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Original Research Article

Sleep Quality and Erectile Dysfunction in Depressed Male Subjects in Nigeria

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ABSTRACT

Background and objectives: There exists a relationship between sleep quality and depressive illness, just as certain studies have established a relationship between depressive illness and erectile dysfunction. The objectives of this study were to determine sleep quality and erectile dysfunction in a group of depressed patients and to seek a possible inter relationship among sleep quality, erectile dysfunction and depressive illness in the Nigerian environment.
Materials and methods: Twenty – five consecutive depressed male patients were evaluated for sleep quality and erectile dysfunction. The diagnosis of depressive illness was made using the criteria from the 10th edition of the International Classification of Diseases (ICD - 10) by the World Health Organization (WHO). The severity of the depression was rated using the 17 – item Hamilton Depression Rating Scale (HamD). The sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI) while erectile dysfunction was assessed using The International Index of Erectile Function (IIEF-5) Questionnaire.
Results: Of the twenty – five subjects, 22 (88.0%) provided complete data. The mean age of the subjects was 39.6 years (SD = 6.2) with a range of 29 – 51 years. Eighteen out of the 22 subjects (81.8 %) were poor sleepers having scored above 5 on the PSQI while 13 of the subjects (59 %) had erectile dysfunction having scored below 22 on the
The International Index of Erectile Function (IIEF-5) Questionnaire. There was a significant association between sleep quality and severity of depression (r = 0.73, p = 0.00). This study did not find a significant association between sleep quality and erectile dysfunction; neither was the study able to establish an association between erectile dysfunction and severity of depression. As predictors, sleep quality and erectile dysfunction accounted for 48 % of the variance in the scores of the Hamilton Depression Rating Scale
Conclusion: This study showed that most depressed patients in the studied group were poor sleepers and that erectile dysfunction was highly prevalent in them. In the management of depressed patients, while attention must be paid towards improving the sleep quality of the patients, the clinician should also not fail to be mindful of the high risk of erectile dysfunction which may or may not require treatment in its own right.

Keywords: Sleep quality, insomnia, sleep disorder, erectile dysfunction, depression, Nigeria

INTRODUCTION

Disturbed sleep is characteristic of patients with mood disorders including depressive illness. [(1)] And sleep disturbance has been found to greatly predict depressive symptoms. [(2)] There are a wide range of sleep disturbances. These may include insomnia and hypersomnia among others. Insomnia itself is a function of a number of sleep parameters including sleep latency, sleep duration and sleep disturbances and these are among the widely used indices of sleep quality. [(3)] Many patients suffering from depression complain of insomnia with

sleep initiation and maintenance difficulties, early morning awakenings, unrefreshed sleep, and decreased sleep time. [(4)] Thus there is an established relationship between sleep quality and depressive illness.

Erectile dysfunction is common among depressed male patients. [(5-6)] In depressed individuals there is usually a decreased interest in pleasurable activities and this may include sexual functions. On the other hand individuals suffering from erectile dysfunction may develop depressive illness as a result of the emotional reaction of such people to the effects of erectile dysfunction on their life. [(5-6)] The evidence thus points to a bi - directional relationship between depressive illness and erectile dysfunction.

Studies seeking a possible relationship among sleep quality, erectile dysfunction and depressive illness in the Nigerian environment are not common. It has become necessary to engage in studies in this direction in order to provide basic information against which subsequent findings may be compared. Such information will also improve clinical practice and benefit to patients. Specifically, the current study aimed at determining the sleep quality and erectile dysfunction in a group of depressed patients in order to know the proportion of depressed subjects who are poor sleepers, and the prevalence of erectile dysfunction among the depressed subjects. The study will also seek a possible inter relationship among sleep quality, erectile dysfunction and depressive illness among the subjects in the Nigerian environment.

MATERIALS AND METHODS

The Setting of the Study and Ethical Consideration

This study was conducted in the Psychiatric Outpatient Clinic of the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile – Ife, Nigeria after an approval was obtained from the Ethics and Research Committee of OAUTHC. The participants were male patients who presented with features of depression and were subsequently diagnosed as suffering from either a depressive episode or recurrent depressive disorder. The diagnoses were made using the 10th edition of the International Classification of Diseases (ICD - 10) by the World Health Organization (WHO). [(7)] They were all cases of unipolar depression. Those who were included in the study were those who presented for the first time and had not used any medication and those who had recurrent depressive disorder but who had not used medication for at least six months before presentation. Written informed consent was obtained from all those who took part in the study.

