Clinical characteristics of 226 college-going female migraineurs in Lahore, Pakistan – putting ICHD-2 to the road test

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Abstract

The International Headache Society (IHS) criteria-based questionnaires were given to 647 college-going females (faculty and students) of selected universities in Lahore, Pakistan. Forty five (7%) were diagnosed with Migraine with Aura (MWA), 181 (28%) with Migraine without Aura (MWOA) and 421 (65%) as NMH (non-migrainous headache). We found '*Photophobia and Phonophobia*' as the most common headache-associated symptoms, and '*Stress' and lack of sleep*' as the most commonly reported triggers of MWA (44%) and MWOA (38%). Most common headache management practice amongst migraineurs was 'sleep' [MWA (35%) and MWOA (39%)]. This is the first paper which elucidates the symptomatology, risk factors and treatment modalities of migraineurs in Pakistan.

INTRODUCTION

Migraine is classically defined as a benign and recurring syndrome of headache, nausea, vomiting, and/or other symptoms of neurologic dysfunction in varying admixtures [1]. Clinical diagnosis of migraine is based on International Classification of Headache Disorders-II (ICHD-II) criteria specified by the International Headache Society (IHS), which classifies migraine into two major classes namely, without aura (MWOA) and with aura (MWA). MWOA manifests as recurrent headache attacks, each lasting 4–72 hours. Typical characteristics of the headache are unilateral location, pulsating quality, moderate or severe intensity, aggravated by routine physical activity and association nausea and/or photophobia and phonophobia. In contrast, MWA patients experience distinguishing neurological disturbances known as 'aura', which may include visual symptoms (flickering lights, spots or lines and/or loss of vision), sensory symptoms ('pins and needles' or numbness) and dysphasic speech disturbances. Aural symptoms usually precede headache phase of an attack [2]. We conducted this research on female headache sufferers because migraine is more common in females [3].

The clinical features of migraine are well documented in many western countries, but the same is nonexistent in Pakistan. Community-based surveys in other countries report migraine prevalence to vary from 3% to 27% [4–9]. The current study is the first of its kind in Pakistan. Our aim in this study was to document the clinical features

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in an university-going female population in Lahore, Pakistan.

MATERIALS AND METHODS

We focused on randomly selected college/university related female population in Lahore city, Pakistan. We randomly selected 2 towns and found 7 women colleges/universities therein. We conducted a cross-sectional, questionnaire-based (University of Health Sciences Lahore – Headache Assessment Questionnaire [UHS-HAQ]) study between August 2007 and December 2007 in these institutions [2].

Design

The above mentioned female population was screened for individuals who already experienced headaches and were sexually mature. Only questionnaires with answer "Yes" to the above question were included in this study. After screening we selected 647 questionnaires. Questions were designed on the basis of the diagnostic criteria proposed by the International Headache Society (IHS) in its International Classification of headache Disorders-II (ICHD-II). The first part of the questionnaire was designed for demographic information of the participants, and included age, marital status, profession and blood group. The second part of the questionnaire was to evaluate the clinical characteristics of headache (frequency, duration, location, severity and associated symptoms) along with treatment/s sort, trigger/s for migraine, family history of migraine (or similar headaches) and the presence of any comorbid disorder. To assess severity, we used a scale from 1–10 (with '1–3' being mild headache, '4–6 being moderate and '7–10' being the severe headache). The third part of the questionnaire was structured to detect the characteristics of aura symptoms in these individuals. Many options in the questionnaire were given such as "Flickering/moving bright lights, halos, or any other spots/lines in front of the eyes OR any temporary loss of vision" to elicit reversible visual symptoms.

UHS-HAQ was administered by 30 physicians who experienced headaches and their feedback was taken and incorporated. We made sure that one of the authors supervised the distribution of the questionnaires and explained it to the respondents individually and/or in groups, whichever was applicable.

Data Analysis

SPSS for Windows version 15.0 (SPSS Inc., Chicago, IL, USA) was used for statistical analyses and $p<0.05$ was considered to be statistically significant.

