

International Research Journal of Ayurveda & Yoga

An International Peer Reviewed Journal for Ayurveda & Yoga



Effect of Integrated Yoga Protocol on Dysmenorrhea among women aged 16-40 years- An open labeled comparative clinical study

Arun Gupta¹

ICV-70.44- ISRA-1.318

VOLUME 4 ISSUE 3 March 2021

1- Medical officer, Department of AYUSH, UT of J&K

Corresponding Author :- Arun Gupta, Medical officer, Department of AYUSH, UT of J&K

Article received on 1st March 2021

Article Accepted 29th March 2021

Article published 31st March 2021

ABSTRACT: -

Background: Yogic practices help decreasing the pain and disability caused by dysmenorrhea in menstruating women.

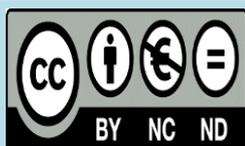
Aim and Objective: This study aimed to assess the effects of 8 weeks of *Asana* (postures) with Pranayama (control of Breath) and no yogic practices on menstrual pain and disability scores in menstruating women of 16-40 years of age.

Subjects and Methods: A total of 60 participants (mean age: 24.35 years) were divided into a yoga (Y) group and control (C) group. Participants attended a 45-min session every day for 8 weeks (2 menstrual cycles) before meals in a community hall. Pain scores, WaLIDD scores, level of functioning, severity of the associated symptoms assessed before and after the interventions in both the groups. Statistical Analysis: Changes in scores were analyzed with the Wilcoxon signed rank test for each group. Pre-post results were compared for all the measured values. $P < 0.05$ was considered statistically significant.

Results: Based on the % difference from the baseline scores, Intervention group (Y) showed significant improvements in pain scores on VAS scale (81.5%), WaLIDD score (71.45%), sites of pain (73.3%) and total duration of pain (66.69%) and overall improvement in the other systemic symptoms associated with dysmenorrhea.

Conclusions: The 8-week yoga intervention for menstruating women improves the functioning of women suffering from dysmenorrhea by decreasing the intensity, duration, sites and symptoms associated with dysmenorrhea.

Keywords: Yoga, Dysmenorrhea, Menstrual Disorders, Visual analogue pain scale, WaLLID score



This work is licensed under a creative attribution -Non-commercial-No derivatives 4.0 International License common

How to cite this article: - Arun Gupta, Effect of Integrated Yoga Protocol on Dysmenorrhea among women aged 16-40 years- An open labeled comparative clinical study, IRJAY, March: 2021, Vol-4, Issue-3; 9-16; DOI: <https://doi.org/10.47223/IRJAY.2021.4322>

INTRODUCTION

Menstrual disorders encompass a number of complaints associated with menstruation including delayed irregular painful and heavy menstrual bleeding which are the common reasons for the gynecological visits among women (Omidvar, 2018)¹. Dysmenorrhea, menorrhagia, and irregularity of the menstrual cycles are the common menstrual disorders found across all the age groups of women in their reproductive years. A recent study shows that dysmenorrhea reports highly variable prevalence ranging from 45 to 93% of women of reproductive age (Hong Ju, 2014)². Menstrual disorders including dysmenorrhea is a symptom complex with plethora of physical, psychological, emotional, behavioral symptoms mainly affecting young adult females in the world, hampering their domestic, academic, social and professional pursuits. Its prevalence is found to be as high as 90% (Agarwal, 2010)³. It can cause incapacitation in 3 to 33% of cases (Bernardi, 2017)⁴. Dysmenorrhea if left untreated may lead to many serious female reproductive tract morbidities like endometriosis, chocolate cyst, tubal blockage, depressive disorders which may affect the reproductive success and quality of life in women (Harada, 2013)⁵. The pharmacological modalities available for the management of Dysmenorrhea include non-steroidal anti-inflammatory drugs, oral contraceptive agents and progestins. These modalities are reportedly of limited use and providing long term relief in this cyclic pain. Additionally, these have a long list of side effects which may compound the underlying gynecological disorder and are detrimental for the general as well as reproductive health of the woman (Harel, 2012)⁶. There is a growing body of evidence that Yogic

interventions are effective in alleviating menstrual distress and disability and are found to be cost-effective, non-pharmacological and self care technique to manage the dysmenorrhea without any undesirable side effects of the drugs (Hyun Nam Ko, 2016)⁷. Yoga demonstrably reduces the daily pain score and enhance the quality of life among women suffering with endometriosis and dysmenorrhea (Goncalves, 2017)⁸. As highlighted in many studies, there is paucity of clinical trials which are based on standard Yoga practice protocols, therefore this study has been designed and executed to generate the evidence of a protocol based yogic intervention on the menstrual distress and quality of life associated with the dysmenorrhea especially on the pain characteristics and the disability caused by the dysmenorrhea

MATERIAL AND METHOD

Participants

A total of 60 females who were willing to participate in the study were enrolled. They were ethnically, socio-economically, marital status wise diverse who ranged in age from 17 to 30 years (M = 24.35, SD = 4.18).

