

Prevalence and Knowledge of Polycystic Ovary Syndrome (PCOS) Among Female Science Students of Different Public Universities of Quetta, Pakistan

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ABSTRACT

Background: Polycystic ovary syndrome (PCOS) is common reproductive age endocrine disorder in women. Women with PCOS experience issues getting to be pregnant (i.e., are infertile) and may have large amounts of androgen hormones. The prevalence of PCOS is increasing rapidly worldwide but the females don't have adequate knowledge about this syndrome.

Objective: The aim of the study and collecting data is to determine and interpret the prevalence of symptoms of PCOS in female students that what percentage of female students are suffering from menstrual irregularities, obesity, hirsutism, alopecia and severe acne problem and to check the percentage of female students which are aware of this syndrome.

Methodology: A mixed methodology approach was conducted in different public universities of Quetta, which focuses on questionnaire based on assessment as well as providing education. The data from 451 female students of age range b/w 18-26 years was collected by using stratified convenient sampling technique from January to September 2016.

Results: The finding of study revealed that 374 (72.5%) respondents were not aware of PCOS and get knowledge thorough brochure. While 407(90.2%) subjects were having adequate knowledge about PCOS after educational intervention. It was obtained in the study that 79 (17.5%) participants were suspected with PCOS and 16 (3.5%) were diagnosed with PCOS on the basis of sign and symptoms and 25 (5.5%) were already diagnosed with PCOS. It was also obtained that 35(7.8%) participants were overweight and 13(2.9%) respondents were obese.

Conclusion: According to the finding of study prevalence of signs and symptoms of PCOS are

increasing but females are not aware of PCOS although its signs and symptoms were present in many of them. Furthermore, study indicates that majority of females don't consult gynecologist unless there is severe or life threatening problem or disease.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is common endocrine disorder in women of reproductive age across the world (Baqai, Khanam, & Parveen, 2010). PCOS influences roughly 5 million women of reproductive age in the United States. Women with PCOs are at increased risk of infertility, endometrial cancer, late menopause and additionally metabolic abnormalities, including insulin resistance, type 2 diabetes mellitus, dyslipidemia and cardiovascular infection (Azziz et al., 2004).

The effect of modernization and technological ascertainment reflects in our daily life and changed our lifestyle a lot. Food intake is focused progressively on sugar, fast food, and soft drinks. This unhealthy eating habits and lack of exercise leads to PCOS as well (Rahman, Parvez, Sabur, & Ali, 2012).

Clinical features of polycystic ovary syndrome are Oligomenorrhea/amenorrhea, Infertility/first trimester miscarriage, Obesity, Hirsutism, Acne, Acanthosisnigricans, Male pattern alopecia (Lujan, Chizen, & Pierson, 2008). It is a heterogeneous condition, whose diagnosis is made on ultrasound and combinations of signs and symptoms and management is dependent on symptoms (Balen, Conway, Homburg, & Legro, 2005).

Approximately, 7 million women in the U.S. have PCOS and less than half of them know that they have the syndrome. Public information and awareness of the symptoms and the incurable

nature of the disorder are critical to identify women who need treatment. (Dezarn). Awareness of PCOS is not only about recognizing a disease, it's about identifying the advantages to healthy living, and the impact on quality of life and longevity of women (Dezarn).

Worldwide prevalence of PCOS studies were directed in Iran (Tehrani, Simbar, Tohidi, Hosseinpanah, & Azizi, 2011), United States (Azhar, Almas, Ahmed, Tajik, & Murtaza, 2014), Spain (Asunción et al., 2000), Sri Lanka (Kumarapeli, Seneviratne, Wijeyaratne, Yapa, & Dodampahala, 2008), India (Nidhi, Padmalatha, Nagarathna, & Amritanshu, 2011), Birmingham (Azziz et al., 2004) and South Australia (March et al., 2010). In Pakistan prevalence of PCOS studies were conducted in Karachi (Baqai et al., 2010) (Gul, Zahid, & Ansari, 2014) and Rawalpindi (Nazir, Tasleem, Tasleem, Sher, & Waheed, 2011). All studies showed that prevalence of PCOS is increasing with time.

