

Effectuality of Aerobic Exercise in Alleviating Signs and Symptoms of PCOS Among Female Nursing Students at Selected Nursing College of Hubballi, Karnataka

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ABSTRACT

Introduction: Polycystic ovarian syndrome (PCOS) is a common multifaceted disorder found among females of the reproductive age. The disease is on its rise because of lifestyle and environmental changes occurring with modernization. Prevalence of PCOS is highly variable ranging from 2.2% to 26% globally. In India the prevalence was reported 9.13% and 22.5% by Rotterdam's criteria and androgen excess society criteria respectively. Aerobic Exercise increases energy expenditure and physical activity in PCOS have shown to have a good impact on improving the anthropometric measurements such as body mass index, waist circumference, and metabolic parameters such as total cholesterol, IR, and lipid profile thus reducing metabolic syndrome and other risk factors associated with PCOS such as type 2 diabetes mellitus, cardiovascular and infertility.

Statement of Problem: "Effectuality of aerobic exercise in alleviating signs and symptoms of PCOS among female nursing students at selected nursing college of Hubballi."

Objectives: To assess the signs and symptoms of nursing students with PCOS in both the experimental and control group. To evaluate the effectiveness of aerobic exercise in alleviating signs and symptoms PCOS among nursing students with PCOS in experimental group. To compare the post-test scores regarding signs and symptoms of PCOS of nursing students in

experimental and control group. To find out an association between pre-test scores of experimental group with their selected socio-demographical variables. To find out an association between pre-test scores of control group with their selected socio-demographical variables.

Methodology: A study was conducted to evaluate the effectiveness aerobic exercise in alleviating signs and symptoms of PCOS among nursing students of selected Nursing College, Hubballi. The research design used for the study was Quasi-experimental; Pre-Test, Post- Test Control Group Design. The setting of the study was KLES's Institute of Nursing Sciences, Vidyanagar, Hubballi and SVP MVP Institute of Nursing Sciences, Hubballi.

Results: Revealed that in experimental group, majority of subjects 9(60%) had moderate PCOS symptoms, 6(40%) had severe menstrual symptoms in pre-test, where as in post test 9(60%) had mild PCOS symptoms and 6(40%) had moderate PCOS symptoms. In control group, majority of the subjects 10(66%) severe PCOS symptoms and 5(34%) had moderate PCOS symptoms in pre test, where as in post-test all of the subjects 15(100%) had moderate PCOS symptoms. In Experimental Group

The calculated value of paired 't' value ($t_{cal}=13.62$)* was greater than the tabulated value ($t_{tab}=2.14$). Hence H_1 was accepted. In Control Group. The calculated value of paired 't'

value ($t_{cal} = 9.81$)* was greater than the tabulated value ($t_{tab} = 2.14$). Hence H_2 was accepted. The calculated unpaired 't' value for experimental and control group t_{cal} value (8.00)* was greater than the t_{tab} value (2.043). This indicates that the mean reduction in PCOS symptom scores of nursing students in the experimental group who have practiced aerobic exercises was higher than those in the control group Hence H_3 was accepted.

There was no statistical association between pre test PCOS symptom scores of the subjects in experimental group and their selected demographic variables Hence H_4 was rejected. There was no statistical association between pre-test PCOS symptomscores of the subjects in control group and their selected demographic variables. Hence H_5 was not accepted.

Conclusion: Therefore, the study concluded that, the overall pre-test PCOS score was moderate to severe. The post-test scores of nursing students who performed aerobic exercise showed significant reduction in signs & symptoms of PCOS. There was no significant association between the pre test hemoglobin level of subjects and their selected demographic variable.

Key Words: PCOS, Aerobic exercise, nursing students, experimental group, control group.

