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A study to assess the effectiveness of wellness program on polycystic ovarian syndrome among adolescent girls at selected colleges, Puducherry

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Abstract
Introduction: A study to assess the effectiveness of wellness program on Polycystic Ovarian Syndrome among adolescent girls at selected colleges, Puducherry.
Objectives
- To assess the level of Polycystic Ovarian Syndrome among adolescent girls.
- To evaluate the effectiveness of wellness program on Polycystic Ovarian Syndrome among adolescent girls.
- To associate the level of Polycystic Ovarian Syndrome among adolescent girls with the selected demographic variables.

Methodology: Quasi Experimental (Non–randomized pre-test post-test with control group) design was adopted for the present study. The population of the study was only adolescent girls with the symptoms of Polycystic Ovarian Syndrome. 40 samples were selected by purposive sampling technique, 20 in each group. Pre-test was done using CRONIN's Modified Observational Scale to assess the symptoms of Polycystic Ovarian Syndrome for both the group. Experimental group received wellness program and control group have not received any intervention. Post-test was conducted for both the group by using same tool.
Study findings: Pre-test revealed that none of them have no symptoms and minimal symptoms, 16(80%) have mild symptoms, 4(20%) have moderate symptoms and none of them have severe symptoms. In post-test, 6(30%) of them have no symptoms, 9(45%) have minimal symptoms, 5(25%) have mild symptoms and none of them had moderate and severe symptoms. In control group, during pre-test, none of them have no symptoms and minimal symptoms, 13(65%) of them have mild symptoms, 6(30%) of them have moderate symptoms, 1(5%) of them have severe symptoms. During post-test, none of them have no symptoms and minimal symptoms, 11(55%) have mild symptoms, 7(35%) have moderate symptoms, 2(10%) of them had severe symptoms. In experimental group, Pre-test mean and SD score was 29.3 and 7.24 respectively. Post-test mean and SD was 16.7 and 4.36614 respectively. In control group, Pre-test mean and SD score was 36.65 and 13.491 respectively. Post-test mean and SD was 37.4 and 12.721 respectively. The calculated't' value was 6.88, which was greater than the tabulated value at $p<0.001$ level. Hence the research hypothesis H_1 was accepted. Also, there was a significant association found in Body Mass Index and Age at confirmation of PCOS with the selected variables. Hence, H_2 was accepted.
Conclusion: The study was conducted to assess the effectiveness of wellness program on PCOS. The study concluded that wellness program was effective in reduction of symptoms of Polycystic Ovarian Syndrome among adolescent girls.

Keywords: Polycystic ovarian syndrome, adolescent girls, wellness program

Introduction
Polycystic ovarian syndrome (PCOS) is a condition in which woman has an imbalance of female sex hormones such as Oestrogen and Progesterone. Polycystic ovaries are slightly larger than normal ovaries and have twice the number of follicles (small cysts). It is a complex metabolic and reproductive disorder that affects an extensive number of women of reproductive age. The disorder that eventually would be known as the (PCOS) Polycystic Ovarian (or Ovary) Syndrome was initially described by Stein *et al*. (1935) [11].
Polycystic Ovarian Syndrome is a set of symptoms related to a hormonal imbalance that can affect women and girls of reproductive age. It may also leads to changes in the menstrual cycle, cyst in the ovary, failure to conceive and other health problems.

It has also been associated with coronary heart disease, diabetes & other metabolic syndromes & hence the estimation of high PCOS prevalence rates appear in the countries where obesity and type 2 diabetes are more common. Though genetic predisposition plays an important role, many studies also show that dietary habits & exercise can also influence the causation of the disease. It is a common health problem among adolescent girls. This is mostly due to unhealthy lifestyle, unhealthy diets and lack of exercises. (The National Institute of Health)

Although there is no cure for Polycystic Ovarian Syndrome, there are several ways to treat and manage the condition. Awareness of Polycystic Ovarian Syndrome and its diagnosis must be increased among physicians caring for adolescent girls. Many women don't find out that they have Polycystic Ovarian Syndrome until they have trouble getting pregnant. Polycystic Ovarian Syndrome is considered to be the most prevalent of all endocrine disorders which women face in day today life. (The Androgen Excess and PCOS Society).

Need for the study

Department of Health and human service office (2017) reported that world-wide every year, 10 million (8% to 20%) of women with reproductive age affected with PCOS. It affects about 1 in 15 (5 to 6 million) women suffer from Polycystic Ovarian Syndrome.

