Original Research Article

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Prevelance of symptoms during menstruation and its management among adolescent girls

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ABSTRACT

Background: Menstruation is a natural phenomena of the female reproductive cycle in which discharge of blood from the uterus exits through the vagina every month, it is the spontaneous onset of puberty. 75% of girls confront some problems associated with menstruation including delayed, irregular, painful and heavy menstrual bleeding. Menstruation can be accompanied with premenstrual and postmenstrual symptoms which include both physiological symptoms and psychological symptoms. It is important to treat both physiological and psychological symptoms with pharmacological and nonpharmacological treatment approaches.

Methods: The study was a prospective observational study done with a sample size of 650 subjects of 9 to 18 age group in whom menstruation already occurred were recruited from five different schools in regions of Pathanamthitta and Alappuzha. The study was conducted in 3 phases, where initially a predesigned well-structured questionnaire was provided to assess the attitude, awareness and practices.

Results: Subjects experienced some or other type of symptoms and had better knowledge regarding menstrual symptoms and its importance of management when compared to subjects from other regions of India which was imparted from a developed and supporting society but still, they lacked some adequate and updated information on symptoms and management of symptoms during menstruation.

Conclusions: So, this study laid the groundwork for discussion on menstrual symptoms, various approaches of treatment to the adolescent girls, providing them the information they lacked and better guidance.

Keywords: Premenstrual symptoms, Post menstrual symptoms, Menstrual pain, Physiological symptoms, Psychological symptoms, Home remedies

INTRODUCTION

Menstruation is the shedding of the lining of a woman's uterus every month. The menstrual blood comprises of blood and tissue which flows from the inside of the uterus and exits through the vagina. Symptoms of menstruation include tender breasts, bloating, fluid retention, muscle aches, joint pain, headaches, acne, abdominal cramps, diarrhea or constipation, lower back pain, trouble

sleeping, low energy, fatigue.^{1,2} Menstrual symptoms vary from person to person and problems generally occur due to differences in factors such as diet, lifestyle and exercise. Common menstrual problems faced by women and adolescent girls are premenstrual syndrome, dysmenorrhea, heavy menstrual bleeding, amenorrhea. Premenstrual syndrome are those are the symptoms triggered by hormones which occur before a period, these include fluid retention, headache, fatigue and irritability.

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Treatment options may include exercise and dietary changes. Dysmenorrhea otherwise called painful periods.

is also known as menorrhagia. Untreated condition can cause anemia. Amenorrhea is the absence of menstrual periods. It is an abnormal condition that occurs in times pre puberty, pregnancy, lactation and post menopause. Causes may include low or high body weight and excessive exercise.3 Dysmenorrhea may be categorized into two types as primary and secondary. Primary dysmenorrhea is defined as painful menstruation among females with normal pelvic anatomy, frequently beginning during adolescence. It is seen only in ovulatory cycles, regularly emerging within 6 to 12 months after menarche with no pathology or organic basis. Secondary dysmenorrhea is a menstrual pain associated with underlying pathology and its onset might be years after menarche.⁵ Although menstrual irregularity can be normal during the first few years after menarche, other menstrual signs and symptoms such as amenorrhea, bleeding, excessive uterine dysmenorrhea premenstrual syndrome may indicate a pathological condition which requires prompt attention and referral.6 Dysmenorrhea is considered the most common symptom of all menstrual complaints and poses a greater burden of disease than any other gynaecological complaint in developing countries. Considering the use of medicines, various studies compared the effectiveness of the painkiller with that of a placebo or other medications. The studies included women with and without endometriosis. The studies show that NSAIDs were more effective than placebos at relieving period pain.4 Treatment with natural remedies was also effective compared to drugs such as use of cinnamon, small teaspoon of fennel, use of hot water bag for the treatment of pain.5 Treatment of nausea includes use of nutmeg, ginger and use of antacid if required.⁶ Many adolescents are unaware of the problems that occur at the time of menstruation and unaware of the solution for the problems. The objective of the study was to provide management of problems faced during menstruation and to assess the safe use of analgesics.

