

# Percentage of Hirsutism with and without PCOS in Women of Amravati Region, Maharashtra, India

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**Abstract:** In the present study we investigated the frequency of hirsutism in women of Amravati district enrolled in Gynaecological hospitals and beauty parlours of Amravati region. Women had hirsutism with and without PCOS and PCOS with and without hirsutism diagnosed patients were considered for this study. Total 182 individuals were investigated. Total hirsutism patients were observed in this study were 15.38% out of which 28.57% patients were hirsutism with PCOS and 71.42% patients were hirsutism without PCOS. Total 12.64% PCOS patients were observed, out of these 34.78% of PCOS patients with hirsutism and 65.21% PCOS patients without hirsutism. Age factor was also included in this study, we observed 35.72% hirsute patients in 16-20 age group, 32.14% hirsute patient in 21-25 age group, 17.86% hirsute patients in 26-30 age group, 7.14% hirsute patients in 31-35 age group and 7.14% hirsute patients in 36-40 age group. Out of total hirsute patients we observed 10.71% hirsute patient having PCOS with high F-G score 8-11, 25% hirsute patient without PCOS with high F-G score 8-9, 17.86% hirsute patients having PCOS with low F-G score 1-7 and 46.43% hirsute patients without PCOS with low F-G score 1-6.

**Keywords:** PCOS, Hirsutism, F-G score, Women, Age factor, Amravati district.

## 1. Introduction

Polycystic ovary syndrome is a common hormonal disorder that affects 5%-10% of women. Polycystic ovary syndrome is a condition associated with hormonal imbalances that cause the ovaries to overproduce androgens. It is a common cause of hirsutism. In patients with PCOS, multiple small follicles develop in the ovaries that appear as cysts, hence the term "polycystic." These small cysts are actually immature ovarian follicles that failed to mature and ovulate.

Hirsutism is defined as growth of thick dark hairs, otherwise known as terminal hairs, on the androgen-dependent areas of body such as upper lips, chin and mandibles. It is quite a disturbing problem for women leading to even marked depression in some patients (Jackson, 2007 and Shulman, 1992). Its reported prevalence ranges from 5% to as high as 40% in different studies (Azziz, 2003; Blume-peytavi, et al 2007; Carmina, 1998; Curran and Moore 2005). Hirsutism is caused by increased androgenicity in the pilosebaceous gland resulting in increased growth of terminal hairs. Hirsute patients have increased dermal activity of the enzyme 5 $\alpha$ -reductase, which is responsible for conversion of testosterone to the more potent androgen dihydrotestosterone (DHT) (Azziz, et al., 2000). High DHT levels increase terminal hair growth in the dermal papilla and therefore, 5 $\alpha$ -reductase inhibitors can be used for the treatment of hirsutism. A more generalized increased 5 $\alpha$ -reductase activity may be important for increased cortisol metabolism in polycystic ovary syndrome (Glintborg, et al., 2009).

Some studies of scalp hair follicles have indicated that White individuals had a higher density of hair follicles than Blacks, who in turn had more follicles than Asians (Sperling, 1999; Lee, et al., 2002). In certain races and communities what amount of hair is considered normal it

is taken as abnormal in others. This makes it difficult to assess the magnitude of problem in a given community. Hirsutism is conventionally divided into two major groups: those with elevation of serum androgens levels having some underlying endocrine disorder (secondary) and those without significant elevation of it and having no underlying disorder often termed as idiopathic. The increased levels of androgens may originate from ovaries, adrenals or prolactin-secreting tumours. Among the causes, idiopathic hirsutism is the most common cause followed by polycystic ovary syndrome, hypothyroidism, Cushing's syndrome and congenital adrenal hyperplasia (Malik, et al., 2007). Simple obesity may lead to hyperandrogenism and hirsutism without significant metabolic disorder (Cupisti, et al., 2007).

The aim of this study to determine the frequency of hirsute women with and without PCOS and their relationship to pattern and severity of hair growth in patients attended at private Gynaecological hospitals and beauty parlour centres of Amravati.

