

Epidemiologic and Clinical Characteristics of Migraine and Tension-Type Headaches among Hospitals Staffs of Shiraz (Iran)

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Abstract- Headache is a common symptom that constitutes a major health problem to all countries in the world. This study was conducted to estimate the prevalence of migraine and tension -type headaches(TTH), its associated occupational risk factors among Shiraz hospitals staffs, and to report on clinical characteristics of migraine and TTH with using the International Headache Society (IHS) diagnosis criteria. A random sample of 1023 staffs constituting a 20% sample of the hospitals staff population was selected. Sampling method was categorical random sampling. Within each group sampling was carried out systematically. Data were collected by screening questionnaire followed by clinical interviews, general physical and neurological examination, and diagnostic criteria of IHS. Prevalence of migraine, TTH and coexisting migraine and TTH were estimated as 11.2% (115 cases), 19.5% (199 subjects) and 3.2% (33 subjects) respectively. In this study , clinical characteristics of headache including type, site, number , intensity ,concomitant symptom of headaches had been surveyed. TTH and migraine headaches were significantly associated with self reported abnormal sleep pattern and female gender ($P < 0.001$). Also TTH was negatively associated with total 24hr duration of sleep and history of involvement in second job significantly ($P < 0.026$). The average of prevalence of migraine and TTH were lower than their counter parts in western countries but higher than previous studies conducted in other Asian countries. Clinical characteristics were almost parallel with IHS criteria, headache-related missed work rates were higher for subjects with migraine headache, and also TTH and migraine were separate disorders and were not as a part of a continuum of headache disorders. Headache disorders deserve more attention, especially concerning strategies leading to adequate primary prevention, diagnosis and treatment.

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Key word: Migraine, tension-type headache (TTH), prevalence, medical staff, hospital

Introduction

The headache is the most common pain syndrome (1). This complication is the ninth, the reason for to call on doctor(2), as 30% of men and women with headaches consult a physician for their headaches(2). One-year prevalence of headache is estimated at approximately 90% studies (3). The prevalence of headache is highest in the 25-34year age groups (4) and this is more common in females than males (3).Tension -type headache and migraine headache comprise two thirds of various kinds of headaches (5). Correct diagnosis is the first and

the most cardinal step for headache treatments (6). From 1988, general acceptance of the International Headache Society (IHS) diagnostic criteria has made it possible to convey comparative studies on headaches across the worlds (5).The prevalence of migraine and tension-type headache based on the diagnostic criteria of the international headache society (IHS) were reported respectively 22.3% and 16.2% among 15 years-old (Korea) (7), 14% and 36% among 15 years old (Canada) (8), 25% and 32.9% among medical student (Brazil) (9), 12.2% and 12.2% among medical students (Oman) (10), 3% and 1.7% among Ethiopian general population (Africa) (11),

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12.5% and 18.8% among 14 years-old female's Turkey (12), 7.4% and 15.8% among medical student's Iran(Shiraz) (13), 1.7% and 5.5% among 7-11years-old students(Iran-Shiraz) (14), 6.1% and 2.1% among 11-18 years-old females Iran(Shiraz) (15), 9.2% and 15.8% among medical students (Iran- Kerman) (16), 11.01% among medical students (Iran-Zanjan) (17) and 10.0%and 24% among teachers (Iran-Shiraz) (18).This study was conducted to determine the prevalence of migraine and tension- type headache among hospitals staffs of Shiraz (Iran) and to identify associated professional risk factors, to report on clinical characteristics of migraine and TTH.

Patients and Methods

The survey was conducted between June and December 2005 among staffs of 24 hospitals of Shiraz who had at least, one-year record of service. A random sample of 1023 (20%) of the hospitals staffs population was selected. Sampling method was categorical and the categories were nursing group (nurses, health workers and obstetricians), official group and the menial group. Sampling method of any group was carried out systematically. Data were collected by screening questionnaire followed by clinical interviews, general physical and neurological examination, and diagnostic criteria of International Headache Society (IHS). A face to face interview was conducted of eligible member's hospitals. Subjects reported more than 5times headache during preceding year were invited to have a free general health examination and filling IHS questionnaire, followed by clinical interview, general physical and neurological examinations. The initial census identified a total of

5075 eligible subjects aged 19 to 59 years with at least one- year record of service. Information on demographic variables and occupation (private/State hospital, type shift, night shift, work history and hours in week, sleeping pattern and second job) questions were also asked about the influence of headaches on working and social life activities. To compare headaches characteristics together were applied one way ANOVA (Bonferroni test) for quantitative variables and χ^2 tests for qualitative variables and to asses of relations migraine and TTH headaches with demographic and occupational variables was used univariate and multiple regression logistics. Analyses were performed using SPSS13.

