



## Assessment of Prevalence of Migraine and Associated Disability in Selected Urban Population of Ludhiana City in Punjab

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## ABSTRACT

**Background:** Neurological disorders are ranked as the leading cause of DALYs in 2015, most prevalent being tension-type headache, migraine, medication overuse headache, Alzheimer's disease and other dementias. Therefore, this community based cross sectional study was planned to determine the prevalence and disability due to migraine in the Urban Field Practice Area of Department of Community Medicine, DMCH, Ludhiana.

**Methodology:** A total of 465 adults (> =18 years) from a population of 11,179 were interviewed by house to house visits. The questionnaire to measure disability among diagnosed patients was prepared based on the diagnostic criteria of migraine by International Headache Society and Migraine Disability Assessment Test (MIDAS).

**Results:** Out of 465 adults, 104 (22.4%) were found to have migraine, out of which 21 had migraine with aura. The prevalence was found to be greater in females (26.1%) than males (10.6%). After applying MIDAS, it was found that 70.2% were facing moderate disability whereas severe disability was seen in 24.0%. Only 12 out of 104 study subjects had prior knowledge regarding their migraine status.

**Conclusion:** This study not only puts light on the proportion and disability due to migraine but also on the need to make people aware about their health condition.

**Keywords:** Urban, migraine, prevalence, disability

## INTRODUCTION

Headache is a common and disabling feature of primary headache disorders, namely migraine, tension-type headache and cluster headaches. It is common in the general population worldwide. Neurological disorders are ranked as the leading cause of DALYs in 2015, most prevalent being tension-type headache, migraine, medication overuse headache, Alzheimer's disease and other dementias.<sup>1</sup>

Globally, prevalence of current headache disorder among adults is about 50%.<sup>2</sup> Asians have a lower prevalence than Europeans and North American.<sup>3,4</sup> The primary headache disorders, mostly migraine and tension-type headache are of global public

health importance as they lead to ill health and impaired quality of life and cause loss of work productivity.<sup>2</sup> The prevalence of the adult population with active headache disorders are 46% for headache in general, 11% for migraine, 42% for tension type headache (TTH) and 3% for chronic daily headache.<sup>4</sup>

Migraine is a primary headache disorder which often begins at puberty and mostly affects those in the age group of 35-45 years. It is recurrent, often life-long and more common in women.<sup>2</sup> Various studies conducted in USA and Europe concluded that 6-8% men and 15-18% women had migraine.<sup>5,6</sup> Similar prevalence is seen in Central America.<sup>7</sup> Migraine appears to be less prevalent in

Asia (around 8%) and in Africa (3-7%) according to some community based studies but is still common.<sup>4</sup> Therefore, the present community based cross sectional study was planned to determine the prevalence and disability due to migraine in an urban area of district Ludhiana, Punjab.

**METHODOLOGY**

The study is a community based cross sectional study conducted in the Urban Field Practice area of Department of Community Medicine, Dayanand Medical College & Hospital, Ludhiana, Punjab, India. The minimum sample size required for the study was calculated using formula  $n = Z^2 p(1-p) / d^2$  where n is sample size, p is expected prevalence or proportion and d is precision rate

For getting the maximum sample size possible (to avoid any bias), sample size was calculated using a prevalence of migraine as 50%.<sup>8</sup>

**Criteria for Diagnosing Migraine Without Aura**

- A. At least five attacks fulfilling B-D
- B. Attacks lasting 4-72 hours if untreated or unsuccessfully treated
- C. Headache has at least two of the following characteristics
  - Unilateral location
  - Pulsating quality
  - Moderate or severe pain intensity
  - Aggravation by or causing avoidance of routine physical activity
- D. During headache, at least one of the following
  - Nausea and / or vomiting
  - Photophobia / Phonophobia
- E. Headache not attributable to any other disorder

