IOSR Journal Of Pharmacy
(e)-ISSN: 2250-3013, (p)-ISSN: 2319-4219
Volume 15, Issue 7 Series. I (July 2025), PP.17-24
www.iosrphr.org

Assessment of Risk Factors, Prevalence, Knowledge, Attitude, and Practice of Polycystic Ovary Syndromein A Community

Vinaykumar K[1] , Milanakumar D K[2], Hithesh Kumar R[3], Bhavani K C[4], Dr. Ravindra P Choudhary*[5]

[1,2,3,4]6th Sem B.Pharm, Sarada Vilas college of pharmacy, Mysuru, Karnataka India
*[*5]Assistant Professor, Department of Pharmacy Practice,SVCP, Mysuru, Karnataka, India*
**Corresponding Author: Dr. Ravindra P Choudhary*
Address: Department of Pharmacy Practice, Sarada Vilas College of Pharmacy, Krishnamurthy Puram, Mysore-570004. Karnataka, India.

ABSTRACT
Background Information: Awareness of PCOS among public is minimum, surveys and studies focused on assessing PCOS and patient perceptions in the Indian setting are very limited.
Objective: To Assess the Risk factors and KAP associated with PCOS in a community.
Materials and Methods: an observation study conducted in community of Mysore, Hassan and Mandya for 5 months. Females of age group (12 -55 years), who can understand, answer questionnaire and who are willing to participate in the study were included. Severe illness patient, not cooperative and pregnant women were excluded. KAP questionnaire consists6 of 11 knowledge, 8 attitude and 7 practice items was implemented on 106 subjects. Essential data required for analysing KAP on PCOS were collected using suitable forms, scores were evaluated using the statistical tools.
Results: KAP questionnaire were implemented on menstruating females and found that majority of subjects have poor knowledge (66%), poor attitude (84.9%), poor practice (90.56%) and 82.07% have poor overall KAP scores on PCOS. Risk factor analysis with overall KAP shows weight, medical history, medication history, smoking, regularity of menstruation, pain scale, fertility problem, use of contraceptives, presence of PCOS, family history and current medication, has statistically significant influence on overall KAP score. Risk factor analysis with PCOS shows weight, age of first period were statistically significant.
Conclusion: Expansion of healthcare services with physicians, pharmacists and other health care professionals can understand and improve the overall health. Thereby prevent further occurrence of PCOS in Indian population.
Keywords: KAP, PCOS, Risk factors, Prevalence.

I. INTRODUCTION

Polycystic ovary syndrome (PCOS) is the most common endocrine disorder in women. The prevalence in infertile women is 15-20%. The etiology of PCOSremains unknown. However, some studies suggest that PCOS is a X-linkeddominant disorder. Women with PCOS have abnormalities in the metabolism of estrogens, androgen and in the regulation of androgen production. These patients may have elevated serum levels of androgenic hormones such as testosterone, androstenedione, and -dehydroepiandrosterone sulphate (DHEAS). However, there is considerable individual variation, and certain patients may have normal androgen levels. PCOS is also associated with peripheral insulin resistance and hyperinsulinemia, and obesity increases the magnitude of both abnormalities.[1]

The phenotype of PCOScan be divided into four phenotypes: phenotype A, phenotype B, phenotype C, and phenotype D i.e.Classic PCOS (Phenotypes A and B), "Ovulatory PCOS" (Phenotype C), "Non-hyperandrogenic PCOS" (phenotype D). PCOS is the most common endocrine disorder in women, affecting 5-10% of women of reproductive age. Polycystic ovaries are found in approximately 20% of the female population, but are typical symptoms that manifest at any time during the fertile lifespan, such as weight gain and insulin resistance. PCOS is associated with 75% of allanovulatory disorders that cause infertility, 90% of women with oligomenorrhea, >90% with hirsutism, and >80% with persistent acne.[2][3]