METHODS

A prospective observational study was carried out for 6 months (November 2019 to April 2020) in 5 different schools of Pathanamthitta and Alappuzha districts. Students were recruited on the basis of inclusion and exclusion criteria after obtaining approval from the institutional ethical committee.

All subjects were provided with a brief introduction regarding the study and the confidentiality of data was explained to the subjects. A pre-counselling section was carried out in each school using a previously designed questionnaire. Information was provided regarding symptoms both physiological and psychological, also on available non pharmacological and pharmacological management of symptoms. Powerpoint presentation, along with distribution of leaflets in the following week

This mainly occurs due to the shedding of lining from the uterus prompted by hormones. Heavy menstrual bleeding was done. At the end of the section subjects were made clear about all aspects related to menstruation.

Based on the result obtained, after a month, changes in the menstrual practices were assessed through a post-counselling questionnaire. All their queries regarding menstruation and related topics were answered satisfactorily. Data collected was entered as well as statistically analysed in Microsoft excel 2010.

A sample size of 650 adolescent girls was selected.

Sample size=
$$\frac{\frac{z^2 \times p (1-p)}{e^2}}{\frac{1+z^2 \times p (1-p)}{e^2 N}}$$

RESULTS

Among 650 subjects, 202 of them experienced pain in lower part of belly followed by 163 of them had pain in lower part of belly and back. 67 subjects had pain in thighs while 66 of them didn't experience any kind of pain.

Among 650 subjects, 299 of them got information from mother, 258 subjects from friends followed by 46 subjects obtained information teachers and friends, 20 subjects from internet, 22 of subjects got to know from both mother and friends, 3 subjects from both internet and friends and 2 from others sources.

Before counselling about 403 subjects used no medicine followed by 213 of subjects used medicine for pain. While 20 subjects took medicine for vomiting followed 12 subjects took medicine for nausea and only 2 subjects took medicine for loose stool. After counselling there was increase in number of subjects who used no medicine for symptoms to 483,

Paracetamol was greatly used by 95 subjects. 58 subjects used Mefenamic acid for pain followed by 35 subjects used Diclofenac and 25 subjects used Dicyclomine before counselling. After counselling there was a decrease in number of subjects who used Paracetamol to 50 and subjects who used Dicyclomine reduced to 20 subjects, those who used Diclofenac reduced to 10 subjects, but there was an increase in number of subjects who used Mefenamic acid to 64.

20 subjects used Ondansetron before counselling which then declined to 12 after counselling.

Majority didn't use any painkillers (67%) followed by about 22% of subject used painkillers at peak hours of pain, about 8% of subjects used it at the time of pain, about 3% of study population used it just before the pain occurred.

Most of subjects about 68% didn't use any remedies followed by about 14% of subjects used cinnamon, fennel was used by about 12% of subjects, about 5% of subjects used nutmeg followed by about 1% of subjects used fennel and nutmeg together.

Among 650 of the study population enrolled in the study, majority of the study population of (41%) found that hot water therapy was an effective method to relieve menstrual pain whereas about (8%) suggested it as ineffective.

Table 1: Physiological symptoms experienced during menstruation.