INTRODUCTION

“Education is given for the sake of individual with a view to save from destruction”

- Thompson

Girls are more likely to be a victim due to various reasons. In a family with limited resources, the female child is more likely to be neglected. She is deprived of good food, physical, education and is utilized as an extra working hand to carry out the household chores, college activities and so on. Along with this the added problems may be burden of menstrual blood loss, precipitates the crises too often, which leads to PCOS

The prevalence of PCOD in the general population has been estimated to 5-10% of women of reproductive age. In India 2, 66, 26,765 populations are affected by PCOD. Even in developed country like USA,

PCOD is most common and most prevailing endocrine disease, affecting 7 to 10 out of 100 (7-10%) of women of child bearing age (15-45yrs). Unfortunately, this disorder often goes undiagnosed because of its many baffling and seemingly unrelated symptoms. The highest reported prevalence of PCOD is 52% among South Asian Women according to WHO.

Efficient management of PCOD provides a prospective window of opportunity to avoid the risk of associated complications. Treatment is broadly aimed at tackling effects of hyperandrogenism, irregular menstruation, and infertility. However, given the complex nature of PCOD, tailoring treatment options to the needs of individual patients can be a difficult clinical exercise.¹⁴ When PCOD is associated with obesity, weight loss is the most effective method of restoring ovulation and menstruation. Vitamin D deficiency may play a role in the development of PCOD, so that has to be treated as well. Some common pointers include: avoid radical dieting (diet should be for wellness, not starvation), more green leafy vegetables and lentils in meals and avoiding junk food, controlling blood sugar levels, exercise facilitates weight loss and acts as a mood elevator and regulates blood glucose levels.¹²

Aerobic Exercise increases energy expenditure and physical activity in PCOS have shown to have a good impact on improving the anthropometric measurements such as body mass index, waist circumference, and metabolic parameters such as total cholesterol, IR, and lipid profile thus reducing metabolic syndrome and other risk factors associated with PCOS such as type 2 diabetes mellitus, cardiovascular and infertility. Hence, this can be included in Routine medical management as Alternative and additional strategy in the treatment of PCOS. Hence the above mentioned factors motivated the investigator to undertake the study. Thus the investigator has decided to test undertake the aerobic exercises among nursing

students who are already suffering with PCOS signs & symptoms

STATEMENT OF THE PROBLEM

“Effectuality of aerobic exercise in alleviating signs and symptoms of PCOS among female nursing students at selected nursing college of Hubballi.”

OBJECTIVES OF THE STUDY

1. To assess the signs and symptoms of nursing students with PCOS in both the experimental and control group.
2. To evaluate the effectiveness of aerobic exercise in alleviating signs and symptoms PCOS among nursing students with PCOS in experimental group.
3. To compare the post-test scores regarding signs and symptoms of PCOS of nursing students in experimental and control group.
4. To find out an association between pre-test scores of experimental group with their selected socio-demographical variables.
5. To find out an association between pre-test scores of control group with their selected socio-demographical variables.

HYPOTHESES

H₁: There will be a statistical difference in post-test and pre-test score regarding

alleviating signs and symptoms of PCOS among nursing students in experimental group at 0.05 level of significance.

H₂: There will be a statistical difference in post-test and pre-test score regarding alleviating signs and symptoms of PCOS among nursing students in control group at 0.05 level of significance.

H₃: There will be a statistical difference in post-test score regarding alleviating signs and symptoms of PCOS among nursing students in experimental and control group at 0.05 level of significance.

H₄: There will be a statistical association between pre-test scores regarding alleviating signs and symptoms of PCOS among nursing students of experimental group with their selected demographic variables at 0.05 level of significance.

H₅: There will be a statistical association between pre-test scores regarding alleviating signs and symptoms of PCOS among nursing students of control group with their selected demographic variables at 0.05 level of significance.

REVIEW OF LITERATURE

Section I: Review of literatures related to signs & symptoms of PCOS

Section II: Review of literature related to an effectiveness of Aerobic Exercise on PCOS.

RESEARCH METHODOLOGY/MATERIALS & METHODS

Research approach : Evaluative Research Approach.

Research design: Quasi-experimental; Pre-Test, Post- Test Control Group Design

Table No 1: Symbolic representation of Quasi-experimental; Pre-Test, Post- Test Control Group Design.

