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Polycystic ovary syndrome, a significant women's health issue - Need for a wake-up call

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ABSTRACT

Women's health forms the crux of a community's health, as they serve as the inter-generational link in promoting the health of the community. Of the many health issues confronting today's women, Polycystic Ovary Syndrome (PCOS) is definitely a major concern. PCOS is the most common endocrine disorder that affects women and is a leading cause of infertility. Women with PCOS may present with obesity, amenorrhea / oligomenorrhea, infertility, or androgenic features. Women with PCOS are also at increased risk for both diabetes and its complications and cardiovascular disease. With early detection and effective management of PCOS, many long-term complications can be prevented. Both pharmacological and non-pharmacological approaches do exist for effective management of PCOS. However, the success of treatment always depends on the compliance which is influenced by individuals' understanding of the disease. Hence, educating the target population and creating awareness about the disease is an integral part of prevention and/or early detection that ultimately reduces the risks associated with PCOS. This review article focuses on the many facets of this common yet understated health issue which is silently and steadily trapping more and more women of reproductive age into its web and jeopardizing the overall health and well-being of women. The article emphasises the need for women to understand the complexities of the disorder and be aware of the possible adverse complications that may arise if not managed properly. The article underlines the need for creating awareness regarding the disorder among Indian women, which might help to initiate preventive measures or advocate successful management, even if afflicted and thus promote overall health and well-being.

Key Words : Polycystic Ovary Syndrome (PCOS), Hyperandrogenism (HA), Quality of life (QoL)

INTRODUCTION

Health is undoubtedly, an indisputable asset for an individual as well as a nation. The health status of its community is a vital indicator of a nation's growth and development. And unarguably, women's health forms the crux of a community's health. Women are not only the pillars of our families but the intergenerational link in promoting the health of the community.

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Women alone have the privilege of giving birth and raising families and hence they are the building stones of our society.

Though at the outset, it seems that our country has succeeded in bringing down the mortality rates, it is quite evident that different forms of morbidities are springing up and posing threat to the welfare of our population. Changing lifestyle – sedentary behaviour compounded with faulty and unwise eating practices and erratic food habits, has certainly had a toll on the health of our population. Women, one of the vulnerable group seem to have borne the brunt of this. PCOS is one such resultant affective disorder of significant concern.

Of the many health issues confronting today's Indian women, Polycystic Ovary Syndrome (PCOS) is definitely a major concern. The multifarious disorder has also been described as the 'Thief of Womanhood' (Kitzinger and Willmott, 2002), as its symptoms and manifestations often target the basic attributes of feminity and pose a threat to the essence of womanhood. Polycystic Ovary Syndrome (PCOS) is a major concern, owing to its multifarious nature and adverse symptoms and complications which pose a threat to the very essence and beauty of womanhood.

PCOS, a complex/ multifaceted disorder: an understanding :

PCOS is a complex endocrine disorder of heterogenous nature affecting women of reproductive age. It is aptly referred to as a 'syndrome' as it encompasses a cluster of symptoms of unclear aetiology. It is also referred to as hyperandrogenic anovulation (HA), or Stein–Leventhal syndrome, as it was first reported in modern medical literature by Stein and Leventhal who, in 1935, described seven women suffering from amenorrhea, hirsutism, and enlarged ovaries with multiple cysts. This metabolic and reproductive disorder with diverse clinical implications, is mainly characterised by menstrual irregularity, hyperandrogenism, and polycystic ovaries. Its pathophysiology, appears most likely to be a combination of genetic disposition and environmental factors, but is still not completely understood.

Though it was previously recognised as a disorder of adult women, it is now presumed as a lifelong syndrome. The heterogeneity of its presentation has made its diagnosis quite difficult and has led to the identification / stratification of different phenotypes of the syndrome, based on the different combinations of symptoms and signs. The clinical presentation of PCOS is found to vary widely. But when fully expressed, the commonly observed manifestations include irregular menstrual cycles, hirsutism (abnormal facial and skin hair growth), acne, infertility and frequently, obesity.

There is no single criterion for the diagnosis of this syndrome (Table 1) and the prevalence of PCOS therefore, depends on the choice of diagnostic criteria.

A thorough physical examination, medical history, and laboratory tests should be conducted to reach the appropriate diagnosis (Witchel *et al.*, 2015). Each of the guidelines requires ruling out any pathological condition that might explain the hyperandrogenism or the menstrual irregularity (Powers *et al.*, 2015).

