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# The occurrence of headaches and their effect upon nursing undergraduate students\*

OCORRÊNCIA E PREJUÍZOS DA CEFALEIA EM ESTUDANTES UNIVERSITÁRIAS DE ENFERMAGEM

OCURRENCIA Y PERJUICIOS DE LA CEFALEA EN ESTUDIANTES UNIVERSITARIOS DE ENFERMERÍA

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## ABSTRACT

This study was performed with the objectives of identifying the occurrence of headache as the major cause of pain and characterizing the effect headaches have on the everyday activities of nursing undergraduate students. This cross-sectional study was performed at the College of Nursing of the Federal University of Goiás, Goiânia, Brazil, from May to June 2008. Participants included 203 students (mean age 21 years; s.d.=1.8), 48.5% from economic class A. Headaches were the major cause of pain for 34.5% of students; described as being of strong intensity; referred to as throbbing (74.3%), stabbing (62.9%), and causing nausea and/or vomiting (55.7%); with episodes occurring in the afternoon (52.9%), and lasting for several hours a day (51.4%). Factors related to the onset of pain were: studying (17.1%) and stress (11.4%). The activities most affected were: their capacity to concentrate (84.3%) and their mood (84.3%) ( $p<0.05$ ). Headaches are less common in the population compared to other country studies, and they affect the students' everyday activities.

## DESCRIPTORS

Headache  
Students, nursing  
Pain measurement

## RESUMO

O estudo teve como objetivos verificar a ocorrência de cefaleia como a principal dor e caracterizar essa experiência e o prejuízo causado por ela nas atividades cotidianas de estudantes universitárias de enfermagem. Trata-se de um estudo transversal, realizado na Faculdade de Enfermagem da Universidade Federal de Goiás, Goiânia, GO, Brasil, de maio a junho de 2008, com 203 estudantes, (idade média de 21 anos; d.p.=1,8), 48,5% da classe econômica A. A cefaleia foi a principal dor para 34,5% das universitárias; de forte intensidade; descrita como latejante (74,3%), pontada (62,9%) e enjoada (55,7%); com episódios à tarde (52,9%), com duração de algumas horas do dia (51,4%). Os fatores relacionados ao início da dor foram: os estudos (17,1%) e o estresse (11,4%) e as atividades mais prejudicadas: a capacidade de concentração (84,3%) e o humor (84,3%) ( $p<0,05$ ). A cefaleia é menos frequente nesta população comparada a estudos realizados em outros países e prejudica as atividades cotidianas das universitárias.

## DESCRIPTORES

Cefaleia  
Estudantes de enfermagem  
Medição da dor

## RESUMEN

El estudio objetivó verificar la ocurrencia de cefalea como dolor principal y caracterizar tal ocurrencia y el perjuicio derivado en las actividades cotidianas de estudiantes universitarias de enfermería. Estudio transversal, realizado en Facultad de Enfermería de Universidad Federal de Goiás, Goiânia-GO, Brasil, entre mayo y junio de 2008, con 203 estudiantes (edad promedio 21 años; d.p.=1,8), 48,5% de segmento económico A. La cefalea constituyó el dolor principal para 34,5% de estudiantes; de fuerte intensidad; descrita como intermitente (74,3%), con puntadas (62,9%) y náuseas (55,7%); prevaleciendo de tarde (52,9%), durando algunas horas al día (51,4%). Los factores relacionados con el inicio del dolor fueron: los estudios (17,1%) y el estrés (11,4%), y las actividades más perjudicadas: la capacidad de concentración (84,3%) y el humor (84,3%) ( $p<0,05$ ). La cefalea es menos frecuente en esta población en comparación con otros países, y perjudica las actividades diarias de las estudiantes.

## DESCRIPTORES

Cefalea  
Estudiantes de enfermería  
Dimensión del dolor

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## INTRODUCTION

Headache is a frequent complaint among young students and the losses this pain causes implies disability, educational failure and an average absenteeism rate of 2.8 days/year<sup>(1)</sup>, greater vulnerability to comorbidities<sup>(2)</sup> and impaired quality of life<sup>(3)</sup>. A consensus exists that women and young adults are the most represented cases<sup>(4)</sup>.