GROUP	PRE-TEST	INTERVENTION	POST-TEST
Experimental Group	O ₁	X	O ₂
Control Group	O ₁	--	O ₂

Key:

O₁: Pre- assessment of Signs & Symptoms of PCOS

X: Administration of Intervention (Aerobic Exercises).

O₂: Post- assessment of Signs & Symptoms of PCOS

Research setting: KLES's Institute of Nursing Sciences, Vidyanagar, Hubballi and SVP MVP Institute of Nursing Sciences, Hosur Hubballi.

Target Population : Nursing students.

Sample: KLES's Institute of Nursing Sciences, Vidyanagar, Hubballi and SVP MVP Institute of Nursing Sciences, Hosur Hubballi

Sampling technique: Non- probability; Purposive sampling technique

Sample size: 40 Female nursing students with PCOS (20 in Experimental group & 20 in control group).

Criteria for selection of the sample:

The criteria for selection of samples in this study involves: -

Inclusive Criteria's: Nursing students who were;

with signs & symptoms of PCOS

Present at the time of data collection

Willing to participate in the study

Exclusion Criteria: Nursing students who were:

Sick at the time of data collection.

Have difficulty to perform aerobic exercise.

Development of the tool:

Based on the objectives of the study, a structured interview schedule regarding socio-demographical variable and hemoglobin estimation scale prepared by the researcher for the present study. The tool was formulated on the basis of the experience of the investigator, review of literature, extensive library search and consultation with Guide and the other experts.

Description of the data collection tool:

Based on the objectives of the study, tool consists of socio-demographical variable and Modified WHO Quality Of Life Questionnaire (WHO-QOL) Prepared by the researcher for the present study.

DESCRIPTION OF THE TOOL

The tool selected for the study was structured questionnaire which comprised of two sections. They were:

Section I: Socio demographic variables of the samples contains 7 items

Section-II: Modified WHO Quality of Life Questionnaire (WHO-QOL)

Section I: Socio demographic variables of the samples contains 7 items

This part consists of 09 items for obtaining information about Socio demographic variables such as age in year, religion, course of study, Habitat, dietary pattern, age at menarche, length of menstrual cycle, previous history of menstrual problems, and family history of PCOS.

Section-II: Modified WHO Quality of Life Questionnaire (WHO-QOL)

This part consists of 35 items based on signs & symptoms of various systems of our body.

Table No 2: Score Interpretation of WHO-QOL

Modified WHO Quality of Life Questionnaire (WHO-QOL)	
Categories	Scoring
No symptoms	0
Mild PCOS	1-40
Moderate PCOS	41-80
Severe PCOS	81-120

Procedure of data collection

The research investigator had taken formal permission from the Principals of KLES Institute of Nursing Sciences and SVP MVP Institute of Nursing Science, Hubballi.

The method used for data collection was as follows:

The research investigator introduced herself and explained the purpose of study to both the groups.

The written consent was obtained from the nursing students of both the groups.

The data was collected by administration of structured questionnaire that consists of demographic variables and Modified WHO Quality of Life (WHO-QOL) to both the groups.

Administration of intervention (Aerobic Exercises) to experimental group.

The post test was carried out 20 days later using the same tool for both the groups (Experimental & Control)

Data collected was then tabulated and analyzed

Table No 3: Time table for data collection

Subjects	Sample	Pre-Test	Intervention	Post-Test
Experimental Group	20 Subjects	21/02/2022	21/02/2022 to 21/03/2022	21/03/2022
Control Group	20 Subjects	22/02/2022	--	22/03/2022

RESULTS

Section I: Distribution of sample characteristics according to socio demographic Variables.

