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Prevalence of Polycystic Ovarian Syndrome: A Study Among Female Medical Students of Jalalabad State University.

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ABSTRACT

Introduction:
Polycystic Ovary Syndrome (PCOS) is a common endocrine disorder among women of reproductive age, marked by symptoms such as elevated androgen levels, menstrual irregularities, and ovarian cysts. The condition has a significant impact on physical and emotional well-being, making its study crucial, particularly in specific populations.

Objective:
This study aimed to determine the prevalence of PCOS and associated factors among female medical students at Jalalabad State University in Kyrgyzstan.

Methodology:
A cross-sectional study was conducted from February 26 to March 17, 2024, involving 217 female medical students from the 1st to 5th years. Data was collected using a semi-structured questionnaire distributed via Google Forms. Statistical analysis was performed using SPSS software, with results expressed as percentages.

Results:
The study revealed that 25.8% of respondents had been formally diagnosed with PCOS, with the majority receiving their diagnosis from an obstetrician-gynecologist. Additionally, 39.3% of participants with PCOS reported a family history of the condition. Common symptoms among those diagnosed included moderate to severe dysmenorrhea, hirsutism, and acne. Emotional concerns were also prevalent, particularly related to weight gain, fertility, and acne.

Conclusion:
This study underscores the high prevalence of PCOS among female medical students, emphasizing the need for increased awareness, early diagnosis, and comprehensive management strategies. Addressing both the physical and emotional impacts of PCOS is crucial to improving the quality of life for those affected, particularly in high-stress environments such as medical academia.

Keywords: PCOS, Female Medical Students, JASU

INRODUCTION

Polycystic ovary syndrome (PCOS) is a complex condition characterized by elevated androgen levels, menstrual irregularities, and/or small cysts on one or both ovaries. The disorder can be morphological (polycystic ovaries) or predominantly biochemical (hyperandrogenemia). Hyperandrogenism, a clinical hallmark of PCOS, can cause inhibition of follicular development, microcysts in the ovaries, anovulation, and menstrual changes.

PCOS is a heterogeneous disorder that affects at least 7% of adult women. According to the National Institutes of Health Office of Disease Prevention, PCOS affects approximately 5 million women of childbearing age in the U.S. Costs to the U.S. health care system for the identification and management of PCOS are approximately $4 billion per year.[1]

According to WHO PCOS affects an estimated 8–13% of reproductive-aged women. Up to 70% of affected women remain undiagnosed worldwide. [6]

The pathophysiology of PCOS involves primary defects in the hypothalamic–pituitary axis, insulin secretion and action, and ovarian function. The association with insulin function is expected; insulin helps to regulate ovarian function, and the ovaries respond to excess insulin by producing androgens, which can lead to anovulation.Follicular maturation arrest is a hallmark sign that an ovarian abnormality exists.[2,3]

Although signs and symptoms vary .The three most common factors associated with PCOS include ovulation irregularities, increased androgen levels, and cystic ovaries. Problems with ovulation and elevated androgen levels occur in the majority of women with PCOS.

Laparoscopic ovarian drilling is an outpatient surgical intervention in which multiple perforations are created in the ovarian surface and stroma. It is thought that this intervention destroys androgen-producing tissue, It has been found to be as effective as medical interventions without increasing the risk of multiple pregnancies.[4]

The drug of choice for inducing ovulation in PCOS is clomiphene citrate.

Antidiabetic drugs can be used to improve fertility, decrease insulin resistance, and reduce circulating androgen levels.[5]

A clomiphene/metformin combination may be tried if individual therapies fail, but evidence of improved results is limited

Human menopausal gonadotropin (HMG) and FSH can also be used to induce ovulation if clomiphene and/or metformin therapy fails

Medroxyprogesterone acetate (MPA) can be used to treat amenorrhea or dysfunctional uterine bleeding in women with PCOS who do not wish to conceive and who are not at risk for pregnancy.

