RESEARCH
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IMPACT OF TAILORED NURSING CARE ON DEMOGRAPHIC AND CLINICAL VARIABLES AMONG WOMEN WITH POLYCYSTIC OVARIAN SYNDROME (PCOS) AND ITS RELATIONSHIP WITH ANTHROPOMETRIC MEASUREMENTS

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Abstract
Objective: An intervention designed to address polycystic ovarian syndrome (PCOS) was examined in this study using a quasi-experimental design. Introduction: Menstrual irregularities, hyperandrogenism, and metabolic disturbances are some of the symptoms of PCOS. PCOS was a complex disease that requires both pharmacological and non-pharmacological interventions. Methodology: Among women with PCOS, both experimental and control groups had diverse demographic characteristics, including age, education, employment, income, and menstrual patterns. Significant proportions of participants did not know anything about PCOS before getting information from medical professionals. Results: There were common premenstrual symptoms and menstrual pain in both groups, with no postmenstrual symptoms reported in most. PCOS and underlying diseases were rare in most participants. Non-vegetarian diets were preferred by the majority of women in both groups. BMI, waist-hip ratio, were not significantly different between treatment and control groups at pretest. After the posttest 1 and 2, the experimental group showed improvements in health risk (waist-hip ratio) compared to the control group. Summary: This study emphasized the importance of tailored nursing interventions for improving the health outcomes of women with PCOS. In addition to improving specific clinical parameters, the comprehensive nursing intervention enhanced PCOS knowledge. Conclusion: It was evident that such interventions could provide benefits to individuals with this complex endocrine disorder and enhance their overall well-being.
Keywords: PCOS, Body mass index, Menstrual cycle, Genetic factors, Demographic variables

INTRODUCTION

A woman who was in her reproductive years was most likely to suffer from polycystic ovary syndrome (PCOS).[1] PCOS has a prevalence ranging from 3.7% to 22.5% in India. [2-5] It was characterized by irregular menstrual cycles, hyperandrogenism, and polycystic ovaries. A high body mass index (BMI), altered lipid profile, insulin resistance (IR), and type 2 diabetes mellitus are common metabolic disorders among PCOS patients. Genetic factors and hormonal shifts, particularly increased androgenic activity, were believed to contribute to PCOS. Women with a family history of PCOS were at higher risk due to inherited genes. Additionally, insulin resistance, where cells become less responsive to insulin, plays a role. The exact cause was complex, likely involving multiple factors. Common PCOS symptoms include menstrual irregularities, infertility, acne, oily skin, and hirsutism (excess hair growth on areas like the chest, back, face, and abdomen).There was evidence that IR occurs in both obese and thin women with PCOS.[6] PCOS has been commonly diagnosed using Rotterdam criteria.[7,8] When PCOS had effectively managed, cardiovascular complications associated with these metabolic disorders could be mitigated. A multidisciplinary approach to PCOS treatment should address immediate symptoms while also considering long-term implications. Treatment methods that had proven effective both pharmacologically and non-pharmacologically for PCOS were crucial.[9-11] PCOS treatment strategies aimed to combat insulin resistance, oligoovulation, and hyperandrogenism. A well-established strategy in managing PCOS was to combine lifestyle modification (LSM) with metformin, which has shown promising results.[12] Studies done in South India and Maharashtra, prevalence of PCOS (by Rotterdam's criteria) were reported as 9.13% and 22.5% (10.7% by Androgen Excess Society criteria) respectively. In this study, through a comprehensive nursing intervention, demographic, clinical, and anthropometric variables such as BMI and Waist Hip Ratio were administered and assessed through a quasi-experimental design.

Methodology

Research design

The Research Design Chosen by the Investigator was Quasi experimental – pre and posttest design in order to evaluate the Effectiveness of Comprehensive Nursing Interventional Package on Demographic as well as Clinical Parameters along with their anthropometric variables among Women having Polycystic Ovarian Syndrome at Selected Hospitals, Chennai.

