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A STUDY ON ASSESSMENT OF RISK FACTOR RESPONSIBLE FOR DEVELOPING POLYCYSTIC OVARIAN SYNDROME, CREATING AWARENESS AND LIMITING THE RISK FACTOR BY ADVANCED PATIENT COUNSELLING

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ABSTRACT

OBJECTIVE: To assess the risk factors in developing poly cystic ovarian syndrome(PCOS), creating awareness and limiting them by advanced patient counseling. MATERIALS AND METHODS: An institutional and community based randomized observational study was conducted in RR institutions and general public over a period of six months. 200 participants who met the inclusion criteria were included in the study. The data was collected using self designed questionnaire and suitable statistical analysis was done. Self made PCOS score was used to access the severity. RESULTS: Out of 200 participants included in the study, majority (22.5%) of the participants belonged to age group of ≥ 25 years. On analysis of PCOS state it was found that 110 participants (55%) were with the chance for getting PCOS (score 5-9), 64 participants(32%) were with High risk of PCOS(score ≥ 10) and 26 participants (13%) were unpredictable to PCOS (score < 5).Among 64 participants with High risk of getting PCOS, majority(17) of the participants were at the age of ≥ 25 years. Among 110 participants with Chance of getting PCOS ,majority (20) of the participants were at the age of 21 years and among 26 participants with Unpredictable to PCOS , most of the participants were at the age of 19 years .Out of 200 participants 25 participants were found with complications. Among them Infertility problems (52%) was found to be the major one. CONCLUSION: The risk of PCOS increases with presence of one or more identified predisposing factors. Most of the factors tested as predisposing factors in our study are interlinked to each other and are mostly modifiable. Hence careful monitoring and proper management of identified predisposing factors not only delays but also helpful in adequate management of the disease.

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INTRODUCTION

DEFINITION

Polycystic Ovarian Syndrome (PCOS), also referred to as hyperandrogenic anovulation (HA), or Stein–Leventhal syndrome, is one of the most common endocrine system disorders that affect women in their reproductive age. Described since 1935 by Stein and Leventhal (1935), it represents a condition in which an estimate of 10 small cysts of a diameter ranging between 2 and 9 mm develop on one or both ovaries and/or the ovarian volume in at least one ovary exceeds 10 ml[1]. It is the most common endocrinopathy affecting premenopausal women, with a prevalence of approximately 4.6%[2].

EPEDEMIOLOGY

World Health Organization (WHO) estimates that PCOS has affected 116 million women (3.4%) worldwide in 2012.Globally,prevalence estimates of PCOS are highly variable, ranging from 2.2% to as high as 26%.In India, experts claim 10% of the women to be affected by PCOS[3].

CLINICAL MANIFESTATIONS OF PCOS

- Oligomenorrhea or amenorrhea
- Hyperandrogenism.
- Acne and Hirsutism (abnormal hair growth) in 60%to 70%.
- Male pattern baldness
- Dark velvety skin(Acanthosis Nigricans)
- Obesity
- High blood pressure &Insulin resistance[4].

PREDISPOSING FACTORS FOR PCOS

The predisposing factors for PCOS include the following :

•Genetic factors: Family history of PCOS.

•High maternal androgen: Prenatal exposure to androgens poorly controlled maternal congenital adrenal hyperplasia, Androgensecreting tumors, Low birth weight/small for gestational age, Premature adrenarche.

•Endocrinal factors: Onset of type 1 diabetes mellitus before menarche, insulin resistance and obesity.

•Drugs: such as anti-epileptic drugs (e.g., Valproate).

PATHOGENESIS OF PCOS

Polycystic ovaries develop when the ovaries are stimulated to produce excessive amounts of male hormones (androgens), particularly testosterone, by either the release of excessive luteinizing hormone bythe anterior pituitary gland, high levels of insulin in the blood (hyperinsulinaemia) in women whose ovaries are sensitive to this stimulus or reduced levels of sex-hormone binding globulin (SHBG) resulting in increased free androgens.

The syndrome acquired its name due to the common sign on ultrasound examination of multiple ovarian cysts which represent immature follicles. The follicles have developed from primordial follicles but the development has stopped at an early antral stage due to the disturbed ovarian function.

Patients with PCOS have higher gonadotrophin releasing hormone (GnRH), which in turn results in an increase in LH/FSH ratio in females with PCOS. The majority of patients with PCOS have insulin resistance and/or obesity. Their elevated insulin levels contribute to or cause the abnormalities seen in the hypothalamic-pituitary-ovarian axis that lead to PCOS. Hyperinsulinemia increases GnRH pulse frequency, LH over FSH dominance, increased ovarian androgen production, decreased follicular maturation and decreased SHBG binding. All these factors contribute to the development of PCOS .

PCOS is characterized by a complex positive feedback of insulin resistance and hyperandrogenism.

Adipose tissue possesses aromatase, an enzyme that converts androstenedione to estrone and testosterone to estradiol. The excess of adipose tissue in obese patients causes them to have both excess androgens (which are responsible for hirsutism and virilization) and estrogens (which inhibit FSH via negative feedback).

PCOS has also been associated with a specific fragile X mental retardation 1 (FMR1) sub-genotype. Many studies suggested that women who have heterozygous-normal/low FMR1 have polycystic-like symptoms of excessive follicle-activity and hyperactive ovarian function[5].

DIAGNOSTIC CRITERIAS

Previously there were no widely accepted diagnostic criteria for PCOS[2]. Many definitions are now used for diagnosis of PCOS such as National Institutes of Health (NIH) criteria, Rotterdam criteria and Androgen Excess PCOS Society criteria[5].

NIH CRITERIA

A consensus from a conference sponsored by the NIH in 1990 determined that the criterion standard diagnosis of PCOS is clinical, defined by the following factors - the presence of ovulatory dysfunction (irregular menstrual cycles and subfertility), the presence of hyperandrogenism (hirsutism or acne), and the exclusion of other related disorders[2]

ROTTERDAM CRITERIA:

The Rotterdam criteria have suggested a broader definition for PCOS, with two out of three of the following criteria being diagnostic of the condition:

1. Polycystic ovaries (either 12 or more follicles or increased ovarian volume [> 10 cm3]).
2. Oligo-ovulation or anovulation
3. Clinical and/or biochemical signs of Hyperandrogenism.

