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Pharmacological and Non-Pharmacological Approaches to Primary Dysmenorrhea:
Awareness, Utilization, and Perceived Effectiveness Among Women in India

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ABSTRACT

Dysmenorrhea is a prevalent gynecological condition that negatively affects the daily life and overall wellbeing of individuals who menstruate. The purpose of this study was to explore various strategies used to cope with menstrual pain within the female Indian population, focusing on the symptoms of dysmenorrhea and the various Ayurvedic, local, pharmaceutical, and lifestyle intervention techniques to relieve menstrual pain. A questionnaire was created and distributed to participants for collecting data from a sample of 47 individuals between the ages of 12 and 45. A snowball sampling method was used to select participants. The questionnaire was predominantly closed-ended and included multiple choice, checklist, rating scale questions, and other items. These were used to collect data on the participants' demographics, pain duration, pain severity, symptoms, and the frequency and effectiveness of various pharmacological and non-pharmacological interventions. Ethical considerations of voluntary participation, informed consent, confidentiality, and total anonymity were practiced. The results revealed that the majority of the participants experienced pain at the start of each menstrual cycle. The participants also reported experiencing symptoms of dysmenorrhea for greater than six years. Among the participants, NSAIDs were the most preferred and used prescription pain relief medications. Among the non-pharmacological interventions, sleeping and using a heating pad were the most preferred, perceived, and valued. Some techniques such as Ayurveda were less commonly known to the sample, highlighting a medical gap which can be bridged.

Keywords: *Dysmenorrhea; Pharmacological Approaches; Menstrual Pain Management; Indian Women; Non-Pharmacological Approaches; Ayurveda*

1. INTRODUCTION

1.1 Understanding Dysmenorrhea in India

Menstrual pain (dysmenorrhea) is very common in India in all age groups particularly in adolescents. The medical term for painful periods, painful cramps and pain in the lower abdomen that

may extend to the lower back and legs. The results of a nationwide survey conducted among 6,715 adolescent girls from 16 states revealed that approximately 61.8% of the respondents reported some form of menstrual pain or disorder (Chokhandre et al., 2024). In a study of healthy women aged 11-28 years, 70.2% of them suffered from dysmenorrhea and many of them used non-pharmacological methods to relieve their pain (Omidvar et al., 2015). Women's experiences, their cultural backgrounds and the nature of the treatment options all play a role in how they manage menstrual pain, in addition to the biological factors. Older generations may use traditional remedies or practices, and newer generations may use modern remedies like painkillers or topical products. Differences in the pain relief are also due to the region. Women in some cultures may turn towards Ayurveda, Acupuncture, or herbal medicines. With the widespread prevalence of dysmenorrhea among Indian women and adolescents, there are implications for education and work productivity. The high prevalence of dysmenorrhea among Indian women and adolescents has important consequences for school attendance, as well as for other aspects of their daily life and wellbeing. In addition to absenteeism from school or work, many women have experienced a decrease in their physical functions, such as pain interfering with their daily activities, their social roles, or their normal mobility during menstruation (Katib et al., 2024). Menstrual pain and symptoms also have a significant economic disadvantage and impact on productivity. Menstruation-related symptoms were linked to an average loss of 33% of productivity, or nearly 9 days of work or study per year in a large international survey (Schoep et al., 2019). All this returns to the central question: menstrual literacy and culturally appropriate pain management strategies have not been discussed adequately, and working while in pain has been normalized, leading to chronic neglect; and pain management in rural communities is still a scattered subject with many learning gaps. Menstrual pain is common in India, and the crossroads of biomedical, cultural and indigenous approaches to care converge in pain management.

1.2 Traditional and Indigenous Practices

Various therapeutic approaches from different medical systems are used traditionally in India for managing pain during menstruation (dysmenorrhea) and each of them has its own mechanism and effectiveness. Medications such as ‘Phala Ghrita’ (a medicated ghee mixture, used to balance hormones and relieve pain) and ‘Jeerakadi Modak’ (herbal medicine containing cumin and other digestive herbs for menstrual regulation) are used in Ayurvedic medicine, while medicated enemas are also employed. Basti therapy is used to remove toxins and balance the doshas (Goel et al., 2022) and Unani medicine uses herbs with emmenagogue properties to improve menstrual flow, antispasmodic and anti-inflammatory properties such as celery, cumin and chamomile (Ahmed et al., 2022).

