

## **Physiotherapy for managing Menstrual Pain- A narrative Review**

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### **Abstract**

Menstruation is a cyclical ovarian function but when this becomes painful it is known as dysmenorrhea. The incidence of menstrual pain ranges from 45-95% in the reproductive age of women. In India the incidence of menstrual pain among college going girls is 84.2%. The pain during menstruation is due to increased myometrial activity with accompanying uterine ischemia (uterine angina).

Dysmenorrhoea affects by decreased physical functioning, increased absenteeism, decreased involvement in academic activity during the menstruation, thereby having an overall decrease in quality of life.

Due to sociocultural factors most of the time women do not seek medical advice regarding menstrual issues. Around 25.5% of girls preferred pharmacological means to handle menstrual pain like paracetamol, aspirin, NSAIDs, oral contraceptives etc. while 83.3% of girls preferred non pharmacological means like rest, massage, specific lying position, exercises, acupressure to ease their pain.

Studies need to be conducted to find out any specific exercise protocol to relieve symptoms of menstruation specifically dysmenorrhea.

**Keywords:** Menstruation, dysmenorrhea, pain, quality of life, women, exercises, physiotherapy

### **Introduction**

**Background:** The entire principle of human generation propagation is a ball game of uterus & its related hormones. There occurs cyclical shedding of endometrial lining of the uterus in response to hormones and pregnancy in a female’s reproductive lifespan.

Menstruation is a sign of cyclical ovarian function<sup>1</sup>. A average women undergoes approximately 400 cycles of menstruation in her lifetime. Menstruation starts in response to withdrawal of progesterone and estrogen with demise of corpus luteum in late secretory phase of endometrial cycle, which involves shedding of endometrial lining and absence of pregnancy.

The average length of each menstrual cycle is 28-30 days, with menstruation continuing for 3-5 days; of which ideally the first 1-2days constituting of heavy periods. The volume of blood loss on an average in each cycle is 25-80 ml<sup>2</sup>.

Menstruation begins at puberty around 10-16 years and continues till menopause till the age of 51; which is also considered as the reproductive age of women<sup>3,4,5</sup>.

There does occur abnormalities in normal menstruation like menorrhagia (excessive blood loss), dysmenorrhea

(painful periods), oligomenorrhoea (infrequent or scanty periods); and amenorrhoea (absent menstrual periods)<sup>1</sup>.

### Dysmenorrhoea & types

Dysmenorrhoea is defined as a menstrual disorder characterized by painful cramps during menstruation. Approximately 45-95 % of women suffer from symptoms related to dysmenorrhoea with every one in five cases being severe. The menstrual pain affects almost three decades of a women's life. The term Dysmenorrhoea is derived from the Greek words 'dys' meaning difficult, painful or abnormal, 'Meno' meaning month and 'rhea' meaning flow<sup>6</sup>.

Dysmenorrhoea is also one of the most common causes for pelvic pain and absenteeism from school or work among young and adult women<sup>7</sup>. Dysmenorrhoea is of mainly two types:

Primary dysmenorrhoea (PD) is a menstrual disorder in which the patient complains of menstrual pain with normal ovulatory cycles, with no pelvic pathology. This type of Dysmenorrhoea is very common amongst adolescents and young women<sup>8</sup>. The pain due to primary Dysmenorrhoea can start from within three years of Menarche (the first menstrual period)<sup>9,10</sup>. This is the most common cause of Dysmenorrhoea in women younger than 25 years<sup>11</sup>. The pain in this condition is in a cyclical pattern, where is pain is maximum in first day and continues for up to 72 hours.

Even though the incidence rates are high but women seeking help or advice from medical professionals is very less. Still discussing menstrual pain is considered as a taboo in many parts of the society. Young females have an understanding that they are bound to suffer and tolerate menstrual pain.

Secondary Dysmenorrhoea is a menstrual disorder which is associated with menstrual pain along with a clear identifiable pathology like endometriosis, fibroids,

adenomyosis, pelvic adhesions, polyps in endometrium, pelvic inflammatory disease) or use of intrauterine contraceptive device<sup>13,14</sup>.

### Physiology of menstrual pain

The pain during menstrual flow is basically due to physiological process which involves increase in myometrial activity with accompanying uterine ischemia (uterine angina).