It should be noted that the diagnosis of PCOS can only be made when other aetiologies for irregular cycles, such as thyroid dysfunction, acromegaly or hyperprolactinaemia, have been excluded if there is clinical suspicion[6].

Phenotypes:

Since PCOS tends to present as a spectrum of diseases, the Rotterdam criteria divided the disease into four phenotypes (Rotterdam, 2004):

1. Frank or classic polycystic ovary PCOS (chronic anovulation, hyperandrogenism, and polycystic ovaries)
2. Classic non-polycystic ovary PCOS (chronic anovulation, hyperandrogenism, and normal ovaries)
3. Non-classic ovulatory PCOS (regular menstrual cycles, hyperandrogenism, and polycystic ovaries)
4. Non-classic mild or normoandrogenic PCOS (chronic anovulation, normal androgens, and polycystic ovaries)[1].

ANDROGEN EXCESS PCOS SOCIETY CRITERIA

In 2006, the Androgen Excess PCOS Society suggested a tightening of the diagnostic criteria to all of the following including excess androgen activity, oligoovulation/ anovulation, polycystic ovaries and other entities are excluded that would cause excess androgen activity.

STANDARD DIAGNOSTIC ASSESSMENT

History-taking :

Specifically for menstrual pattern, obesity, hirsutism and the absence of breast development. If obese, the time of onset, progression and problems should be explored.

Physical examination :

This includes general body habitus, obesity, body mass index, blood pressure, presence of acne, male pattern of baldness and evidence of acanthosisnigricans.

Gynecologic ultrasonography :

It looks for small ovarian follicles.The follicles may be oriented along the ovarian periphery appearing as a ‘string of pearls’ on ultrasound examination.

Laboratory tests

1. levels of androgens, including androstenedione and testosterone may be elevated.Dehydroepiandrosterone sulfate (DHEA-S) levels above 700-800 mcg/dL are highly suggestive of adrenal dysfunction. The free testosterone level is thought to be the best measure, with about 60% of PCOS patients demonstrating high levels.
2. The ratio of LH (Luteinizing Serum hormone) to FSH (Follicle stimulating hormone) is greater than 1:1 (sometimes more than 3:1), as tested on day 3 of the menstrual cycle.
3. Fasting biochemical screen and lipid profile.
4. Two-hours oral glucose tolerance test (OGTT) in patients with risk factors (Obesity, family history, history of gestational diabetes) may indicate impaired glucose tolerance (insulin resistance) in patients with PCOS.
5. Fasting insulin level or GTT with insulin levels (also called IGTT): Elevated insulin levels have been helpful to predict response to medication and may indicate patients who will need higher doses of metformin or the use of a second medication to lower insulin levels.

Differential Diagnosis of PCOS

Other causes of irregular or absent menstruation and hirsutism, such as hypothyroidism, congenital adrenal hyperplasia (21-hydroxylase deficiency),

Cushing’s syndrome, hyper-prolactinemia, androgen secreting neoplasms and other pituitary or adrenal disorders should be investigated[5].

COMPLICATIONS

➢Diabetes mellitus.
➢Increased cardiovascular risk factors (Hypertension, Dyslipidemia and early markers of Atherosclerosis).
➢Obstructive sleep Apnea.
➢Depression or Psychological disorders
➢Infertility.
➢Endometrial hyperplasia in 30%to 50% of women.
➢Increased risk of Endometrial Carcinoma[4].

MANAGEMENT OF PCOS

ThemanagementofPCOStargetsthesymptomatologyforwhich patients usually present, anovulation, infertility, hirsutism, or acne being the most common complaints[1].

LIFESTYLE MODIFICATIONS

➢Weight reduction: Weight loss improves the endocrine profile and increases the likelihood of ovulation and pregnancy[7].Always should maintain proper BMI (Body Mass Index).
➢Diet: Diets recommended for obese PCOS patients are low in calories with a reduced carbohydrate intake. Reduce the intake of fats with very low density lipoproteins that can helps to weight gain ultimately leads to insulin resistance.

Diet rich in iron like dates and fiber rich contents along with fruits and fresh vegetables must be taken.
➢Exercise: Perform regular exercise& yoga to minimize the complications of PCOS.
➢Use Carica papayabefore one week of your menstruation date that can help to stimulate the growth of female hormones like Oestrogen that will help to maintain proper menstruation cycles[8].

PHARMACOLOGICAL TREATMENT:

If lifestyle changes are not enough to resolve symptomatology, medicaltreatmentisaddedforbettermanagementofthepatient's complaints. Medical management of PCOS is aimed at the treatment of metabolic derangements, anovulation, hirsutismand menstrual irregularity.

Oral contraceptives (OCPs):

By suppressing the hypothalamo-pituitary-ovarian axis, OCPs decrease LH secretions, increase sex hormone binding globulins, and decrease free testosterone levels. This addresses hyperandrogenism-mediated symptoms improving acne and hirsutism, corrects menstrual cycle abnormalities, and provides a mean for eff ective contraception.

Metformin:

Metformin (Glucophage), an oral anti-diabetic biguanide drug, acts by impeding hepatic glucose production and increasing the peripheral insulin sensitivity. Metformin treatment of obese adolescents with PCOS and impaired glucose tolerance proved beneficial in improving glucose tolerance andinsulin sensitivity, in lowering insulinemia, and in reducing elevated androgen levels.It is also used as a combination with clomiphene citrate to improve fertility outcomes in clomiphene citrate resistant patients[1].The minimum dose is 500mg three times a day[4].

Thiazolidinediones

Thiazolidinediones (TZD) represent a class of insulin sensitizer drugs used in the treatment of type II diabetes mellitus. The use of pioglitazone, one member of this class, was studied in patients with PCOS and data showed that its administration results in a decline in fasting serum insulin levels and insulin resistance.

Spironolactone

A steroid chemically relatedtothemineralocorticoidaldosterone,wasabletoimprove insulinsensitivity; It also suggested itsuse for hyper and rogenism associated symptoms such as acne and hirsutism[1].

Clomiphene citrate:

It constitutes one of the first-line treatments for ovulation induction.It is an estrogen receptor antagonist that interferes with negative feedback of the estrogen-signaling pathway, resulting in increased availability of FSH. Increased FSH leads to follicular growth, followed by an LH surge and ovulation[7].The combination of Clomiphene and Metformin is effective in many women with PCOS who are unable to conceive on their own[4].

