



IJPPR

INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals

ISSN 2349-7203




Human Journals

Research Article


May 2024 Vol.:30, Issue:5

© All rights are reserved by Vishnupriya S et al.

Prevalence of Menstrual Migraine among South Indian Women



IJPPR
INTERNATIONAL JOURNAL OF PHARMACY & PHARMACEUTICAL RESEARCH
An official Publication of Human Journals



ISSN 2349-7203

Vishnupriya S*, Jasmine Fathima Ashraf⁽¹⁾

**Assistant Professor, Department of Pharmacy Practice, PSG College of Pharmacy, Coimbatore, Tamil Nadu, India.*

¹Department of Pharmacy Practice, PSG College of Pharmacy, Coimbatore, Tamil Nadu, India

Submitted: 27 April 2024
Accepted: 02 May 2024
Published: 30 May 2024

Keywords: Migraine, Menstruation, Hormonal changes, Pain, Aura.

ABSTRACT

Objectives:

To determine the prevalence of menstrual migraine among South Indian women.

To assess the knowledge of menstrual migraine among the study population.

To evaluate the awareness of pure menstrual migraine and hormone related migraine.

Methods: This is a prospective, observational study which was conducted among 200 South Indian women for a period of six months. Data were collected using Menstrual Migraine questionnaires through an online survey and assessed.

Results: Among 200 patients, 79 (40%) had a past history of migraine. Age during the onset of 1st menstrual migraine was between 18 and 20 for 85 patients (42%). 104 (52%) patients had migraine only during menstruation. 74(37%) patients had migraine that lasted for 1-2 days. Forehead is the site of pain for 60 (30%) patients. 89 (45%) patients had moderate pain. 46 (23%) patients tried meditation, deep breathing and yoga to overcome migraine. **Conclusion:** Among 200 subjects, 140 were observed with pure migraine and 60 with hormone related menstrual migraine. It is understood that acquiring proper knowledge regarding hormonal changes, menstrual cycle and its impact on women's health is significant.



HUMAN JOURNALS

ijppr.humanjournals.com

INTRODUCTION

Menstruation is a physiological process that occurs throughout the reproductive years of every woman, which is marked as an onset of menarche (1). It is characterized by the removal of thick lining of the uterus through vagina from the body (2). Migraine is characterized by recurrent attacks of headache with changes in intensity, frequency, and duration (3). It has been influenced by multiple genes and environmental triggers (4). The term “Migraine” is derived from the Latin word “hemicrania” meaning unilateral headache (5). It has been regarded as a vascular disorder because of the throbbing nature of pain. Attacks are commonly pulsating, usually restricted to one side (unilateral) and can last for 4-48 hours. It is mostly associated with nausea, vomiting, loose motion and other symptoms (6). Epidemiological studies have documented its socioeconomic and personal impacts. Menstrual migraine most commonly occurs from day -2 to day +3 of the menstrual cycle (7). Attacks occurring at this time of the cycle are typically without aura (8). There are two types of menstrual migraine and that includes pure menstrual migraine (PMM) which occurs predominantly around menstruation and menstrual migraine or hormone related migraine (HRM), which occurs not only during menstruation but also at the other times of the month(9). The peak prevalence of migraine occurs in women of reproductive age and women experience a higher burden of migraine symptoms(10). Approximately, 60% of women with migraine will relate a periodicity of their headaches to their menstrual cycles. Most often these headaches occur just before or during menstruation. Usually, only one migraine episode will occur at this time. Some of these women will also relate their headaches to the time of ovulation. It may rarely occur immediately after the menstruation(11). 7-14% of migraineurs have menstruation as the only trigger of their migraine(12). Changes in the ovarian hormones that occurs due to the abnormal response of neurotransmitters can be the cause of menstrual migraine(13). It is being hypothesized that the decrease in estrogen levels during menstruation can be an essential trigger for menstrual migraine (11). Although, the exact pathophysiology of menstrual migraine is unknown(14). It has long been summarized that the natural withdrawal of ovarian hormones might be the precipitating event leading to menstrual migraine. The premenstrual phase of the menstrual cycle is characterized by diminishing secretion of progesterone and estradiol. Since these two hormone levels tend to fall together, withdrawal of one or both could precipitate menstrual migraine(15). Decrease in estrogen level that occurs during the luteal phase of the menstrual cycle is thought to be a critical trigger in the development of menstrual migraine. Multiple neurotransmitter systems are