Ethical consideration

All participants in this study were treated with respect and privacy, according to ethical principles and procedures. The institutional ethical committee approved this research on October 18, 2021. Permission was obtained from the concerned authorities to conduct the study. Informed consent was obtained from all individuals participating in the study .To safeguard the privacy and sensitive information of the participants; strict measures were implemented to maintain confidentiality.

Inclusion criteria

- Married or unmarried women aged 18 to 33 years
- Women who married and not conceived
- Women who are diagnosed as PCOS in past one year
- Women who knows Tamil and English

Exclusion criteria

- Women who conceived in during study
- Women who has PCOS with physical deformities
- Women who are in hormonal & PCOS treatment and oral contraceptives
- Women who has associated with DM, HT and other co-morbid illness

Tools used

Interventional Tool: Video assisted teaching on PCOS; Investigator guided Aerobic Exercises which includes Progressive Resisted Training and High Intensity Interval Training and Needs based dietary prescription

Dependent variables: Demographic variables, clinical variables and Anthropometric measurements.

Population sample size: A total of 200 participants were selected, with 100 individuals in each of the experimental and control groups.

Data analysis

The data obtained was analyzed using descriptive and inferential statistics. SPSS (Statistical Package for Social Sciences) Version 28 was used to conduct the statistical analysis.

Results and discussion

Table:1 Frequency and percentage wise distribution of demographic and Clinical variables among women with polycystic ovarian syndrome in experimental and control group

S.NO	DEMOGRAPHIC AND CLINICAL VARIABLES	EXPERIMENTAL GROUP		CONTROL GROUP		Chi square
		N	%	N	%	
1	**Age**					
	18- 21 years	49	49%	45	45%	1.26
	22- 25years	26	26%	23	23%	
	26- 29 years	14	14%	17	17%	
	30 – 33 years	11	11%	15	15%	
2	**Religion**					
	Hindu	60	60%	41	41%	8.04
	Muslim	21	21%	28	29%	
	Christian	19	19%	30	30%	
	Others	0	0%	1	1%	
3	**Residential**					
	Rural	53	53%	50	50%	1.02
	Semi-rural	20	20%	25	25%	
	Urban	15	15%	12	12%	
	Semi-urban	12	12%	13	13%	
4	**Educational status**					
	Illiterate	25	25%	23	23%	13.8
	Primary Education	8	8%	6	6%	
	Secondary Education	20	20%	5	5%	
	Diploma	19	19%	25	25%	
	Undergraduate	20	20%	24	24%	
	Postgraduate	8	8%	17	17%	
5	**Occupation**					
	Private Employee	21	21%	26	26%	2.59

	Public Employee	6	6%	3	3%	
	House hold	73	73%	70	70%	
	Self-Employee	0	0%	1	1%	
6	**Monthly Family Income**					
	1000- 10000	29	29%	27	27%	21.0
	11000– 15000	42	42%	13	13%	
	16000 – 20000	23	23%	43	43%	
	21000 and above	6	6%	7	7%	
7	**Type of family**					
	Joint family	31	31%	28	28%	1.79
	Nuclear family	56	56%	52	52%	
	Extended family	13	13%	20	20%	
8	**Marital status**					
	Married	22	22%	24	24%	0.113
	Unmarried	78	78%	76	76%	
9	**Source of information regarding PCOS**					
	Medical professional	76	76%	71	71%	2.68
	Paramedical	14	14%	21	21%	
	Friends and family members	4	4%	5	5%	
	Mass media	6	6%	3	3%	
10	**Previous information regarding PCOS**					
	Yes	49	49%	46	46%	0.180
	No	51	51%	54	54%	
	CLINICAL VARIABLES					
11	**Age of first menstrual period**					
	9 - 11 Years	40	40%	35	35%	0.685
	12- 14 Years	47	47%	49	49%	
	15 - 17 Years	13	13%	16	16%	
12	**Pattern of menstrual Cycle**					
	Regular	19	19%	17	17%	0.136
	Irregular	81	81%	83	83%	
13	**Pattern of menstrual flow**					
	Normal flow	18	18%	15	15%	0.348
	Over flow	72	72%	74	74%	
	Scanty	10	10%	11	11%	
14	**Presence of pain during menstrual cycle**					
	Yes	64	64%	66	66%	0.285
	No	22	22%	19	19%	
	Mild, Moderate, Severe	14	14%	15	15%	
15	**Duration of menstrual flow**					
	2- 3 days	13	13%	11	11%	0.258
	3- 5 days	23	23%	22	22%	
	More than 5 days	64	64%	67	67%	
16	**Family history of PCOS**					
	Yes	33	33%	35	35%	0.089
	No	67	67%	65	65%	
17	**History of underlying diseases**					
	Yes	40	40%	27	27%	6.47
	No	45	45%	48	48%	
	Diabetes, Hypertension, Thyroid	8	8%	18	18%	
	Any other	7	7%	7	7%	
18	**History of previous treatment for PCOS**					
	Yes	56	56%	52	52%	0.861
	No	42	42%	44	44%	