Results

Of 1023 subjects 448(%43.8) subjects had more than 5times headaches during the preceding. Applying the IHS criteria, neurological and physical examination, 11.2% (115 subjects) [95% CI: 9.3-13.1%] of population had migraine, 19.5% (199 subjects) [95% CI: 17.1-21.9%] had TTH and 3.2% (33 subjects) [95% CI: 2.1-4.3%] had coexisting migraine and tension. Also 5.3% (54 subjects) [95% CI: 3.9-6.6%] had migraine with aura and 6.0% (61 subjects) [95% CI: 4.5-7.4%] had migraine without aura. 57.2% (585 subjects) [95% CI: 54.2-60.2%] of population was free headache in the preceding year.

Females had significantly higher odds of Headaches ($P < 0.001$). Migraine was more common in 30-39 year-old age group (16.5%, 95%CI: 12.6-20.6%). However tension-type headache and mixed headache were more common in 40-49 year-old age group (25.8%, 95% CI: 20-31.6%).

Table 1. Demographic data and prevalence of headache based gender, Job groups, having shift

Feature	Migraine (N=115)	P *	TTH (N=199)	P *	Mixed headache ¹ (N=33)	P*
Age (Year). Mean(SD)	33.9 (7.89)	0.12	34.4(8.74)	0.12	37.7(10.53)	0.016
Sex: Female (%)	97(13.6)	0.0001	154(21.7)	0.0001	29(4.1)	0.005
Nurse (%)	72(13.3)		118(21.8)		24(4.4)	
Job groups: Clerical/managerial (%)	18(7.8)	0.33	43(18.7)	0.014	4(1.7)	0.09
Menial (%)	25(9.9)	0.24	38(15.1)	.0002	5(2.0)	0.06
Type of Working: Having night shift (%)	53(12.6)	0.36	82(19.5)	0.2	17(4)	0.12
Sleeping status: Abnormal (%)	6.9(1.38)	0.0001	6.7(1.54)	0.0001	6.6(1.8)	0.0001
Sleeping hours (Hours/Day). Mean(SD)	7.2(1.4)	0.11	7.2(1.6)	0.0001	7.2(1.6)	0.013
History of second job (year). Mean(SD)	9.5(8.8)	0.19	11.0(8.7)	0.049	7.5(6.1)	0.22

1: Mixed headache: migraine and TTH

*: univariate logistic regression analysis of the relationship "headaches" and "factors"

Table 2. Comparison of headache factors in different headache subtypes by one way ANOVA (Bonferroni test)

Headache factors	Migraine(N=115) mean(SE)	TTH(N=199) mean(SE)	Mixed head- ache(N=33) mean(SE)	(P-value)		
				1,2	1,3	2,3
Frequency, (days/month)	4.9(5.7)	6.3(7.38)	7.1(8.9)	0.29	0.0001	0.0001
Duration (Hours)	15.4(20.7)	12.7(18.37)	17.1(21.65)	0.13	0.004	0.12

1, Migraine 2, TTH 3, Mixed (migraine and TTH) headache

As table 1 patients with self reported abnormal sleep pattern including insomnia, early awakening night mares and sense of inadequate sleep had higher odds of headache and there was inverse relation with hours sleeping and probability of TTH and mix headache, also odds TTH and mix headache of nurses were more than official and menial groups and there was significant relation between TTH with second job and having night shift (Table 1). Table 2 shows factors headaches as frequency headaches per month and long headaches in pre attack of headache, Mean comparison these variables in subtype of headaches was observed in Table 2.