International epidemiological studies have investigated the prevalence of headache among college students. At the University of Abomey-Calavi School of Health Science in Cotonou (Benin), Africa<sup>(5)</sup>, the prevalence rate of migraine corresponded to 11.3% (95% CI: 8.2-15.3), significantly higher among female (18.3%) than among male (6.8%) students. In Turkey<sup>(6)</sup>, the prevalence of tension headache among college students amounted to 22.64% and that of migraine to 17.89%, significantly more frequent among women ( $p < 0.0001$ ). At the University Ambrose Alli in Nigeria, the prevalence rate of migraine (according to International Headache Society criteria) equaled 9.6% (10.3% for women and 8.9% for men,  $p = 0.35$ ), causing severe and significant disability for 15.9% of the interviewees<sup>(7)</sup>. In Munich, Germany, 83.1% of students between 14 and 20 years of age mentioned headache, with a higher frequency of female students<sup>(8)</sup>. At the University of Zagreb Medical School, Croatia, the prevalence of migraine was estimated at 8.86% among first-year and 10.90% among sixth-year students, while prevalence rates for tension headache corresponded to 60.13% and 57.69%, respectively<sup>(9)</sup>. Frequency rates were significantly higher among women than among men ( $p = 0.017$ ). At the University of Belgrade, Yugoslavia, 66.8% ( $n = 1943$ ) of students indicated primary headache<sup>(10)</sup>.

In Brazil, a study<sup>(11)</sup> conducted among college students from different courses in Ribeirão Preto, São Paulo State, estimated a 24% prevalence rate for migraine and 32% for tension headache, with lower school productivity levels among students with migraine than among those with tension headache. Other studies conducted in the Brazilian general population appointed 74.1% of headache prevalence in Santa Catarina State<sup>(12)</sup>; 53.2% in the interior of Espírito Santo<sup>(13)</sup> and 71.3% in Rio Grande do Sul<sup>(14)</sup>. In all studies, women and young adults predominated.

In view of this reality and the lack of studies about the theme among Brazilian college students, it was considered important to contribute to knowledge advances on the epidemiology of headache in that population, with a view to knowing the extent of the problem among future nurses and support health services that aim for problem prevention and health promotion in this population.

The study aimed to verify the occurrence of headache as the main self-referred pain among female college students in Nursing and to characterize the painful experience and resulting losses in these women's daily activities.

## METHOD

The study was developed at the School of Nursing of Universidade Federal de Goiás (FEN/UFG), located in the city of Goiânia, Goiás State, Brazil, between May and June 2008, after a favorable opinion from the Institutional Review Board at Universidade Federal de Goiás Hospital das Clínicas, in compliance with National Health Council Resolution 196/96.

A cross-sectional study was accomplished in the student population ( $n = 250$ ) regularly enrolled in the undergraduate Nursing program (approximately 50 students per year). Students younger than 18 and who were not present in the classroom after three attempts by the researcher and male students (three) were excluded, totaling 203 participants, distributed across the five course years (81.2% of nursing students).

**Headache is a frequent complaint among young students and the losses this pain causes implies disability, educational failure and an average absenteeism rate of 2.8 days/year, greater vulnerability to comorbidities and impaired quality of life.**

The research variables included: occurrence of headache (considered as any pain located in the head), characterized in terms of intensity (measured through the Numerical Scale (NS)<sup>(15)</sup>, ranging from 0 to 10, in which 0 meant no pain and 10 the *worst possible pain*. Scores from 1 to 4 represented *mild pain*, 5 and 6 *moderate pain* and from 7 to 9 *strong pain*; quality, assessed through the McGill-LF Questionnaire<sup>(16)</sup>, comprising 78 descriptors, distributed in four large groups and 20 subgroups, 11 of which characterized the sensory-distinctive dimension of the painful experience, four the affective-motivational dimension, one the cognitive-evaluative dimension and five the miscellaneous group. Moreover, the time of day was investigated when the pain episode occurred (morning, afternoon and night), the duration of the pain episode (some hours, half of the day, the entire day, part of the week, part of the month and the entire month), the frequency of pain episodes (none, sometimes, frequently, continuously) and the factors related with the emergence of headache (separation from the family, loss of close people, rupture of affective relation, studies, stress, does not know and others). The intensity of the impairment the headache caused in daily activities was measured through a cup scale<sup>(17)</sup>, in which the first cup was equivalent to 0=no impairment; the second to 1=small impairment; the third to 2=moderate impairment; the fourth to 3=great impairment and the fifth to 4=total impairment and the factors related to the emergence of the pain (separation from the family, loss of close people, rupture of affective relation, studies, stress, does not know and others).

