

Patients with chronic headache tend to have more psychological symptoms than those with sporadic episodes of pain

Pacientes com cefaleia crônica tendem a ter mais sintomas psicológicos que aqueles com episódios esporádicos de dor

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ABSTRACT

There are controversial associations between headaches and psychological symptoms. **Objective:** To design a profile of neuroticism, a term that groups variables related to negative personality traits, in patients with chronic daily headache (CDH) when compared to episodic migraine (EM) patients, applying the Factorial Scale of Emotional Adjustment/Neuroticism (NFS). **Method:** One hundred adult patients with CDH and forty with EM answered the NFS. **Results:** Comorbidities of subtypes of neuroticism ($p=0.006$) were more common in chronic daily headache patients, with three or more disorders ($p=0.0002$): dependent personality disorder ($p=0.0001$), anxiety, reduced concentration and production ($p=0.0008$), depression ($p<0.0001$), suicidal ideation ($p=0.0008$) and hopelessness even without depression ($p<0.0001$). **Conclusion:** Patients with CDH tend to have dependent personality disorder, low production and concentration, anxiety, depression, suicidal ideation and hopelessness, superimposing two or more psychological disorders. These factors should be pondered for a better resolution in the treatment of CDH.

Keywords: headaches disorders, migraine, psychology.

RESUMO

Há associações controversas entre cefaleia e sintomas psicológicos. **Objetivo:** Traçar um perfil de neuroticismo em portadores de cefaleia crônica diária (CCD) quando comparados aos portadores de migraânea episódica (ME), utilizando-se a Escala Fatorial de Ajustamento Emocional/Neuroticismo (EFN). **Método:** Cem pacientes adultos com CCD e quarenta com ME, responderam à EFN. **Resultados:** Comorbidades de subtipos de neuroticismo ($p=0,006$) destacaram-se na CCD, ultrapassando três transtornos ($p=0,0002$): transtorno de personalidade dependente ($p<0,0001$), ansiedade, concentração e produção diminuídas ($p=0,0008$), depressão ($p<0,0001$), ideação suicida ($p=0,0008$) e desesperança ($p<0,0001$), mesmo sem depressão ($p<0,0001$). **Conclusão:** Paciente com CCD apresentaram indícios de transtorno de personalidade dependente, baixa capacidade de concentração e produção, ansiedade, depressão, ideação suicida e desesperança, superpondo dois ou mais transtornos psicológicos. Esses fatores devem ser ponderados para maior resolutividade no tratamento da CCD.

Palavras-chave: transtornos da cefaleia, migraânea, psicologia.

The term chronic daily headache (CDH) covers a group of primary headaches that occur more than fifteen days per month, with duration of a minimum of four hours, over at least three months^{1,2,3}. CDH include chronic migraine (CM), chronic tension-type headache (CTTH), hemicranias continua (HC), and new daily persistent headache (NDPH)⁴. CDHs affect from 3 to 5% of the general population, and account for approximately 40% of resources of clinics specialized in headaches⁵. Chronic migraine is

the most prevalent subtype of CDH seen in tertiary care centers⁶. The first description of a migrainous personality was published by Harold Wolf in 1937 who reported an association between migraine and some psychiatric symptoms. Although this characterization of migrainous adults as obsessive, shy, obedient and with rigid and inflexible traits⁷ has since been abandoned, the concept at that time highlighted a need to investigate correlations between headaches and psychological factors⁸. Clinical and

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Conflict of interest: There is no conflict of interest to declare.

Received 02 June 2014; Received in final form 14 May 2014; Accepted 02 June 2014.

epidemiological studies have shown that psychiatric disorders occur more frequently in patients who suffer from recurring headaches^{2,9}.

