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Research Article

The prevalence of probable migraine and sleep quality among women aged 20-49 living in a semi-rural area in western Turkey

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ABSTRACT

Background: We aimed to evaluate the prevalence of probable migraine, to examine the factors associated with probable migraine and to assess the level of sleep quality among women aged 20-45 who were living in the county town named Mahmudiye, in Eskisehir, in Turkey.
Methods: The study was carried out in all women aged 20-45 years in Mahmudiye. 69.2% of women (n=570) comprised the study group. Questionnaire consisted of three parts: The first part included several socio-demographic, nutritional and health characteristics. The second part included questions about the headache type and third part included Pittsburgh Sleep Quality Index (PSQI). Migraine type headache was scanned via the International Headache Society (IHS) criteria for migraine. There were eight criteria which were defined by IHS. Individuals who possessed the six of the eight criteria were defined as "probable migraine".
Results: The mean age of the participants was 32.8±7.3 years. Prevalence of probable migraine was 13.3% (n=60) and it was significantly higher in women who have been smoking and who had a physician diagnosed chronic diseases. Of the women, 45.1% had poor sleep quality based on the PSQI. The sleep quality of probable migraineurs was found significantly lower than healthy women.
Conclusions: To control the probable migraine symptoms and attacks, we suggest to giving regular treatment to women with chronic diseases and reducing the smoking.

Keywords: Probably migraine, Women, Sleep quality, Semi-rural area

INTRODUCTION

Migraine is a chronic, progressive and debilitating disorder that has important effects on people's lives.[1] Migraine is responsible for 1.3% of years with disability in the world. Also all headaches are responsible for twice of this load. Migraine is one of the most common neurological disorders, with a one-year prevalence of approximately 18% in women and 6% in men and typically the highest prevalence occurs between the ages of 25 and 55 years in women.[2,3] Attacks of migraine may be precipitated by a number of conditions such as hormonal changes, stress, fatigue and variations in sleep rhythm.[4] Despite all these conditions, the particular mechanisms of migraine precipitation are still unknown.[5]

Previous studies have found that migraine occurs with other illnesses at a greater coincidental rate than is seen in the general population.[6] Migraine patients report sleep disturbances, most notably, increased trouble falling asleep which affects 50% of them. Other complaints include: waking up during night, fear or anxiety when falling asleep, falling asleep sweating, lacking of refreshing sleep, feeling tired upon awakening, snoring and restless movements while asleep.[7] Impairment of the patients' quality of sleep and quality of life can be caused not only by the migraine attacks but also by additional problems such as sleep disorders, excessive fatigue and daytime sleepiness. Relationship between sleep quality and migraine has been known for more than a century, yet the exact pathophysiological mechanism of this

association is complex and manifold.[8] Several studies show the relationship between sleep quality and migraine in clinics and hospitals[9,10] whereas there are limited numbers of study regarding relationship between sleep quality and probable migraine in community. Current study aimed to evaluate the prevalence of probable migraine, examine factors associated with probable migraine and assess sleep quality among women whose aged 20-45 and living in the district named Mahmudiye, in Eskisehir, in Turkey.

METHODS

The cross-sectional study was carried out in all women aged 20-45 years in Mahmudiye, a semi-rural area in Western Turkey. Permission for the study was obtained prior to collection of data by contacting and receiving approval from the management authority. Furthermore we used the protocol (protocol no: 14198468-010.07, protocol date: 18/12/2013) which was signed between Rectorship of Eskisehir Osmangazi University and Governorship of Eskisehir for collecting the data from Educational and Research Region of Eskisehir Osmangazi University (Alpu, Beylikova, Sivrihisar and Mahmudiye county towns). According to the Turkish Statistical Institute, the total number of women living in Mahmudiye, aging 20-45, was 706[11] and it was expected to be reached them. "Informed consent" was acquired from individuals in the light of the Ethical Principles for Medical Research Involving Human Subjects in the Helsinki Declaration.[12] After informing participants about the purpose of the study, verbal consents were acquired. The questionnaire was filled by the researchers with the face-to-face conversation method. 69.2% of women (n=570), who were at home and accepted to participate in the study, comprised the study group. The questionnaire consisted of three parts: The first part included the women's several socio-demographic characteristics (age, educational level, marital status, employment status, income level, family type, having physician diagnosed chronic disease), some nutritional and behavioral habits (smoking status, alcohol, cheese, chocolate, coffee, and soda consumption) and characteristics related to some health conditions (status of menstrual periods, having dysmenorrhea, using oral contraceptive drugs). The second part included questions about headache type and probable migraine. Finally, Pittsburgh Sleep Quality Index (PSQI) consisted of the third part of the questionnaire.