Indian native tribes also have a wealth of herbal treatments with complex preparations for the treatment of menstrual pain. For example, the Rajbanshi tribe of Assam, North Bengal, Nepal and East Bihar has been using complex combinations of Allium sativum (garlic), Zingiber officinale (ginger) and other medicinal plants (Roy et al., 2017). Das et al. (2005) reported that the plant Bongali Era is used by the Koch-Rajbongshi tribe of West Bengal and Meghalaya. The effectiveness of these remedies comes from gingerols, terpenoids and flavonoids. These are compounds that have anti-inflammatory, pain-relieving, and muscle-relaxing properties (Kumar et al., 2024). Furthermore, yoga can be beneficial for dysmenorrhea by reducing stress and regulating hormones with appropriate yoga poses and breathing exercises. In general, the performance of the traditional systems is not uniform. The findings suggest that 62.79% of the participants showed improvement after taking ayurvedic treatment, and 38.89% of the participants showed improvement after taking allopathic treatment (Kapoorchand, 2023). Traditional methods are still significant in their cultural importance and have shown promising therapeutic potential, but they need to be rigorously clinically tested for their efficacy (Patibandla et al., 2024).

1.3 Modern and Pharmaceutical Interventions

The most effective and well-studied medications used in modern times for dysmenorrhea include nonsteroidal anti-inflammatory drugs (NSAIDs). These drugs act by inhibiting the enzyme cyclooxygenase that is involved in the production of prostaglandins. These are chemicals that are similar to hormones, and they start strong uterine contractions that cause cramping. NSAIDs have been found to be effective in reducing pain, with almost half of women finding moderate to excellent pain reduction compared to less than one-fifth of women with a placebo (Marjoribanks et al., 2015). Commonly used NSAIDs are Naproxen, Ibuprofen, Mefenamic acid, diclofenac and Ketoprofen, which are typically taken at the beginning of menstruation and continued for 2-3 days during the most painful period. There are other drugs, such as hormonal contraceptives, which can help control menstrual pain as well as preventing pregnancy. Progestogen-containing contraceptives are effective in suppressing ovulation and prostaglandin production, which helps to alleviate pain (Latthe & Champaneria, 2014). Some women also take Paracetamol, which is less effective than NSAIDs in treating dysmenorrhea (Marjoribanks et al., 2010).

Although these drugs can be effective, they have some disadvantages. NSAIDs may have gastrointestinal side effects, including nausea or indigestion, and headaches or dizziness; these are best taken with food to decrease the chance of stomach irritation. Furthermore, conventional treatments do not work for about 15% of women, and some women are unable to use these treatments because they may have medical risks and side effects (Proctor and Farquhar, 2006).

Although there is growing interest in the study of menstrual health, there are still many gaps in the literature, especially in India. Previous research that has investigated dysmenorrhea has been conducted in adolescents or young adults only, and there is a lack of information regarding the way different age groups cope with menstrual pain. Furthermore, the topic of menstrual literacy in India is vastly under-researched and there is little research on the impact of awareness and knowledge on pain management behaviour in Indian women. New drugs like NSAIDs, topical analgesics, and medicated sprays have also caught up with the evidence base, with only a handful of studies that have systematically assessed their effectiveness and usage. Furthermore, most of the available comparative studies on treatment of dysmenorrhea are conducted at either a global or a cross-national level, thus reducing the cultural and contextual specificity required to grasp the nature of pain management practices in the context of Indian traditions, beliefs, and health-seeking practices. Most importantly, there have been few studies that compare modern medical treatments to indigenous or traditional treatments directly. The present study aims to fill all these gaps by providing a culturally sensitive, age-inclusive and India-specific study on menstrual pain management, thereby adding a nuanced and culturally relevant perspective to the field.