Throbbing was observed in 99(86.1%) of migraineurs and in 69(34.7%) of patient with TTH and there was significant difference in throbbing between migraineurs and TTH cases ($P<0.0001$). A total of 55(47.8%) patients with migraine had unilateral headache and 64(37.2%) of patients with TTH had bilateral headache. There was a significant difference in site headache and type headache ($P<0.0001$) (Table 3). Nau-

sea with 75 cases (65.2%) was the most common associated symptom of migraine and followed by appetite decrease with 48 cases (41.7%) (Table 3). In 70 (60.9%) of migraineurs and 76 (38.2%) of patients with TTH described their headache attacks as severe ones in their self reports. The intensity of headache was more severe in Migraine patients than in TTH patients ($P<0.0001$). In 25 (21.7%) of patients with Migraine and in 17(8.5%) of patients with TTH missed their work days due to headache in previous year. We entered variables with $P\leq .20$ (gender, age, job group, Second job, sleeping status, rate sleeping and having night shift) in multiple regression logistic analysis. In univariate logistic regression (migraine and TTH), privates/state hospitals($P=0.82$ and $P=0.58$), rotating/ fixed shift ($P=0.95$ and $P=0.87$), number of night shifts within week ($P=0.95$ and $P=0.66$), duration sleep after of night shift ($P=0.74$ and $P=0.92$) history work ($P=0.68$ and $P=0.83$) and, hour's work in week ($P=0.95$ and $P=0.68$) were $P>.20$ then no entered in model.

Table 3. Distribution of headache characteristics and Comparison of headache characteristics in migraine and TTH among Shiraz (Iran) hospitals staffs by headache

Variables	Migraine (%) N=115	TTH (%) N=199	Mix headache(%) N=33	Significance
Intensity ¹				
Sever	70(60.9)	76(38.2)	23(69.7)	$P<0.0001$
Throbbing pain	99(86.1)	69(34.7)	30(90.9)	$P<0.0001$
Usually				
Site of headache				
Unilateral	55(47.8)	74(37.2)	11(33.3)	
Bilateral	27(23.5)	17(8.5)	7(21.2)	
Occipital	3(2.6)	24(12.1)	3(9.1)	$P<0.0001$
Frontal	6(5.2)	27(13.6)	0(0.0)	
Generalized	3(2.6)	15(7.5)	5(15.2)	
Else	21(18.2)	42(21.1)	7(21.2)	
Having Nausea	75(65.2)	96(48.2)	23(69.7)	$P<0.004$
Having Vomiting	37(32.2)	27(13.6)	11(33.3)	$P<0.0001$
Having Photophobia	40(34.8)	28(14.1)	18(54.5)	$P<0.0001$
Having Phonophobia	37(32.2)	46(23.1)	17(51.5)	$P=0.079$
Having Related missed work	25(21.7)	17(8.5)	9(27.3)	$P<0.0001$

1: Intensity: 1, Mild 2, Moderate 3, Sever

Table 4. World wide comparison of headache prevalence

Years	County	Category	Age (year)	Sample size	Prevalence			N. Reference
					Mi-graine%	TTH %	Mix headache%	
1991	Denmark	G.P ¹	25-64	1000	10	-	-	19
1992	Canada	G.P	≥15	1573	14	36	14	8
1993	Finland	G.P	-	1000	6.5	-	-	20
1995	Iran. kerman	Students		238	9.2	15.8	-	16
1997	Sudan	G.P	18-74	1661	13.2	-	7.8	21
1997	Iran. Shiraz	Medical Students	-	310	7.4	15.8	2.6	13
1998	Korea	G.P	≥15	2500	22.3	16.2	-	7
1999	Iran.Zanjan	Medical Students		554	11.01	-	-	17
2000	Iran	Female Students	18-25	700	8.6	-	-	22
2002	Iran. Shiraz	Female	11-18	700	6.1	12.2	2.7	15
2004	Iran. Shiraz	Teachers		538	10	24	5.2	18
2004	Iran. Shiraz	Students	6-13	2226	1.7	5.5	-	14
2006	Zimbabwe	Psychological hospital staff	-	175	30.8	47.7	-	23
2006	Turkey	Police group	15-64	1117	14.5	25.9	-	24
2006	Brazil	Students	12-17	625	22.1	22.9	-	25

1: G.P indicates general population

In model TTH and migraine headache were significantly associated with self reported abnormal sleep pattern including insomnia, early awakening night mares and sense of inadequate sleep ($P < 0.003$), also TTH was negatively associated with total 24hr duration of sleep ($P < 0.001$), and history of involvement in second job was significantly associated with TTH ($P < 0.026$). Although odds ratios of migraine and TTH were higher for nurses rather than clerical/managerial and menial groups, but no significant association was seen between headaches (migraine and TTH) and the above mentioned job groups ($P=0.788$ and $P=0.285$).