Materials

A twelve- page, detailed patient information sheet which also contained a trilingual consent form. Patient information sheet was annexed with the visual images of the yoga protocol to be followed during the study from beginning to end for the ease and self-help of the participant. A specially designed research proforma divided into seven different sections viz. demographic profile, menstrual profile, pain characteristics, associated symptoms, working ability, need for medical help

and life style. Pictorial representations of the visual analogue pain scale and body image (Front and back view) were incorporated for the easy localization of intensity and site of pain. This proforma contains scoring tables with before, during and after the treatment scores on various parameters of the participants for the assessment of the effect of the therapy. The scoring pattern of pain, various associated symptom and disability were based on Visual analogue pain scale, CTCAE version 5 and WaLIDD score of menstrual distress, respectively.

Procedure

All the participants (n=60) were allocated into two groups, thirty in each group on the basis of their willingness to actively participate in the Yoga intervention program. Participants from intervention group were given a 1 week training for the specialized Yoga intervention program in a community hall in four batches and were asked to follow the same at their home for 45 minutes a day for at least 2 months i.e. two menstrual cycles. The baseline data of their menstrual pain scores, severity of dysmenorrhea associated symptoms and WaLIDD scores of both the groups i.e. intervention and control group was collected before and after the study. Both the groups were followed up 1 month after the completion of intervention. The study participants of both the intervention and control group were assessed on Day 2 of their menstrual cycle for the above variables. All the information and visual guide for the practice of this yoga protocol was provided to the participants of the study. A weekly telephonic follow-up was also taken from the participants regarding their difficulties.

RESULTS

A preliminary analysis of effectiveness of Yoga intervention in reducing the pain scores (VAS scores), sites of pain, duration of pain, working disability and symptoms associated with the dysmenorrhea are showed a significant decrease in the yoga intervention group when compared with the control group. VAS pain score before and after treatment showed a 81.25% decrease with (M VAS

BT= 8, SD= 1.174) to (M VAS AT= 1.5, SD= 0.93), $p < 0.001$. Number of sites of pain also showed a highly significant 73.32% decline in the yoga intervention group (M sites BT= 2.5, SD = 0.68) to (M sites AT= 0.66, SD = 0.71), $p < 0.01$. However there is a small increase (2.9%) in the sites of pain in the control group. The average difference of duration of pain in days, before and after the treatment is found to decrease from (M duration of pain BT= 2.3, SD = 0.66) to (M duration of pain AT= 0.76, SD = 0.50), $p < 0.001$ in the trial group i.e. 66.69% decline in the average duration of pain. However the control group showed a small increase in the average duration of pain i.e. 2.85%, $p > 0.05$. In the trial group, there is highly significant decline ($p < 0.001$) in the severity of symptoms associated with dysmenorrhea (Table 4). Mean severity score of nausea, vomiting, constipation, diarrhea, fatigue, loss of appetite and other physical mental symptoms decreased by 78.72%, 93.61%, 81.81%, 100%, 89.2%, 80% and 80.35% respectively (Table 5), after the Yoga intervention in the trial group. Average WaLIDD score (Index of working disability during dysmenorrhea) reduced in the trial group from (M WaLIDD score BT= 9.46, SD = 1.59) to (M WaLIDD score AT= 2.7, SD = 0.74), $p < 0.001$, showing an overall 71.47% decline in the working disability. In control group no appreciable change in the symptoms associated. The working disability showed marginal increase of 2.4% from (M WaLIDD score BT= 9.4, SD = 2.28) to (M WaLIDD score AT= 9.6, SD = 2.31), $p > 0.05$ in the control group. (Table 4)