RESULTS

Of the 647 females, 45 (7%) were diagnosed with MWA, 181 (28%) were diagnosed as MWOA and 421 (65%) had NMH (non-migrainous headache). Headache type was significantly associated with age-groups ($p<0.000$, Table 1), marital status ($p<0.001$, Table 2), headache characteristics (Table 3) – headache frequency ($p<0.000$), duration of headache attacks ($p<0.000$), headache severity ($p<0.000$), location of headache ($p<0.000$), headache quality ($p<0.000$), associated symptoms ($p<0.000$, Table 4), headache triggers ($p<0.002$, Table 5), treatment modality for headache ($p<0.000$, Table 6), family history ($p<0.003$, Table 7) and presence of aura symptoms ($p<0.000$, Table 8). Headache type was not found to be significantly associated with blood groups.

We divided the participants into 3 groups based on their ages (Table 1). We found decrease in prevalence of headache with increasing age in all headache groups ($p<0.000$). Within the migraine group, both MWA and MWOA were most common in Group A i.e. 16–21 years (59%, 59% respectively). MWA (65%) and MWOA (70%) were found more common in unmarried women.

Headache characteristics

Frequency of headache: 'Variable Pattern' was observed to be the most common response in all diagnostic subtypes i.e. NMH (55%), MWA (44%) and MWOA (38%). Within the migraine group, we found headache attacks to be more frequent in the MWOA group (>6days/month: 31.65%; >14days/month: 38.4%) than MWA (>6 days/Month: 6.53%; >14 days/month: 9.6%). The frequency of attacks was found to be greater in the MWOA as compared to MWOA group.

Duration of headache: Within the migraine group, 53% of MWA and 52% of MWOA sufferers reported having headache attacks for more than 4 hours per episode, which was not significantly different.

Routine activity limitation: Headache limited routine activity in MWA (83%) and MWOA (79%).

Table 1. Prevalence of the various clinical varieties of headache in different age groups of the local female population.

Age (years)	NMH	MWA	MWOA
	N =421(%)	n =45 (%)	n=181 (%)
Group A (16-21)	278 (66)	26 (59)	105 (59)
Group B (22-35)	103 (24)	11 (25)	61 (34)
Group C (>36)	13 (3)	7 (15)	13 (7)

Table 2. Association of marital status with clinical class of headache in the local female population.

	NMH	MWA	MWOA
	N =421(%)	n =45 (%)	n=181 (%)
Married	73 (17)	15 (35)	52 (29)
Un-married	344 (82.0)	28 (65)	126 (70)

Table 3. Headache association in patients

HEADACHE FEATURE	NMH	MWA	MWOA
	n=421(%)	n=45(%)	n=181(%)
FREQUENCY	123 (29.2)	13 (28.9)	63 (34.8)
>6 days/month	65 (15.4)	12 (26.7)	48 (26.5)
>14 days/month	231(54.9)	20 (44.4	70 (38.7)
Variable	123 (29.2)	13 (28.9)	63 (34.8)
DURATION			
< 4 hours/attack	346 (82.2)	21 (46.7)	84 (46.4)
> 4 hours/attack	73 (17.3)	24 (53.3)	94 (51.9)
SEVERITY			
Mild	121 (29.5)	1 (2.2)	4 (2.2)
Moderate	197 (48)	19 (42.2)	75 (41.4)
Severe	92 (22.4)	25 (55.6)	102 (56.4)
LOCATION			
Right half of head	40 (9.5)	4 (8.9)	14 (7.7)
Left half of head	28 (6.7)	2 (4.4)	12 (6.6)
Front of head	110 (26.1)	11 (24.4)	27 (14.9)
Back of head	35 (8.3)	1 (2.2)	15 (8.3)
Whole of head	147 (34.9)	14 (31.1)	62 (31.1)
Other locations	50 (4.3)	11 (2.2)	45 (2.8)
CHARACTER			
Throbbing	53 (12.6)	8 (17.8)	22 (12.2)
Pulsating	105 (24.9)	15 (33.3)	64 (35.4)
Pressure-like	223 (53.0)	17 (37.8)	70 (38.7)
Throbbing/Pulsating	3 (0.7)	2 (4.4)	2(1.1)
Throbbing/Pulsating/ Pressure-like	1 (0.2)	0 (0.0)	3 (1.7)
Throbbing/ Pressure-like	1 (0.2)	1 (2.2)	3 (1.7)
Pulsating/Pressure-like	4 (1.0)	2(4.4)	12 (6.6)
Other type of pain	23 (5.5)	0 (0.0)	5 (2.8)
AURA SYMPTOMS			
TRIGGERS			
ALLEVIATED BY:			