involved in menstrual migraine. Withdrawal of estrogen correlates with changes in prostaglandin release in opioid tone, increasing the sensitivity of dopamine receptors, increased serotonergic transmission and reactivity of the cerebral vasculature to serotonin. During menstrual migraine, an increase in melatonin secretion does not occur in the luteal phase, leading to sleep interruption which increases the severity of menstrual migraine(16).

METHODOLOGY

This study was carried out in 200 South Indian women for a period of 6 months. It was a prospective, observational study, conducted through an online survey. Study materials include Menstrual Migraine Questionnaire (MM) and International Headache Society Classification of Migraine without aura. A questionnaire was prepared and validated based on the references mentioned above and few changes were made.

INCLUSION CRITERIA:

- Migraine without aura (or) attacks fulfilling criteria for migraine without aura.
- Women who all are at reproductive age.
- Women with no known history of other gynecological or chronic diseases.
- Women with a regular menstrual cycle.
- Migraine attacks should be present in at least 2 of 3 consecutive menstruation.

EXCLUSION CRITERIA:

- More than 10 headache attacks per month on average during the screening phase.
- Steroid hormonal treatment in the past 3 months.
- Ongoing treatment with anti-epileptic drugs and benzodiazepines.
- Migraine with aura.

Willingness of the patients was checked before starting the study. Those who are willing to take part in the study, the demographic information like name, age, sex, medical history, migraine history, the interval between periods, medication history, details about intensity and

site of pain, symptoms were collected through questionnaires and an Excel sheet was interpreted for the data.

RESULTS

A total of 200 patients were included in the study. The subjects enrolled were categorized into different age groups. Majority of the population belongs to the age group of 21-25 years (58 subjects) (Table 1).

Table 1: AGE WISE CLASSIFICATION OF SUBJECTS

AGE GROUP	NO. OF POPULATION	PERCENTAGE
15 -20	26	13
21 – 25	58	29
26 – 30	51	26
31 – 35	32	16
36 – 40	09	05
41 – 45	10	05
46 – 50	11	05
51 – 55	02	01
66 - 70	01	01

Among 200 subjects involved in the study, 154 (77%) experienced their menarche during the age of 12 or above. 28 subjects (14%) experienced after 10 or above and 18 subjects (09%) after the age of 16 or above. Subjects were classified based on the duration of periods. 140 (70%) subjects experienced periods for 3-5 days. 30 (15%) subjects experienced for 3 days and 30 (15%) subjects experienced for more than 5 days. Majority of the population had their menstrual cycle for the period of 28-30 days. 79 (40%) women had a past history of migraine and 121 (60%) did not have a history of migraine. Participants were classified based on their medication history. Majority of the population was not on any medication. 34 (17%) subjects were on nasal decongestants (Table 2).

Table 2: MEDICATION HISTORY OF SUBJECTS

MEDICATION HISTORY	NO. OF POPULATION	PERCENTAGE
Oral contraceptives	08	04
Hormonal Replacement Therapy	26	13
SSRIs	06	03
Nasal Decongestants	34	17
Proton Pump Inhibitors	05	03
None of the above	121	60

Among the participants, 85 (42%) had their first menstrual migraine at the age of 18-20 years. 54 (27%) had menstrual migraine before the age of 18(Table 3).