International Journal of Reproduction, Contraception, Obstetrics and Gynaecology (2017) says that in India the overall prevalence of PCOS was 41%. It was 16% in married women and 24% in unmarried girls.

AIIMS - Department of Endocrinology and Metabolism (2016) says that 20 – 25% of Indian women are childbearing age are suffering from PCOS. While 60% of women with PCOS are obese.

Androgen Excess and Polycystic Ovarian Syndrome Society (2017) estimated that one in every 10 women in India has PCOS among women of reproductive age and out of every 10 women diagnosed with PCOS, 6 are adolescent girls. 7% - 10% women experienced PCOS is one of the cause for infertility. Middle East Fertility Journal (2017) conducted an epidemiological survey in Tamil Nadu, 22.5% of women are suffering from PCOS.

The survey of general population (2016) suggests that 50% of reproductive women were affected from PCOS in the age group of 17-25 years in Puducherry. Polycystic Ovarian Syndrome is more among women employed in the IT sector and also cases of Polycystic Ovarian Syndrome are predominantly seen in the age group of 15 to 40 years. Polycystic Ovarian Syndrome mostly affects adolescent and young girls, which creates the challenge of trying to conceive. Typically, it remains undiscovered, until a woman is having difficulty becoming pregnant. Polycystic are two to five times larger than normal ovaries. This can contribute to infertility. Possible complications are Sterility, Obesity, related conditions like high blood pressure and diabetes, increased risk of Endometrial Cancer, Possible increased risk of Breast Cancer. PCOS is a common health problem among adolescent girls. This is mostly due to unhealthy lifestyle, unhealthy diets and lack of exercises.

Statement of the problem

"A study to assess the effectiveness of wellness program on Polycystic Ovarian Syndrome among adolescent girls at selected colleges, Puducherry".

Objectives

- To assess the level of Polycystic Ovarian Syndrome among adolescent girls.
- To evaluate the effectiveness of wellness program on Polycystic Ovarian Syndrome among adolescent girls.
- To associate the level of Polycystic Ovarian Syndrome among adolescent girls with the selected demographic variables.

Assumptions

- Adolescent girls with Polycystic Ovarian Syndrome may be experiencing changes in their physical and mental health
- Wellness program may reduce the symptoms of Polycystic Ovarian Syndrome among adolescent girls to some extent.

Hypotheses

- **H_1:** There is a significant difference in level of Polycystic Ovarian Syndrome among adolescent girls.
- **H_2:** There is a significant association between the levels of polycystic ovarian syndrome among adolescent girls with the selected demographic variables.

Delimitations

The study was delimited to

- Adolescent girls with symptoms of Polycystic Ovarian Syndrome
- SVCET, Puducherry and IFET, Villupuram
- 4 weeks period of data collection
- Sample size of 40

Methodology

The research approach used in this study is Quantitative research approach. Quasi Experimental (Non –randomized pre-test post-test with control group) design is adopted for the present study. The study consists of 40 samples in engineering colleges. Purposive sampling technique was adopted. 20 samples were in experimental group in SVCET, Ariyur, Puducherry and 20 samples were in control group in IFET, Villupuram, Tamil Nadu. Pre-test was conducted to both the groups by using Cronin's Modified Observational scale to assess the level of Polycystic Ovarian Syndrome. Experimental group receives wellness program daily for about 20 minutes, 4 weeks duration. It includes aerobic exercises such as Jumping back, low squat jump and side to side scatters. After 4 weeks the post - test was conducted to assess the level of PCOS for both experimental and control group with the same tool.

Development and description of tool

Tool consisted of two parts

Part A: Demographic variables: Age, Education, Residence, Religion, Dietary pattern, Consumption of junk foods and Clinical variables: Height, Weight, Body Mass Index, Age at menarche, Family history of Polycystic Ovarian Syndrome, Age at confirmation of Polycystic Ovarian Syndrome, Duration of Polycystic Ovarian Syndrome.

Part B: Cronin's modified observational scale to assess the level of PCOS

It consist of 20 questions which helps to assess the level of

Polycystic Ovarian Syndrome of the adolescent girls. Each question scores 0 – 5. 0 indicate no symptoms, 1 indicate minimal symptoms, 2 indicate mild symptoms, 3 indicate moderate symptoms, 4 indicate severe symptoms, and 5 indicate very severe symptoms.

Data analysis and interpretation

The collected data was organized, tabulated and analysed by using descriptive and inferential statistics as follows.