Methodology

This cross-sectional study utilized a semi-structured questionnaire administered to female medical undergraduate students from the 1st to 5th year at Jalalabad State University named after B. Osmonov in Jalalabad, Kyrgyzstan. The questionnaire was distributed via Google Forms, and students were requested to complete and submit their responses. The study was conducted from February 26, 2024, to March 17, 2024. The study population comprised female medical students from the 1st to 5th year who agreed to participate, resulting in a sample size of 217 students. Inclusion criteria were all consenting female medical students from the 1st to 5th year, while those who did not consent were excluded. Statistical analysis will be performed using SPSS (Statistical Package for the Social Sciences) software, with the results expressed as percentages.

Results:

INFORMATION RELATED TO SOCIO DEMOGRAPHY

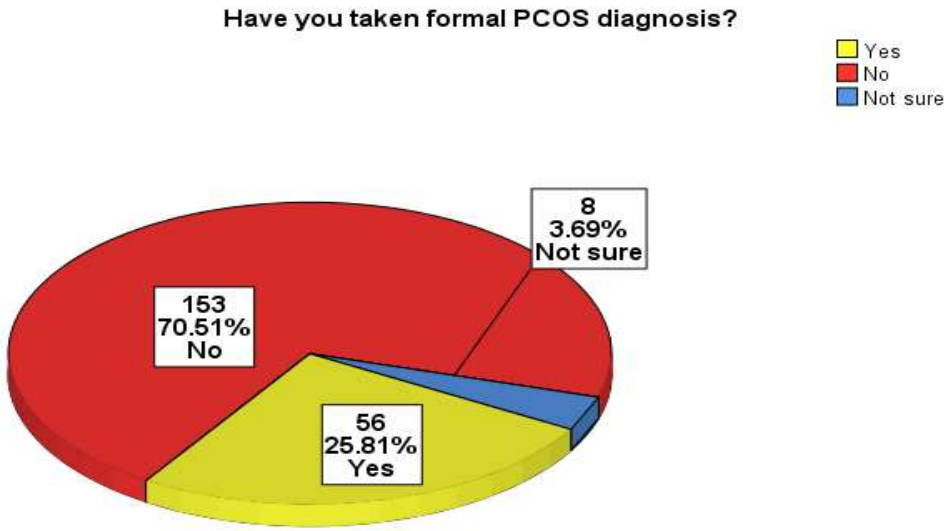
TABLE 1: Socio demographic Information of the respondents

VARIABLES	FREQUENCY (F) N=217	PERCENTAGE (%)
Year of study		
1st year	50	23
2nd year	43	19.8
3rd year	33	15.2
4th year	62	28.6
5th year	29	13.4
Age of the respondent		
15-20 years old	55	25.3
20-25 years old	158	72.8
25-30 years old	4	1.8
Religion of the respondent		
Hindu	116	53.5
Muslim	84	38.7
Christians	13	6
Other	4	1.8
Nationality of the respondent		
India	167	77
Pakistan	44	20.3
Bangladesh	6	2.8
Family		
Joint family	67	30.9
Single family	150	69.1
Marital status of the respondent		
Single	215	99.1
Married	2	0.9

Mother's level of education		
Illiterate	11	5.1
Primary – secondary school	69	31.8
UG Graduate	64	29.5
Diploma	22	10.1
PG Graduate	51	23.5
Father's level of education		
Illiterate	4	1.8
Primary – secondary school	56	25.8
UG Graduate	60	27.6
Diploma	23	10.6
PG Graduate	74	34.1

The above table 1 shows that Year of Study with accordance with Frequency is Maximum at 4th Year (i.e.62) and Minimum at 5th Year (i.e.29).The Distribution of the Respondent according to their Age which is Maximum of 72.8% in 20-25 Years Old and Minimum of 1.8% in 25-30 Years Old. There are Maximum of Hindu and Muslim Respondents (i.e.116 and 84 respectively) and Minimum Number of Christian and Other Respondents (i.e.13and4 respectively). Most of the Respondents are from India (ie.167) and Next come the Pakistani (ie.44) Respondents. There is Lot of Nuclear Family Respondents as Compared to Joint Family Respondents. The maximum numbers of Respondents are not married and Very Least Number (i.e.0.92%) is married. The Education Level of respondent's Mothers is 23.50% in PG Graduate and 5.07% are Illiterate. The Education Level of respondent's Fathers is 27.65% in UG Graduate and 10.60% in Diploma Level.

