LIFESTYLES AND PREVALENCE OF POLYCYSTIC OVARIAN SYNDROME AMONG COLLEGE STUDENTS: A CROSS-SECTIONAL STUDY IN PUNE, URBAN, MAHARASHTRA, INDIA

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Abstract

Background: Polycystic ovarian syndrome (PCOS) is the most common endocrine disorder among women of reproductive age groups. It is one of the leading causes of poor fertility. Behavior and lifestyle modifications are an important part of treatment for PCOS. Several cases in the community remain undiagnosed due to a lack of awareness and proper guidance. Thus, risk assessment in the form of a survey would be one of the strategies to identify this syndrome early to encourage young women to seek timely treatment and prevent its long-term complications.

Objective: To analyze and discuss the prevalence of Polycystic Ovarian Syndrome (PCOS) and the impact of their lifestyle among the young females of Pune, urban, Maharashtra.

Methods: In this survey study, a questionnaire was prepared to collect information related to socio-demography, diet, physical activity, and the pattern of the menstrual cycle.

Results: A total of 248 girls from Pune urban participated in this survey of which 28.23% were reported to have PCOS. Out of which 8.46% ($P > 0.05$) of girls were obese with PCOS. Also, only 18.95% ($P > 0.05$) of girls with PCOS exercised regularly. Only 18.54 % ($P > 0.05$) of girls with PCOS consumed healthy diet regularly and more than 12.90 % ($P > 0.05$) of girls with PCOS had an irregular cycle. Moreover, the results of the independent t-test showed there is no significant difference between participant's characteristics and PCOS. ($P > 0.05$).

Conclusion: From this study, we conclude that there is an impact of quality of life of females on prevalence of PCOS. Early diagnosis of PCOS and lifestyle modifications will help the girls to improve their quality of life.

Keywords: PCOS, Lifestyle, Diet, Health, Pune, Urban.

INTRODUCTION

Polycystic Ovarian Syndrome (PCOS) is a typical endocrine condition in women of reproductive age, with prevalence rates of between 6-10%. The condition is portrayed by the presence of a few liquid filled sacs called pimples inside the ovaries (Fig. 1) The sacs are follicles containing an immature egg that never develop to trigger ovulation. It is seen in women of child-bearing age across all societies and nationalities. A planned investigation of Indian teenagers revealed a frequency of 9.13%[1]. The basic highlights of PCOS are unpredictable or anovulatory cycle with indications of hyperandrogenism like skin inflammation, seborrhea, hirsutism, alopecia, plain virilization, and polycystic ovaries on pelvic sonography[2]. As of late, it has been related to weight, insulin resistance (IR), and the danger of creating Type 2 diabetes mellitus (T2DM)[2]. It could be seen as a cosmetic issue as a result of hirsutism and acne, or as a gynecological concern that causes unpredictable periods and reduced fertility[3]. Way of life changes and long-term medications are fundamental for an effective result. A portion of the examinations utilized for PCOS are ultrasound check, laparoscopy, hormonal examinations, and hysteroscopy Lifestyle changes and long-term medications are essential for a successful outcome. Some of the investigations used for PCOS are ultrasound scan, laparoscopy, hormonal investigations, and hysteroscopy[4].Treatment is significantly aimed at the prompt introducing protest and the treatment of barrenness for overweight women ought to incorporate weight reduction, workout, food control, and skincare[5]. Oily skin and skin inflammation are unpretentious indications of androgens, yet hirsutism is the most widely recognized appearance of PCOS[6]. During the previous decade, women with constant anovulation and hyperandrogenism have been seen to have an expanded commonness of diabetes and expanded danger factors for coronary heart disease (CHD)[7]. Maiya et. al., (2008) saw that weight reduction by actual work ought to be considered as the primary line of treatment. An evaluated oxygen consuming activity was discovered to be an unequivocal device in diminishing the body weight in ladies with PCOS. It was additionally found to decrease the blister size, expanding ovulation, and pregnancy rate. It is notable that activity preparing improves a variety of wellbeing related results, including assurance against the advancement of Coronary Vascular Illness and diabetes[10]. Wehrenberg et. al. in 1999 recommended an insignificant measure of weight reduction (5–10%) over just a month was adequate to improve the introduction of PCOS. Weight reduction is along these lines an alluring result in overweight ladies with PCOS for treating both intense clinical and long haul metabolic wellbeing. Weight reduction by means of energy limitation was accounted for to build up the decreases in stomach fat, blood glucose, blood lipids, and insulin obstruction, upgrades in feminine cyclicity, ovulation and richness, decreases in testosterone levels, and free androgen list[11].