A review of the literature on headache and personality provides strong evidence of secondary neuroticism and increased sensitivity to stress in patients suffering from CDH^{1,10,11,12} and episodic migraines (EM)^{13,14,15}. Higher scores for neuroticism, a term that groups variables related to negative personality traits, have been noted for chronic migraine patients^{7,9,14,16} than for other patients or for a healthy population. Mood and anxiety disorders are the most prevalent in this population. Many studies used the Minnesota Multiphasic Personality Inventory (MMPI) to investigate patients with different types of headaches or other pains. The highest scores were given to patients with the strongest or most frequent types of pain and to patients with long-lasting headaches. This perhaps justifies why “such psychological abnormalities, often seen in chronic headaches, are frequently interpreted as responses to chronic pain”¹⁴.

In the case of migraine, Bigal and Lipton described it as a chronic disease with progressive and sporadic manifestations in some people^{17,18}, the very process of becoming chronic remains unclear. It is believed that progression of migraine leads to changes in the central nervous system that are manifested by changes in nociceptive and pain thresholds, such as central sensitization¹⁹. The fact that individuals with chronic headache, including migraine, regularly suffer from other comorbidities, indicates the need for studies on the possibility that the same pathophysiological mechanisms explain the two clinical manifestations²⁰. The relationship between premorbid disorders may be causal or casual, or even share the same risk factors (genetic or environmental) producing a mental state which gives rise to the two conditions⁸.

The characterization of the personality and psychological functioning of patients with headaches has been an area of interest not only in the psychosomatic medical literature, but also in psychiatry and neurology^{7,8,9,12,21}. The aim of this study was to assess possible associations between CDH and neuroticism by comparing individuals suffering from CDH to those with EM and to describe a possible personality profile typical of CDH patients from the viewpoint of neurotic symptoms, using the Factorial Scale of Emotional Adjustment/Neuroticism (NFS).

METHOD

A prospective study was carried out of 140 outpatients in an Headache Outpatient Clinic. Participants, of both genders with a minimum age of 18 years, were allocated to two groups: individuals with syndromic diagnosis of CDH and

those with EM. After a consultation with a neurologist and formally consenting to participate in this study, the patients were interviewed by a psychologist who noted demographic variables and applied the NFS. The exclusion criteria were the diagnosis of other neurological comorbidities or other chronic organic diseases. Data were analyzed using the Fisher exact test. Differences between groups with p -values < 0.05 were considered significant. All the subjects provided written consent for their participation in the study, which was approved by the Ethics Committee.

The NFS²² is an objective scale for evaluating a dimension in human personality called neuroticism based on the Five-Factors Model (FFM), developed from studies by Allport and Odbert. This scale consists of 82 items and four sub-factors: vulnerability, psychosocial maladjustment, anxiety and depression. The results may indicate evidence of dependent, avoidant, antisocial or “borderline” personality disorders, depression, anxiety, difficulties in perceiving and addressing problems, low concentration and production, suicidal thoughts and despair. Although this inventory is not efficacious for diagnosis, it was drawn up using DSM-IV criteria and indicates trends that should be better investigated in each case.

This study compared two groups of patients: those with chronic headache and those with sporadic episodes of pain.

RESULTS

The mean age of the patients was 42 years with a standard deviation of 14.42 and range of 18 to 81 years. Only 14.2% of the 100 patients with CDH and 40 with EM were male (Table 1). Although there was not a prior concern regarding the matching of the groups which were formed by order of arrival, there was no significant difference in the proportions of men and women between groups.

However, the EM Group was significantly younger than the CDH Group ($p=0.0049$). Figure 1 shows the distribution of patients by age group.

All the patients were evaluated by a neurologist before being invited to take part in this study. In the CDH Group, with one or more subtypes of the syndrome, the mean duration of the headaches was 10.75 years (standard deviation – SD=13.90; range: 6 months to “over 65 years”). The mean duration of the headaches in the EM Group was 9.31 years (SD=12.19; range: 2 months to “over 40 years”).

The mean age at the onset of headaches for the CDH Group was 34.38 years (SD=14.71; range: 7-66 years). For the EM Group the mean age at the onset of pain was 27.83 years (SD=14.45; range: 7-56 years).

