Original article:

Prevalence of depression among women with polycystic ovarian syndrome

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ABSTRACT

Introduction: Polycystic ovarian syndrome (PCOS) is one of the most commonest   endocrine disorder among women aged between 18-44years. It is characterized by amenorrhea,oligomenorrhea, anovulation, infertility, hirsutism, and acne. PCOS patients are at increased risk of medical problems like diabetes mellitus,hypertension, dyslipidemia and metabolic problems.
These patients have changes in their physical appearance and the associated medical problems involve long term treatment which makes them prone for depression. .

Aim: To determine the prevalence of depression among women with PCOS compared to normal healthy women.

Methodology: 50 cases of PCOS as per the Rotterdam criteria were selected from the Gynecology OPD, Government Chengalpattu Medical College. The anthropometric parameters were taken and they were asked to complete the Beck's Depression Inventory.The data was compared with that of 50 age -matched normal healthy individuals. The statistics analysis was done usingthe unpaired sample 't' test Pearson's Correlation   and Chi square test.

Result: The collected data was analyzed with IBM.SPSS Statistics software version23.0. BMI & Depression scores were significantly increased in the PCOS group compared to the controls ($p < 0.001$**).The Study showed increased prevalence of mild to moderate depression in PCOS patients compared to the normal subjects. There was no significant correlation between the depression scores and BMI.

Key words: Polycystic Ovarian Syndrome, Depression, Beck's Depression Inventory

INTRODUCTION:

Polycystic ovarian syndrome is a common endocrine disorder in females in the reproductive age group(1, 2). With changes in the lifestyle the incidence of PCOS has increased significantly in Indian women. PCOS is associated with changes in physical appearance, menstrual abnormalities,infertility and lowered self-esteem.   There is also increased risk of co- morbidities like hypertension (3), dyslipidemia (4), impaired glucose tolerance and type-2 diabetesmellitus (5).   Depression is a disorder characterized by emotional, cognitive, physiological and behavioral symptoms. The primary emotional symptom is a profound sense of sadness and low mood.Irritability, frustration and anger oftenaccompany this low mood. Depressed individuals have difficulty in concentrating and making simple decisions.

Physiological symptoms include changes in appetite, sleep, fatigue and concerns about aches and pains. Decreased sexual interest is reported in depressed individuals. Behavioral symptoms include decreased

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activity, loss of interest and inability to derive pleasure from activities that were previously interesting and pleasurable (6).

Women have a greater tendency for depression when compared to men (7). Many studies have shown a greater incidence of depressive disorders in obstetric – gynecological patients. Hence it is important to identify patients with depression at the earliest and counsel them so that it can improve the quality of life. A US study has reported a 50% rate of depression in patients with PCOS but there were no controls (8).Another study which compared the mood states in PCOS subjects with weight- matched healthy women using a number of questionnaires found that acute and long –standing depressive symptoms were significantly higher in the PCOS group (9). Hence in the present study we have estimated the depression levels in PCOS and compared it with age matched normal healthy females.

AIM OF THE STUDY:

To determine the prevalence of depression among women with PCOS when compared with normal healthy women of the same age group.

MATERIALS & METHODS:

The study was conducted in the Department of Physiology and Department of Gynecology, Government Chengalpattu Medical College, Chengalpattu.

CASES:

50 women who were diagnosed with PCOS as per the Rotterdam criteria in the age group 18 -35 years were selected for the study from the out-patient Department of Gynecology,Government Chengalpattu Medical College & Hospital.

INCLUSION CRITERIA:

- Ultrasound findings of polycystic ovaries

- Clinical signs of hyper-androgenism
- $\geq$ 35 days interval between menstrual periods
- Amenorrhoea
- Infertility

EXCLUSION CRITERIA:

Patients with:

- Thyroid dysfunction
- Psychiatric disorders
- Adrenal hyperplasia
- Hyperprolactinemia
- Anti- psychotic medications

CONTROLS:

50 normal healthy women subjects with regular menstrual cycles in the age group of 18-35 years were randomly selected from the Master Health Check Up, Chengalpattu Medical College & Hospital.

