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Prevalence of polycystic ovary syndrome in Aljouf region of Saudi Arabia

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Polycystic ovarian syndrome (PCOS) is a common metabolic disorder with diverse etiologies among women of reproductive age. The prevalence of PCOS varies with different ethnicities and across various geographies and social settings. The worldwide prevalence is estimated to be 6–7%. In the present study we evaluate the prevalence of PCOS in Saudi reproductive women in between the age of 18-45 years from Gynecology department of Maternity and Children Hospital (MCH), sakaka, aljouf, Saudi Arabia. Total 485 PCOS participated in this retrospective study over a period of January 2018 to December 2018. The participant's criteria were included age, BMI, history of menstruation and as well as the presence of hirsutism, acne, and alopecia. The participants were also assessed for total testosterone, follicle stimulating hormone, luteinizing hormone, prolactin and thyroid stimulating hormone levels. All Data obtain from the hospital record database files in MCH. The Rotterdam criteria were used for diagnosis of polycystic ovary syndrome (PCOS). Total 485 PCOS cases were diagnosed out of 7200 and represent of prevalence of 6.7%. Our study documented the prevalence of PCOS is higher in a woman ages between 18–45 years old. We have aim to further research of prevalence on PCOS with population based.

Keywords: Polycystic ovary syndrome (PCOS), Body Mass Index (BMI), Hirsutism (H)

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a common endocrine disorder and affected 6 to 20% of child bearing aged women that lead to irregular menstruation, infertility and increased androgen production which causes excess body hair and acne (Kalavathi et al. , 2015). PCOS is a key responsible to increased risk of infertility occurs in 75% cases included other health problem such as abortion, increased body weight, cardiac disorders , type 2 diabetes , endometrial hyperplasia and endometrial carcinoma (Hardiman et al.,2003; Giudice ,2006).

A single diagnostic characteristic is insufficient to recognize the clinically identification of polycystic ovary syndrome due to its diverse

symptoms. Criteria of the European Society of Human Reproduction and Embryology/American Society for Reproductive Medicine, called Rotterdam. The diagnostic criteria included irregular menstrual, hyperandrogenism and polycystic ovaries that based on clinical or biochemical and ultrasound findings (Eshre, 2004). Nevertheless PCOS is a common hormonal disorder, but the exact prevalence of PCOS is unidentified, in 2012 according to World Health Organization (WHO), 116 million women usually affected PCOS (Farrell, 2010). Globally, there was variable prevalence of PCOS which started from 2.2% to 26% due to inability understand of their used diagnostic criteria (Moran et al. 2010).

Previous studies reported, the prevalence of PCOS depend on ethnic background such as those women from South East Asia often present more severe symptoms in young age group (Glintborg et al.,2010; Casarini,2014). In addition, the genetic role also predicted to more severe hyperandrogenic symptom in Middle East population (Sharif et al. 2017). Furthermore the study in Qatari women found 18.3% the prevalence of PCOS (WHO, 2008).The prevalence of polycystic ovary syndrome in sakaka, Saudi Arabia is remaining unknown, other than it is concerned that it may be found same to other reports (Al-Ruhaily et al.,2008). However, there are still no published available reports on prevalence of PCOS among Saudi reproductive women in sakakaaljouf region. The aim of present study was to distinguish the prevalence of current polycystic ovary syndrome on the hospital base in sakaka, Saudi Arabia.

MATERIALS AND METHODS

This retrospective study conducted in the Gynecology outpatient Department of Maternity and Children hospital (MCH) sakaka, Saudi Arabia. In aljouf region, there is only one specialize hospital (MCH) and the entire patient referred to this hospital from different places. We selected a reproductive aged woman (18 to 45 years) associated with PCOS from hospital electronic database that had been investigated for clinically diagnosed according to Rotterdam consensus criteria (Sharif et al.2017) over a period of January 2018 to December 2018.

A woman who has pregnant, menopausal, hysterectomy and using hormonal contraceptives were excluded. The inclusion criteria included age of the patients, body mass index (BMI), age of menarche, menstrual pattern such as having oligo-amenorrhoea (The menstruation is missing for 35-182 days) or amenorrhoea (> 182 days), dysmenorrhoeal with problem of hyperandrogenism-related like hirsutism, acne vulgarism, and alopecia (Rumball ,2005). Hirsutism was assessed based on the modified Ferriman-Gallwey (mF-G) score; the laboratory data included serum follicle stimulating hormone (FSH), luteinizing hormone (LH), prolactin, testosterone and thyroid hormone. Ultrasound report was available for the confirmation of PCOS depend on the presence of twelve or more follicles along a diameter of 2-9 mm in each ovary and or improvement of volume in each ovary at least 10 ml⁹.This study was approved by an Institutional Ethical committee of Jouf university.

RESULTS

The four hundred eighty five participant of polycystic ovary syndrome were carried out of 7200 patients who was visited the Gynecology Department of MCH in between January 2018 to December 2018. The characteristic of women with PCOS is represented in Table 1 as below.

