

## INNOVATIONS

### Identify the Risk of Polycystic Ovary Syndrome among Adolescent Girls in selected Colleges, Puducherry

**Mrs. Hemavathi. P<sup>1</sup>, Dr.Malathi. S<sup>2</sup>**

Research Scholar <sup>1</sup>,

Professor<sup>2</sup>

Department of Community Health Nursing

Vinayaka Missions Annapoorana College of Nursing

Vinayaka Mission's Research Foundation (Deemed to be University), Salem,  
India.

Corresponding Author Email ID: [breezehema@gmail.com](mailto:breezehema@gmail.com)

---

#### **Abstract:**

**Background:** Polycystic ovary syndrome (PCOS) is a common endocrine disorder in young women and it is characterized by menstrual irregularity, signs of hyperandrogenism such as acne, excess body hairs, male-pattern baldness and infertility.<sup>(1)</sup>**Materials and methods:**An Exploratory Survey to identify the Risk of Polycystic Ovarian Syndrome was conducted among Adolescent Girls in selected Colleges, Puducherry. **Results:** It was found that among 130 adolescent girls, 17 (13.1%) of them had no risk, 60 (46.2%) of them had low risk, 51 (39.2%) of them found with moderate risk and 2 (1.5%) of them had high risk for PCOS. 61 (46.92%) of the Adolescent experienced hair loss or excessive hair thinning and 15 (11.53%) similarly had overweight and abnormal hair growth. 61 (46.92%) of the Adolescent experienced hair loss or excessive hair thinning and 15 (11.53%) similarly had overweight and abnormal hair growth. significant association found between Risk of PCOS and socio demographic variables of Adolescent girls such as Education and Age at menarche. No significant association found between Risk of PCOS and Personal medical and family history of DM & PCOS of Adolescent girls.

**Key words:**Adolescent Girls and Risk of PCOS

---

#### **Introduction**

Poly Cystic Ovarian Syndrome (PCOS) is a disease characterized by multiple small sacs filled with fluid in the ovaries (Poly cyst) which fails to release eggs causes menstrual irregularities and hyperandrogenism.<sup>(1)</sup> It is an endocrine disorder affecting women of reproductive age worldwide and affects 5% to 10% of women in the reproductive age.<sup>(2)</sup> Poly Cystic Ovarian Disease is a common problem among teenage girls accounting for 1 case out of 10 adolescent girls. A study finding shows that Adolescent Girls with Poly Cystic Ovarian Disease have an increased risk of the Metabolic Syndrome Associated with increased androgen levels.<sup>(3)</sup>

According to a study by PCOS Society (2017), one in every 10 women has PCOS, a common endocrinal system disorder among women of reproductive age and out of every 10 women diagnosed with PCOS, six are teenage girls in India. A study conducted by the department of endocrinology and metabolism, AIIMS (2017) shows that about 20-25 per cent of Indian women of childbearing age are suffering from PCOS.<sup>(4)</sup>

Symptoms appears first during puberty among adolescent girls. It is characterized by irregular menstrual cycle, hirsutism, acne, overweight or obesity, multiple cysts in the ovaries involving hyperandrogenism and insulin resistance.<sup>(5)</sup>PCOS is linked to long term health problems such as cardiovascular diseases type II diabetes and endometrial cancer. Hereditary, environmental and lifestyle factor increases the risk of PCOS among adolescent girls. Diet, weight control, physical activity and consumption of Calcium, vitamin D and magnesium helps to improve the symptoms of PCOS.<sup>(6)</sup>

Students are becoming independent as they enter college and got freedom to choose their food habits. College canteen mostly has fast food items, junk foods and beverages which the students enjoy during their break time with friends. More screen time, lack of physical activity and improper eating habits puts adolescents at a higher risk of overweight /obesity, PCOS, cardiovascular disease, type 2 diabetes mellitus, some type of cancers and hypertension. PCOS is the leading cause of infertility and menstrual irregularities among young women. Identifying the risk of PCOS at early may help adolescent girls to be aware about their potential risk of developing PCOS and follow recommended lifestyle modification focusing primordial prevention. This study was aimed to identify risk of PCOS among Adolescent girls.

