

## ORIGINAL RESEARCH ARTICLE - CLINICAL STUDY

## Effect of Lifestyle and Yoga on Primary Dysmenorrhoea in Adolescent Girls

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### ABSTRACT

**Introduction:** Importance of women has always been undeniable in society. To strengthen overall health system and Quality of Life in the family, addressing women's health is a necessary and effective approach. Dysmenorrhoea or painful menstruation is a medical condition which is often experienced by majority of adolescent girls. 20% to 90% of menstruating adolescent girls suffer from primary dysmenorrhoea and out of them about 15% affect more severely. Erratic lifestyle, inappropriate eating habits, excessive intake of fast food, night awakening, lack of physical activity etc. are acting as risk factors of Primary Dysmenorrhoea (Kashtartava). As the conventional management is associated with various complications, the clinicians are inclining towards other non-pharmacological measures. Healthy lifestyle and specific yogic practices could have beneficial effects on it. To establish these facts, study entitled "Effect of Lifestyle Modification and Specific Yogic Practices on Primary Dysmenorrhoea in Adolescent Girls" was conducted. **Materials and Methods:** Total 60 patients of Primary Dysmenorrhoea (Kashtartava) were selected on the basis of inclusion criteria and randomly allocated into 3 equal groups after getting ethical clearance and their written consent. Group A: Advised for Specific Lifestyle, Group B: Advised for Specific Yogic Practices, Group C: Advised for Specific Lifestyle and Specific Yogic Practices both. All patients were assessed before treatment and at an interval of every month, upto 3 months. **Results:** In all three groups, statistically highly significant improvements were observed in intensity and duration of pain, Quality of Life in Physical and Psychological domains. These cost effective, non-pharmacological approaches

should be adopted by adolescent girls to overcome the problem of Dysmenorrhoea.

**Keywords :** *Dysmenorrhoea, Kashtartava, Lifestyle, Quality of Life (QOL)*



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## Introduction

Dysmenorrhoea can be defined as painful menstruation of sufficient magnitude so as to incapacitate day-to-day activities.<sup>[1]</sup> Primary dysmenorrhoea is usually associated with normal ovulatory cycle and without any pelvic pathology.<sup>[2]</sup> It can be associated with cramping pain in supra-pubic area, low backache, pain radiating downwards to the anterior aspect of thighs. In some cases, with severe form of Dysmenorrhoea the associated symptoms like nausea, vomiting, headache, weakness may occur. Onset of symptoms may be few hours to 24 hours before or with the onset of menstruation and last up to 48-72 hours.<sup>[3]</sup> In this condition many adolescents report limitations in daily routine activities such as missing school, college, sports activities and other social activities. Primary Dysmenorrhoea is a prevalent condition causing reduction in quality of life (QOL) for many adolescent girls, resulting from pain as well as parallel social and psychological distress.

The word *Kashtartava* is expressed as the condition where Artava is shaded with great difficulty and pain. In Ayurvedic contexts, *Kashtartava* is described as a symptom of various Yonivyapada, among them *Vatala Yonivyapad*, *Udavartini*, *Suchimukhi*, *Vatika Artava Dushti* and *Kshina Artava Dushti* can be compared with Primary dysmenorrhoea with no pelvic pathology. Vitiating Vata is the main cause behind all types of pain (Vatadrutenastiruja)[4] and any Yonivyapada is not manifested without involvement of Vata dosha.<sup>[5]</sup> Excessive indulgence in Vata vitiating factors aggravates Vata dosha leading to painful menstruation.

As the pain is *Vatika* in origin, use of *Vatahara Ahara-Vihara* and specific yogic practices could help to pacify *Vata* and thereby pain.

## Aim of study

To evaluate the efficacy of Lifestyle modification and Specific Yogic Practices on cases of Primary Dysmenorrhoea (*Kashtartava*)

**Type of research:** Clinical Trial

**Design of the study:** Randomized study

**Trial methodology:** Open trial

## Material and methods

**Selection of cases:** Total 60 patients fulfilling the inclusion criteria of Primary Dysmenorrhoea (*Kashtartava*) were registered from O.P.D. of department of Swasthavritta & Yoga and the department of Prasuti Tantra, S.S. Hospital, IMS, BHU, Varanasi, during March 2019 to February 2020. Detailed history was taken according to the proforma prepared for the study incorporating all the relevant points from both Ayurveda and modern medical sciences.