**Criteria for Diagnosing Migraine with Aura**

- A. At least two attacks fulfilling criteria B-D
- B. Aura consisting of at least one of the following, but no motor weakness:
  - Fully reversible visual symptoms including positive features (e.g. flickering lights, spots or lines) and / or negative features (i.e. loss of vision)
  - Fully reversible sensory symptoms including positive features (i.e. pins and needles) and / or negative features (i.e. numbness)
  - Fully reversible dysphasic speech disturbance
- C. At least two of the following:
  - Homonymous visual symptoms and / or unilateral sensory symptoms
  - At least one aura symptom develops gradually over ≥5 minutes and / or different aura symptoms occur in succession over ≥5 minutes.
  - Each symptom lasts ≥5 and ≤60 minutes
- D. Headache fulfilling criteria B-D for Migraine without Aura begins during the aura or follows aura within 60 minutes
- E. Headache not attributed to another disorder

Thus, a sample size of 384 was calculated and after taking 20% as the non-response rate, the final sample size came out to be 461. Therefore, we included 465 subjects in our study.

From a population of 11,179 comprising of approximately 2236 houses, 465 adults (> = 18 years) were interviewed by house to house visits. Systematic random sampling was adopted to select the respondents and every 5<sup>th</sup> house was included in the study. Verbal informed consent was taken before filling the proforma. The proforma was prepared based on the diagnostic criteria of migraine by International Headache Society.<sup>9</sup>

The study subjects who were diagnosed to have migraine according to the diagnostic criteria were assessed using Migraine Disability Assessment Test (MIDAS) to calculate the disability.

The Migraine Disability Assessment Test has following questions:

1. On how many days in the last 3 months did you miss work or school because of your headaches?
2. How many days in the last 3 months was your productivity at work or school reduced by half or more because of your headaches? (Do not include days you counted in question 1 where you missed work or school.)
3. On how many days in the last 3 months did you not do household work (such as housework, home repairs and maintenance, shopping, caring for children and relatives) because of your headaches?
4. How many days in the last 3 months was your productivity in household work reduced by half or more because of your headaches? (Do not include days you counted in question 3 where you did not do household work.)
5. On how many days in the last 3 months did you miss family, social or leisure activities because of your headaches?

Disability is calculated by calculating the total score that is total number of days (question 1-5).

MIDAS Grade	Definition	MIDAS Score
I	Little or No Disability	0-5
II	Mild Disability	6-10
III	Moderate Disability	11-20
IV	Severe Disability	21+

**Statistical analysis:** The data so generated was analyzed by using statistical tests like percentage, proportions and chi-square test.

**RESULTS**

Demographic characteristics of respondents as shown in Table 1 indicate that out of 465 study subjects, maximum (25.8%) were in the age group of 18-27years.

**Table 1: Socio-Demographic profile of the study participants (n=465)**

Characteristics	Number (%)
<b>Age (years)</b>	
18-27	120 (25.8)
28-37	119 (25.6)
38-47	83 (17.8)
48-57	59 (12.7)
58-67	48 (10.3)
68-77	21 (4.5)
78-87	15 (3.2)
<b>Gender</b>	
Male	113 (24.3)
Female	352 (75.7)
<b>History of smoking</b>	
Present	30 (6.5)
Absent	435 (93.5)
<b>History of alcohol intake</b>	
Present	44 (9.5)
Absent	421 (90.5)

**Table 2: Prevalence of migraine in the study participants**

Indicators	Cases (%)
No. of subjects	465
Migraine without aura	83 (17.9)
Migraine with aura	21 (4.5)
Total migraine cases	104
Prevalence (%)	22.4

**Table 3: Prevalence of migraine as per various variables**

Characteristics	n	Subjects with Migraine	PR*	p value
<b>Age (years)</b>				
18-27	120	26	21.7	
28-37	119	30	25.2	
38-47	83	16	19.3	
48-57	59	13	22.0	
58-67	48	6	12.5	
68-77	21	9	42.9	
78-87	15	4	26.4	
<b>Gender</b>				
Male	113	12	10.6	0.0005
Female	352	92	26.1	
<b>History of smoking</b>				
Positive	30	12	40.0	0.016
Negative	435	92	21.1	
<b>History of alcohol intake</b>				
Positive	44	12	27.3	0.411
Negative	421	92	21.9	

n=Total Subjects; \*Prevalence Rate

**Table 4: Disability due to migraine according to MIDAS scale**

MIDAS Grade	Subjects (n=104) (%)
I (little or no disability)	
II (mild disability)	6 (5.8)
III (moderate disability)	73 (70.2)
IV (severe disability)	25 (24)

