Original Article

Lifestyle Intervention Program on Quality of Life and Psychological Well-being of Girls with Risk of Developing Polycystic Ovarian Syndrome (PCOS) in Selected Colleges of Bhubaneswar, Odisha

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Abstract

Background: Globally, Polycystic Ovary Syndrome affects 5–10% of the population of reproductive age, making it the most prevalent endocrine condition. Symptoms often include oligomenorrhea, hyperandrogenism, and obesity.

Objective: The main objective of the study is to assess the effect of life lifestyle intervention program on quality of life and psychological well-being among girls at risk of developing PCOS.

Method: A quasi-experimentalstudy was conducted among 120 girls at risk of developing PCOS in a selected college in Bhubaneswar (60 in the experimental group and 60 in the control group). Girls aged 16-20 years, with a PCOS risk assessment score greater than 5 and staying in the hostel, were selected purposively. Tools include 1. Socio-demographic questionnaire, 2. Risk assessment checklist to identify the risk of PCOS girls,3. Standardised SF-36 QOL questionnaire to assess the Quality of life and 4. Standardised Riff's psychological well-being scale to assess the psychological well–being of girls with risk of developing PCOS.

Result: Study result shows that there was a significant improvement in the post-test mean quality of life (QOL) score in the experimental group as compared to the control group (U=1746.0, P=0.002) and a significant reduction was seen in the post-test mean psychological well-being score in the experimental group as compared to the control group (U=1523,P=0.00). There was a significant association found between quality of life and age (χ^2=1.159, p=0.021), menstrual flow (χ^2=7.402, p=0.025), and BMI (χ^2=3.726, p=0.023). And significant association was found between the psychological wellbeing and type of family ($\chi2$ = 5.574, p 0.01), menstrual flow ($\chi2$ = 7.402, p = 0.04), and BMI ($\chi2$ = 3.726, p = 0.02).

Conclusion: The lifestyle intervention program was an effective non-pharmacological nurse-led intervention in improving the quality of life and reducing psychological well-being of girls with risk of developing PCOS.

Keywords: Lifestyle intervention program, Quality of life, Psychologicalwell-being

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Introduction

Adolescent gynaecological problems occupy a special space in the spectrum of gynaecological disorders of all ages. Menstrual abnormalities are frequently encountered in this age group. Polycystic Ovary Syndrome (PCOS) is the most common cause of anovulatory infertility in women.[1]Polycystic ovary syndrome (PCOS) is the most common endocrine condition affecting between 8% and 13% of women of reproductive age and 6%–18% of adolescent girls, depending on the diagnostic criteria used and the population studied.[2]

Polycystic ovarian syndrome (PCOS) has been defined by the National Institute of Health and Rotterdam criteria as a hormonal disorder characterised by the presence of at least one polycystic ovary (presence of multiple cysts), accompanied by ovulatory dysfunction and excessive secretion of androgen. [3.]

First-line effective treatment for Polycystic Ovary Syndrome (PCOS) involves lifestyle changes. Even minor lifestyle adjustments have been shown to reduce symptom severity and improve psychological well-being.[4] The positive impact of exercise on psychological outcomes in PCOS has been specifically explored in two clinical trials. Furthermore, studies have indicated that women with PCOS have a significant prevalence of anxiety, and this anxiety appears to be a risk factor for developing depression.[5]

Yoga has been widely recognised as an effective complementary therapy for treating various psychological issues, including anxiety and depression, across scientific studies.[6] Specifically, it can alleviate symptoms of depression, anxiety, stress, and post-traumatic stress disorder, while also promoting overall well-being.[7] Ultimately, adopting a healthy lifestyle that incorporates diet, exercise, and yoga is known to significantly improve psychological status and quality of life.[8]

Adolescence is a stage of transition from childhood to adulthood. This period includes several physiological changes, such as body growth, hormonal fluctuations, and the rapid development of primary and secondary sex characteristics.[9]Adolescents are more prone to health risks due to these hormonal and lifestyle changes, as well as a potential lack of knowledge. Therefore, it is important to minimise complications in later adolescence by increasing awareness, encouraging the adoption of healthy lifestyles, and promoting the early recognition of health problems.[10]

