Association of signs and symptoms at menarche with Pitta Predominant *Prakriti*: An observational study

ABSTRACT:

Background: Menarche a sign of puberty which links childhood to adult hood. It is the phase of progression of sexual characters required at the adolescent's age. It is seen that premenstrual symptoms regularly occurs in luteal phase of menstrual cycle. Similarly, when we can see premenarcheal symptoms in luteal phase of first menstrual cycle. *Bhawmishra* has explained that difference in color is due to different *Prakriti es* of individuals and vitiated doshas are responsible for symptoms like pain and burning sensation. **Material & Method:** A total 673 girls were screened from Wardha city and out of them 150 were recruited for the study. Data were gathered with the help of specially designed proforma and *Prakriti* questionnaire. Qualitative analysis was done based on recorded data. **Observation & Results:** Around 105 girls with *Pitta Prakriti* noted the problem of dysmenorrhea. Various observations were recorded based on regularity (16.67%)- irregularity (83.33%), quantity (Excess 19.34%, Moderate 68.66%, Scanty 12%), consistency (Clot 23.34%, Viscous 37.33%, Watery 39.33%), smell (Foul 18.67%, Normal 81.33%), dysmenorrhea condition (No 30%, Yes 70%), pain intensity (High 16.67%, Medium 72.67%, Scanty 10.66%) and other associated sign & symptoms like back pain, headache, pain in abdomen, body ache, stomach pain. **Conclusion:** It was concluded that average age group were seen around 12 years, majority of participants had watery flow and viscid flow which can be explained as *Pitta dosha* has dominance of *Agni*. The duration of menstruation was seen averagely about 6 days in most of the participants.

Keywords: *Pitta Dosha, Prakriti* , Menstrual cycle, Menarche, Dymenorrhea

Introduction:

Menarche a sign of puberty in girls which is the span which bridges the childhood with adult hood. It is the development of secondary sexual characters at adolescent age. There is variation in the age menarche of and almost is dependent upon the genetic and environmental factors. In Ayurveda, *Rutuchakra* is the term used for the menstrual cycle. The word 'chakra' stands for the regular onset of something on regular intervals. Menarche (*Rajodarshan*) moderately is seen in girls of age 10-15 years (1).

Nowadays, onset of menarche affected due to changing climatic conditions, ethnic origin, societal condition, urban or rural habitation, physical exercise, literacy, sensual stimulation, inheritance, and health issues due to changing lifestyle. other factors were also documented associated with the age at menarche, like season and month at birth, body type, status of the family income, occupation and parents literacy and family sizing. In published literature it was found that some important controlling factors for the onset of puberty are hereditary, nourishment, build mass, emotional status, societal, and artistic environment, exposure to sun-light and other factors. A girl living in town regions with good diet, enough body weight and whose mother have early menarche, or start adolescence early in the age pattern. *Prakriti* is the predominance of *Doshas* in the person. Treatment is also done according to the *Prakriti*. *Prakriti*

is dominant over persons as *Dwandwaj Prakriti.* In persons of *Pitta-vata* and Pitta-Kapha *Prakriti* different signs and symptoms are seen in menarcheal age and pattern (2).

In case of imbalanced *Pitta,* the body heat and its sharpness help to spread viscosity in the body fluid ultimately in blood, which results in heavy menstrual flow, associated with burning or stinging, obscene-smelling, and induce irritation, impatience, engorged breasts in some cases, and a skin problems and elevated body temperature, spotting before or after menses. It is seen that premenstrual symptoms regularly occurs in luteal phase of menstrual cycle. Similarly, when we can see pre Menarcheal symptoms in luteal phase of first menstrual cycle. *Bhawmishra* has explained that difference in colour is due to different *Prakriti* es of individuals and vitiated doshas are responsible for symptoms like pain and burning sensation. The aggravated doshas play important role and act out as main force of action and have the utmost influence in particular segments of the cycle (3,4).

