Insomnia as an Indicator to Depression

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ABSTRACT

50 adult outpatients suffering from depression were selected after excluding the presence of any organic disease.

They were psychometrically tested by applying:

1. Beck's depression inventory.

2. St. Mary's Hospital sleep questionnarie.

The same procedure was also applied upon 25 volunteers of nearly the same age as a control group. The sleep of depressed patients differed significantly in many aspects from that of the control group. Also the differences between the neurotic and psychotic depressives as regards different sleep parameters were examined. A significant negative correlation, between the depth of depression and the sleep coefficient values, was found except in the age group 30-39. These results are discussed in comparison to the results of previous researches.

INTRODUCTION

Insomnia is considered by many research workers as one of the characteristic symptoms of depression *(Hawkins and Hendels, 1966; Soldatos and Kales, 1982).* There is a similarity between the symptoms of depression and the behavior of insomniacs, both of them showed passivity, lowered frequency of response to initiation, a negative cognitive set, lack of aggression, initiation, reports of being calm, indifferent and submissive *(Marchini et al., 1983).*

It was found that fitful or unrefreshing sleep in depressed patients is due to disturbance in the central autonomic centres especially the reticular formation and limbic cortex. Psychologically, it can result from unresolved conflicts of earlier experiences *(Hau, 1967).* The insomniac individual usually internalizes his emotions, a process

which leads to psychological arousal and activation and finally to insomnia *(Soldatos and Kales, 1982)*.

On a biochemical level, it was found that dreams are a cholinergic phenomenon *(Jama, 1978)*. A parallelism is present between certain sleep manifestations and those of depression, thereby patients with endogenous depression have less inhibition of REM sleep than normal subjects *(McCarley, 1982)*. The sleep in cases of depression is characterized by sleep maintenance disturbance, early morning awakening and shortened REM sleep latency *(Hawkins and Mendels, 1966; Association of sleep disorders centres, 1979)*.

AIM OF THE WORK

This work aimed at detecting the presence of a possible correlation between the severity of insomnia and the depth of depression.

MATERIAL

The study involved 2 groups: patients and controls.

1. Patients: 50 depressed patients (31 females, 19 males) were selected from the outpatient clinic of psychiatry of the main university hospital of Alexandria. Their ages ranged between 18 and 60 years; with a mean of 32.52 ± 11.26 years.
2. Controls: 25 volunteers were chosen from the workers and paramedical staff. They were 7 males and 18 females. Their ages ranged between 20 and 60 years with a mean of 36.3 ± 10.73 years.

METHOD

The studied groups were subjected to the following:

1. Psychiatric interview: The patients were categorized into different subtypes of depression according to the criteria of the Egyptian manual of psychiatric diagnosis (MPDI) *(Okasha et al., 1975)*.
2. Complete medical and neurological examination.

3. Psychometry:
   a. Beck's depression inventory *(Beck, 1969).*
   b. St. Mary's hospital sleep questionnaire *(Ellis et al., 1981).*

Statistical analysis: (t) test for comparison between 2 sample means was used for comparison between patients and controls. (ANOVA) test was used to detect the difference between the subtypes of psychotic depression as regards the different sleep parameters. The (t) test for examining the correlation from the "0" level (t_{n-2}) was used to evaluate the correlations in the results. In all the previous tests 5% was taken as the critical value of significance.

RESULTS

The results' of St. Mary's hospital (SMH) sleep questionnaire revealed that the sleep of depressed patients differed significantly from that of the controls as regards initial insomnia (t = 2.34), intermediate insomnia (t = 5.14), time spent asleep (t = 3.36) and mean value of sleep coefficient (t = 5.75). The differences as regards time spent in bed and late insomnia were insignificant (Table 1).

The sleep pattern of neurotic depressives when compared with that of psychotic depressives showed a significantly longer period of initial insomnia (t = 2.45), more time spent asleep (t = 2.65). The period of late insomnia was significantly longer in psychotic depression that in neurotics (t = 2.67). The differences between the 2 groups as regards time spent in bed, intermediate insomnia and sleep coefficient was insignificant (Table 2).