Aromatase inhibitors :

Selective aromatase inhibitors such as anastrozole and letrozole are promising new ovulation-inducing agents. Theyblock the peripheral passage of androgens to estrogens reduces the quantity of estrogens, thereby producing positive feedback in the pituitary, increasing FSH, and optimizing ovulation[7].

Eflornithine Cream:

It is a cream meant for topical application, which is involved in inhibition of Ornithine Decarboxylaze enzyme which is main responsible for abnormal hair growth and is used for hirsutism[9].

Alternative medicine :

Acupuncture is one of the alternative medicine modalities that had been emerging as one of the commonly used methods for treatment of PCOS. Acupuncture may help PCOS patients to regulate and manage their periods. Moreover, it may help in decreasing body weight, reducing headache and improving patient's mood. Also, placing acupuncture needles in the areas related to the reproductive system may improve blood supply to the reproductive area, normalize hormone levels and help the proper functioning of the reproductive system[7].

Prevalence of PCOS cases in India rises about 30% in the last couple of years. Lack of knowledge and lifestyle changes are considered to be the major factor leading to this phenomenon.Awareness and accurate diagnosis is the first step in managing PCOS as it improves quality of life of the patient.

The diverse manifestations of PCOS start at an early age when a girl is maturing into a young woman. It is important to make an early diagnosis in order to prevent early and late sequel of the syndrome. Therefore, the screeningand diagnosis should be considered in young girls with risk factors suggestive of PCOS[10]. There is a need to increase awareness among women so as to avoid fertility problems, future health comorbidities and also to reduce financial cost and burden[1].

AIMS and OBJECTIVES

Aims

- To assess the risk factors in developing polycystic ovarian syndrome, creating
- awareness and limiting them by advanced patient counseling.

Objective of the study

- To prevent the occurrence of PCOS in females who are nearer for its occurrence.
- To minimize the symptoms and to improve the quality of life of females suffering
- PCOS.
- To create awareness on PCOS among females of reproductive age.
- To prevent the complications of PCOS in females who are suffering from it in
- their early age.
- To minimize PCOS by advanced patient counseling.

METHODOLOGY

study site:

The study was conducted in RR Institutions and general public.

study design:

An institutional and community based randomized observational study.

study duration:

➢Planning - 1 month
➢Data collection - 3 months
➢Interpretation and thesis writing - 2 months

study population:

Study participants were from RR institutions and general public.

sample size:

200 participants from RR institutions and general public.

STUDY CRITERIA:

inclusion criteria

Females aging between 18-45 yrs ,who are willing to participate in the study.

exclusion criteria
Females with thyroid dysfunction,acromegaly.
Females having hyperprolactinaemia.

source of data:
Self designed questionnaire

Study materials:
data collection form:

The data was collected by using a self designed questionnaire consisting of demographic details and 20 statements for self-assessment of risk factors of PCOS. Scoring was done to assess who are at high risk of PCOS (≥10), chance of getting PCOS (5-9) and are unpredictable to PCOS (< 5). The questionnaire was prepared based on WHO Guidelines and Standard Text Books written to assess the Risk Factors of PCOS. The data was collected, documented and analyzed by simple descriptive statistical method.

study procedure:
➢Females aging between 18-45 yrs, who were willing to participate in the study was given a questionnaire.
➢The data was collected from the questionnaire consisting of demographic details and 20 statements for self-assessment of risk factors of PCOS. The questionnaire was prepared based on WHO Guidelines and Standard Text Books written to assess The Risk Factors of PCOS.
➢Scoring was done to assess who are at high risk of PCOS, chance of getting PCOS and are unpredictable to PCOS.
➢The entire data collected was entered in Microsoft excel sheet for analysis of results.
➢The entire data was analyzed using appropriate statistical methods (MS Excel).

evaluation criteria:
The risk factors for developing polycystic ovarian syndrome were assessed and awareness on PCOS was created among adult females in the RR institutions and nearby general public.

statistical analysis:
Statistical analysis was performed using MS excel and the result was statistically analyzed using appropriate statistical method (MS excel).

RESULTS
This study included 200 participants from age group 18-45 years of RR institutions and general public. The study was conducted from November 2018 to April 2018.

AGE DISTRIBUTION OF THE PARTICIPANTS
Out of 200 participants enrolled in the study, majority of participants 45 (22.5%) belonged to age group ≥ 25 years, followed by 19 years (14%),20 years(12.5%),21 years(12.5%),22 years (12.5%),23 years(10%),18 years (9%),24 years(7%) .

Table no 1: Age distribution of the participants.

AGE DISTRIBUTION IN YEARS	NO OF FEMALES	PERCENTAGE
18	18	9 %
19	28	14 %
20	25	12.5 %
21	25	12.5 %
22	25	12.5 %
23	20	10 %
24	14	7 %
≥25	45	22.5 %

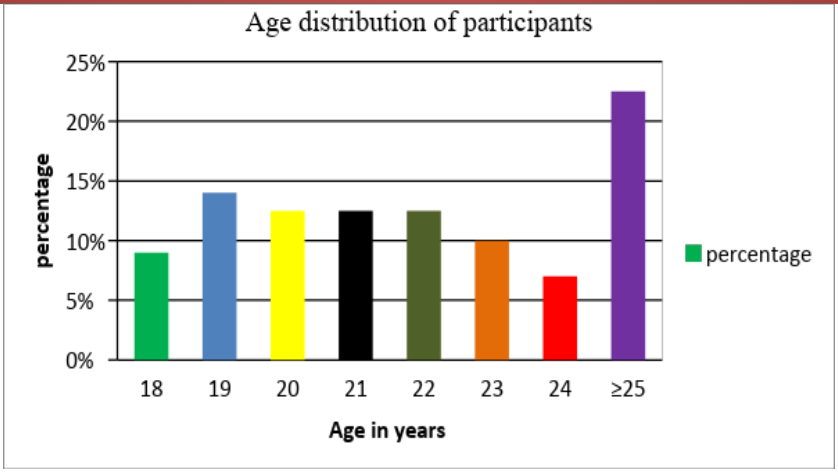

Figure no 1: Percentage age distribution of the participants.