## **Materials and methods**

### **Research design and sampling**

Explorative Cross-Sectional Survey was conducted to identify Adolescent girls with risk of PCOS. Simple random sampling technique was used to select 130 adolescent girls in the age group of 17 to 19 years studying in selected Arts and Science Colleges in Puducherry. Adolescent girls who were attended menarche, unmarried and willing to participate in the study was included in the study. Adolescent girls diagnosed with PCOS and are on treatment were fall under exclusion criteria.

### **Data collection**

Data was collected during January 2020. Researcher explained the purpose of the study and obtained informed Consent from the Adolescent girls. Assent and parent consent was taken for adolescent girls who were less than 18 years. Structured interview questionnaire consists of Socio Demographic variables and modified PCOS risk assessment questionnaire was used to collect data. Interviewer spent 15 to 20 minutes for each study participants. PCOS risk assessment questionnaire had 11 questions. Each questions had two responses as yes/ No. For “yes” one point and “No” zero point was given. PCOS risk score ranges between 1 to 3 denoted as Low risk, 4 to 7 denoted as Moderate risk, 7 to 11 was denoted as high risk and 0 as no risk. Adolescent girls with High risk were referred to Secondary level health care facility and Girls with Low and Moderate risk were given health education on Polycystic Ovary Syndrome and importance of Lifestyle Modification in prevention of Polycystic Ovary Syndrome. The collected data was organized, tabulated and analyzed by using descriptive and inferential statistics. The statistical method used for data analysis was frequency, percentage, and chi-square. The data was presented in the form of tables and figures.

## Results

Study results show that, 72 (55.4%) of them in the age group 18 years, 84 (64.6%) of them were studied B.Sc, 73 (56.2%) of them attained menarche at 12-13 years, 119 (91.5%) of the were non-vegetarian, 124 (95.4%) of them belongs to Hindu Religion, 40 (30.8%) of them had monthly family income Rs. 3000-5000, 110 (84.6%) of them were belongs to Nuclear family, 74 (56.9%) of them were live in Urban area, 61 (47.0%) fathers and 54 (41.6%) mothers studied up to Secondary education and only 13 (10%) of them had previous information about PCOS.

Fig 1 shows that, 2(1.54%) of them got information through mass media, 3 (2.31%) of them got information through Health professionals and 8 (6.15%) of them got information through family and friends.

Table 1 shows that, 12 (9.23%) of them had personal medical history and 118 (90.77%) of them had no personal medical history. Figure 2, shows that 3 (2.30%) Adolescent girls had history of Anemia, 4 (3.08%) of them had history of Asthma, 2 (1.54%) similarly had history of Surgery and Sinusitis and 1 (0.77%) had history of Tuberculosis. Table 2 shows that, 16 (12.31%) of them had Family history of PCOS and 74 (56.92%) of them had Family history of DM.

Table 3 shows that, 17 (13.1%), 60 (46.2%), 51 (39.2%) and 2 (1.5%) of them had no risk, Low risk, Moderate risk and 60 high risk for PCOS respectively. Table 4 shows that significant association found between risk of PCOS and socio demographic variables of Adolescent girls such as Education (0.037\*) and Age at menarche (0.000\*\*) at  $p < 0.05$ . Table 5 shows that no significant association between Risk of PCOS and Personal medical and family history of DM & PCOS at  $p < 0.05$ .

## Discussion

In the present study it was observed that 12.31% of Adolescent girls had Family history of PCOS. Whereas the study done by Archana Singh\*, K. Vijaya, Kaparti Sai Laxmi 14 had PCOS among 117 adolescent girls. Out of 14 adolescent girls 6 (43%) had family history of PCOS.<sup>(7)</sup>

It was found that out of 130 adolescent girls 17 (13.1%) had no risk and 113 (86.9%) had some level of risk. Similar study was conducted by Shoba et.al reported that out of 752 students 86.2% had low risk and 13.4 % had moderate risk and no students was found with high risk of PCOS.<sup>(8)</sup>

In the present study 53 (40.7%) adolescents girls had risk score ranges between 4 to 8. Sahar Mansour et al reported in Egypt that out of 500 adolescent girls, 12.2 girls had risk score more than 4 out of 9. The difference in the score may be due to dietary habits and physical activity of the adolescent girls based on the socio-cultural factors.<sup>(9)</sup>

significant association found between risk of PCOS and adolescent girls education and age at menarche. Hence it was inferred that the risk of developing PCOS was not dependent with age, education status, family income, religion, Dietary pattern, father's education, mother's education, residency, personal medical and family history of DM & PCOS.