Focusing on psychotic depressives; there was no significant difference among the 3 subtypes namely, depressive illness not elsewhere specified, involutional melancholia and manic depressive illness (depressive type) as regards the different sleep parameters (Table 3).

The distribution of the values of sleep coefficient in the whole sample is shown in table (4).

The total sample of patients showed a significant negative correlation between the scores of Beck DI and the sleep coefficient values for each patient (b = - 0.59, r = - 0.29, t_{n-2} = 2.09).

Table 1: St. Mary's hospital sleep questionnaire for patients and controls, showing the mean value of sleep parameters

		Patients.			Controls			
		No.	Mean	S.D.	No.	Mean	S.D.	t
1.	Time spent in bed in minutes	50	480.8	111.8	25	443.8	123.17	1.37
2.	Initial insomnia in minutes	43	57.0	63.0	25	26.8	19.60	2.34
3.	Intermediate insomnia in minutes	43	96.7	92.4	25	17.0	29.40	5.14
4.	Late insomnia in minutes	43	30.1	62.0	25	13.6	21.10	1.29
5.	Time spent asleep in minutes	50	274.1	164.4	25	378.6	121.00	3.35
6.	Sleep coefficient	50	551.7	29.6	25	86.5	8.10	5.75

* Significant

Table 2: St. Mary's hospital sleep questionnaire for patients with neurotic and psychotic depression showing the mean value of sleep parameters

		Neurotically dep.			Psychotically dep.			
		No.	Mean	S.D.	No.	Mean	S.D.	t
1.	Time spent in bed in minutes	25	500.7	123.1	25	456.0	102.7	1.37
2.	Initial insomnia in minutes	24	129.2	119.4	19	56.0	56.5	2.45
3.	Intermediate insomnia in minutes	24	30.2	67.0	19	31.8	63.8	0.17
4.	Late insomnia in minutes	24	39.0	44.5	19	85.0	68.0	2.67
5.	Time spent asleep in minutes	25	296.0	156.4	25	211.4	163.5	2.65
6.	Sleep coefficient	25	587.5	26.5	25	46.5	32.2	0.96

* Significant

Table 3: St. Mary's hospital sleep questionnaire for subtypes of psychotic depression, showing the mean value of some sleep parameters

	Depressive illness not elsewhere specified		Involutional melancholia		Manic depressive illness (depressive type)		
	No.	Mean	No.	Mean	No.	Mean	F
1. Initial insomnia in minutes	11	59.5	4	60.0	4	42.5	0.634*
2. Intermediate insomnia in minutes	11	45.9	4	11.2	4	13.7	2.548*
3. Late insomnia in minutes	11	94.1	4	77.5	4	67.5	0.565*
4. Sleep coefficient	14	44.2	5	50.3	6	48.7	0.128*

* Non Significant

Table 4: St. Mary's hospital, sleep questionnaire distribution of the value of sleep coefficient in the whole sample of depressed patients

Sleep Coefficient	No. of Patients
0 - 9 %	8
10 - 19 %	1
20 - 29 %	4
30 - 39 %	4
40 - 49 %	2
50 - 59 %	6
60 - 69 %	9
70 - 79 %	8
80 - 89 %	5
90 - 99 %	3

As regards both sexes, males followed the previous relation (b =-0.83, r = -0.42, t_{n-2} = 2.08). Females showed an insignificant negative correlation (b = - 0.45, r = -0.21, t_{n-2} = 1.20) (Figure 1A).

Patients of the age groups 18-29 years (No. = 22) showed a significant negative correlation between the scores of Beck's DI and the sleep coefficient values (b = -0.85, r = -0.43, t_{n-2} = 2.12). Those aged 30-39 years old (No. = 11) did behave differently as they showed a significant positive correlation between the scores of Beck DI and the sleep coefficient values (b = 1.35, r = 0.58, t_{n-2} = 2.16). Patients of the age group 40-60 years old (No. = 17) showed an insignificant negative correlation (b = -0.69, r = -0.39, t_{n-2} = 1.91) (Figure 1B).

The 11 patients within the age group 30-39 years old were diagnosed as follows: 6 as depressive illness not elsewhere specified, 2 as manic depressives, 2 as situational depressives and the first 1 as depressive neurosis.