Figure 1: Distribution of respondents according to their PCOS diagnosis



The above figure shows that Out of 217 respondents, 56 individuals (25.81%) reported having taken a formal PCOS diagnosis, while 153 (70.51%) said they hadn't, and 8 (3.69%) were unsure.

Table 2: Distribution of respondents according to position of person who diagnosed them.

SN	VARIABLE	FREQUENCY	PERCENTAGE
1	OBGYN	50	89.1
2	Internal medicine	6	10.9
	Total	56	100

The above table 2 shows that the majority of respondents diagnosed with PCOS were seen by obstetrician-gynecologists (OBGYN), accounting for 49 individuals (89.1%), while 6 individuals (10.9%) were diagnosed by internal medicine physicians.

Table 3: Distribution of respondents according to their insulin resistance, prediabetes or type 2 diabetes diagnosis

SN	VARIABLE	FREQUENCY	PERCENTAGE
1	YES	9	16.1
2	No	39	69.6
3	Not sure	8	14.3
	Total	56	100

The above table 3 shows that Out of 56 respondents who have PCOS, 39 (69.6%) reported not being diagnosed with insulin resistance, prediabetes, or type 2 diabetes, 9 (16.1%) said they had been diagnosed, and 8 (14.3%) were unsure of their diagnosis status.

INFORMATION RELATED TO FAMILY HISTORY

Table 4: Distribution of respondents with PCOS according to their family chronic medical history.

Variable	Response	(n=56)	(%)
Family history of hypertension	Yes	28	50%
	No	28	50%
Family history of diabetes	Yes	31	55.4%
	No	25	44.6%
Family history of PCOS diagnosis	Yes	22	39.3%
	No	34	60.7%
Family history of miscarriages or Recurrent pregnancy Loss	Yes	3	5.4%
	No	53	94.6%
Family history of hormonal disorder or condition related to Reproductive health	Yes	11	19.6%
	No	45	80.4%
Family history of PCOS symptoms	Yes	24	42.9%
	No	32	57.1%
Family history of heart disease or cardiovascular problems	Yes	20	35.7%
	No	36	64.3%
Family history of female smoking	Yes	4	7.1%
	No	52	92.9%

The above table 4 shows that Out of 56 respondents with PCOS diagnosis, 28(50%) reported that someone in their family is suffering from hypertension, while 28 (50%) stated that no one in their family has hypertension. 31 (55.4%) reported that someone in their family is suffering from diabetes, while 25 (44.6%) stated that no one in their family has diabetes. 22 individuals (39.3%) reported having female relatives diagnosed with Polycystic Ovary Syndrome (PCOS), while 34 individuals (60.7%) stated that no female relatives had been diagnosed with PCOS. 3(5.4%) reported a family history of miscarriages or recurrent pregnancy loss, while the majority, 53 (94.6%), stated there was no such history. 11 (19.6%) reported a family history of hormonal disorders or conditions related to reproductive health, while 45 (80.4%) stated there was no such history in their families. 24(42.9%) stated that family members have reported symptoms like ovarian cysts, pelvic pain, or abnormal bleeding, while 32 (57.1%) said no family members have reported such symptoms. 20 individuals (35.7%) reported a family history of heart disease or cardiovascular problems, while 36participants (64.3%) did not have a family history of such issues and the majority of respondents, ie.92.9% (52 individuals), reported that female member of their family were not smoking or exposed to cigarette smoke, while a smaller percentage, ie.7.1% (4 individuals), indicated that female member of their family were smokers or exposed to cigarette smoke.