The exact cause of PCOS is not unknown but thought to be related with abnormal hormonal balance. In PCOS, women make more androgenthan normal. High level of androgen affects

the development andrelease of egg during ovulation. Hyperinsulinemia is also linked withPCOS. Excess insulin produces androgen, which furthercauses acne, hirsutism and problem in ovulating. Insulin resistance leads to weight gain in women which leads to excess fat and exacerbates PCOS symptoms. Other hormones such as luteinizing hormone (LH)(which stimulates ovulation), prolactin (the hormone that stimulates the mammary glands to produce milk), and sex hormone binding globulinare also elevated in PCOS. Elevated LH levels abnormally affectovaries.[4]

Symptoms of PCOS usually appear in the teens and early twenties. This varies from woman to woman. Symptoms range from mild to severe condition. The most common symptoms of PCOS include unpredictable or irregular menstruation multiple small cysts in the ovaries, high levels of androgen and prolactin hormones, acne (which occurs after puberty and does not respond to usual treatments), Rapid weight gain, difficulty losing weight, hirsutism (excessive hair growth on the face, chest, abdomen, thighs, back or buttocks; affects 70% of women with PCOS), mental health problems, metabolic disorders, difficulty conceiving, thinning hair and hair loss Oily skin, depression and mood swings, hick velvety, dark skin patches on neck, arms, chest, thighs acanthosis nigricans, pelvic pain, sleeplessnesshours known as breathing (brief cessation of breathing), obesity (80% of women with PCOS are obesity), fatigue (always very low energy levels).[4]

II. MATERIALS AND METHODOLOGY

a) Study design: It is a cross sectional observational study.
b) Sources of data: All the relevant and necessary data were collected from patient data entry form and by interview with patients.
c)Study population: 106 patients.
d)Study period: This study was conducted over a period of five months among in-patients from July 2022 to November 2022.
e)Inclusion Criteria: Females of age group between 12 to 55 years,able to understand comprehends and reply to questions,the patients who gives written informed consent were included.
f)Exclusion Criteria:Residents who decline /not interest to participate in the study, not co-operative,severely ill pregnant women and lactating women were excluded.
g)Site of study: Residential areas of Mysore, Mandya, and Hassan
h) Ethical Approval: Written informed consent was taken from the individual subjects before the commencement of the study.
i)Study tools: The study procedure involves the use of some forms for data collection, documentation, and analysis of the data.
j)Informed Consent Form: An informed consent form was designed incorporating all the vital information about the study. It was prepared in English and the patient was explained clearly about the study.consent was obtained from patients who volunteered for the study and those who fulfilled the study criteria. It consists of study objectives and advantages for the patient beinga part of the study, with a provision for obtaining the patients' signature. Those patients who were illiterate, the study wasdiscussed with them and consent was obtained from caretakers.
k) **Information to participant sheet:** It consists of detailed explanation in English, about the information regarding the study such as the title, the purpose, the procedure and possible risks and benefits.
Patient Data collection Form: It includes the demographics of the patients such as age,weight,heigh,education,occupation,urban /rural,diet,past medication history,past medical history,socio economic history,personal habits,symptoms etc.
Self-Structured KAP Questionnaire: It consists of 26 questions in English with choices, based on the patient's knowledge, attitude and practice regarding the concept of PCOS. It assesses patients' knowledge regarding the cause, signs and symptoms, complications, necessary life style modification, patients' attitude about their disease condition and how do they practice etc. Based on the answer scores were given out of 26.

III. RESULTS

DEMOGRAPHIC DETAILS OFSTUDY POPULATION:

Out of 106 subjects, the majority of the study population (93.3%) belongs to age group of 14-30 years. 50% of the study population belongs to the weight category of 51-70kg. 78% of the subject belongs to height of 5.1- 6.0 feet. In our study most of them have the qualification of degree (91.5%). 7.5% of subjects are home maker. 37.7% of population lives in rural areas and most of them are from Mysuru. 33.9% were vegetarian. 11.3% of the subjects were suffering from past medical history and only 7.5% of subjects are on the medications. Most of them are having middle class economy. Most of them are not having habit of alcohol consumption and smoking. 53.7% had menarche at the age between 14-16 years. 25.4% of women are having irregular periods. 1.8% of women are having fertility problem and 14.2% are with PCOS.