## Conclusion

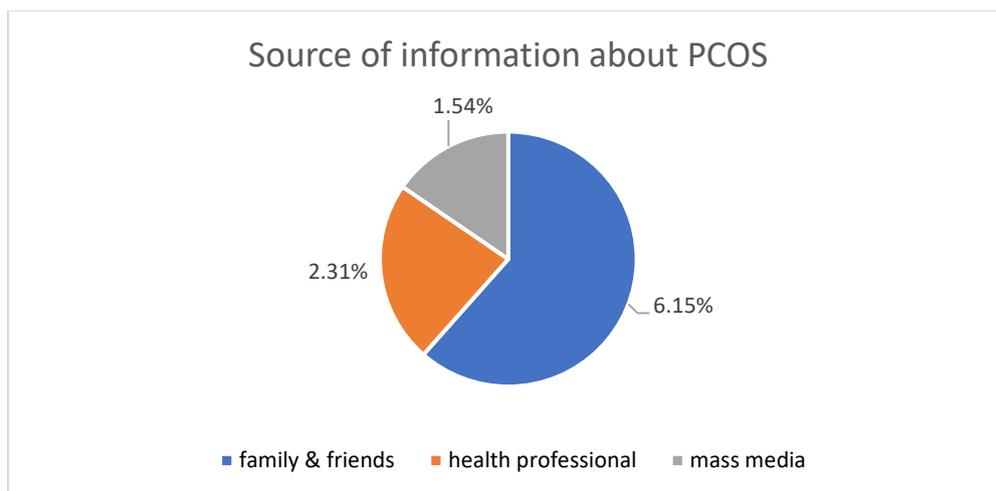
Most of the Adolescent girls of current generation are at risk of developing PCOS due to improper lifestyle behaviour. Study results concludes that risk of PCOS is higher among adolescent girls. Identifying Adolescent girls at risk for PCOS helps in preventing long-term complications associated with this syndrome. Primordial prevention of PCOS paves way for positive lifestyle modification to achieve the better reproductive outcome.