2. METHODOLOGY

2.1 Aim and objectives of the study

The primary aim of this study is to investigate menstrual pain management techniques among women residing in India, with an emphasis on Ayurvedic, indigenous, and pharmaceutical practices. Specifically, the study seeks to explore the symptoms most frequently experienced by menstruating women across different age groups, and to examine the average duration and characteristics of menstrual pain. Beyond symptom profiling, the study delves into the range of interventions commonly employed to alleviate dysmenorrhea, spanning two broad categories — pharmaceutical interventions such as NSAIDs, topical gels, and sprays, and non-pharmaceutical approaches including lifestyle modifications, herbal remedies, and Ayurvedic practices. Another central objective is to understand people's familiarity with ayurvedic approaches to pain management in order to determine which approaches are most beneficial in managing menstrual symptoms within the studied population. Throughout the study, ethical standards

were rigorously upheld — participants provided informed consent after being briefed on the study's purpose, no personally identifiable information was collected, and detailed survey instructions were provided to ensure accurate and comfortable responses. All data gathered was used exclusively for academic purposes.

2.2 Participants

The present research was carried out on a respondents set of 47. The participants were of an overall age range of 12 years to 45 years and above. The sample was predominantly composed of adolescents and young adults aged 12–18 years, with older age groups, particularly those aged 45 and above, being notably underrepresented. The majority of the participants recalled experiencing dysmenorrhea for over 6+ years. Regarding the timing of pain onset, most respondents experience pain on the onset of menstrual flow, while nearly half experience it one to two days prior to menstruation (Refer to Table 1).

2.3 Instrumentation

A questionnaire was sent out to all eligible participants via Google Forms. Before beginning, the form presented a brief overview of the purpose of the study and all ethical considerations. The form comprised six sections covering demographic and clinical details of dysmenorrhea, including age, pain characteristics, severity, associated symptoms and interventions used for pain relief. It assessed pharmacological and non-pharmacological pain management strategies in more detail, by collecting information such as the specific strategy used, frequency of use and effectiveness. The questionnaire primarily included close-ended questions such as multiple choice options, checklists and rating scales to ensure ease in responding and the efficiency of collecting useful quantitative data.

2.4 Data collection procedure

The questionnaire was initially distributed to participants who met the inclusion criteria, namely women who have experienced dysmenorrhea, through digital platforms. A snowball sampling technique was used, wherein initial respondents were encouraged to share the survey link with other eligible individuals within their networks, thereby expanding the sample. The survey required approximately 5 to 10 minutes to complete, and responses were automatically recorded and compiled into tables and charts for further analysis.

2.5 Ethical considerations:

Before filling out the form, all respondents were provided with a brief overview of the study’s purpose, ensuring informed consent was obtained before proceeding with the questionnaire. Participation was completely voluntary, with the option to withdraw at any point from sharing data. All responses were kept confidential and anonymous throughout the study, and participants were informed that the collected data would be used strictly for academic purposes only.

3. RESULTS

Table 1 *Sample Characteristics and Menstrual Pain Profile of Respondents (N = 47)*

Variable	Category	n	%
Age group	12–18 years	19	40.4
	19–29 years	15	31.9
	30–45 years	10	21.3
	45 years and above	3	6.4
Duration of experiencing menstrual pain	< 1 year	8	17.0
	1–3 years	14	29.8
	4–6 years	4	8.5
	6+ years	15	31.9
	Not recalled	6	12.8
Typical onset of menstrual pain	At onset of menstrual flow	25	53.2
	1 day before menstrual flow	12	25.5
	2 days before menstrual flow	5	10.6
	More than 2 days before menstrual flow	5	10.6
Typical duration of pain	1 day	7	14.9
	2 days	20	42.6
	3 days	9	19.1
	4 days	5	10.6
	5 days	3	6.4
	6 days	2	4.3
	7 days	1	2.1

Table 1 summarizes the demographic composition of the sample and key characteristics of menstrual pain among respondents (N = 47). The sample was predominantly composed of adolescents and young adults, with individuals aged 12–18 years representing the largest group, followed by participants aged 19–29 years. Older age groups were comparatively underrepresented, particularly those aged 45 years and above. With regard to the duration of dysmenorrhea, a substantial proportion of respondents reported experiencing menstrual pain for several years, with the largest groups indicating durations of more than six years or between one and three years. Only a small proportion of participants

reported a relatively recent onset of symptoms. In terms of the timing of pain onset, menstrual pain most commonly began at the onset of menstrual flow. However, nearly half of the respondents reported experiencing pain prior to menstruation, typically beginning one to two days before the start of the cycle. Overall, these findings suggest that menstrual pain in the sample is generally a long-standing condition and is most frequently experienced at or immediately preceding the onset of menstruation.