DISCUSSION

The results of the current study revealed that the selected protocol for Integrated Yoga Therapy for dysmenorrhea is effective in reducing pain, severity of dysmenorrhea, number of sites of pain, functional ability and improving the severity score of symptoms associated with dysmenorrhea. The two groups i.e. trial and control group are found to be homogenous in their general baseline characteristics except, the Intermenstrual period which is longer in

the control group which points towards more prevalence of the menstrual disorder in the control group (Table 3). Review of available scientific literature demonstrably showed highly varied improvement in the pain and disability associated with disability associated with dysmenorrhea ranging from 10% to 88%. Results of pain improvement and decline in the disability in present study are highly consistent with a clinical trial on 113 subjects which reported 88.3% complete pain relief and 88% improvement in absenteeism i.e. working disability. However this study did not include the integrated yoga therapy approach and emphasized only on the *Asana* part of Yoga therapy without *pranayama* and meditation (Naag, 2013)⁹. Yoga intervention is also found to be highly effective in addressing the plethora of the symptoms presented as syndrome in an effective manner. An Iranian study on the pre-menstrual syndrome reported 57.84% improvement in emotional symptoms, 54.05% improvement in Physical symptoms, 76.02% improvement in behavioral symptoms, 61.2% in Quality of life parameters (Kamalifard, 2017)¹⁰. In the present study also physical and mental symptoms associated with dysmenorrhea showed a considerable decline in the severity after the yoga intervention as highlighted above. Emergence of these gastro-intestinal, emotional and autonomic dysfunction may be attributed to changes in the concentration and sensitivity of tissues towards reproductive steroids, neurotransmitters like GABA and serotonin and increased prostaglandin release in the uterine tissues which may also affect the GI (Bernstein, 2014)¹¹. Symptoms of GI disturbances and autonomic dysfunction are also found more pronounced in patients with dysmenorrhea who also exhibited elevated heart and diastolic blood pressure, tremulousness and fatigue. Yoga is reported to be associated with the increase in the levels of the thalamic GABA levels which are associated with improvement of mood and decreased anxiety (Streeter, 2010)¹². Another study on Yoga indicated that meditation and mantra are known to increase the serotonin levels in brain

which elevates mood and alter the pain perception (Kumar, 2015)¹³. With the given integrated Yoga protocol which consists of *Meditation*, *Pranayama*, *Asana* and *mantra* one can modulate the pain perception and optimize the hormonal environment which is more conducive to the normal menstruation. With the mood elevation, correction of gastro-intestinal function, nutrient supply and core strengthening exercise the deleterious effects of menstrual distress can be reduced thereby increasing the working ability as evident from the WaLIDD score in this study. The study was conducted on very small sample and due to the limitations randomization and blinding was not possible in the study. Such studies with other protocols on the larger sample sizes should be planned at multi-center level. Enthusiasm to learn and perform Yoga can be one confounding factor which may influence the result and pain assessment and is more of a subjective parameter which are some of the important limitations of the study. With the use of WaLIDD score, the study has been tried to be made more objective in terms of the outcomes.

CONCLUSION

The study entitled “Management of Dysmenorrhea among women aged 16-40 years with Yogic Interventions in Jamnagar City Gujarat State” can be concluded with the highly significant outcomes of the integrated yogic management of dysmenorrhea with the given protocol consisting of *Meditation*, *Asana* and *Pranayama* on reducing the menstrual distress and dysmenorrhea. Study participants who chose to participate in the study were benefitted by Yogic interventions in terms of the pain score, duration of pain and sites of pain during their menstrual cycle. It is observed from this study that Menstrual pain and disability can be modulated by a number of ways through yogic interventions like change in pain perception, systematic relaxation, hormonal balance, secretion of endorphins and endogenous pain relieving substances, balance between sympathetic and parasympathetic nervous tones. Keeping in view the high prevalence of this disorder among women

Integrated Yogic interventions must be promoted through various public health programs and should be introduced as a part of Life skill management for the females and can be included in the school

curriculum and Adolescent health friendly clinics in District Hospitals which may help us reducing the overall incidence of the menstrual disorders and other gynecological disorders.

Table 1: Grouping and Intervention

Groups	Sample Size	Intervention	Duration of Intervention	Follow up
Group A	30	Specially designed Yoga and Pranayama Protocol for 45 minutes every day before meals.	2 months/ 2 menstrual cycle	1month
Group B	30	No intervention	2 months	1month