Sr. No.	Responses	Number of subjects
1.	Nausea and vomiting	189
2.	Tiredness	59
3.	Headache	92
4.	Dizziness	15
5.	Loss of appetite	29
6.	Nausea and vomiting, tiredness and headache	11
7.	Nausea and vomiting and tiredness	8
8.	Nausea and vomiting tiredness, headache, dizziness, loss of appetite	6
9.	Nausea and vomiting, tiredness, headache, dizziness, feel high	2
10.	Nausea and vomiting, tiredness, headache, loss of appetite	2
11.	Nausea and vomiting, tiredness, dizziness	3
12.	Nausea and vomiting, tiredness, dizziness, loss of appetite	3
13.	Nausea and vomiting, tiredness, dizziness, difficulty in urination	2
14.	Nausea and vomiting, tiredness, loss of appetite	7
15.	Nausea and vomiting, headache	4
16.	Nausea and vomiting, loss of appetite	3
17.	Tiredness, headache, dizziness	10
18.	Tiredness, headache, dizziness, loss of appetite	4
19.	Tiredness, headache, loss of appetite	23
20.	Tiredness, headache, loss of appetite, loose stool	2
21.	Tiredness, dizziness	13
22.	Tiredness, dizziness, loss of appetite	11
23.	Tiredness, dizziness, loose stool	2
24.	Tiredness, loss of appetite, difficulty in urination	2
25.	Tiredness, loss of appetite, loose stool	3
26.	Tiredness, difficulty in urination	2
27.	Tiredness, loose stool	7
28.	Nausea and vomiting, headache	2
29.	Headache, dizziness	6
30.	Headache, dizziness, loss of appetite	4
31.	Dizziness, loss of appetite	2
32.	Loose stools	3
33.	Acne	85
34.	Feel high	6
35.	Itching	8
36.	Others	17
37.	Nil	3
38.	Total	650

The above were the different physiological symptoms experienced by subjects during menstruation.

Table 2: Psychological symptoms experienced during menstruation.

Sr. No.	Responses	Number of subjects
1.	Irritated	178
2.	Angry	43

3. Sad	71
4. Feeling low	45
5. Lack of sleep	16
6. Lack of interest	20
7. Irritated, angry, feeling low, lack of interes	2
8. Irritated, angry, sad	5
9. Irritated, angry, sad, feeling low, lack of sle	ep 11
10. Irritated, angry, feeling low, lack of interes	
11. Irritated, angry, lack of sleep	2
12. Irritated, angry, lack of interest	28
13. Irritated, sad, feeling low, lack of sleep, lac	k of interest 2
14. Irritated, sad	8
15. Irritated, sad, feeling low, lack of interest	3
16. Irritated, sad, lack of sleep	4
17. Irritated, sad, lack of sleep, lack of interest	2
18. Irritated, sad, lack of interest	6
19. Angry, sad, feeling low	2
20. Angry, sad, lack of interest	7
21. Angry, feeling low	5
22. Angry, feeling low, lack of interest	6
23. Angry, lack of sleep	7
24. Angry, lack of sleep, lack of interest	3
25. Angry, lack of interest	12
26. Others	10
27. Nil	133
28. Total	650

The above are the psychological symptoms experienced during menstruation.

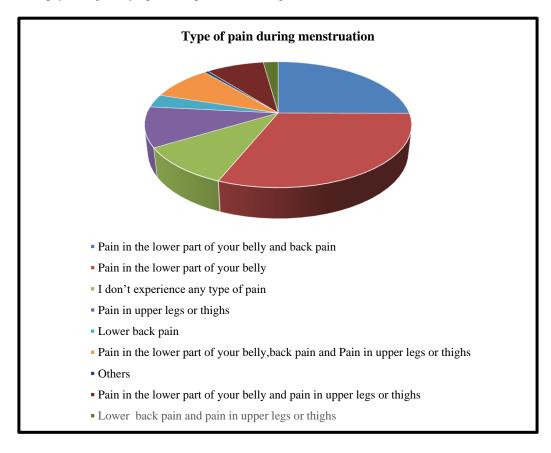


Figure 1: Different type of pains experienced during menstruation.

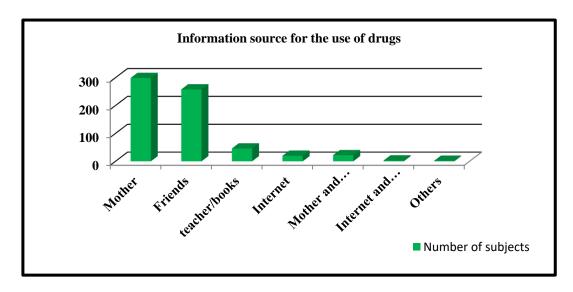


Figure 2: Source of information about usage of medication during menstruation.