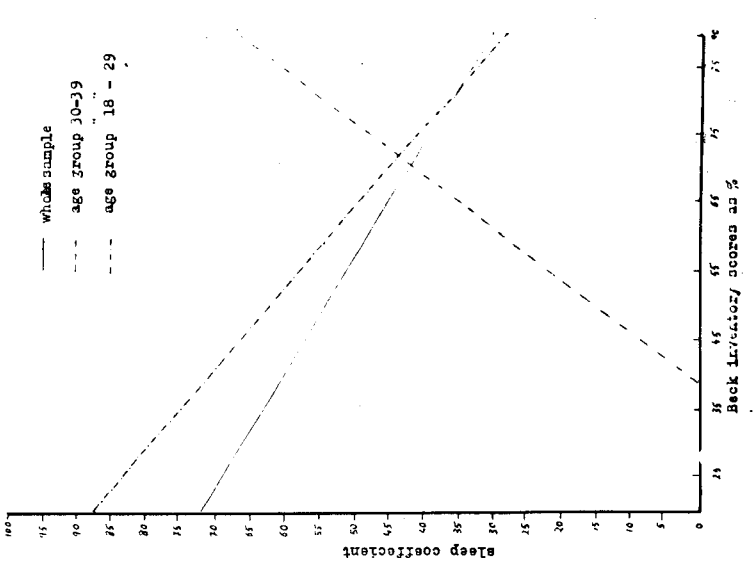

Figure 1B - Correlation between depth of depression as percentage of score of Beck's inventory - and the sleep coefficient of the whole sample and different age groups.

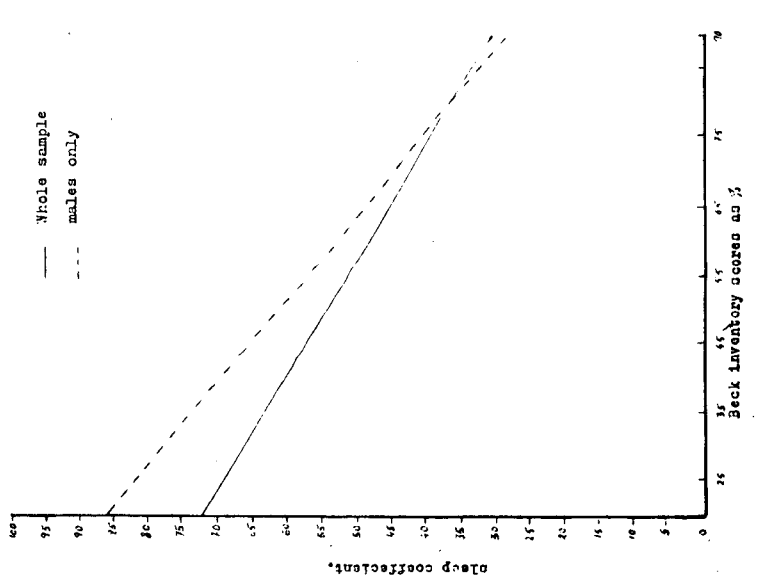

Figure 1 A - Correlation between depth of depression as percentage of score of Beck's inventory - and the sleep coefficient of the whole samples and of males only.

DISCUSSION

92% of patients included in the present study could be considered insomniacs, as they had sleep coefficient values of less than 88%. This value was taken as the cut off point which discriminated correctly between good and bad sleepers *(Coates, 1982).*

The present study showed that depressed patients had statistically significant more initial and intermediate insomnia than controls. They had significantly shorter total sleeping time. Their sleep coefficient was lower than that of the controls and the difference was significant. These results are further confirmation to previous results *(Hawkins and Mendels, 1966; Soldatos and Kales, 1982).*

In the present study although the mean value of early morning awakening for patients was more than that of controls, yet the difference was insignificant. It was also previously proposed that depressed patients have more spontaneous awakenings with maximal disturbances in the last third of the night *(Mendels and Hawkins, 1968).*

