Original Article

Prevalence of Migraine and its effect on Quality of Life in Doctors and Medical Students

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ABSTRACT

Background : Doctors and medical students work under stressful conditions. They have hectic schedules, get insufficient sleep and have tremendous stress all of which are risk factors for migraine. Migraine handicaps an individual's efficiency, which adversely affects his routine life. Adequate information on the prevalence of migraine, its distribution and associated risk factors in this community is lacking and is vital for planning interventions.

Aim :

1. To study the prevalence of migraine among doctors and medical students.

2. To analyze & understand the nature of disability caused due to migraine.

3. To study the correlation of lifestyle with severity and frequency of migraine.

Materials and Methods : A cross sectional study was carried out based on a questionnaire approved by Institutional Ethics Committee was carried out in NKP Salve Institute of Medical Sciences and Research Centre, Nagpur. A total of 150 participants including medical faculty, PG students, senior residents, interns and undergraduate medical students were included. A detailed history of each participant was taken and gender was recorded. Institut de recherches cliniques de Montréal, detailed validated lifestyle questionnaire was distributed to all the participants. IHS (International Headache Society) criteria was used for the diagnosis of migraine and was confirmed by neurologist. Participants those who were confirmed with diagnosis of migraine were given MIDAS (Migraine Disability Assessment) questionnaire to note severity of pain and disability assessment.

Results : The prevalence of migraine was found to be 26.66% in the given sample size. Migraine was significantly associated with decreased duration of exercise [CHI SQUARE = 8.241, P VALUE = 0.004], alcohol consumption [CHI SQUARE = 17.39, P VALUE = 0.00003], sleep duration [CHI SQUARE = 31.5, P VALUE = 0.0000001] and smoking [CHI SQUARE = 21.23, PVALUE = 0.000012]. Stress, gender and diet did not show significant correlation.37% of the participants were diagnosed with migraine with aura and 63% of participant suffered from migraine without aura. The MIDAS questionnaire revealed moderate disability for 50% of the participants.

Conclusion : Migraine was observed to limit the daily activities of the doctors and also hampered their personal and family life. A significant correlation was found between migraine and duration of exercise, sleep, alcohol consumption and smoking habits.

Keywords : MIDAS, IHS, Migraine, prevalence, lifestyle, disability, risk factor.

Introduction :

Migraine is a common neurological disorder prevalent amongst people across the globe and being considered as the 13th major medical disorder generally characterized with unilateral or bilateral headache, nausea, vomiting, photophobia and phonophobia.[1] It has a significant and detrimental impact on patients' lifestyle. Conversely, lifestyle also impacts frequency and severity of migraine attacks. Dietary habits and lifestyle factors, alcohol and caffeine consumption, smoking status, physical activities, eating habits and chocolate consumption, motivation and state of mind, medication and sleeping patterns are found to be associated with migraine attacks in adults.[2-4]

Work stress, one of the environmental factors, is believed to be an important trigger for migraine. Doctors have stressful jobs, are frequently on

rotating work shifts, undergo emotional stress, and work for long hours every day because of their job requirements.[5] Headache, which many a time occurs due to various psychological and physical stressors is more prevalent in medical students and doctors than general population.[6,7]

Prevalence of migraine in India ranges between 4.13% - 25.2% as reported by different studies in India. There is lack of knowledge of the prevalence and burden attributable to headache disorders among doctors and medical students.[8-14]

Objectives :

The aim is :

1. To study the prevalence of migraine among doctors and medical students.

2. To analyze & understand the nature of disability caused due to migraine.

3. To study the correlation of lifestyle with severity and frequency of migraine.

Materials and Methods :

Study Design : It is a questionnaire based observational cross sectional study approved by Institutional Ethics Committee of N.K.P. Salve Institute of Medical Sciences and Research Centre, Nagpur and was carried out in the same institute.

Sample Size : A total of 150 randomly selected participants including allopathic doctors, PG students, senior residents, interns and medical students (both asymptomatic and symptomatic) were included in the study.

Inclusion Criteria : All those participants ready to sign the informed consent form in the age group of 18-65 years were included in this study.

Exclusion Criteria : The patients suffering from psychiatric illness, pregnancy, acute febrile illness refractive errors and any other diagnosed condition causing myalgia, joint pain and epilepsy were excluded from the study.