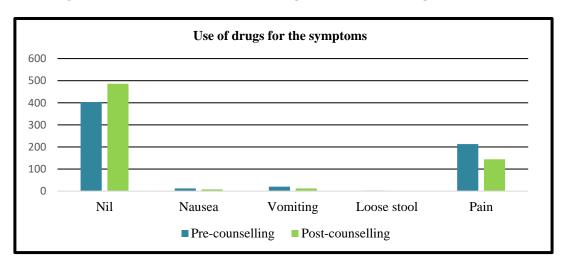


Figure 3: Usage of drugs for menstrual symptoms.

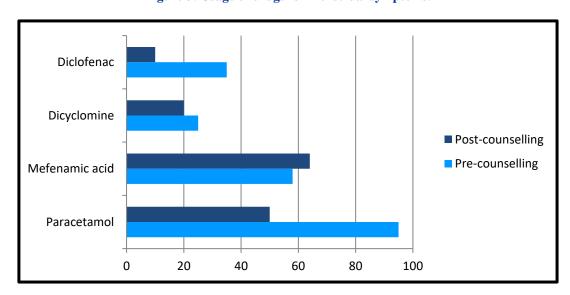


Figure 4: Usage of medicines for menstrual pain.

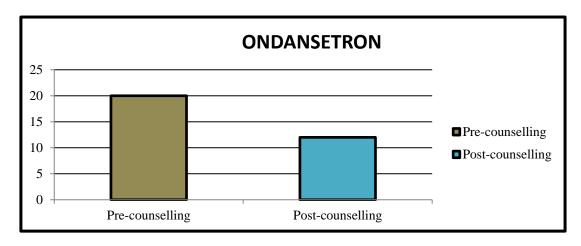


Figure 5: Usage of medicines for vomiting during menstruation.

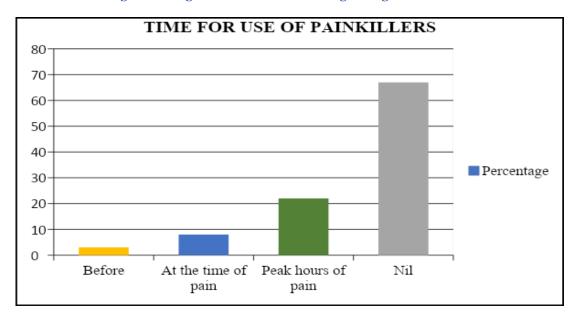


Figure 6: Time when painkillers are used.

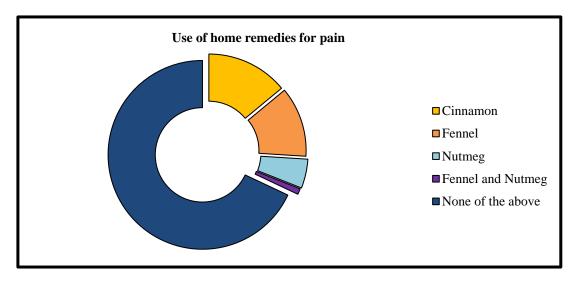


Figure 7: Home remedies for menstrual pain.

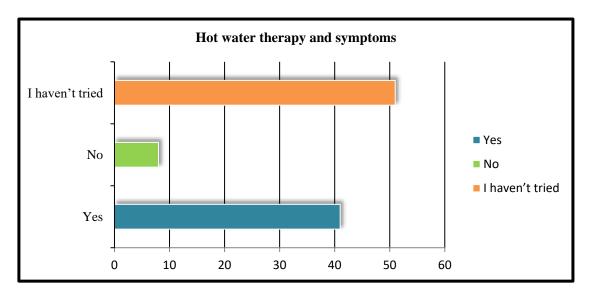


Figure 8: Effectiveness of hot water therapy.

