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RESEARCH ARTICLE

ASSESSMENT OF QUALITY OF SLEEP IN PSYCHIATRIC PATIENTS USING PSQI SCALE-ROLE OF CLINICAL PHARMACIST

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ABSTRACT

Background: Insomnia is defined as the complaint of difficulty falling asleep, staying asleep or non-restorative sleep. DSM-IV criteria for primary insomnia if the duration is >1month.It causes clinically significant distress or impairment. It does not occur exclusively during the course of a mental disorder. Insomnia is the most commonly observed in co-morbid patients with psychiatric conditions.

Aim: To improve quality of sleep in psychiatric patients with sleep disturbances by providing non-pharmacological support to the patients attending psychiatry.

***Objectives*:**

- To avoid and minimize drug dependence by following non-pharmacological treatment.
- To improve quality of sleep non-pharmacologically

Method: A cross-sectional study was conducted in government general hospital, Guntur. It is approved by the Ethical committee. The quality of sleep is assessed using PSQI scale for a period of 6 months i.e; of December, 2016 to May, 2017.

Results: The were analysed using graphpad prism and graphpad instat. A total number of60 patients, males were 33(58%) and females were 24(42%). From our data, 47% of psychosis patients were observed with sleep disturbances, the level of significance of p-value 0.005 shows the improvement in sleep quality was assessed by using PSQI scale after follow-up.

Conclusion: SHE can be used as a supportive therapy for patients who do not need sedatives with psychiatric disorders compared to pre-follow up there was significant improvement in quality of sleep at post-follow up. Clinical pharmacist has a major role in the management of psychiatric disorders by monitoring ADRs, Drug interactions and improving patient related quality of life.

INTRODUCTION

Insomnia is the most commonly observed in co-morbid patients with psychiatric conditions. It is defined by the presence of an individual's report of difficulty with sleep.

Insomnia is defined as the complaint of difficulty falling asleep, staying asleep or non-restorative sleep[1]. DSM-IV criteria for primary insomnia if the duration is >1month.It causes clinically significant distress or impairment. It does not occur exclusively during the course of a mental disorder. It is not due to another medical or sleep disorder or effects of medication or substance abuse.

Types of Sleep Disorders According To DSM-IV-TR

Primary sleep disorders

- Dysomnias
- Parasomnias

Secondary sleep disorders

- Sleep disorder related to another mental disorder
- Sleep disorder due to a general medical condition
- Substance induced sleep disorder[2]

Sleep Requirements and Quantity of Sleep

Sleep requirement is defined as the optimal amount of sleep required to remain alert and fully awake and to function

adequately throughout the day. Sleep required for an average adult is approximately 7.5 to 8 hours

Sleep patterns

- Infant: 14-20hours
- Children: 10-14hours
- Adult: 7-9hours
- Elderly: varies (5-7hours)need more longer time to sleep than adult, wake early and frequently during night[3]

Sleep Latency

The duration of time from lights out or bedtime to the onset of sleep refers to how long it takes to fall asleep. Normal sleep latency is about 15minutes.Rapid eye movement (REM) is 90minutes.[4]

Duration and Time of Administration

Duration: Should be limited to 2to 3 weeks maximum.

Dosage: Should be tapered slowly if hypnotics have been taken regularly for more than a few weeks.

Doses*:* Should be taken 20minutes before retiring in order to allow dissolution in the stomach and absorption to commence before the patient lies down

The ICSD-2 lists the sleep disorders in 8 major categories

1. The insomnias
2. The sleep-related breathing disorders
3. The hypersomnias of central origin
4. The circadian rhythm sleep disorders
5. The parasomnias
6. The sleep-related movement disorders
7. Isolated symptoms, apparently normal variants and unresolved issues
8. Other sleep disorders[5]

The insomnia disorders can be either primary or secondary. Primary insomnias can have both intrinsic and extrinsic factors involved in their etiology, but they are not regarded as being secondary to another disorder. Secondary forms occur when the insomnia is a symptom of a medical or psychiatric illness such as depression[6], mania, another sleep disorder, or substance abuse. A 2004 National Institutes of Health consensus development conference on insomnia led to the promotion of the term "comorbid insomnia" to distinguish primary insomnia from insomnia due to other primary sleep disorders, medical and psychiatric disorders, and insomnia due to medication or drug use. Comorbid insomnia does not indicate whether the associated medical disorder is causative or coincidental. The term primary insomnia is used in both the International Classification of Diseases (ICD-10) and the Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV) classifications and has the benefit of being more of a global classification of insomnia. The ICSD-2 uses a more detailed subtyping of the insomnias than either the DSM or ICD. The term secondary insomnia is still appropriate for use when there is clear causality with the underlying medical or psychiatric disorder, such as one might see in insomnia secondary to pain disorders. Inadequate sleep hygiene is a disorder associated with common daily activities that are inconsistent with good-quality sleep and full daytime alertness. Such activities include irregular sleep onset and wake times, stimulating and alerting activities before bedtime, and substances (e.g., alcohol, caffeine, cigarette smoke) ingested near to sleep time. These practices do not necessarily cause sleep disturbance in other people. For example, an irregular bedtime or wake time that produces insomnia in one person may not be important in another.[7]