The comparison between depressed neurotics and psychotics in the present study revealed that initial insomnia was statistically longer in neurotics than in psychotics. Early morning awakenings were significantly longer in psychotics than in neurotics. The total time of sleeping was longer for patients with neurotic depression than it was for patients with psychotic depression. These results are confirmatory to a previous Egyptian study *(Okasha et al., 1975).*

Intermittent insomnia in the present study did not show significant difference between neurotic and psychotic depressives. This finding is against the result of a previous research which concluded that there is maximal disturbance in the continuity of sleep of psychotic depressives when compared with that of neurotic depressives *(Mendels and Hawkins, 1968).*

In the present study intermediate and late insomnia were longer in patients suffering from depressive illness not elsewhere specified than in the other subtypes of psychotic depression; namely involutional and manic depressive illness, the difference was insignificant. Contradictory to this finding it was found that initial insomnia was a complaint which is commoner is non bipolar depressives that it is in

bipolar depressives *(Brockington et al., 1982)*. Other opinions put the changes in sleep in depressed patients as one of the parameters of questionable value in the discrimination between autonomous and non autonomous depression *(Hartmann, 1968)*.

The present study showed that there is a significant negative correlation between the depth of depression and the value of sleep coefficient. This is confirmatory to a previous study showing that the tendency for greater sleep disturbance was associated with higher scores on Beck Depression Inventory *(Mendels and Hawkins, 1968)*.

In the present study patients of the age group 30-39 years old, were deviant from the previous rule and showed a significant positive correlation between the sleep coefficient and the depth of depression. Also females and patients of the age group 40-46 years old showed an insignificant negative correlation. Other studies found also that in depressed patients there are periods when their sleep remained unchanged or was slightly longer than normal *(Hartmann, 1968)*. Some of the studies separated the anergic hypersomniac depressed from the agitated hyposomniac depressed. It was concluded that the first group slept longer than the second group by about 100 minutes per night *(Shimmizu et al., 1979)*.

A recent study found that young depressed patients slept more and not less than when not depressed. Clinical reports indicate that mildly or moderately depressed older subjects sleep longer than normal. It was concluded that there is an interaction of age and depression with sleep *(Hawkins et al., 1985)*.

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L'INSOMNIE COMME INDICATEUR à LA DÉPRESSION

ABSTRAIT

50 patients adults souffrant de dépression ont été choisis après avoir éxclus la présence de maladies organiques.

Ils ont été évaluer à l'aide des épreuves psychométriques suivantes:

1. L'inventaire de la dépression de Beck.
2. Le questionnaire du sommmeil de l'hôpital de St. Mary. Le même procédé a été appliqué sur 25 volontaires, du même âge à peu près, comme groupe controle. Le sommeil des malades déprimés était significativement different de celui du groupe controle, et ceci dans plusieurs aspects. De même les differences entre les dépressifs névrotiques et psychotiques en ce qui concerne les différents paramètres du commeil ont été éxaminées. Une corrélation négative significative a été trouvée entre la profondeur de la dépression et la valeur du coefficient de sommeil, et ceci dans le groupe d'âge 30-39. Les résultats de cette étude sont discuttés en comparison avec les résultats des recherches précédentes.

الموجز
الأرق كمؤشر للاكتئاب

أجريت الدراسة على عينه تجريبية مكونة من خمسين مريضا بالاكتئاب من العيادة الخارجية تم أستبعاد اصابتهم بالمرض العضوى. وكذلك عينة ضابطه عن خمسة وعشرين متطوعاً.

شملت الدراسة تطبيق (١) قائمة "بيك" للأكتئاب (٢) اسبتيان" مستشفى سانت مارى "للنوم وصلت الدراسة الى وجود فروق جوهرية بين النوم عند العينه التجريبية مقارنة بالعينه الضابطه.

كما تم فحص الفروق بين الاكتئابين العصابى والذهانى فيما يختص بمتغيرات النوم. كما وجدت علاقة دالة سالبة بين عمق الأكتئاب وقيمة معامل النوم فى جميع الفئات العمرية. بأستثناء الشريحة ٣٠ - ٣٩ سنة. كما تم مناقشة هذه النتائج بالمقارنة بنتائج الدراسة المشابهة.