Instruments

Hamilton Depression Rating Scale (HamD)

The 17 – item Hamilton Depression Rating Scale (HamD) is clinician – rated, is one of the widely used scales for rating depression in medical research and practice. [(8-9)] Nine of the 17 items are scored on a five-point scale while the other 8 items are scored on a three-point scale. The higher the score the more severe the depression. A total score can range from 0 to 54. A score of 10 – 13 is regarded as mild depression; 14-17 as mild to moderate depression while a score of >17 is moderate to severe depression.

The Pittsburgh Sleep Quality Index (PSQI)

The Pittsburgh Sleep Quality Index is a self-report questionnaire that is used to measure sleep quality. It measures sleep quality over a one- month period. [(3)] The19-item self-report questionnaire yields 7 components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. Subjective sleep quality as the name suggests simply refers to the individual's evaluation of his sleep quality by answering the question: During the past month, how would you rate your sleep quality overall? It could be rated as very good, fairly good, fairly bad or very bad. Sleep latency is the interval between the

time of going to bed and the time the subject sleeps off. Sleep duration is the total time the individual spends sleeping. Sleep efficiency is number of hours slept divided by number of hours spent in bed and this is expressed as a percentage. Sleep disturbance refers to sleep disruption from such factors as pain, bad dreams and snoring among others. Use of sleeping medication and daytime dysfunction are considered explanatory. Each of these components is rated on a 0 – 3 scale. Scores from the 7 components are added to obtain a Global Sleep Quality Score. The range of Global Score is 0 – 21, higher score indicating worse sleep quality. Subjects with Global Scores greater than 5 are poor sleepers while those who score 5 and below are good sleepers. [(3)] The Cronbach's alpha for the Global Sleep Quality scale was reported to be 0.83. [(3)]

The International Index of Erectile Function (IIEF-5) Questionnaire

The International Index of Erectile Function (IIEF-5) Questionnaire was developed by Rosen et al. as an abridged, 5-item version of the original 15 item version of The International Index of Erectile Function. [(10)] The original IIEF instrument was specifically designed for use in clinical trials and is reported to be not well suited for use as a simple instrument to detect erectile dysfunction. [(10)] The IIEF-5 was developed to diagnose the presence and severity of erectile dysfunction (ED). Each of the five items is rated on a scale of 1-5. Thus the range of scores is from 5 to 25 with higher scores indicating less impairment.

The severity of ED is generally classified into five categories based on the score in The International Index of Erectile Function (IIEF-5) Questionnaire. [(10)] No erectile dysfunction (22 -25), Mild erectile dysfunction (17 - 21), Mild to moderate erectile dysfunction (12 -16), Moderate erectile dysfunction (8 - 11) and Severe erectile dysfunction (5 - 7).

Procedure

Twenty – five consecutive depressed male patients who met the inclusion criteria were evaluated for sleep quality and erectile dysfunction. The diagnoses of depressive episode and recurrent depressive disorder were made using the criteria from the 10th edition of the International Classification of Diseases (ICD - 10) by the World Health Organization (WHO). The severity of the depression was rated using the 17 – item Hamilton Depression Rating Scale (HamD). The sleep quality was measured using the Pittsburgh Sleep Quality Index (PSQI) while erectile dysfunction was assessed using The International Index of Erectile Function (IIEF-5) Questionnaire.

Statistical Analyses

The data were analyzed using the Statistical Packages for the Social Sciences, Version 17 (SPSS 17.0). Proportions, percentages, range, means and standard deviations were calculated for relevant variables. Multiple linear regression analysis was done with scores on the Hamilton Depression Rating Scale (HamD) as the Dependent Variable. The Independent Variables were the scores on the Pittsburgh Sleep Quality Index (PSQI) and The International Index of Erectile Function (IIEF-5) Questionnaire.

RESULTS

Out of the twenty – five subjects, 22 (88.0%) provided complete data. Those who provided incomplete data were excluded from the analyses. The mean age of the subjects was 39.6 years (SD = 6.2) with a range of 29 – 51 years. Fourteen of the subjects (63.6 %) were employed; and 12 (54.5 %) were married, the rest were in the group of single, separated, divorced and widowed.

Eighteen out of the 22 subjects (81.8 %) were poor sleepers having scored above 5 on the PSQI while 13 of the subjects (59 %) had erectile dysfunction having scored below 22 on the The International Index of Erectile Function (IIEF-5) Questionnaire.

The details of the subjects' scores on The International Index of Erectile Function (IIEF-5) Questionnaire showed that nine of the subjects scored 22-24 (no erectile dysfunction), six scored 17-21 (mild erectile dysfunction) and seven subjects scored 12 – 16 (mild to moderate erectile dysfunction). Further information on the characteristics of the subjects is shown on Table 1.