## 2. Methods

### 2.1 Study Population

A total of 182 females were surveyed randomly by visiting Gynaecological Hospitals and Beauty parlour centres of Amravati region. We included patients diagnosed for PCOS in Gynaecologist hospitals and enrolled for excess hair growth in the beauty parlours of Amravati region. An informed consent was sought from them and data entered into pre-structured standard pro forma. In this study we included different parameters like age, pelvis sonography and Ferriman and Gallwey (F-G) scoring system. F-G scoring system was used to assess the severity of hirsutism in patients. Women had PCOS without hirsutism, PCOS with hirsutism, hirsutism without PCOS.

The study group diagnosed with PCOS according to the Rotterdam ESHRE/ASRM consensus (Rotterdam, 2003). The study included only patients diagnosed in Gynaecological hospitals with PCOS phenotype I, Patients were assessed by history and physical examination. History, after recording biodata (name, age, address, occupation). Physical evaluation, a detailed examination was conducted to note the sites, density, extent, colour and texture of hair growth.

**2.2 Observation and Results**

Table 1 showed the percentage of hirsutism and PCOS patients, total 15.38% patients were hirsutism, out of these 28.57% hirsutism with PCOS and 71.42% hirsutism without PCOS. Total PCOS patients were 12.64%, out of these 65.21% PCOS without hirsutism and 34.74% PCOS with hirsutism.

**Table 1:** Total individual investigated (n=182), hirsutism (n=28), PCOS (n=23)

Total Patients observed		182
Hirsutism patients	Total hirsutism patients	28(15.38%)
	Hirsutism with PCOS	8(28.57%)
	Hirsutism without PCOS	20(71.42%)
PCOS Patients	Total PCOS	23(12.64%)
	PCOS without Hirsutism	15(65.21%)
	PCOS with hirsutism	8(34.78%)
Normal		139(76.34%)

**Table 2:** Age group wise study of hirsutism patients (n=28)

S. No	Age group	n (%)
1	16-20	10(35.72)
2	21-25	9(32.14)
3	26-30	5(17.86)
4	31-35	2(7.14)
5	36-40	2(7.14)

Table 2 showed age group wise study of hirsutism patients. Age group 16-20 had 35.72% of hirsutism and age group 31-40 had 7.14 % of hirsutism

The severity of hirsutism is depicted in Table 4. Out of 28 only 07 patients had severe hirsutism were having higher Ferriman and Gallwey score i.e. more than 8. The hairs were thick, deeply pigmented and densely populated. 19 patients showed less quantity of hairs had lesser Ferriman and Gallwey score i.e. less than 8 and remaining 2 had their F-G score 8.

**Table 4:** F-G score and Pelvic Sonography finding in 28 Patients

S.N	F/G Score	U/S pelvis	S.N	F/G Score	U/S Pelvis
1	5	N	15	1	N
2	5	N	16	1	N
3	9	N	17	1	N
4	10	PCO	18	5	PCO
5	1	N	19	1	N
6	16	N	20	1	N
7	8	N	21	1	N
8	4	N	22	8	N
9	7	PCO	23	10	PCO
10	2	N	24	9	PCO
11	2	N	25	3	N
12	2	N	26	7	N
13	12	N	27	3	PCO
14	19	N	28	4	N
	1	PCO		1	PCO

Body area wise hair density, thickness and extent - We have observed majority of our patients (n=28, 17.86%) had scores between 10 and 12. Lower face including chin and mandibular area were the dominant sites involved in majority of patients (78.57%), followed by upper lip (46.43%). The other areas involved included temples, forehead, neck, chest, mid abdomen and limbs. In this study we have seen 78.57% of FG score in those individuals who have hair present on lower face including chin and mandibular this percentage shown highest number in study.

**3. Discussion**

Different studies have been conducted on the etiological and biological aspects of hirsutism and role of polycystic ovary syndrome. The serum concentration of androgens including testosterone and dehydroepiandrosterone levels is significantly higher in patients with hirsutism alone or hirsutism with polycystic ovaries than in women without hirsutism (Bardin and Lipsett, 1997; Seirafi, *et al.*, 2007).. There is very sparse literature on relationship of serum androgens to severity and pattern of hair growth in hirsutism. PCOS is the most common cause of hirsutism and may affect up to 10% of women. Hirsutism is very common and often improves with medical management.