Migraine type headache was scanned via the International Headache Society (IHS) criteria for probable migraine.[13] There were eight criteria which were defined by IHS. Individuals who possessed the six of the eight criteria were defined as probable migraine. PSQI[14] have been using to assess sleep disturbances over the past month. The PSQI is an 18-item self-report questionnaire. These items produce seven component scores ranging from 0 (no difficulty) to 3 (severe difficulty). Components are sleep duration, sleep disturbance; sleep latency, daytime disturbance, habitual sleep efficiency, sleep quality, and taking sleep medications. The sum of these score of components yields a measure of global sleep quality which ranges from 0 to 21. Getting five or more score in PSQI is defined poor sleep quality for each participant. The index was translated into Turkish by Agargun et al.[15] Individuals; who smoke at least one cigarette daily were defined as smokers,[16] who consume at least 30 grams of ethyl alcohol weekly were defined as alcohol consumers,[17] who consume at least two glasses of soda were defined as soda consumers and who consume at least two couple of coffee were defined as coffee consumers.

The data were analyzed by using SPSS version 20 (IBM). The statistical analysis was carried out using Chi-square tests. A value of $p < 0.05$ was considered as statistically significant.

RESULTS

The mean and standard deviation of age of the participants was 32.8±7.3 (ranged from 25 to 45) years. Of the 452 women included in the study, 197 women (43.6%) graduated from primary school; 164 women (36.3%) graduated from high school and 91 women (20.1%) graduated from university. Among the women, 77.9% were married; 70.8% were unemployed; 8.4% had poor income level. Of all the participants, 82.1% had a nuclear family type and 32.1% had a physician diagnosed chronic disease. In the present study, prevalence of probable migraine was 13.3% (n=60). In present study, the prevalence of probable migraine was significantly higher in women who had low income level and had a physician diagnosed chronic disease. Table 1 showed the distribution of women whether they were probable migraine or not, according to socio-demographic characteristics. The prevalence of smoking in the study group was 27.0%. Of the women, 78.3% consumed cheese; 31.0% consumed chocolate; 28.5% consumed coffee and 19.9% consumed soda, regularly. The prevalence of probable migraine was significantly higher in women who have been smoking ($p=0.009$). There was no difference between alcohol, cheese, chocolate, coffee, soda consuming and prevalence of probable migraine ($p > 0.05$). Table 3 showed the distribution of women whether they were probable migraine or not, according to some nutritional and behavioral habits.

In this study 73.0% of women reported that they always had regular menstruation periods; 51.3% of women had dysmenorrhea and 6.4% of women used oral contraceptive drugs regularly. In our study there was no difference between menstrual regularity, dysmenorrhea, use of oral contraceptives and prevalence of probable migraine ($p > 0.05$). Table 4 showed the distribution of the women whether they were probable migraine or not, according to characteristics about their some health conditions.

Table 1: The distribution of women whether they were probable migraine or not, according to socio-demographic characteristics.

