0]	test=2.892
Hausa	0 0.0	2 100.0	2 100.0 [1.1]	df=3, p>0.05
Other Tribe	15 51.7	14 48.3	29 100.0 [15.7]	
Total	**88 47.8**	**96 52.2**	**184 100.0 [100.0]**	
Employment status				X²
Unemployed	56 58.9	39 41.1	95 100.0 [51.6]	test=9.735
Employed	32 36.0	57 64.0	89 100.0 [48.4]	df=1,
Total	**88 47.8**	**96 52.2**	**184 100.0 [100.0]**	**p=0.002***
Accommodation type				
Single	31 50.0	31 50.0	62 100.0 [33.7]	X²
Flat	45 45.5	54 54.5	99 100.0 [53.8]	test=1.473
Duplex	11 50.0	11 50.0	22 100.0 [12.0]	df=3, p>0.05
Others	1 100.0	0 0.0	1 100.0 [0.5]	
Total	**88 47.8**	**96 52.2**	**184 100.0 [100.0]**	
Noise at night				
Not at all	45 45.5	54 54.5	99 100.0 [53.8]	X²
Sometimes	28 46.7	32 53.3	60 100.0 [32.6]	test=1.740
Often	12 60.0	8 40.0	20 100.0 [10.9]	df=3, p>0.05
Every night	3 60.0	2 40.0	5 100.0 [2.7]	
Total	**88 47.8**	**96 52.2**	**184 100.0 [100.0]**	
Bed partner				
Only self	44 55.7	35 44.3	79 100.0 [42.9]	X²
One other person	25 48.1	27 51.9	52 100.0 [28.3]	test=5.009
2 or more others	19 35.8	34 64.2	53 100.0 [28.8]	df=2, p>0.05
Total	**8 47.8**	**96 52.2**	**184 100.0 [100.0]**	

Table 1: Sociodemographic variables.

Diagnostic Variable	n, Number of patients	Percentage
Organic brain disorders	4	2.2
Acute psychotic disorders	13	7.1
Schizophrenia	66	35.9
Major depressive disorders	45	24.5
Bipolar affective disorders	25	13.6
Anxiety & other neurotic disorders	16	8.7
Substance use disorders	2	1.1
Primary insomnia	3	1.6
Epilepsies	10	5.4
Total	**184**	**100**

Table 2: Psychiatric diagnosis.

V Sociodemographic Variable	Insomnia Present n (%)	No Insomnia n (%)	Total n (%)	Test of Significance
Age 20-39years 40-59years ≥ 60years **Total**	21 20.6 7 14.0 9 28.1 **37 20.1**	81 79.4 43 86.0 23 71.9 **147 79.9**	102 100.0 50 100.0 32 100.0 **184 100.0**	X^2=2.456 df=2 p>0.05
Sex Male Female **Total**	18 20.5 19 19.8 **37 20.1**	70 79.5 77 80.2 **147 79.9**	88 100.0 96 100.0 **184 100.0**	X^2=0.013 df=1 p>0.05
Marital status Single Married Separated/divorced Widowed **Total**	18 17.8 18 21.3 1 7.1 5 62.5 **37 20.1**	83 82.2 48 78.7 13 92.9 3 37.5 **147 79.9**	101 100.0 61 100.0 14 100.0 8 100.0 **184 100.0**	Mann-WhitneyU =1647.7 df=3 p>0.05
Tribe Yoruba Igbo Hausa Others **Total**	19 19.8 12 21.1 2 100.0 4 13.8 **37 20.1**	77 80.2 45 78.9 0 0.0 25 86.2 **147 79.9**	96 100.0 57 100.0 2 100.0 29 100.0 **184 100.0**	Mann-Whitney U=1857.5 df=3 p>0.05
Occupational Status Employed Unemployed **Total**	15 16.9 22 23.2 **37 20.1**	74 83.1 73 76.8 **147 79.9**	89 100.0 95 100.0 **184 100.0**	X^2=1.137 df=1 p>0.05

%= percentage within variable, p= p value, *= significant p value, df=degree of freedom, X^2= Chi-square test

Table 3: Sociodemographic variables vs insomnia.