Kapha dosha directs the first part of the cycle, i.e., *Rutukala,* after menses, as the endometrium gets thicken and develops more and more glandular in structure. A woman achieves the essence of *Kapha*—the moistness, the radiance, the sense of harmony and being settled within herself. *Rutukāla* terminates in ovulation. Ovulation indicates the commencement of the next phase of cycle. *Pitta* primarily acts through the blood tissue layer, and as such, the endometrium becomes more engorged with blood vessels, that prepare the bed for the potentially fertilized egg. If the egg is not fertilized, the last phase gets started. *Sushruta,* the legendary ancient Ayurveda scholar, has convincingly described this process as the weeping cry of esand it acts as a moving force, enabling the flow of menstruation. The dosha in the particular phase acts optimally and exhausted at one time of point, and get surpassed by another dosha for next phase of cycle. The study was aimed to study the correlation of sign and symptoms at menarche in *Pitta*-dominant *Prakriti* participants. Simultaneously assess the age of onset with sign and symptoms at the onset of menarche (5).

Materials and Methods :

Participants: A total of 673 girls were screened for the study from the age group 9-15 years, 300 girls were excluded as they do not have their menses. of the remaining 373 girls, 123 girls were having *Vata*-dominant *Prakriti* in which 53 were of *Vatapittaj* and 70 were of *Vatakaphaj*, and 100 were *Kapha*-dominant *Prakriti* in which 45 were *Kaphajvataj* and 55 were of *Kaphapittaj*. So they were excluded from the study. A total of 150 *Pitta*-dominant girls were selected for the study of which 99 were of *Pittakaphaj Prakriti* and 51 were of *Pittavataj Prakriti* .

Methodology :

Prakriti parikshan proforma was prepared for the assessment of *Prakriti* and case record proforma was prepared for the assessment of status of menarche and status of menarche.
The study was completed under the following steps-

- Assessment of *Pitta*-dominant *Prakriti*
- Observation regarding the status of the menarche
- Observations regarding the status of the current menstrual cycle

- Descriptive statistical analysis to find out correlation between *Pitta*-dominant *Prakriti* and menarche

(a) Place of work: school going girls from Wardha district
(b) Sample size: 150
(c) Study type: observational study
(d) Study design: Cross-sectional study
(e) Inclusion criteria:
- Females who had their menarche age group 9–15 years
- *Pittavataj* and *Pittakaphaj*

(f) Exclusion criteria:
- Hypothyroidism
- Polycystic ovary disease

(g) Assessment criteria: *Prakriti* questionnaire and case record form were used for data collection and for assessment.

Observation and Results:

Out of 150 participants Age of menarche is observed as 74% of girls had their menarche at 12 years of age, 40 girls had at 13 years of age, atound 27% of girls had menarche at 11 yeras, 6% of girls had menarche at 14 years of age, 2% and 1% of girls had menarche at the age of 10 and 15 respectively. Occurence of the next cycle at the time of menarche is observed in 150 participants as, 125 girls had regular cycle and 25 girls had irregular menstrual cycle. Quantity at the time of menarche was seen in 150 participants with clear observation as they had, 103 girls with moderate qauntity of flow, 29 girls with excess quantity of flow, 18 girls with scanty menstrual quantity. With 150 participants consistency at the time of menarche is observed with 69 girls with watery consistency, 59 girls with viscid consistency, 22 girls with clots in their first blood. About the smell of menstrual flow at the time of menarche was found normal in 122 girls and foul smelling in 28 girls. Out of 150 participants, Duration of menstrual flow at the time of menarche was seen as 384% of girls in 6 days, 184% of girls in 5 days, 126% of girls with 7 days of menstrual flow, 104 % of girls with 4 days of menstrual flow, 24% of girls 8 days of menstrual flow, 21% of girls with 3 days of menstrual flow. Interval in their next cycle after menrache is observed in 150 participants, 20% of girls had 28 days of cycle, 34% of girls had 30 days as their cycle, 14% of girls had 60 days as their next cycle, 4% of girls had their next cycle as 26, 5% of girls had their next cycle on 25, 27, 31, 35 and above 60 days, 4% of girls had 22 days as their next cycle, 3% of girls had 23 days their next cycle, 1% of girls had their next cycle on 24, 39, 45, 50, 55, 180 days. While in dysmenorrhea with 150 partcipants was seen like 105 girls with no dysmenorrhea and 45 girls were seen with symptoms. With the study of symptoms during the first menstrual cycle is observed in 150 participiants, as 66 girls with abdominal pain, 15 girls with weakness during the flow, 7 girls with body pain, 22 girls with loose motions, 5 girls with cramps, and 21 headache.

