



# Effect of Pranayamas on Lifestyle Pattern of Females with Symptoms of Premenstrual Disorders

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## Abstract

The present study aimed to examine the effect of yogic pranayamas in lifestyle pattern of twenty (N-20) females who were experiencing the symptoms of premenstrual disorders. The lifestyle pattern of females was assessed by applying the Rand SF-36 Health Survey Questionnaire. The females responded to Rand SF-36 Health Survey Questionnaire to assess the effect of pranayama on all the domains of health; physical functioning, role limitations related to physical problems, role limitations related to emotional problems, energy/fatigue, emotional well-being, social functioning, bodily pain and general health perception. Analysis of Variance (ANOVA) was used to compare the effects of pranayama intervention on lifestyle pattern of females among four cycles during three months. The results of present study revealed that Physical health and emotional problems were subsided, leading to better participation in different events of life with better emotional well-being. Pranayama also enhanced the energy level of females resulting to reduced bodily pains and changed perception about general health positively.

Keywords: Pranayama, Lifestyle Pattern, Premenstrual Disorders, Females

## Introduction

Womanhood is the phase in a female's life after she has gone through youth and puberty. Every month women's body goes through a radical change in preparation for possible pregnancy. As the hormones shift their delicate balance, these changes are experienced as physical and emotional feelings. For some, these monthly changes bring several days of discomfort and stress. It is known that three out of every four women may experience slight physical and mental disorders before menstruation (Erbil et al., 2010; Asci et al., 2015; Gencdogan, 2006). The relationship among psychological, health-related variables and premenstrual symptoms is very wide and also related to menstrual attitude, perceived stress, post-traumatic stress disorder and abuse history (Lustyk et al., 2006; Woods et al., 1985; Brooks-Gunn & Ruble, 1980; Lustyk et al., 2007; Wittchen et al., 2003). Menstrual cycle is a physiological occurrence which has been identified with numerous psychosocial components. Social, culture and family atmospheres impact ladies conviction and approaches towards menstruation (Firat et al., 2009).

Lifestyles are preferences made by people that influence health and to some extent self-convenient, means all behaviors connected intentionally or unintentionally with health (Song et al., 2013). Lifestyle pattern of a person is led by prone of disease. Lifestyle of women is significantly affected by menstruation directly or indirectly. At the same time, menstruation can also be influenced by diet, mental stress or physical work. (Negi et al., 2018) and changing in habits of eating food and physical activities directly influence the menstrual cycle (Fujiwara, 2018; Lakkawar et al., 2014) and on the other hand, symptoms related to menstruation also have an important impact on quality of life and women with menstrual symptoms also have lower level of general, physical, mental and social health and work-related performance during menstrual days (Schoep et al., 2019). Lifestyle is the preferences made for ourselves and these preferences influence someone's health directly and indirectly. Similarly, lifestyle has a major impact on women's menstrual health. In this study, addition of yogic intervention as an active lifestyle in females with premenstrual symptoms can be supportive to amend their lifestyle positively towards menstruation.

**Objective:** The purpose of the study was to observe the effect of pranayama on lifestyle pattern among females with symptoms of premenstrual disorders

## Methods

It was a pranayama interventional study with regard to lifestyle pattern of females with symptoms of premenstrual disorders. A diagnostic criterion for premenstrual syndrome by American College of Obstetricians and Gynaecologists (2000) was used for the selection of subjects having premenstrual disorders for the present study. The twenty (20) females of childbearing age with symptoms of premenstrual disorders were selected from Chandigarh for the present study and introduced with pranayama intervention. Pranayama interventions lasted for 3 months and included four menstrual cycles and the outcome measures were collected four times at similar time points from the first cycle to fourth cycle before the onset of menstruation. Pranayama were introduced to subjects to modify their lifestyle and to enhance their fitness level. Volume of intervention during first six weeks was 4 days/week for 30 minute and in last six weeks, 4 day/week for 45 minutes. Lifestyle pattern of females was measured by Rand SF-36 Health Survey Questionnaire. This questionnaire consisted of eight different domains; physical functioning, role limitations related to physical problems, role limitations related to emotional problems, energy/fatigue, emotional well-being, social functioning, bodily pain and general health perception. Analysis of Variance (ANOVA) was used to find out the significant effect of pranayama intervention within the four cycles in three months. Further, scheffe post hoc test was applied to find out the direction and degrees of differences where 'F' ratio found significant. The level of significance was set at 0.05.