Table 1 : Definitions of PCOS

Definition/year	Diagnostic criteria
NIH/1990	Requires the simultaneous presence of: 1. Hyperandrogenism (clinical and/or biochemical) 2. Ovarian dysfunction
Rotterdam (ESHRE/ASRM)/2003	Requires the presence of at least two criteria: 1. Hyperandrogenism (clinical and/or biochemical) 2. Ovulatory dysfunction 3. Polycystic ovarian morphology[1]
AES/2006	Requires the presence of hyperandrogenism (clinical and/or biochemical) and either: 1. Ovulatory dysfunction 2. Polycystic ovarian morphology[1]
Androgen Excess and PCOS Society/2009	Requires the simultaneous presence of: 1. Hyperandrogenism (clinical and/or biochemical) 2. Ovarian dysfunction (ovulatory dysfunction and/or polycystic ovarian morphology[1]

- PCOS diagnosis is an exclusion diagnosis of other disorders, such as NC- CAH, Cushing syndrome, acromegaly, hyperprolactinemia, hypothyroidism, premature ovarian failure, virilizing adrenal or ovarian neoplasm and a drug- related condition.

1. The ultrasound definition of polycystic ovarian morphology is the presence of $\geq$12 follicles with a 2- to 9- mm diameter on the ovary. An ovarian volume >10 ml is also suggestive. Only one ovary consistent with polycystic ovarian morphology is sufficient for the diagnosis.

ESHRE = European Society for Human Reproduction and Embryology
ASRM = American Society for Reproductive Medicine

Prevalence of PCOS :

Although PCOS is said to be one of the most common endocrine disorder of premenopausal women, the actual prevalence of PCOS in the community is a subject of continuing debate owing to the difference in the specific sampling methodology used in each of the various studies as well as study design limitations. According to the World Health Organization, PCOS affects 116 million women worldwide as of 2010 (3.4% of women) (Vos, 2012). In the United Kingdom, a community-based prevalence study using the Rotterdam criteria found that about 18% of women had PCOS and that 70% of them were previously undiagnosed.

According to the National Institutes of Health (NIH) diagnostic criteria, 4–10% of women of reproductive age suffered from PCOS in USA (Azziz et al., 2004). Based on the Rotterdam diagnostic criteria, the prevalence of PCOS in adolescents varied between a minimum of 3% (Hashemipour et al., 2004) and a maximum of 26% (Driscoll, 2003).

Studies of PCOS in India carried out in convenience samples reported a prevalence of 3.7% to 22.5% (Gill *et al.*, 2012 and Joshi *et al.*, 2014) with 9.13% to 36% prevalence in adolescents only (Nidhi *et al.*, 2011 and Nair *et al.*, 2012). The wide variation in prevalence might be due to heterogeneous presentation of symptoms, diagnostic criteria practiced, limitations in diagnosis, age groups, and ethnic populations studied.

Economic burden of PCOS :

The economic burden of PCOS is significantly huge. It is estimated that around 4 billion dollars are spent annually in the United States to screen for the disease and treat its associated morbidities, such as hirsutism, infertility, and diabetes mellitus (Azziz *et al.*, 2005). The Australian Health System reportedly spends more than 800 million dollars every year for the same (Azziz *et al.*, 2005). Patients with PCOS are twice more likely to be admitted to hospital in comparison to patients without it (Hart and Doherty, 2015). Thus, it is a matter of grave concern which demands proper attention and action.

The situation can be gloomy in case of the developing and the under-developed countries with limited resources and access for health care and many cases even go unnoticed or under reported. This emphasises the need for accurate and early diagnosis of PCOS, not only to prevent future health comorbidities but also to reduce financial cost and burden (Kamangar *et al.*, 2015).

The Associated Anomalies :

Polycystic syndrome (PCOS) is associated with multiple metabolic abnormalities. Accordingly, patients with PCOS may be expected to have a higher morbidity and mortality from the sequelae of the metabolic syndrome (the clustering of insulin resistance, obesity, hypertension, and dyslipidemia). The resulting physiological dysfunction produced by interrelated metabolic and hormonal factors, predisposes patients with PCOS to different complications like cardiovascular disease (CVD), endometrial hyperplasia and cancer, miscarriage, and acanthosis nigricans (Teede *et al.*, 2010).