A total of 352 (75.7%) respondents were female and 113 (24.3%) were male. History of smoking was present in 6.5% study subjects and alcohol intake was found in 9.5% study subjects.

Overall prevalence of migraine in the present study came out to be 22.4% (104/465). Prevalence of migraine without aura was 17.9% and migraine with aura was 4.5%. (Table 2)

Highest prevalence of migraine was found in the age group of 68-77 years (42.9%) whereas minimum prevalence was in the age group of 58- 67 years (12.5%).The prevalence was found to be greater in females (26.1%) than males (10.6%).The prevalence was found to be 40.0% and 27.3% in subjects with positive history of smoking and alcohol intake respectively. (Table 3). No significant association was seen between prevalence of migraine and age (p= 0.174) and similarly with history of alcohol intake (p= 0.411). In the present study, prevalence of migraine was found to be significantly higher in females (26.1%) than in males (10.6%) (p<0.001).History of smoking and prevalence of migraine were also found to be significantly associated (p=0.016).

On applying MIDAS scale, it was found that 70.2% of subjects with migraine had moderate disability while 24.0% were facing severe disability.

In the present study it was found that severe disability was seen in all the subjects having migraine with aura and only 4 subjects with migraine without aura. It was also found that only 12 out of 104 subjects had any prior knowledge regarding their migraine status.

## DISCUSSION

Prevalence of migraine in the present study came out to be 22.4% (104/465). It was found to be greater in females (26.1%) than males (10.6%). These results are in concordance with the results seen in a similar study conducted in Karnataka by Kulkarni G *et al*<sup>10</sup>which reported prevalence to be 25.2% and it was greater among females (31.6% vs 18.5%).Another study conducted in Ethiopia (2013)also showed that the prevalence of primary headache disorders was 21.6% and that for mi-

graine was 10%.<sup>11</sup> However, the prevalence in this study was lower than that found in some other studies (Allena M *et al*, Rao GN *et al*).<sup>12,13</sup>

Highest prevalence of migraine was in age group of 68-77 years (42.9%) whereas minimum prevalence was in age group of 58- 67 years (12.5%). These variations could be because of lesser number of subjects in the higher age groups as otherwise age was not found to be a significant variable for migraine.

No association was seen between prevalence of migraine and history of alcohol intake whereas significant association with history of smoking was found. The subjects with positive history of smoking had higher prevalence of migraine (40.0% vs 21.1%) thus suggesting that smoking could trigger migraine.

Among males, 10.6% had migraine without aura and none had migraine with aura. Similarly, among females 20.2% had migraine without aura whereas migraine with aura was found in 6% of the females.

Only 12 out of 104 study subjects had prior knowledge regarding their migraine status which shows the lack of awareness among the people. After applying MIDAS, it was found that 70.2% of the subjects diagnosed with migraine were facing moderate disability while another 24.0% faced severe disability. Severe disability was seen in all the subjects having migraine with aura and only among 4 subjects having migraine without aura.

The limitation of the study is that it may not show the actual prevalence of migraine as per gender as the data was collected during daytime, so less number of males (113) could be interviewed due to their non-availability at home.

## CONCLUSION

The study not only puts light on the proportion and disability due to migraine but also on the need to make people more aware about their health condition which can be achieved through health education. This study also tells about the need to know about importance of aura so that medication can be taken timely and loss of work days because of migraine can be saved. Also, health education programme regarding migraine should highlight various risk factors for migraine so that appropriate preventive measures can be suggested.

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