Table 2 *Characteristics and Manifestations of Menstrual Pain Among Respondents (N = 47)*

Variable	Category	n	%
Pain severity	No pain	4	8.5
	Slight pain	9	19.1
	Moderate pain	19	40.4
	Above moderate pain	11	23.4
	Worst pain imaginable	4	8.5
Region of pain	Lower abdomen	44	93.6
	Lumbar region	21	44.7
	Inguinal region	12	25.5
	Thigh	6	12.8
	Calves	1	2.1
Associated symptoms	Headache	22	46.8
	Loss of appetite	22	46.8
	Decrease in concentration	19	40.4
	Dizziness	14	29.8
	Nausea/Vomiting	11	23.4
	Sweating	8	17.0
	Diarrhea	7	14.9
	Stomach and back ache	3	6.4
	Muscle/joint pain with fever	1	2.1
	Increase in appetite	1	2.1
	Mood swings	1	2.1
	No symptoms	1	2.1

**Note.* Percentages are calculated based on the total sample (N = 47). Multiple responses were permitted for regions of pain and associated symptoms.

Table 2 summarizes the severity, location, and associated symptoms of menstrual pain reported by the respondents (N = 47). With respect to pain severity, the largest proportion of participants reported experiencing moderate pain (40.4%, n = 19), followed by above-moderate pain (23.4%, n = 11). Smaller proportions reported slight pain (19.1%, n = 9), while only a minority indicated no pain (8.5%, n = 4) or worst pain imaginable (8.5%, n = 4). Overall, these findings suggest that menstrual pain among the respondents was most commonly perceived as moderate in intensity, though a considerable proportion experienced more severe levels of discomfort.

In terms of pain location, the lower abdomen was by far the most frequently reported region of pain, reported by the vast majority of respondents (93.6%, n = 44). Pain was also commonly reported in the lumbar region (44.7%, n = 21), suggesting that menstrual discomfort frequently extends to the lower back. Less commonly reported regions included the inguinal region (25.5%, n = 12), thigh (12.8%, n = 6), and calves (2.1%, n = 1).

Respondents also reported several accompanying symptoms during menstruation. The most frequently reported symptoms were headache and loss of appetite, each experienced by nearly half of the participants (46.8%, n = 22). Other commonly reported symptoms included decreased concentration (40.4%, n = 19), dizziness (29.8%, n = 14), and nausea or vomiting (23.4%, n = 11). Gastrointestinal and physiological symptoms such as diarrhea (14.9%, n = 7) and sweating (17.0%, n = 8) were reported by a smaller proportion of respondents. Only a very small number of participants reported symptoms such as mood swings, increased appetite, or muscle and joint pain with fever. Overall, these findings indicate that dysmenorrhea in the sample is characterized not only by localized abdominal pain but also by a range of associated systemic symptoms that may affect physical comfort and daily functioning.

Table 3 *Medication Use and Pharmaceutical Management of Menstrual Pain (N = 47)*

Variable	**Category**	**n**	**%**
Use of medication for menstrual pain	Yes	22	46.8
	No	25	53.2
Timing of medication use *(n = 22)*	Before pain starts	1	4.5
	When pain starts	8	36.4
	When pain becomes unbearable	13	59.1
	Physician	7	31.8
	Self	5	22.7
	Mother	2	9.1

Source of medication recommendation *(n = 22)*	Mother and friend	2	9.1
	Pharmacist and mother	2	9.1
	Physician and mother	1	4.5
	Physician, mother, and friend	1	4.5
	Nurse and mother	1	4.5
	Physician and friend	1	4.5
Type of medication used *(n = 22)*	Spasmolytic drugs	7	31.8
	Nonsteroidal anti-inflammatory drugs (NSAIDs)	6	27.3
	Not known	7	31.8
	Panadol	1	4.5
	Meftal Spas	1	4.5
	Paracetamol	1	4.5

**Note.* Percentages for medication-related variables are calculated based on respondents who reported taking medication (n = 22).