METHODS AND MATERIALS

This is a cross-sectional study conducted in Pune, Urban, Maharashtra in YOUNG girls between the ages of 18 to 25 years to check the status of PCOS, between the years of December 2019-May 2020. In this study, participants were explained about the purpose of the study and their consent was obtained. The self-made questionnaire was developed and validated by the specialist in this field. The questionnaire then was circulated among the participants. Components of the questionnaire consist of demographic details, perception of PCOS, awareness of exercise in PCOS, emotions attributed to PCOS, biggest concern with PCOS, and willingness for lifestyle modification. (Image no-1)

RESULTS AND DISCUSSION

In recent years, lifestyle modification has tremendously increased the prevalence of PCOS amongst women, which leads to various complications including cancer, cardiovascular disorders, and infertility[15].Signs and indications of PCOS incorporate feminine anomaly, hair development issue, diabetes, weight irregularity, skin break out, skin pigmentation, stress, state of mind issues, and hormonal unevenness, and so forth the presence of these manifestations demonstrate the chance of the presence of PCOS[16].

In the present research study, the questionnaire was prepared based on the above-related symptoms. The response was recorded and collected from willingly participating 248 females of which 70 girls (28.23%) were reported to have PCOS. PCOS patients were grouped as obese or lean as per their Body Mass Index (BMI) according to World Health Organization (WHO) 2000 criteria. An individual with a BMI of 18-24 was considered normal. Those above 24 were considered obese. In the study cohorts, only 18.54% of girls with PCOS had a healthy weight and 8.46% were obese whereas a phenomenal 73 % volunteers were found to be overweight. About 6.04% of girls with PCOS had income between 1 to 5 lakhs per annum and 16.12% girls with annual income above 5 lakhs. Thus, comparing the socio-economic status with incidence of PCOS revealed that the prevalence of this condition was predominant in girls from higher economic strata. The use of private vehicles for transport and lack of physical activity among girls from higher economic strata could be primary causes for this difference. This was further corroborated by the percentage of girls without PCOS who followed some type of exercise regimen like walking, running, yoga, aerobics, and others. It was found that only 18.95% of girls with PCOS exercised regularly among the total respondents whereas 43.14% of girls who exercised regularly did not suffer from PCOS. Only 4.43 % of girls with PCOS exercised daily while about 14.51% of girls were irregular in their exercise routine. Thus, the lack of physical activity or lack of regular exercise could be considered as primary pointers to severity of PCOS.

Apart from exercise diet is a key part of a PCOS treatment plan. Hormonal imbalance is at the root of all symptoms displayed by girls affected by PCOS. Since the estrogen receptors do not function properly the metabolic functions are affected adversely[17].A diet rich in fresh fruits and vegetables not only helps in the weight loss process but also certain fruits and vegetables which are rich in antioxidants help to control the inflammatory response commonly seen in girls with PCOS[18]. In this study, 25.80% of girls with PCOS were found to drink more milk than others. About 15.72% of girls consumed cow's milk while 10.08% of girls took buffalos' milk with nutritional additives. Also, 57.25% of girls without PCOS consumed milk including 27.41% cow's milk and 23.19% buffalos' milk with additives. It is reported that milk itself contains number of macro and micronutrients. However, the benefits of including nutritional additives in milk is a million-dollar question. Most of these additives are malt-based containing a high percentage of sugars and carbohydrates along with other essential micronutrients as per the advertisement claims. Thus use of these additives adds to the total sugar consumption by children and young girls which may predispose to weight gain and existing probability of PCOS[19]. Apart from this use of steroids and hormones to increase milk production in cows and buffaloes is rampant in the animal husbandry industry[20]. Steroid hormones have been extensively used in animal husbandry because they can promote the growth of animals and improve feed conversion efficiency[21]. These include androgens, estrogens, glucocorticoids, and progestogens and related synthetic compounds[22]. Hormone residues in food have detrimental effect on the endocrine system in humans[23]. Reports have additionally highlighted capability of steroid chemicals in food got from creatures to be poisonous and cancer-causing, and their deposits might be applicable to an assortment of sicknesses including disease of the bosoms, ovaries, and prostate[24]. A meagre 5% of girls with PCOS ate fruits on a regular basis while 23% ate fruits irregularly. About 17 % of girls who ate fruits regularly did not display any symptoms of PCOS. Only 2.01% of girls with PCOS had salad in their every meal, 1.61% of girls had a salad as a part of their meal at least once a day while 52.91% consumed salads 3-4 times a week only. Also, 20.16% of girls with PCOS were non-vegetarians with white meat being consumed to a larger extent. Nearly 44 % of girls without PCOS were non-vegetarians with nearly 19.25 % respondents eating both red and white meat. Hirpessa et.al., studied the potential health impact of rampant use of hormones and steroid and their