Table 1: Distributions of patients based on demographics.

Demographics		Numbers (%) (n=82)
Age Group	14-30 yrs. 31-45 yrs.	99(93.39%) 7(6.60%)
Weight	31-50 kg 51-70 kg 71-90 kg	45(45.45%) 53(50%) 8(7.54%)
Height	4.1-5.0 feet 5.1-6.0 feet	23(21.69%) 83(78.30%)
Education	≤PUC Degree	9(8.49%) 97(91.50%)
Occupation	Employed Home makers	8(7.54%) 98(92.45%)
Place	Urban Rural	66(62.26%) 40(37.73%)
District	Mysuru Mandya Hassan	77(72.64%) 19(17.92%) 10(9.43%)
Diet	Vegetarian Non-vegetarian	36(33.96%) 70(66.03%)
Medical history	Present Absent	8(7.54%) 98(92.45%)
Medication history	Present Absent	8(7.54%) 98(92.45%)
Social-economic	Poor Middle class High	7(6.60%) 85(80.18%) 14(13.20%)
Smoking	Yes No	1(0.94%) 105(99.05%)
Alcohol	Yes No	1(0.94%) 104(98.11%)
Age of first period	11-13 years 14-16 years 17-19 years	48(45.28%) 57(53.77%) 1(0.94%)
Regularity of menstruation	Regular Irregular	79(74.52%) 27(25.47%)
Menstrual Hygiene	Good Moderate Excellent	64(60.37%) 41(38.67%) 1(0.94%)
Pain scale	0-5.0 6.0-10.0	69(65.09%) 91(85.84%)
Marital status	Married Unmarried	15(14.15%) 91(85.84%)
Fertility Problem	Yes No	2(1.88%) 104(98.11%)
Use of Oral contraceptives	Yes No	6(5.66%) 100(94.33%)
Presence of PCOS	Yes No	15(14.15%) 91(85.84%)
Family History	Yes No	4(3.77%) 102(96.22%)
Current medication	Yes No	7(6.60%) 99(93.39%)

PROPORTION OF POPULATION WITH PCOS:

Out of the 106 cases reviewed, 15 subjects were diagnosed with PCOS. The proportion of PCOS in our study population was found to be 14.15%.

KAP ANALYSIS ON PCOS:

There are 11 Knowledge Questions, 8 attitude questions and 7 practice questions in our KAP questionnaire on PCOS the KAP questionnaire were given to all the subjects involved in our study(n=106) and scored. The overall score for knowledge, attitude and practice questionnaire will be evaluated for total of 26 points i.e., (11,8 and 7 points respectively). The mean of knowledge questionnaire score was found to be 5.04 points, the mean of attitude questionnaire score was found to be 2.13 points and the mean of practice questionnaire score was found to be 1.65 points.The mean of overall KAP questionnaire score was found to be 8.82 points and around 82.07% of study population (n= 87) were having poor overall KAP scores.

Table 2: Detailed Mean scores of KAP.

Parameters	Total scores.	Mean score obtained
Knowledge	11	5.04
Attitude	8	2.13
Practice	7	1.65
Overall KAP	26	8.82

Table 3: Details of classified scores of knowledge.

Knowledge	Number of subjects
Poor (0-6)	70 (66%)
Good (7-11)	36 (34%)

Table 4: Details of classified scores of Attitude.

Attitude	Number of subjects
Poor (0-4)	90(84.90%)
Good (5-8)	16 (15.09%)

Table 5: Details of classified scores of Practice.