The participants were characterized according to the socioeconomic class (classified based on the family head's education level and the number of goods owned, according to the *Correction Key for Socioeconomic Classification in Brazil*, Classes: A1, A2, B1, B2, C1, C2, D, and E – Brazilian Association of Advertisers/Brazilian Association of Market Research Institutes (ABA/ABIPME)(18), the age (18-20 years, 21-23 years, >= 24 years), the course year the student was attending (1st, 2nd, 3rd, 4th or 5th year); involvement in extracurricular activities (research, community service, monitoring and training programs – yes/no answers) and regular exercising (at least thrice per week – yes/no answers).

The female students were contacted in the classroom, at an appropriate time to complete the standardized data collection instrument. They received instructions to locate the main pain felt on body diagrams and then characterize it according to the variables of interest. Data were compiled and analyzed using SPSS 16.0 software, and represented through descriptive central trend measures like mean and median, and dispersion measures (Q1-25% of the ranked sample and Q3-75% of the ranked sample, minimum, maximum and standard deviation). Spearman's correlation test was used for associations between numerical variables and the chi-square test for associations between categorical variables. Significance was set at 5%.

## RESULTS

Among the 203 nursing college students, distributed across the five years of the undergraduate Nursing program, 70 (34.5%) appointed the head as the main pain site. The ages of the women who complained of headache ranged between 18 and 28 years ( $M=21$  years;  $SD=1.8$ ); 48.5% belonged to economic class A (A1+A2); 65.7% participated in extracurricular activities and only 21.4% exercised regularly (Table 1).

Third-year nursing students showed the highest frequency of headache reports (25.7%). The episodes were more frequent in the afternoon period (52.9%), took *some hours* (51.4%) and were *frequent* for 40.0% of the students (Table 2).

When asked about the factors related with the onset of headache, 54.3% of the students could not inform about these, 17.1% appointed *studying* and 11.4% *stress*.

The mean pain intensity scores (according to the 0-10 numerical scale) was 7.0 ( $MIN=2.0$ ;  $MAX=10$ ;  $Q1=5.0$ ;  $Q3=8.0$ ). According to 45.7% of the students, the pain was classified as *strong*; 35.7% considered it *moderate*; 10.0% *mild* and 8.6% the *worst possible pain* (Picture 1).

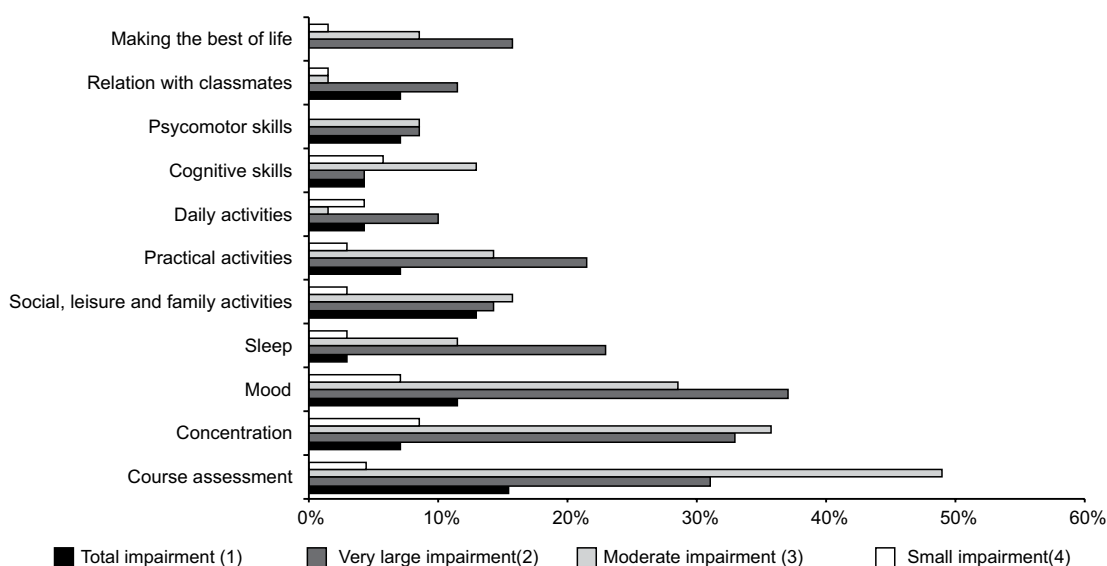
Regarding pain quality, the most frequently chosen descriptors (30% or more of the population) were: *throbbing* (74.3%), *jumping* (62.9%), *sickening* (55.7%), *tiring* (48.6%), *tight* (38.6%), *troublesome* (38.6%), *penetrating* (32.9%), *heavy* (31.4%), *nauseating* (30.0%) and *sensitive* (30%), in the four groups (sensory, affective, evaluative and mixed) of the McGill-LF Pain Questionnaire<sup>(16)</sup>.