## Results

**Table-1**

**Descriptive analysis of four cycles of pranayama group with regard to physical functioning before the onset of menstruation**

Group		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Pranayama	Cycle I	20	48.5000	8.28759	1.85316	30.00	60.00
	Cycle II	20	52.0000	8.33509	1.86378	40.00	65.00
	Cycle III	20	53.2500	6.74244	1.50766	40.00	65.00
	Cycle IV	20	53.7500	9.01388	2.01556	40.00	70.00

**Table-2**

**Comparative analysis of four cycles of pranayama group with regard to physical functioning before the onset of menstruation**

Group		Sum of Squares	df	Mean Square	F	Sig.
Pranayama	Between Groups	336.250	3	112.083	1.693	.176
	Within Groups	5032.500	76	66.217		
	Total	5368.750	79			

Table-2 clearly indicates no significant differences within the four cycles of pranayama group with regard to physical functioning of females before the onset of menstruation. Since the obtained F ratio 1.693 was found significant at 0.05 level of significance, therefore, there is no need to apply post-hoc test.

**Table-3**

**Descriptive analysis of four cycles of pranayama group with regard to role limitations related to physical problems before the onset of menstruation**

Group		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Pranayama	Cycle I	20	27.5000	17.95462	4.01478	.00	50.00
	Cycle II	20	31.2500	13.75299	3.07526	.00	50.00
	Cycle III	20	37.5000	12.82473	2.86770	25.00	50.00
	Cycle IV	20	41.2500	14.67857	3.28223	25.00	75.00

**Table-4**

**Comparative analysis of four cycles of pranayama group with regard to role limitations related to physical problems before the onset of menstruation**

Group		Sum of Squares	Df	Mean Square	F	Sig.
Pranayama	Between Groups	2281.250	3	760.417	3.412*	.022
	Within Groups	16937.500	76	222.862		
	Total	19218.750	79			

\*significant at 0.05 level

Table-4 clearly indicates significant differences within the four cycles of pranayama group with regard to role limitations related to physical problems of females before the onset of menstruation. Since the obtained F ratio 3.412 was found significant at 0.05 level of significance, therefore, scheffe post-hoc test was applied to see the direction and degree of differences within the four cycles of pranayama group with regard to role limitations related to physical problems of females before the onset of menstruation.

Table-5

**Significance of difference between paired means of four cycles of pranayama group with regard to role limitations related to physical problems before the onset of menstruation**

Group	(I) Cycle	(J) Cycle	Mean Difference (I-J)	Std. Error	Sig.
Pranayama	Cycle I	Cycle II	-3.75000	4.72082	.889
		Cycle III	-10.00000	4.72082	.223
		Cycle IV	-13.75000*	4.72082	.044
	Cycle II	Cycle III	-6.25000	4.72082	.627
		Cycle IV	-10.00000	4.72082	.223
	Cycle III	Cycle IV	-3.75000	4.72082	.889

Table-5 shows significant difference between cycle I & IV of pranayama group with regard to role limitations related to physical problems of females before the onset of menstruation as obtained mean difference was found 13.75000 with P value 0.044 ( $P < 0.05$ ). However, no significant difference was found between cycle I & II, cycle I & III, cycle II & III, cycle II & IV and cycle III & IV. While comparing the mean values of these cycles a minor improvement has been observed within the cycle I & II, cycle I & III, cycle II & III, cycle II & IV and cycle III & IV of pranayama group with regard to role limitations related to physical problems of females before the onset of menstruation.

Table-6

**Descriptive analysis of four cycles of pranayama group with regard to emotional problems before the onset of menstruation**

Group	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum	
Pranayama	Cycle I	20	43.3290	21.89603	4.89610	.00	66.66
	Cycle II	20	51.6615	17.01222	3.80405	33.33	66.66
	Cycle III	20	59.9945	17.43774	3.89920	33.33	100.00
	Cycle IV	20	69.9950	18.41846	4.11849	33.33	100.00

Table-7

**Comparative analysis of four cycles of pranayama group with regard to emotional problems before the onset of menstruation**

Group	Sum of Squares	df	Mean Square	F	Sig.	
Pranayama	Between Groups	7819.056	3	2606.352	7.383*	.000
	Within Groups	26831.167	76	353.042		
	Total	34650.223	79			

\*significant at 0.05 level

Table-7 clearly indicates significant differences within the four cycles of pranayama group with regard to emotional problems of females before the onset of menstruation. Since the obtained F ratio 7.383 was found significant at 0.05 level of significance, therefore, scheffe post-hoc test was applied to see the direction and degree of differences within the four cycles of pranayama group with regard to emotional problems of females before the onset of menstruation.