	Medical / Surgical	02	2%	4	4%	
19	**Habit of doing exercise**					
	Regular	13	13%	19	19%	1.34
	Irregular	87	87%	81	81%	
20	**Dietary Pattern**					
	Vegetarian	24	24%	27	27%	0.470
	Non- vegetarian	68	68%	67	67%	
	Ova – vegetarian	8	8%	6	6%	

Table 1 summarizes the demographic and clinical characteristics of women diagnosed with polycystic ovarian syndrome (PCOS) in both the experimental and control groups. Noteworthy similarities include the age distribution, with 49% in the 18-21 age group in the experimental group and 45% in the control group. The majority identified as Hindu (60% experimental, 41% control) and resided in rural areas (53% experimental, 50% control). Education-wise, 25% of the experimental group was illiterate, contrasting with 25% in the control group holding a diploma. In terms of occupation, the majority engaged in household activities (73% experimental, 70% control). Monthly family income varied, with 40% in the experimental group earning between 11000 and 15000, and 43% in the control group earning between 16000 and 20000. Nuclear family structures were prevalent in both groups (56% experimental, 52% control). Most women were unmarried (78% experimental, 76% control) and received PCOS information from medical professionals (76% experimental, 71% control). Both groups exhibited similarities in menstrual characteristics, such as the age of the first menstrual period (47% experimental, 49% control), irregular menstrual cycles (81% both groups), and pain during menstrual cycles (64% both groups). Family history of PCOS was absent in the majority (67% both groups), and most had no history of underlying diseases (90% experimental, 100% control). Previous PCOS treatment history was noted in 56% of the experimental group and 52% of the control group. Irregular exercise habits were common (87% experimental, 81% control), and a significant portion identified as non-vegetarian (68% experimental, 67% control).

Table: 2 Anthropometric measurements (BMI and Waist HIP Ratio)

	TEST	**GROUP**	**MEAN**	**STANDARD DEVIATON**	**MEAN DIFFERENCE**	**'t' VALUE Independent -t test**	**df**	**'p' VALUE**
BMI	Pre test	Experimental group	28.1	3.434	0.0600	0.1160	594.0	0.9992
		Control group	28.04	3.45				
	Post Test 1	Experimental group	24.19	4.117	-3.800	7.348	594.0	<0.0001
		Control group	27.99	3.56				
	Post test-2	Experimental group	22.64	3.563	-5.250	10.15	594.0	<0.0001
		Control group	27.89	3.77				
HEALTH RISK [waist HIP ratio]	Pre test	Experimental group	88.73	6.311	0.1300	0.1380	594.0	0.9987
		Control group	88.60	6.620				
	Post Test 1	Experimental group	82.36	8.167	-5.730	6.081	594.0	<0.0001
		Control group	88.09	6.097				
	Post test-2	Experimental group	78.19	6.285	-9.630	10.22	594.0	<0.0001
		Control group	87.82	6.270				

p<0.001HS- highly significant, NS-Non Significant.