Pittsburgh Sleep Quality Index Scale

The Pittsburgh Sleep Quality Index (PSQI) is an effective instrument used to measure the quality and patterns of sleep in adults. It differentiates "poor" from "good" sleep quality by measuring seven areas (components): subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction. The Pittsburgh Sleep Quality Index is a related scoring tool of sleep quality.[8]

Non- Pharmacological Management

Most insomnia patients indicate that they would prefer a non-pharmacologic solution to their insomnia. There are several effective treatment approaches to chronic insomnia that do not involve the use of hypnotics, Education about normal sleep and counselling around habits for promoting good sleep hygiene are a good but insufficient intervention when used alone. Various relaxation therapies hypnosis, meditation, deep breathing, and progressive muscle relaxation can be helpful. These techniques in contrast to use of hypnotics, are not immediately beneficial but require several weeks of practice to improve sleep. Success is dependent on high degree of motivation in patients, who must devote considerable time to practice these techniques. Those who succeed in learning these techniques have a greater satisfaction with maintenance treatment than do patients chronically using hypnotics. Furthermore, responders to behavioural interventions have sustained benefits after 6 months. Biofeedback can be helpful in those patients who are not sensitive to their internal state of arousal. Patients are provided an external measure of a biological variable such as an EMG or EEG that allows them a means to influence their own level of arousal. Sleep restriction therapy is similarly aimed at reducing the amount of wake time spent in bed.[9]

Sleep Hygiene Education: Sleep Hygiene Education is intended to provide information about lifestyle (diet, exercise, substance use) and environmental factors (light, noise, temperature) that may interfere with or promote better sleep. Sleep hygiene also may include general sleep facilitating recommendations, such as allowing enough time to relax before bedtime, and information about the benefits of maintaining a regular sleep schedule.

1. Don't go to bed unless you are sleepy
2. If you are not asleep after 20 minutes, then get out of the bed
3. Begin rituals that help you relax each night before bed
4. Get up at the same time every morning.
5. Get a full night's sleep on a regular basis
6. Avoid taking naps if you can
7. Keep a regular schedule of sleep
8. Don't read, write, eat, watch TV, talk on the phone, or play cards in bed.
9. Do not have any caffeine after lunch.
10. Do not have a beer, a glass of wine, or any other alcohol within six hours of your bedtime.

11. Do not have a cigarette or any other source of nicotine before bedtime.
12. Do not go to bed hungry, but don't eat a big meal near bedtime either.
13. Avoid any tough exercise within six hours of your bedtime
14. Avoid sleeping pills, or use them cautiously
15. Try to get rid of or deal with things that make you worry.[10]

Pharmacological Treatments for Insomnia

Several medication classes are used for the treatment of insomnia, although the strength of evidence regarding their efficacy and tolerability varies considerably. A wide variety of sedating medication has commonly been used as sleeping pills, which vary in pharmacokinetic properties and side effects. The ideal sleeping pill would shorten latency to sleep, maintain normal physiological sleep all night without blocking normal behavioural responses, leave neither hangover nor withdrawal effects the next day; be devoid of tolerance and side effects such as Impairment of breathing, cognition, and coordination, and should not be habit forming or addictive. Short life hypnotics usually produce less daytime sedation than those with longer half-life drugs, but they often result in more rebound insomnia when they are discontinued. However, they relatively cause more amnesia especially for material that is learned during the period of peak concentration of drugs. The major classes are benzodiazepine receptors agonists (BzRA), antidepressant drugs (AD), antihistamines, melatonin, and various herbal remedies including valerian root extracts. Of these medications, only BzRAs are formally approved for the indication of insomnia treatment in the United States.

Patients

Total no. of 612 patients were screened for the study. Out of them 57 met the inclusion criteria such as Patients treated with mental illness (Schizophrenia, Anxiety, Alcohol withdrawal, Depression) and complaining with sleep disturbances. And Patients between 20-65 years. Known cases of psychiatric disorders complaining about sleep disturbances not using benzodiazepines and other sedation causing drugs. And also newly diagnosed primary insomnia cases. Patients who are currently on psychiatric treatment for disease proper. Any other ill patients (eg:patients undergoing dialysis and other comorbid conditions) were excluded in the study.