**Approval of Ethical committee:** The approval from Institutional Ethical Committee of IMS, BHU was obtained with number (Dean/2018/EC/699), dated 14.07.2018, before commencing the clinical study.

**CTRI registration:** Present clinical study was registered in Clinical Trial Registry India (CTRI) with CTRI registration number CTRI/2019/ 03/018272, dated: 26.03.2019.

## Inclusion Criteria

1. Adolescent girls of age group 12-20 years.
2. Painful menstruation for at least 3 consecutive regular menstrual cycles.
3. Pain begins before few hours to one day of menstruation or with onset of menstruation and lasting for 2-3 days.
4. Patients taking Analgesic/ Antispasmodic during menstruation (SOS basis- maximum 1tab of 500mg /Day)

## Exclusion Criteria

1. Married females.
2. Adolescent girls who were not willing for trial and associated with any currently ongoing research study.
3. Cases having Secondary Dysmenorrhoea.
4. With pelvic pathology like Fibroid uterus, Ovarian cyst or tumour and menstrual irregularities like Menorrhagia, Metrorrhagia, congenital anomaly etc.

(By USG finding)

5. Cases suffering from any chronic illness like severe Anaemia, Diabetes, Coagulopathy, Bronchial Asthma, Tuberculosis, Jaundice, Malnourished etc.
6. Cases those were under hormonal therapy.
7. Patients taking Analgesic/ Antispasmodic BD/TDS daily during menstruation.

**Investigations:** (Before interventions)

- a) Routine investigations: Blood-Hb%, TLC, DLC, ESR
- b) Specific investigation: USG (lower abdomen and pelvis)

### Study design

**Grouping:** Selected 60 patients were divided randomly into three groups with 20 cases in each group:

Group A: Advised Specific Lifestyle

Group B: Advised Specific Yogic Practices (Minimum 6 hours/week for total 12 weeks)

Group C: Advised Specific Lifestyle and Specific Yogic Practices

### Specific Lifestyle

Patients of this group were advised to follow healthy lifestyle in terms of specific Pathya Ahara-Vihara along with contraindication of Apathya Ahara-Vihara, mainly to pacify Vata dosha, improvement of nourishment and maintenance of personal hygiene.

### Specific Yogic Practices

Patients of this group were advised to practice Yoga regularly in following order:

Joint movements: All joints 5 Rounds bilaterally (Total 10 minutes)

Asana (Total 30 minutes)	Pranayama: (Total 10 minutes)	Dhyana: 10 minutes
Trikonasana®5 Rounds Chakkichalana®5 Rounds Marjariasana®5Rounds Dhanurasana® 5 Rounds Pavanmuktasana® 5 Rounds Shavasana® 10 minutes	Nadisodhana® 20 rounds Bhramari Pranayama® 10 rounds	Dhyana ®10 minutes

**Follow ups:** Three follow ups of the patients of all three groups were recorded on the basis of assessment criteria, at an interval of one month each, for a total period of three months. Total 7 cases (2 in Group A, 3 in Group B and 2 in Group C) were dropped out at different follow ups.

**Criteria for assessment:** The efficacy of interventions was assessed on the basis of changes observed in subjective and objective parameters, by giving them appropriate scoring according to their gradations.

### Subjective parameters

- Assessment on the basis of;
- ✓ Intensity of pain- [VAS Score]

✓ Duration of pain

- Pre and post interventional assessment of Quality of Life of all cases was done by using WHOQOL-BREF (taken prior permission).

### Objective parameter

- BMI

### Statistical Methods of Evaluation:

In case of subjective parameters (Clinical symptoms) the Intra-group comparison was done by Friedman test and Inter-group comparison was by Kruskal-Wallis test. For Quality of Life (All domains) and Objective Parameter (BMI) the intra-group comparison was done by Paired t test and inter-group comparison by One-way ANOVA.