DISCUSSION

Type of pains and discomfort experienced during menstruation

In this study, 202 subjects experienced lower belly pain during menstruation followed by 163 subjects who felt both lower belly pain and back pain followed by others who experienced other symptoms like pain in legs, back pain, body pain. In the study conducted by Nagar et al 97% experienced lower belly pain followed by 89% who experienced backache and in a study, conducted by Vani et al.^{23,24} 72.8% experienced dysmenorrhea. This was because of the contraction of the uterus which was caused by prostaglandins. If the uterus contracted more strongly it may press against the blood vessel that caused hypoxia to the neighbouring muscle tissues of the uterus and this increased pain. Dysmenorrhea contributed to nausea and diarrhoea. The pain they experienced may be due to lack of physical activities, lack of healthy nutrients or a healthy diet, their sedentary lifestyle and their pain can be an indicator of irregularity.

Physiological symptoms experienced during menstruation

Most of the subjects mentioned that they experienced nausea and vomiting (189) during menstruation followed by headache (92) and other symptoms like tiredness, dizziness, loss of appetite. Similar results were found in the study conducted by Agarwal et al in which 50% experienced headache, 63% experienced loss of appetite, and 30% experienced tiredness. Headache may occur before the start of menstruation or during menstruation or after menstruation and this was due to the change in level of oestrogen and progesterone during the menstrual cycle.

Psychological symptoms experienced during menstruation

In this study, 178 subjects agreed that they experienced irritation, 71 subjects experienced sadness and others experienced other symptoms like anger, feeling low, lack of sleep, lack of interest. In the study conducted by Agarwal et al they found that their subjects experienced irritability (84%).²⁵ These symptoms were common at the time of menstruation because of ovulation, which caused oestrogen level to drop. A shift in oestrogen and progesterone hormones can lead to both physical and emotional symptoms. Changes in oestrogen and progesterone levels also influenced serotonin levels which had a great role in a girl's psychological characters. The psychological symptoms they experienced may be the reason for the difficulties they experienced doing their daily activities and their inability to concentrate.

Use of drugs during menstruation source of information for the use of drugs during menstruation

From the study enrolled with 650 subjects, about 299 subjects obtained knowledge on the use of drugs for menstrual symptoms from mother, followed by 258 subjects from friends, other subjects obtained information from teachers, books, internet. The study conducted by Poureslami et al had similar results in which about 61% of them identified their mothers as the best source for such information which then was followed by friends, teachers. The study conducted by Armour et al found that about 62.4% depend on family, 51.4% on friends, 22.8% on teachers and only 21.8% used the internet for information. The study conducted by Armour et al found that about 62.4% depend on family, 51.4% on friends, 22.8% on teachers and only 21.8% used the internet for information.

Use of medicines for physiological symptoms

From the study enrolled with 650 subjects during precounselling, it was observed that 403 subjects used no

medicines for any of the symptoms, followed by 213 subjects who used medicines for pain, remaining subjects used medicines for nausea, vomiting and loose stool. But after counselling there was a rapid increase in non-drug users from 403 to 486 subjects, followed by decrease in subjects who used drugs for pain during menstruation to 144 subjects along with decline in subjects who used drugs for nausea, vomiting and loose stool. The study conducted by Alsaleem et al had similar results which showed that in India only a small proportion of about 25.5% of girls used pharmacological treatment for pain while majority of them used no medicines but relied on non-pharmacological treatment.¹⁶ Many studies such as study conducted by Avasarala et al had suggested use of drugs only with a severe pain only when the symptoms hinder daily activities and chores and it was recommended not to depend much on medicine as it may lead to several adverse effects.¹⁷