Table 4. Association of Clinical Symptom in Patients with NMH, MWA, and MWOA

	NMH	MWA	MWOA
	n=421 (%)	n =45 (%)	n=181 (%)
Nausea only	9 (2.1)	8(17.8)	33 (18.2)
Vomiting only	10 (2.4)	5 (11.1)	17 (9.4)
Photophobia only	85 (20.2)	0 (0.0)	0 (0.0)
Phonophobia only	245 (58.2)	0 (0.0)	1 (0.6)
Nausea & vomiting	1 (0.2)	1 (2.2)	4 (2.2)
Nausea & photophobia	1 (0.2)	0 (0.0)	3 (1.7)
Nausea & phonophobia	3 (0.7)	1 (2.2)	17 (9.4)
Vomiting & photophobia	1 (0.2)	0 (0.0)	0 (0.0)
Vomiting & phonophobia	1 (0.2)	0 (0.0)	6 (3.3)
Photophobia & phonophobia	25 (5.9)	18 (40.0)	65 (35.9)
Vomiting, Photophobia & Phonophobia	1 (.2)	4 (8.9)	16 (8.8)
Nausea, Vomiting, Photophobia & Phonophobia	0 (.0)	5 (11.1)	9 (5.0)
Nausea, Photophobia & Phonophobia	0 (.0)	2 (4.4)	6 (3.3)
Nausea, Vomiting, Photophobia & Phonophobia	0 (.0)	5 (11.1)	9 (5.0)
No nausea, vomiting, photophobia and phonophobia	39 (9.3)	0 (.0)	0 (.0)

Table 5. Headache trigger in all patient groups

	NMH	MWA	MWOA
	n =421(%)	n =45 (%)	n=181 (%)
Stress	167 (39.8)	16 (35.6)	63 (34.8)
Lack of sleep	120 (28.6)	7 (15.6)	33 (18.2)
Alcohol consumption	3 (0.7)	0 (.0)	2 (1.1)
Stress & lack of sleep	87 (20.7)	20 (44.4)	69 (38.1)
Stress & alcohol consumption	1 (0.2)	0 (.0)	0 (.0)
No trigger identified	20 (4.8)	1 (2.2)	6 (3.3)
Certain diet	3 (0.7)	0 (.0)	4 (2.2)
Others	19 (4.5)	1 (2.2)	4 (2.2)

Table 6. Treatment modality for headache and sleep distrubances

	NMH	MWA	MWOA
	n=421 (%)	n =45 (%)	n=181 (%)
Massage	23 (5.5)	1 (2.2)	10 (5.5)
Sleep	220 (52.3)	16 (35.6)	71 (39.2)
Massage & sleep	12 (2.9)	3 (6.7)	2 (1.1)
Medication	94 (22.3)	14 (31.1)	64 (35.4)
Medication & Massage	2 (.5)	1 (2.2)	3 (1.7)
Medication, Massage & Sleep	4 (1.0)	1 (2.2)	5 (2.8)
Medication & Sleep	36 (8.6)	7 (15.6)	25 (13.8)
no treatment	21 (5.0)	2 (4.4)	0 (0.0)
Other	9 (2.1)	0 (0.0)	1 (0.6)