Section II: Analysis and interpretation of hemoglobin level of subject's who have

Section III: Testing Hypotheses

SECTION-I

Findings Related To Socio-Demographic Variables Of Subjects

Table 4: Frequency and percentage distribution of subjects in both Experimental Group and Control Group according to socio-demographic variables. n1+n2=40

Sl.No	Demographic variables	Experimental Group		Control Group	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1.	Age (in yrs)				
	18-19 yrs	3	15	2	10
	19-20yrs	5	25	4	20
	20-21 yrs	4	20	6	30
	21-22yrs	8	40	10	50
2.	Religion				
	Hindu	12	60	13	65
	Muslim	04	20	03	15
	Christian	04	20	04	20
	Others	00	00	00	00
3.	Course				
	GNM	04	20	05	25
	B. Sc(N)	10	50	11	55
	P. B. B. Sc(N)	03	15	02	10
	M.Sc (N)	03	15	02	10
4.	Habitat				
	a) Rural	05	25	06	30
	b) Urban	15	75	14	70
5.	Dietary pattern				
	a) Vegetarian	12	60	10	50
	b) Mixed	08	40	10	50
6.	Age at menarche				
	a) 11-14yrs	13	65	12	60
	b) 14-16yrs	07	35	08	40
7.	Length of menstrual cycle				
	a) 1-2 days	02	10	02	10
	b) 3-4 days	10	50	12	60
	c) 5-6 days	04	20	04	20
	More than 6 days	04	20	02	10
8.	Previous history of menstrual problems				
	a) Irregular menstrual cycle	10	50	11	55
	b) Scanty discharge	02	10	3	15
	c) Painful menstruation	05	25	4	20
	d) Heavy menstrual bleeding	03	15	02	10
	e) Others	00	00	00	00
9.	Family history of PCOS				
	a) Yes	04	20	05	25
	b) No	16	80	15	75

SECTION-II

Analysis and interpretation of PCOS symptom scores of subjects in both the experimental group and control group.

Table No 5: Mean, Median, Mode, Standard Deviation and Range of PCOS symptom scores of subjects in both the experimental group control group. n1+n2=40

Area of analysis	Standard				Range (H-L)
	Mean	Median	Mode	Deviation	
Exp.Group Pre-test	82.7	78	78	14.76	58
Control Group	85.4	88	89	11.12	42
Exp.Group Post-test	44.73	40	40	10.42	32
Control Group	55.8	53	60	9.58	34
Exp.Group Difference	37.97	38	38	4.34	26
Control Group	29.6	35	29	1.54	08

Table No 5 reveals that, In Experimental Group

The mean pretest PCOS symptom score was 82.7, median was 78, mode was 78, standard deviation was 14.76 and range was 58, where as in post-test the mean PCOS symptom score was 44.73, median was 40, mode was 40, standard deviation was 10.42 and range was 32. The overall difference in mean PCOS symptom score was 37.97, median was 38, mode was 38, standard deviation was 4.34 and range was 26.

In Control Group

The mean pretest PCOS symptom score was 85.4, median was 88, mode was 89, standard deviation was 11.12 and range was 42, where as in post-test the mean menstrual symptom score was 55.8, median was 53, mode was 60, standard deviation was 9.58 and range was 34. The overall difference in mean PCOS symptom score was 29.6, median was 35, mode was 29, standard deviation was 1.54 and range was 8.

Table No 6: Frequency and percentage distribution of PCOS scores in experimental group. n1=20

PCOS symptom score	Pre test		Post-test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Severe (81-120)	06	40	00	0
Moderate (41 -80)	09	60	06	40
Mild (0-40)	00	0	09	60

Table 6 reveals that

Majority of subjects 9(60%) had moderate PCOS symptoms, 6(40%) had severe

menstrual symptoms in pre-test, where as in post test 9(60%) had mild PCOS symptoms and 6(40%) had moderate PCOS symptoms.