The most frequent subtype of daily chronic headache was migraine. Figure 2 shows the proportion of the different subtypes of CDH found in this study.

Table 1. Sociodemographic characteristics of patients with chronic daily headaches (n=100) and episodic migraines (n=40).

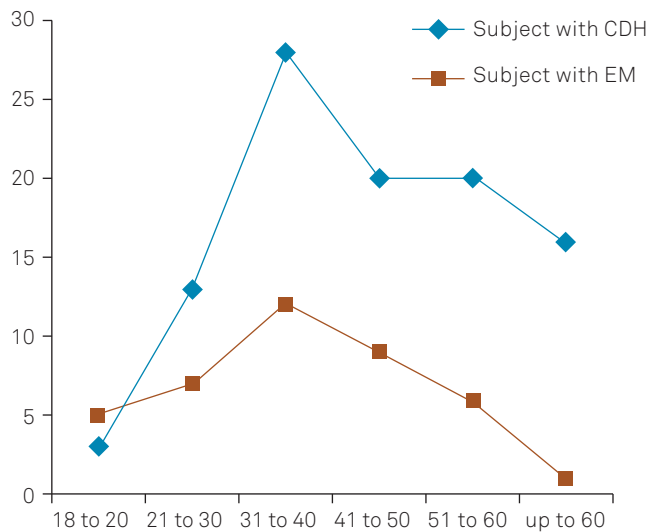
Characteristic	Chronic daily headaches (n=100)		Episodic migraines (n=40)		p-value
	N (%) or mean±SD				
Gender					
Male	10 (10.0)		9 (22.5)		0.066
Female	90 (90.0)		31 (77.5)		0.066
Age (years)	44±14.1		37±12.7		0.0049
Marital status					
Single	21 (21.0)		10 (25.0)		0.600
Married	67 (67.0)		24 (60.0)		0.439
Separated/divorced	5 (5.0)		4 (10.0)		0.307
Widowed	7 (7.0)		2 (5.0)		0.712
Employment status					
Unemployed	62 (62.0)		15 (37.5)		0.011
Employed	38 (38.0)		25 (62.5)		0.011
Schooling					
Less than 1 year	6 (6.0)		1 (2.5)		0.444
2-7 years	48 (48.0)		9 (22.5)		0.005
8-10 years	14 (14.0)		5 (12.5)		0.842
11 or more years	32 (32.0)		25 (62.5)		0.001

Use of analgesics is frequent in patients with headaches and this can possibly change the course of disease. Figure 3 shows the percentage of patients who took excessive medications, according to the criteria of the International Headache Society²⁵.

It was noted that both the CDH and EM Groups had high prevalence of symptoms of neuroticism (Table 2). However, patients with CDH appeared to be more susceptible to neurotic symptoms: 90% of the patients of this group had at least one symptom of neuroticism against 67.5% in the EM Group (p=0.006). This difference between groups is more notable as the number of comorbid disorders increases, that is, for two or more associated disorders (p=0.0002). Table 2

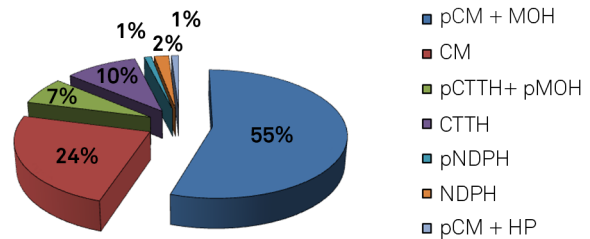
shows the manifestations of neuroticism in both the CDH and EM Groups.

In fact, differences in relation to almost all the subtypes of neuroticism were clear in the statistical comparison between groups. The CDH Group had the highest proportion of patients with dependent personality (p<0.0001), anxiety with less concentration and productivity (p=0.0008) and depressive disorders (p=0.0001). Moreover, two symptoms that are often present in depression were analyzed in particular; patients with CDH had more suicidal thoughts (p=0.0008) and despair (p=0.0001).