Table-1: Recorded observations

1	Age menarche in years	Number of participants
	10	2
	11	27
	12	74

	13	40
	14	6
	15	1
2	**Regularity in menstrual cycle**	**Number of participants**
	Irregular	25
	Regular	125
3	**Quantity**	**Number of participants**
	Excess	29
	Moderate	103
	Scanty	18
4	**Consistency**	**Number of participants**
	Clot	35
	Viscous	56
	Watery	59
5	**Smell**	**Number of participants**
	Foul	28
	Normal	122
6	**Associated sign & symptoms**	**Number of participants**
	Back Pain	07
	Fatigue	15
	Headache	21
	Pain in Abdomen	66
	Crams in extremities	05
	Loss motions	22
7	**Intensity**	**Number of participants**
	High	25
	Medium	109
	Scanty	15
8	**Dysmenorrhea**	**Number of participants**
	NO	45
	YES	105

Discussion:

Dysmenorrhea and irregular menses are more common among adolescent age. General menstrual symptoms are like fatigue, backache, and headache. It is observed that occurrence of dysmenorrhea is increasing day by day in the population; but such sufferings would affect the productivity among females and may increases the cases of infertility in future. Dysmenorrhea is the commonest (66.8%) gynecological problem associated with adolescent girls. Many other studies also reported that prevalence range of dysmenorrhea is from 25% to 90% among women and adolescents girls (6).

Among 150 participants, 69% of girls had watery consistency, 59% girls had viscid consistency in Pitta-dominating *Prakriti* and 122 girls had normal smell from menstrual flow. This reason can be explained because the constituents of pitta is agni mahabhoot(7). Ayurveda scholar *Charaka* has stated that after misfunctioning of the function of *Agni*, the person dies, and when the *Agni* of the person is Sama, that time person seems to be healthy and would be a long-life, peaceful, healthy life. But, if the *Agni* of individual gets vitiated, the whole metabolic functioning of the body become disturbed, resulting into the sick health and illness (8).

Age of menarche is observed as 74% of girls had their menarche at 12 years of age, 40% girls had at 13 years of age, atound 27% of girls had menarche at 11 yeras, 6% of girls had menarche at 14 years of age, 2% and 1% of girls had menarche at the age of 10 and 15 respectively. The intrinsic factors plays a vital role in sexual stage of maturation, the hormonal indicators of the adipose tissue, pancreatic secretions, and gastrointestinal tract functioning perform an significant part in the transformation of metabolic information into the meaning information which helps to direct central nervous system which trigger or delay the commencement of puberty (9). The functionality of Ayurveda reproductive system in women is initiated by onset of menstruation is menarche. The peak time being 12 years to 16 years, these are probable ages. There may be slight variation in individual cases because of age, that can be influenced by specific *Ahara* and *Arogya*. The lowest age of menarche is 10 years and highest is 15 years. The adolescents who encounter early on puberty and menarche are identified for a major risk of psychosocial issues like carelessness and unsafe sexual behavior. Additionally, they attain short stature and gained obesity and number of bodily health issues likewise menstrual troubles, compared to adolescents having menarche at a later age (10).

In the study of anthropometry, it reveals that body physic of female has great influence on their reproductive characteristics marked by the monarchial age. In other studies, it was observed that an early monarchial age is linked with increased risk for breast cancer, obesity, endometrial cancer, and uterine leiomyomata. Moreover, several studies have described that age at menarche may relate to following reproductive performance, in case of first intercourse, first pregnancy, and associate subsequent miscarriage (6).

Duration of menstrual flow at the time of menarche was seen as 38.4% of girls in 6 days, 18.4% of girls in 5 days, 12.6% of girls with 7 days of menstrual flow, 10.4 % of girls with 4 days of menstrual flow, 24% of girls 8 days of menstrual flow, 21% of girls with 3 days of menstrual flow. Longer duration and quantity of menstrual bleeding may be associated with boosted follicle stimulating hormone concentrations and ovulatory cycles among healthy individuals of reproductive age group (11). Age of an individual is more important factor than that of basal metabolic rate in case of menstrual cycle length and its variability. There should be individualized attitude to understand and encourage reproductive health and fertility, and simultaneously regulating factors such as bodily activity and stress conditions (12).