Table-8

**Significance of difference between paired means of four cycles of pranayama group with regard to emotional problems before the onset of menstruation**

Group	(I) Cycle	(J) Cycle	Mean Difference (I-J)	Std. Error	Sig.
Pranayama	Cycle I	Cycle II	-8.33250	5.94173	.582
		Cycle III	-16.66550	5.94173	.057
		Cycle IV	-26.66600*	5.94173	.000
	Cycle II	Cycle III	-8.33300	5.94173	.582
		Cycle IV	-18.33350*	5.94173	.029
	Cycle III	Cycle IV	-10.00050	5.94173	.424

Table-8 shows significant difference between cycle I & IV cycle and cycle II & IV of pranayama group with regard to emotional problems of females before the onset of menstruation as obtained mean difference was found 26.66600 and 18.33350 with P value 0.000 and 0.029 ( $P < 0.05$ ) respectively. However, no significant difference was found between cycle I & II, cycle I & III, cycle II & III, and cycle III & IV. While comparing the mean values of these cycles a minor improvement has been observed within the cycle I & II, cycle I & III, cycle II & III and cycle III & IV of pranayama group with regard to emotional problems of females before the onset of menstruation.

Table-9

Descriptive analysis of four cycles of pranayama group with regard to energy/fatigue before the onset of menstruation

Group		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Pranayama	Cycle I	20	41.7500	10.67153	2.38623	20.00	60.00
	Cycle II	20	45.2500	10.44724	2.33607	25.00	65.00
	Cycle III	20	47.7500	8.18776	1.83084	35.00	65.00
	Cycle IV	20	52.5000	9.38924	2.09950	35.00	75.00

Table-10

Comparative analysis of four cycles of pranayama group with regard to energy/fatigue before the onset of menstruation

Group		Sum of Squares	df	Mean Square	F	Sig.
Pranayama	Between Groups	1225.938	3	408.646	4.322*	.007
	Within Groups	7186.250	76	94.556		
	Total	8412.188	79			

\*significant at 0.05 level

Table-10 clearly indicates significant differences within the four cycles of pranayama group with regard to energy/fatigue of females before the onset of menstruation. Since the obtained F ratio 4.322 was found significant at 0.05 level of significance, therefore, scheffe post-hoc test was applied to see the direction and degree of differences within the four cycles of pranayama group with regard to energy/fatigue of females before the onset of menstruation.

Table-11

SIGNIFICANCE OF DIFFERENCE BETWEEN PAIRED MEANS OF FOUR CYCLES OF PRANAYAMA GROUP WITH REGARD TO ENERGY/FATIGUE BEFORE THE ONSET OF MENSTRUATION

Group	(I) Cycle	(J) Cycle	Mean Difference (I-J)	Std. Error	Sig.
Pranayama	Cycle I	Cycle II	-3.50000	3.07499	.731
		Cycle III	-6.00000	3.07499	.291
		Cycle IV	-10.75000*	3.07499	.010
	Cycle II	Cycle III	-2.50000	3.07499	.882
		Cycle IV	-7.25000	3.07499	.145
	Cycle III	Cycle IV	-4.75000	3.07499	.500

Table-11 shows significant difference between cycle I & IV of pranayama group with regard to energy/fatigue of females before the onset of menstruation as obtained mean difference was found 10.75000 with P value 0.010 ( $P < 0.05$ ). However, no significant difference was found between cycle I & II, cycle I & III, cycle II & III, cycle II & IV and cycle III & IV. While comparing the mean values of these cycles a minor improvement has been observed within the cycle I & II, cycle I & III, cycle II & III, cycle II & IV and cycle III & IV of pranayama group with regard energy/fatigue of females before the onset of menstruation.

Table-12

Descriptive analysis of four cycles of pranayama group with regard to emotional well being before the onset of menstruation

Group		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Pranayama	Cycle I	20	55.6000	4.47684	1.00105	48.00	64.00
	Cycle II	20	62.4000	4.38178	.97980	56.00	72.00
	Cycle III	20	64.8000	4.02100	.89912	60.00	72.00
	Cycle IV	20	71.4000	5.39395	1.20612	64.00	84.00



Table-13

Comparative analysis of four cycles of pranayama group with regard to emotional well being before the onset of menstruation

Group		Sum of Squares	df	Mean Square	F	Sig.
Pranayama	Between Groups	2554.200	3	851.400	40.300*	.000
	Within Groups	1605.600	76	21.126		
	Total	4159.800	79			

\*significant at 0.05 level

Table-13 clearly indicates significant differences within the four cycles of pranayama group with regard to emotional well being of females before the onset of menstruation. Since the obtained F ratio 40.300 was found significant at 0.05 level of significance, therefore, scheffe post-hoc test was applied to see the direction and degree of differences within the four cycles of pranayama group with regard to energy/fatigue of females before the onset of menstruation.