Table 1 Demographic characteristic of reproductive age women with PCOS

Variables	Total (n-485)
Age (years)	31.25±6.02
Weight (kg)	68.57±13.63
Height (m)	1.52 ± 0.07
BMI (kg/m ²)	28.2±4.2
Follicle Stimulating Hormone (mIU/ml)	7.64±1.54
Luteinizing Hormone (mIU/ml)	9.65±5.22
Serum Testosterone (ng/dl)	34.36 ±20.47
Prolactin (ng/ml)	9.75 ±4.28
Thyroid stimulating hormone	3.06±2.56

The prevalence of patients was 6.7%. All the PCOS women were age within 18 and 45 years old. The mean age for diagnosis is 31.25±6.02 years old. The mean height of the patients were 1.52 ± 0.07 m and the mean weight 68.57±13.63 Kg and the mean Body Mass Index (BMI) of 28.2 ± 4.2 kg/m². Total 50% of patients had a BMI <30, 22% of BMI 25–30 and 27% women had a BMI 18-24. Table 2 shows the estimated prevalence of PCOS under Rotterdam criteria.

Table 2. The Prevalence of clinical features in polycystic ovary syndrome

Variables	Total (n-485)	Percentage %
Pcos + Oligomenorrhoea	114	23.50
Pcos + hirsutism	87	17.93
Pcos +obesity+ hairsutism	109	22.47
Pcos + Obesity	56	11.54
Pcos +Acne+ hairsutism	119	24.53

DISCUSSION

Polycystic ovary syndrome (PCOS) is a common hormonal dysfunction and heterogeneous endocrine disorder in reproductive women. To our knowledge, there were no previous data available on PCOS rather than our study. However, our study carries out in the prevalence of PCOS women in sakaka, aljouf

region, Saudi Arabia. This study was shown 6.7% prevalence of PCOS according to Rotterdam criteria under the women with reproductive age in between 18 to 45 years. Our prevalence of PCOS was lower to other studies that reported 32.5% prevalence in Madinah population, and 53.7% of Taibah University in Madinah city respectively (Kumarapeli et al.2008; Chen et al. 2008). In addition, the prevalence of PCOS is 2.4% in Chinese population and 7.1 in Iran population (Mata, 2011).The prevalence of PCOS study in Spain and Mexico is comparatively elevated than China population (Moran et al. 2010; Tehrani et al. 2011). On previous many studies for prevalence of PCOS in community based but there were very few studies reported for prevalence of PCOS on hospital based. In present study, a retrospectively collected data from hospital file but the majority of studies existing on population based which was diagnosed of PCOS by using different classification.

However the prevalence of PCOS was reported to be 9.13% of a population of India, with their age ranged from 18-45 years (Kalavathiet al., 2015). However, the diverse exposed of PCOS mostly due to insufficient reports for definite diagnosis of this disease as well as dissimilar explanation. The prevalence of PCOS was found to vary to vary in different countries because the population depends on their sample size, age of women, the site where the subjects recruited, the criteria and methods used for diagnosis of PCOS. While, the diagnosis of PCOS based on a combination of clinical, laboratory and ultrasound finding (Mehrabian et al. 2011; Billah, 2018). The prevalence of PCOS at Copenhagen University Hospital, Denmark, was 16.5% over a period of 20–40 years (Mehrabian et al. 2011). The three definitions are in use for the diagnosis of PCOS as the first one was with the National Institute of Health (NIH) in 1990 which included the combination of clinical, biochemical signs and clinical symptoms of ovulation disorder or infertility in the absence of non-classical adrenal hyperplasia (Billah,2018; Malik ,2018). The second was Rotterdam by Fertility and Embryology Association of Europe and America Fertility Society at Rotterdam conference in 2003 and has considered only two criteria that was Oligo-ovulation, clinical hyperandrogenism, or biochemical hyperandrogenism (Gambineri, 2012). The third definition was held 2006 in the Androgen Excess Society (AES) and considered in criteria of hirsutism or hyperandrogenism, oligoovulation and anovulation or polycystic

ovaries, and increase levels of androgens or related disorders (Diamanti et al.1999).The present study included the demographic details of age, BMI index and menstrual irregularities, we found menstrual irregularities (23.50%) and hirsutism (64.9%) in PCOS women, that was similar found in previous studies of PCOS (Michelmores et al. 1999; McKnight 1964; Shayan et al. 2017). Menstrual irregularity is a one of the important diagnostic criteria which used for diagnosis of PCOS. In the present study, we also found Obesity association with PCOS (11.54%) and presence of acne (24.53%) respectively. On the other hand acne and other dermatological lesions were also reported in other studies conducted in the Gulf region and it was as high as 50% in Denmark study (Hadjiconstantinou et al. 2017; Lauritsen et al. 2014; Shan et al. 2015). However, previously there was no available data that show women with prevalence of PCOS in sakaka city. Besides, present study, provided data from one hospital due to one specialized hospital (MCH) available which has referred patient from different places. As well conducting the retrospective study, our results were comprehensive to the women with PCOS who attended in the Gynecology Department of MCH.

In the present study has some limitation that available data from one hospital and short period of time. Furthermore, this study was incredibly hard for a number of patients to collect their medical records, files due to insufficient available data in the hospital information systems for the diagnosis of PCOS.

CONCLUSION

The Present study revealed prevalence of PCOS 6.7% in Saudi women ages between 18-45 years from the Maternal and Children Hospital (MCH), in sakaka ,aljouf region, that's similar to other countries. We suggested to future research on PCOS prevalence in a population based assessment.

CONFLICT OF INTEREST

The authors declared that present study was performed in absence of any conflict of interest.

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AUTHOR CONTRIBUTIONS

Research designed, collected the data and wrote; Umme Salma, Statistical analysis; Md Sayed Ali Sheikh, and revised the manuscript; M Elshamy and Eman KRashwan. All authors declare there is no conflict of interest.

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