Artava is excreted out in the *Rajasrava Kala*, and the duration varies according to different authors. *Bhavamishra* - three days, *Vagbhata* - three nights, *Charaka* - five nights, *Harita* - seven days, *Bhela* - five days (13)While in dysmenorrhea with 150 partcipants was seen like 105 girls with no dysmenorrhea and forty-five girls were seen with symptoms. With the study of symptoms during the first menstrual cycle is observed in 150 participiants, as body ache (4.6%), fatigue (10%), headache (14%), pain in abdomen (44%), cramps in extremities (3.3%), and loose motion (14.66%) and 9.33% girls didn't observed any associatited sign and symptoms.

Dysmenorrhea is the commonest symptom other than various gynecological disorders, which present in most of the women as a primary form of disease condition. Pain related with dysmenorrhea is triggered by hypersecretion of prostaglandins and which increase uterine contraction (14). Few studies on related aspects were reviewed (15-18). Majority of the participants suffered from dysmenorrhea during menses even though more than 3/4th of them had mild-to-moderate pain. Nevertheless, about 30% of them complained of severe pain. Comparing with other reports from India in higher age group (adults), study findings indicated higher frequency of acute menstrual pain and it may be due to effect of age on severity of pain.
Intensity of blood flow in this study was seen with 109 girls with moderate flow, 25 girls with heavy flow, 15 girls with scanty flow. Menstrual bleeding patterns are consideringly in association with reproductive health, and changes in bleeding forms might be affect the quality of life. Alterations in sex hormones are assumed to be associated with bleeding patterns, because hormones throughout the menstrual cycle influence the proliferation and shedding of the endometrial lining of the uterus (11-22).

Limitation:

The study is performed in the area comprises of urban and rural population; therefore, generalizing of the result of the study must be done with attention. The findings may be representative of the menstrual characteristics of urban as well as rural population.

Conclusion:

A conclusion is made that there is diect relation of *Pitta*-dominant *Prakriti* and signs and symptoms of menstrual cycle and menarche. Age of menarche in the participants of the study were seen in 12 years. It was seen that they had regular menstrual cycle with interval of 28-30 days in regulary menstruating girl. Majority of participants had watery flow and viscid flow which can be explained as *Pitta dosha* has dominance of *Agni* mahabhutas. Duration of menstruation is seen for about 6 days in most of the participants. Moderate qauntity of flow in menarche was recorded.

NOTE:

The study highlights the efficacy of "Prakriti" which is an ancient tradition, used in some parts of India. This ancient concept should be carefully evaluated in the light of modern medical science and can be utilized partially if found suitable.

References:

1. Nanal VV, Borgave VS. Maternal Health, Supraja (Eugenics) and Ayurveda. Anc Sci Life. 2008;28(1):44–8.
2. Dey S, Pahwa P. Prakriti and its associations with metabolism, chronic diseases, and genotypes: Possibilities of new born screening and a lifetime of personalized prevention. J Ayurveda Integr Med. 2014;5(1):15–24.
3. Byadgi PS. Critical appraisal of Doshavaha Srotas. Ayu. 2012;33(3):337–42.
4. Tewiri PV, Neelam, Kulkiro MKS. A STUDY OF LUKOL IN LEUCORRHOEA, PELVIC INFLAMMATORY DISEASES AND DYSFUNCTIONAL UTERINE BLEEDING. Anc Sci Life. 2001;21(2):139–49.