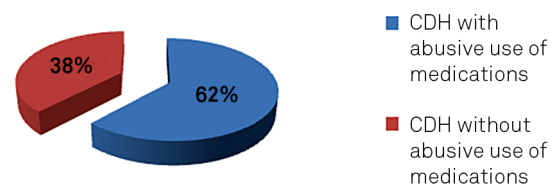
CDH: chronic daily headache; EM: episodic migraines.

Figure 1. Distribution of patients by age groups according to each study group at the time of this study.



MC: Chronic migraine; pMC: Probable chronic migraine; CEM: Headache due to excessive medications; CTTC: Chronic tension-type headache; CPDI: New daily-persistent headache (NDPH); CH: Hypnic headache; CDH: chronic daily headache.

Figure 2. Proportion of the different subtypes of CDH



CDH: chronic daily headache.

Figure 3. CDH with or without medication overuse.

Table 2. Manifestations of neuroticism in CDH and EM Groups

Subtypes of Neuroticism	CDH		EM		p-value
	n	%	n	%	
Dependent personality disorder*	60	60	8	20	<0.0001
Avoidant personality disorder*	9	9	14	35	0.0005
Antisocial or Borderline personality disorder	12	12	2	5	0.2268
Low capacity of concentration and production*	3	3	12	30	<0.0001
Anxiety disorder*	59	59	11	27.5	0.0008
Depressive disorder*	45	45	4	10	<0.0001
Difficulties to perceive their problems*	10	10	16	40	0.0001
Suicidal ideation*	25	25	1	2.5	0.0008
Despair*	72	72	0	0	<0.0001
Evidence of at least 1 disorder *	90	90	27	67.5	0.0060
Evidence of 3 or more disorders*	34	34	2	5	0.0002
Depression and suicidal ideation	24	24	1	2.37	0.3391
Depression and despair	24	24	0	0	0.0597
Suicidal ideation without depression	1	1	0	0	0.7252
Despair without depression*	47	47	0	0	<0.0001

CDH: chronic daily headache; EM: episodic migraines.

On the other hand, patients in the EM Group had more avoidant personality disorder ($p=0.0005$), a tendency to be less alert and without motivation ($p=0.0001$) and difficulty to perceive their problems (0.0001) than the CDH Group.

There was no significant difference in respect to the symptom of suicidal ideation among depressed patients of the two groups ($p=0.3391$); hopelessness, in contrast, was more common among those with CDH ($p=0.0597$). Among patients without depression, although there was no significant difference between the two groups regarding suicidal thoughts ($p=0.7252$), patients with CDH presented more hopelessness ($p<0.0001$).

Despite the small number of men in the sample, differences in neuroticism between men and women of the same group were investigated. It was found that both men and women in the EM Group have symptoms of neuroticism ($p=0.321$). The same was observed with respect to the subtypes of personality disorders: both men and women with EM present subtypes of personality disorders and there seems to be no significant differences between genders in this group.

In the CDH group, no difference was found comparing genders in relation to patients presenting neuroticism symptoms in general ($p=0.5153$). However, on analyzing subtypes of disorders separately, it was noted that, in this group, women had more depression ($p=0.0199$) and suicidal ideation ($p=0.0479$) than men.

DISCUSSION

The fact that patients in the EM Group were younger than those in the CDH Group seems to corroborate the hypothesis that EMs tend to become more frequent with time.

Evidence of three or more subtypes of neuroticism was identified in 34% of patients with CDH and 5% with EM

($p=0.0002$). Patients with CDH proved to be susceptible to more subtypes of neuroticism and to a higher number of symptoms, often with indicia (signs, evidence) of two or more concomitant neuroticism subtypes ($p=0.0002$). This corroborates previous publications that assumed that psychiatric disorders occur more frequently in patients who suffer from recurring headaches²⁹. In 1982, Andrasik stated in his studies that the severity of psychiatric symptoms might be positively associated with the frequency of headaches and not with the intensity⁸.