Socio-demographic characteristics	Probable Migraine			x^2; p
	No n (%) [a]	Yes n (%) [a]	Total n (%) [b]	
Age group				
20-24	64 (90.1)	7 (9.9)	71 (15.7)	2.300; 0.681
25-29	90 (88.2)	12 (11.8)	102 (22.6)	
30-34	61 (87.1)	9 (12.9)	70 (15.5)	
35-39	90 (86.5)	14 (13.5)	104 (23.0)	
40 and above	87 (82.9)	18 (17.1)	105 (23.2)	
Educational level				
Primary school	166 (84.3)	31 (15.7)	197 (43.6)	2.657; 0.265
High school	143 (87.2)	21 (12.8)	164 (36.3)	
University	83 (91.2)	8 (8.8)	91 (20.1)	
Marital status				
Single	86 (86.0)	14 (14.0)	100 (22.1)	0.006; 0.940
Married	306 (86.9)	46 (13.1)	352 (77.9)	
Employment status				
Not working	274 (85.6)	46 (14.4)	320 (70.8)	0.849; 0.357
Working	118 (89.4)	14 (10.6)	132 (29.2)	
Income level				
Poor	29 (76.3)	9 (23.7)	38 (8.4)	**6.697; 0.035**
Middle	257 (86.0)	42 (14.0)	299 (66.2)	
Good	106 (92.2)	9 (7.8)	115 (25.4)	
Family type				
Nuclear	325 (87.6)	46 (12.4)	371 (82.1)	3.592; 0.166
Extended	54 (85.7)	9 (14.3)	63 (13.9)	
Fragmented	13 (72.2)	5 (27.8)	18 (4.0)	
Physician diagnosed chronic disease				
No	277 (90.2)	30 (9.8)	307 (67.9)	**9.271; 0.002**
Yes	115 (79.3)	30 (20.7)	145 (32.1)	
Total	392 (86.7)	60 (13.3)	452 (100.0)	

a: Column b: Row

Table 2: The distribution of the women whether they were probable migraine or not, according to their sleep quality.

	Probable Migraine			x^2; p
	No n (%) [a]	Yes n (%) [a]	Total n (%) [b]	
Sleep quality of women				
Poor	207(83.5)	41(16.5)	248(54.9)	**5.066; 0.024**
Good	185(90.7)	19 (9.3)	204(45.1)	
Total	392(86.7)	60(13.3)	452(100.0)	

a: Column b: Row

The mean score of PSQI was 5.28 ± 3.23 and min-max scores ranged from 0 to 19. Among the women, 54.9% had good sleep quality and 45.1% had poor sleep quality based on the PSQI. In this study, the sleep quality among the women with probable migraine was found significantly lower than healthy women ($p < 0.05$). Table 2 showed the distribution of the women whether they were probable migraine or not, according to their sleep quality.

DISCUSSION

Migraine affects nearly 15% of people -approximately one billion people- all over the world.[18] It has been known that the prevalence of headache of migraine type is higher in women than in men. According to the result of the study of Boru et al, it was found that the prevalence of migraine in the reproductive age group was higher in women as against men.[19] Many clinical and community based studies,[20,21] also reported similar results. Because of these reasons, we conducted study among women aged between 20 and 45. However there was no significant correlation between age group and frequency of probable migraine.

Table 3: The distribution of the women whether they were probable migraine or not, according to some nutritional and behavioral habits.

Some nutritional and behavioural habits	Probable Migraine			x^2; p
	No n (%) [a]	Yes n (%) [a]	Total n (%) [b]	
Smoking status				
Not smoking	295 (89.4)	35 (10.6)	330 (73.0)	**6.727; 0.009**
Smoking	97 (79.5)	25 (20.5)	122 (27.0)	
Alcohol use				
No	386 (86.9)	58 (13.1)	444 (98.2)	Fisher; 0.288
Yes	6 (75.0)	2 (25.0)	8 (1.8)	
Cheese consumption status				
No	87 (88.8)	11 (11.2)	98 (21.7)	0.258, 0.612
Yes	305 (86.2)	49 (13.8)	354 (78.3)	
Chocolate consumption status				
No	273 (87.5)	39 (12.5)	312 (69.0)	0.330; 0.566
Yes	119 (85.0)	21 (15.0)	140 (31.0)	
Coffee consumption status				
No	281 (87.0)	42 (13.0)	323 (71.5)	0.013; 0.908
Yes	111 (86.0)	18 (14.0)	129 (28.5)	
Soda consumption status				
No	319 (88.1)	43 (11.9)	362 (80.1)	2.498; 0.114
Yes	73 (81.1)	17 (18.9)	90 (19.9)	
Total	392 (86.7)	60 (13.3)	452 (100.0)	

a: Column b: Row

Table 4: The distribution of the women whether they were probable migraine or not, according to characteristics about their some health condition.