**Table 1** – Distribution of nursing college students with self-referred headache according to socioeconomic, demographic and academic variables - Goiânia, GO - 2008

Variables	Students	
	N	(%)
<b>Age range</b>		
18 to 20 years	33	47.1
21 to 23 years	33	47.1
24 years or older	4	5.7
<b>Participates in extracurricular activities</b>		
Yes	46	65.7
No	24	34.3
<b>Socioeconomic Class</b>		
Class A (A1+A2)	34	48.5
Class B (B1+B2)	28	40.0
Class C (C1+C2)	6	8.5
Class D	1	1.4
Class E	1	1.4
<b>Exercises regularly</b>		
Yes	15	21.4
No	55	78.6
<b>Course Year</b>		
First year	11	15.7
Second year	15	21.4
Third year	18	25.7
Fourth year	11	15.7
Fifth year	15	21.4
<b>Total</b>	<b>70</b>	<b>100.0</b>

**Table 2** – Distribution of students according to frequency, duration and time of day when headache episodes emerged – Goiânia, GO - 2008

Characteristics	Students	
	N	(%)
<b>Time of day when pain emerges</b>		
Morning	11	15.7
Afternoon	37	52.9
Night	22	31.4
<b>Duration of pain episodes</b>		
Some hours	36	51.4
Half of the day	15	21.4
Entire day	13	18.6
Part of the week	3	4.3
Part of the month	2	2.9
Entire month	1	1.4
<b>Pain frequency during last week</b>		
None	8	11.4
Sometimes	29	41.4
Frequently	28	40.0
Continuously	5	7.1
<b>Total</b>	<b>70</b>	<b>100.0</b>



**Picture 1** – Distribution of daily activities impaired by headache and intensity of loss, measured through cup scale (0-4) – Goiânia, GO - 2008

The activities the headache impaired are displayed in Table 3. The proportion of students that indicated impairment in daily activities (concentration ability, mood, relations with other people, cognitive skills, psychomotor skills and accomplishment of practical and assessment activities) due to the headache was greater than that of students who mentioned impairment due to other pain forms.

The scores attributed to the intensity of the impairment the pain caused in daily activities, using the cup scale, are displayed in Picture 1. A higher percentage of students (35.7%) attributed score 3 – *very large impairment* in *course subject activities* and *concentration ability*; and 22.0% attributed score 2 – *moderate impairment* in *mood*, *sleep*, *accomplishment of practical activities*, *daily activities*, *making the best of life* and *relating with classmates*.

The correlation between the impairment intensity and headache intensity (Spearman ratio) was weak ( $r$  ranged from 0.27 to 0.35), positive and significant for concentration ability ( $r=0.35$ ;  $p=0.006$ ); social, leisure and family activities ( $r=0.31$ ;  $p=0.010$ ); relation with other people ( $r=0.32$ ;  $p=0.006$ ) and ability to make the best of life ( $r=0.27$ ;  $p=0.010$ ), indicating the importance of considering pain intensity when assessing the disability.