Studies about knowledge of PCOS were done in Thandalam India (Nimo Biam, September-December 2015), Mansoura, Egypt (H. E. Mohamed, Mansour, & Ibrahim, 2015) and Mangalore India (H. A. A. Mohamed, 2016). A knowledge study about PCOS was conducted in Karachi on urban Pakistani women (Gul et al., 2014).

Aim of Study:

The prevalence of PCOS is increasing rapidly worldwide but the females don't have adequate knowledge about this syndrome and there is no study conducted in Pakistan to assess the knowledge of PCOS among female university students. There are few studies conducted in Pakistan for assessment of PCOS prevalence and no study is conducted in Quetta. So the aim of the study and collecting data is to determine and interpret the prevalence of above mentioned symptoms of PCOS that what percentage of female students are suffering from menstrual irregularities, obesity, hirsutism, alopecia and severe acne problem and to check that what percentage of female students are aware of this syndrome.

1. RESEARCH METHODOLOGY

Study Design

A mixed methodology approach was conducted which focuses on questionnaire based on assessment as well as providing education.

Study Setting

The study was conducted in different universities of Quetta among science students. Three public universities were selected to collect data which were University of Balochistan, Sardar Bahadur Khan Women's University and Balochistan

University of Information Technology, Engineering and Management Sciences (BUIITEMS) respectively.

Study Duration

The study was conducted from January to September 2016

Sampling Technique

Stratified Convenient sampling technique was used based on the availability of respondents within a specific range.

Sample Size

A total of 500 questionnaires were distributed among the female science students.

Inclusion Criteria

Female science students of age between 18-26 years and who were willing to participate in the study.

Exclusion Criteria

Female science students having age more than 26 or less than 18 years and who were not willing to participate in the study.

Study Tool

A self-developed questionnaire was used for which both content and face validation was done by the experts of Faculty of Pharmacy. Before distributing the questionnaire a pilot study was done to assess the reliability. The tool was found reliable (Cronbach's alpha = 0.799).

The questionnaire consists of four domains: First part was concerned with demographics of the respondents. Second part of questionnaire contained 20 questions about PCOS Knowledge. The third part of questionnaire consists of clinical evaluation regarding the prevalence of PCOS and fourth part of questionnaire contained question regarding the Source of information of PCOS.

Scoring

There were total 20 knowledge questions and scoring was done by making cutoff value of 11. The score ≤ 11 was considered as poor knowledge while score ≥ 12 was considered as adequate knowledge.

For clinical evaluation, a total of 12 sign and symptoms were given and students having 4-8 symptoms were considered as suspected while students having more than 8 symptoms were considered as diagnosed.

Sampling Procedure

The questionnaire was distributed among female students and responses were collected. After collecting filled questionnaires education about PCOS was provided through brochure (written material) and short lecture was also delivered to students. Then again same questionnaire was distributed among those female students and responses were collected.

Ethical Consideration

The study was conducted according to the ethical guidelines for human experimentation. Study has been approved by research committee from Department of Pharmacy Practice, Faculty of Pharmacy. Written consent was taken from every participant prior to initiate research.

Statistical Analysis

The data were computed and analyzed using IBM statistical package for social sciences version 20 (IBM SPSS version 20). Descriptive analysis was performed. The results for each item on the questionnaire were reported, as frequencies and percentages.

2. RESULTS**Response rate**

A total of 500 questionnaires were distributed out of which 451 were returned with a response rate of 90.2 %.

Demographic Characteristics

Demographic characteristics are shown in table 1. Majority of respondents 226 (26.1%) were having age ranges between 21-23 years. Three hundred and twenty one respondents (71.2%) were urban. Majority of respondents, 427 (94.7%), 439 (97.3%), and 120 (26.6%) were unmarried, Muslim and Pashtun respectively. Most of the students, 193 (42.8%) participated were from University of Balochistan. Majority of respondents 182 (40.4%) and 201(44.6%) were of life sciences field and of 1st year respectively.