### Observation and results:

In this study majority of cases were at the age 15-16 years (45%), and of middle socio-economic status (78.3%). Observations of intensity of pain (VAS score) revealed significant shift of grades in different study groups. On intra-group comparison the statistically highly significant ( $p < .001$ ) results were observed in all three groups. On inter-group comparison, at every follow up the results for intensity of pain were statistically not significant (Table-1). In case of duration of pain, on intra-group comparison shift of grades was found statistically highly significant ( $p < .001$ ) in all three groups. On inter-group comparison the values for duration of pain were statistically not significant after interventions ( $P=0.504$ ) (Table-2). In this study group significant changes were not observed in Overall score in QOL, in any group (Table-3). Shift of Domain-1 scores (Physical) in QOL, in all groups were statistically

highly significant. On inter-group comparison there is no significant change in QOL Domain-1 score before and after interventions (Table-4). Observations revealed that shift of Domain-2 scores (Psychological) in QOL were statistically highly significant in all groups. On inter-group comparison there is no significant change in QOL Domain-2 score before and after Interventions (Table-5). This study revealed statistically not significant changes in Domain 3 and 4 scores (Social and Environmental) in QOL in any group, and on inter-group comparison there is no significant change in score in QOL Domain 3 and 4 before and after Interventions (Table 6 and 7). On intra-group comparison, Paired t-test reveals that changes in BMI were statistically significant in Group A, however statistically not significant in Group B and C. On inter-group comparison of all three groups, there were highly significant changes in BMI, before and after Interventions (Table 8).

**Table-I: Intensity of Pain (VAS Score) in 60 Patients of Primary Dysmenorrhoea (Kashtartava)**

Groups	Grade	Intensity of Pain (VAS Score) No. & % of Cases				Within the group comparison (Friedman test)
		BT	F1	F2	F3	
Group-A	0	0	0	3 (15.8%)	4 (22.2%)	$\chi^2=39.492$ $P=.000$
	1	4 (20.0%)	5 (25%)	7 (36.8%)	11(61.1%)	
	2	14(70.0%)	13(65%)	9 (47.4%)	3 (16.7%)	
	3	2 (10.0%)	2(10%)	0	0	
Group-B	0	0	0	2 (11.1%)	5 (29.4%)	$\chi^2=35.542$ $P=.000$
	1	5 (25.0%)	7(35%)	12(66.7%)	11(64.7%)	
	2	15(75.0%)	13 (65%)	4(22.2%)	1(5.9%)	
	3	0	0	0	0	
Group-C	0	0	0	6 (31.6%)	6 (33.3%)	$\chi^2=46.588$ $P=.000$
	1	6 (30.0%)	9 (45%)	11(57.9%)	10(55.6%)	
	2	11 (55%)	9 (45%)	2(10.5%)	2 (11.1%)	
	3	3 (15%)	2 (10%)	0	0	
Between the Groups comparison (Kruskal-Wallis Test)		$\chi^2 =0.629$ $P=0.730$	$\chi^2 =1.575$ $P=0.455$	$\chi^2=5.852$ $P=0.054$	$\chi^2=0.903$ $P=0.637$	

**Table-II: Duration of Pain in 60 Patients of Primary Dysmenorrhoea (Kashtartava)**

Groups	Grade	Duration of Pain				Within the group comparison (Friedman test)
		BT	F1	F2	F3	
Group-A	0	0	0	3 (15.8%)	3 (16.7%)	$\chi^2=27.400$ P=.000
	1	7(35%)	10 (50%)	10(52.6%)	13(72.2%)	
	2	13 (65%)	10 (50%)	6 (31.6%)	2 (11.1%)	
	3	0	0	0	0	
Group-B	0	0	0	2 (11.1%)	5 (29.4%)	$\chi^2=14.143$ P=.003
	1	15(75.0%)	15(75.0%)	14(77.8%)	10(58.8%)	
	2	5 (25.0%)	5 (25.0%)	2 (11.1%)	2 (11.8%)	
	3	0	0	0	0	
Group-C	0	0	0	6 (31.6%)	6 (33.3%)	$\chi^2=33.545$ P=.000
	1	8 (40%)	18 (90%)	12(63.2%)	11(61.1%)	
	2	11 (55%)	1 (5%)	1 (5.3%)	1 (5.6%)	
	3	1 (5%)	1 (5%)	0	0	
Between the Groups comparison (Kruskal-Wallis Test)		$\chi^2=7.525$ P=0.023	$\chi^2=7.122$ P=0.028	$\chi^2=4.693$ P=0.096	$\chi^2=1.370$ P=0.504	