Medicines consumed for menstrual pain

During pre-counselling a total of 213 subjects used medicines for pain during menstruation in which 95 subjects used paracetamol, followed by 58 subjects who used mefenamic acid, other subjects used dicyclomine and diclofenac for their symptoms. The subjects had very little knowledge about the side effects associated with drugs, which was clarified on counselling. Thus the result obtained after counselling was prevalent in which the total number of subjects who used drugs was reduced to 144 subjects along with an increase from 58 to 64 subjects who used mefenamic and a drastic decrease in number of subjects who used other drugs. From various studies such as Marjoribanks et al and Marchini et al it was found that drugs that were commonly used for menstrual pain were ibuprofen, naproxen, paracetamol, mefenamic acid, dicyclomine and diclofenac. 19,21 Several studies such as conducted by Tangchai et al and Wijesiri et al stated that about 86.6% used paracetamol followed by about 9.7% used mefenamic acid. Paracetamol was used by the majority more than NSAIDS as it was the commonly known analgesic. 20,21 Study conducted by Armour et al stated that NSAIDs were the first line treatment for menstrual related pain as it inhibited cyclooxygenase enzyme which may reduce the release of prostaglandin that caused the pain. 14 Also, it was found out that paracetamol had less effect than NSAID and placebo whereas NSAIDS were very effective in alleviating pain. The study by Zhang et al found that among the NSAIDS the most effective was mefenamic acid because it had a favourable risk benefit ratio whereas paracetamol was less effective compared with others. 18

Usage of medicines for treating vomiting during menstruation

Nausea and vomiting were symptoms commonly seen during menstruation in most of the adolescents. This occured mainly due to hormonal imbalance during menstruation and also due to menstrual cramps. Vomiting can be triggered by food, odour, colour. In this study out of 650 subjects, 20 subjects used emeset (ondansetron) for vomiting and no other drugs were used by subjects. Ondansetron is a serotonin antagonist, which acts by blocking serotonin receptors in the CTZ. This reduced the communication to the vomiting center in the brain and decreases the nausea and vomiting. Post counselling results showed a decrease from 20 to12 subjects. According to Healthline, an online platform and newsletter such as Medical news today, recommended to use only non-pharmacological therapy such as to get some fresh air, eat small meals or to have ginger tea to alleviate mild nausea, while drugs are used in persisting or severe vomiting condition only after a physician's prescription.⁴

Time when painkillers were used

Out of 650 subjects, about 67% did not use any drug followed by about 22% who used drugs at the peak hours of pain and 8% used at the time of pain. Drugs should always be used as per the physician's direction to get an appropriate action at the right time. The study conducted by Wijesiri et al had contradictory results that showed the majority of their subjects about 85.2% used the drug before the onset of pain while about 14.8% used them after the onset of pain.²²

Home remedies used during menstrual pain

In the present study different types of home remedies to decrease menstrual symptoms were identified. About 68% of subjects used no home remedies, followed by 14% of subjects used cinnamon, 12% of them used fennel, 5% of subjects used nutmeg, some used both fennel and nutmeg together. All the remedies mentioned were traditional herbal medicines. Study conducted by Jaafarpour et al suggested that cinnamon had a significant effect on reduction of pain and with respect to no reported side effects cinnamon can be regarded as a safe and effective treatment.9 Several studies such as Zeraathad et al and Gebeyehu et al recommended the use of home remedies as an alternative to drugs used for menstrual symptoms as it was more beneficial with less side effects. 10,20 Also, most of the subjects used home remedies as a non-pharmacological treatment for menstrual pain. They even increased the use of the home remedies when pain increased, some subjects even used more than one home remedy at a time. Most commonly used home remedies were fennel, cinnamon, nutmeg, ginger. Fennel was recommended due to its antiinflammatory property which helped to relax muscles in the uterus and relieveed the cramps and discomfort during the periods.