Discussion

This is a population-based study of chronic idiopathic headache in hospital staffs of Shiraz. Migraine prevalence of 11.2% found in our study is almost equal to that found by Yusefy (17) in Iran medical students (11.0 %). The estimated tension-type headache prevalence of 19.5% in our study was the highest in comparison with previous studies conducted in Iran (13-16). The estimated coexisting migraine and tension- type headache prevalence of 3.2% was consistent to Ayatollahi (15) in adolescent girls of Iran (2.7%), but less than half of the prevalence reported by Roh in Korea (7). In comparison to the prevalence of headache in the other groups in Iran, the prevalence of Headache was considerably high in

our studies (13-18). Higher prevalence of headache among hospitals staffs are mostly related to following, 1: stressful working environment 2: The long working with sick patients 3: role performance for weak human in hospital and 4: present woman staffs more than man staffs in working environment of hospital .A comparison of our headache prevalence with those reported from some Asian, European, American and African countries is presented in Table 4. Obvious differences are in the demography of the various study populations, methodologies utilized limit, and tiresome moils, Tension and circumference pressure.

Migraine is commonly unilateral, pulsating moderate, to sever intensity and is associated with nausea, photophobia and phonophobia. TTH is characterized as bilateral, pressing/ tightening in quality, mild or moderate intensity and is not usually aggravated by routine physical activities Migraine (5,3,14,26). Almost half, (47.8%) the migraine patients in our study reported unilateral headaches and 74 (37.2%) of the TTH patients, reported bilateral headaches, which results in a lower rather than other studies (7,27,21,28,29). In present study, other clinical characteristics such as, pulsating nature and association with phonophobia and photophobia were almost parallel with IHS criteria and prior finding (6,7,21,26,27,32,33,36,37). Despite this, we found different pain intensity among migraine and TTH 26. Severe headache can lead to disruption of work, family and

social life, the long term consequences of which may affect quality of life (34,35). Evidence suggests the presence of a pain intensity threshold for disability (36) and also in our study headache-related missed work rates were higher for subjects with migraine headache too (21.7% against 8.5%). This finding was consistent with IHS diagnosis and several studies (2,7,8,21,33,27). Measuring the severity of migraine is important in understanding the extent of the burden of migraine on the individual and on society and predictors of disability and need rate for patient care, treatment and help target those more disabled by migraine (34). We concluded that tension-type headache and migraine were separate disorders and not part of a continuum of headache disorders, (This concurred with Ulrich's and Iniguez's studies (26,37). In general women had higher odds of headaches than the men (Which is in consistent with several others studies (7,10,33,38,39). In this study a significant association was established between sleeping pattern and headaches association. Despite this, TTH was negatively associated with total 24 h duration of sleep. Other studies in Iran (Shiraz) confirmed sleeping pattern just was associated with migraine headache (18,39-41). Also there was significant association among TTH and history of having second job. No significant association was found between professional groups and headaches, contrary to other studies (42,38). Also no significant difference was observed between shift work which is in consistent with Portela's study (43). Of course the survey of risk factor of occupational on headache, is a difficult problem, and the reason is that, intricacy of the occupational, can also influence survey result. Headache disorders deserve more attention, especially concerning strategies leading to adequate primary prevention, diagnosis and treatment (44). These strategies can be assessed by examining frequency distribution, identifying of probably risk factor, attack frequency, duration, intensity and headache-related disability (44).

In addition to identifying and treating appropriate patients can reduce the impact of headache on the individual and the burden of headache on society (34). We hope the results presented here will be useful, however to confirm the above epidemiological and clinical characteristics of chronic idiopathic headache in Iran, further studies are needed.