STUDY DESIGN: Case Control Study

STUDY PLACE: Government Chengalpattu Medical College & Hospital, Chengalpattu

The study protocol was approved by the Institutional Ethical Committee of Government Chengalpattu Medical College.

METHODOLOGY:

Informed and written consent was obtained from all the subjects who participated in the study. The nature of the study was explained to all the subjects. The Anthropometric measurements were taken and the BMI was calculated using Quetlet's index.

The subjects were asked to complete two questionnaires.

The first questionnaire included personal information regarding theage, marital status, parity, employment, personal history regarding drugs and

previous illnesses, family history of psychiatric illness.

The Beck Depression Inventory was used to assess the state of mind of the subjects. The

questionnaires were scored as directed by the standard instructions given in theform. Each question had a score of 0 to 3. By summing up the scores the results were analyzed.

BECK DEPRESSION INVENTORY SCORES

TOTAL SCORE	LEVELS OF DEPRESSION
1 -10	Normal
11 -16	Mild mood disturbance
17 -20	Borderline clinical depression
21 -30	Moderate depression
31 -40	Severe depression
Over 40	Extreme depression

Subjects with severe depression who scored 31 to 40 in the Beck Depression Inventory had feelings of guilt, loss of self- worth,loss of appetite and weight, sleeplessness, intent to commit suicide. These feelings were experienced almost every day for 2 consequent weeks. Subjects with moderate depression had symptoms of changes in appetite and sleep, had feelings of guilt, a sense of failure and disgust. Those with mild depression felt dissatisfied with life, were disappointed with themselves, and lost interest in other people but it did not affect their food and sleep habits and their regular routine.

STATISTICAL ANALYSIS:

The collected data was analyzed with IBM.SPSS Statistics software version 23.0. To describe about the data descriptive statistics frequency analysis, percentage analysis were used for categorical variables and the mean and SD was used for continuous variables. To find the significant difference between the bivariate samples in independent groups the unpaired sample't' test was used. To assess the relationship between the variables Pearson's correlation was used. In all the above statistical tools the probability value of 0.05 was considered as significant level

Table – I

Group Statistics

	Groups	N	Mean	Std. Deviation	P value
AGE	PCOS	50	26.82	3.9	1.000
	Non PCOS	50	26.82	4.2	
HEIGHT	PCOS	50	154.90	6.8	0.875
	Non PCOS	50	155.12	7.0	
WEIGHT	PCOS	50	70.78	8.2	**< 0.001****
	Non PCOS	50	60.40	7.1	
BMI	PCOS	50	29.61	3.9	**< 0.001****
	Non PCOS	50	25.32	2.9	
BDI SCORE	PCOS	50	18.58	6.8	**< 0.001****
	Non PCOS	50	9.12	3.4	

Table – II

Correlations between PCOS & CONTROLS

Groups = PCOS

Correlations

		BMI	SCORE	AGE
BMI	Pearson Correlation	1	-.074	.155
	Sig. (2-tailed)	50	.612 50	.282
	N			50
BDI SCORE	Pearson Correlation	-.074	1	-.120
	Sig. (2-tailed)	.612	50	.407
	N	50		50
AGE	Pearson Correlation	.155	-.120	1
	Sig. (2-tailed)	.282	.407 50	50
	N	50		

Groups = Non PCOS

Correlations

		BMI	SCORE	AGE
BMI	Pearson Correlation	1	-.153	-.125
	Sig. (2-tailed)	50	.288 50	.387
	N			50
BDI SCORE	Pearson Correlation	-.153	1	.047
	Sig. (2-tailed)	.288	50	.748
	N	50		50
AGE	Pearson Correlation	-.125	.047	1
	Sig. (2-tailed)	.387	.748 50	50
	N	50		

TABLE III

BDI Score Range * Groups Crosstabulation

|			Groups		Total
			PCOS	Non PCOS	
BDI Score Range	Normal	Count	7	38	45
		% within Groups	14.0%	76.0%	45.0%
	Mild	Count	10	8	18
		% within Groups	20.0%	16.0%	18.0%
	Borderline	Count	11	4	15
		% within Groups	22.0%	8.0%	15.0%
	Moderate	Count	22	0	22
		% within Groups	44.0%	0.0%	22.0%
Total		Count	50	50	100
		% within Groups	100.0%	100.0%	100.0%

Table – I shows the relationship of the anthropometric parameters between the two groups. The two groups were age matched. The BMI was significantly greater in the PCOS group(p < 0.001**)compared to the controls. Depression scores were also significantly increased in the PCOS group compared to the controls (p < 0.001**)

Table – II Pearson correlation was used to examine the relationship between the Beck score, BMI and age. Although there was not much correlation between the age of depression between the PCOS group and controls, the BMI wasfound to be higher in the PCOS group.