Table 3 summarizes respondents' use of pharmaceutical interventions for managing menstrual pain. Slightly more than half of the respondents reported not using medication (53.2%, n = 25), while 46.8% (n = 22) indicated that they take medication to manage menstrual pain. Among those who reported medication use, the majority indicated that they take medication when the pain becomes unbearable (59.1%, n = 13). A smaller proportion reported taking medication when pain begins (36.4%, n = 8), while only 4.5% (n = 1) indicated that they take medication before the onset of pain.

With regard to sources of medication recommendations, physicians were the most commonly cited source (31.8%, n = 7), followed by self-recommendation (22.7%, n = 5). Recommendations from family members were also reported, particularly mothers (9.1%, n = 2). These findings suggest that both medical professionals and informal family networks play a role in guiding medication use for menstrual pain.

In terms of medication type, spasmolytic drugs (31.8%, n = 7) and NSAIDs (27.3%, n = 6) were the most commonly reported medications. However, a comparable proportion of respondents (31.8%, n = 7) reported that they were not aware of the specific medication type, indicating a potential gap in medication awareness among users.

Table 4 *Non-pharmacological Strategies Used for Menstrual Pain Relief*

Strategy	**n**	**%**
Heating pad / warm compress	36	78.3
Sleeping / rest	36	78.3
Walking / mild exercise	20	43.5
Massaging / rubbing abdomen	16	34.8
Listening to music / relaxation	16	34.8
Eating sweet foods	14	30.4
Topical products	2	4.3
Cold pad / ice pack	0	0

**Note.* Multiple responses were allowed.

Table 4 presents the non-pharmacological strategies used by respondents to manage menstrual pain (N = 46), with participants allowed to select multiple options. The most frequently reported strategies were using a heating pad or warm compress and sleeping or resting, each reported by 36 respondents (78.3%), indicating that heat therapy and rest are the most commonly relied upon non-drug methods for pain relief. Walking or mild exercise was reported by 20 respondents (43.5%), suggesting that a moderate proportion of participants engage in physical activity as a coping strategy. Massaging or rubbing the abdomen and listening to music or relaxation techniques were each used by 16 respondents (34.8%), reflecting moderate adoption of comfort-based or relaxation strategies. Eating sweet foods was reported by 14 respondents (30.4%). In contrast, topical products were used by only 2 respondents (4.3%), indicating very limited use of such remedies. Notably, no respondents reported using a cold pad or ice pack (0%), suggesting that cold therapy is not a commonly preferred method for managing menstrual pain in this sample. Overall, the findings indicate that respondents tend to rely more heavily on heat-based and rest-related strategies, while other approaches are used less frequently.

Table 5 *Perceived Effectiveness of Menstrual Pain Management Strategies (N = 47)*

Strategy	Not Used n (%)	Not Effective n (%)	Slightly Effective n (%)	Neutral n (%)	Effective n (%)	Extremely Effective n (%)
Medication	14 (29.8)	3 (6.4)	0 (0.0)	3 (6.4)	15 (31.9)	12 (25.5)
Heating pad / warm compress	8 (17.0)	0 (0.0)	3 (6.4)	16 (34.0)	15 (31.9)	5 (10.6)
Cooling pad / ice pack	28 (59.6)	9 (19.1)	7 (14.9)	3 (6.4)	0 (0.0)	0 (0.0)
Sleeping / rest	0 (0.0)	1 (2.1)	7 (14.9)	9 (19.1)	19 (40.4)	11 (23.4)
Walking / exercise	5 (10.6)	6 (12.8)	14 (29.8)	7 (14.9)	7 (14.9)	8 (17.0)
Massage / abdominal rubbing	18 (38.3)	4 (8.5)	8 (17.0)	7 (14.9)	6 (12.8)	4 (8.5)
Listening to music / relaxation	13 (27.7)	7 (14.9)	13 (27.7)	8 (17.0)	3 (6.4)	3 (6.4)
Dietary changes	11 (23.4)	11 (23.4)	8 (17.0)	4 (8.5)	11 (23.4)	2 (4.3)
Topical products	23 (48.9)	11 (23.4)	5 (10.6)	4 (8.5)	2 (4.3)	2 (4.3)

**Note*. Effectiveness ratings were measured on a six-category response scale ranging from not effective to extremely effective. Percentages are based on the total sample (N = 47).