PCOS STATE OF THE STUDY POPULATION

Among 200 participants , majority of participants 110 (55%) had a score of 5-9,followed by 64 participants (32%) with score ≥ 10 ,26 participants (13%) with score < 5.

Table no 2: Analysis of PCOS state in female population based on scoring.

SCORE	NUMBER OF FEMALE POPULATION	PERCENTAGE OF FEMALE POPULATION	STATE OF PCOS
< 5	26	13%	Unpredictable to PCOS
5-9	110	55%	Chance of getting PCOS
≥ 10	64	32%	High risk of PCOS

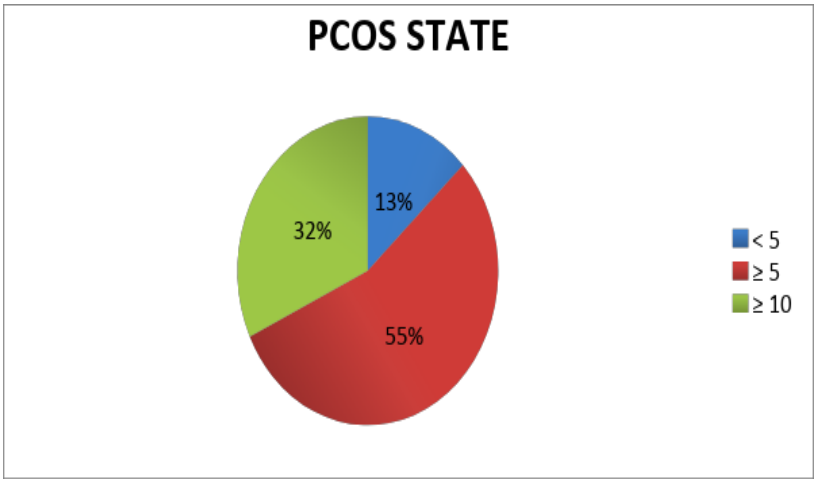

Figure no 2: Diagrammatic representation of analysis of PCOS state in female population based on scoring.

AGE Vs SCORE

Out of 64 participants with high risk of getting PCOS (score ≥ 10), 17 participants were at the age of ≥ 25 years, followed by 14 participants at the age of 22 years,10 participants at the age of 23 and 24 years,5 participants at the age of 21 years,4 participants at the age of 20 years,3 participants at the age of 19 years and 1 participant of age 18years.

Out of 110 participants with chance of getting PCOS (score ≥ 5), 20 participants were at the age of 21 years, followed by 19 participants at the age of 20 years,18 participants at the age of ≥ 25 years ,17 participants at the age of 18 years,12 participants at the age of 19 years,11 participants at the age of 22 years and 9 participants at age of 23years and 4 participants of age 24 years.

Out of 26 participants with unpredictable to PCOS (score < 5), 13 participants were at the age of 19 years, followed by 10 participants at the age of ≥ 25 years, 2 participants at the age of 20 years , and 1 participant of age 23 years.

Table no 3: Age Vs Score.

AGE IN YEARS	SCORE ≤5	SCORE 5—9	SCORE ≥10
18	0	17	1
19	13	12	3
20	2	19	4
21	0	20	5
22	0	11	14
23	1	9	10
24	0	4	10
≥25	10	18	17

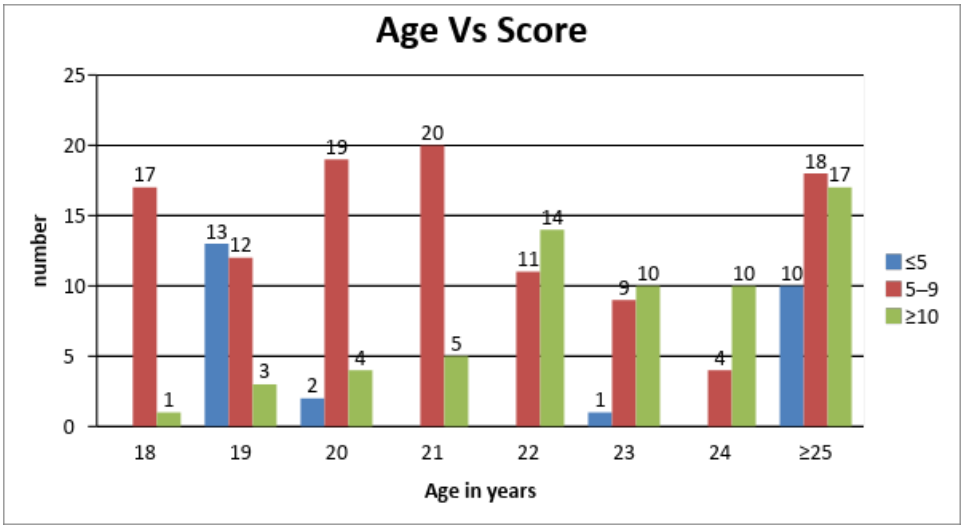

Figure no 3: Diagrammatic representation of Age Vs Score.

MARITAL STATUS

Out of 200 participants, 162 participants (81%) were unmarried and 38 participants (19%) were married.

Table no 4: Marital Status.

SL NO	MARITAL STATUS	NO OF THE STUDY OF PARTICIPANTS	PERCENTAGE OF STUDY PARTICIPANTS
1	Married	38	19 %
2	Unmarried	162	81%

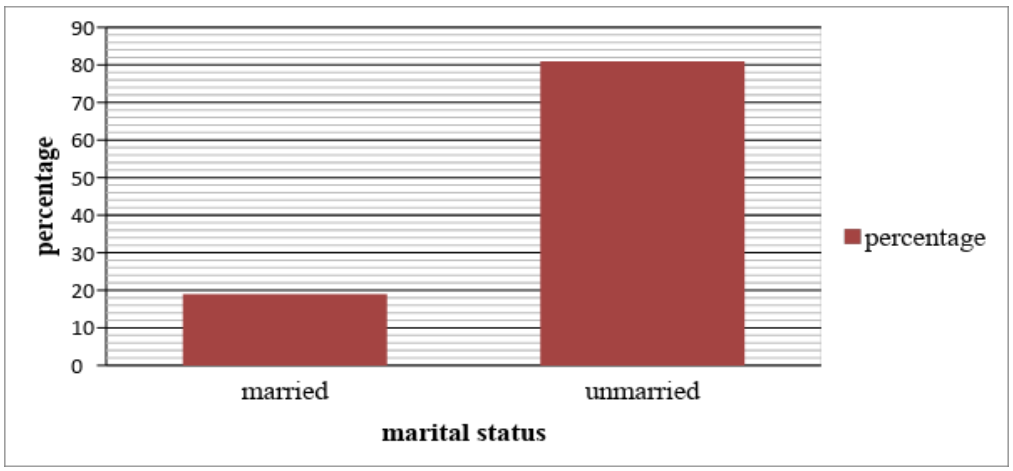

Figure no 4: Diagrammatic representation of marital status.