Table – III - Cross tabulation of the percentage of depression score between the two groups. Evaluation of depression scores in the PCOS group showed, 22 cases (44%)of moderate depression, 11 cases (22%) of borderline depression and 10 cases (20%) of mild depression. The total number of cases who had normal Beck score of less than ten in the PCOS group was 7 (14%) as compared to 38 (76%) in the controls.

Among the controls 8 subjects (16%) showed mild depression and 4subjects (8%) showed borderline depression.

RESULTS:

PREVALANCE OF DEPRESSION IN PCOS PATIENTS

BECK'S DEPRESSION INVENTORY SCORES
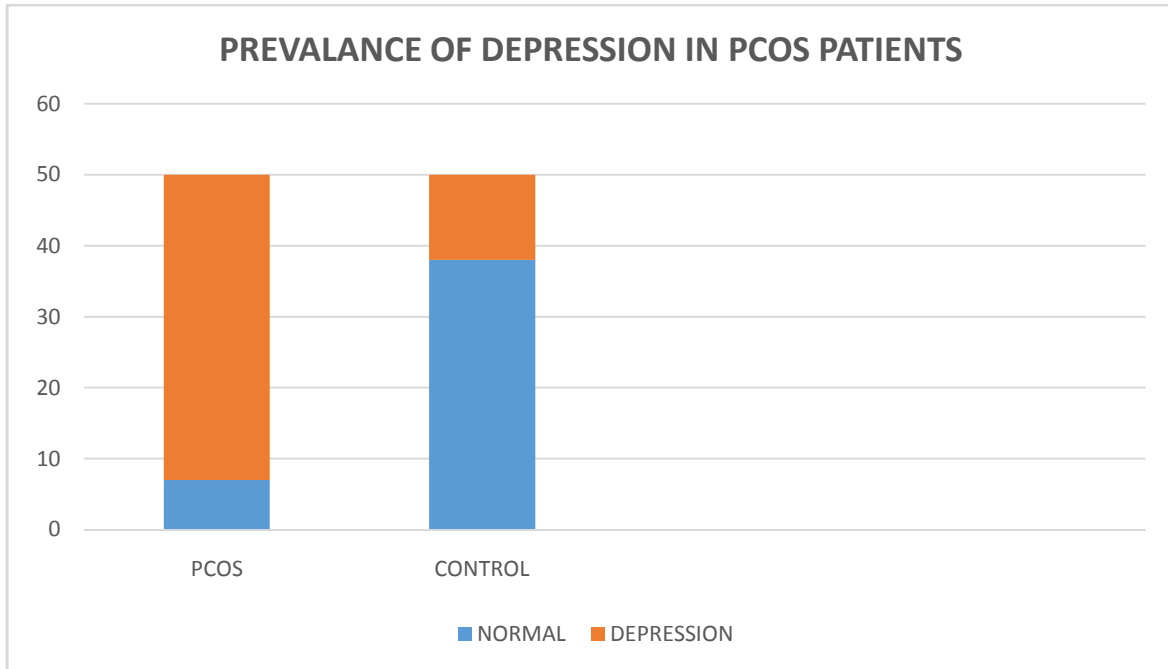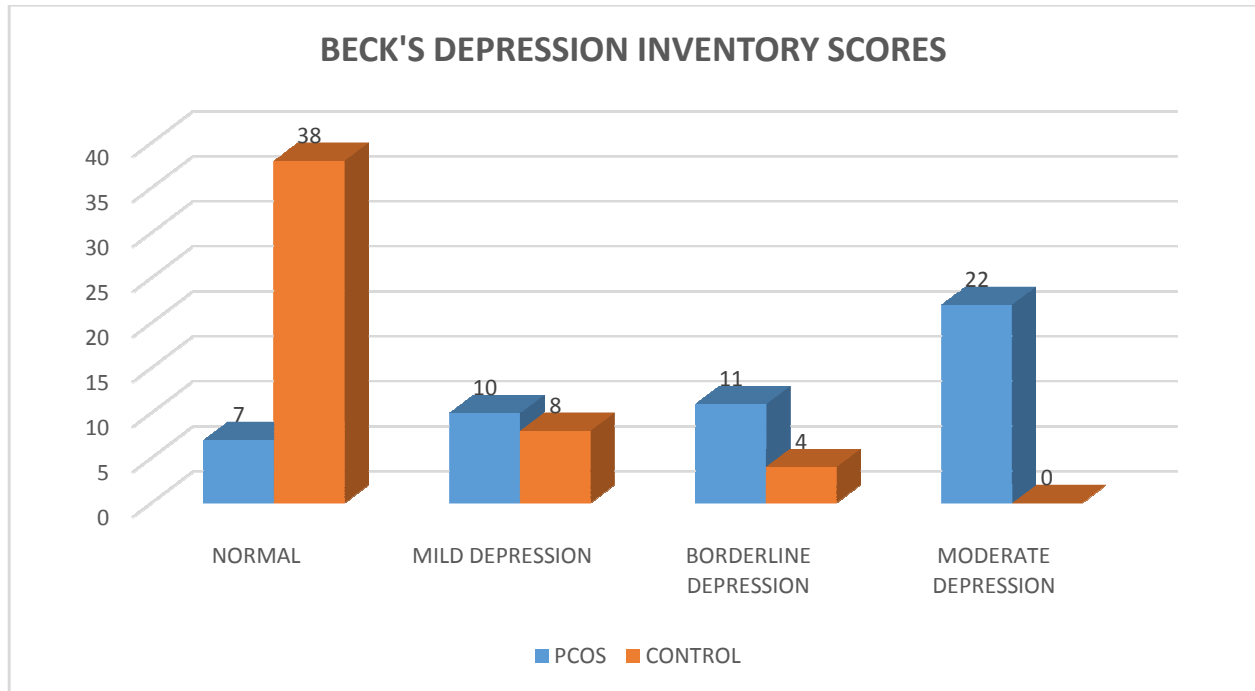
DISCUSSION:

Polycystic ovarian syndrome is highly prevalent in women within the reproductive age group in India. Changes in the life-style and the hectic schedule of young women are some of the reasons for higher incidence of PCOS.These women suffer from lower self -esteem,more negative self-image (9, 13)and have higher levels of depression due to the physical features of hyper-androgenism.Beck's depression inventory is a simple and effective method for evaluation of depression.

In our study, there were significantly a greater number of cases with moderate and border-line depression with symptoms of changes in appetite and sleep, feelings of guilt, a sense of failure and disgust. A case with mild depression was present in both the groups who felt dissatisfied with life, but it did not affect their normal routine.

The data regarding risk of depressive disorders in women with infertility are controversial & limited.(10 -12). There is some evidence that during the time that couples attempt to conceive, women with fertility problems experience more negative emotionalfeelings than women who successfully conceive spontaneously (13). Most cases of PCOS have fertility problems and they come in contact with the gynecologist frequentlyfor treatment. Hence it is imperative that gynecologist address the problem of depression in these patients and refer them early for counseling so that their quality of life can be improved. Regular screening of these patients with the Beck's depression Inventory can help the gynecologist to assess the cases by themselves for further referral.

LIMITATIONS OF THE STUDY:

The study design did not take into account the socio-economic status of the subjects which could have influenced the Beck's Inventory scoring. Women with PCOS tend to have clinical or biochemical hyperandrogenism. Although the relationship between androgenism and depression in women is

controversial, hormonal assay would have added further value to the study.

CONCLUSION:

Our study has revealed that depression is rampant among women with PCOS and the Beck Depression Inventory can be used as a simple screening tool for early diagnosis for these patients.

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