residues in animal sourced food like meat and reported the need to regulate the industry as presence of residues
beyond the tolerance acts as a risk factor for the occurrence of potential public health problems[25].
Nearly 27 % of girls with PCOS ate junk food 3- 4 times a week while 70.56 % without PCOS had junk food sometimes. Junk food are low in nutritional value and include food such as pizzas, burgers, chips, etc. These foods are high in fats, sugars, salt, and excessive consumption may lead to obesity, heart problems, hormonal imbalance, and diabetes[26]. Indian fast-food market was expected to be worth US$ 27.57 billion by 2020 due to changing consumer behaviour and demography. Peer pressure, appealing taste, attractive advertisement, ease of availability and cost are the primary drivers for the youth to tilt towards fast food[27].

A measly 0.80 % of girls with PCOS were involved in some sports which they played every day while 8.06% of girls played a game at least once a week. According to Regina Gut hold from the Maternal, Newborn, Child, and Adolescent Health and Aging Department, World Health Organization, the level of lacking actual work in India was 74 % (72 % for young men and 76 % for young ladies). Further, the justification deficient active work in India could have its foundations in social molding and identify with financial layers particularly for young ladies from the provincial foundation[28]. Also, the lack of suitable, comprehensive incentives at school / institute level, training centers, playgrounds and academic constraints only add to the rot. The need of the hour is to establish programs and policies to ensure compulsory physical activity at least for one hour daily. Considering that India is the origin of ancient practices of Yoga and Surya Namaskar which have been scientifically proven to benefit physical and mental fitness and especially for girls suffering from PCOS, the task is cutout for the policy makers to make these practices mandatory right from school level. A case study conducted by Vinaya V Potdar et.al., scientifically and systematically proved the benefits of Surya namaskar for controlling and mitigating PCOS [29]. Only 16.93 % of girls with PCOS had regular sleep cycles in contrast to 56.45 % of girls without PCOS. About 45 % of girls with PCOS had menstruation for longer than 5 days. They experienced heavy bleeding in some cycles and spotting in some cycles. More than 54 % of girls with PCOS had irregular cycles while most girls (65%) without PCOS reported regular menstrual cycles. Moreover, this survey shows that about 7.66% of girls had dysmenorrhea, 3.22% of girls had amenorrhea, around 6.45% of girls suffered through spotting while 10.88% of girls experienced heavy bleeding. Nearly 40% of girls with PCOS were on hormonal therapy, mainly oral contraceptives to regularize their menstrual cycles whereas 27 % of girl resorted to alternative systems of medicine like homeopathy and Ayurveda. The first aspects of PCOS that need treatment are oligo-amenorrhea, hyperandrogenism, and metabolic concerns such as insulin resistance[30]. Oligo-amenorrhea and the resultant fertility problems are treated with agents such as, clomiphene, letrozole, metformin, and gonadotropin therapy, which induce ovulation[31]. Another common mode of treatment of hyperandrogenism related to PCOS is oral contraceptives often in combination with an anti-androgen agent[30]. Studies conducted by Saika Manzoor et.al reported adverse effects of oral contraceptives on lipid levels, glucose tolerance and inflammatory markers based on evaluation of metabolic, hormonal, inflammation and coagulation profiles[32].