BMI STATUS OF STUDY POPULATION

Out of 200 participants enrolled in the study ,125 participants (62.25%) has normal BMI status, followed by overweight 45(22.5%),underweight 23(11.5%)and obese 7 (3.5%).

Table no 5: BMI status of study population.

BMI STATUS	NUMBER OF FEMALES	PERCENTAGE
Underweight	23	11.5%
Normal	125	62.5%
Overweight	45	22.5%
Obese	7	3.5%

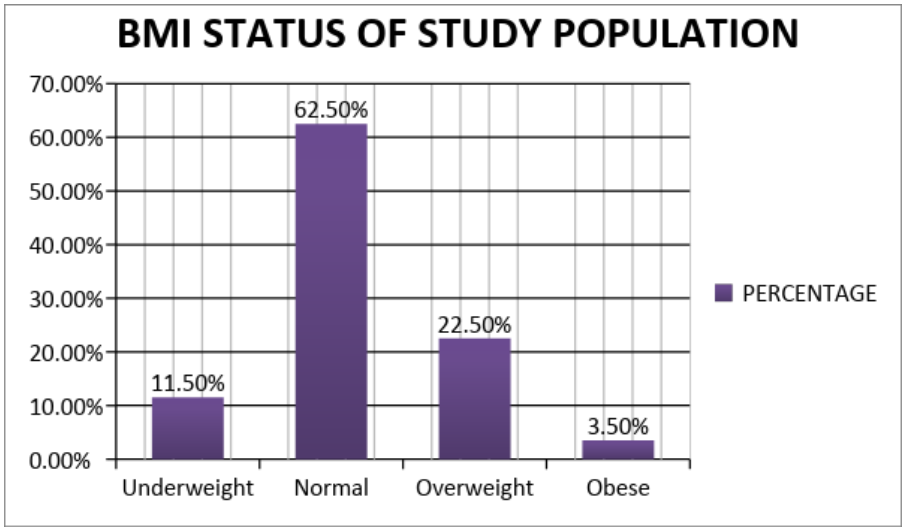

Figure no 5: Diagrammatic representation of BMI Status of study population.

BMI VS SCORE

Among 64 participants with high risk of getting PCOS (score ≥ 10), 38 participants had normal BMI status, followed by 20 participants of overweight,4 participants with obese status and 2 were underweight.

Among 110 participants with chance of getting PCOS (score ≥ 5), 72 participants had normal BMI status, followed by 19 participants with overweight,17 participants with underweight and 2 participants with obese status.

Among 26 participants with unpredictable to PCOS (score < 5), 15 participants had normal BMI status, followed by 6 participants with overweight,4 participants with underweight and 1 participant with obese status.

Table no 6: BMI Vs Score.

BMI STATUS	SCORE<5	SCORE 5–9	SCORE≥10
Underweight	4	17	2
Normal	15	72	38
Overweight	6	19	20
Obese	1	2	4
Total	26	110	64

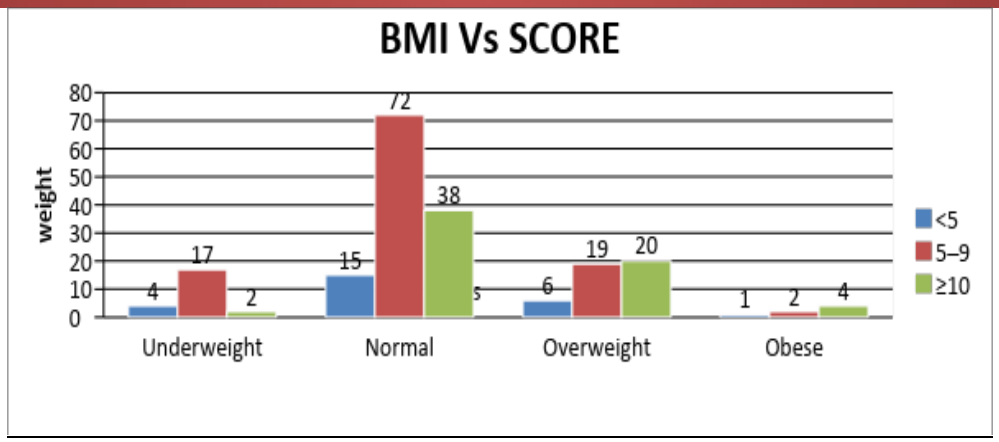

Figure no 6: Diagrammatic representation of BMI Vs Score.

DIAGNOSIS

Out of 200 participants involved in the study,147 participants (73.5%) were not diagnosed with PCOS and 53 participants (26.5%) were diagnosed with PCOS.

Table no 7: Diagnosis of PCOS.

DIAGNOSIS	NUMBER	PERCENTAGE
Already diagnosed	53	26.5%
Not diagnosed	147	73.5%

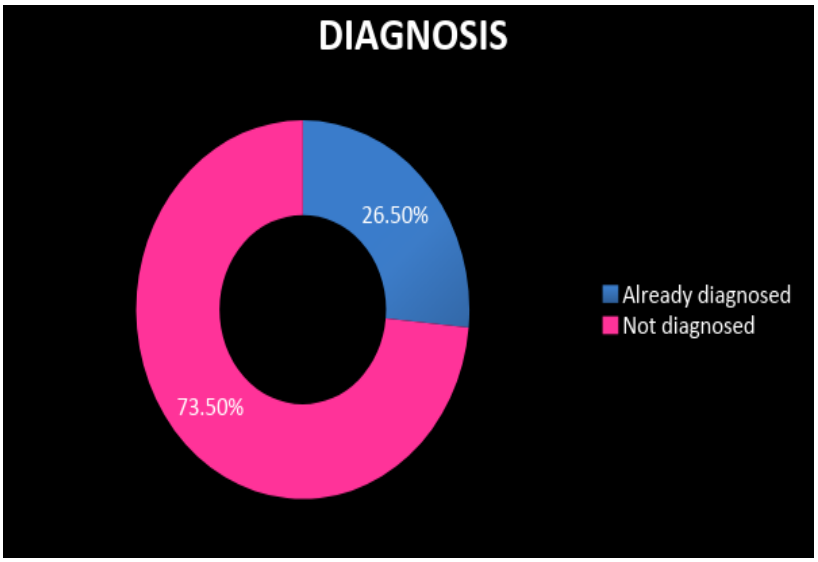

Figure no 7: Diagrammatic representation of Diagnosis of PCOS.