References

1. Mirzaei GR. Prevalence of Migraine without aura and reduced efficacy of its associated factors among Shahr Kord

- female high pupils. *J Shahr Kord Uni Med Sci* 2003; 5(4): 55-62. [Persian]
2. Hamzei Moghaddam A, Bahraam Pour A, Mobasher M. Prevalence of Migraine and it's associated demographic factors among Kerman official. *J Kerman Uni Med Sci* 1997; 5(2): 84-91. [Persian]
3. Evans RW, Mathew NT. *Handbook of Headache*. Philadelphia: Lippincott Williams & Wilkins; 2000.
4. Cheung RT. Prevalence of migraine, tension-type headache, and other headaches in Hong Kong. *Headache* 2000; 40(6): 473-9.
5. Olesen J, Tfelt-Hansen P, Welch KMA, editors. *The Headaches*. 2nd ed. Philadelphia, Pa: Lippincott Williams & Wilkins; 2000.
6. Najafi Koopaei M, Semnani S, Rezaei O, Garagozlo K. Clinical of survey migraine without aura. *J Ahvaz Uni Med Sci* 1988; 24: 72-83. [Persian]
7. Roh JK, Kim JS, Ahn YO. Epidemiologic and clinical characteristics of migraine and tension-type headache in Korea. *Headache* 1998; 38(5): 356-65.
8. Pryse-Phillips W, Findlay H, Tugwell P, Edmeads J, Murray TJ, Nelson RF. A Canadian population survey on the clinical, epidemiologic and societal impact of migraine and tension-type headache. *Can J Neurol Sci* 1992; 19(3): 333-9.
9. Bigal ME, Bigal JM, Betti M, Bordini CA, Speciali JG. Evaluation of the impact of migraine and episodic tension-type headache on the quality of life and performance of a university student population. *Headache* 2001; 41(7):710-9.
10. Deleu D, Khan MA, Humaidan H, Al Mantheri Z, Al Hashami S. Prevalence and clinical characteristics of headache in medical students in oman. *Headache* 2001; 41(8): 798-804.
11. Tekle Haimanot R, Seraw B, Forsgren L, Ekbom K, Ekstedt J. Migraine, chronic tension-type headache, and cluster headache in an Ethiopian rural community. *Cephalalgia* 1995; 15(6): 482-8.
12. Köseoglu E, Naçar M, Talaslioglu A, Cetinkaya F. Epidemiological and clinical characteristics of migraine and tension type headache in 1146 females in Kayseri, Turkey. *Cephalalgia* 2003; 23(5): 381-8.
13. Ayatollahi SMT, Darab Zand T, Bozorgi F, Sheibani Monfared F. Prevalence of migraine and Tension type headache among Shiraz University of Medical Science. *Kerman Uni Med Sci* 1998; 6(3): 141-8. [Persian]
14. Ayatollahi SMT, Khosravi A. The study of clinical characteristics of Shiraz school children suffering from migraine and tension type headache (2002-2003). *J Kermanshah Uni Med Sci* 2004; 8(3): 25-32. [Persian]
15. Ayatollahi SM, Moradi F, Ayatollahi SA. Prevalences of migraine and tension-type headache in adolescent girls of Shiraz (southern Iran). *Headache* 2002; 42(4): 287-90.