Practice	Number of subjects
Poor (0-3)	96(90.56%)
Good (4-7)	10 (9.43%)

Table 6: Details of classified scores of overall KAP.

overall	Number of subjects
Poor (0-13)	87(82.07%)
Good (14-26)	19 (17.92%)

In our study, we also found that 26.41% of subjects got the information about PCOS from books, journals and during their education. 14.15%,11.32% of subjects got the information about PCOS from Doctors and friends or family members respectively. 39% people mentioned the internet and social media was their source of knowledge about PCOS.41.50% of subjects knows about the weight reduction and ovary cystectomy treatment options.88.67% of subjects told that PCOS will affect their social life mildly.11.32% of subjects told that PCOS affect their work life moderate to severely.

RISK FACTOR ANALYSIS:

The probable risk factors such as age, weight, height, education, occupation, place, diet, medical history, socioeconomic history, smoking, alcohol, age of first period, regularity of menstruation, menstrual hygiene, menstrual pain, marriage status, fertility problem, use of oral contraceptives, presence of PCOS, family history, current medication were considered for analysis, the following results were obtained.

Table 7:The details of various factors influencing KAP scores.

Factors		**Overall KAP scores**		**p-value**
		≤13 (poor)	>13 (good)	
Age	14-30(n=99)	80	19	0.20076
	31-45(n=7)	7	0	
Weight	31-50(n=45)	40	5	0.000006*
	51-90(n=61)	47	14	
Height	4.1-5.0(n=23)	18	5	0.58988
	5.1-9.0(n=83)	69	14	
Education	≤PUC(n=9)	8	1	0.57746
	Degree(n=97)	79	18	
Occupation	Home maker/unemployed(n=8)	6	2	0.58737
	Workers/Students(n=98)	81	17	
Place	Urban(n=66)	51	15	0.097726
	Rural(n=40)	36	4	
Diet	Vegetarian(n=36)	31	5	0.43724
	Non-Vegetarian(n=70)	56	14	
Medical history	Present(n=12)	3	9	0.0000004*
	Absent(n=94)	84	10	
Medication history	Present(n=8)	0	8	0.0000003*
	Absent(n=98)	87	11	
Socioeconomic history	Poor/Middle class(n=92)	75	17	0.70318
	Higher(n=14)	12	2	
Smoking	Yes (n=1)	0	1	0.031554*
	No (n=105)	87	18	
Alcohol	Yes (n=2)	1	1	0.232489
	No (n=104)	86	18	
Age of first period	11-13 years (n=48)	40	8	0.75872
	14-19 years (n=56)	47	11	
Regularity of menstruation	Regular (n=79)	72	7	0.000003*
	Irregular (n=27)	15	12	
Menstruation hygiene	Good (n=65)	54	11	0.735010
	Moderate (n=41)	33	8	
Pain scale	0-5 (n=69)	62	7	0.004348*
	6-10 (n=37)	25	12	
Marriage status	Married (n=15)	13	2	0.616829
	Unmarried (n=19)	74	17	

Fertility problem	Yes (n=2)	0	2	0.0022493*
	No (n=104)	87	17	
Use of contraceptives	Yes (n=6)	3	3	0.034964*
	No (n=100)	84	16	
Presence of PCOS	Yes (n=15)	5	10	0.0000001*
	No (n=91)	82	9	
Family history	Yes (n=4)	1	3	0.0024141*
	No (n=102)	86	16	
Current medication	Yes (n=7)	1	6	0.0000001*
	No (n=99)	86	13	

Note: Significance level: ≤0.05.
(*) indicates results are significant.

The weight (p value-0.000006), medical history (p value-0.0000004), medication history (p value-0.000003), smoking(p value-0.031554), regularity of menstruation (p value- 0.000003), pain scale (0.004348), fertility problem (p value 0.0022493), use of contraceptives (p value-0.034964), presence of PCOS (p value-0.0000001), family history (p value-0.0024141), current medication (p value-0.0000001) categorization shows a direct influence on overall KAP scores of PCOS which shows statistically significant p-value and risk, while age, height, education, occupation, place, diet, socioeconomic history, alcohol, age of first period, menstruation hygiene and marriage status does not show statistically significant p-value.