Table 3: ONSET OF FIRST MENSTRUAL MIGRAINE

ONSET OF FIRST MENSTRUAL MIGRAINE	NO. OF POPULATION	PERCENTAGE
<18 Years	54	27
18 – 20 Years	85	42
21 – 25 Years	26	13
26 – 40 Years	09	05
>40 Years	02	01
None of the above	24	12

140 (70%) subjects had headaches only during menstruation. Out of 200 subjects, 78 (39%) had headache for more than 2 menstrual cycles and 74 (37%) had headache during every menstrual cycle. 35 subjects (18%) had headache only once. From the total population,77 (38%) experienced headache on the first day of menstrual cycle. 56 (28%) subjects experienced headache a day before the beginning of the menstrual cycle and 42 (22%) subjects had the second and third day of menstrual cycle. Out of 200 population, 74 (37%) subjects have reported to have menstrual migraine for 1-2 days. 67 (34%) subjects had menstrual migraine for 2-3 days.33 (17%) subjects had migraine for more than 3 days. Factors inducing migraine were studied among the study population. It was found that aroma had a major role in inducing migraine followed by bright light, noise and seizure (Figure 1).

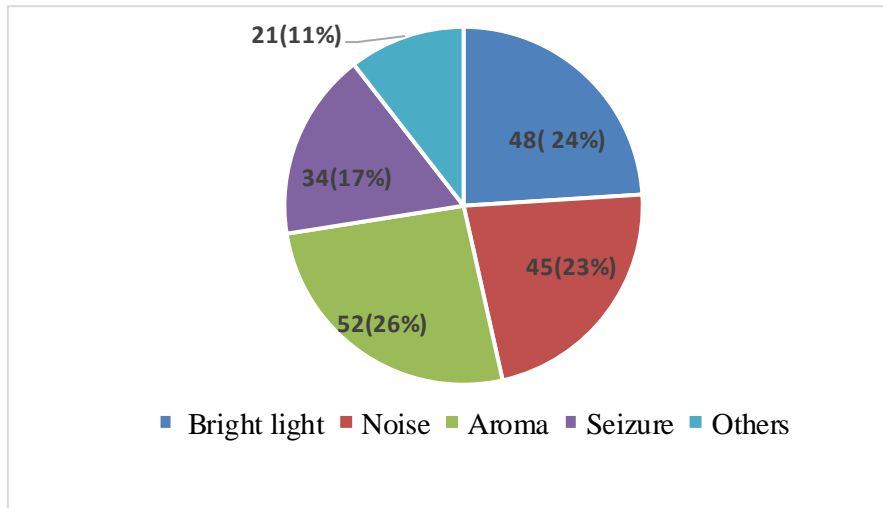


FIGURE 1: FACTORS INDUCING MENSTRUAL MIGRAINE

Participants were grouped based on the site of pain and forehead was found to be the major site of pain for 60 (30%) subjects (Table 4).

TABLE 4: CLASSIFICATION OF PAIN SITE

PAIN SITE	NO. OF POPULATION	PERCENTAGE
One side of the head	41	21
Both the sides of head	43	21
Forehead	60	30
Around the eyes	38	19
None of the above	18	09

The severity of the migraine was assessed and the total participants were divided into five groups. 89 (45%) participants had moderate pain, 52 (26%) had severe pain and 32 (16%) had mild pain. 14 (7%) subjects were identified with extremely severe pain and 13 subjects did not fall into any of the above mentioned categories. The symptoms of menstrual migraine include vomiting, nausea, diarrhoea and nasal congestion. Majority of the population had fatigue. Depression and anaemia are the common comorbidities observed among the study participants (Table 5).

TABLE 5: TYPES OF COMORBIDITIES

COMORBIDITY	NOOF POPULATION	PERCENTAGE
PCOD/PCOS	11	06
Hypothyroidism	12	06
Anaemia	22	11
Depression	35	19
Autoimmune disease	08	04
Others	15	07
None of the above	102	51

Study participants used various methods to overcome menstrual migraine. Commonly used methods are meditation and yoga followed by analgesics (Figure 2).

