BRIEF REPORT

Excessive daytime sleepiness in patients with depressive disorder

Sonolência diurna excessiva em pacientes com transtorno depressivo

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Abstract

Objective: *To evaluate excessive daytime sleepiness in patients with depressive disorder and to examine its association with the severity of depression and suicidal ideation.* ***Method:*** *Seventy patients were interviewed and assessed by the Epworth Sleepiness Scale (ESS), the Beck Depression Inventory (BDI) and the Beck Scale for Suicidal Ideation (SSI). Descriptive analysis, Pearson correlations and Student's* t*-test were used for data analyses.* ***Results:*** *Most of the patients (57.1%) obtained high scores on the ESS. Correlation was positive and strongly significant between ESS scores and BDI scores, as well as between ESS scores and SSI scores. Patients with high ESS scores obtained higher mean BDI and SSI scores in comparison to patients with lower ESS scores. Significant differences ($p < 0.05$) were encountered when the patients with higher ($\geqslant 10$) and lower (< 10) ESS scores were compared in terms of total ESS, BDI and SSI scores.* ***Conclusions:*** *Excessive daytime sleepiness was frequent among patients and significantly associated with higher levels of depression and particularly with suicidal ideation. Thus, a careful investigation of daytime sleepiness in depressed patients is required during clinical evaluation.*

Keywords: *Sleep disorders; Disorders of excessive somnolence; Depressive disorder; Personality inventory; Suicide/psychology*

Resumo

Objetivo: *Avaliar a incidência de sonolência diurna excessiva em pacientes com transtorno depressivo e examinar sua associação com a gravidade do quadro depressivo e ideação suicida.* ***Método:*** *Setenta pacientes foram entrevistados e avaliados através da Escala de Sonolência de Epworth (ESE), da Escala de Depressão de Beck BD e da Escala de Ideação Suicida de Beck (EIS). Análises descritivas, análise de correlação de Pearson e teste-*t *de Student foram utilizados para a análise dos dados.* ***Resultados:*** *A maioria dos paciente (57,1%) apresentaram altas pontuações na ESE. Houve correlações positivas e fortes entre scores da ESE e BD e entre scores da ESE e EIS. Pacientes com altas pontuações na ESE obtiveram escores na BD e na EIS mais elevados do que os pacientes com baixos escores de ESE. Houve diferenças significativas ($p < 0,05$) entre pacientes com escores mais baixos (< 10) e mais elevados ($\geqslant 10$) na ESE, em relação às pontuações totais das ESE, EDB e EIS.* ***Conclusões:*** *A sonolência diurna excessiva foi freqüente nos pacientes e significativamente associada a maior gravidade da depressão e ideação suicida. Desta maneira, é necessária uma cuidadosa investigação da sonolência diurna excessiva em pacientes deprimidos durante a avaliação clínica.*

Descritores: *Transtornos do sono; Distúrbios do sono por sonolência excessiva; Transtorno depressivo; Inventário de personalidade; Suicídio/psicologia*

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Introduction

Difficulty in maintaining a desired level of wakefulness is the essence of daytime sleepiness, which is considerably frequent among individuals with high sleep debt.[1] Manifest sleepiness ranges from drowsiness, reduced performance to actual episodes of involuntary sleep in spite of volitional efforts to remain awake and cognitive impairment.[2]

Within a medical framework, excessive daytime sleepiness (EDS) is generally considered to be one of the main symptoms of depressive disorder, as a result of sleep deprivation or poor sleep quality.[3] Several epidemiological studies have indicated a strong association between EDS and moderate to severe depression.[4-6] This sleep disturbance and others play a significant role as predictors of and risk factors for depression. They are indeed an important key role for depression onset. Although the association of EDS and depression is not clearly detailed, the importance of addressing it is clear and has a major clinical significance.[7] EDS frequently leads depressed patients to seek medical assistance. Nevertheless, it is commonly under evaluated.[8] Therefore, understanding and proper management of this sleep disturbance are required in the clinical evaluation.

The aim of this study was to evaluate excessive daytime sleepiness in outpatients with depressive disorder and to study its relationship with the severity of depression and suicidal ideation.