CONCLUSION

PCOS is a common endocrine disorder of female adolescence and adulthood with exact etiology unknown but pathophysiology rooted in insulin resistance, hyperandrogenism, and chronic anovulation. a mess of clinical factors can present including hirsutism, menstrual irregularities, metabolic abnormalities, acne, and increased BMI. Numerous studies are conducted worldwide to check the causes for PCOS and extensive literature and data is accessible regarding clinical manifestations of the condition. This study points to creation of higher awareness among the masses, early diagnosis, and management to stop the long-term complications. This as well as lifestyle modification for weight reduction and dietary modifications will improve the standard of life and mitigate infertility issues due to PCOS. This study explored the lifestyles of college-going girls in urban Pune and awareness about role of diet and exercise on controlling the symptoms of PCOS. the most effective treatment option varies among individuals, and the effectiveness of every treatment can vary consistent with an individual's condition. However, it's not only at the micro-family level that

this awareness should be built. it's imperative that the medical fraternity and government think tanks develop coherent and comprehensive policies to coach the masses about importance of traditional food habits and modern and ancient exercise regimens. the identical should be implemented right from schools to high schools to make sure healthy eating habits among youngsters. This combined with compulsory education and development of sports academies to market exercise will supplement the growing incidence of not only PCOS but also obesity among youngsters thanks to addiction to unhealthy sustenance which are alien to our cultural foodscape.

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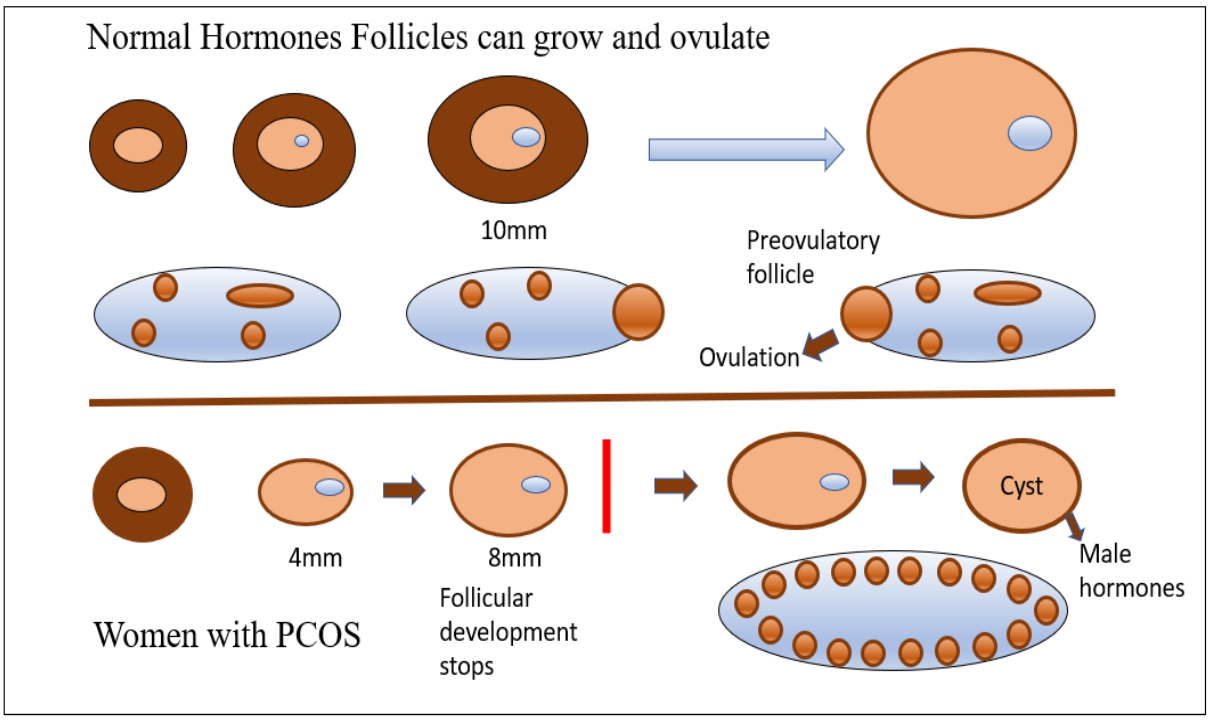

Fig.1. Polycystic Ovarian Syndrome

AISSMS COLLEGE OF PHARMACY

GENERAL MEDICAL SURVEY

Name -		
Age-	Weight -	Height -
BMI-	Marital status -	Mob.no -
Age at first menses -	Annual family income-	Date -