Table 5 presents participants' perceptions of the effectiveness of various menstrual pain management strategies (N = 47). Among pharmacological approaches, medication was reported as effective by 31.9% (n = 15) and extremely effective by 25.5% (n = 12) of respondents, while 29.8% (n = 14) indicated that they did not use medication.

Among non-pharmacological strategies, sleeping or resting emerged as the most positively evaluated method, with 40.4% (n = 19) rating it as effective and 23.4% (n = 11) as extremely effective, and no respondents reporting that they did not use this strategy. Heating pads or warm compresses were also perceived as helpful, with 31.9% (n = 15) rating them as effective and 10.6% (n = 5) as extremely effective, although 34.0% (n = 16) reported a neutral perception of their effectiveness.

In contrast, cooling pads or ice packs were rarely used (59.6%, n = 28) and were not rated as effective or extremely effective by any respondent. Walking or exercise showed mixed perceptions, with 29.8% (n = 14) rating it as slightly effective and smaller proportions reporting it as effective (14.9%, n = 7) or extremely effective (17.0%, n = 8). Similarly, massage or abdominal rubbing showed varied responses, with 38.3% (n = 18) reporting that they did not use this strategy.

Other strategies, such as listening to music or relaxation techniques and dietary changes, were generally rated as slightly effective or neutral by many respondents, while relatively few participants perceived them as highly effective. Topical products were among the least utilized methods (48.9%, n = 23 not used) and were infrequently rated as effective. Overall, the findings suggest that rest and heat-based methods are perceived as the most effective non-pharmacological strategies, whereas cooling methods and topical products appear to be less commonly used and less favorably evaluated.

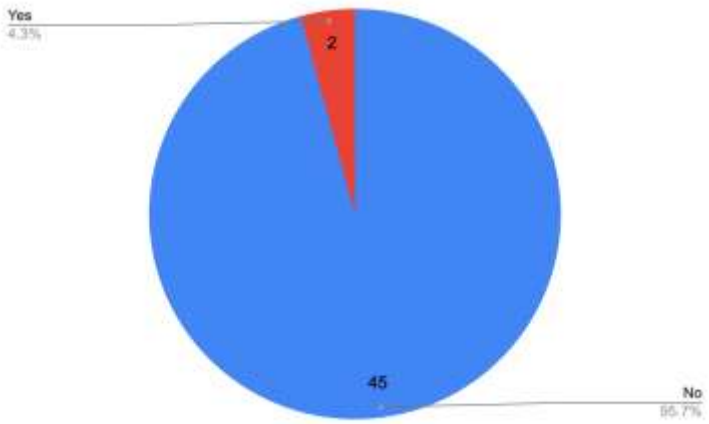

Figure 1 shows the distribution of respondents' familiarity with Ayurvedic interventions for managing menstrual pain

Figure 1 presents respondents' familiarity with Ayurvedic interventions for managing menstrual pain. A substantial majority of participants (95.7%, n = 45) reported that they were not familiar with such interventions, while only a small proportion (4.3%, n = 2) indicated awareness. Among those who were aware, commonly mentioned interventions included *kaadha* and *abhyanga*.