Section A: Distribution of adolescent girls according to their variables

Section B: Distribution of pre-test and post-test level of PCOS

Section C: Effectiveness of wellness program on Polycystic Ovarian Syndrome among adolescent girls

Section D: Association between the levels of Polycystic Ovarian syndrome among adolescent girls with the selected demographic variables

The frequency and percentage distribution of demographic variables, regarding age, in experimental group 7(35%) of them were belong to 19 years and 20 years respectively, in control group 16(80%) of them belong to 19 years. Considering the education (in department), in experimental group 8(40%) of them were CSE, in control group 11(55%) of them were CSE. Regarding the residence, in both the groups 11(55%) of them were from rural area. In regards to the religion, in experimental group 18(90%) of them were Hindu and in control group 16(80%) of them were belong to Hindu. Regarding the dietary pattern, in experimental group most 18(90%) of them were in non-vegetarian and in control group all of them were non vegetarian. In considering consumption of junk foods, in experimental group most 13(65%) and in control group 18(90%) of them had junk foods.

In clinical variables, regarding height, in both the groups 9(45%) of them were belong to 151-160 cm and 161-170 cm respectively. In control group 9(45%) were belong to 161-170 cm. In considering the weight, in experimental group 8(40%) of them were belong to 61-70 kg and in control group 9(45%) of them were belong to 61- 70 kg. Regarding the BMI, in experimental group 10(50%) of them were between 18.5- 24.9 kg/m^2 and in control group 16(80%) of them were between 25-29.9 kg/m^2. In consent to the age at menarche, in experimental group 14(70%) and in control group 16(80%) of them were between the age group of 14-15 years. Regarding the family history of PCOS, in experimental group 14(70%) of them have no family history of PCOS and in control group none of them have the family history of PCOS. With regards to the confirmation of PCOS, in experimental group 11(55%) and in control group 13(65%) of them who confirmed PCOS were between 19-20 years. While considering the duration of PCOS, in experimental and control group found that 16(80%) and 8(40%) of them were suffered for <6 months respectively.

Table 1: Frequency and percentage distribution of pre-test and post-test level of PCOS in experimental group and control group (n=40)

Level of PCOS	Experimental group				Control group			
	Pre-test		Post-test		Pre-test		Post-test	
	n	%	n	%	n	%	n	%
No symptoms	0	0	6	30	0	0	0	0
Minimal symptoms	0	0	9	45	0	0	0	0
Mild symptoms	16	80	5	25	13	65	11	55
Moderate symptoms	4	20	0	0	6	30	7	35
Severe symptoms	0	0	0	0	1	5	2	10
Total	20	100	20	100	20	100	20	100

Table 1: shows that Frequency and percentage distribution of level of PCOS among adolescent girls, in experimental group pre-test out of 20 subjects, none of them have no symptoms and minimal symptoms, 16(80%) have mild symptoms, 4(20%) have moderate symptoms and none of them have severe symptoms. In post- test, 6(30%) of them have no symptoms, 9(45%) have minimal symptoms, 5(25%) have mild symptoms and none of them have moderate and severe symptoms. In control group, during pre-test, none of them have any symptoms and minimal symptoms, 13 (65%) of them have mild symptoms, 6(30%) of them have moderate symptoms, 1(5%) of them have severe symptoms. During post-test, none of them have no symptoms and minimal symptoms, 11(55%) have mild symptoms, 7(35%) have moderate symptoms, 2(10%) of them have severe symptoms.

Effectiveness of wellness program on Polycystic Ovarian Syndrome among adolescent girls

Table 2: Mean, standard deviation and t value according to the post test scores of PCOS among adolescent girls in experimental group and control group

Group	Post-test		
	Mean	SD	T value
Experimental	16.7	4.36	6.88
Control	37.4	12.72	

*p<0.001 Level of significance

The above table exhibits that in experimental group, the post-test mean and SD scores was 16.7 and 4.36 and in control group, the post-test mean and SD score was 37.4 and 12.72. The calculated 't' value was 6.88, which was greater than the tabulated value at p<0.001 level. Hence the research hypothesis H1 was accepted. It was evident that wellness program was very effective in reduction of symptoms of Polycystic Ovarian Syndrome among adolescent girls.