Sr no.	Questionnaire
1.	Do you exercise regularly?
2.	Do you follow any diet for PCOS?
3.	Do you consume milk regularly?
4.	Do you eat fruits daily?
5.	Do you eat sprouts in your regular meal?
6.	Do you consume junk food?
7.	Do you sleep 8 hours regularly?
8.	Do you have regular menstrual cycle?
9.	Do you know about PCOS?
10.	Do you experience any symptoms of PCOS?
11.	Are you taking any medication for PCOS?
12.	Do you think it is important for girls of your age to know more about PCOS?

All the information provided above is correct with voluntary participation.

Date Signature of participants

Fig. 2. Survey questionnaire of main questions

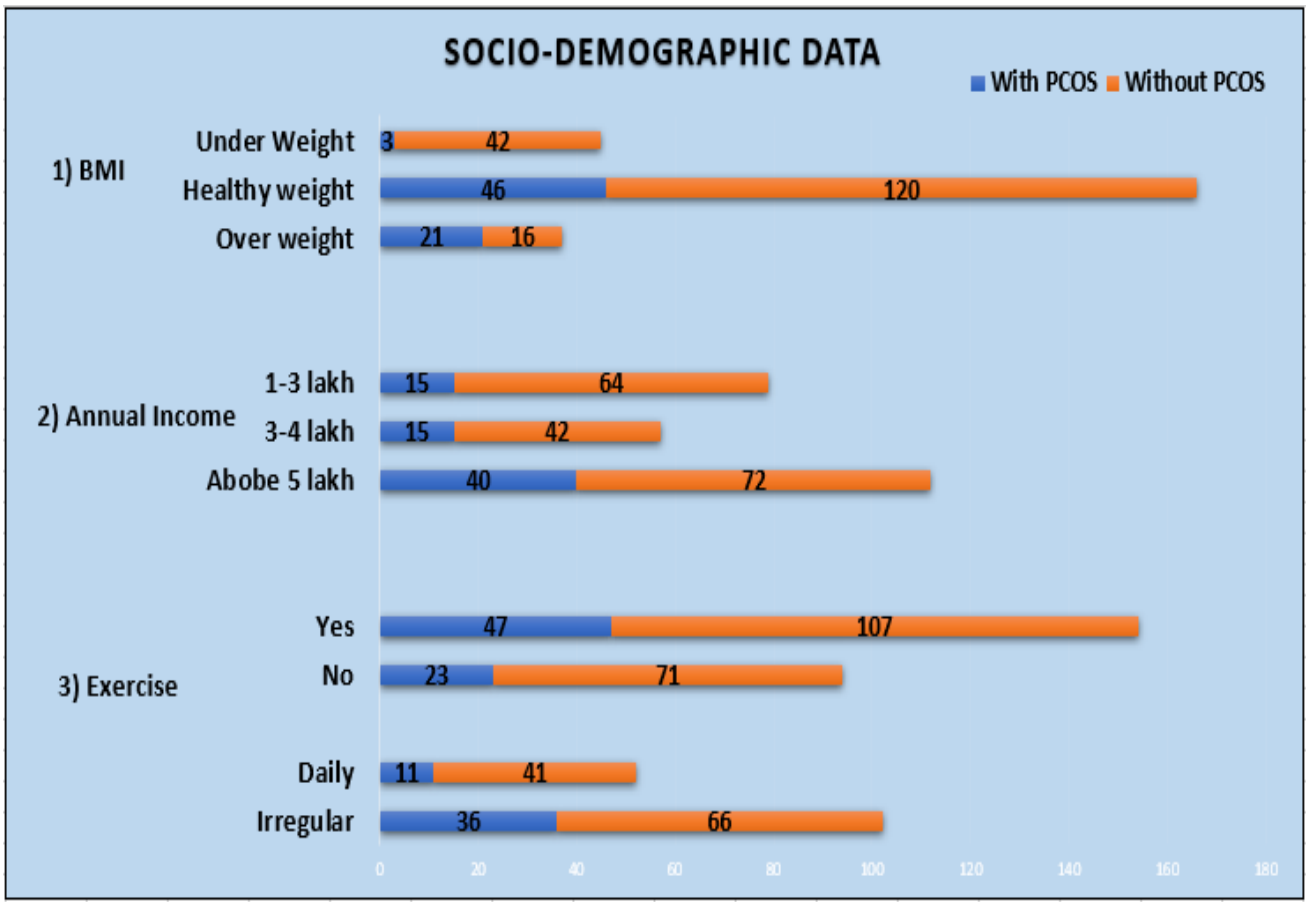

Fig.3. Descriptive data for socio-demographic and exercise data

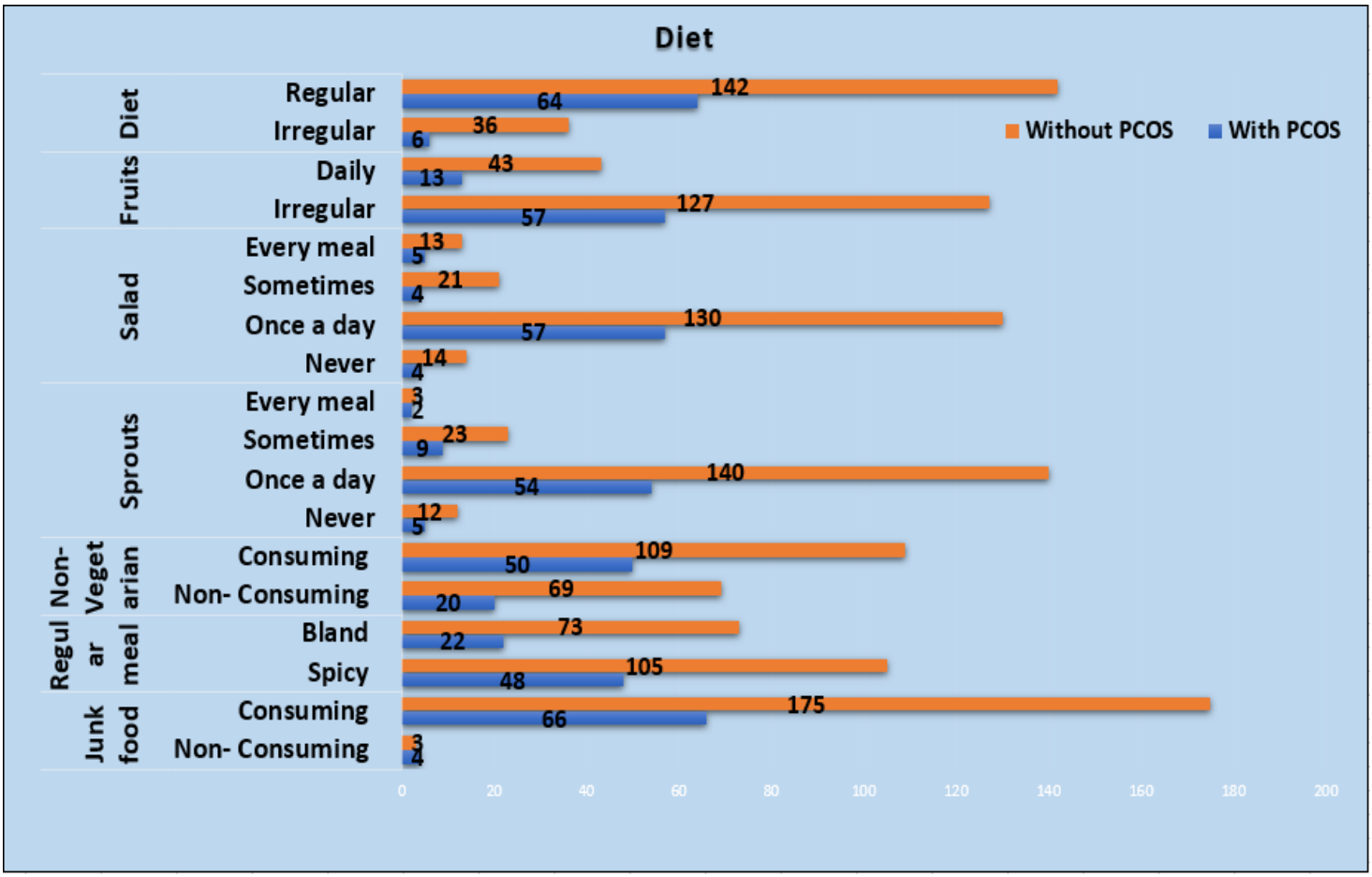

Fig.4. Descriptive data of diet and nature of food

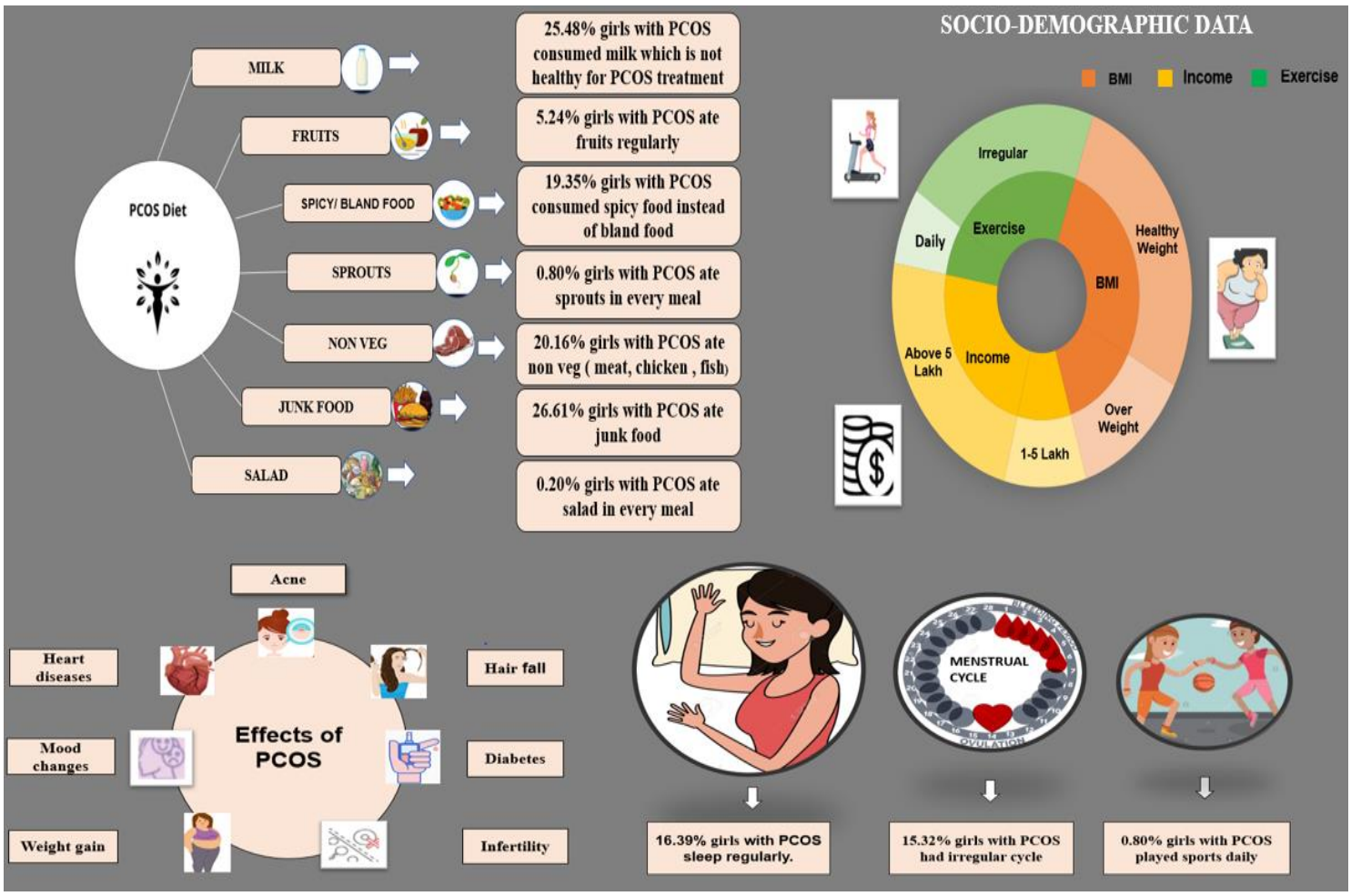

Fig. 5. Bird's eye view of PCOS symptoms and causative factors