



ORIGINAL ARTICLE

AN OBSERVATIONAL STUDY TO ASSESS THE STATUS OF APANA VAYU IN PREMENSTRUAL SYNDROME

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Abstract

Introduction

Premenstrual Syndrome (PMS) is a psychoneuroendocrine disorder with an unclear origin that manifests just before menstruation, marked by symptoms in the luteal phase, aligning with the *Ayurvedic* concept of *Rituvyateetakala vyadhi* characterized by *pitta* and *vata* imbalance. A key factor is *Apana vayu* located in the lower pelvic region, which plays a vital role in expelling *sukla* (seminal fluid), *arthava* (ovulation or menstrual flow), *sakruth* (feces), *mootra* (urine), and *garbha* (fetus). Although menstruation is a natural occurrence, numerous women undergo affective and somatic symptoms before this process. When *Apana vayu* is in *prakruthavastha* (balance state), support regular bodily functions, but *vaigunyvastha* (imbalance state) leads to various issues. Addressing imbalances in *Apana vayu* contributes to alleviating both the mental and physical symptoms of PMS, leading to an enhancement in the overall well-being of women.

Methodology: Study design – Descriptive study. The study was conducted on 138 female participants having PMS, age group of (18-30) years in Government Ayurveda College, Kannur. Sampling done was consecutive sampling. PMS was diagnosed based on ACOG criteria and *apana vaigunya* was assessed by *apana vaigunya* assessment questionnaires. *Apana vaigunya* was assessed twice: first assessment was done 3-4 days before menstruation, and the second assessment, a day after the cessation of menstrual bleeding.

Results: Among 138 participants, the degree of *Apana vayu vaigunya* was higher during PMS and improved after cessation of menstruation. There was a significant difference in the status of *Apana vayu* in female participants having Premenstrual Syndrome.

Conclusion: *Apana vayu vaigunya* was found to be prominent during PMS. This necessitates the need of proper advice and treatments to prevent the occurrence of symptoms of PMS which will help to improve the quality of life of women.

Introduction

Premenstrual Syndrome (PMS) is a psychoneuroendocrine disorder with an

unclear origin that manifests just before menstruation, marked by symptoms in the luteal phase. It is characterized by recurrent psychological or physical symptoms, or both, that are peculiar to the luteal phase of the menstrual cycle and resolve by the end of menstruation¹. Menstruation involves cyclic blood discharge from the uterus, lasting 3-5 days in a 21-35 day cycle, with an average of 28 days with 70-80% of women unaffected in their daily activities. Around 20- 30% experience PMS, while 3-8% face severe symptoms². The menstrual cycle consists of two halves. The first half includes the menstrual and follicular phases, marked by low and then rising estrogen levels, leading to a peak in follicular stimulating hormone (FSH) and luteinizing hormone (LH) during the peri-ovulatory phase. The second half encompasses the luteal phase, where estrogen and progesterone levels rise, followed by the pre-menstrual phase with falling hormone levels. Women may have premenstrual symptoms, bloating, excessive sleep and exacerbations of chronic illnesses during this period³. These symptoms are not brought on by an organic condition. The severity of the symptoms must interfere with everyday activities, one's ability to lead a fulfilling life, and interpersonal interactions⁴. Premenstrual Dysphoric Disorder (PMDD) represents an intense manifestation of premenstrual symptoms. Its severity varies from PMS concerning the magnitude of symptoms, predominance of mood swings, and significant functional impairment. Symptoms like anxiety, irritability, hostility, depressed mood, disturbed sleep, change in appetite, fatigue, breast swelling and tenderness, and abdominal bloating are most common⁵.

As per *Ayurvedic* principles, the physiological processes of the body are greatly impacted by *dosha*, *dhatu*, and *mala*⁶. *Apana vayu*, a subtype of *vata dosha*, is essential for eliminating *sukla*, *arthava*, *sakruth*, *mootra*, and *garbha*. The excretory process, crucial for waste removal and balance of body, is regulated by *apana vayu*, ensuring coordination with all *vata* subdivisions⁷. The regular physiological processes of the other subdivisions of *vata* are disrupted by any vitiation in *apana vayu* in a normal state. *Susrutha* in *nidana sthana* specifies that *apana vayu* is situated in the *pakwashaya*, where substances vital for body growth and maintenance are generated and absorbed⁸. In a balanced state (*prakruthavastha*), *apana vayu* performs *samyak malamootradi vikshepanadi karma*⁹, while imbalance (*vaigunyavastha*) contributes to various disorders. The *chala guna* of *vata* is characterized by rapid movement and the ability to influence other substances such as *doshas*, *dhatu*s, and *malas*. *Vata's gathi* (movement) is *anuloma*, directional, and varies based on its subdivisions. The intensity of *chala guna* depends on the dominant *swaroopa*