Table 2: Yoga Protocol used for the study

S.no	Name of Yogic Activity	Rounds	Duration of Performance	Remarks
1.	<i>Om Chanting in Padmasana</i>	3	3 min	
2.	<i>Sukshma Vyayama and loosening exercises</i>	2	7 min	Clock wise and counter clock wise direction. Forward and Back ward
3.	<i>Surya Namaskara</i>	2	4 min	12 steps
Short Relaxation Pause with Deep Breathing				
4.	Pranayama Practice			
a.	<i>Nadi Shodhana Pranayama</i>	5	5 min	
5.	<i>Ardha Chakrasana</i>	1	2 min	
6.	<i>Malasana</i>	1	1min	
7.	<i>Ardhamatstyendrasana/ Bharadwaja Asana</i>	1	2 min	On both the sides Right and Left
8.	<i>Baddha Konasana</i>	1	2 min	
9.	<i>Supta Baddha Konasana</i>	1	2 min	
10.	<i>Paschimottana Asana</i>	1	2min	
11.	<i>Viparitamarni</i>	1	2 min	
Short Relaxation Pause with Deep Breathing				
	Pranayama Practice			
b.	<i>Kapala Bhati</i>	3	3min	30 strokes in each round
12.	<i>Bhujangasana</i>	1	2 min	
13.	<i>Pawanmuktasana</i>	1	2 min	
c.	Bhramari	3	3min	
14.	<i>Balasana</i>	1	1 min	
15.	<i>Yoga Nidra</i>	1	5 min	
16.	<i>Shanti Paatha</i>	1	3 min	

Table 3. Study population Characteristics- Before the beginning of trial

S.no	Variable	Study Population (N=60)	Trial Group (n=30)	Control Group (n=30)
1	Age (in years)	24.35 ± 4.18	23.76 ± 4.14	24.93 ± 4.21
2	Married	31	14	17
3	Unmarried	29	16	13
4	BMI	24.2 ± 3.6	23.5 ± 3.53	24.82 ± 3.7
5	Length of Menstrual Period in Days	3.7 ± 1.09	3.73 ± 1.04	3.68 ± 1.17
6	Length of Menstrual Cycle	33.6 ± 13.02	30.76 ± 3.99	36.38 ± 1.17
7	Periods Regularity	51	26	25
8	Mean Pain score (VAS)	7.7 ± 1.4	8 ± 1.17	7.43 ± 1.67
9	Mean duration of Pain	2.2 ± 0.8	2.3 ± 0.66	2.1 ± 1.02
10	Mean no. of sites of Pain	2.4 ± 0.76	2.5 ± 0.68	2.3 ± 0.83
11	Mean WaLLID score	9.4 ± 1.95	9.46 ± 1.59	9.4 ± 2.28

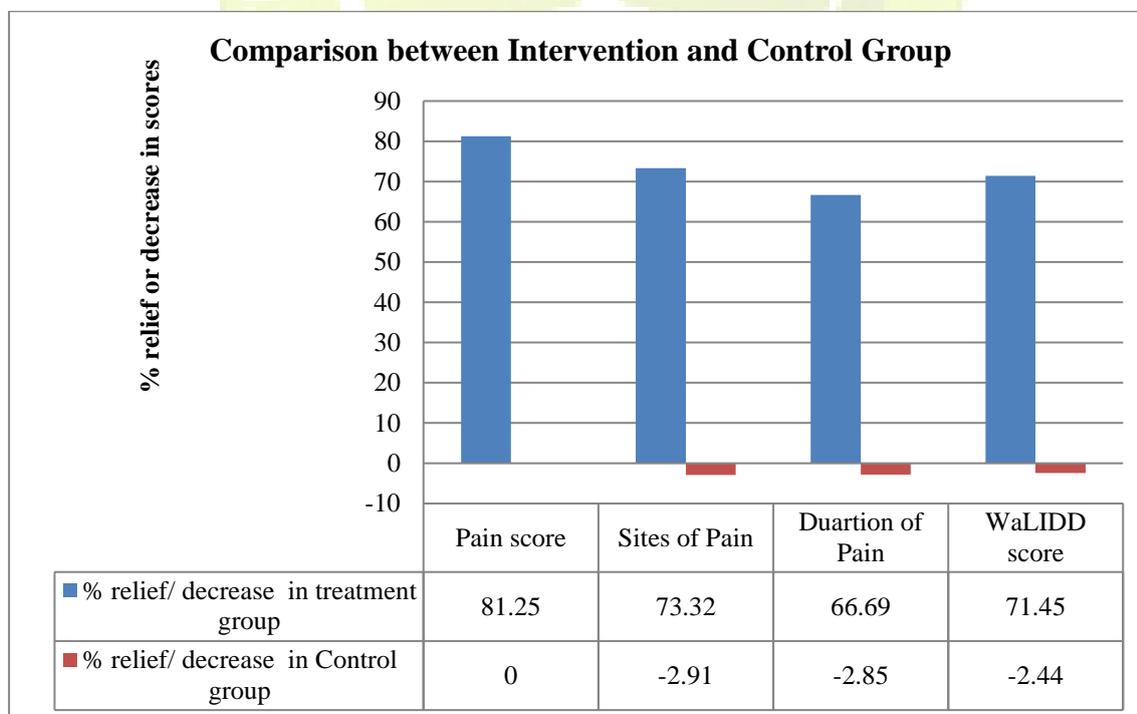
Table 4: Before and After the Yoga Protocol

Table 5: Associated Symptoms of Dysmenorrhea before and after the treatment.