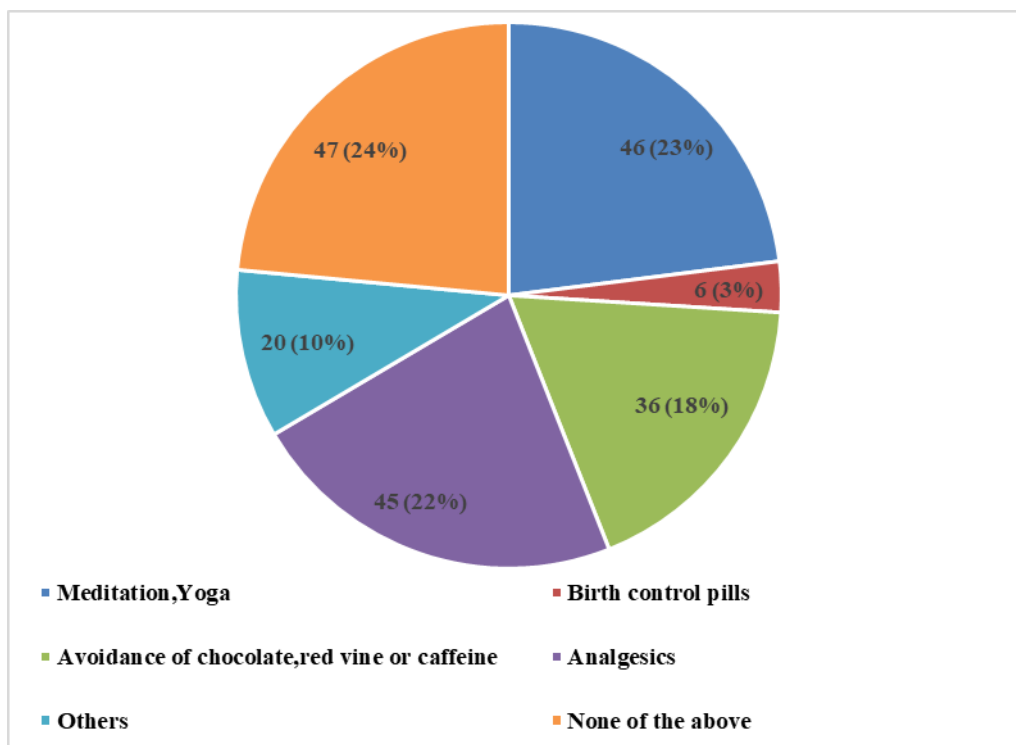


FIGURE 2: METHODS TO OVERCOME MENSTRUAL MIGRAIN

DISCUSSION

The study that was conducted among 200 women from south India mainly deals with the prevalence of migraine related with menstruation and its types. Previous studies proved to establish concrete evidences of menstruation inducing migraine in women (3,6).In order to

get a better idea about menstrual migraine, we assessed various factors related to menstruation. Parameters like age, onset of menarche, medical and medication history, site of pain, methods to overcome migraine, etc were analyzed (5,7). In our study, irrespective of age, we found that there is a relation between menstruation and migraine.

Majority of the women with menstrual migraine belong to the age group of 21-26, which is in accordance with the study conducted by Fernandez et al (2020) (16). In a study conducted by Tepper J et al (2008) (17) a questionnaire containing 9 questions was given to 250 women on routine visits to the headache centre. Similarly in our study we prepared a questionnaire with 26 questions and circulated to 200 women through online. Those 9 questions were only about headache and their history. We collected a detailed history of their menstrual cycle, medications, comorbidities and methods to overcome migraine from the 26 questions.