Table 1: Demographics Characteristics

Description	Frequency	Percentages (%)
Age		
18-20 years	206	45.7
21-23 years	226	50.1
24-26 years	19	4.2
Marital status		
Single	427	94.7
Married	24	5.3
Institute		
UOB	193	42.8
SBK	182	40.4
BUITEMS	76	16.9
Religion		
Muslim	439	97.3
Non-Muslim	12	2.7
Ethnicity		
Pashtun	120	26.6
Baloch	114	25.3
Panjabi	80	17.7
Urdu	44	9.8
Persian/hazarah	51	11.3
Other	42	9.3

Locality		
Rural	130	28.8
Urban	321	71.2
Faculty (Field of study)		
Medical and health sciences	56	12.4
Basic sciences	76	16.9
Life sciences	182	40.4
Management sciences	128	28.4
Others	9	2.0
Year of study		
1 st year	201	44.6
2nd year	130	28.8
3rd year	43	9.5
4th year	62	13.7
5th year	15	3.3

2. Knowledge Regarding PCOS

Knowledge regarding PCOS is shown in table 2. Majority of the respondents answered positively of all knowledge questions. However, 116 (25.7%) and 87 (19.3%) don't know that symptomatic treatment is provided for PCOS and antidiabetic medications are used to treat PCOS respectively.

Table 2: Knowledge regarding PCOS

Questions	Yes	No	Don't know
Have you heard about the term called "polycystic ovary syndrome" (PCOS)?	451 (100%)		
Have you heard about androgen (male) hormone (e.g. testosterone and androstenedione)	426 (94.5%)	23 (5.1%)	2 (0.4%)
In PCOS there is increased level of androgen hormone	396 (87.8%)	16 (3.5%)	39 (8.6%)
Patient suffering from PCOS have small multiple cysts in their ovaries	392 (86.9%)	16 (3.5%)	39 (8.6%)
Obesity may cause PCOS	393 (87.1%)	18 (4.0%)	40 (8.9%)
Prediabetes condition (due to decrease insulin	341 (75.6%)	47 (10.4%)	63 (14.0%)

action in body) may cause PCOS			
Irregular or absence of menstrual (period) cycle is a symptom of PCOS	438 (97.1%)	8 (1.8%)	5 (1.1%)
Unusual amount of hair growth on different body parts (upper lip, chin, abdomen, breast, thighs etc.) is a symptom of PCOS	416 (92.2%)	12 (2.7%)	23 (5.1%)
Severe acne problem during menstrual (periods) cycle is a symptom of PCOS	404 (89.6%)	26 (5.8%)	21 (4.7%)
Hair loss from scalp more than normal is a symptom of PCOS	341 (75.6%)	43 (9.5%)	67 (14.9%)
PCOS diagnosis can be confirmed by vaginal ultrasound	369 (81.8%)	30 (6.7%)	52 (11.5%)
Specific blood test can be used for diagnosis of PCOS	332 (73.6%)	44 (9.8%)	75 (16.6%)
PCOS may leads to diabetes (sugar)	365 (80.9%)	29 (6.4%)	57 (12.6%)
PCOS may leads to heart diseases	341 (75.6%)	52 (11.5%)	58 (12.9%)
PCOS may leads to infertility (inability to have children)	416 (92.2%)	9 (2.0%)	26 (5.8%)
PCOS may leads to anxiety and depression	391 (86.7%)	16 (3.5%)	44 (9.8%)
Hormonal therapy may be used to treat PCOS	371 (82.3%)	23 (5.1%)	57 (12.6%)
Anti-diabetic medications (metformin) may be used to treat diabetes	343 (76.1%)	21 (4.7%)	87 (19.3%)
Symptomatic treatment may be given to relief the symptoms of PCOS	300 (66.5%)	35 (7.8%)	116 (25.7%)
Surgery may be	348	27	76

use to remove the ovarian cysts	(77.2%)	(6.0%)	(16.9%)
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3. Clinical Evaluation of PCOS

Clinical evaluation of PCOS is given in table 3. Most of respondents answered negative to all clinical parameters for diagnosis. While 38 (8.0%), 121 (26.6%), 84 (18.6%), 36 (8.0%), 115 (25.5%), 160 (35.5%), 127 (28.2%), 111 (24.6%), 98 (21.7%), 90 (20.0%), 27 (6.0%), 136 (30.2%) have very heavy periods, prolonged periods, complete absence of periods, partial absence of periods, acne problem during menstrual cycle, unusual amount of hair loss from scalp, unusual amount of hair growth at different body parts, dark color patches on skin, continuous abnormal weight gain, diabetes and family history of diabetes respectively.