INFORMATION RELATED TO MENSTRURAL PROBLEM OF RESPODENTES

Table 5: Distribution of the respondents with PCOS according to their history of menstrual problems during their menstrual cycle

SN	VARIABLE	SUBGROUP	FREQUENCY	PERCENT
1	Heavy bleeding during their menstrual cycle	No problem	14	25.0
		Moderate problem	36	64.3
		Sever problem	6	10.7
2	Irregular bleeding during their menstrual cycle	No problem	15	26.8
		Moderate problem	32	57.1
		Sever problem	9	16.1
3	Dysmenorrhea during the menstrual cycle	No problem	14	25

		Moderate problem	29	51.8
		Sever problem	13	23.2
4	Abdominal bloating during menstrual cycle	No problem	13	23.2
		Moderate problem	35	62.5
		Sever problem	8	14.3
5	Menstrual clots during their period	No problem	17	30.4
		Moderate problem	28	50.0
		Sever problem	11	19.6
		TOTAL	56	100

The above table 5 shows that among the 56 participants with pcos, 14 individuals (25%) reported no problem with heavy bleeding during their menstrual cycle, 36 participants (64.3%) reported a moderate problem, and 6 participants (10.7%) reported a severe problem with heavy bleeding during their menstrual cycle. 15 participants (26.8%) reported having no problem with irregular bleeding during their menstrual cycles , 32participants (57.1%) reported having a moderate problem, and 9participants (16.1%) reported having a severe problem with irregular bleeding during their menstrual cycles. 14participants (25%) reported having no problem with dysmenorrhea during their menstrual cycles ,29 participants (51.8%) reported having a moderate problem, and13 participants (23.2%) reported having a severe problem with dysmenorrhea during their menstrual cycles. 23.2% (n=13)reported no problem with abdominal bloating during their menstrual cycle, 62.5%(n=35) reported a moderate problem, and 14% (n=8)reported a severe problem. 17 individuals reported having no problem with menstrual clots during their period. 28 respondents experienced a moderate problem, while 11respondents, faced a severe problem with menstrual clots during their period.

INFORMATION RELATED TO EMOTION OF THE RESPONDENTS.

Table 6: Distribution of respondents with PCOS according to their emotional feeling

Variables	**Frequency**	**percentage**
worried on talking about PCOS in society		
Embarrassed	2	3.6
Little embarrassed	4	7.1
Not embarrassed	50	89.3
Emotionally worried about their fertility		
Worried	14	25
Little worried	20	35.7
Not worried	22	39.3
Emotional feeling about weight gain		
Worried	27	48.2
Little worried	15	26.8
Not worried	14	25.0
Emotional feeling about getting acne		
Worried	32	57.1
Little Worried	8	14.3
Not Worried	16	28.6
total	56	100

The above table 6 shows that out of 56 respondents with PCOS, 3.6% (n=2) reported feeling embarrassed, 7.1 %(n=4) felt a little embarrassed, and the majority, 89.3 %(n=50), reported not feeling embarrassed when discussing PCOS in society. Approximately 25% of respondents expressed concern about fertility, while around 39.3% indicated they were not worried, and approximately 39.3% stated they were only slightly worried.maximum respondent with PCOS (i.e.27) worried about weight gain but about 26.8% of respondent with PCOS little worried about weight gain and 25% of respondent with PCOS didn't worried about weight gain. Maximum number of respondent with PCOS worried about getting acne (i.e.32) and about 16 respondents with PCOS not worried about getting acne.

INFORMATION RELATED TO RISK FACTOR

Table 7: Distribution of respondent with PCOS according to their risk factor

SN	VARIABLE	SUBGROUP	FREQUENCY	PERCENT
1	BMI	<18.5(underweight)	4	7.1
		18.5-24.5(normal)	32	57.1
		25-29.5 (obese)	16	28.9
		>35(extreme obese)	4	7.1
2	Hirsutism	No problem	24	42.9
		Moderate problem	26	46.4
		Sever problem	6	10.7
3	acne problem	No problem	32	57.1
		Moderate problem	17	30.4
		Sever problem	7	12.5
4	blood pressure history	Yes	11	19.6
		No	45	80.4
5	history of cigarette smoking	Once in a while	8	14.3
		More often	2	3.6
		No	46	82.1
6	stress level in their daily life	Rarely	11	19.6
		Occasionally	24	42.9
		Often	21	37.5
		TOTAL	**56**	**100**