77% of women reported that the age of onset of menarche was 12 or above which is in concordance with the study by Fernandez et al (2020)(16). Spierings et al (18) study stated the same results that the average age of menarche was 12.5 years and for those subjects, the onset of migraine has occurred within 1 year of menarche. In our study, a significant number of population used analgesics to overcome migraine which is in concordance with the study performed by Karen et al (19). Rahul et al (19) concluded that Migraines occurring during the menstrual time period have a longer duration (greater than 4 days) which is contrary to our study where menstrual migraine was reported to exist for 1-2 days. Rahul et al stated that there existed evidence of a higher rate of recurrence in migraine during menstrual time which is similar to our study where majority (76%) of our subjects reported the same. Fernandez et al (16) identified climate and sunlight as triggering factors for migraines which partially aligns with our study where bright light is observed to be one of the significant factors leading to migraine. Contrary to the study of Fernandez et al. who reported that majority of the women who experienced migraine were on oral contraceptives, we didn't find a significant relation between migraine and oral contraceptives.

Severity of the migraine was assessed in our study and majority of the participants reported to have moderate pain (45%) whereas study of Spierings et al (18) reported that severe pain was observed widely.

Previous evidences demonstrated an improvement of acute migraine after abstinence from coffee. Similar results were observed in our study. Having said that, there also exist certain studies which prove that consumption of coffee can help in relieving headache. Henceforth,

future studies are needed to establish the relation between coffee and menstrual migraine. In relation to the previous studies, tiredness was seen as the most prevalent symptom in among our study participants.

Pavlovic et al (21) study reported that one-third of the menstrual migraine cases were observed to have migraine outside their menstruation window. An identical result was observed in our study, where 30% of women had migraine outside their menstruation window.

Our study has limitations in collecting the socioeconomic and geographical factors of the participants. Data were collected through an online survey but, in-person interview would have contributed to solving the doubts related to the questionnaire. Further research is required on a larger population and including women from various socioeconomic backgrounds to assess menstrual migraine and its impact on economy, quality of life and genetic association of the disease.

CONCLUSION



In this study, 200 South Indian women were involved and assessed for the prevalence of menstrual migraine. Subjects who were included in the study were categorized based on various criteria like age, age of onset of first periods, past history of migraine, frequency of headache during menstruation, duration of menstrual migraine, symptoms, severity, pain site, steps taken to overcome the migraine attack. This study brought a conclusion that among 200 subjects enrolled 140 subjects (70%) were noted with pure menstrual migraine and rest 60 subjects (30%) were with hormone related migraine during menstrual cycle. Thus, this study enforces the importance of proper knowledge about the hormonal variations and the impact of those hormonal variations over migraine. It is important to acquire enough awareness about the menstrual cycle & its impact on health and to have adequate knowledge about the precaution measures and steps to overcome the symptoms of menstrual migraine in women of reproductive age in order to increase the quality of life during menstruation.

Conflict of interest: None. Disclaimer: Nil.

REFERENCES

- 1) Garg S, Anad T. Menstruation related myths in India: strategies for compacting it. *J Family Med Prim Care*. 2015; 4(2):184-6.
- 2) Tundia MN, Thakrar DV. A study on menstrual hygiene practices and problems among adolescent girls in Udaipur, Rajasthan, 2018. *Int J Community Med Public Health* [Internet]. 2018 Jul. 23;5(8):3486-91.