Table 3: Clinical evaluation of PCOS

Questions	Yes	No	Don't Know
Do you have?			
History of PCOS in your mother or sister	38 (8.0%)	378 (83.8%)	37 (8.2%)
Very heavy periods (more than 2 pads per day)	121 (26.6%)	323 (71.6%)	7 (1.6%)
Prolonged periods (more than 7 days)	84 (18.6%)	355 (78.7%)	12 (2.7%)
complete Absence of periods (not at all)	36 (8.0%)	405 (89.8%)	10 (2.2%)
Partial absence of periods (not after 28 days)	115 (25.5%)	325 (72.1%)	11 (2.4%)
Acne problem during menstrual cycle	160 (35.5%)	266 (59.0%)	25 (5.5%)
Unusual amount of hair loss from scalp	127 (28.2%)	302 (67.0%)	22 (4.9%)
Unusual amount of hair growth at different parts of your body (upper lip, chin, abdomen, breast, thighs etc.)	111 (24.6%)	327 (72.5%)	13 (2.9%)
Discoloration or dark color patches on skin	98 (21.7%)	339 (75.2%)	14 (3.1%)
Continuous abnormal weight gain	90 (20.0%)	353 (78.3%)	8 (1.8%)
diabetes	27 (6.0%)	399 (88.5%)	25 (5.5%)
Family history of diabetes	136 (30.2%)	283 (62.7%)	32 (7.1%)

4. Diagnosis of PCOS

Diagnosis of PCOS is elaborated in table 4. Most of respondents 331 (73.4%) were not diagnosed with PCOS while 79 (17.5%) were suspected, 16 (3.5%) were diagnosed on the basis of sign and symptoms and 25 (5.5%) were already diagnosed with PCOS.

Table 4: Diagnosis of PCOS

Description	Frequency	Percentage
Not diagnosed	331	73.4
Suspected	79	17.5
Diagnosed	16	3.5
Already diagnosed	25	5.5

5. Educational Intervention

Majority of respondents 374 (82.9%) were not aware of PCOS and provided education and after educational intervention all of them were aware of PCOS as described in table 5.

Table 5: Educational Intervention

Description	Frequency	Percentage
Education provided	374	82.9
Education not provided	77	17.1

6. Knowledge Level of Respondents

Knowledge levels of respondents are shown in table 6. Most of the respondents 407 (90.2%) were have adequate knowledge about PCOS.

Table 6: Knowledge Level

Description	Frequency	Percentage
Poor knowledge	44	9.8
Adequate knowledge	407	90.2

7. Knowledge score association among demographics

Chi square test was performed among knowledge score group; dichotomized as good and poor knowledge. Result showed that none of the demographic significantly associated with knowledge score group i.e. $p > 0.05$ as shown in table. 7.

Table 7. Knowledge score association among demographics

Description	Frequency	Knowledge Level		P-Value (Chi Square)
		Poor	Good	
Age				0.551

18-20 years	206	8	198	
21-23 years	226	14	212	
24-26 years	19	1	18	
Marital status				
Single	427	22	405	0.831
Married	24	1	23	
Institute				
UOB	193	8	185	0.202
SBK	182	8	174	
BUITEMS	76	7	69	
Religion				
Muslim	439	22	417	0.606
Non-Muslim	12	1	11	
Ethnicity				
Pashtun	120	3	117	0.506
Baloch	114	6	108	
Panjabi	80	7	73	
Urdu	44	3	41	
Persian/hazarah	51	2	49	
Other	42	2	40	
Locality				
Rural	130	9	121	0.263
Urban	321	14	307	
Faculty (Field of study)				
Medical and health sciences	56	5	51	0.134
Basic sciences	76	1	75	
Life sciences	182	13	169	
Management sciences	128	4	124	
Others	9	0	9	
Year of study				
1 st year	201	10	191	0.706
2nd year	130	6	124	
3rd year	43	4	39	
4th year	62	2	60	
5th year	15	1	14	

DISCUSSION

The current study showed that most of the respondents were not aware of PCOS and its sign and symptoms before educational intervention. A similar results were obtained in study that most of the engineering students had inadequate knowledge in pre-test (Nimo Biam, September-December 2015). Another study done to estimate effect of educational sessions about Polycystic Ovarian Syndrome in late adolescent girls showed same results (Hanan Elsayed Mohamed, 8-August-2015).