Menstruation starts when there is no conception, following which there is degeneration of corpus luteum and sudden decrease in levels of progesterone. Progesterone levels are high during middle of luteal phase of menstrual cycle after ovulation. After which there is endometrial sloughing which occurs during menstruation, there is release of lysosomal enzymes which further increases secretion of prostaglandin *F2alpha* and prostaglandin E2 by arachidonic acid cascade mediated by cyclooxygenase (COX) pathway. This arachidonic acid synthesis is also regulated by progesterone levels through the activity of lysosomal enzyme phospholipase A2<sup>15,16</sup>. These prostaglandins are responsible for producing myometrial contraction and vasoconstriction by producing anaerobic metabolites which later causes hyper sensitization of pain fibers and thereby producing pelvic pain<sup>17,18</sup>.

Though exact mechanism is yet to be understood completely but most probably this pain is induced by an excessive production of prostaglandin causing ischemia. They also cause uterine ischemia. Any form of exercise also reduces levels of stress hormones like adrenaline and cortisol, which also stimulates the production of endorphins, chemicals in which are the natural painkillers and mood elevators. Exercises also eased pain and symptoms as a result of increased metabolism and blood flow to uterus<sup>19</sup>.

## **Incidence of menstrual pain**

Across the world around 45-95% of women in their reproductive age. Majority of the child bearing age of a women is spent in dealing with menstrual pain in cases with primary Dysmenorrhoea. Out of these women approximately 2-29% of women experience severe menstrual pain which affects their normal functioning in studies or job. This higher variance in reporting of primary dysmenorrhea related symptoms is due to multiple factors like ignorance, educational levels, societal taboos and restrictions or cases being unreported in many geographical locations<sup>17,18</sup>. Out of the overall reported cases approximately 70-90% of the women are the younger women, who suffer from menstrual pain<sup>20</sup>.

In an incidence study conducted by Mike Arm our, Kelly Parry et all in 2019 also found that prevalence of dysmenorrhea was high around 71.1% irrespective of economic status of the country from where participants were recruited. They also found that the rates of incidence was similar among both high school and university students. Around 40.9% of the female students reported impaired classroom performance and also had issues with concentrating in the class. Approximately 20.1 % of the students complained of absenteeism due to symptoms of dysmenorrhea<sup>21</sup>. Apart from menstrual pain around 43% of participants also complained of multiple secondary symptoms like emotional changes, breast tenderness, bloating and fatigue. Fatigue was experienced by 44% of the respondents. Of the total sample considered in this study, 37% of participants also reported a decrease in sporting and social activities due to menstrual pain.

In yet another study on prevalence in Australia by Mike Arm our, Tania Fefolja et all in 2020 among women from age range of 13-25 , found that Dysmenorrhoea was found in 92% females, the severity of pain being constant

with age. The respondents also complained of non-cyclical pelvic pain<sup>22</sup>.

In a study conducted by Kural in India in 2015 Dysmenorrhoea was reported in 84.2% college going girls; where pain was measured by VAS in which 34.2% females had severe pain, 36.6% had moderate pain and 29.2 % had mild pain<sup>23</sup>. The incidences suggest that dysmenorrhea is a public health problem and it has its negative effect on health, social environment, work and psychological status<sup>23</sup>.

In yet another study conducted on Indian girls by Shabnam Omidyar etal in 2016 which concluded that about 70.2% of the girls had menstrual pain , where pain usually continued for 1-2 days during menstruation. Apart from pain participants complained mostly of tiredness and the next being low back pain. Of which 25% girls opted pharmacological means to manage menstrual pain whereas 83.2% preferred non-pharmacological means to mangle their symptoms. only 14.2% took medical opinion<sup>24</sup>.

## **How menstrual pain affects women's life?**

Various studies have hinted on the effects dysmenorrhea has on life of women. In a study performed by Kanwal in 2019, they concluded that dysmenorrhea pain decreased physical functioning, role limitation due to physical health and work-related productivity and efficiency among female participants<sup>25</sup>.

In the study conducted by Mike Arm our et all female students did suffer a lot academically due to menstrual pain<sup>21</sup>.

In another study absenteeism among dysmenorrhea girls from schools & colleges was around 50 %. In which tiredness and back pain were the most common and dominant complaint<sup>24</sup>.

Primary dysmenorrhea is also linked with absenteeism and decreased quality of life among women in child

bearing age<sup>10</sup>. This problem is often under diagnosed and under-treated.

## **Discussion**

### **Different treatments for managing menstrual pain**

#### **Medical management**

In most of the cases of dysmenorrhea, due to socio cultural views and traditions women, do not feel comfortable discussion about menstrual pain or its associated symptoms with anyone. It is understood that menstrual pain is common and that they are bound to suffer and accept the symptoms that comes with menstruation. Women of developing nations feel it is a part and parcel of womanhood or part of reproductive life that a woman has.