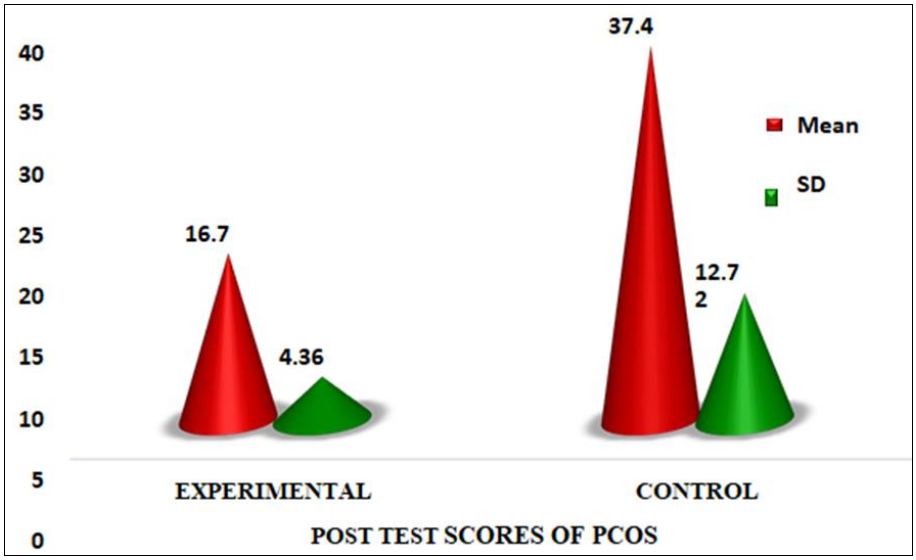

Fig 1: Mean and standard deviation according to the post test scores of PCOS among adolescent girls in experimental and control group.

Table 3: Association between the experimental group pre- test level of PCOS with the Selected Demographic & Clinical Variables (n=20)

S. No.	Variables	Mild	Moderate	Severe	Chi square & p value
1	**Age**				
	(a) 17 years	0	4	0	
	(b) 18 years	0	1	1	
	(c) 19 years	1	5	1	4.613
	(d) 20 years	0	6	1	NS
2	**Education (in department)**				
	(a) CSE	1	5	2	
	(b) EEE	0	4	0	6.198
	(c) Civil	0	1	1	NS
	(d) ECE	0	6	0	
3	**Residence**				
	(a) Urban	0	9	0	4.091
	(b) Rural	1	7	3	NS
4	**Religion**				
	(a) Hindu	1	14	3	
	(b) Muslim	0	0	0	0.556
	(c) Christian	0	2	0	NS
5	**Dietary pattern**				
	(a) Vegetarian	0	1	1	2.716
	(b) Non vegetarian	1	15	2	NS
6	**Consumption of Junk foods**				
	(a) Yes	1	10	1	1.597
	(b) No	0	6	2	NS
7	**Height**				
	(a) ≤150 cm	0	2	0	
	(b) 151-160 cm	1	7	1	2.037
	(c) > 160 cm	0	7	2	NS
8	**Weight**				
	(a) ≤50 kg	0	1	0	
	(b) 51-60 kg	1	4	1	6.611
	(c) 61-70 kg	0	8	0	NS
	(d) > 70 kg	0	3	2	
9	**Body Mass Index**				
	(a) <18.5	0	0	0	
	(b) 18.5-24.99	1	10	0	5.838
	(c) 25-29.99	0	5	3	NS
	(d) >30	0	1	0	
10	**Age at menarche**				
	(a) 12-13 years	1	2	2	7.149
	(b) 14-15 years	0	13	1	NS
	(c) >15 years	0	1	0	
11	**Family history of Polycystic Ovarian Syndrome**				
	(a) Yes	1	4	1	2.54
	(b) No	0	12	2	NS

12	**Age at confirmation of Polycystic Ovarian Syndrome**				
	(a) <17 years	1	1	0	
	(b) 17-18 years	0	7	0	**12.102* S**
	(c) 19-20 years	0	8	3	
13	**Duration of Polycystic Ovarian Syndrome**				
	(a) <6 months	0	13	3	
	(b) 6 months-1 year	0	1	0	6.536
	(c) 1-2 years	1	2	0	NS

Table 4: Association between the control group pre- test level of PCOS with the Selected Demographic & Clinical Variables (n=20)