Table-14

Significance of difference between paired means of four cycles of pranayama group with regard to emotional well being before the onset of menstruation

Group	(I) Cycle	(J) Cycle	Mean Difference (I-J)	Std. Error	Sig.
Pranayama	Cycle I	Cycle II	-6.80000*	1.45349	.000
		Cycle III	-9.20000*	1.45349	.000
		Cycle IV	-15.80000*	1.45349	.000
	Cycle II	Cycle III	-2.40000	1.45349	.441
		Cycle IV	-9.00000*	1.45349	.000
	Cycle III	Cycle IV	-6.60000*	1.45349	.000

Table-14 shows significant difference between cycle I & II, cycle I & III, cycle I & IV, II & IV and cycle III & IV of pranayama group with regard to emotional well being of females before the onset of menstruation as obtained mean difference was found 6.80000, 9.20000, 15.80000, .00000 and 6.60000 with P value 0.000, 0.000, 0.000, 0.000 and 0.000 ( $P < 0.05$ ) respectively. However, no significant difference was found between, cycle II & III. While comparing the mean values of these cycles a minor improvement has been observed within the cycle II & III of pranayama group with regard emotional well being of females before the onset of menstruation.

Table-15

Descriptive analysis of four cycles of pranayama group with regard to social functioning before the onset of menstruation

Group		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Pranayama	Cycle I	20	31.2500	13.75299	3.07526	.00	62.50
	Cycle II	20	34.3750	13.37405	2.99053	12.50	62.50
	Cycle III	20	38.1250	11.08802	2.47936	25.00	62.50
	Cycle IV	20	40.6250	10.63370	2.37777	25.00	62.50

Table-16

Comparative analysis of four cycles of pranayama group with regard to social functioning before the onset of menstruation

Group		Sum of Squares	df	Mean Square	F	Sig.
Pranayama	Between Groups	1021.484	3	340.495	2.255	.089
	Within Groups	11476.563	76	151.007		
	Total	12498.047	79			

Table-16 clearly indicates insignificant differences within the four cycles of pranayama group with regard to social functioning of females before the onset of menstruation. Since the obtained F ratio 2.255 was found insignificant at 0.05 level of significance. Therefore, post-hoc test has not been applied.

Table-17

Descriptive analysis of four cycles of pranayama group with regard to bodily pain before the onset of menstruation

Group		N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
Pranayama	Cycle I	20	51.7500	6.83932	1.52932	32.50	65.00
	Cycle II	20	55.7500	5.79814	1.29650	45.00	67.50
	Cycle III	20	56.5000	4.96037	1.10917	47.50	67.50
	Cycle IV	20	59.2500	5.07185	1.13410	52.50	67.50

Table-18

Comparative analysis of four cycles of pranayama group with regard to bodily pain before the onset of menstruation

Group		Sum of Squares	df	Mean Square	F	Sig.
Pranayama	Between Groups	575.938	3	191.979	5.874*	.001
	Within Groups	2483.750	76	32.681		
	Total	3059.688	79			

\*significant at 0.05 level

Table-18 clearly indicates significant differences within the four cycles of pranayama group with regard to bodily pain of females before the onset of menstruation. Since the obtained F ratio 5.874 was found significant at 0.05 level of significance, therefore, scheffe post-hoc test was applied to see the direction and degree of differences within the four cycles of pranayama group with regard to bodily pain of females before the onset of menstruation.

Table-19

Significance of difference between paired means of four cycles of pranayama group with regard to bodily pain before the onset of menstruation

Group	(I) Cycle	(J) Cycle	Mean Difference (I-J)	Std. Error	Sig.
Pranayama	Cycle I	Cycle II	-4.00000	1.80779	.189
		Cycle III	-4.75000	1.80779	.084
		Cycle IV	-7.50000*	1.80779	.001
	Cycle II	Cycle III	-.75000	1.80779	.982
		Cycle IV	-3.50000	1.80779	.298
	Cycle III	Cycle IV	-2.75000	1.80779	.514

Table-19 shows significant difference between cycle I & IV of pranayama group with regard to bodily pain of females before the onset of menstruation as obtained mean difference was found 26.66600 with P value 0.000 ( $P < 0.05$ ). However, no significant difference was found between cycle I & II, cycle I & III, cycle II & III, cycle II & IV and cycle III & IV. While comparing the mean values of these cycles a minor improvement has been observed within the cycle I & II, cycle I & III, cycle II & III, cycle II & IV and cycle III & IV of pranayama group with regard to bodily pain of females before the onset of menstruation.