Materials and Study Design

This is a cross-sectional study which is conducted for 6 months and the patients were educated about the importance of maintaining sleep hygiene. Follow-up is done within the study period and the quality of sleep is assessed by using PSQI scale.

Statistical Analysis and Results

The PSQI score is calculated before and after the Sleep Hygiene Education. The scores were compared by using paired t-test. And p-value is calculated using the graph pad instat The demographic characteristics were observed and presented in the table:1 and disease wise distribution of the subjects were presented in the figure:1 and symptom wise distribution were explained in the table:2. The p-value of the PSQI scores were calculated and represented in the table:3. Sleep patterns of the subjects before and after the follow-up were explained in the figures: 2 & 3.

Table 1 Age and Gender wise distribution of study sample

Age(class interval)	Males(N=33)	Females(N=24)
20-25	2	0
26-30	2	0
31-35	2	4
36-40	5	5
41-45	8	5
46-50	6	4
51-55	1	3
56-60	4	0
61-65	3	3

Out of 57 subjects, Males are 33(58%) and Females are 24(42%).Among males 8(24%) are found in 41-45 age group and the least is 1(3%) is found in 51-55 age group. Among females 5(21%) are found in the both 36-40 and also 41-45 age groups and the least 3(13%) are found in the both 51-55 and also 61-65 age groups.

No females were found among these 20-25, 26-30 and 56-60 age groups.

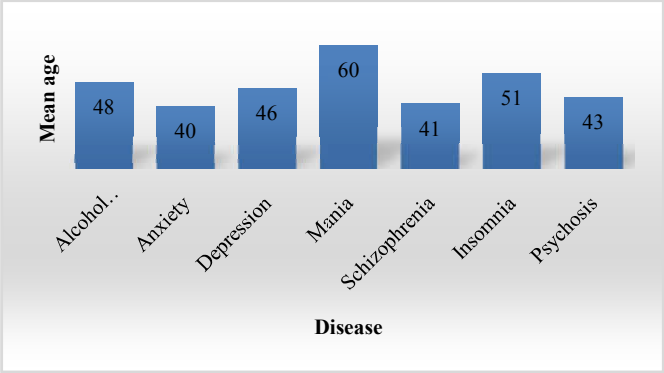

Figure 1 Age and Disease wise distribution

The 57 subjects mean age was calculated and at the mean age of 60 the sleep disturbances in mania diagnosed subjects were observed, mean age of 51 insomnia subjects were seen, at the mean age of 48 alcohol dependence syndrome subject were observed, at the mean age of 46 depression diagnosed subjects were observed, at the mean age of 43 psychosis diagnosed subjects were observed, at the mean age of 41 schizophrenia diagnosed patients were observed, and at the mean age of 40 anxiety diagnosed patients were observed.

Table 2 Symptom and gender wise distribution of subjects

Symptoms	Males(N=24)	Females(N=16)
Disturbed sleep	10	4
Headache	4	4
Irritability	2	4
Decreased appetite	8	4

Among all the 57 subjects, majority14(25%) of the subjects reported with the symptom disturbed sleep, among them males are 10(71%) and females are 4(29%), followed by decreased appetite by 12(21%), among them males are 4(50%) and females are 4(50%), followed by headache by 8(14%), among them males are 2(33%) and females are 4(67%), and irritability was reported by 6(11%), among them males are 8(67%) and females are 4(33%).

Table 3 Differences in PSQI scores between pre-follow up and post-follow up

	Mean ± SD	P-value
Pre-follow up	9.140 ± 3.324	0.0001
Post-follow up	6.526 ± 2.693	

The mean and standard deviations of the PSQI scores at pre-follow up and post-follow up were calculated using graph pad instat 3 and P-value (0.0001) is calculated using graph pad prism 7 software which is significant.

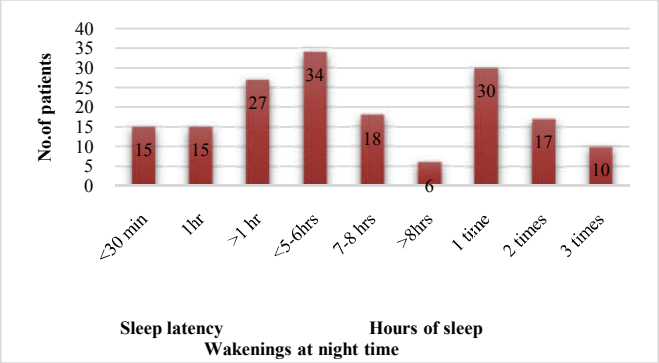

Figure 2 Sleep patterns of the subjects

Sleep patterns were assessed and majority of them were 27(47%) have sleep latency of about >1hr, and 34 (60%) have only 5-6 hrs of sleep, 30 (53%) were waking up at the night time at least 1 time at the time of sleep.