of the specific *vata subdivision*¹⁰. Disrupting urges (*vegadharana*) and impaired digestion (*agni vaigunya*) leads to *apana vayu* imbalance. Imbalance can manifest in an *anuloma* direction like *atisara* or *pratiloma* (opposite) direction like *malabandha*. According to *Ayurvedic* doctrine, one of the main causes of PMS symptoms is the accumulation of *Ama* (metabolic toxins and impurities) and blockages of *Artava vaha Srotas* (menstrual channels). The accumulation of *ama* in the female reproductive system causes disruptions in the normal movement of *Vata Dosha*. A poor diet and low digestive fire cause *ama* formation, which predispose the woman to a variety of symptoms throughout the menstrual cycle's peak activity and transition. This toxin build up can significantly influence digestive problems, and obstructions to elimination which in turn causes mental disorders¹¹. Mood swings, worry, fear, insomnia, lower back discomfort, and distention are all examples of *vata*-type PMS symptoms. Breast soreness, urethritis, hives, hot flushes, irritability, and often a burning feeling when urinating are the hallmarks of *Pitta*-type PMS. Water retention causes swollen and breasts tenderness in people with *kapha*-type PMS¹².

PMS manifests with symptoms that can significantly hinder a woman's performance in academic, professional, familial, personal, and community settings. Since the root cause of PMS is not clearly understood, the predominant approach to treatment focuses on alleviating symptoms. Commonly employed treatments such as Pyridoxine, NSAIDs, diuretics, oral contraceptive pills (OCP), GnRH analogues, and psychotherapy are widely used¹³, but they come with the drawbacks of being expensive and carrying potential side effects. As *Apana vayu* has role in female reproductive cycle which is responsible for excretion of *arthava*, thus status of *apana vayu* need to be understood in physiological purview. It is important for the healthy status of human being, and its variation in PMS has yet to be known. When *apana vayu* is in *prakruthavastha* it performs *samyak mala mutra vikshepanadi karma* like expulsion of *arthava* (ovulation or menstrual flow), etc while its *vaigunyatha* may lead to alteration in these normal functioning. This study aims to assess the status of *Apana vayu* in Premenstrual syndrome (PMS) and if there is prominent *Apana vayu vaigunya*, proper advices and treatments can be provided which will prevent the occurrence of symptoms of PMS which will help to improve the quality of life of women.

Aim and Objective

To determine the status of *Apana Vayu* in the female participants of age group (18-30) years attending Govt. Ayurveda College, Kannur with PMS diagnosed with ACOG criteria.

Methodology

Type of study- Observational study

Study setting- Government Ayurveda College, Kannur, Kerala

Period of study- 18 months

Study population- Female participants aged between 18-30 years with PMS (fulfilling the ACOG criteria of PMS) in Govt. Ayurveda College, Kannur.

Sample size- 138

In a study by Shruti V. Kamat, Premenstrual syndrome in Anand District, Gujrat: A cross-sectional survey¹⁴, which was conducted in 1702 females, but the data regarding the severity of PMS was collected from 1281 females. The prevalence of constipation & diarrhea, obtained from 1281 group, was 10%. This was used for sample size calculation.

$\text{Sample size (n)} = \frac{z^2 pq}{d^2}$
$= 138.29$
≈ 138

Sampling technique - Consecutive sampling

Inclusion criteria

Females of age group (18 – 30) years

Fulfilling American College of Obstetrics Gynecology criteria for PMS

Those who provide informed consent.

Exclusion criteria

Subjects with irregular menstruation

Subjects undergoing hormonal therapy

Subjects undergoing treatment for psychological problems.

H/O of pelvic inflammatory disease

Disorders of ovary and uterus

Underlying pathological conditions of the breast

Pregnant and lactating women

Alcoholics and smokers

Diseases interfering with bowel habits: Hemorrhoids, Fistula, IBS

Materials and Methods

Research Proforma

ACOG Criteria

Apana vayu vaigunya questionnaire

ACOG criteria for Premenstrual Syndrome

PMS diagnosis requires experiencing at least one emotional and one physical symptom from specific lists, symptoms are unrelated to organic lesion and occur consistently during the luteal phase of each menstrual cycle. They must be significant enough to disrupt the woman's lifestyle or necessitate medical intervention, with symptom free intervals during the remainder of the cycle.