A detailed history of each participant was undertaken and gender was noted. A detailed validated lifestyle questionnaire, Institut de recherches cliniques de Montréal[15] was distributed to all the participants. Based on the score distribution,

Lifestyle Score -

54 and above - indicates good lifestyle

53 and below - indicates bad lifestyle

Dietary Habits -

30 - 40 - indicates healthy diet

24 - 29 - indicates moderately healthy diet

8 - 23 - indicates unhealthy diet

Duration of Exercise -

6-30 - indicates that the participant is regularly exercising

0-5 - indicates that the participant is rarely exercising

Alcohol Consumption -

>0 - indicates that the patient is alcoholic

0 - indicates that the patient is non alcoholic

Stress levels -

13 - 24 - indicates that the participant suffers from more stress

6 -12 - indicates that the participant suffers from less stress

Sleeping Habits -

= 4 - indicates good sleeping habits

1 - 3 - indicates bad sleeping habits

Smoking Habits -

= 5 - indicates that the participant is a non smoker

< 5 - indicates that the patient is a smoker

Out of the 150 participants, IHS criteria questionnaire[16] was given to those who suffered from chronic headache and this was used to diagnose the cases of migraine. Personal interview was taken and diagnosis of migraine was confirmed by the same neurologist.

Those participants who were confirmed with diagnosis of migraine were given MIDAS questionnaire[17] to note severity of pain and disability assessment. MIDAS (Migraine Disability Assessment) is a validated questionnaire which measures the impact of headache on life and

determines the level of pain and disability caused by headaches.

Statistical Analysis :

The associations between migraine prevalence and various aspects of lifestyle like low physical activity, smoking and alcohol consumption and inadequate sleep were estimated using multiple logistic regression with odds ratio (OR) and 95% confidence interval (CI). The analyses were adjusted for gender, age, and the other independent variables. When found appropriate, the independent variables were treated as single ordinal variables and incorporated

in a 2-sided test for trend to evaluate the probability of a linear relationship between lifestyle factors and migraine. Non-parametric tests were performed for between-group analyses.

Observations and Results :

Out of 150 participants, 90 were asymptomatic and 60 were symptomatic. These 60 participants had a problem of headache and out of which 40 met with the IHS criteria of migraine which included migraine with aura and migraine without aura. Thus, the prevalence of migraine in our study is 40 out of the 150 participants (26.66%).

1) Table 1 shows gender distribution. This shows that prevalence of migraine is comparable in both genders.

Table 1 : **Shows the Gender of the Participants. (N=150)**

GENDER	MIGRAINE	MIGRAINE %	HEADACHE (WITHOUT MIGRAINE)	% HEADACHE (WITHOUT MIGRAINE)	NON MIGRAINE	% NON MIGRAINE
MALES (N=77)	17	22.07%	9	11.68%	52	67.53%
FEMALES (n=73)	23	31.50%	11	15.06%	38	52.05%
TOTAL (n=150)	40		20		90	

CHI SQUARE - 1.70, P-VALUE - 0.19 (NS)

2) Table 2 shows dietary habits of the participants. This study reports no association of dietary habits with migraine.

Table 2 : **Shows the Dietary Habits of the Participants.**

DIETARY HABITS	RANGE	MIGRAINE	% MIGRAINE	NON MIGRAINE	% NON MIGRAINE
HEALTHY (n=60)	30-40	13	21.66	47	78.33
MODERATELY HEALTHY (n = 49)	24-29	14	28.57	35	71.42
UNHEALTHY (n=41)	8-23	13	31.70	28	68.30
TOTAL (n=150)		40		110	

CHI SQUARE - 1.32, P-VALUE - 0.25 (NS)

3) Table 3 shows the duration of exercise of the participants exhibiting strong association of migrane with physical activity.

Table 3 : **Shows the Duration of Exercise of the Participants.**

EXERCISE	SCORE RANGE	MIGRAINE	% MIGRAINE	NON MIGRAINE	% NON MIGRAINE
REGULARLY EXERCISING (n=139)	6-30	33	23.74	106	76.25
RARELY EXERCISING (n=11)	0-5	7	63.63	4	36.36
TOTAL (n=150)		**40**		**110**	

CHI SQUARE - 8.241, P-VALUE - 0.004 (HS)

4) Table 4 shows alcohol consumption of the participants. Thus alcohol consumption and frequency of intake influences migraine significantly.

Table 4 : **Shows Alcohol Consumption of the Participants**

ALCOHOL	SCORE RANGE	MIGRAINE	% MIGRAINE	NON MIGRAINE	% NON MIGRAINE
ALCOHOLIC (n=41)	>0	21	51.2	20	48.8
NON ALCOHOLIC (n=109)	0	19	17.43	90	82.67
TOTAL (n=150)		**40**		**110**	

CHI SQUARE - 17.39, P-VALUE - 0.00003 (HS)

5) Table 5 displays stress levels of the participants. This study exhibits no association between stress levels and attacks of migraine.