**Conflict of interest: nil**

**Source of funding: nil**

## References

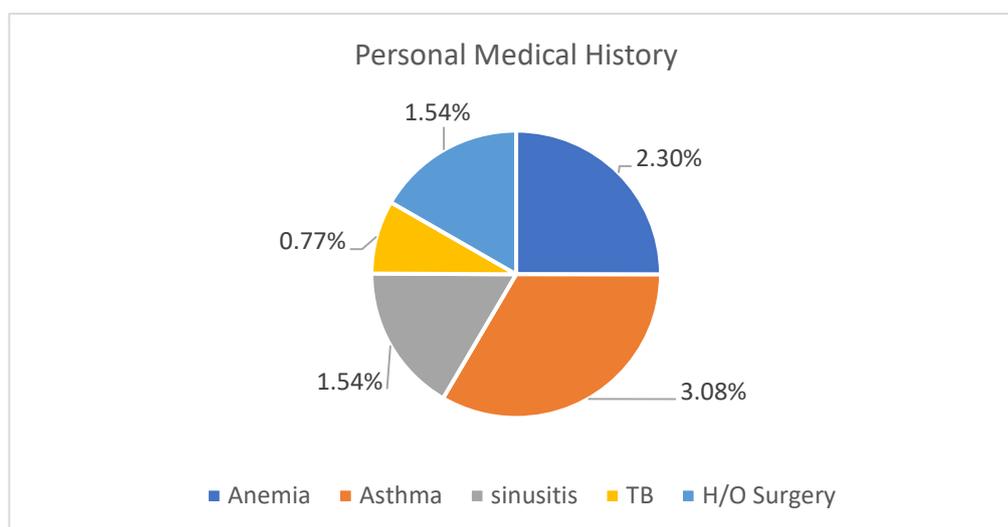
1. Mehring PM. Disorders of female reproductive system. *Pathophysiology: Concepts of Altered Health States*. China. Wolter Kluwer Health, Lippincott Williams and Wilkins; 2014, 1144-1146.
2. Hung J, Hu L, Tsai S, Yang A, Huang M, Chen P et al. Risk of Psychiatric Disorders following Polycystic Ovary Syndrome: A Nationwide Population-Based Cohort Study. *PLOS ONE*. 2014;9(5): e97041.
3. Annie W.Lin and Maria E. Lujan. *An International Review Journal of Advances in Nutrition*. Comparison of Dietary intake and Physical Activity between Women with and without Polycystic Ovary Syndrome. 2014 sep, 5(5) 486-496.
4. Prevalence of PCOS among childbearing age of Indian women. Department of endocrinology and metabolism, AIIMS. Bangalore, India.
5. José Bellver, Luis Rodríguez-Tabernero, Ana Robles, Elkin Muñoz, Francisca Martínez, José Landeras, Juan García-Velasco, Juan Fontes, Mónica Álvarez, Claudio Álvarez, Belén Acevedo, Polycystic ovary syndrome throughout a woman's life. *J Assist Reprod Genet*. 2018 Jan; 35(1): 25–39. Published online 2017 Sep 27. doi: 10.1007/s10815-017-1047-7
6. Tsikouras.P et.al Features of Polycystic Ovary Syndrome in adolescence. *J Med Life*. 2015 Jul-Sep; 8(3): 291–296.
7. Singh, Archana & Vijaya, K. & Laxmi, Kaparati. (2018). Prevalence of polycystic ovarian syndrome among adolescent girls: a prospective study. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 7. 4375.
8. Shobha, \* and Devi, Elsa Sanatombi and Prabhu, Anusuya (2014) An exploratory survey to identify the adolescents with high risk for Polycystic Ovarian Syndrome (PCOS) and to find the effectiveness of an awareness programme among students of selected pre university colleges of Udupi District. *IOSR Journal of Nursing and Health Science*, 3 (3). pp. 66-69. ISSN 2320–1940
9. Sahar Mansour Ibrahim, Yossria Ahmed Elsayed, eda Esmail Reyad, & Hanan Fahmy Azzam. (2017). Screening of polycystic ovarian syndrome among adolescent girls at cairo university. *The Malaysian Journal of Nursing (MJN)*, 9(1), 16-20.



**Figure 1: Distribution of Adolescent Girls according to previous source of information about PCOS**

**Table 1: Distribution of Adolescent Girls according to the personal medical history**  
n =130

| Personal Medical History | Frequency (f) | Percentage (%) |
|--------------------------|---------------|----------------|
| Yes                      | 12            | 9.23%          |
| No                       | 118           | 90.77%         |



**Figure 2: Distribution of Adolescent Girls with Personal Medical History**

**Table 2: Distribution of Adolescent Girls according to the family health history**  
**n =130**

| Family Health History | Yes           |                | No            |                |
|-----------------------|---------------|----------------|---------------|----------------|
|                       | Frequency (f) | Percentage (%) | Frequency (f) | Percentage (%) |
| PCOS                  | 16            | 12.31%         | 114           | 87.69%         |
| DM                    | 74            | 56.92%         | 56            | 43.08%         |

**Table 3: Distribution of Adolescent Girls according to the level of PCOS risk**  
**n =130**

| Level of PCOS Risk  | Frequency (f) | Percentage (%) |
|---------------------|---------------|----------------|
| No Risk             | 17            | 13.1           |
| Low Risk (1- 3)     | 60            | 46.2           |
| Moderate Risk (4-7) | 51            | 39.2           |
| High Risk (>7)      | 2             | 1.5            |