- 3) Mac Gregor. Migraine associated with Menstruation. *Funct Neurol.* 2000; 15 suppl3:143-53.
- 4) Sutherland HG, et.al. Investigation of Polymorphism in genes involved in estrogen metabolism in menstrual migraine. *Gene* 2017; 607: 36-40.
- 5) Simić S, Slankamenac P, Cvijanović M, Banić-Horvat S, Jovin Z, Ilin M. [Menstrual migraine]. *Med Pregl.* 2007 Sep-Oct;60(9-10):449-52.
- 6) Ferreira KS, Guilherme G, Faria VR, Borges LM, Uchiyama AA. Women Living Together Have a Higher Frequency of Menstrual Migraine. *Headache.* 2017 Jan;57(1):135-142.
- 7) Barra M, Dahl FA, Vetvik KG. Statistical testing of association between menstruation and migraine. *Headache.* 2015 Feb;55(2):229-40
- 8) Van Casteren DS, van Willigenburg FAC, MaassenVanDenBrink A, Terwindt GM. Jealousy in women with migraine: a cross-sectional case-control study. *J Headache Pain.* 2020 May 11;21(1):51
- 9) Burch R. Epidemiology and Treatment of Menstrual Migraine and Migraine during pregnancy and lactation: A narrative review. *Headache* 2020; 60 (1): 200-216.
- 10)Edelson RN. Menstrual migraine and other hormonal aspects of migraine. *Headache.* 1985 Oct;25(7):376-9.
- 11)Ibrahimi K, van Oosterhout WP, van Dorp W, Danser AH, et al., Reduced trigeminovascular cyclicality in patients with menstrually related migraine. *Neurology.* 2015 Jan 13;84(2):125-31.
- 12)Jan Lewis Brandes, *Encyclopedia of the Neurological Sciences*, 2003,163-167.
- 13)Cupini LM, Corbelli I, Sarchelli P. Menstrual migraine: what it is and does it matter? *J Neurol.* 2021 Jul;268(7):2355-2363.
- 14)Barra M, Dahl FA, MacGregor EA, Vetvik KG. Identifying menstrual migraine- improvingthe diagnostic criteria using a statistical method. *J Headache Pain.* 2019 Sep 6;20(1):95
- 15)Witteveen, H., van den Berg, P. & Vermeulen, G. Treatment of menstrual migraine; multidisciplinary or mono-disciplinary approach. *J Headache Pain* 2017(18),45.
- 16)Fernández-Martínez E, Onieva-Zafra MDMD, Abreu-Sánchez A, et al., Menstrual Migraine Among Spanish University Students. *J Pediatr Nurs.* 2021 Jan-Feb;56:e1-e6.
- 17)Tepper SJ, Zatochill M, Szeto M, Sheftell F, Tepper DE, Bigal M. Development of a simple menstrual migraine screening tool for obstetric and gynecology clinics: the menstrual migraine assessment tool. *Headache.* 2008 Nov-Dec;48(10):1419-25.
- 18)Spierings EL, Padamsee A. Menstrual-Cycle and Menstruation Disorders in Episodic vs Chronic Migraine: An Exploratory Study. *Pain Med.* 2015 Jul;16(7):1426-32.
- 19)Ferreira KS, Guilherme G, Faria VR, Borges LM, Uchiyama AA. Women Living Together Have a Higher Frequency of Menstrual Migraine. *Headache.* 2017 Jan;57(1):135-142.
- 20)Bhambri R, Martin VT, Abdulsattar Y, Silberstein S, Almas M, Chatterjee A, Ramos E. Comparing the efficacy of eletriptan for migraine in women during menstrual and non-menstrual time periods: a pooled analysis of randomized controlled trials. *Headache.* 2014 Feb;54(2):343-54.
- 21)Pavlović JM, Stewart WF, Bruce CA, Gorman JA, Sun H, Buse DC, Lipton RB. Burden of migraine related to menses: results from the AMPP study. *J Headache Pain.* 2015 Mar 18;(16:24).

<p>Image Author -1</p> 	<p>Author Name – Corresponding Author: Vishnupriya S Author Affiliation: Assistant Professor, Department of Pharmacy Practice Author Address/Institute Address: PSG College of Pharmacy, Peelamedu, Coimbatore-641004</p>
<p>Image Author -2</p> 	<p>Author Name – Dr. Jasmine Fathima A Author Affiliation- Lecturer, Department of Pharmacy Practice, PSG College of Pharmacy Author Address/Institute Address- PSG College of Pharmacy, Peelamedu, Coimbatore-641004</p>