Characteristics about some health condition	Probable Migraine			x^2; p
	No n (%) [a]	Yes n (%) [a]	Total n (%) [b]	
Menstruation periods				
Regular	103 (84.4)	19 (15.6)	122 (27.0)	0.518; 0.472
Irregular	289 (87.6)	41 (12.4)	330 (73.0)	
Dysmenorrhea				
No	196 (89.1)	24 (10.9)	220 (48.7)	2.083; 0.149
Yes	196 (84.5)	36 (15.5)	232 (51.3)	
Using oral contraceptive drugs				
No	367 (86.8)	56 (13.2)	423 (93.6)	0.007; 0.932
Yes	25 (86.2)	4 (13.8)	29 (6.4)	
Total	392 (86.7)	60 (13.3)	452 (100.0)	

a: Column b: Row

In present study, the prevalence of probable migraine did not differ from educational level, marital status, and employment status. Many studies reported that prevalence of migraine was observed frequently in these groups; married, graduated and urbanites. In our study, this reason may be occurred presumably because participants usually live in rural area, usually unemployed and usually not well-educated.

Stewart et al. have been reported that there was a significant relationship between income level and prevalence of migraine. They also reported that low-incomer women aged 30-49 had increased risk of migraine. Accordingly in our study, the prevalence of probable migraine was significantly higher in women who had low-income level. Some studies have also reported similar results.[22,23] These findings might have been stemmed from the low-income people who had the lack of treatment opportunity.

In this study, the prevalence of probable migraine was significantly higher in women who had a physician diagnosed chronic diseases. It was known that migraine had been associated with chronic diseases such as hypertension, anxiety, depression, obstructive sleep apnea syndrome, obesity, Alzheimer's disease.[24,25] This might has been resulted from the fact that migraine etiology can be similar with many chronic disorders' etiology.

In our study, the prevalence of probable migraine was significantly higher in women who have been smoking. Karli et al. have been reported that smoking is the one of the most prominent precipitating factors of migraine type headaches.[26] It was known that carbon monoxide intoxication had been associated with headache. Also inhalation of tobacco smoke, which contains up to 5% carbon monoxide, raised the plasma carboxyhemoglobin level. When this level rose, relative anoxia occurred through departing of oxygen from hemoglobin. Then relative anoxia caused vasodilatation which correlated with migraine type headache.

Coffee consumption may protect a person from headache while the sudden withdrawal from the consumption of coffee may induce migraine. Coffee consumption may also be a marker for other behavioral risk factors (e.g., stress) which were in relationship with migraine. Many studies have reported that migraine headaches started or worsened with consuming coffee, chocolate, and cheese.[19,27] In our study there was no difference between alcohol, cheese, chocolate, coffee, soda consuming and prevalence of probable migraine. We conducted the questionnaire to individuals based on their expressions therefore it might obscured the real relationship between consume tendency and migraine.

In this study there was no difference between menstrual regularity, having dysmenorrhea, using oral contraceptives drugs and prevalence of probable migraine. In some studies, these factors have been identified as precipitating factors for migraine due to estrogen effect.[19,26] In our study, the sleep quality of probable migraineurs was found significantly lower than the healthy participants. Incidence of sleep disorders was determined higher in migraine patients than general population in the study which conducted by Peres et al.[28] Sleep disorders may be a symptom which associated with migraine. Furthermore increased insomnia may raise frequency of migraine attacks. Meanwhile, sleep quality of patients may decrease with increased migraine attacks due to the sleep disorders.

CONCLUSION

Consequently, probable migraine has been found more frequent in women who have low-income level, who have physician diagnosed chronic diseases and who have been smoking. Also it was found that women with probable migraine had poor sleep quality. Therefore, to control the probable migraine's symptoms and attacks, we suggest to giving regular treatment to women with chronic diseases and reducing the smoking.

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EU, RA, MEG conceived, designed and did statistical analysis & editing of manuscript, EU, RA, MEG did data collection and manuscript writing and AU did review and final approval of manuscript.

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