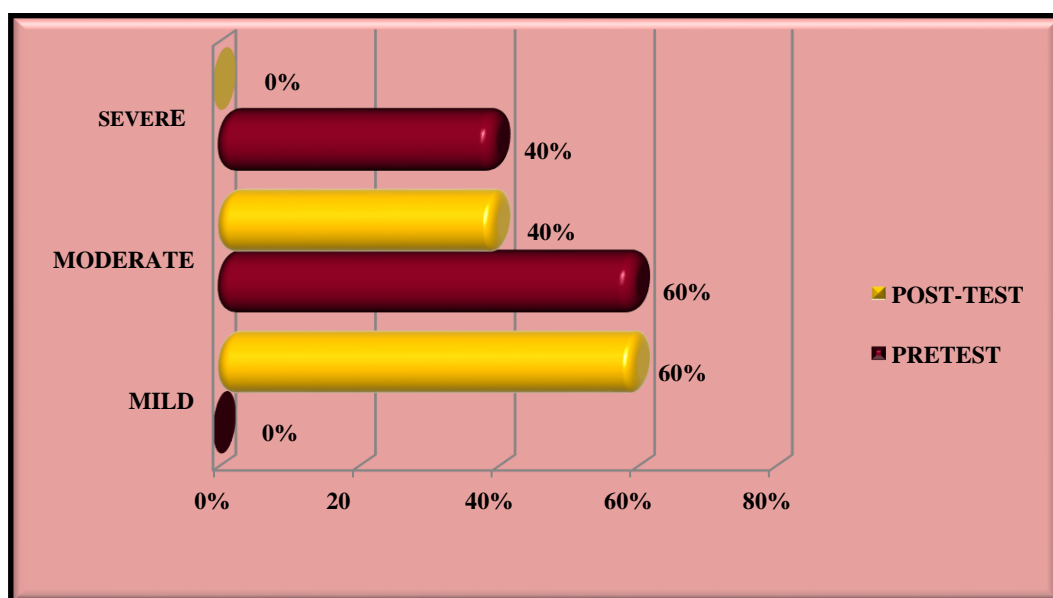


Figure 1: The cylindrical graph represents the distribution of the subjects according to their PCOS symptom scores in experimental group.

Table No 7: Frequency and percentage distribution of PCOS symptomscores in control group. n₂=20

PCOS symptomScore	Pre test		Post-test	
	Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
Severe (81-120)	10	66	0	0
Moderate (41-80)	05	34	15	100
Mild (0-40)	00	0	00	00

Table 7 reveals that

Majority of the subjects 10(66%) severe PCOS symptoms and 5(34%) had moderate

PCOS symptoms in pre test, where as in post test all of the subjects 15(100%) had moderate PCOS symptoms.

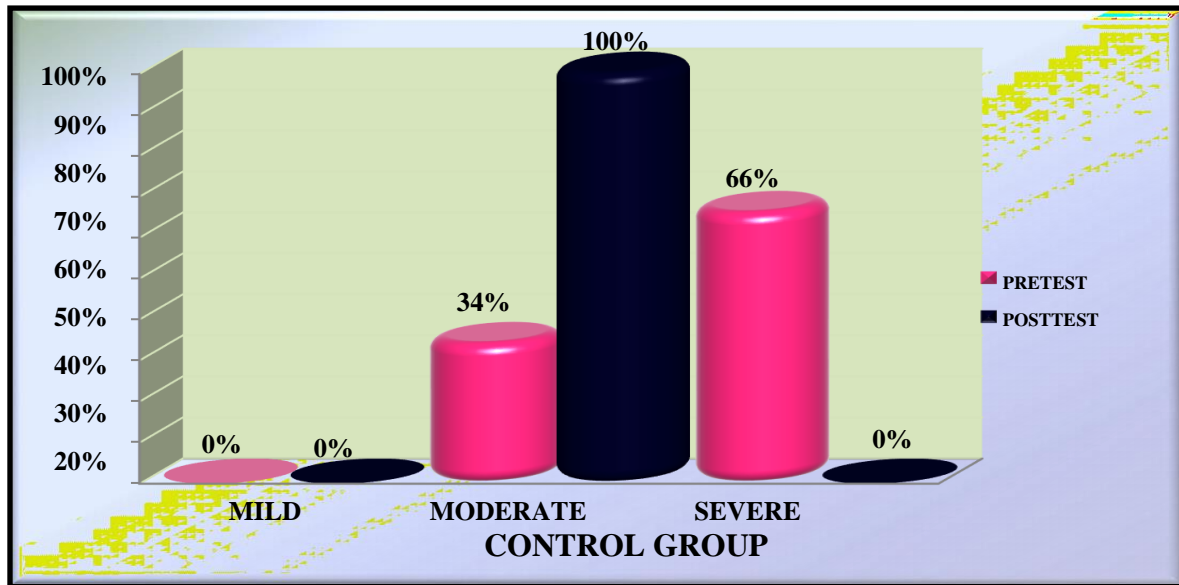


Figure 2: The cylindrical graph represents the distribution of the subjects according to their PCOS symptom scores in Control Group.