Method

1. Sample

A cross-sectional study with a sample of 70 outpatients was conducted in the Psychiatric Unit of the Onofre Lopes University Hospital (Natal, RN, Brazil), from April to July 2005. The sampling convenience method was utilized in this study. The selection of patients was accomplished according to inclusion criteria (age between 18 and 65 years and diagnosis of unipolar depressive disorder). Diagnosis was provided by five psychiatrists responsible for the medical assistance through clinical interview using the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for unipolar depressive disorder[9] Patients' medical records were reviewed to assess the physicians' recognition of depressive disorder. All the patients consecutively admitted to the psychiatric outpatient unit who met the inclusion criteria of this study were evaluated. Exclusion criteria were diagnoses of bipolar disorder, psychoactive substance use, post-traumatic stress disorder, post-puerperal depression, and epilepsy.

2. Data collection

The interviews were held by one of the researchers, who has been properly trained to apply the instruments and who also provided assistance and full explanation for self-evaluation scales. All patients gave their free and informed written consent to participate in this study. The project was approved by the Ethics Committee of the Universidade Federal do Rio Grande do Norte (CEP-UFRN, nr. 111/2004).

3. Instruments

The Epworth Sleepiness Scale (ESS) is a self-evaluation questionnaire that was used to investigate daytime sleepiness among the patients. This questionnaire measures the propensity of patients to sleep or doze during active and passive situations commonly encountered during the wake period.[10] The metric of the ESS ranges from 0 to 24. ESS scores < 10 were considered as indicative of less severe sleepiness and scores $\geqslant 10$ were deemed clinically significant sleepiness.[11]

The Beck Depression Inventory (BDI) is a self-evaluation questionnaire and is one of the most commonly used instruments to measure depression severity.[12] This questionnaire consists of 21 items regarding depressive symptoms. The total BDI score is obtained from the sum of partial scores of each item, which range from 0 to 3. Total score below 10 indicates none or minimal depression, 10 to 18 indicates mild, 19 to 29 indicates moderate and above 30 indicates severe depression.[13]

The Beck Scale for Suicide Ideation (SSI) is a clinician-rating scale with a semi-structured interview format. This questionnaire is one of the most thorough instruments for assessing suicidal ideation, which is considered as an indication for suicidal risk.[14] It consists of 19 items, each of it rated on a scale from 0 to 2. High scores are related to more severe suicidal ideation. Total score equivalent to 6 or above indicates clinically significant suicidal ideation.

The Portuguese validated version of these scales was used.[11,13,15]

4. Statistical analysis

Sociodemographic characteristics were described through absolute and relative frequencies. Correlation analyses of the final scores of each scale were performed using Pearson correlation. The means obtained in the BDI and SSI scales for patients with ESS < 10 and $\geqslant 10$ were compared through the Student *t*-test for independent samples. Associations with p values lower than 0.05 were considered as significant. All data analyses were performed with Statistical version 6.0 for Windows.

Results

Data concerning socio-demographic characteristics of the patients are shown in Table 1. Out of 70 patients, 30 (42.8%) obtained ESS score < 10 in relation to 40 patients (57.2%) who obtained score $\geqslant 10$. There was a positive and strongly significant correlation between ESS and BDI scores ($r = 0.85$), as well as between ESS and EIS scores ($r = 0.79$).

The comparison of mean BDI and SSI scores between patients with an ESS score of < 10 and those with an ESS

Table 1 – Socio-demographic characteristics of the study sample

Variables	Patients (n = 70)		
	n	Frequency	(%)
Age	40.48 ± 12.54*		
Gender			
Male	26	36.6	
Female	44	63.4	
Marital status			
Single	15	21.4	
Married/with a companion	44	62.9	
Separated/divorced	2	2.8	
Widower	9	12.9	
Socio-economical status			
Up to 1 minimum wage	18	25.7	
1-2 minimum wages	36	51.4	
2-3 minimum wages	10	14.3	
Above 4 minimum wages	6	8.6	

** Mean ± Standard deviation*

score of ⩾ 10 indicated significant differences (respectively $t = 11.96$, $p < 0.001$ and $t = 10.33$, $p < 0.001$). Data concerning these comparisons are shown in Table 2.

The average duration (mean ± standard deviation) of depressive disorder in months was 6.40 ± 1.90. However, most of the patients with ESS < 10 had a shorter duration of depressive disorder when compared to patients with higher ESS scores (Table 2).