**Table-III: Overall QOL and General health of 60 Patients of Primary Dysmenorrhoea (Kashtartava)**

Groups	QOL Overall score		Within the group comparison BT-AT Paired t test
	BT Mean $\pm$ SD (n)	AT Mean $\pm$ SD (n)	
Group A	6.35 $\pm$ 0.933 (20)	6.50 $\pm$ 0.786 (18)	-0.111 $\pm$ 0.471 t=-1.000 P=0.331
Group B	6.25 $\pm$ 0.716 (20)	6.18 $\pm$ 0.529 (17)	-0.059 $\pm$ 0.243 t=-1.000 P=0.332
Group C	6.30 $\pm$ 0.865 (20)	6.39 $\pm$ 0.850 (18)	-0.056 $\pm$ 0.236 t=-1.000 P=0.331
Between the Group comparison One-way ANOVA	F=0.070 P=0.932	F=0.863 P=0.428	

**Table-IV: QOL (Domain 1- Physical Health) of 60 Patients of Primary Dysmenorrhoea (Kashtartava)**

Groups	QOL (Domain 1- Physical Health)		Within the group comparison BT-AT Paired t test
	BT Mean $\pm$ SD (n)	AT Mean $\pm$ SD (n)	
Group A	21.65 $\pm$ 2.231 (20)	22.39 $\pm$ 2.227 (18)	-0.667 $\pm$ 0.686 t=-4.123 P=0.001
Group B	21.05 $\pm$ 1.731 (20)	22.06 $\pm$ 1.478 (17)	-1.235 $\pm$ 0.831 t=-6.126 P=0.000
Group C	21.90 $\pm$ 2.049 (20)	22.83 $\pm$ 1.886 (18)	-1.056 $\pm$ 0.873 t=-5.132 P=0.000
Between the Group comparison One-way ANOVA	F=0.941 P=0.396	F=0.737 P=0.484	

**Table-V: QOL (Domain 2- Psychological) of 60 Patients of Primary Dysmenorrhoea (Kashtartava)**

Groups	QOL (Domain 2- Psychological)		Within the group comparison BT-AT Paired t test
	BT Mean $\pm$ SD (n)	AT Mean $\pm$ SD (n)	
Group A	17.90 $\pm$ 3.354 (20)	19.50 $\pm$ 2.407 (18)	-1.556 $\pm$ 1.338 t=-4.932 P=0.000
Group B	16.95 $\pm$ 1.986 (20)	18.00 $\pm$ 1.458 (17)	-1.294 $\pm$ 1.213 t=-4.400 P=0.000
Group C	17.90 $\pm$ 2.654 (20)	19.22 $\pm$ 2.016 (18)	-1.333 $\pm$ 1.029 t=-5.497 P=0.000
Between the Group comparison One-way ANOVA	F=0.812 P=0.449	F=2.739 P=0.074	

**Table-VI: QOL (Domain 3- Social relationship) of 60 Patients of Primary Dysmenorrhoea (Kashtartava)**

Groups	QOL (Domain 3- Social relationship)		Within the group comparison BT-AT Paired t test
	BT Mean $\pm$ SD (n)	AT Mean $\pm$ SD (n)	
Group A	6.25 $\pm$ 0.639 (20)	6.28 $\pm$ 0.669 (18)	0
Group B	6.10 $\pm$ 0.641 (20)	6.18 $\pm$ 0.636 (17)	0
Group C	6.25 $\pm$ 0.967 (20)	6.06 $\pm$ 0.416 (18)	0
Between the Group comparison One-way ANOVA	F=0.257 P=0.774	F=0.654 P=0.524	