## DISCUSSION

Epidemiological studies<sup>(5-6,8-9)</sup> developed in different countries, including Brazil<sup>(11)</sup>, estimated a higher prevalence rate of headache among college students (between

41.0% and 98.3%) than in the present study – 34.5%. This finding may be related to the fact that only the main pain was considered, i.e. the pain that bothered most. In Nigeria, among first to sixth-year medical students, with a mean age of 23.4 years, the prevalence of headache corresponded to 46.0%, significantly more common among women (62.8%)<sup>(19)</sup>. In Turkey, among students in the same course (mean age 21.16 years;  $sd=2.03$ ), migraine predominated among women<sup>(6)</sup>. In Oman, in the Persian Gulf, high prevalence rates were observed for headache (98.3% at some moment in life and 96.8% in the latest year of life) among 403 college students, with a mean age of 21.9 years;  $sd=1.9$  and a majority of women (62.5%)<sup>(20)</sup>. At the University of Belgrade, Yugoslavia, the prevalence of headache among Medicine and Pharmacy college students between 18 and 28 years of age corresponded to 66.8%<sup>(10)</sup>.

In the United States (USA), 17.3% of students indicated headache episodes one or more times per week; 33.6% once or twice per month; 50.9% at least once per month and 49% with low frequencies and greater variation over time. Moreover, 60% of the interviewees affirmed that headache interfered in their habitual activities<sup>(4)</sup>, a higher frequency than in the present study (21.4%) and similar to that in Oman<sup>(20)</sup>, in which 20% of medical students indicated that they were unable to perform daily activities during the pain episodes, which emerged one or more times per month. These data appoint frequent impairments in students' activities, which can result in academic failure and difficulties to make important decisions in professional and personal life.

**Table 3** – Distribution of activities impaired by headache and other pains the female college students referred - Goiânia, GO - 2008

Impaired activity	Headache as main pain		Other pain sites		p*
	N	%	N	%	
<b>Concentration ability</b>					
No	11	15.7	44	63.0	0.0020
Yes	59	84.3	75	37.0	
<b>Mood</b>					
No	11	15.7	36	30.3	0.0260
Yes	59	84.3	83	69.7	
<b>Social, leisure and family activities</b>					
No	38	54.3	80	67.2	0.0760
Yes	32	45.7	39	32.8	
<b>Daily activities</b>					
No	55	78.6	81	68.1	0.1200
Yes	15	21.4	38	31.9	
<b>Relations with other people</b>					
No	43	61.4	97	81.5	0.0020
Yes	27	38.6	22	18.5	
<b>Sleep</b>					
No	42	60.0	62	52.1	0.2000
Yes	28	40.0	57	47.9	
<b>Making the best of life</b>					
No	52	74.3	94	79.0	0.4000
Yes	18	25.7	25	21.0	
<b>Cognitive skills</b>					
No	51	72.9	101	84.9	0.0400
Yes	19	27.1	18	15.1	
<b>Psychomotor skills</b>					
No	53	75.7	108	90.8	0.0050
Yes	17	24.3	11	9.2	
<b>Relationship with classmates</b>					
No	53	75.7	103	86.6	0.1500
Yes	15	24.3	16	13.4	
<b>Evaluation activities of course subjects</b>					
No	34	48.6	90	75.6	0.00010
Yes	36	51.4	29	24.4	
<b>Practical activities of course subjects</b>					
No	37	52.9	67	56.3	0.00010
Yes	33	47.1	52	43.7	

In our study, headache was studied without any reference to the etiological diagnosis. Studies have shown, however, that migraine and tension headache most affect women<sup>(6,9-10, 14, 19-20)</sup>, leading to the hypothesis that these were the two most frequent types of headache among female college students in this study. Moreover, regarding migraine, an association is observed with the hormonal variations women are subject to in their lifetime, especially related to the menstrual cycle<sup>(10)</sup>. Besides, the migraine is described as pounding/throbbing and moderate to severe, similar to the present study findings. In the State of Rio Grande do Sul, Brazil, in a study involving the general population, women displayed four times more headache than men<sup>(14)</sup>. On the other hand, tension head-

ache prevails in individuals with higher education levels, with a prevalence peak around 30-39 years for men and women<sup>(21)</sup>.

Regarding factors related to the onset of headache, 17.1% of students appointed *studying* and 11.4% *stress*. Among medical students, sleep deprivation (72.4%), excessively long work hours (57.9%) and lack of rest (52.3%) were the precipitating/aggravating factors of pain<sup>(20)</sup>. In the State of Santa Catarina, Brazil, in an eminently female population, stress (79.7%) and menstruation (61.7%) were the most frequently mentioned triggering factors<sup>(12)</sup>. In Africa, psychological fatigue was the most frequent triggering factor of headache among college students<sup>(5)</sup>.