In relation to antidepressant and/or hypnotic intake prior to the interview, 27 (38.4%) patients used antidepressants and/or hypnotics, out of which 12 (17.1%) had an ESS score of < 10 and 15 (21.3%) had an ESS score ⩾ 10. A total of 43 (61.6%) were free of antidepressant and/or hypnotic medication.

Discussion

The socio-demographic characteristics of the study sample, such as age, gender, marital and socio-economical status indicated that most of the patients were low-income middle-aged women. These results concord with a previous work carried out in a major public hospital.[16] Regarding age and gender, it has been previously suggested that women report depression more frequently than men,[17] as well as elderly and middle-aged adults in relation to youngsters.[18] The results showed that more than half of the patients with depressive disorder in this study experienced clinically significant EDS and severe depression. These findings are consistent with previous reports of a strong association between daytime sleepiness and severity of rated mood symptoms.[6-7]

In the current study a significant association between EDS and high SSI scores (clinically significant suicidal ideation) was observed. This result is unequivocally striking, considering that no specific relation of EDS with suicidal ideation has been previously described. An explanation for this finding may be that patients with severe depressive disorder rank daytime drowsiness along with other major depressive symptoms.[19] Therefore, the major clinical implication of this study is that EDS is related to suicidal ideation and should be considered in the assessment of suicidal risk.

In this study, patients with higher levels of excessive sleepiness had longer duration of depressive disorder, when compared to patients with lower rates of sleepiness. The association of EDS with severe depression, in which the duration is frequently longer, is possibly the underlying reason.[20-21]

A total of 38.4% of the patients mentioned antidepressant and/or hypnotic intake, whereas 61.6% were free of these medications. This suggests that excessive daytime sleepiness was not probably due to medication effects in most of the cases. Previous studies have suggested that EDS may be due to residual symptoms of previous depression, despite clinical remission of many aspects of this mood disorder.[22-24] Sleepiness may equally be attributed to subjectively low sleep quality in severe cases of depressive disorder.[25] Therefore, the etiology of EDS in these patients remains uncertain.

In relation to the study restraints, the absence of data concerning previous episodes of mania and the influence of possible psychiatric co-morbidities should be stressed. The presence of sleep apnea among the patients is an information bias, since it is well known that sleep apnea is frequently encountered in depression, particularly among middle-aged women.[2] Moreover, the fact that some patients used antidepressants and/or hypnotics should equally be stressed. Antidepressants may also show a variety of other effects on sleep, like poor sleep perceptions or excessive daytime sleepiness.[25]

Conclusions

In the present study, clinically significant EDS was frequently encountered among patients with depressive disorder, and a significant association was observed between severe depression and EDS. However the major finding was the strong relationship of EDS with suicidal ideation. Thus, careful investigation of daytime sleepiness in depressed patients is advised during clinical evaluation.

Table 2 – Comparison of BDI, SSI scores (mean ± standard deviation) and the duration of the depressive disorder between patients with an ESS score of < 10 and those with a score of ≥ 10

	ESS < 10 (n = 40)		ESS ≥ 10 (n = 30)		p*
BDI	25.84 ± 2.80		46.22 ± 8.85		< 0.001
SSI	2.58 ± 1.17		7.80 ± 2.56		< 0.001
	ESS < 10		ESS ≥ 10		
Duration of depressive disorder	n	%	n	%	
Up to 3 months	24	80	4	10	
> 3-6 months	4	13.4	12	30	
> 6-12 months	1	3.3	22	55	
> 12 months	1	3.3	2	5	
Total	30	100	40	100	