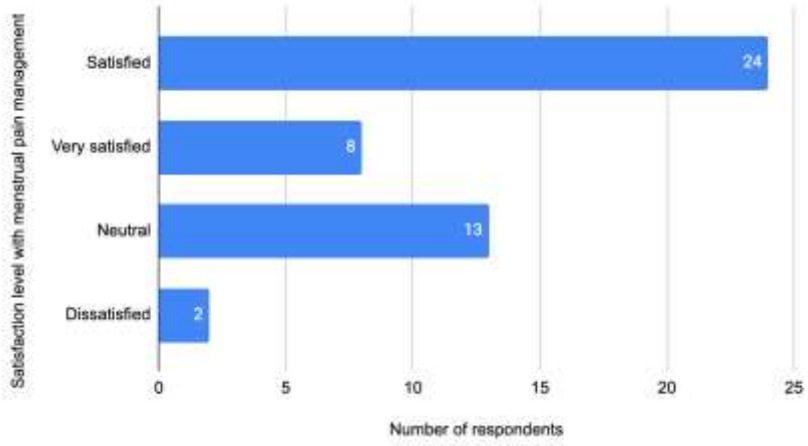

Figure 2 *shows the distribution of respondents' satisfaction with current menstrual pain management*

Figure 2 illustrates respondents' overall satisfaction with their current menstrual pain management strategies. The majority of participants reported being satisfied (n = 24), followed by those who reported neutral satisfaction levels (n = 13). A smaller proportion indicated being very satisfied (n = 8), while only a minimal number reported dissatisfaction (n = 2), suggesting that although most respondents perceive their management strategies as adequate, a notable proportion remain ambivalent.

4. DISCUSSION

A major finding of this study showcased that the awareness of using Ayurvedic treatment to relieve menstrual pain was notably low. A study conducted by Kapoorchand (2023) found that only 14% of 306 participants opted for Ayurvedic menstrual treatment (N = 43), while the rest of the participants preferred allopathic remedies. In the present study, 4.3% of respondents stated they were familiar with using Ayurvedic interventions to relieve menstrual pain, while 95.7% stated they were unfamiliar with the

same. This could be due to a gap in public knowledge about traditional treatment options. Ayurvedic management actually reported a higher rate of relief (62.79%) compared to those using allopathy (38.89%) (Kapoorchand, 2023). This suggests that the low usage of Ayurvedic treatment in the present sample was not due to its lack of efficacy, but rather due to lack of awareness and utilization of these available interventions.

Findings from the present study found that sleeping was labelled as an effective treatment for menstrual pain. Stefan et al. (2026) also found evidence for the same in their research which showcased how adequate sleep reduced occurrence of dysmenorrhea. The study found that improving sleep quality may represent a potential non-pharmacological approach to reducing menstrual pain amongst the chosen sample, which was female engineering college students.

Findings from the present study showed that the majority was using NSAI and spasmolytic drugs to treat menstrual pain. Hernández Bueno et al. (1998) conducted a study to study the efficacy and safety of spasmolytic drugs on women with primary or secondary dysmenorrhea. In the results recorded, only 1 out of 28 women experienced moderate pain intensity, proving that the spasmolytic analgesics (Lysine clonixinate and hyoscinbutylbromide bromide) reduced and prevented menstrual pain.

Marjoribanks et al. (2010) also conducted a study on the effect of NSAIDs on menstrual pain symptoms. The main results showcased that NSAIDs are effective for treating dysmenorrhea, and they also provide significant pain relief compared to paracetamol drugs, another common option selected as the medication type in the present study. It also concluded that there was little evidence of any particular NSAID having the most exceptional outcomes in terms of pain relief and safety, when being compared with one another.

The current study also highlighted the most common sources of medication recommendation as physicians (N = 7) and self-prescribed (N = 5). Anand et al. (2018) conducted a study on a cohort of menstruating women not associated with any medical field in particular to find that 56% of non-medical students followed a doctor's advice compared to 29% using drugs without consultation, showing physician consultation was more prevalent in this group. In contrast, amongst a group of medical and paramedical students in India, Fatima et al. (2017) explicitly concluded that “Self-medication practice for dysmenorrhea was more among medical students probably due to the knowledge of drugs, better awareness and greater access to drug information during their curriculum”. They found 64.88% of medical students self-prescribing medications to relieve menstrual pain, while medical consultation was sought by only 15.38% overall. This shows how a stronger awareness of medical treatments can reduce reliance on consultants for menstruating women. Overall, the discussion reveals the unique personalized approaches for women to relieve menstrual pain, and the effectiveness and safety of many pharmaceutical and non-pharmaceutical treatments.