Table No 8: Frequency and percentage distribution of PCOS symptom scores of subjects in experimental group. n₂=20

Mean percentage of menstrual symptom				
Group	Totalscore	Pre-test	Post-test	Symptoms
Experimental Group	2400	69%	37%	32%

Table No 8 reveals that the mean percentage of PCOS symptom scores in the pre-test was 69% and 37% in the post-test. Hence the total reduction in PCOS symptom was 32%.

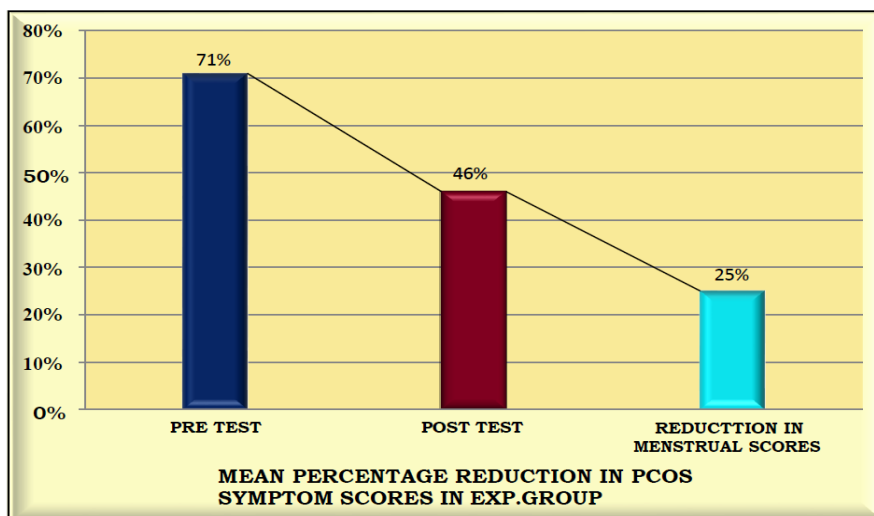


Figure 3: The cylindrical joint graph represents the distribution of the subjects according to their PCOS symptom scores of experimental group.

Table No 9: Frequency and percentage distribution of PCOS symptom scores of subjects in control group. n₂=20

Group	Mean percentage of PCOS symptom			Reduction
	Total score	Pre-test	Post-test	in pain
Control group	2400	71%	46%	25%

Table No 9 reveals that,

The mean percentage of PCOS symptom scores in the pre-test was 71% and 46% in the post-test. Hence the total reduction in PCOS symptom was 25%.