Other home remedies to relieve menstrual symptoms

In this study, some home remedies were recommended that were found beneficial from various studies. Besides this, it was also found that some subjects used home remedies other than the recommended ones. Those remedies were the use of ginger, warm water, fenugreek, ginger and fenugreek together and tea with lemon. Out of 250 subjects who used it, about 35% of subjects used ginger, followed by 27% used warm water. In earlier times. women were less concerned regarding menstruation and its related problem. They had realized the importance of treating symptoms with medicines or with other remedies. From the study done by Khayat et al it was found that ginger could significantly reduce the total score of PMS, severity of mood, physical and behavioural symptoms and from Rahnama et al about 80% of dysmenorrhoea cases were resolved by ginger use. Ginger acts by inhibition of the metabolism of cyclooxygenase, lipoxygenase enzymes which prevents the production of prostaglandins that are responsible for pain. Fenugreek has antispasmodic, anti-inflammatory properties whereas drinking warm water may relax the contracting muscles and increase the blood flow. Lemon tea may help to reduce indigestion and gastrointestinal symptoms.

Effectiveness of hot water therapy for menstrual pain

Hot water therapy is also a well-known method used to relieve the pain. Hot water therapy worked by relaxing the contracting muscles in the uterus and increased the blood flow. From several studies such as Jo et al and Singh et al it was found that there was a reduction in menstrual pain with heat therapy compared with analgesics.⁶ Thus it was one of the most effective and easiest methods to relieve the pain. Out of 650 subjects of this study, about 51% haven't tried hot water therapy, followed by 41% who have benefited from it. This result was similar to the study conducted by Singh et al in which 9 out of 16 girls used hot water therapy and about 37.33% have benefited from the therapy but some found it difficult to use it during the school hours.

CONCLUSION

Menstruation is a vital part of a female's life. Hence it is important to assess their ideas and practices that they following during their menstrual Menstruation is a vital part in a female's life. Hence it is important to assess their ideas and practices that they were following during their menstrual cycle. The development of a healthy attitude towards menstruation through proper awareness is essential for all adolescents. Moreover, providing the right information about menstruation is able to create a healthier generation as only a woman with proper health is able to reproduce a healthier generation. This study was carried out in 650 subjects from 5 different schools. Girls of 9-18 years of age were included. A previously designed well-structured questionnaire was provided to subjects to assess their knowledge regarding menstrual symptoms and on its management. Based on the information obtained a counselling session was conducted which provided information on symptoms both physiology

psychology symptoms and on management, doubts were clarified and after a month another counselling session was carried out to find out the changes undergone by the subjects. The study was conducted in 650 subjects where 44% of the subjects belonged to the age group of 15-16 years and 58% of the subjects attained menarche at the age of 12-13 years. 202 subjects experienced pain in the lower part of belly, 189 of subjects experienced nausea and vomiting, 178 felt irritated during menstruation and 56% of subjects experienced difficulty in performing daily activities. In this study the pain they experienced may be due to lack of physical activities, lack of healthy nutrients or a healthy diet, their sedentary lifestyle and their pain can be correlated to irregularities because excessive or unusual pain can be considered as an indicator of irregularities. It was found that the source of information regarding the use of drugs during menstruation was mother in 299 subjects. The number of subjects who did not use drugs during menstruation after counselling has improved (259 to 135), in which subjects who consumed paracetamol decreased from 95 to 50 and ondansetron decreased from 20 to 12. 62% of subjects found home remedies to be beneficial and 38% of subjects used other home remedies than recommended. Most of the subjects about 68% didn't use any remedies followed by about 14% of subjects used cinnamon, fennel was used by about 12% of subjects, about 5% of subjects used nutmeg. Out of 650 subjects of this study, about 51% haven't tried hot water therapy, followed by 41% who have benefited from it. In this study majority of subjects experienced some or other type of symptoms also they had some knowledge regarding management of those symptoms. But still they lacked some updated information on symptoms, management and proper use of analgesics. This study aimed at upgrading and providing new information on symptoms, its management and counselled on importance of proper use of analgesics.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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