**Table-VII: QOL (Domain 4- Environmental QOL) of 60 Patients of Primary Dysmenorrhoea (Kashtartava)**

Groups	QOL (Domain 4- Environmental QOL)		Within the group comparison BT-AT Paired t test
	BT Mean $\pm$ SD (n)	AT Mean $\pm$ SD (n)	
Group A	25.10 $\pm$ 3.291 (20)	25.17 $\pm$ 3.468 (18)	0.056 $\pm$ 0.236 t=1.000 P=0.331
Group B	24.15 $\pm$ 2.033(20)	23.88 $\pm$ 1.576 (17)	-0.059 $\pm$ 0.243 t=-1.000 P=0.332
Group C	23.65 $\pm$ 3.083(20)	24.6 $\pm$ 2.711 (17)	-0.056 $\pm$ 0.236 t=-1.000 P=0.331
Between the Group comparison One-way ANOVA	F=1.330 P=0.272	F=1.168 P=0.319	

**Table-VIII: Body Mass Index (BMI) of 60 Patients of Primary Dysmenorrhoea (Kashtartava)**

Groups	BMI		Within the group comparison BT-AT Paired t test
	BT Mean $\pm$ SD (n)	AT Mean $\pm$ SD (n)	
Group A	19.62 $\pm$ 0.772 (20)	19.70 $\pm$ 0.604 (18)	-0.155 $\pm$ 0.297 t=-2.218 P=0.040
Group B	19.82 $\pm$ 0.690 (20)	19.81 $\pm$ 0.619 (17)	0.000 $\pm$ 0.282 t=0.000 P=1.000
Group C	20.74 $\pm$ 0.634 (20)	20.58 $\pm$ 0.528 (18)	0.150 $\pm$ 0.329 t=1.932 P=0.070
Between the Group comparison One-way ANOVA	F=14.545 P=0.000	F=11.942 P=0.000	

## Discussion

In this study there was statistically highly significant reduction in intensity of pain (VAS score) and duration of pain in cases of all three groups, after interventions as compared to before interventions. It proves that Lifestyle modification and specific Yogic practices have great effect on Primary Dysmenorrhoea (*Kashtartava*).

It is observed that improvement in Quality of Life (QOL) in Domain-2 (Physical) and Domain-3 (Psychological) was statistically highly significant after specific interventions.

In domains like overall QOL, Social relationships and Environmental QOL the results were statistically not significant. It indicates that in adolescent girls suffering from Primary Dysmenorrhoea (*Kashtartava*) the lifestyle modification and regular practice of selected yogic practices have positive impact on Quality of Life.

### Probable mode of action of Lifestyle modification

Pain is the prime characteristic of vitiated Vata. *Kashtartava* is explained as a symptom in various *Yonivyapada* and vitiated Vata is the main reason

behind it. Acharya Lolimbraj described that if a person is taking proper Pathya then there will be no need of medication and on the other hand if a person is taking Apathya then the medication would not be effective.<sup>[6]</sup> Hence, Pathyapathya plays a major role here. Lifestyle modification in terms of Vatahara ahara-vihara helps in alleviation of Vata and thereby helps to treat the pain during menstruation. Kashtartava in adolescent girls prohibit them to do daily activities and decreases their Quality of Life. Modification of Lifestyle helps them to overcome pain during menstruation and improve their Quality of Life and Body Mass Index.

### Probable mode of action of Yogic Practices

Yoga, explains Aadhi or mental imbalance as the root cause of diseases. Practice of Yoga helps to maintain the functions of body and mind for sustainable health. Hypoxia is another main cause of pain during menstruation. Selected Yogic practices like Trikonasana<sup>[7]</sup>, Chakkichalāsana<sup>[8]</sup>, Marjariasana<sup>[9]</sup>, Dhanurasana<sup>[10]</sup>, Pavanmuktāsana<sup>[11]</sup> improves blood circulation to the pelvic area, relaxes muscles and reduces pain during menstruation. Shavasana<sup>[12]</sup> and Dhyana<sup>[13]</sup> helps in mental relaxation and releases stress, which is a risk factor of Primary Dysmenorrhoea and helps to subside the pain. Pranayama increases vitality and lowers the levels of stress and anxiety by harmonising prana<sup>[14]</sup>. Yogic practices help in releasing Endorphins made by Pituitary gland and CNS. Endorphins help in reduction of stress and reduce feeling of pain. It improves QOL of adolescent girls suffering from Primary Dysmenorrhoea.