Table 5 : **Shows stress levels of participants**

STRESS	SCORE RANGE	MIGRAINE	% MIGRAINE	NON MIGRAINE	% NON MIGRAINE
LESS STRESS (n=133)	13-24	35	26.31	98	73.69
MORE STRESS (n=17)	6-12	5	29.41	12	70.59
TOTAL (n=150)		40		110	

CHI SQUARE - 0.073, P-VALUE - 0.78 (NS)

6) Table 6 shows sleeping habits of the participants. Number of sleep hours are inversely associated with migraine.

Table 6 : **Shows the sleeping habits of participants.**

SLEEP HABITS	SCORE RANGE	MIGRAINE	% MIGRAINE	NON MIGRAINE	% NON MIGRAINE
GOOD SLEEPING HABITS (n=102)	=4	13	12.74	89	87.26
BAD SLEEPING HABITS (n=48)	1-3	27	56.25	21	43.75
TOTAL (n=150)		**40**		**110**	

CHI SQUARE - 31.5, P-VALUE - 0.0000001 (HS)

3) Table 7 depicts smoking habits of the participants. smoking plays a significant role in triggering attacks of migraine.

Table 7 : **Shows the smoking habits of participants.**

SMOKING	SCORE RANGE	MIGRAINE	% MIGRAINE	NON MIGRAINE	% NON MIGRAINE
NON SMOKER (n=125)	=5	24	19.2	101	80.8
SMOKER (n=25)	<5	16	64	9	36
TOTAL (n=150)		**40**		**110**	

CHI SQUARE - 21.23, P-VALUE - 0.000012 (HS)

8) Table 8 shows lifestyle of the participants. Quality of lifestyle has a remarkable impact on the attacks of migraine.

Table 8 : **Shows the lifestyle of the participants.**

| LIFESTYLE	MIGRAINE	% MIGRAINE	NON MIGRAINE	% NON MIGRAINE
GOOD LIFESTYLE (n=128)	30	23.43	98	76.57
BAD LIFESTYLE (n=22)	10	45.45	12	54.55
TOTAL (n=150)	40		110	

CHI SQUARE - 4.62, P-VALUE - 0.03 (S)

Out of these 40 recorded cases of migraine, 15 (37%) patients suffered from migraine with aura and 25 (63%) patients suffered from migraine without aura. Migraine types of headaches were related with intensity of headache, routine activity limitations, gender, sensory and visual symptoms and quality of headache was recorded in the study sample.

Figure 1 shows the migraine disability of the participants. Out of 40 participants, 1 (2.5%) had little or no disability, 6 participants (15%) had mild migraine disability, 20 (50%) suffered from moderate disability and the rest 13 (32.5%) participants suffered from severe disability. No significant difference was found between men and women with regards to their MIDAS scores. The mean MIDAS score of the participants suffering from episodic migraine was found to be 13.65 indicative of moderate migraine disability.

Discussion :

Migraine is a perturbing health problem due to its recurring nature which includes disability, loss of
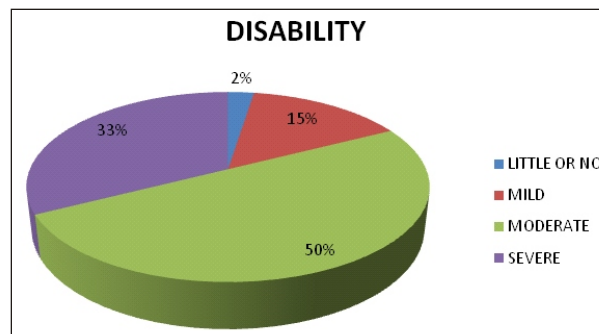
Figure 1 : **shows Migraine Disability According to Midas Test**

performance and accompanying morbidity. The main objective of this cross sectional study was to analyze the relation of lifestyle factors with migraine and also study the grades of its affliction in doctors and medical students. The prevalence of migraine was found to be at a moderate rate of 26.66% in this region vis-à-vis West Bengal showcasing 14.12%[12] and Karnataka which displayed a staggering rate of 63.9%[13]. The varying rates may be related to the different methods adopted, differences in defining the criteria of

headache prevalence, environmental factors, socio-demographic factors or ethnicity of the studied population. Regarding gender, frequency of migraine is more in females (31.5%) owing to hormonal differences between the genders. Similar finding have been revealed by other notable studies in this field.[1,2,9,10] In contrast, the study by Yazdanparast. M. et al[24] in Iran reported higher prevalence of migraine in males than in females. This might be due to differences in genetic backgrounds and study designs.