The table 7 shows that among 56 respondents with PCOS maximum respondent (i.e.32) has normal BMI. About 4 respondents are underweight. About 16 respondents are obese. About 4 respondents are extremely obese. 24 respondents had no hirsutism problem. About 26 respondents had moderate hirsutism problem and about 6 respondents had sever hirsutism problem. 32 respondents had no acne problem. About 17respondents had moderate acne problem and about 7respondents had severe acne problem.11 respondents had been diagnosed with high blood pressure or high cholesterol. 2 respondents have been smoking. 8respondents had been smoked once in a while and 46 respondents didn't smoke. 11 respondents reported that they rarely feels stress, 24 respondents reported that they occasionally feels stress and 21 respondents reported that they often feels stress.

Discussion

This study indicated that 25.8% of respondents reported having a diagnosis of PCOS. Similarly, among Pakistani undergraduate students, 18.32% reported a PCOS diagnosis.[11]Additionally, a study conducted among staff, faculty, and students at Texas Women's University campuses in Denton, Dallas, and Houston found that 28.5% of respondents reported having received a formal diagnosis of PCOS.[8]

This study found that 39.3%% (n=22) of participants with PCOS reported having a family history of PCOS. Similarly, another study conducted in a medical college in Nerul, Navi Mumbai, Maharashtra, showed that 6.35% (n=29) of respondents had relatives with PCOS. [7]

This study reveals that 51.81% (n=29) of participants with pcos reported experiencing moderate dysmenorrhea, while 23.2% (n=13) described their condition as severe. Similarly, a descriptive cross-sectional study conducted at the King Saud Medical City Gynecological Referral from July 2022 to January 2023 found that 28.29 % (n=58) of respondents with PCOS reported experiencing issues with dysmenorrhea. [15]

In the research outlined, it was discovered that 46.4% (n=26) of the participants with PCOS reported experiencing moderate issues with hirsutism, while 10.7% (n=6) described their hirsutism as severe. A comparable investigation by Barberis et al. found a notably higher prevalence, with 75% (n=327) of respondents with PCOS indicating they experienced hirsutism. [16]

In the research findings, it was revealed that among 217 participants 8.8% (n=19) of participants indulged in occasional smoking, while 3.2% (n=7) admitted to a more frequent habit. Likewise, a descriptive cross-sectional study conducted at Kathmandu Medical College and Teaching Hospital (KMCTH) in Sinamangal, Kathmandu, Nepal, by K.C. et al., noted that 1.8% (n=7) of respondents acknowledged smoking. [9]

This study found that 12.5 %(n=7) respondents with PCOS has severe problems with acne 30.4%(n=17) respondents with PCOS has moderate problem with acne and 57.1 %(n=32) of respondents with PCOS has no problem with acne Similar study was carried out from September 2017 to March 2018 among the students of Sarojini Naidu College for Women, Kolkata, WB shows that Acne was found in 40.74% of participants with PCOS.[17]

Conclusion

The study conducted at Jalalabad State University reveals a significant prevalence of polycystic ovary syndrome (PCOS) among female medical students, with 25.8% having been formally diagnosed with the condition. A strong association was found between PCOS and family history, as many diagnosed students reported a familial link to the disorder. The study also noted that women with PCOS frequently face menstrual and metabolic challenges, including dysmenorrhea and hirsutism. Additionally, the psychological and emotional burden of PCOS is evident, with concerns about acne, weight gain, and fertility being common among those diagnosed. This underscores the mental health challenges associated with the condition. The findings emphasize the need for increased awareness of PCOS, particularly in academic settings, to ensure early diagnosis and intervention. Furthermore, the study calls for comprehensive management strategies that address both the physical and psychological aspects of PCOS, thereby improving the overall well-being of affected individuals. Lastly, it highlights the potential impact of academic stress on exacerbating PCOS symptoms, pointing to the necessity of targeted support for students facing such challenges.

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