Variable	Insomnia Present n (%)	No Insomnia n (%)	Total n (%)	Test of Significance
Accommodation Type Single room Flat Duplex Others **Total**	13 21.0 19 19.2 5 22.7 0 0.0 **37 20.1**	49 79.0 80 80.8 17 77.3 1 100.0 **147 79.9**	62 100.0 99 100.0 22 100.0 1 100.0 **184 100.0**	Mann-Whitney U=1787.0 df=3 p>0.05
Noise at night Not at all Sometimes Often Every night **Total**	5 5.1 17 28.3 12 60.0 3 60.0 **37 20.1**	94 94.9 43 71.7 8 40.0 2 40.0 **147 79.9**	99 100.0 60 100.0 20 100.0 5 100.0 **184 100.0**	**Mann-Whitney U=700.0 df=3 p<0.01***
Bed partner Only Self One other person 2 or more others **Total**	16 20.3 13 25.0 8 15.1 **37 20.1**	63 79.7 39 75.0 45 84.9 **147 79.9**	79 100.0 52 100.0 53 100.0 **184 100.0**	X^2=1.605 df=2 p>0.05

%= percentage within variable, p= p value, *= significant p value, df=degree of freedom, X^2= Chi-square test

Table 4: Sleeping conditions and insomnia.

Diagnostic Variable	No Insomnia n (%)	Insomnia Present n (%)	Total n (%)	Test of Significance
Schizophrenia	7 10.6	59 89.4	66 100.0	X^2=8.762 df=3 **p=0.033***
Major Depression	15 33.3	30 66.7	45 100.0	
Bipolar Affective disorder	6 24.0	19 76.0	25 100.0	
Anxiety Disorder & other neurotic disorders	3 18.8	13 81.2	16 100.0	
Total	**121 74.6**	**31 20.4**	**152 100.0**	

%= percentage within variable, p= p value, *= significant p value, df=degree of freedom, X^2= Chi-square test

Table 5: Major diagnoses and insomnia.

several previous studies, which report that insomnia augments lifetime risk for major depression [11,28] and that non-depressed people with insomnia have a twofold risk of developing depression, compared to people with no sleep difficulties [13]. One of such studies is the John Hopkins Precursor study which showed insomnia as a predisposition to depression later in life [29]. The figure found in our study is, however, much lower than 85.0% reported by Ford and Kamerow [9]; and this may be a function of the sleep-50 questionnaire's stringent criteria for diagnosing insomnia used in our study. Insomnia was reported in 24.0% of patients with bipolar affective disorder and this figure is also lower than the 77.0% reported by Jackson and colleagues [14] and this is also probably a function of the instrument used.

Contrary to hypothetical expectations, insomnia was found to be less prevalent among those with anxiety disorders than those with bipolar affective disorder. This may suggest lower reporting among anxiety disorder patients, and may also reflect the fact that a fewer number of anxiety disorder patients attended out-patient clinic during the period of this study. Also those that did attend might have self-medicated with anxiolytics. The patients' estimation of their hours of sleep at night significantly and negatively correlated with their insomnia score of the sleep-50 questionnaire. This suggests that the patients' own subjective assessment of their sleep may be a reliable first inquiry when investigating insomnia.

Conclusion

The study concludes that insomnia is quite prevalent among the population of patients studied and is strongly associated with depression as well as social conditions such as unemployment and noisy environment. It is also concluded that patients' subjective estimation of sleep hours is fairly reliable. Finally the study emphasizes the value of sleep questionnaires in the study of sleep disorders, as very useful information can be obtained using these. We advocate routine enquiries regarding insomnia in psychiatric outpatients.

Limitations

The fact that only subjects who can read and understand English were included in the study means that the opportunity to study an even larger population was missed. Also a further pitfall was the effect of current sedating neuroleptic medication, and the effect of self-medicating with prescription hypnosedatives whose legal dispensing has been poorly controlled in the general community.

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