5. Bhatt N, Deshpande M. A Critical Review and Scientific Prospective on Contraceptive Therapeutics from Ayurveda and Allied Ancient Knowledge. Front Pharmacol. 2021 Jun 3;12:629591.
6. Omidvar S, Amiri FN, Bakhtiari A, Begum K. A study on menstruation of Indian adolescent girls in an urban area of South India. J Fam Med Prim Care. 2018;7(4):698–702.
7. Payyappallimana U, Venkatasubramanian P. Exploring Ayurvedic Knowledge on Food and Health for Providing Innovative Solutions to Contemporary Healthcare. Front Public Health. 2016 Mar 31;4:57.
8. Agrawal AK, Yadav CR, Meena MS. Physiological aspects of Agni. Ayu. 2010;31(3):395–8.
9. Petersohn I, Zarate-Ortiz AG, Cepeda-Lopez AC, Melse-Boonstra A. Time Trends in Age at Menarche and Related Non-Communicable Disease Risk during the 20th Century in Mexico. Nutrients. 2019 Feb 13;11(2):394.
10. Kim JH, Lim JS. Early menarche and its consequence in Korean female: reducing fructose intake could be one solution. Clin Exp Pediatr. 2020 May 14;64(1):12–20.
11. Dasharathy SS, Mumford SL, Pollack AZ, Perkins NJ, Mattison DR, Wactawski-Wende J, et al. Menstrual Bleeding Patterns Among Regularly Menstruating Women. Am J Epidemiol. 2012 Mar 15;175(6):536–45.
12. Grieger JA, Norman RJ. Menstrual Cycle Length and Patterns in a Global Cohort of Women Using a Mobile Phone App: Retrospective Cohort Study. J Med Internet Res. 2020 Jun 24;22(6):e17109.
13. Tiwari PV, Sharma RD, Chaturvedi C. MATERNITY IN ANCIENT INDIAN MEDICINE. Anc Sci Life. 1987;6(4):192–202.
14. Bernardi M, Lazzeri L, Perelli F, Reis FM, Petraglia F. Dysmenorrhea and related disorders. F1000Research. 2017 Sep 5;6:1645.
15. Dekar, Pradnya Deepak. “Critical Analysis of Role of Ranjak Pitta and Raktagni in Perspective of Modern Physiology.” INTERNATIONAL JOURNAL OF LIFE SCIENCE AND PHARMA RESEARCH 10, no. 4 (October 2020): L164–67. https://doi.org/10.22376/ijpbs/lpr.2020.10.4.L164-167.
16. Korde, Swapnil, Pallavi Daigavane, Prutha Ganesh Khakhar, Priyanka Niranjane, and Bhagyashree Chimote. “Association of Skeletal and Dental Maturity Indicators with the Onset of Menarche and Its Applicability for Growth Modification of Jaw Bases in Females Aged between 7 and 14 Years.” JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 18 (May 4, 2020): 1484–89. https://doi.org/10.14260/jemds/2020/324.
17. Bais A, Mishra SA, Darda PP, Phansopkar P. Impact of 6 Weeks Pilates Training on Menopause Specific Symptoms and Quality of Life in Menopausal Women: A Case Report. JOURNAL OF PHARMACEUTICAL RESEARCH INTERNATIONAL. 2021;33(37B).
18. Boharupi, Pranali, and Meena Shamrao Deogade. “Assessment of Prevalence of Primary Dysmenorrhoea in University Students.” INTERNATIONAL JOURNAL OF AYURVEDIC MEDICINE 11, no. 2 (June 2020): 170–74.
19. Gondivkar SM, Indurkar A, Degwekar S, Bhowate R. Evaluation of gustatory function in patients with diabetes mellitus type 2. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2009 Dec 1;108(6):876-80.

20. Khatib N, Gaidhane S, Gaidhane AM, Khatib M, Simkhada P, Gode D, Zahiruddin QS. Ghrelin: ghrelin as a regulatory Peptide in growth hormone secretion. Journal of clinical and diagnostic research: JCDR. 2014 Aug;8(8):MC13.
21. Agrawal A, Timothy J, Cincu R, Agarwal T, Waghmare LB. Bradycardia in neurosurgery. Clinical neurology and neurosurgery. 2008 Apr 1;110(4):321-7.
22. Nagrale AV, Herd CR, Ganvir S, Ramteke G. Cyriax physiotherapy versus phonophoresis with supervised exercise in subjects with lateral epicondylalgia: a randomized clinical trial. Journal of Manual & Manipulative Therapy. 2009 Jul 1;17(3):171-8.