COMPLICATIONS

Out of 200 participants ,25 participants were found with complications. Among them 13 participants (52%) had infertility problems followed by 10 participants (40%) with mood swings and 1 participant (4%) with complication of menopause and pigmentation.

Table no 8: Complications of PCOS.

COMPLICATION	NO. OF FEMALES	PERCENTAGE
Infertility	13	52%
Mood swings	10	40%
Menopause	1	4%
Pigmentation	1	4%
TOTAL	25	100%

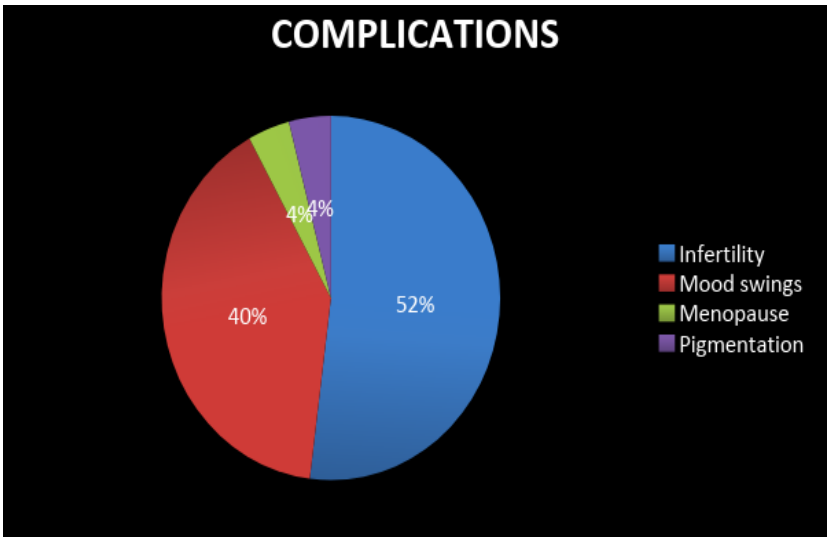

Figure no 8: Diagrammatic representation of complications of PCOS.

SYMPTOMS VS SCORE (≥ 10)

Out of 64 participants with high risk of getting PCOS (score ≥ 10), 64 participants (100%) had irregular menstruation , followed by 59 participants (92.1%) with mood swings, 54 participants(84.3%) with acne, 52 participants (81.2%) with hirsutism, 34 participants (53.1%) with weight problems and 19 participants (29.6%) with pigmentation problems and 10 participants (15.6%) with alopecia.

Table no: 9 Symptoms Vs score (≥10).

SL NO	SYMPTOMS	NUMBER	PERCENTAGE
1	Irregular menstruation	64	100%
2	Weight problem	34	53.1%
3	Hirsutism	52	81.2%
4	Acne	54	84.3%
5	Alopecia	10	15.6%
6	Mood swings	59	92.1%
7	Pigmentation	19	29.6%

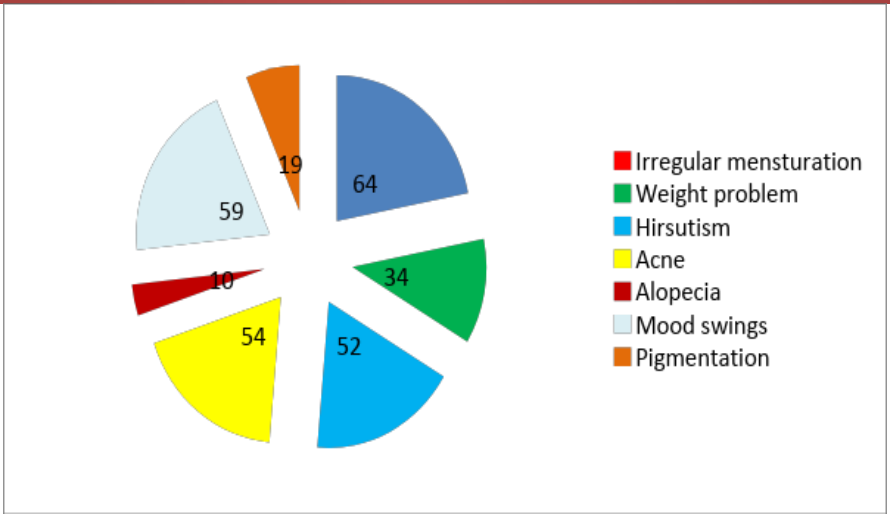

Figure no 9.1: Diagrammatic representation of participants with different Symptoms Vs score (≥ 10).

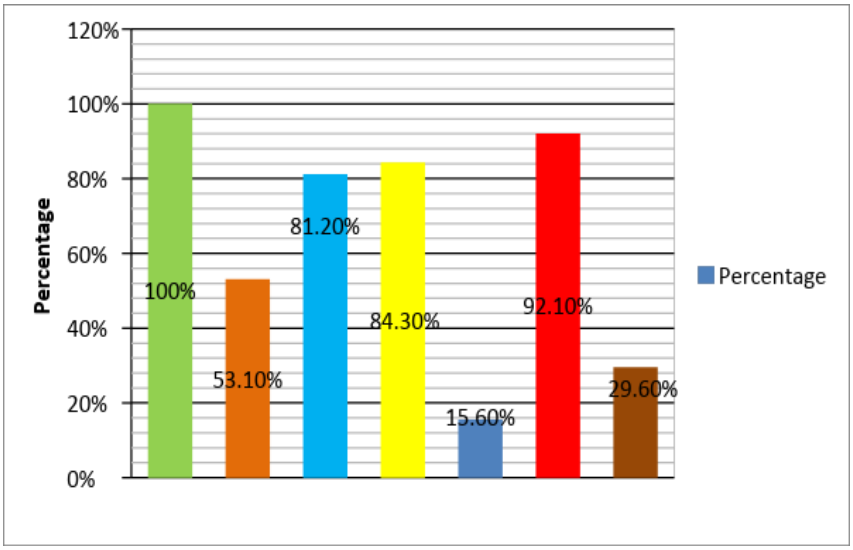

Figure no 9.2: Diagrammatic representation of Symptoms Vs Score (≥10).