According to a clinical review by Michelle Proctor<sup>14</sup> dysmenorrhea prevalence ranges from 45-95% which is very high, management of dysmenorrhea pain is by working on reducing the prostaglandin levels. Most commonly used drugs used by women were paracetamol, aspirin and NSAIDs by reducing the action of cyclooxygenase pathways thereby inhibiting prostaglandin production. Medications like contraceptives act by inhibiting ovulation. There are also other medical methods which manages dysmenorrhea like levonorgestrel releasing intrauterine system, Minera intrauterine device, progestogens and antiprogestogens, gonadotrophin releasing hormones and danazol or even calcium channel blockers. There were many women who also preferred alternative therapies like herbal products and dietary supplements like thiamine, pyridoxine, magnesium, fish oil, or a low-fat vegetarian diet which had some positive effects.

In his review he also explained the mechanism by which menstrual pain gets relieved; as exercises improves blood flow to pelvis as well as stimulating release of Beta endorphins which act as analgesics.

In a study conducted by Dogan et al<sup>26</sup> where they were exploring the various treatment option women opted for helping them to ease menstrual pain. In order to overcome menstrual pain approximately 72 % of women opted to lie down and take rest, 56% of them would rub their abdomen, 54% resorted to listening to music, 52% applied hot packs on feet, 49% applied hot packs on lower abdomen, around 50 % took analgesic for relief, 26 % drank chamomile tea, 25% had green tea, 22% did diaphragmatic breathing, while 23 % did some aerobic exercise.

In a study by Remedios López-Liria et al<sup>7</sup> women consumed NSAIDs (Nonsteroidal Anti-inflammatory Drugs) and hormonal drugs like contraceptives which act by prostaglandin inhibition were used as a medical management for managing menstrual pain. The prolonged use of NSAIDs is limited as it comes with its own potential side effects like stomach irritation or ulcer, cardiovascular, hepatic and renal problems. Whereas oral contraceptives causes frequency of bleeding, weight gain and risk of venous thromboembolism.

Their study thus focused on various alternative conservative treatments for primary Dysmenorrhoea. There are multiple means of conservative approaches to manage menstrual pain like isometric exercises, massage therapy, yoga, electrotherapy, stretching, kinesiotape, progressive relaxation exercises and aerobic dance. It was also well found out that any form of conservative approach is definitely better than placebo or no treatment at all. Also physiotherapy treatments do come with no associated side effects as compared to any form of medical management.

In yet another study by Nikita Mathur<sup>19</sup> in 2020 also focused on need for implementation of 8 Weeks of exercise which included stretching, aerobics and

cardiovascular exercises which helped the subjects in relieving of menstrual symptoms.

In the study conducted by Omidyar, Shabnam et al<sup>24</sup>; where they found 70.2% of females suffered from primary Dysmenorrhoea, of which around 50 % remained absent from schools and colleges which affected their academic attendance and performance. Tiredness and back pain was commonly associated with menstrual pain. According to the findings of the study around 25.5 % of the girls opted for pharmacological intervention for managing menstrual pain and associated symptoms, 83.3 % of girls opted for non-pharmacological means of relieving their symptoms. Also noteworthy of the fact that only 14.2 % of girl's sook medical advice for menstrual pain. The study also focused on need for medical advice, awareness about menstrual health and puberty for young girls.

In a study by Fernandez Martinez et al<sup>27</sup>, where various nursing students were the subjects, who experienced menstruation pain expressed their reluctance in seeking medical advice, while they used various non pharmacological strategies to manage dysmenorrhea like relaxation by rest, heat, massage, music etc. most common reason for non-adoption of medication being side effects, fear of drug dependency, also those who took medication ended with NSAID resistant menstrual pain where they had to increase their dosage to manage their pain.

In the study conducted by Abaraogu et al<sup>28</sup> discussed that exercises had very fewer side-effects and were mostly preferred in comparison to pharmacological treatments or herbal treatments for reduction of menstrual pain. The effects of exercises were not just pain reduction, decrease in pain duration in hours, decrease in use of sedative drugs, decrease in total and present pain intensity. The

costs and risks of exercise interventions are also low, so exercises can be considered for clinical use.

### **Conclusion**

Thought his prevalence of women suffering from dysmenorrhea and other menstrual heal issues, still the idea of seeking medical attention is limited. Though there has been an increase in interest to opt non pharmacological means of managing menstrual pain, the horizon is too wide. Lot of comparative studies have been conducted between various exercises, but still a single specific protocol needs to be designed to address this very important aspect of women's health.

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