Moderate to Severe Associated Symptoms	Intervention Group			Control Group		
	Mean severity score		% Decrease (BT-AT)/BT*100	Mean severity score		% Decrease (BT-AT)/MBT*100
	BT	AT		BT	AT	
Nausea	1.57	0.33	78.72	1.43	1.36	4.65
Vomiting	1.57	0.1	93.16	1.33	1.3	2.5
Constipation	1.56	0.2	81.81	1.86	1.36	26.7
Fatigue	2.16	0.23	89.23	2.2	1.76	19.69
Loss of Appetite	2.3	0.46	80	1.56	1.23	21.27
Other symptoms	1.8	0.3	80.35	1.56	1.56	0

Acknowledgement- None
Financial Assistant -None
Conflict of Interest-None

REFERENCES:

- Omidvar, S., Amiri, F. N., Bakhtiari, A., & Begum, K. (2018). A study on menstruation of Indian adolescent girls in an urban area of South India. *Journal of family medicine and primary care*, 7(4), 698–702. https://doi.org/10.4103/jfmpc.jfmpc_258_17
- Hong Ju, Mark Jones, Gita Mishra, The Prevalence and Risk Factors of Dysmenorrhea, *Epidemiologic Reviews*, Volume 36, Issue 1, 2014, Pages 104–113, <https://doi.org/10.1093/epirev/mxt009>.
- Agarwal, A. K., & Agarwal, A. (2010). A study of dysmenorrhea during menstruation in adolescent girls. *Indian journal of community medicine : official publication of Indian Association of Preventive & Social Medicine*, 35(1), 159–164. <https://doi.org/10.4103/0970-0218.62586>.
- Bernardi, M., Lazzeri, L., Perelli, F., Reis, F. M., & Petraglia, F. (2017). Dysmenorrhea and related disorders. *F1000Research*, 6, 1645. <https://doi.org/10.12688/f1000research.11682.1>
- Harada T. (2013). Dysmenorrhea and endometriosis in young women. *Yonago acta medica*, 56(4), 81–84.
- Harel Z. (2012). Dysmenorrhea in adolescents and young adults: an update on pharmacological treatments and management strategies. *Expert opinion on pharmacotherapy*, 13(15), 2157–2170. <https://doi.org/10.1517/14656566.2012.725045>.
- Ko, Hyun & Le, Sam & Kim, Sang Dol. (2016). Effects of Yoga on Dysmenorrhea: A Systematic Review of Randomized Controlled Trials. *Alternative & Integrative Medicine* 5(4), Available from: doi: 10.4172/2327-5162.1000226.
- Gonçalves, A. V., Barros, N. F., & Bahamondes, L. (2017). The Practice of Hatha Yoga for the Treatment of Pain Associated with Endometriosis. *Journal of alternative and complementary medicine (New York, N.Y.)*, 23(1), 45–52. <https://doi.org/10.1089/acm.2015.0343>
- Nag, Usha, Kodali Madhavi, (2013). Meditation And Yoga As Alternative Therapy For Primary Dysmenorrhea. *International Journal of*

- Medicine and Pharmaceutical Sciences (India), 3(7), 39-44. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.301.6179&rep=rep1&type=pdf>.
10. Kamalifard, Mahin & Yavari, Abbas & Asghari-Jafarabadi, Mohammad & Ghaffarilaleh, Ghafoureh & Kasb-Khah, Ahmad. (2017). The Effect of Yoga on Women's Premenstrual Syndrome: A Randomized Controlled Clinical Trial. *International Journal of Women's Health and Reproduction Sciences*. 5. 205-211. 10.15296/ijwhr.2017.37.
 11. Bernstein MT, Graff LA, Avery L, Palatnick C, Parnerowski K, Targownik LE. Gastrointestinal symptoms before and during menses in healthy women. *BMC Womens Health*. 2014;14:14. Published 2014 Jan 22. doi:10.1186/1472-6874-14-14.
 12. Streeter CC, Whitfield TH, Owen L, et al. Effects of yoga versus walking on mood, anxiety, and brain GABA levels: a randomized controlled MRS study. *J Altern Complement Med*. 2010;16(11):1145-1152. doi:10.1089/acm.2010.0007.
 13. Krishnakumar D, Hamblin MR, Lakshmanan S. Meditation and Yoga can Modulate Brain Mechanisms that affect Behavior and Anxiety-A Modern Scientific Perspective. *Anc Sci*. 2015;2(1):13-19. doi:10.14259/as.v2i1.171.