Students in this research described pain qualities through words from the sensory, affective, evaluative and mixed groups of the MPQ-LF. The following were the most frequently chosen: *throbbing* (74.3%), *jumping* (62.9%), *sickening* (55.7%), *tiring* (48.6%), *tight* (38.6%), *troublesome* (38.6%), *penetrating* (32.9%), *heavy* (31.4%), *nauseating* (30.0%) and *sensitive* (30%). In a research conducted at the neurology service of a teaching hospital in the State of Rio de Janeiro, involving 50 episodic tension headache patients (80% female; mean age 32 years), the most frequently chosen pain descriptors were *heavy* (34%) and *tight* (30%)<sup>(21)</sup>. *Tight* was also the word most frequently chosen (70.96%) among students with tension headache and throbbing among students with migraine (87.57%)<sup>(6)</sup>. Among medical students, the most frequent headache descriptors were *tight* (38.6%) and *throbbing* (36.1%)<sup>(20)</sup>, similar to the present study findings. Further research is needed to more accurately clarify the description of different headache types. It should be reminded that the MPQ can be used to distinguish painful symptoms<sup>(22)</sup>.

The self-referred pain intensity in this study was strong (scores 7, 8, 9) for 45.6% of the students and the *worst possible pain* (score 10) for 8.6% of them. The pain intensity of headache was also very strong for 11.9% of the medical students in Oman<sup>(20)</sup>. This alerts to the fact that the intensity of headache, independently of age and profession, can be considered very strong, resulting in limitation and disability, as observed in a study in the State of São Paulo, Brazil<sup>(11)</sup>. Moreover, in this study, the correlation between pain intensity and the intensity of impairments in the students' daily activities was positive and significant, support reports about impairments in these activities. Medical students also reported difficulties to complete their daily activities<sup>(20)</sup>.

In Turkey, moderate-severe disability was found in two-thirds of migraine students from different courses, associated with educational failure<sup>(1)</sup>. In Nigeria, the disability was moderate-severe for 36.6% of students<sup>(19)</sup>.

Regarding the frequency of impairments in the students' daily activities due to the headache, *concentration ability* and *mood* ( $p < 0.05$ ), followed by *ability to perform daily activities* and *relationship with classmates*, with lower frequency levels. The impact on quality of life and decreased occupational and leisure abilities are well-known factors that have been largely described in literature. Employees from the University of São Paulo at Ribeirão Preto Medical School *Hospital das Clínicas* in the State of São

Paulo said that they avoid driving when in pain (35.1%); some reported about having canceled family (59.9%) and leisure activities (81.2%) due to pain. Eighty-two percent reported that they had to stop doing what they were doing to lie down or that they would like to lie down<sup>(3)</sup>.

In this study, the significant correlation between pain intensity and the intensity of impairments for concentration ability, participation in social and leisure activities, relation with other people and ability to make the best of life appoints pain intensity as a possible determinant factor of low productivity and/or quality loss in the results of students' tasks, as observed in a study<sup>(11)</sup> that involved 1022 Brazilian college students.

The present study limitations, related to the population restricted to one single Nursing college and the lack of an etiological diagnosis of the headaches point towards the need for further research, using more representative sample, which permit better knowledge on the headache problem among female Nursing students. The importance of investigating headache in a young and female population is to avoid further unnecessary suffering, reduce comorbidities, start early and adequate treatment and promote health, acknowledging the value of this population as future health professionals.

## CONCLUSION

The prevalence of headache as the main referred pain among female nursing students is lower than the rates found in similar studies. Nevertheless, the subjective pain intensity is classified as very strong/worst possible for most students. In qualitative terms, the pain is described through words from the sensory, affective and evaluative groups of the McGill Pain Questionnaire (MPQ), indicating the multidimensional nature of this experience.

The pain episodes preferably emerge in the afternoon, continue for some hours during the day, emerge frequently and are triggered by *studying* and *stress*. Headache interferes in the students' daily activities, mainly in their concentration ability and mood, which are fundamental for the learning process.

It is highlighted that the elaboration/implantation of preventive health programs should be encouraged with a view to screening for headache cases and forwarding students to specialized care at an early stage, with a view to preventing disease and promoting health in this young population.

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