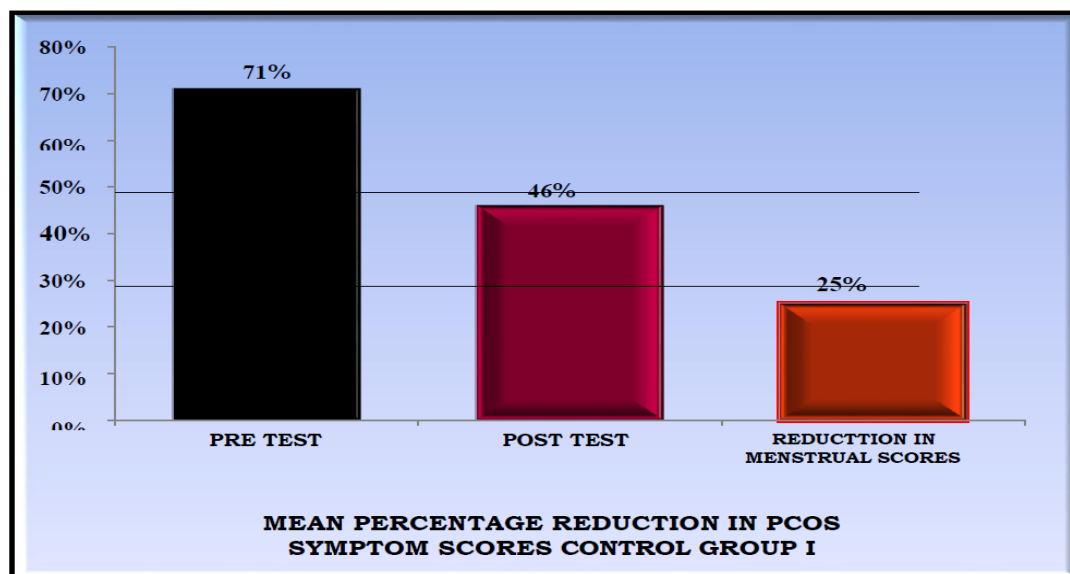


Figure 4: The cylindrical graph represents the distribution of the subjects according to percentage distribution of PCOS symptom scores of subjects in control group.

Section-III: Testing of hypotheses

H₁: There will be a statistical difference in post-test and pre-test score regarding alleviating signs and symptoms of PCOS among nursing students in experimental group at 0.05 level of significance.

H₂: There will be a statistical difference in post-test and pre-test score regarding alleviating signs and symptoms of PCOS among nursing students in control group at 0.05 level of significance.

Table No 10: Mean Difference (d), Standard Error of Difference and paired 't' value of PCOS symptom score of subjects in both the experimental Group and Control Group. n₁+n₂=40

Groups	Mean difference (d)	Standard error of difference	Paired 't' value	
			Cal. Value	Tab. Value
Exp. Group	38	10.79	13.62*	2.14
Control Group	29.6	11.6	9.81*	2.14

Table No 10 reveals that, In Experimental Group

The calculated value of paired 't' value (t_{cal}= 13.62)* was greater than the tabulated value (t_{tab}=2.14). Hence H₁ was accepted.

In Control Group

The calculated value of paired 't' value (t_{cal}= 9.81)* was greater than the tabulated value (t_{tab}=2.14). Hence H₂ was accepted.

This indicates that the reduction of PCOS symptom score was significant at 0.05 levels. Therefore, aerobics exercise effective in alleviating PCOS symptoms among experimental group.

H₃: There will be a statistical difference in post-test score regarding alleviating signs and symptoms of PCOS among nursing students in experimental and control group at 0.05 level of significance.

Table No 11: Comparison of post-test score regarding reduction in PCOS symptoms among nursing students and unpaired-‘t’ values of PCOS symptom score of subjects of experimental and control group. $n_1+n_2=40$

Experimental group		Control group		Mean difference (\bar{d})	Standard error of difference (SEd)	Unpaired ‘t’ values	
Mean	SD	Mean	SD			Calculated	Tabulated
71.46	11.69	99.33	6.70	27.86	3.47	8.00*	2.043

Significant at 0.05 level of significance

Table No 11 reveals that

The calculated unpaired ‘t’ value for experimental and control group t cal value (8.00)* was greater than the ttab value

(2.043). This indicates that the mean reduction in PCOS symptom scores of nursing students in the experimental group who have practiced aerobic exercises was higher than those in the control group Hence H3 was accepted.

H4: There will be a statistical association between pre-test scores regarding alleviating signs and symptoms of PCOS among nursing students of experimental group with their selected demographic variables at 0.05 level of significance.

Table 12: Association between pre test PCOS symptom scores and selected demographic variables among subjects of Experimental Group. $n_1=20$