Method and Materials

Quantitative research approach with Quasi experimental design was adopted to assess the effect of lifestyle intervention program on Quality of life and Psychologicalwell-being of girls with risk of developing PCOS.The present study was carried out in the Rajdhani College and Ravenshaw College, Bhubaneswar. The girls whose risk assessment score was more than 5 and aged 16-20 years were included in the study, and those who had major associated health problems and mentally ill girls were excluded from the study. A totalof 120 adolescent girls were selected by a purposive sampling technique.Subjects were assigned to the experimental (n=60) i.e Rajdhani College of Bhubaneswar,and the control group (n=60), i.e, Ravenshaw College of Nursing,before conducting the study.Ethical permission was taken from the institutional ethical committee (IEC), and administrative permission was taken from thePrincipal of Rajdhani College and Ravenshaw College.The tools used to collect the data were:1. Socio-demographic questionnaire, 2. Risk assessment checklist to identify the risk of PCOS, 3. Standardised SF-36 QOL questionnaire to assess the Quality of life and 4. Standardised Riff's psychological well-being scale to assess the psychological well–being of girls with risk of developing PCOS. Baseline assessment was done on the 1st day,and the lifestyle intervention program was given in the next day. Lifestyle intervention program was implemented on the experimental group. The lifestyle intervention program includes knowledge regarding PCOS, dietary patterns, and demonstration of exercise and relaxation techniques.Follow-up was done by visiting the college weekly. The data was analysed using descriptive and inferential statistics with SPSS 21 version.

Result

Demographic characteristics of adolescent girls show that the highest percentage of girls in the experimental group (53.34%) and control group (55%) were aged between 16-18 years. Highest percentage (68.3%) in the experimental group belongs to the nuclear family,and 55.0% in control group belongs to Joint family.The majority of girls in the experimental group (55.34%) and control group (65.0%) were non-vegetarian. Nearly one fourth (21%) in the experimental group and 20% in the control group had polymenorrhea. And equal (23.4%) of girls in the control and experimental group had oligomenorrhea. One third of (30%) girls in the experimental group and 23.3% in the control group had scanty menstrual flow. And 20% in the experimental group and 21.7% in the control group had heavy menstrual flow. Highest percentage of girls (66.66%) had BMI between 20-29.9 in the experimental group and in control group, 66.66% had BMI between 18.5-24.9. Nearly one fourth (23.34%) in the experimental group and 25% in the control group had hypothyroidism. And 11.66% in the experimental group and 10% in the control group had hyperthyroidism as an associated medical disorder. Chi-Square test was computed to assess the homogeneity. Both groups were homogeneous in terms of all demographic characteristics.

Table No 1. Demographic Characteristics of Girls with risk of developing PCOS

$N=n_1$ (60) $+n_2$ (60)

S. No	Characteristics	Experimental Group f (%)	Control Group f (%)	χ^2 Value	P value
1	Age (In years)				
	16-18	32 (53.34%)	33 (55%)	0.09	0.85
	19-21	28 (46.66%)	27 (45%)		
2	**Type of family**				
	Nuclear	41 (68.30%)	27 (45%)	6.65	0.99
	Joint	19 (31.66%)	33 (55%)		
3	**Type of Diet**				
	Vegetarian	28 (46.66%)	21 (35%)	1.69	0.19
	Non-Vegetarian	32 (55.34%)	39 (65%)		
4	**Nature of Menstrual Cycle**				
	Normal (21-35 Days)	33 (55%)	34 (55.7%)	0.07	0.97
	Polymenorrhea (< 21 Days)	13 (21.7%)	12 (20%)		
	Oligomenorrhea (> 35 Days)	14 (23.4%)	14 (23.4%)		
5	**Nature of menstrual flow**				
	Normal	30 (50%)	33 (55%)	0.68	0.71
	Scanty	18 (30%)	14 (23.3%)		
	Heavy	12 (20%)	13 (21.7%)		