It is the leading cause of female infertility and is responsible for a cluster of symptoms that can affect the body physically and emotionally. Thus, PCOS adversely affects endocrine, metabolic, reproductive and cardiovascular health. It seems to affect all areas of the body and not just the reproductive system.

Impact on Health and Quality of Life (QoL) :

PCOS presents with a constellation of symptoms that can affect the body physically and emotionally and significantly impact the quality of life. Its physical, reproductive and metabolic effects cause significant psychological distress and lead to poor health-related QoL in the afflicted women. Changes in appearance, menstrual irregularities, difficulty in conceiving and possibly disturbances in sexual attitudes and behaviour may adversely influence the feminine identity of patients with PCOS and this in turn can result in psychological distress. The clinical symptoms compounded with the increasing evidence on the long-term health risks associated with PCOS may also have a negative impact on psychosocial well-being. Indeed, the diagnosis of PCOS has been found to be associated with feelings of frustration, anxiety and emotional stress (Hahn, 2005; Eggers and Kirchengast, 2001 and Sills *et al.*, 2001).

In adolescents with PCOS, a negative impact on various aspects of health-related quality of life (HRQoL), such as limitations in physical functioning, general behaviour, and family activities, have been identified. As PCOS often manifests at a younger age, its cosmetic and psychosexual implications are thought to cause profound emotional distress in affected women

(Trent *et al.*, 2002). As a result, patients with PCOS expressed feeling less feminine. Thus, it is evident that PCOS has profound implications on the overall well – being of its victims.

Management of PCOS :

Efficient management of PCOS provides a prospective window of opportunity to avoid the risk of associated complications. It is widely accepted that the management of PCOS depends on the symptoms which could be ovulatory dysfunction-related infertility, menstrual disorders, or androgen-related symptoms. Given the complex nature of PCOS, tailoring treatment options to the needs of individual patients can be a difficult clinical exercise. Long-term risks of PCOS must be balanced against current acute needs of the patients like the desire for continued fertility and the need to ameliorate the cosmetic challenges associated with PCOS. The Androgen Excess and Polycystic Ovary Syndrome Society recommends lifestyle management (diet and exercise) as the primary therapy for metabolic complications in overweight and obese women with PCOS.

PCOS-related hyperandrogenism is hypothesized to cause central obesity with a high waist/hip ratio independent of the body mass index (BMI) and obesity in turn, is associated with anovulation, miscarriage, or late pregnancy complications (such as pre-eclampsia and gestational diabetes) (Pasquali *et al.*, 2003; Boomsma *et al.*, 2006). Therefore weight loss can help to improve the endocrine profile and thus increase the likelihood of ovulation and pregnancy. Modest weight loss of 2-5% of total body weight can help restore ovulatory menstrual periods in obese patients with PCOS (Patel and Nestler, 2006). It is suggested that a decrease of 500-1000 calories daily, along with 150 minutes of exercise per week, can cause ovulation; however, weight loss is only recommended for those who are overweight.

Due to its heterogeneous nature, effective management of PCOS needs a sustained, multi-pronged strategy with inter-disciplinary expertise, based on strong evidentiary framework to guide the standardization of care. Proper management and treatment can help to control the symptoms and avoid long-term problems.

Need for a Wake -up call :

In the contemporary clinical practice in India, efforts aimed at tackling the menace is stymied by the lack of awareness about PCOS, the associated co-morbidities, long -term effects and effective management. Gynaecological diseases are common in Indian women but the symptoms are mostly ignored. Many are unaware of the problem until the problem becomes worse.

Further, in view of the higher risk of PCOS in Indian women, and the relative lack of medical infrastructure to deal with the chronic outcomes of PCOS, there is an immediate necessity to wake up and rise to the occasion and alert women in general regarding this multifarious disorder, the incidence of which is steadily increasing in our population.

Diet and activity pattern seem to play a pivotal role in both promotion and prevention of any disease condition. The same may hold true for PCOS too and a realisation of this fact is also essential among our womenfolk to safeguard their health and ensure overall well-being.

Conclusion :

It is important that every woman has access to knowledge related to the spectrum of women's health issues, PCOS, being a significant one of it. As the saying goes, 'Prevention is better than cure'; further, 'A stich in time saves nine'. Therefore, appropriate initiatives taken today to create awareness among Indian women can definitely guide them to seek medical help at the right time. It can also motivate them to adopt a healthy lifestyle either to keep this complex disorder at bay or even if afflicted, to often ameliorate the symptoms and to advocate efficient management.

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