SYMPTOMS Vs SCORE (5-9)

Out of 110 participants with chance of getting PCOS (score 5-9), 95 participants (86.3%) had irregular menstruation , followed by 73 participants (66.3%) with mood swings, 72 participants(65.4%) with hirsutism, 71 participants (64.5%) with acne, 67 participants (60.9%) with weight problems and 31 participants (28.1%) with alopecia and 23 participants (20.9%) with pigmentation problems.

Table no: 10 Symptoms Vs score (5-9).

SL NO	SYMPTOMS	NUMBER	PERCENTAGE
1	Irregular menstruation	95	86.3%
2	Weight problems	67	60.9%
3	Hirsutism	72	65.4%
4	Acne	71	64.5%
5	Alopecia	31	28.1%
6	Mood swings	73	66.3%
7	Pigmentation	23	20.9%

Figure no 10.1: Diagrammatic representation of participants with different Symptoms Vs score (5-9).

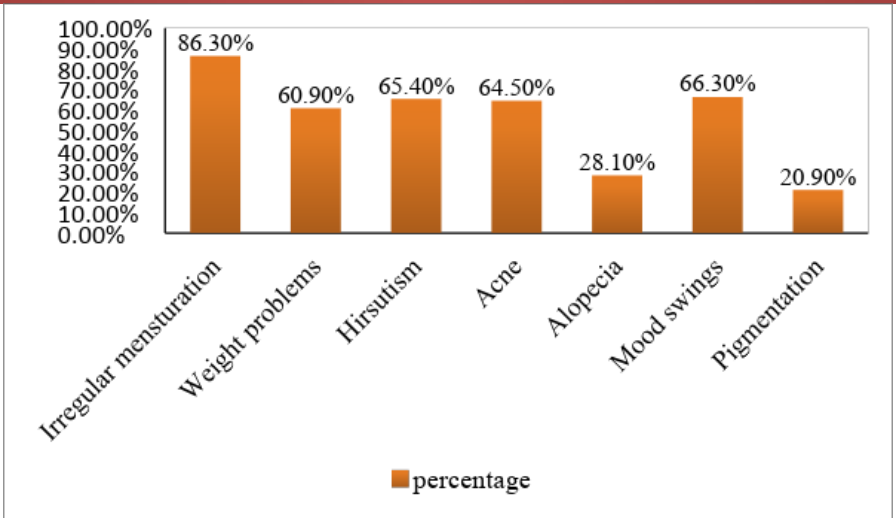

Figure no 10.2: Graphical representation of Symptoms Vs Score (5-9).

SYMPTOMS VS SCORE (<5)

Out of 26 participants who were unpredictable to PCOS (score < 5), 22 participants (84.6%) had weight problems ,followed by 16 participants (61.5%) with acne,7 participants(26.9%) with mood swings,4 participants (15.3%) with hirsutism,3 participants (11.5%) with pigmentation and 3 participants (11.5%) with irregular menstruation and 2 participants (7.6%) with alopecia.

Table no 11: Symptom Vs score (<5).

SL NO	SYMPTOMS	NUMBER	PERCENTAGE
1	Irregular menstruation	3	11.5%
2	Weight problems	22	84.6%
3	Hirsutism	4	15.3%
4	Acne	16	61.5%
5	Alopecia	2	7.6%
6	Mood swings	7	26.9%
7	Pigmentation	3	11.5%

Figure no 11.1: Diagrammatic representation of participants with different Symptoms Vs score (<5).

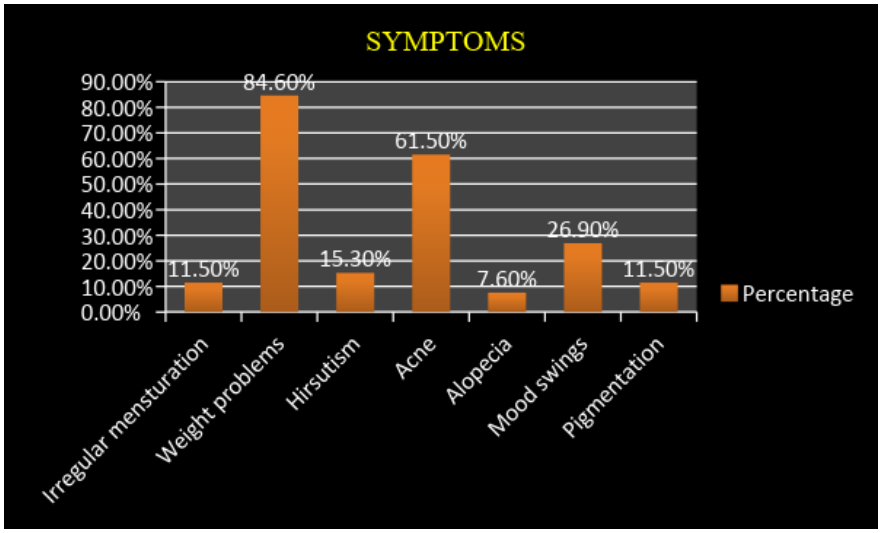

Figure no 11.2: Graphical representation of Symptoms Vs score (<5).

COUNSELING DONE

Among 200 participants, 174 participants (87%) were given counseling on PCOS and 26 participants (13%) were not given counseling. The counseling was given to participants who had scored ≥5. The participants who have scored <5 (unpredictable to PCOS) were given awareness on PCOS by providing leaflet.

Table no 12: Details about Counseling provided.