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16. Hamzei Moghadam A, Ghaffari Nejad AR, Bahram Pour B. Prevalence of migraine and depression and Together relation among students of Kerman University of Medical Sciences. *J Kerman Uni Med Sci* 1997; 4(2): 85-90. [Persian]
17. Yusefy M. Prevalence of migraine among students of Zanjan University of Medical Science. *J Zanjan Uni of Med Sci* 1999; 18-24. [Persian]
18. Ayatollahi SMT, Cheraghian B. Epidemiologic model for risk factors of migraine and tension type headaches among primary schools teachers of Shiraz 2003. *J Kerman Uni Med Sci* 2004; 12(2): 85-92. [Persian]
19. Rasmussen BK, Jensen R, Schroll M, Olesen J. Epidemiology of headache in a general population: a prevalence study. *J Clin Epidemiol* 1991; 44(11): 1147-57.
20. Honkasalo ML, Kaprio J, Heikkilä K, Sillanpää M, Koskenvuo M. A population-based survey of headache and migraine in 22,809 adults. *Headache* 1993; 33(8): 403-12.
21. Dahlöf C, Linde M. One-year prevalence of migraine in Sweden: a population-based study in adults. *Cephalalgia* 2001; 21(6): 664-71.
22. Nadery T, Hamzei Moghaddam A, Bahram Pour A. Prevalence of migraine and its associated factors among students with syndrome of pre menstuate. *J Kordestan Uni Med Sci* 2000; 5(17): 18-21. [Persian]
23. Quesada-Vázquez AJ, Rodríguez-Santana N. The prevalence of primary headaches in the working population at a psychiatric hospital in Zimbabwe. *Rev Neurol* 2006; 43(3): 129-31.
24. Karli N, Akiş N, Zarifoğlu M, Akgöz S, Irgil E, Ayvacioğlu U, et al. Headache prevalence in adolescents aged 12 to 17: a student-based epidemiological study in Bursa. *Headache* 2006; 46(4): 649-55.
25. Queiroz LP, Barea LM, Blank N. An epidemiological study of headache in Florianopolis, Brazil. *Cephalalgia* 2006; 26(2): 122-7.
26. Iñiguez C, Larrodé P, Mauri JA, Morales F. Clinical features of daily chronic headache. *Rev Neurol* 1997; 25(143): 1034-7.
27. Ghaffar Pour M, Harirchian MH, Nadery N. Epidemiology, etiology and clinical survey of headache within visitors of neurology, clinic of Fatemeh hospital. *J Semnan Uni Med Sci* 1997; 6: 32-8. [Persian]
28. Scher AI, Stewart WF, Liberman J, Lipton RB. Prevalence of frequent headache in a population sample. *Headache* 1998; 38(7): 497-506.
29. Piovesan EJ, Kowacs PA, Lange MC, Pacheco C, Piovesan LR, Werneck LC. Prevalence and semiologic aspects of the idiopathic stabbing headache in a migraine population. *Arq Neuropsiquiatr* 2001; 59(2-A): 201-5.
30. Ziegler DK, Hassanein RS, Couch JR. Characteristics of life headache histories in a nonclinic population. *Neurology* 1977; 27(3): 265-9.
31. Shirazi B, Etemadi-far M, Mohammad-zade Z, Sadeghi B, Akhavan HR. Survey of patients with headache of view of individual and clinical characteristics, concomitant signs and precipitating factors. *J Esfahan Uni Med Sci* 1996; 48(15): 88-93. [Persian]
32. Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. Headache Classification Committee of the International Headache Society [editorial]. *Cephalalgia* 1988; 8 Suppl 7: 1-96.
33. Lavados PM, Tenhamm E. Epidemiology of tension-type headache in Santiago, Chile: a prevalence study. *Cephalalgia* 1998; 18(8): 552-8.
34. Lipton RB, Stewart WF, Von Korff M. The burden of migraine. A review of cost to society. *Pharmacoeconomics* 1994; 6(3): 215-21.
35. Ferrari M D. The economic burden of migraine to society. *Pharmacoeconomics* 1998; 13(6): 667-76.
36. Stewart WF, Shechter A, Lipton RB. Migraine heterogeneity. Disability, pain intensity, and attack frequency and duration. *Neurology* 1994; 44(6 Suppl 4): S24-39.
37. Ulrich V, Russell MB, Jensen R, Olesen J. A comparison of tension-type headache in migraineurs and in non-migraineurs: a population-based study. *Pain* 1996; 67(2-3): 501-6.
38. Scher AI, Stewart WF, Liberman J, Lipton RB. Prevalence of frequent headache in a population sample. *Headache* 1998; 38(7): 497-506.
39. Henry P, Michel P, Brochet B, Dartigues JF, Tison S, Salamon R. A nationwide survey of migraine in France: prevalence and clinical features in adults. *GRIM. Cephalalgia* 1992; 12(4): 229-37; discussion 186.
40. Masoud A, Taghaddosi M. Sleep disorders and migraine and tension headache. *Pajoohande J* 2003; 7(3): 191-3.
41. Dodick DW, Eross EJ, Parish JM, Silber M. Clinical, anatomical, and physiologic relationship between sleep and headache. *Headache* 2003; 43(3): 282-92.
42. Zétola VH, Nývák EM, Luiz A, Branco BO, Sato BK, Nita CS, et al. Headache incidence in a hospital community. *Arq Neuropsiquiatr* 1998; 56(3B): 559-64.
43. Portela LF, Rotenberg L, Waissmann W. Self-reported health and sleep complaints among nursing personnel working under 12 h night and day shifts. *Chronobiol Int* 2004; 21(6): 859-70.
44. Rasmussen BK. Epidemiology and socio-economic impact of headache. *Cephalalgia* 1999; 19 Suppl 25: 20-.