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6	**BMI**				
	Below 18.5	8 (13.33%)	4 (10%)	28.09	0.95
	18.5-24.9	10 (16.66%)	40(66.66%)		
	25-29.9	37 (61.66%)	8 (13.34%)		
	30 & above	5 (8.35%)	6 (10%)		
7	**Associated Medical Problems**				
	Hypothyroidism	14 (23.34%)	15 (25%)	0.40	0.81
	Hyperthyroidism	7 (11.66%)	9 (10%)		
	None	39 (68%)	36 (60.7%)		

Table: No-2: Shows the comparison of domain-wise posttest quality of life scores between experimental and control group. In all six domains, the posttest quality of life score in experimental group is higher than control group. And statistically significant differencewas shown in physical functioning (t =3.219,P= 0.035), vitality (t = 3.368, P = 0.001), and Role Emotion (t = 3.507, P = 0.001). Since it can be interpreted that life lifestyle intervention program has improved the quality of life in the experimental group compared to control group.

Table No 2: Comparisons of domain-wise post-test score quality of life (QOL) in experimental and control groups.

$N=n_1$ (60) $+n_2$ (60)

Sl no	Domain	Mean±SD		t value	P value
		Experimental group	Control group		
1	Physical functioning	12.63±5.16	11.57±4.33	3.219	**0.035**
2	Bodily pain	3.25±1.57	2.83±1.5	1.498	0.137
3	Vitality	6.71±2.95	5.11±2.20	3.368	**0.001**
4	Social function	3.08±1.41	2.63±2.64	1.165	0.247
5	Role Emotion	4.23±2.06	3.11±1.37	3.507	**0.001**
6	Mental Health	6.41±3.14	5.78±2.34	1.246	0.215
Overall		34.11±12.34	32.78±9.67	0.657	0.512

P<0.05 Statistically significant, Independent 't' test, df=118

Table: No-3: Shows the comparison of domain wise posttest of psychological well-being score between experimental and control groups. Here, the lower the score indicate the better the psychological well-being. In all six domains, the posttest psychological well-being in the experimental group is lower thanthe control group. And statistically significant difference shown in personal growth (t = 1.99, P = 0.049), positive relation (t = 0.44, P = 0.039), and purpose in life (t = 1.63, P = 0.078). Since it can be interpreted that life style intervention program has improved the psychological well-beingin all domain in the experimental group thancontrol group.

Table: No-3: Show the comparison of Overall post-test mean quality of life score and Psychological well-being (PWD) score between experimental and control group. The quality of life score in the experimental group is higher as compared to the control group. And the psychological well-being score in the experimental group is lower than the control group. And also showing the statistically significant difference in Quality of life (t=1.263, p=0.035) & Psychological wellbeing (t=1.263, p=0.035). Hence, it can be interpreted that lifestyle intervention program given for the adolescent girls improved their quality of life and psychological wellbeing.

Table No 4. Comparison of the overall posttest mean quality of life score (QOL) and psychological well-being among (PWD experimental and control group.

N=n_1 (60) +n_2 (60)

Variable	Mean±SD		t value	p value
	Experimental Group	Control group		
Quality of life	34.43±12.256	31.85±10.01	1.263	0.035
Psychological well being	124.42±40.493	134.25±39.20	1.351	0.023

P<0.05 Statistically significant, Independent ' t' test, df=118

Table No-4: Shows the correlation between the pretest score of quality of life and psychological well-being score. There was a very weak correlation found between quality of life (QOL) and psychological well-being (PWD) and there was no significant relation found (r=0.126, p=0.339).

Table No 4. Relation between pretest quality of life (QOL) and psychological wellbeing (PWD)

N= 120

Criteria	Mean±SD	r	P value
Quality of life	29.9 ± 8.25	0.12	0.33
Psychological well being	127.96 ± 39.45		

P≤0.05 Statistically significant, Karl Pearson correlation coefficient.