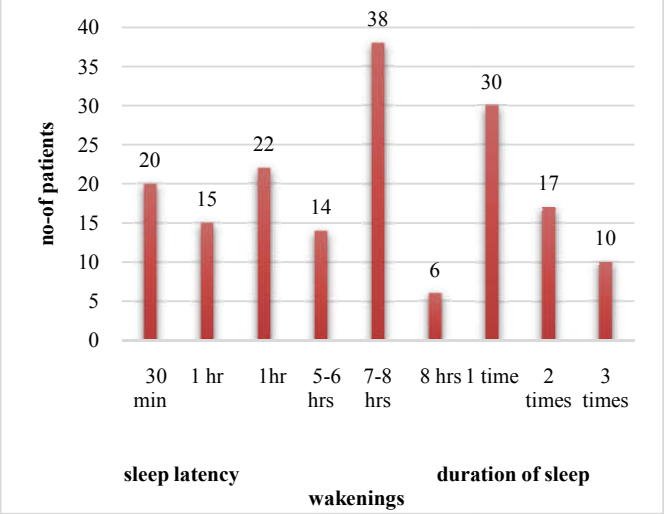

Figure 3 sleep patterns of the subjects after follow up

Sleep patterns were assessed after the sleep hygiene education was given then results shown that majority of patients have sleep latency of 30 mins, and duration of sleep of the subjects were increased to 7-8 hours.

DISCUSSION

Sleep hygiene education improves the sleep disturbances significantly, the difference is observed through Pittsburgh sleep quality index scale. According to Kakinuma *et al*., sleep hygiene education and other non-pharmacological interventions are effective in short-term treatments of insomnia. We have chosen sleep hygiene education over cognitive behavioural therapy as it requires special trained therapist to perform the sessions of cognitive behavioural therapy which was observed in the national health services.uk.[11] However our study was different compared to other studies done with cognitive behavioural therapy, as we only considered the patients with no co-morbidities other than psychiatric conditions, who are attending OP.

Discussion for table 1: in this table it was observed that males (33) were more in number than females (24). Number of males were 7(12%) and females were 3(5%) found to be in the age group of 55-65 this shows that males were more than females, according to the Jun Ishigooka *et al*., also males were more than females due to economic and other health consequences.[12] From the figure:1 in our study we found that the mean age of occurrence of sleep disturbances was above 40 years, it is correlated with the study performed by the D Bhattacharya *et al*., where the mean age of occurrence of sleep disturbances was found to be 37±3.[13]

Differences in the mean PSQI scores were shown in our study(table:3) with respective to the pre-follow up and post-follow up and the P-value is significant which was correlated with the study done by Nao Nishinoue *et al*; shown the difference in the PSQI scores regarding pre and post follow up. In our study we mainly assessed the sleep patterns (figure: 2) of the subjects by using PSQI scale where we found the sleep latency, sleep duration and number of awakenings during sleep. We found that majority of the patients were having less hours of sleep i.e; up to less than 6 hours which was correlated with the study conducted by Matthias J.Müller *et al*.,[14]

Sleep patterns were also assessed after sleep hygiene education (figure: 3) which shows that duration of sleep was increased, which was correlated with the study conducted by Franklin C. Brown *et al*., [15]

List of Abbreviations

AD – Anti-depressant drugs
ADR- Adverse Drug Reactions
BzRA – Benzodiazepine receptor agonists
CBT – Cognitive Behavioural Therapy
DSM-IV – Diagnostic Statistical and Mental Disorders-IV
EMG – External Measures of Biological Variables
EEG- Electro encephalo Gram
ICSD – International Classification of Sleep Disorders
ICD – International Classification of Disorders
NREM – Non-Rapid Eye Movement
OP – Out Patient
PSQI – Pittsburgh Sleep Quality Index
REM – Rapid Eye Movement
SHE – Sleep Hygiene Education
TV- Television

CONCLUSION

Here, we conducted a cross sectional Study in psychiatric patients, to improve sleep quality by providing sleep hygiene education. In supporting of our hypothesis the results had shown that middle age group people have more sleep disturbances. While, coming to the gender mostly males are suffered from sleep disturbances compared to females, regarding disease conditions, psychosis patients are more prone to sleep disturbances than other psychiatric disorders. The outcome of our study, there is a significant improvement in the sleep quality when sleep hygiene education was provided along with pharmacotherapy rather than sleep hygiene education alone. It was observed that by using PSQI

scales among the psychiatric patients providing the sleep hygiene education was considered to be beneficial.

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