**Table 4.: Association between Risk of PCOS and socio demographic variables of Adolescent girls**

n=130

| Sl. No | Demographic variables                  | Risk of PCOS |      |                |      |                     |      |                |      | p value |
|--------|--|--------------|------|----------------|------|---------------------|------|----------------|------|---------|
|        |  | No Risk (0)  |      | Low Risk (1-3) |      | Moderate Risk (4-7) |      | High Risk (>7) |      |         |
|        |  | n            | %    | n              | %    | n                   | %    | n              | %    |         |
| 1.     | <b>Age in years</b>                    |              |      |                |      |                     |      |                |      | 0.373   |
|        | 17 years                               | 5            | 14.7 | 14             | 41.2 | 15                  | 44.1 | 0              | 0.0  |         |
|        | 18 years                               | 12           | 16.7 | 33             | 45.8 | 26                  | 36.1 | 1              | 1.4  |         |
|        | 19 years                               | 0            | 0.0  | 13             | 54.2 | 10                  | 41.7 | 1              | 4.2  |         |
| 2.     | <b>Education</b>                       |              |      |                |      |                     |      |                |      | 0.037*  |
|        | B.Sc                                   | 9            | 19.6 | 22             | 47.8 | 13                  | 28.3 | 2              | 4.3  |         |
|        | B.Com                                  | 0            | 0.0  | 20             | 50.0 | 20                  | 50.0 | 0              | 0.0  |         |
|        | BCA                                    | 0            | 0.0  | 18             | 40.9 | 26                  | 59.1 | 0              | 0.0  |         |
| 3.     | <b>Age at Menarche</b>                 |              |      |                |      |                     |      |                |      | 0.000** |
|        | 10-11 years                            | 0            | 0.0  | 1              | 33.3 | 1                   | 33.3 | 1              | 33.3 |         |
|        | 12-13 years                            | 11           | 15.1 | 32             | 43.8 | 30                  | 41.1 | 0              | 0.0  |         |
|        | 14-15 years                            | 6            | 12.5 | 26             | 54.2 | 16                  | 33.3 | 0              | 0.0  |         |
|        | >15 years                              | 0            | 0.0  | 1              | 16.7 | 4                   | 66.7 | 1              | 16.7 |         |
| 4.     | <b>Dietary Pattern</b>                 |              |      |                |      |                     |      |                |      | 0.100   |
|        | Vegetarian                             | 1            | 9.1  | 3              | 27.3 | 6                   | 54.5 | 1              | 9.1  |         |
|        | Non-vegetarian                         | 16           | 13.4 | 57             | 47.9 | 45                  | 37.8 | 1              | 0.8  |         |
| 5.     | <b>Religion</b>                        |              |      |                |      |                     |      |                |      | 0.840   |
|        | Hindu                                  | 17           | 13.7 | 58             | 46.8 | 47                  | 37.9 | 2              | 1.6  |         |
|        | Christian                              | 0            | 0.0  | 1              | 50.0 | 1                   | 50.0 | 0              | 0.0  |         |
|        | Muslim                                 | 0            | 0.0  | 1              | 25.0 | 3                   | 75.0 | 0              | 0.0  |         |
| 6.     | <b>Monthly family Income in Rupees</b> |              |      |                |      |                     |      |                |      |         |