COUNSELING	NUMBER OF FEMALES	PERCENTAGE
Done	174	87%
Not done	26	13%

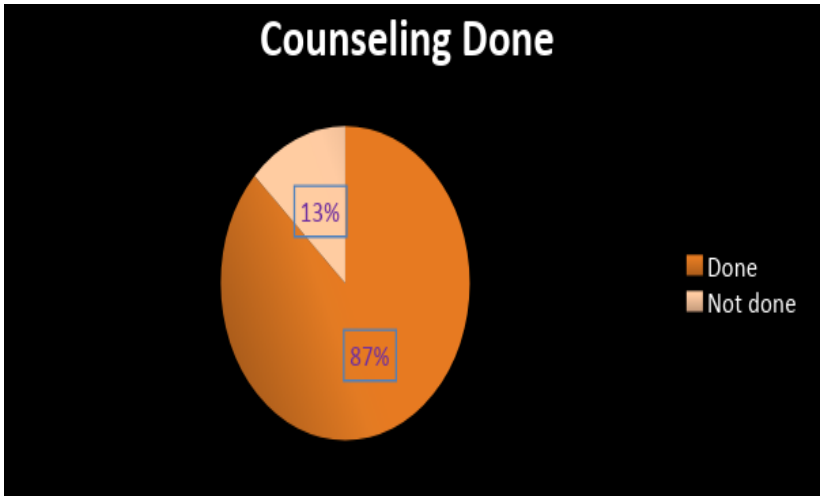

Figure no 12: Diagrammatic representation of counseling done.

DISCUSSION

The diverse manifestations of PCOS start at an early age when a girl is maturing into a young woman. It is important to make an early diagnosis in order to prevent early and late sequel of the syndrome. Therefore, the screening and diagnosis should be considered in young girls with risk factors suggestive of PCOS. There is a need to increase awareness among women so as to avoid fertility problems, future health comorbidities and also to reduce financial cost and burden.

The present study was a randomized observational study conducted on 200 participants in the RR institutions and nearby general public by using a self designed questionnaire form. The duration of the study was six months.

Out of 200 participants included in the study, majority (22.5%) of the participants belonged to age group of ≥ 25 years. In our study of analysis about PCOS state, it was found that 110 participants (55%) were with the Chance for getting PCOS (score 5-9),64 participants(32%) were with High risk of PCOS(score ≥ 10) and 26 participants (13%) were unpredictable to PCOS (score < 5).

Among 64 participants with High risk of getting PCOS,majority(17) of the participants were at the age of ≥ 25 years , among 110 participants with Chance of getting PCOS,majority (20)of the participants were at the age of 21 years and among 26 participants with Unpredictable to PCOS , most of the participants were at the age of 19 years.

In our study, percentage of unmarried participants (81%) was high compared to percentage of participants who were married (19%).

It was found that in our study, majority of study participants (62.5%) had normal BMI status in each PCOS state.

In the conducted study,out of 200 participants 25 participants were found with complications. Among them Infertility problems was found to be the major one followed by mood swings.

On analyzing the predominant symptoms in participants with high risk of getting PCOS (score ≥ 10), we found that major one as irregular menstruation , followed by mood swings, acne, hirsutism, weight problems and pigmentation problems.

On analyzing the predominant symptoms in participants with chance of getting PCOS (score 5-9), we found that major one as irregular menstruation ,followed by mood swings, hirsutism, acne, weight problems, alopecia and pigmentation problems.

On analyzing the predominant symptoms in participants who were unpredictable to PCOS (score < 5),we found the major symptom as weight problems ,followed by acne, mood swings, hirsutism, pigmentation and irregular menstruation.

After collection of data from the questionnaire, counseling was given to participants with high risk and chance of getting PCOS as they are more prone to PCOS. Counseling was given to 87% of the participants. 13% of participants who were unpredictable to PCOS were given awareness on PCOS by providing information leaflet. Obese and overweight participants were advised for weight loss.Also, hormonal profile for thyroid,hyperandrogenism was suggested for high risk participants. The following counseling points were given to the participants:

- Every women should Perform self-test every month in order to assess the state of PCO occurrence.
- Reduce the intake of carbohydrate which can help to regulate menstrual cycles in regular manner.
- Reduce the intake of fats with very low density lipoproteins that can help to reduce weight gain which would otherwise ultimately lead to insulin resistance.
- Perform regular exercise& yoga to minimize the complications of PCOS.
- Maintain proper BMI (body mass index).
- Use carica papaya before one week of menstruation date that can help to stimulate the release of female Hormones like Estrogen that will help to maintain proper menstruation cycles.
- Diet rich in iron like dates and fiber rich contents along with fruits and fresh vegetables must be taken.
- A balanced diet must be taken based on body weight for example plate model meal.

CONCLUSION

PCOS is a common endocrine disorder of female adolescent and adulthood with exact etiology unknown but pathophysiology rooted in insulin resistance, hyperandrogenism, and chronic anovulation. A multitude of clinical factors can be present including hirsutism, menstrual irregularities, metabolic abnormalities, acne, and increased BMI.The study reveals that irregular menstruation is the major symptom as compared to other symptoms among the study participants and infertility is the major complication found among the participants who were already diagnosed with PCOS. The present study is very helpful in assessing the risk factors responsible in developing PCOS and also minimizing them by life style modifications through advanced patient counseling. From this study, prevalence of PCOS was analyzed.Counselling and awareness given to individuals would help them to protect themselves from some of the consequences associated with PCOS.

Obesity and fast food diet habits were found to be the predisposing factors for development of PCOS. The risk of PCOS increases with presence of one or more identified predisposing factors. Most of the factors tested as predisposing factors in our study are interlinked to each other and are mostly modifiable. Hence careful monitoring and proper management of identified predisposing factors not only delays but also helpful in adequate management of the disease.Awareness was provided for the participants asinformation is very crucial to females with PCOS for better understanding of the disease, complications associated with it, and to participate actively in their disease self-management.

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ABBREVIATIONS

PCOS	Polycystic Ovarian Syndrome
HA	Hyper androgenic anovulation
WHO	World Health Organization
SHBG	Sex Hormone Binding Globulin
GnRH	Gonadotropin Releasing Hormone
LH	Luteinizing Hormone
FSH	Follicle Stimulating Hormone
FMR1	Fragile X Mental Retardation
NIH	National Institutes of Health
DHEA-S	Dehydroepiandrosterone Sulphate
OGTT:	Oral Glucose Tolerance Test
IGTT	Impaired Glucose Tolerance Test
BMI	Body Mass Index
OCP	Oral Contraceptive
TZD	Thiazolidinedione
HOMA-IR	Homeostatic Model Assessment-Insulin Resistance

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