Table 2 presents a comparative analysis of the efficacy of the comprehensive nursing intervention package on anthropometric measurements among women diagnosed with polycystic ovarian syndrome (PCOS) in both the experimental and control groups. In the pretest, the mean BMI scores for women with polycystic ovarian syndrome (PCOS) in the experimental and control groups were 28.1±3.434 and 28.04±3.45, respectively, with a non-significant difference (t = 0.1160). In post-test 1 and 2, the experimental group showed significant improvement (BMI: 24.19±4.117 and 22.64±3.563) compared to the control group (BMI: 27.99±3.56 and 27.89±3.77), with t values of 7.348 and 10.15. Similarly, Health risk (waist HIP ratio) exhibited non-significant differences in the pretest (t = 0.1380) but significant improvements in post-test 1 and 2 (t = 6.081 and 10.22). These

results indicate the positive impact of the comprehensive nursing intervention package on various parameters in women with PCOS.

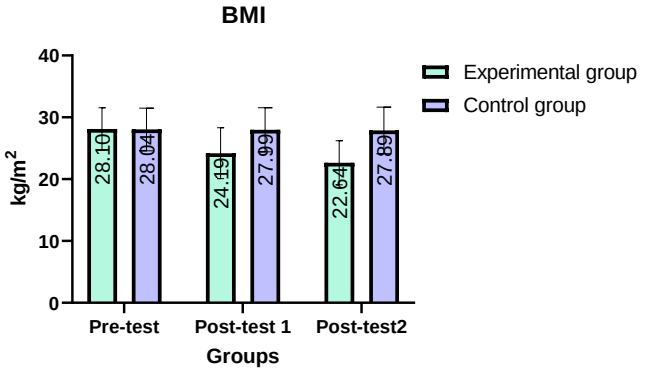

Figure: 1 Measurement of BMI

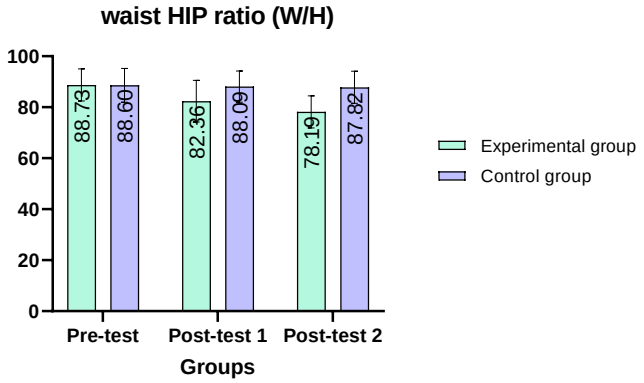

Figure: 2 Measurement of Waist Hip Ratio

Even though our study didn't find statistical significance in regards to weight, there has been speculation that BMI may have a bearing on reproductive hormone levels in individuals with PCOS.[13, 14]There was evidence that higher BMI has been associated with lower levels of LH.[15, 16] while other studies report that BMI didn't had a significant effect on LH. [17,18] Conversely, high BMI, specifically obesity, and age contribute significantly to PCOS' various facets. Metabolic characteristics and clinical manifestations of the syndrome may be significantly affected by these factors.[19, 20] A comparison of the effectiveness of a comprehensive nursing intervention package on health risk (waist-hip ratio) for women with polycystic ovarian syndrome in the experimental group was conducted in the pretest, and a comparison was done in the control group with a score of 0.84±0.021. PCOS, as well as its associated complications, particularly infertility, were more likely to occur in women with high BMIs and central obesity. A larger waist circumference and a wider hip circumference were linked to a higher incidence of PCOS, according to earlier research.[21] Pretest results indicated there was no statistically significant difference in health risk (waist-hip ratio) between the experimental and control groups, according to an independent 't' test.

Conclusion

In conclusion, this study demonstrates the importance of tailored nursing interventions in improving PCOS health outcomes. Both experimental and control groups in this study were evaluated for their demographics and clinical profiles. Among the participants, a variety of characteristics were revealed. Among the variables were age distribution, educational background, and employment sector. According to the study, there were no statistically significant differences between the experimental and control groups in BMI, waist-hip ratio. The nursing intervention significantly improved health risks (waist-hip ratio) among women. There was a positive impact on certain clinical parameters related to PCOS with the comprehensive nursing intervention package. Such interventions can benefit patients suffering from this complex endocrine disorder and improve their well-being.

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