|    |                           |    |      |    |      |    |      |   |      |       |
|----|---------------------------|----|------|----|------|----|------|---|------|-------|
|    | 3000-5000                 | 7  | 17.5 | 19 | 47.5 | 14 | 35.0 | 0 | 0.0  | 0.425 |
|    | 5000-10000                | 3  | 7.9  | 19 | 50.0 | 16 | 42.1 | 0 | 0.0  |       |
|    | 10000-15000               | 6  | 17.1 | 13 | 37.1 | 14 | 40.0 | 2 | 5.7  |       |
|    | >15000                    | 1  | 5.9  | 9  | 52.9 | 7  | 41.2 | 0 | 0.0  |       |
| 7. | <b>Type of Family</b>     |    |      |    |      |    |      |   |      | 0.319 |
|    | Joint                     | 0  | 0.0  | 7  | 41.2 | 10 | 58.8 | 0 | 0.0  |       |
|    | Nuclear                   | 16 | 14.5 | 51 | 46.4 | 41 | 37.3 | 2 | 1.8  |       |
|    | Extended                  | 1  | 33.3 | 2  | 66.7 | 0  | 0.0  | 0 | 0.0  |       |
| 8. | <b>Place of Residence</b> |    |      |    |      |    |      |   |      | 0.519 |
|    | Urban                     | 8  | 10.8 | 34 | 45.9 | 30 | 40.5 | 2 | 2.7  |       |
|    | Rural                     | 9  | 16.1 | 26 | 46.4 | 21 | 37.5 | 0 | 0.0  |       |
| 9. | <b>Father's Education</b> |    |      |    |      |    |      |   |      | 0.145 |
|    | Primary                   | 8  | 20.5 | 17 | 43.6 | 14 | 35.9 | 0 | 0.0  |       |
|    | Secondary                 | 1  | 4.8  | 9  | 42.9 | 11 | 52.4 | 0 | 0.0  |       |
|    | Higher secondary          | 4  | 7.1  | 28 | 50.0 | 23 | 41.1 | 1 | 1.8  |       |
|    | Diploma                   | 2  | 40.0 | 2  | 40.0 | 1  | 20.0 | 0 | 0.0  |       |
|    | Undergraduate             | 2  | 22.2 | 4  | 44.4 | 2  | 22.2 | 1 | 11.1 |       |
| 10 | <b>Mother's Education</b> |    |      |    |      |    |      |   |      | 0.094 |
|    | Primary                   | 8  | 19.0 | 17 | 40.5 | 17 | 40.5 | 0 | 0.0  |       |
|    | Secondary                 | 2  | 9.5  | 12 | 57.1 | 7  | 33.3 | 0 | 0.0  |       |
|    | Higher secondary          | 5  | 8.9  | 25 | 44.6 | 24 | 42.9 | 2 | 3.6  |       |
|    | Diploma                   | 0  | 0.0  | 2  | 50.0 | 2  | 50.0 | 0 | 0.0  |       |
|    | Undergraduate             | 2  | 28.6 | 4  | 57.1 | 1  | 14.3 | 0 | 0.0  |       |

\* significant at  $p < 0.05$ .

**Table 5: Association between Risk of PCOS and Personal medical history and Family History of PCOS and DM of Adolescent girls**

n=130

| Sl. No | Medical History                      | Risk of PCOS |      |                |      |                     |      |                |     | p value |
|--------|--------------------------------------|--------------|------|----------------|------|---------------------|------|----------------|-----|---------|
|        |                                      | No Risk (0)  |      | Low Risk (1-3) |      | Moderate Risk (4-7) |      | High Risk (>7) |     |         |
|        |                                      | n            | %    | n              | %    | n                   | %    | n              | %   |         |
| 1      | <b>Personal medical history</b>      |              |      |                |      |                     |      |                |     | 0.096   |
|        | Yes                                  | 0            | 0.0  | 12             | 46.2 | 13                  | 50.0 | 1              | 3.8 |         |
|        | No                                   | 17           | 16.3 | 48             | 46.2 | 38                  | 36.5 | 1              | 1.0 |         |
| 2      | <b>Family health history of PCOS</b> |              |      |                |      |                     |      |                |     | 0.330   |
|        | Yes                                  | 2            | 11.8 | 5              | 29.4 | 10                  | 58.8 | 0              | 0.0 |         |
|        | No                                   | 15           | 13.3 | 55             | 48.7 | 41                  | 36.3 | 2              | 1.8 |         |
|        | <b>Family health history of DM</b>   |              |      |                |      |                     |      |                |     | 0.394   |
|        | Yes                                  | 4            | 7.3  | 28             | 50.9 | 22                  | 40.0 | 1              | 1.8 |         |
| No     | 13                                   | 17.3         | 32   | 42.7           | 29   | 38.7                | 1    | 1.3            |     |         |