Table 8:The details of various factors influencing PCOS.

Factors		**Presence of PCOS**	**p-value**
Age	14-30(n=99)	14	0.227568
	31-45(n=7)	1	
Weight	31-50(n=45)	5	0.038291*
	51-90(n=61)	10	
Height	4.1-5.0(n=23)	3	0.1626
	5.1-9.0(n=83)	12	
Education	≤PUC(n=9)	1	0.219414
	Degree(n=97)	14	
Occupation	Home maker/unemployed(n=8)	2	0.22756
	Workers/Students(n=98)	13	
Place	Urban(n=66)	12	0.058787
	Rural(n=40)	3	
Diet	Vegetarian(n=36)	4	0.09181
	Non-Vegetarian(n=70)	11	
Medical history	Present(n=12)	6	0.227568
	Absent(n=94)	9	
Medication history	Present(n=8)	4	0.23537
	Absent(n=98)	11	
Socioeconomic history	Poor/Middle class(n=92)	12	0.206505
	Higher(n=14)	3	
Smoking	Yes (n=1)	1	0.25
	No (n=105)	14	
Alcohol	Yes (n=2)	1	0.246463

	No (n=104)	14	
Age of first period	11-13 years (n=48)	8	0.03208*
	14-19 years (n=56)	7	
Regularity of menstruation	Regular (n=79)	3	0.18797
	Irregular (n=27)	12	
Menstruation hygiene	Good (n=65)	9	0.072192
	Moderate (n=41)	6	
Pain scale	0-5 (n=69)	6	0.116875
	6-10 (n=37)	9	
Marriage status	Married (n=15)	3	0.202016
	Unmarried (n=19)	12	
Fertility problem	Yes (n=2)	2	0.25
	No (n=104)	14	
Use of contraceptives	Yes (n=6)	3	0.239153
	No (n=100)	12	
Family history	Yes (n=4)	2	0.242848
	No (n=102)	13	
Current medication	Yes (n=7)	6	0.246463
	No (n=99)	9	

Note: Significance level: ≤0.05.
(*) indicates results are significant.

The weight (p value-0.038291), age of first period (p value-0.03208) shows a direct influence on presence of PCOS which shows statistically significant p-value and risk, while age, height, education, occupation, place, diet ,medical history, medication history, socioeconomic history, smoking, alcohol, regularity of menstruation, menstruation hygiene, pain scale, marriage status, fertility problem, use of contraceptives family history and current medication does not show statistically significant p-value.

IV. DISCUSSION AND CONCLUSION:

The prime objective of this study was to assess the knowledge, attitude and practice and to assess the risk factors, drug utilization review and prevalence associated with PCOS. The Demographics and clinical characteristics of our study population were similar to the reports of otherstudies on KAP of PCOS.

Out of 106 subjects, the majority of the study population (93.3%) belongs to age group of 14-30 years. 50% of the study population belongs to the weight category of 51-70kg. 78% of the subject belongs to height of 5.1- 6.0 feet. In our study most of them have the qualification of degree (91.5%). 7.5% of subjects are home maker. 37.7% of population lives in rural areas and most of them are from Mysuru. 33.9% were vegetarian. 11.3% of the subjects were suffering from past medical history and only 7.5% of subjects are on the medications. Most of them are having middle class economy. Most of them are not having habit of alcohol consumption and smoking. 53.7% had menarche at the age between 14-16 years. 25.4% of women are having irregular periods. 1.8% of women are having fertility problem and 14.2% are with PCOS.