### CONCLUSION

Primary Dysmenorrhoea (*Kashtartava*) often affects adolescent girls and decreases their Quality of Life. It occurs mainly due to vitiation of Vata dosha and is caused by improper lifestyle including irregular eating habits, improper sleep, lack of physical activity etc. Healthy lifestyle in terms of Pathya ahara and Vihara helps in Vatasamana and ultimately reduction of pain. Selected Yogic practices reduce stress, anxiety and maintain mental balance, thereby pacify pain by avoiding manasika hetu of Kashtartava. Interventions in the form of Healthy

Lifestyle and specific Yogic Practices were recommended for the management of Primary Dysmenorrhoea. Both, lifestyle modification and Yogic practices helped in decreasing intensity and duration of pain, and improving Quality of Life (physical and psychological domains) of adolescent girls suffering from Primary Dysmenorrhoea (*Kashtartava*). It has been observed that these selected interventions are cost effective and without side effects, which is really a great benefit to the society as prevention module for lifestyle disorders.

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### सारांशः

परिचयः समाज में महिलाओं का महत्व हमेशा अग्रणी रहा है। स्वास्थ्य की सम्पूर्ण व्यवस्था एवं परिवार के जीवन की गुणवत्ता को मजबूत बनाने के लिए महिलाओं के स्वास्थ्य को ध्यान में रखना आवश्यक एवं कारगर उपाय है। कष्टार्तव अर्थात् माहवारी के समय दर्द होना एक ऐसी स्वास्थ्य समस्या है जिसका अनुभव अधिकतर किशोरियों में होता है | 20 से 90 प्रतिशत किशोरियाँ प्राइमरी डिसमिनोरिया का अनुभव करती हैं जिनमें से 15 प्रतिशत में तीव्रता अधिक होती है। खराब जीवन शैली, गलत खान-पान, फास्ट फूड का अधिक प्रयोग, रात्रिजागरण, शारीरिक क्रियाशीलता का अभाव आदि प्राइमरी डिसमिनोरिया (कष्टार्तव) के कारक हैं छ इसकी वर्तमान चिकित्सा कई कठिनाईयों से युक्त होने के कारण चिकित्सकों का झुकाव गैर-औषधीय चिकित्सा की तरफ हो रहा है। स्वस्थ जीवन शैली एवं विशिष्ट योगाभ्यास इसमें लाभकारी हो सकती हैं। इस तथ्य को स्थापित करने के लिए “किशोरियों में जीवन शैली परिवर्तन एवं विशिष्ट योगाभ्यास का प्राइमरी डिसमिनोरिया पर प्रभाव” नामक विषय का अध्ययन किया गया।

विधि एवं सामग्री: प्राइमरी डिसमिनोरिया के कुल 60 रोगियों को इन्क्लूसन क्राइटेरिया के आधार पर लिया गया जिनको एथिकल स्वीकृति एवं लिखित सहमति के बाद तीन बराबर समूह में रखा गया छ समूह ए को विशिष्ट जीवन शैली समूह बी को विशिष्ट योगाभ्यास एवं समूह सी को दोनों की सलाह दी गयी। सभी प्रतिभागियों का प्रारम्भ में एवं हर महीने तीन माह तक परीक्षण किया गया।

परिणामः सभी समूहों में दर्द की तीव्रता एवं समय तथा शारीरिक एवं मनोवैज्ञान सम्बन्धी गुणवत्ता में सांख्यिकी आंकलन में सुधार देखा गया। ये स एवं गैर-औषधीय विधियाँ प्राइमरी डिसमिनोरिया की समस्या के उपाय के रूप में सभी किशोरियों को अपनानी चाहिए।