After educational intervention majority of participants had adequate knowledge about PCOS. In another research it was found that most of respondents in post-test had moderately adequate knowledge (Nimo Biam, September-December 2015). A further study showed similar results that after educational program majority of respondents had good knowledge (H. A. A. Mohamed, 2016). Study results revealed that there was improvement of all variables of knowledge and there was highly statistical significant difference between pre and post educational sessions (Fernandes, 2013). In addition, the study on effectiveness of educating program showed highest improvement of knowledge regarding all the program content and mean posttest score was higher than the mean pretest knowledge score (Amasha & Heeba, 2014). Also the present study results were supported by a study reported that adolescent girls have remarkable increase in knowledge due to the effectiveness of self-instruction module (Simu, 2013).

It was obtained in study that majority of respondents had adequate knowledge regarding signs and symptoms after educational intervention. The present study findings were in the same line with results found in a study that subjects had adequate knowledge regarding signs and symptoms (H. A. A. Mohamed, 2016).

It was found in the present study that few participants were diagnosed with PCOS on the basis of signs and symptoms. A study was led on Indian adolescents and less than 10% subjects were determined to have PCOS as per Rotterdam criteria (Nidhi et al., 2011). Another study in BIRDS showed prevalence of PCOS nearly half of total in selected infertile women as per Rotterdam criteria (Baqai et al., 2010)

The current study showed that majority of respondents don't have oligomenorrhea, amenorrhea, acne, hirsutism and obesity. Similar results were obtained in study conducted in Karachi Pakistan (Gul et al., 2014). A study led in Rawalpindi Pakistan and obtained different results that most of respondents have oligomenorrhea and hirsutism (Nazir et al., 2011). A research done in Iran found hirsutism in many respondents, and menstrual disturbance in almost 40% of the subjects (Zandi, Farajzadeh, & Safari, 2010). Present study showed that almost 3% subjects were obese with and without PCOS. Obesity was reported in many acne patients with and without PCOS (Zandi et al., 2010). Not more than 8% participants were found overweight in our study. A study showed that many of infertile respondents were overweight (Baqai et al., 2010). Another study have reported that 50% of PCOS women were overweight or obese (Gambineri, Pelusi,

Vicennati, Pagotto, & Pasquali, 2002). A comparisons done amongst women with PCOS, in whites, blacks, Hispanics and Asians obtained that Asians less likely to be obese than whites, blacks and Hispanics (Lo et al., 2006).

It was found in study that many of participants were suspected with PCOS as they had signs and symptoms. It indicates that many females don't consult gynecologists for their health status. It was found in another study that except in life-threatening situations, the families do not take the woman to a healthcare institute, because taking a woman out of their houses had thought to be disrespectful (Rizvi, Khan, & Shaikh, 2014). In a study done amongst adolescents in Karachi found that most of the subjects stated that the problems related to sexual organs/disease should not be described to anyone. Only 22% reported that the problem should be discussed with the family members, whereas remaining subjects stated that in case of any problem a doctor should be consulted (Ali, Ali, Waheed, & Memon, 2006).

CONCLUSION AND RECOMMENDATIONS

The finding of study revealed that prevalence of signs and symptoms of PCOS are increasing but students were not aware of PCOS although its signs and symptoms were present in many of them. So different education programs should be done to provide knowledge about such diseases to females. Furthermore, study indicates that majority of females don't consult gynecologist unless there is severe or life threatening problem or disease. So females should consult gynecologist at least once in a year for their better health status.

Limitations: As this study is conducted only in one city of Pakistan and only on educated females due to unavailability of sources so the results cannot be generalized to whole country. So there is need of further research in other areas and also on uneducated females. Furthermore Due to lack of facilities the diagnosis was made on the basis of signs and symptoms.

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