In the study conducted by **Shubhi Agarwal**, it was found that the 11% subjects were having excess facial hair but in compare to our study yielding 21%.[10] In another study conducted by the **Nisreen KhalidAref Albezrah** et al shows that the 79% were from urban areas while our study were having the 62.26% subjects from the urban areas.[5]

As the knowledge, attitude and practice questionnaire containing the question about that they have heard about the ovarian cyst before was answered yes by 89% of the subjects in the study conducted by the **Nisreen Khalid Aref Albezrah** et al but our study shows 77.35% subjects had the knowledge ovarian cyst.[5] The study by **Mohamed H A A**(2016)[6] observed that most of population were having poor KAP scores and the study conducted by **Shubhi Agarwal** were also having the poor KAP scores which were similar study containing the low KAP mean score 8.82.[10]

Assessing the risk factors, the study conducted by **Mrs. Shubhi Agarwal** shows that 26% of the population were having irregularity in the menstruation which was almost similar to our study result of 25.47%.[10] But another study conducted in Taif city was found to have 52% women were having the irregular menstruation which influences the risk factors of PCOS.[5]

The Prevalence according to the study conducted by **Tehrani et al** [7] showed the PCOS prevalence of 14.6% in Iranian Population. the cross-sectional study of PCOS by **Beena Joshi et al** in Mumbai India showed 22.5% PCOS prevalence [8] and **Nidhi et al** study shows the PCOS prevalence of 10.97%.[9] But our study shows 14.15% PCOS prevalence in 106 subjects.

ACKNOWLEDGEMENT:

The authors are thankful to **Dr Hanumanthachar Joshi K**, Principal, Sarada Vilas College of Pharmacy, and **Dr Charan CS**, Department of Pharmacy Practice, Sarada Vilas College of Pharmacy, Mysuru.We also thank.

ABBREVATIONS:

PCOS: Polycystic Ovary Syndrome
KAP: Knowledge, Attitude and Practice
LH: Luteinizing hormone

REFERENCES

[1]. Badawy A, Elnashar A. Treatment options for polycystic ovary syndrome. International journal of women's health. 2011;3:25.
[2]. Adams J, Polson DW & Franks S. Prevalence of polycystic ovaries in women with anovulation and idiopathic hirsutism. BMJ 1986; 293: 355–359.
[3]. Homburg R. Polycystic ovary syndrome – from gynaecological curiosity to multisystem endocrinopathy.Hum Reprod 1996; 11: 29–39.
[4]. Qureshi SS, Gupta JK, Shah K, Upmanyu NE. Prevalence and risk factor of polycystic ovarian syndrome. Prevalence. 2016;9(2):23-5.
[5]. Albezrah NK, Arein FR. Knowledge, attitude, and practice toward weight reduction among polycystic ovary syndrome women at Taif city. Saudi Journal for Health Sciences. 2019 May 1;8(2):112.
[6]. Mohamed HA. Effect of educational program on the level of knowledge regarding polycystic ovarian syndrome among adolescent girls. Journal of Nursing Education and Practice. 2016 Jun 3;6(10):80-7.
[7]. Tehrani FR, Simbar M, Tohidi M, Hosseinpanah F, Azizi F. The prevalence of polycystic ovary syndrome in a community sample of Iranian population: Iranian PCOS prevalence study. Reproductive Biology and Endocrinology. 2011 Dec;9(1):1-7.
[8]. Joshi B, Mukherjee S, Patil A, Purandare A, Chauhan S, Vaidya R. A cross-sectional study of polycystic ovarian syndrome among adolescent and young girls in Mumbai, India. Indian journal of endocrinology and metabolism. 2014 May;18(3):317.
[9]. Nidhi R, Padmalatha V, Nagarathna R, Amritanshu R. Prevalence of polycystic ovarian syndrome in Indian adolescents. Journal of pediatric and adolescent gynecology. 2011 Aug 1;24(4):223-7.
[10]. Simha A, Agarwal S. Nutrition Education Intervention for the management of Polycystic Ovary Syndrome (PCOS). Indian Journals. 2019; 9(2):21-27.