Table 8. Data on complication association in patients

	NMH	MWA	MWOA
	n=421 (%)	n=45(%)	n=181(%)
Visual symptoms only	45 (10.7)	8(17.8)	30 (16.6)
NU* only	4 (1.0)	1 (2.2)	4 (2.2)
NB** only	4 (1.0)	0 (0)	1 (0.6)
Pins and needles only	30 (7.1)	1 (2.2)	9 (5.0)
Difficulty in speaking only	49 (11)	11 (24)	19 (10)
Visual symptoms & NU	5 (1)	1 (2)	2 (1)
Visual symptoms & NB	1 (0.2)	0 (0)	1 (0.6)
Visual symptoms & Pins and needles	10 (2)	4 (9)	6 (3)
Visual symptoms & difficulty in speaking	18 (4)	3 (6)	14 (7)
Numbness unilateral & Pins and needles	1 (0.2)	2 (4)	3 (1)
Numbness unilateral & Difficulty in speaking	1 (0.2)	0 (0)	1 (0.6)
Numbness bilateral & pins and needles	3 (0.7)	1 (2)	1 (0.6)
Numbness bilateral & difficulty in speaking	1 (0.2)	1 (2)	1 (0.6)
Pins and needles & difficulty in speaking	8 (2)	2 (4)	3 (1)
Visual symptoms + NU + Pins & Needle	3 (0.7)	1 (2)	0 (0)
Visual symptoms + NB + Pins & Needle	3 (0.7)	0 (0)	2 (1)
Visual symptoms + Pins & Needle + Speech difficulty	9 (2)	4 (9)	5 (2)
NU + Pins & Needle + Speech difficulty	2 (0.5)	2 (4)	1 (0.6)
NB + Pins & Needle + Speech difficulty	0 (0)	2 (4)	0 (0)
Visual symptoms, NU, pins & needles & difficulty in speaking	2 (0.5)	0 (0)	3 (1)
Visual symptoms, NB, pins & needles & difficulty in speaking	2 (0.5)	1 (2)	3 (1)
Visual symptoms + NU + Speech difficulty	6 (1)	0 (0)	2 (1)
Visual symptoms + NB + Speech difficulty	2 (0.5)	0 (0)	3 (1)
NB + Speech difficulty	3 (0.7)	0 (0)	0 (0)
NU + Speech difficulty	1 (0.2)	0 (0)	0 (0)
No aura symptoms	208 (49)	0 (0)	67 (37)

Table 7. Family history association in all patient groups

	NMH	MWA	MWOA
	n =409(%)	n =44 (%)	n=179 (%)
First degree relative	156(38)	29 (65)	83 (46)
Second degree relative	7(1.7)	0 (0)	7(4)
First & second degree relatives	4(1)	1 (2)	5(3)
No family history reported	242 (59)	14(31)	84(47)

Severity: We found 55% of MWA and 56% of MWOA to fall in the moderate headache category. In NMH headaches sufferers 46% were classified as mild.
Location: Headache in the 'front of head' was the most common response in MWA (24%) and MWOA (14%) groups.
Quality: MWA (37%), MWOA (38%) and NMH (53%) described their headaches as 'pressure-like sensation.
Associated symptoms: MWA (40%), MWOA (36%) reported 'photophobia and phonophobia' as their most frequent headache associated symptoms. NMH (58%) reported 'phonophobia' to be their most frequent associated symptom with headache.

Headache triggers

'*Stress' and lack of sleep'* were found to be the most commonly reported triggers of MWA (44%) and MWOA (38%).

Treatment sort for headaches

Most common headache management practice amongst migraineurs was 'sleep' [MWA (35%) and MWOA (39%)]. The other significant mode of treatment was medications (MWA 31%, MWOA 35%). Paracetamol was found to be the most commonly used analgesic (MWA 9%, MWOA 8%).

Family history

Amongst migraineurs, MWA (69%) and MWOA (53%) reported positive family history for similar headaches. On asking the nature of relationship with the relative suffering from these similar headaches, MWA respondents reported 66% and MWOA 46% of their relatives as being 'first degree relatives'.

Aura symptoms

Out of the total 647 headache respondents, 402 (62%) reported having aura symptom/s. After applying ICHD-2 diagnostic criteria to the respondents reporting aura symptom/s, 45 (11%) respondents qualified as having MWA, 144 (35%) with MWOA, 213 (56%) as NMH with independent aura symptoms and 245 (37%) as NMH without any aura symptoms.

DISCUSSION

The majority of Pakistani people, who experience headaches including migraine, do not generally seek medical care. Everyday headaches are treated by over-the-counter allopathic, homeopathic, herbal drugs or simple massages. The headaches that persist beyond these measures warrant a visit to a primary health care provider in local districts or private practicing physicians (non-specialists). A neurologist is usually consulted when the headache is crippling and is affecting personal or professional activities. Therefore, a population-based survey, instead of a clinic-based survey was chosen to explore characteristics of headache in general and migraine in specific, including those who had never consulted or had formally been diagnosed by a physician as having any kind of primary headache.

The current study found the frequency of migraine among the local female headache sufferers to be 34% (28% were MWOA patients while 7% were MWA patients), while 65% of the study population had NMH. The target population comprised of female headache sufferers of reproductive age, middle socioeconomic class, involved in academic and research activities. We found more MWOA than MWA. Migraine was found to be most common (59%) both in MWA & MWOA in unmarried, young females aged 16–21 (post-menarche). We conclude that stress of university education and other social issues such as stress of getting married etc can attribute to this finding.