Sl.No	Demographic variables	Mild	Moderate	Severe	Chi-square		Df
					Cal. Value	Tab. Value	
1.	Age (in yrs)						
	a) 18-19 yrs	00	04	04	0.68	5.59	02
	b) 20-21 yrs	00	05	02			
2.	Religion						
	a) Hindu	00	03	05	7.21	12.59	06
	b) Muslim	00	04	01			
	c) Christian	00	02	00			
	d) Others	00	00	00			
3.	Course						
	a) GNM	00	05	01	0.22	9.49	4
	b) B.Sc	00	00	01			
	c) P.B.Bsc	00	01	04			
	d) MSc.(N)	00	00	00			
4.	Habitat						
	a) Rural	00	06	05	1.32	5.99	2
	b) Urban	00	03	01			
5.	Dietary pattern						
	a) Vegetarian	00	04	04	0.7	5.99	2
	b) Mixed	00	05	02			
6.	Age at menarchae						
	11-13yrs	00	06	02	1.6	5.99	2
	13-15yrs	00	03	04			
7.	Length of menstrual cycle						
	a) 1-2 days	00	00	01	1.96	12.59	6
	b) 3-4 days	00	07	04			
	c) 5-6 days	00	02	01			
	d) More than 6 days	00	00	00			
8.	Previous history of PCOS problems						
	Irregular menstrual cycle	00	00	00	2.89	15.51	8
	b) Scanty discharge	00	02	00			
	Painful menstruation	00	06	06			
	Heavy menstrual bleeding	00	01	00			
	e) Others if any	00	00	00			
9.	Family history of PCOS						
	a) Yes	00	03	00	2.5	5.59	2
	b) No	00	06	06			

Table no 12 reveals that

There was no statistical association between pre test PCOS symptom scores of the subjects in experimental group and their

selected demographic variables Hence H4 was rejected.

H₅: There will be a statistical association between pre-test scores regarding alleviating signs and symptoms of PCOS among nursing students of control group with their selected demographic variables at 0.05 level of significance.

Table No 13: Association between pre-test PCOS symptom scores and selected socio- demographic variables among subjects of Control group. n2=20

Sl.No	Demographic variables	Mild	Moderate	Severe	Chi-square		
					Chi Cal. Value	Tab value	Df
1.	Age (in yrs)						
	a) 18-19 yrs	00	02	06	0.5	5.59	02
	b) 20-21 yrs	00	03	04			
2.	Religion						
	a) Hindu	00	03	07	1.11	12.59	6
	b) Muslim	00	02	02			
	c) Christian	00	00	01			
	d) Others	00	00	00			
3.	Course						
	a) GNM	00	03	03	3.72	9.49	4
	b) B.Sc	00	01	06			
	c) P.B.Bsc	00	01	01			
	d) MSc.(N)	00	00	00			
4.	Habitat						
	a) Rural	00	02	04	0	5.99	2
	b) Urban	00	03	06			
5.	Dietary pattern						
	Vegetarian	00	02	06	0.5	5.99	2
	Mixed	00	03	04			
6.	Age at menarche						
	11-13yrs	00	03	06	0	5.99	2
	13-15yrs	00	02	04			
7.	Length of menstrual cycle						
	a) 1-2 days	00	00	00	0.16	12.59	6
	b) 3-4 days	00	03	07			
	c) 5-6 days	00	02	03			
	d) More than 6 days	00	00	00			
8.	Previous history of PCOS problems						
	a) Irregular menstrual cycle	00	00	01	2.27	15.51	8
	b) Scanty discharge	00	00	00			
	c) Painful menstruation	00	03	08			
	d) Heavy menstrual bleeding	00	02	01			
	e) Others if any	00	00	00			
9.	Family history of PCOS						
	Yes	00	04	00	0.66	5.59	2
	No	00	00	01			

Table no 13 reveals that, In Control Group

There was no statistical association between pre-test PCOS symptom scores of the subjects in control group and their selected demographic variables. Hence H₅ was not accepted.

CONCLUSION

Based on the findings of the study, the following conclusions were drawn.

The overall pre-test PCOS score was moderate to severe in both the groups.

The post-test signs & symptom scores of nursing students who performed aerobic exercise showed significant reduction in signs & symptoms of PCOS.

The post-test signs & symptom scores of nursing students who performed aerobic exercise showed significant reduction in signs & symptoms of PCOS as compared with the control group who did not perform the aerobic exercise.

There was no significant association between the pre test PCOS scores of subjects and their selected demographic variable in both the groups.

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Ethical Approval: Approved

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