ACOG Criteria

Affective

a. Depression : yes/no

b. Angry outburst : yes/no

c. Irritability : yes/no

d. Anxiety : yes/no

e. Confusion : yes/no

f. Social withdrawal : yes/no

2. Somatic

a) Breast tenderness: yes/no

b) Abdominal bloating: yes/no

c) Headache: yes/no

d) Swelling of extremities: yes/no

Assessment for *Apana vayu*

1st assessment – 3 to 4 days before menstruation

2nd assessment – 1 day after cessation of menstrual bleeding

The present study was a descriptive observational study. The female participants of age group (18-30) years diagnosed with PMS (fulfilling the ACOG criteria of PMS) at Government Ayurveda College, Kannur, Pariyaram, were selected. 138 participants satisfying the eligibility criteria were selected by consecutive sampling method. The study period was 18 months. Covid protocol was followed during the study, considering the pandemic situation. After the initial screening process as per the inclusion and exclusion criteria, written informed consent were obtained from selected participants. Data collection was carried out using case proforma.

Apana vayu assessment tool

Assessment of *apana vayu vaigunya* was done with a questionnaire created especially for this study. It was created using data from a validated questionnaire for *vataprathilomatha*, originally prepared by Dr. Soumya P Viswa, PG scholar of the year 2013 – 2016, Department of *Roganidana*, GAVC, Kannur as her MD research work titled "Development of an assessment for *vataprathilomatha* in *koshta* with special reference to *Arsa*"¹⁵ and later modified by Dr. Anju Aravind T PG Scholar of the year 2017 – 2020, Department of *Kriyasareera*, GAVC, Kannur as her MD research work titled "A comparative study to assess the gating mechanism of pain response in pressure application technique in *Katigraha* along with *Gandharvahasthadi Kashayam* based on the visual analogue scale"¹⁶. Further

some modifications were done as per need of this present study. Thus, the final questionnaire for the assessment of *Apana vayu* (not validated) had 16 questions with 2 options Yes and No for each one. With this questionnaire, *apana vayu vaigunya* was assessed by obtaining responses for all 16 questions. It was a self-assessment questionnaire, respondents were supposed to write a yes or no option to the questionnaire that best describes their physiology. A score of 1 was assigned to Yes and Score 0 was assigned to No options respectively. The *apana vayu* assessment was done two times i.e. 1st assessment was done 3-4 days before menstruation (during PMS) and the 2nd assessment was done 1 day after the cessation of bleeding i.e. after menstruation. As seen in the table below, the extent of *apana vayu vaigunya* can be inferred from the score.

<i>Apana vayu vaigunya</i> criteria	
50% above response	<i>Apana vayu vaigunya</i> present
50% below response	<i>Apana vayu vaigunya</i> absent

Process of Data collection

Data collection was done by engaging in personal interviews with respondents.

Observation and Result

(89.93%) had *apana vayu vaigunya* and 14 (10.1%) did not have *apana vayu vaigunya* during PMS. All the participants did not have *apana vayu vaigunya* after cessation of menstruation.

The above table shows the mean, SD, minimum, and maximum values of *Apana vayu vaigunya* during PMS and after menstruation.

Table No: 4 Descriptive Statistics - *Apana vayu vaigunya* during PMS and after cessation of menstruation

	N	Mean	Std. Deviation	Minimum	Maximum
<i>Apana Vayu Vaigunya</i> during PMS	138	58.8768	13.58879	12.50	93.75
<i>Apana Vayu Vaigunya</i> after cessation of menstruation	138	.1812	1.05236	.001	6.25

From the above table, it can be interpreted that there was a significant difference between *Apana Vayu Vaigunya* during PMS and after cessation of menstruation. 138 participants had a higher *Apana vayu vaigunya* during PMS than after menstruation.