5. CONCLUSION

The present study explored a range of pain management techniques used by menstruating women, categorizing them into two broad groups: pharmaceutical and non-pharmaceutical approaches, and evaluating their perceived effectiveness. It further examined the level of awareness and utilization of alternative treatments, particularly Ayurvedic remedies, alongside emerging solutions such as topical gels and roll-on applications. The study also addressed gaps in knowledge and adoption of these methods.
The non-pharmaceutical interventions deemed to be the most effective were sleeping, applying a heating pad/warm compress, followed by walking or exercising. Some strategies were found slightly ineffective or unhelpful, such as using a cooling pad or application of topical products.

When comparing non-pharmaceutical and pharmaceutical interventions together, medication was highlighted as the second most effective strategy. The most common type of medication used is spasmolytic drugs, alongside Nonsteroidal anti-inflammatory drugs (NSAIDs). A majority of the sample also stated that their type of medication was unknown. These medications were mainly physician-prescribed, but it can also be observed that many women self-prescribed medications for relieving menstrual pain. The conducted research and findings are significant to understand how women in the Indian region make use of medication to relieve pain. It also highlights the variety of medication recommendation sources, but also exposes an awareness gap as many women were not able to categorize the type of drug they were being prescribed. The familiarity with remedies such as topical products and indigenous Ayurvedic treatment was low, and shows that it does not influence pain management techniques amongst the sample. However, the study also shows that most women were satisfied with their pain management techniques, while there were still a few who were slightly dissatisfied or neutral, creating an opportunity for new techniques to be investigated.

5.1 Limitations of the Study

This study has various methodological limitations that should be considered when interpreting the results. One of the major limitations of the study is that the number of respondents is small (47) and the statistical power of the analysis is accordingly restricted, as are the generalizability of the results to the Indian female population. Second, the study was conducted using snowball sampling, which means that the respondents were recruited through social media platforms which presents a significant digital access bias, as it excludes women from rural areas, lower socioeconomic status or areas with limited access to the internet, who may have very different pain management practices and cultural beliefs. Third, the sample was heavily skewed towards adolescents and young adults (12–29 years), with older age groups (45 years and over) making up only 6.4% of the respondents. Because the study was specifically designed to explore menstrual pain management among the various age groups, this underrepresentation significantly weakens the study's goal. Fourth, the study was completely based on self-reported data obtained through a close-ended questionnaire, and this approach is not as rich in terms of insight into the participants' experiences, culture, and reasons for selecting interventions. Open-ended or mixed methods approaches might have produced more in-depth, more complex data. Fifth, a significant number of respondents who said they took medication (31.8%) did not know the name of the medication they were taking, adding measurement uncertainty to the analysis of the medication and reducing the strength of the conclusions reached on preferences for medication. Lastly, the cross-sectional design of the study only reflects one point in time and does not take into consideration how the conception of pain management and/or its effectiveness might change throughout the course of a woman's menstrual life or in response to differing levels of health awareness.

5.2 Recommendations for Future Research

The findings of the present study suggest some important research avenues.

1. Studies in the future can recruit a larger sample size, particularly for women in their 30s and above.
2. A cross-cultural or cross-country comparative research could be conducted in the future to expand the scope and applicability of the findings.
3. An experimental or longitudinal research design might be used to more carefully identify which intervention has the greatest impact. This may be especially helpful for newer products like topical gels and sprays.
4. A mixed methods research design can be used, which includes both quantitative surveys and qualitative interviews or focused group discussions to capture the cultural, generational and personal factors that influence women's choice of pain management strategies.

5. Further research is needed on the ayurvedic interventions. Future studies might explore their effects when used alone, while holding other simultaneous interventions constant. Many respondents were also unfamiliar with the type of drug they were using, revealing that more efforts can be put towards creating medication awareness among people.
6. In addition, researchers should look at alternative approaches to data collection that are not digital, such as community-based or in-person data collection, to reach women from rural areas, lower socioeconomic status, and areas with limited access to digital technology.
7. The study should be replicated and specific barriers to awareness and use of traditional and indigenous remedies among Indian women should be explored. A focused study to understand the reasons for the underutilization of Ayurvedic treatments, such as lack of awareness, cultural changes, availability and stigma, would be very useful in helping to close this divide.

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