Hirsutism results from either increased production of androgens or increased sensitivity of hair follicles to normal levels of androgens. These stimulate hair growth, increase size and intensify the growth and pigmentation of hair. The androgens may originate from adrenals or ovaries. Thus tumours of these organs cause severe and rapid hirsutism. The causes of hirsutism include polycystic ovary syndrome, idiopathic, congenital adrenal hyperplasia, Cushing's disease, pregnancy, ageing (Tekin, *et al.*, 2004) and certain medications like androgens, (Mustafa, *et al.*, 2006).

In the present study, the percentage of normal, hirsutism and PCOS peoples depicted in Table no 1. We have observed that out of 182 peoples 15.38% of peoples having hirsutism only, 12.64% of total peoples having PCOS problem, and remaining 76.37% peoples was normal. Out of total observed PCOS patients 65.21% PCOS patients without hirsutism, 34.78% of PCOS patients with

hirsutism. Total hirsutism patients observed in this study were 15.38% out of which 28.57% patients of total hirsutism with PCOS, 71.42% hirsutism without PCOS. Age group was also included in this study, we observed 35.72% hirsute patients with 16-20 age, 32.14% hirsute patient with 21-25 age, 17.86% hirsute patients with 26-30 age, 7.14% hirsute patients with 31-35 age and 7.14% hirsute patients with 36-40 age group. Out of total hirsute patients we observed 10.71% hirsute people having PCOS with high F-G score 8-11, 25% hirsute people without PCOS with high F-G score 8-9, 17.86% hirsute patients having PCOS with low F-G score 1-7 and 46.43% hirsute patients without PCOS with low F-G score 1-6. Similar work was also done by (Doulat, *et al.*, 2008) in this study 6 patients had severe hirsutism (F-G score  $\geq 12$ ), 8 had moderately severe hirsutism (F-G score  $\geq 7-12$ ), while 12 patients had mild hirsutism (F-G score  $\leq 7$ ). Reingold *et al.* had similar observations in a study on 62 Caucasian women. Ferriman and Gallwey (F-G) scoring system was used to assess the severity of hirsutism in observed patients. A score of 8 is taken as cut off value. Patients having score above 8 are graded as having severe hirsutism while below 8 as mild (Tekin, *et al.*, 2004).

Hirsutism is a common problem of our population. It varies in severity from mild to severe. Perception and acceptance of hirsutism by women varies considerably between cultures, races and individuals. Therefore a standard tool is essential to properly assess, classify and monitor prognosis in hirsutism. Ferriman and Gallwey (Ferriman D and Gallwey JD., 1961) designed a nice scoring system for this purpose which has remained gold standard to assess the severity and monitor treatment efficacy and prognosis.

#### 4. Conclusion

The present study was showing correlation between hirsutism and PCOS. In this study, we observed that 28.57% patients having hirsutism with PCOS, that indicates level of androgen was increased in that patients. Due to high level of androgen in woman (patient) hair was growing on different parts of the body. As per F-G score criteria, we have observed dense hair on chin and mandible of women those who are suffering by severe hirsutism. Our results support to this study, because the pattern of hair on body and there relation to hirsutism may be a cause of PCOS. If F-G score of hirsutism patient above 8 (severe hirsutism) there is chance to suffer by PCOS. Therefore, we may conclude that hirsutism and PCOS are correlated to each other.

#### 5. Future Scope

Present study was the preliminary phase for to know the PCOS patients in and around Amravati region. This study will also provide scientific informative data about PCOS and gives new direction for analysis and diagnosis of PCOS patients. Hirsutism is the common cause of PCOS. In future study, we will try to correlate this study with the present living life style of women's like diet, lack of exercise, obesity, stress, and other factors responsible for PCOS. This study will also extend and explore with the

endocrine as well as genetic parameter of the PCOS patients. This study and related further study will be benefited to research students, scientists, NGO's, doctors and Health Department to frame a guidelines for women's who are living in present living life style.

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