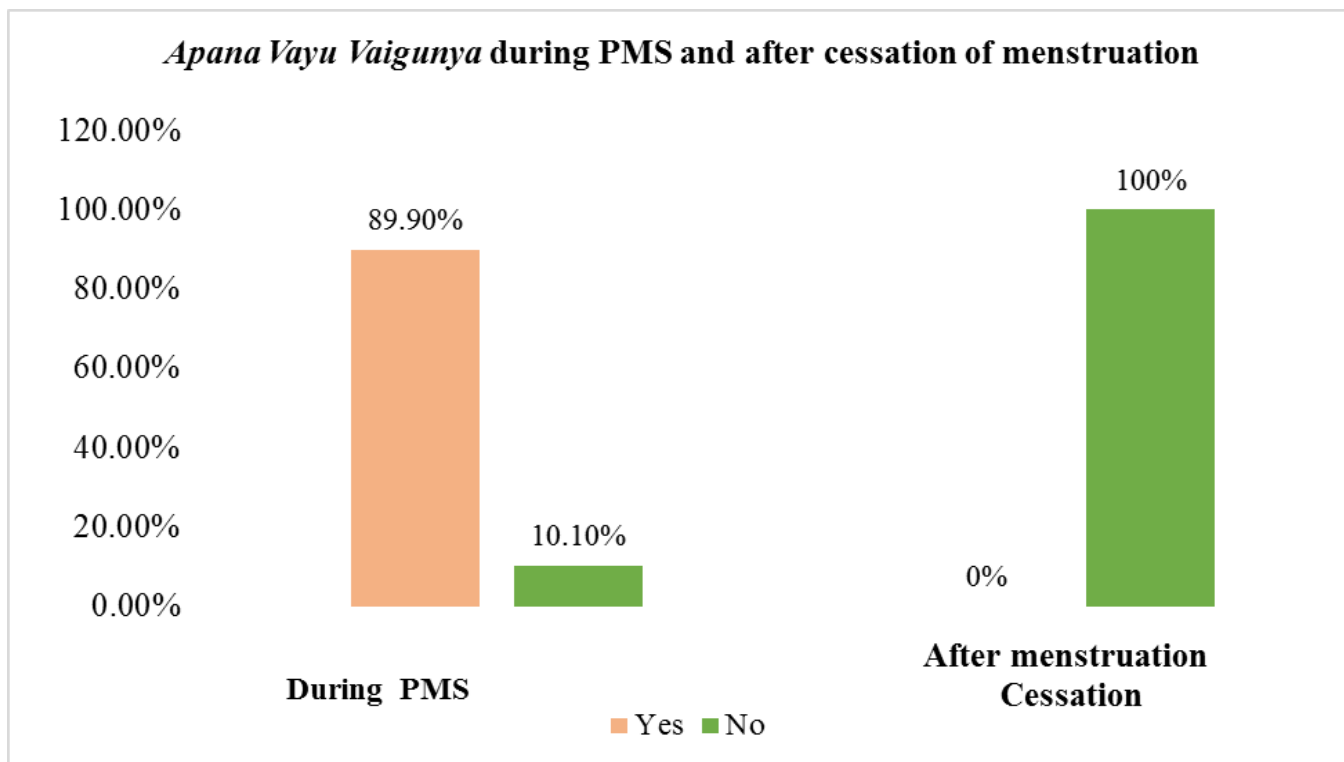


Chart 1: *Apana vayu vaigunya* during PMS and after cessation of menstruation

The frequency distribution of *Apana Vayu Vaigunya* during PMS and after cessation of menstruation was studied and given in the above chart. Out of the 138 participants, 124

Table No: 5 Ranks - *Apana vayu vaigunya* during PMS and after cessation of menstruation

		N	Mean Rank	Sum of Ranks	Z	Asymp. Sig. (2-tailed)
<i>Apana vayu vaigunya</i> after cessation of menstruation	Negative Ranks	138 ^a	69.50	9591.00		
	Positive Ranks	0 ^b	.001	.001	-10.233	.001
<i>Apana vayu vaigunya</i> during PMS	Ties	0 ^c				
	Total	138				

a. *Apana Vayu Vaigunya* after cessation of menstruation < *Apana Vayu Vaigunya* during PMS

b. *Apana vayu vaigunya* after cessation of menstruation > *Apana Vayu Vaigunya* during PMS

c. *Apana Vayu Vaigunya* after cessation of menstruation = *Apana Vayu Vaigunya* during PMS