Table 1: Sample Characteristics (N = 22)

Variable	Range	Mean	SD
Age	29 – 51 years	39.6 years	6.2
PSQI	4 – 14	10.2	3.4
IIEF-5	12 – 24	18.7	4.1
HamD	14 – 39	23.9	7.4

PSQI: Score on The Pittsburgh Sleep Quality Index
IIEF-5: Score on The International Index of Erectile Function (IIEF-5) Questionnaire
HamD : Score on the Hamilton Depression Rating Scale

On multiple linear regression model, HamD was the dependent variable while PSQI score and score on IIEF-5 were the independent variables. The correlation between HamD and PSQI score (r1) was 0.73 ($p < 0.001$). This showed that there was a significant association between sleep quality and severity of depression. The correlation between HamD and IIEF-5 (r2) was 0.11 ($p = 0.31$) while that between PSQI and IIEF-5 (r3) was 0.17 ($p = 0.22$). This study did not find a significant association between erectile dysfunction and severity of depression; neither was the study able to establish an association between sleep quality and erectile dysfunction. The correlation coefficient among HamD, PSQI and IIEF-5 (R) was 0.73 ($p < 0.001$), R square was 0.53 and Adjusted R Square was 0.48. This showed that as predictors, sleep quality and erectile dysfunction accounted for 48 % of the variance in the scores of the Hamilton Depression Rating Scale by virtue of their linear relationship. The results of the regression analysis are shown in Table 2.

The correlation between HamD and PSQI score is denoted by r1; the correlation between HamD and IIEF-5 is denoted by r2 while that between PSQI and IIEF-5 is denoted by r3. The correlation coefficient among HamD, PSQI and IIEF-5 is denoted by R.

Table 2: Values for Regression Analysis with HamD score as Dependent Variable; PSQI score and IIEF-5 as Independent Variables

Variable	Value
Correlation	
r1	0.73 ($p < 0.001$)
r2	0.11 ($p = 0.31$)
r3	0.17 ($p = 0.22$)
Model Summary	
R	0.73
R Square	0.53
Adjusted R Square	0.48
ANOVA	
df	2, 19
F	10.86
Significance	$p = 0.001$

On another regression model, the study did not find a significant relationship between age and any of the scores on Hamilton Depression Rating Scale, The Pittsburgh Sleep Quality Index or The International Index of Erectile Function (IIEF-5) Questionnaire.

DISCUSSION

Depressive illness is a common psychiatric disorder and is reported to have a lifetime prevalence of 5 to 12% in men and 10 to 25% in women. [(11)] In this study, most of the subjects proved to be poor sleepers; in other words to have poor sleep quality. This is consistent with the literature. Patients with depression often complain of difficulty initiating sleep, frequent awakenings during the night, early morning wakefulness, or nonrestorative sleep. [(12-13)] These often disturbed sleep parameters in depression are what sum up to constitute sleep quality. Individuals suffering from insomnia are up to 10 times more likely to have depression than people in the general population. [(14-15)] This is a further evidence suggesting a strong association between insomnia and depressive illness and therefore sleep quality and depressive illness.

In this study not only did most of the subjects prove to be poor sleepers, in other words to have poor sleep quality, their scores on PSQI correlated highly positively with the severity of their depression. These are all consistent with the findings in the literature. The high association between

depressive illness and insomnia is considered suggestive of common pathways in their neurobiology. A number of biological mechanisms have been used to explain disturbed sleep patterns in depressed patients. [16-17] These include abnormalities in monoaminergic neurotransmission, problems in the control of biological rhythms and over activity of the hypothalamic–pituitary–adrenal (HPA) axis. [16,18-19]

It is rather striking that the study failed to find a significant association between erectile dysfunction and severity of depression; and also between sleep quality and erectile dysfunction. It is important however to note that all those who had erectile dysfunction had either the mild or mild to moderate grade of dysfunction with none having severe erectile dysfunction. As a matter of fact, none of the patients had erectile dysfunction as his primary reason for seeking medical attention. However those who were found to have a dysfunction were recommended for treatment.

The sample size of this study may have also contributed to these findings. The rather small sample size is a limitation for the current study. Larger sample sizes are suggested in subsequent studies so as to be able to make more confident conclusions in this regard.

CONCLUSION

In the management of male depressed patients, the clinician should have a high index of suspicion with regard to the possibility of the patients having some degree of erectile dysfunction which is quite common in this group of patients. When present in depressed patients, erectile dysfunction may require management in its own right.

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