** t student test*
ESS = Epworth Sleepiness Scale
BDI = Beck Depression Inventory
SSI = Beck Scale for Suicide Ideation

References
1. Gupta RM. Approach to the sleepy patient. *Med Health R I*. 2002;85(3):86-9.
2. Bittencourt LR, Silva RS, Santos RF, Pires ML, Mello MT. Excessive daytime sleepiness. *Rev Bras Psiquiatr*. 2005;27(Suppl1):16-21.
3. Fava M. Daytime sleepiness and Insomnia as correlates of depression. *J Clin Psychiatry*. 2004;65(Suppl16):27-32.
4. Silber MH. Sleep Disorders. *Neurol Clin*. 2001;19(1):173-86.
5. Breslau N, Roth T, Rosenthal L, Andreski P. Sleep disturbance and psychiatric disorders: a longitudinal epidemiological study of young adults. *Biol Psychiatry*. 1996;39(6):411-8.
6. Hublin C, Kapiro J, Partinen M, Heikkila K, Koskenvuo M. Daytime sleepiness in an adult, Finnish population. *J Intern Med*. 1996;239(5):417-23.
7. Young TB. Epidemiology of daytime sleepiness: definitions, symptomatology and prevalence. *J Clin Psychiatry*. 2004;65(Suppl 16):12-6.
8. Tylee A, Gastpar M, Lepine JP, Mendlewicz J. DEPRESS II (Depression Research in European Society II): a patient survey of the symptoms, disability and current management of depression in the community. DEPRESS Steerling Committee. *Int Clin Psychopharmacol*. 1999;14(3):139-51.
9. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM-IV). 4th ed. Washington (DC): American Psychiatric Press; 1994.
10. Johns MW. A new method for measuring daytime sleepiness: the Epworth Sleepiness Scale. *Sleep*. 1991;14(6):540-5.
11. Pedroso A, Filho AC, Aloe F, Tavares SM. Resultados da Escala de Sonolência EPWORTH em 480 alunos de graduação da Faculdade de Medicina da Universidade de São Paulo. *Rev Med*. 1996;75(2):100-7.
12. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for meausirng depression. *Arch Gen Psychiatry*. 1961;4:561-71.
13. Gorenstein C, Andrade L. Validation of a Portuguese version of the Beck Depression Inventory and the State-Trait Anxiety Inventory in Brazilian subjects. *Braz J Med Biol Res*. 1996;29(4):453-7.
14. Beck AT, Kovacs M, Weissman A. Assessment of suicidal intention: the Scale for Suicide Ideation. *J Consult Clin Psychol*. 1979;47(2):343-52.
15. Cunha JA. Manual da versão em português das Escalas de Beck. São Paulo: Casa do Psicólogo; 2001.
16. Berry JM, Storandt M, Coyne A. Age and sex differences in somatic complains associated with depression. *J Gerontol*. 1984;39(4):465-7.
17. Hara C, Lopes Rocha F, Lima-Costa MF. Prevalence of excessive daytime sleepiness and associated factors in a Brazilian community: the Bambui study. *Sleep Med*. 2004;5(1):31-6.
18. Blazer DG. Mood disorders: epidemiology. In: Sadock BJ, Sadock VA, eds. *Comprehensive textbook of psychiatry.* 7ª ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2000. p. 1298-308.
19. Schmidtke A, Bille-Brahe U, De Leo D, Kerkhof A, Wasserman D, eds. Suicidal behaviour in Europe: results from the WHO/EURO Multicentre Study on Suicidal Behaviour. Göttingen, Germany: Hogrefe & Huber; 2001.
20. Ohayon MM, Caulet M, Philip P, Guilleminault C, Priest RG. How sleep and mental disorders are related to complaints of daytime sleepiness. *Arch Intern Med*. 1997;157(22):2645-52.
21. Paykel ES, Ramana R, Cooper Z. Residual symptoms after partial remission: an important outcome in depression. *Psycol Med*. 1995;25(6):1171-80.
22. Judd LL, Akiskal HS, Maser JD, Zeller PJ, Endicott J, Coryell W, Paulus MP, Kunovac JL, Leon AC, Mueller TI, Rice JA, Keller MB. Major depressive disorder: a prospective study of residual subthreshold depressive symptoms as predictor of rapid relapse. *J Affect Disord*. 1998;50(2-3):97-108.
23. Lucchesi LM, Pradella-Hallinan M, Lucchesi M, Moraes, WA. O sono em transtornos psiquiátricos. *Rev Bras Psiquiatr*. 2005;27(Suppl1):27-32.
24. Agargun MY, Kara H, Solmaz M. Subjective sleep quality and suicidality in patients with major depression. *J Psychiat Res*. 1997;31(3):377-81.
25. Cano-Lozano MC, Espinosa-Fernandez L, Miro E, Buela-Casas G. A review of sleep disorders in depression. *Rev Neurol*. 2003;36(4):366-75.