S. No	Variables	Mild symptoms	Moderate symptoms	Severe symptoms	Chi square & P value
1	**Age**				
	(a) 17 years	1	0	0	
	(b) 18 years	1	0	0	1.962
	(c) 19 years	10	5	1	NS
	(d) 20 years	1	1	0	
2	**Education (in department)**				
	(a) CSE	9	2	0	
	(b) EEE	0	2	1	8.985
	(c) Civil	1	0	0	NS
	(d) ECE	3	2	0	
3	**Residence**				
	(a) Urban	5	4	0	4.336
	(b) Rural	8	2	1	NS
4	**Religion**				
	(a) Hindu	10	5	1	
	(b) Christian	2	1	0	7.372
	(c) Muslim	1	0	0	NS
5	**Dietary pattern**				
	(a) Vegetarian	0	0	0	NIL
	(b) Non vegetarian	13	6	1	
6	**Consumption of Junk foods**				
	(a) Yes	12	5	1	0.855
	(b) No	1	1	0	NS
7	**Height**				
	(a) ≤150 cm	0	0	0	
	(b) 151-160 cm	6	4	1	2.098
	(c) >160 cm	7	2	0	NS
8	**Weight**				
	(a) ≤50 kg	0	0	0	
	(b) 51-60 kg	4	3	1	4.779
	(c) 61-70 kg	7	2	0	NS
	(d) > 70 kg	2	1	0	
9	**Body Mass Index**				
	(a) <18.5	0	0	0	12.692* **S**
	(b) 18.5 – 24.9	2	1	0	
	(c) 25 – 29.9	11	5	0	
	(d) >30	0	0	1	
10	**Age at menarche**				
	(a) 12-13 years	3	0	0	
	(b) 14-15 years	10	6	0	1.038
	(c) >15 years	0	0	1	NS
11	**Family history of Polycystic Ovarian Syndrome**				
	(a) Yes	0	0	0	NIL
	(b) No	13	6	1	
12	**Age at confirmation of Polycystic Ovarian Syndrome**				
	(a) <17 years	1	0	0	
	(b) 17-18 years	5	1	0	2.414
	(c) 19-20 years	7	5	1	NS
13	**Duration of Polycystic Ovarian Syndrome**				
	(a) <6 months	6	2	0	
	(b) 6 months-1 year	5	3	0	5.769
	(c) 1-2 years	2	1	1	NS

Table: 3 shows that there was a significant association found between the Age at confirmation of Polycystic Ovarian Syndrome except age, education (in department), residence, religion, dietary pattern, consumption of junk foods, height, weight, BMI, age at menarche, family history of PCOS and duration of PCOS experimental group pre-test with the selected demographic and clinical variables due to small sample size. Hence, H2 was accepted.

Table: 4 shows that there was a Significant association found in Body Mass Index except age, education (in department), residence, religion, dietary pattern, consumption of junk foods, height, weight, age at menarche, family history of PCOS, age at confirmation of PCOS and duration of PCOS with the selected demographic and clinical variables due to small sample size. Hence, H2 was accepted.

Major findings of the study

Frequency and Percentage distribution of level of PCOS among adolescent girls in experimental group pre-test revealed that none of them have no symptoms and minimal symptoms, 16(80%) have mild symptoms, 4(20%) have moderate symptoms and none of them have severe symptoms. In post-test, 6(30%) of them have no symptoms, 9(45%) have minimal symptoms, 5(25%) have mild symptoms and none of them had moderate and severe symptoms. In control group, during pre-test, none of them have any symptoms and minimal symptoms, 13 (65%) of them have mild symptoms, 6(30%) of them have moderate symptoms, 1(5%) of them have severe symptoms. During post-test, none of them have no symptoms and minimal symptoms, 11(55%) have mild symptoms, 7(35%) have moderate symptoms, 2(10%) of them have severe symptoms.

In experimental group, Pre-test mean and SD score was 29.3 and 7.24 respectively. Post-test mean and SD was 16.7 and 4.36614 respectively. In control group, Pre-test mean and SD score was 36.65 and 13.491 respectively. Post-test mean and SD was 37.4 and 12.721 respectively. The calculated' value was 6.88, which was greater than the tabulated value at $p<0.001$ level. Hence the research hypothesis H1 was accepted. Also, there was a significant association found in Body Mass Index and Age at confirmation of PCOS with the selected variables. Hence, H2 was accepted.

Conclusion

The study was conducted to assess the effectiveness of wellness program on PCOS. The study concluded that wellness program was effective in reduction of symptoms of Polycystic Ovarian Syndrome among adolescent girls.

Recommendations

- The study can be replicated with a large sample for better generalization.
- A comparative study can be conducted between the schools and colleges adolescent girls with the symptoms of Polycystic Ovarian Syndrome.
- A comparative study can be conducted among rural and urban areas as well as among teenage girls and married girls.

Conflict of Interest

Not available

Financial Support

Not available

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