The prevalence of migraine among the doctors and medical students in our study is significantly related to lack of exercise (P-value=0.004), alcohol consumption (P-value=0.00003), inadequate sleep (P-value=0.0000001), and their smoking habits (P-value=0.000012). Stress (P-value=0.78), gender (P-value=0.19) and dietary habits (P-value=0.25) were not found to be statistically significant in this study.

Lack of sleep is a well-known trigger for migraine. This again points towards disruptions in the biology of sleep and/or circadian rhythms in sufferers. In the present study, we have found a highly significant relationship between sleep and migraine with p value of 0.0000001 and chi square value 31.5.This is in line with the studies of M Zahid et al[1], Kuo et al[7], Kurt S et al[8] and Das S.K. et al[12] who hypothesized heavy workloads, work stress and sleep disturbance to be the major causes of migraine as quality and duration of sleep are hampered. Other studies suggest that migraine appears to be associated with the disruptions in the biology of sleep and circadian rhythms in sufferers. Working in the hospital was found to be highly nerve racking because doctors need to deal with unpredictable medical emergencies, have long working hours, are exposed to high levels of stress and this is regarded as potential migraine precipitant.

In this study, no explicit association was found between stress and attacks of migraine. This might be due to small sample size and differences in study design. Contrarily, M Zahid et al[1] recorded tension or stress as a common trigger in patients for migraine attack which was well supported by the work of M.K. Demikirkan et al[9], Smitherman TA et

al[11] and Neut et al[21] also confirmed that stress and anxiety symptoms are commonly comorbid with migraine but they exert influence on functional impairment of the individual. Further studies are needed to clarify this issue.

Tobacco acts as a precipitating factor for migraine. Cigarette smoking is directly involved in aggravating the headache as it alters nitric oxide levels in the brain, triggers blood vessels to constrict, reducing blood flow to the brain and the meninges leading to depressed brain activity, which is a major component of migraine attack. Furthermore, nicotine, a vasoactive substance may stimulate the pain-sensitive nerves increasing the sensitivity towards pain[18]. This is indicated in the present study where a strong significant correlation was found between smoking and its negative influence on the course of headache with the p value-0.000012 and chi square value 21.23. In agreement with this, study by F.Moschiano et al[22] investigated the relationship between smoking and frequent headache (OR 2.16, 95 % CI 1.393.35) and found it to be strongly associated. Also, L. Robberstad et al[18] found the relation between smoking and migraine to be 1.8 (95% CI 1.4 2.2, p = 0.0001).

We observed that 51.2% of the people suffering from migraine were alcoholic with p-value 0.0003. This proves a highly significant correlation between alcohol consumption and migraine. Alcohol releases histamine from mast cells which causes vasodilatation leading to increase blood flow to the brain and headache is provoked by high initial blood/brain levels, hence becoming a potential factor for trigger of migraine. This is incomparable with the study of H. le et al[20] which concluded that migraine subjects consume less alcohol than healthy subjects. It is unlikely that alcohol consumption prevents attacks of migraine. On the other hand A.C.Winter et al[19] found a significant trend of decreasing prevalence of migraine with increasing amounts of alcohol consumption. Such ambiguity can be clarified by several cross sectional studies on large population.

It has been observed that 76.25 % of control and 23.74% of the cases exercised regularly whereas

63.63% of cases exercised rarely and this shows high inverse correlation of migraine with physical activity (p value of 0.004). During exercise, the body releases endorphins, which are the body's natural painkillers leading to substantial reduction in migraine. Sometimes, exercise may exacerbate a headache acutely, but the long-term studies have shown that it can reduce migraine. Similarly, L. Robberstad et al[18] showed association between low physical activity and recurrent headaches. (OR = 1.2, 95% CI 1.11.4, p =0.002)

The association of diet and frequency of migraine was not found to be significant in the present study as the p value was 0.25. But reports by Das S.K. et al[12] and F.Moschiano et al[22] showed irregular mealtimes and intake of food, such as chocolate, fatty food, cheese were more commonly associated in patients with migraine. The possible explanation for variations may be due to different statistical interpretations. According to some previous studies, diet appeared to be relatively unimportant in migraine attacks and foods such as cheese and chocolate are contrarily thought to be less powerful in triggering migraine.[23]

One of the strength of the present study is a detailed history and elaborate questionnaire including the lifestyle factor, assessment of its disability and also a good clinical history for the accuracy of the diagnosis. Its major limitation is the modest sample size.

Conclusion :

This research elucidates that migraine has nefarious effects on the day to day activities and lives of the doctors. Lifestyle modification and adequate relaxation are the non pharmacological treatments for migraine which have a very positive outcome. Increase in awareness of prevention of migraine, proper assessment of its triggering factors, enhanced self regulation among the medical fraternity can mitigate the effects of this disease.

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