An item-by-item analysis of the symptoms assessed with the present inventory showed that patients with CDH have strong indicia of dependent personality disorder characterized by the need for approval and the expectation of help from others. In contrast to this, patients with EM tend to be excessively detached and independent in respect to their opinions and their acceptance of help from others, eventually evolving with avoidant personality disorder. A follow-up study may be useful to assess whether there is a change in the characteristics of personality dependency along with an increasing frequency of headaches as the patient ages ($p=0.0049$).

EM patients exhibited a perceptual detachment from their problems, less motivation and attention in relation to new and unexpected situations, characterized by an excessively low level of anxiety ($p=0.0001$), CDH individuals demonstrated impulsiveness, irritability, panic and mood swings that lead to less concentration and a drop in productivity, characterized by an excessively high level of anxiety ($p=0.0008$).

The association of CDH with anxiety and depression is well established, as was also found in this study. Furthermore, suicidal ideation and hopelessness were significant differences in both groups. Although 2.5% of the EM sample presented suicide ideation, this rate was 10 times higher (25%) in CDH ($p=0.0008$), particularly in the women of this group ($p=0.047$). Hopelessness was also more present

in subjects with CDH ($p < 0.0001$), even in patients without depression ($p < 0.0001$).

With EMs, the patients tend to become detached from themselves and others, decreasing their self-criticism and perception that they have problems, with less motivation and assertiveness to solve their problems ($p = 0.0001$), they become less aware, with a distancing of their opinions and expectations of others, eventually evolving to an extreme of avoidant personality disorder ($p = 0.0005$). It seems to be connected to their pain, nothing and nobody else matters, a strategic attempt to confront or adapt to the stress associated with the painful condition.

CDH patients, on the other hand, have the opposite stance, an anxious search ($p = 0.0008$) with dependence on others ($p < 0.0001$), a disorganized state and irritable mood with less control, a depressive anxious apathy ($p < 0.0001$), loss of hope ($p < 0.0001$) and suicidal ideation ($p = 0.0008$). As if the effort to manage the stress of pain had waned and they had succumbed.

This study appears to point to an increase in the threshold of bearable pain. On comparing with EM, CDH patients seems to become exhausted, evolving with a greater number of psychopathologies, depression, anxiety, despair and suicidal ideation. Perhaps as the migraine becomes chronic it is associated with this reduction in sensitivity that annuls the patient's ability to cope. In this study, as in others, half of the patients with CDHs presented stress and were almost at the point of exhaustion¹. So, it is possible to understand the despair ($p < 0.0001$), suicidal ideation and the larger number of combined disorders as a collapse of the organism in successive attempts to adapt to continuous pain, typical of a stress exhaustion stage¹.

In conclusion, patients with CDH tend to have dependent personality disorder, low production and concentration, anxiety, depression, suicidal ideation and hopelessness, superimposing two or more psychological disorders. These factors should be considered for a better resolution in the treatment of CDH.