Table-20

Descriptive analysis of four cycles of pranayama group with regard to general health perception before the onset of menstruation

Group	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum	
Pranayama	Cycle I	20	49.5000	3.59092	.80296	45.00	55.00
	Cycle II	20	53.2500	4.37547	.97838	45.00	60.00
	Cycle III	20	56.5000	4.61690	1.03237	50.00	65.00
	Cycle IV	20	59.2500	4.06364	.90866	55.00	65.00

Table-21

Comparative analysis of four cycles of pranayama group with regard to general health perception before the onset of menstruation

Group		Sum of Squares	df	Mean Square	F	Sig.
Pranayama	Between Groups	1061.250	3	353.750	20.252*	.000
	Within Groups	1327.500	76	17.467		
	Total	2388.750	79			

\*significant at 0.05 level

Table-21 clearly indicates significant differences within the four cycles of pranayama group with regard to general health perception of females before the onset of menstruation. Since the obtained F ratio 20.252 was found significant at 0.05 level of significance, therefore, scheffe post-hoc test was applied to see the direction and degree of differences within the four cycles of pranayama group with regard to general health perception of females before the onset of menstruation.

Table-22

Significance of difference between paired means of four cycles of pranayama group with regard to general health perception before the onset of menstruation

Group	(I) Cycle	(J) Cycle	Mean Difference (I-J)	Std. Error	Sig.
Pranayama	Cycle I	Cycle II	-3.75000	1.32163	.053
		Cycle III	-7.00000*	1.32163	.000
		Cycle IV	-9.75000*	1.32163	.000
	Cycle II	Cycle III	-3.25000	1.32163	.119
		Cycle IV	-6.00000*	1.32163	.000
	Cycle III	Cycle IV	-2.75000	1.32163	.237

Table-22 shows significant difference between cycle I & III, cycle I & IV and cycle II & IV of pranayama group with regard to general health perception of females before the onset of menstruation as obtained mean difference was found 7.00000, 9.75000 and 6.00000 with P value 0.000, 0.000 and 0.000 ( $P < 0.05$ ) respectively. However, no significant difference was found between cycle I & II, cycle II & III, and cycle III & IV. While comparing the mean values of these cycles a minor improvement has been observed within cycle I & II, cycle II & III, and cycle III & IV of pranayama group with regard to general health perception of females before the onset of menstruation.

## Discussion

The current study highlighted that pranayama practice enhanced the quality of life of females with symptoms of premenstrual disorders. The results of this study show significant improvements in all domains of Rand SF-36 Health Survey Questionnaire except physical functioning and social functioning in the last cycle of pranayama intervention before the onset of menstruation. Higher improvement can be seen in Emotional well-being, Role limitations due to emotional problems and Role limitations due to physical health whereas marginal improvement was found in Physical functioning and social functioning of females at the end of pranayama intervention. Ankad et al. (2011) revealed that concentrative act of breathing in pranayama removed attention of worries and released the stress of subjects and stress-free state of mind induced relaxed responses in which parasympathetic nerve overrules sympathetic activity. Saoji (2019) found that Pranayama effect the autonomic and pulmonary functions, neurocognitive abilities as well as the metabolic activities and biochemical in the body. Bazzano (2018) reported that yoga/mindfulness activities improved emotional and psychological quality of life by reducing symptoms of anxiety, facilitate stress management and enhance social and emotional learning activities. Kumar (2014) observed that slow breathing pranayama improved anxiety, cognition and general well being and improved parasympathetic activity. Finally, on the basis of findings of present study, it is safely surmised that quality of life can be improved with pranayama practices in females with symptoms of premenstrual disorders.

## Conclusion

It is concluded that significant improvement in lifestyle pattern of females has been noticed after undergoing three months pranayama training. Physical health and emotional problems were alleviated leading to better participation in different events of life with better emotional well-being. Pranayama also enhanced the energy level of females resulting in reduced bodily pains and thus changing their perceptions about general health positively.

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