Association between demographic characteristics and Quality of Life & Psychological Well-being

Chi-Square test was computed to find the association between quality of life and socio-demographic characteristics. There was a significant association found between age (χ^2=1.159, p=0.021), menstrual flow (χ^2=7.402, p=0.025), and BMI (χ^2=3.726,p=0.023). The association between psychological well-being and socio-demographic characteristics shows a significant association found between the type of family (χ2 = 5.574, p= 0.01), menstrual flow (χ2 = 7.402, p = 0.04), and BMI (χ2 = 3.726, p = 0.02).

Discussion

In the present study, the highest percentage of participants were aged between 16 and 18 years. This aligns with findings by Zeinab et al. (2021), who studies the effect of educational programs on the lifestyles of paramedical students and reported that the majority of female participants (73.5%) fell within the 16–20 age bracket.[11] These findings suggest that the risk factors and early manifestations of Polycystic Ovarian Syndrome (PCOS) are highly prevalent among adolescent girls, highlighting a critical window for early intervention.

Furthermore, the majority of participants across both groups belonged to nuclear families. This demographic trend may be attributed to the urban settings typical of nuclear families, which are frequently associated with more sedentary lifestyles

and a higher reliance on processed foods compared to traditional joint families.

Additionally, baseline data showed that a majority of the girls in both groups were overweight. Excess adipose tissue is known to increase insulin resistance, which subsequently stimulates the ovaries to produce higher levels of androgens. This resulting hormonal imbalance is recognised as a primary driver of the PCOS disease process.

The finding of this study is that the lifestyle intervention program significantly improved both the Quality of Life (QOL) and Psychological Well-Being (PWB) of girls at risk for PCOS. This is supported by recent research by Nahidi (2024), which revealed that a lifestyle promotion program successfully improved anthropometric and clinical manifestations of PCOS in adolescents. And also emphasised that educational institutions are highly appropriate settings for both identifying at-risk individuals and implementing these modifications.[12]

Hesari et al. demonstrated the efficacy of targeted dietary additions, noting that eight weeks of regular garlic consumption resulted in significant reductions in both weight and body mass index (BMI) ($P < 0.01$). Furthermore, this dietary intervention led to significant enhancements across all domains of the Modified Polycystic Ovary Syndrome Health-Related Quality of Life Questionnaire (MPCOSQ) ($P < 0.001$).[13]

The receptiveness to such programs in our study reflects findings by Saslow et al., who noted that a majority of individuals with PCOS express a strong interest in lifestyle interventions designed to increase energy, reduce anxiety and depression, promote weight loss, prevent diabetes onset, and regulate menstrual cycles.[14]

The psychological benefits observed in our intervention are corroborated by Adshead et al. Their systematic review confirmed that psychological and lifestyle interventions yield beneficial effects on depression, anxiety, stress, general body image, and multiple specific domains of the PCOSQ (including menstrual, hirsutism, infertility, emotion, and weight domains).[16]

Regarding physical activity, a meta-analysis by Hafizi Moori et al. reported that exercise training can significantly lower serum levels of C-Reactive Protein (CRP), reducing systemic inflammation in PCOS patients.[15] Similarly, De Lima Nunes et al. reported that physical exercise improves a variety of health outcomes in the PCOS population, including increased ovulation rates, menstrual regularity, and cardiorespiratory fitness, alongside reductions in mental health disorders, waist circumference, and body fat. [17]

Consequently, current clinical practice guidelines strongly advocate for physical exercise as a cornerstone in the non-pharmacological management of PCOS.

Conclusion

The findings overwhelmingly suggest that a lifestyle intervention program is a highly effective, non-pharmacological strategy for mitigating the psychological and quality-of-life impacts in girls identified as being at risk for developing Polycystic Ovary Syndrome (PCOS). The study provides strong evidence that empowering at-risk girls with sustainable lifestyle tools is crucial for holistic health management, resulting in tangible, positive gains in both their mental resilience and daily functioning.

Conflict of Interest: None

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