Regarding headache characteristics, our study also revealed that migraine attacks are of longer duration than NMH attacks (duration of headache attacks statistically significant in the migraine group (MWA 53%, MWOA 52% p=0.000), though the frequencies may be lower than expected. As expected, we found that migraine tended to limit routine activity much more than NMH which was of significance (MWA 83%, MWOA 79% p=0.000). Further more, '*photophobia and phonophobia*' is found to be the commonest associated symptoms in the migraine group [MWA (40%), MWOA (36%)]. This is consistent with the fact that photophobia, phonophobia and nausea have been described as the most specific features for migraine [10]. '*Nausea only*' was observed in MWA (17.8%) and MWOA (18.2%). This finding is in agreement with findings of previous studies [11, 12].. On the contrary, '*Front of the Head*' was found to be the most common site of migraine headaches (MWA 25%, MWOA 15% p=0.000). Similarly, the International Headache Society (IHS) describes migraine pain to be of pulsating in quality [2]. However, we found '*pressure-like sensation*' (MWA 37%, MWOA 38%) to be most common quality of pain described in this study. These results may be due to racial, ethnic, geographical and/or environmental factors.

In the NMH category, 245 (37%) respondents did not report having any aura symptoms. Out of the 213 (56%) who experienced aura, there was a subgroup that fulfilled the IHS criteria for 'Aura Without Migraine Headache' diagnosis [2]: *'speech difficulty' developing over 5 minutes and lasting < 60 minutes (24.1 %); visual symptoms (such as bright light haloes, lines and/or reversible loss of vision) developing over 5 minutes and lasting < 60 minutes (18.5%).* In MWA, visual symptoms have been reported to be the most common aura symptoms [13]. However, our study shows 17.8% MWA and NMH 10.7% having visual symptoms. Within the migraine group**,** *Difficulty in Speaking* (24%) was the most frequently reported symptom in MWA group, while *No Aura Symptoms* (37%) was the most common response in MWOA group.

Headache Severity and Duration of Headache attacks:

Further testing within the MWA group revealed duration of individual attacks had significant relation with severity of pain, whereby MWA respondents experiencing <4 hours of pain per attack had moderate severity (73.7%) and MWA cases having >4 hours of pain per attack had severe pain severity (72%, p<0.007). Similar results were observed in MWOA where respondents experiencing headache attacks <4 hours/attack suffered from moderate intensity of pain (67.6%), while the ones who had >4 hours of pain per attack experienced severe intensity of pain (67%, p<0.000). This supports the notion of interrupting the pain early in migraineurs.

Headache Severity and Associated Symptoms:

Besides retrieving the classical migraine-associated symptoms (nausea, vomiting, photophobia and phonophobia), many respondents reported variable combination of these symptoms. Since there are many different migraine phenotypes, various combinations of associated symptoms may define unique migraine models in this population. Overall, we found '*photophobia and phonophobia*' as the commonest symptoms in 52% of MWA respondents with moderate severity and 28% respondents with severe intensity. In the same migraineur group, nausea was associated with moderate intensity in 21% and with severe intensity in 16% respondents while vomiting was associated with moderate intensity in 15% and with severe intensity in 8% (p=0.000). In MWOA respondents, again the commonest symptoms were '*photophobia and phonophobia*' with moderate severity in 42% and severe intensity in 31%; nausea was associated with moderate intensity (24%) and severe intensity (12%) while vomiting was associated with moderate intensity (12%) and severe intensity (7%) in MWOA (p=0.000).

Headache Severity and aura symptoms:

In MWA respondent group, 55% experienced severe, 42% moderate and 2% mild headaches. In MWOA respondent group, aura symptoms were found in 78% with severe and 56% with moderate headaches. In NMH respondents, aura symptoms were reported in 65% with severe, 56% with moderate and 28% with mild intensity headaches. Thus chances for experiencing aura symptoms seems to increase with increasing

headache intensity (and/or vice versa) in all headache groups. We did not find similar relation between severity and type, location, triggers of headache or family history for headaches.

Migraine is known to run in families and previously reported data show that the family history of migraine vary from 45% to 70% [14,15]. In our study, we also found a positive family history within migraineurs (MWA 69% and MWOA 53%, p= 0.003).

This study is expected to add to the symptomatology knowledgebase for headaches, especially migraine in Pakistan. It further clearly emphasizes on the importance of discerning geographical variation in headache pain expression.

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