References

1. Galego JCB, Moraes AM, Cordeiro JA, Tognola WA. Chronic daily headache: stress and impact on the quality of life. *Arq Neuropsiquiatr* 2007;65:1126-1129.
2. Silberstein SD, Lipton RB. Chronic daily headache. *Curr Opin Neurol* 2000;13:277-283.
3. Silberstein SD. Chronic Daily Headache. *JAOA* 2005;105(Suppl 2):S523-S529.
4. Halker RB, Hastriter EV, Dodick DW. Chronic daily headache: an evidence-based and systematic approach to a challenging problem. *Neurology* 2011;76(Suppl 2):S537-S543.
5. Scher AI, Stewart WF, Liberman J, Lipton RB. Prevalence of frequent headache in a population sample. *Headache* 1998;38:497-506.
6. Bigal ME, Rapoport AM, Lipton RB, Tepper SJ, Sheftell FD. Assessment of migraine disability using the migraine disability assessment (MIDAS) questionnaire: a comparison of chronic migraine with episodic migraine. *Headache* 2003;43:336-342.
7. Wolff HG. Personality features and reactions of subjects with migraine. *Arch Neurol Psychiatry* 1937;37:895.
8. Andrasik F, Blanchard EB, Arena JG, Teders SJ, Teevan RC, Rodichok LD. Psychological functioning in headache sufferers. *Psycho Med* 1982;44:171-182.
9. Merikangas KR, Stevens DE. Comorbidity of migraine and psychiatric disorders. *Neurol Clin* 1997;15:115-123.
10. Federal Bureau of Prisons. Classification. Federal Bureau of Prisons. Federal bureau of prisons clinical practice guidelines for the management of headache. Federal Bureau of Prisons 2003:6-8.
11. Bigal ME, Sheftell FD, Rapoport AM, Tepper SJ, Weeks R, Baskin SM. MMPI personality profiles in patients with primary chronic daily headache: a case-control study. *Neurol Sci* 2003;24:103-110.
12. Tsuji SR, Carvalho DS. Aspectos psíquicos das cefaleias primárias. *Rev Neurociências* 2002;10:129-136.
13. Silberstein S, Tfelt-Hansen P, Dodick DW, et al. Guidelines for controlled trials of prophylactic treatment of chronic migraine in adults. *Cephalalgia* 2008;28:484-495.
14. Huber D, Henrich G. Personality traits and stress sensitivity in migraine patients. *Behav Med* 2003;29:4-13.
15. Mercante JPP, Bernik MA, Zukerman-Guendler V, Zukerman E, Kuczynski E, Peres MFP. Comorbidade psiquiátrica diminui a qualidade de vida de pacientes com enxaqueca crônica. *Arq Neuropsiquiatr* 2007;65:880-884.
16. Mercante JPP, Peres MFP, Guendler V, Zukerman E, Bernik MA. Depression in chronic migraine: severity and clinical features. *Arq Neuropsiquiatr* 2005;63:217-220.
17. Haut SR, Bigal ME, Lipton RB. Chronic disorders with episodic manifestations: Focus on epilepsy and migraine. *Lancet Neurol* 2006;5:148-157.
18. Bigal ME, Lipton RB. Concepts and mechanisms of migraine chronification. *Headache* 2008;48:7-15.
19. Welch KM, Nagesh V, Aurora S, Gelman N. Periaqueductal gray matter dysfunction in migraine: cause or the burden of illness? *Headache* 2001;41:629-637.
20. Zukerman E. Fisopatologia da cefaléia crônica diária. *Einstein* 2004;2(Suppl 1):S5-S7.
21. Padrão de codependência e prevalência de sintomas psicossomáticos. Available at http://btdt.famerp.br/tde_arquivos/1/TDE-2007-07-05T131144Z-90/Publico/mariaaparecidajunqueirazampieri_dissert.pdf. Accessed (may 10, 2012).
22. Hutz CS, Nunes CH. Elaboração e descrição da Escala Fatorial e de Ajustamento Emocional/Neuroticismo. In: Hutz CS, Nunes CH(Eds). *Escala Fatorial de Ajustamento Emocional/Neuroticismo - EFN*. São Paulo: Casa do Psicólogo, 2001:9-13.
23. Hutz CS, Nunes CH, Silveira AD, Serra J, Anton M, Wiekzorek LS. O desenvolvimento de marcadores para a avaliação da personalidade no modelo dos cinco grandes fatores. *Psicol Reflex Crít* 1998;11:395-410.
24. Trentini CM, Hutz CS, Bandeira DR, Teixeira MAP, Gonçalves MTA, Thomazoni AR. Correlações entre a EFN - Escala Fatorial de Neuroticismo e o IFP - Inventário Fatorial de Personalidade. *Aval Psicol* 2009;8:209-217.
25. International Headache Society Subcommittee. The international classification of headache disorders. Second Edition. *Cephalalgia* 2004;24(Suppl. 1):S1-S160.