DISCUSSION

Apana vayu vaigunya during PMS and after menstruation

In the present study, out of the 138 subjects, 124 (89%) had *apana vayu vaigunya* during PMS and none had *apana vayu vaigunya* after cessation of menstruation. There was a statistically significant difference between *apana vayu vaigunya* during PMS and *apana vayu vaigunya* after menstruation. Thus, the status of *apana vayu vaigunya* was found higher during PMS, while no *apana vayu vaigunya* was found after menstruation. Physical symptoms associated with PMS included headache, fatigue, weight gain from fluid retention, abdominal bloating, breast tenderness, constipation or diarrhea, and pain in joints, according to a study by Shruti V. Kamat et al¹⁷. Changes in hunger, weight gain, headache, nausea, constipation, anxiety, irritability, rage, weariness, restlessness, mood swings, and sobbing are all included as symptoms of PMS in a study by Gudipally PR. et al¹⁸. And it was stated that the symptoms of PMS disappear when the monthly period or bleeding get stop¹⁹. In the present study most of the participants experienced somatic symptoms such as constipation, change in appetite, anal pain during bowel movements, abdominal pain, bloating, a tendency to vomit, excessive belching, difficulty urinating, headache, fatigue, muscle cramps, and lower back pain. Additionally, they reported affective symptoms such as depression, anxiety, irritability, confusion, and social withdrawal during premenstrual syndrome (PMS), all of which were attributed to imbalances in the *apana vayu*. These complaints were observed to subside after the cessation of menstrual bleeding. The symptoms of PMS can be correlated with *vata dushti lakshana*. During PMS, *apana vayu* is in *vridhdha awastha*. Due to *mithya ahara vihara*, *Apana vaigunya* occurs resulting in *pratiloma gati* of *vayu* and also vitiation of subtypes of *vata* resulting in *glani*, *rodana*, *sarvanga vedana*, *pralapa*, *udwega*, *anawasthita chitta*, etc which are similar with the symptoms of PMS.

One of the five divisions of *Vata*, *Apana vayu* is more significant because it is located at *Pakwashaya*, the capital of *Vata*. It follows that any deviation from the usual state of either *apana vayu* or *pakwashaya* causes the other

subdivisions of *Vata*'s normal physiological functions to become vitiated as well. All other *vata* subdivisions are likely to be treated in conjunction with the *apana vayu* or *vata sthana*. In contemporary times, the prevalence of disorders arising from imbalances in *apana vayu* is on the rise, primarily due to irregular and unhealthy dietary and lifestyle habits, compounded by the suppression of natural bodily urges. This trend has a noticeable impact on the physical and psychological well-being of women. Women in this era are highly predisposed to *apana vayu* vitiation due to their dietary habits and lifestyle choices²⁰ which increases the severe symptoms of Premenstrual syndrome.

Disruption in bodily urges and digestion can lead to imbalances in the *apana vayu*. These imbalances are thought to be a major cause of PMS symptoms due to accumulation of metabolic toxins (*ama*) and blockages in menstrual channels. *Ama* buildup in the female reproductive system disrupts the normal movement of *Vata dosha*, exacerbated by poor diet and weak digestion. This toxin accumulation affects digestion, elimination, and mental well-being during the menstrual cycle's peak and transition phases. The vitiation of *Vata* and other doshas due to unhealthy lifestyle choices leads to the aggravation of *Kapha* and *Vata* resulting in symptoms like excessive sleep, back pain and abdominal swelling. The combination of vitiated *Vata* and *Kapha* affects the mind, causing mental symptoms such as depression, anxiety, confusion, and sudden emotional outbursts, ultimately leading to Premenstrual Disorder. Limited research in *Ayurveda* focuses on this matter, but existing studies²¹ highlight the connection between *doshic* imbalances particularly *apana vayu vaigunya*. The term '*vaigunya*' refers to both the qualitative and quantitative disturbances of the *apana vayu*, in addition to *vridhdhi* and *ksaya*. *Apana vayu vaigunya* can present as anything from moderate episodes of constipation to severe cases of mental problems. Therefore addressing the imbalances in *Apana Vayu*, specifically targeting its *vaigunyata*, forms the foundation for treating Premenstrual Syndrome. Focusing on correcting severe *Apana Vayu vaigunya* in an individual has the potential to alleviate the symptoms associated with PMS.

Conclusion

Apana Vayu Vaigunya was found to be prominent during PMS. No *Apana Vayu Vaigunya* was found after cessation of menstruation. This necessitates the need of proper advice and treatments to prevent the occurrence of symptoms of PMS which will help to improve the quality of life of women.

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***Apana vayu vaigunya* tool**

Questionnaires for assessing *Apana vayu vaigunya*

- Do you have hard stool? Yes/No
- Do you have a feeling of tastelessness? Yes/No
- Do you have loss of appetite? Yes/No
- Is there any pain in the anal region at the time of passing stool? Yes/No
- Do you have any kind of pain in your abdomen? Yes/No
- Is there any kind of increased bowel sounds in your abdomen? Yes/No
- Do you feel fullness of abdomen? Yes/No
- Does your feeling of abdominal distension get reduced after intake of food? Yes/No
- Immediately after urination do you have a tendency to urinate again? Yes/No
- Do you have a tendency for vomiting? Yes/No
- Do you suffer from excessive belching? Yes/No
- Do you feel difficulty in micturition? Yes/No
- Do you suffer from headache? Yes/No
- Do you always feel tiredness? Yes/No
- Do you always have cramps in calf muscles? Yes/No
- Do you have low back pain? Yes/No