



ORIGINAL RESEARCH PAPER

Medicine

A Cross sectional study to find out the prevalence of obesity and associated risk factors in Poly Cystic Ovarian syndrome and Non Poly Cystic Ovarian syndrome.

KEY WORDS: Obesity, Polycystic ovarian syndrome.

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ABSTRACT

Background: Since its original description given by Stein et al (1), obesity has been recognized as a common feature of the polycystic ovary syndrome (PCOS). In the United States, some studies report that the prevalence of overweight and obesity in women with PCOS is as high as 80%. There are other factors which play an important role in obesity such as life style changes, family history and hormonal disorder. The most common cause of PCOS is obesity is one such factor. Hence the objective of this study to find out the prevalence of obesity and its associated risk factors among polycystic ovarian syndrome and non-polycystic ovarian syndrome individuals.

Methods: Cross sectional study designs were done among 143 individuals, the study subjects were selected randomly from outpatient and inpatient department of Obstetrics and gynaecology, Reproductive Medicine and Endocrinology of tertiary care hospital. The tools of measurement were taken with a validated questionnaire of back ground characteristics and questions pertaining to life style changes and obesity among PCOS and Non PCOS individuals.

Results: Among 143 individuals the overall prevalence of obesity was 21.7% in PCOS and Non-PCOS individuals. The prevalence of hirsutism among PCOS and Non PCOS individuals were 37.7 and 12.2 percentages. This difference of observation was found to have statistically significant $p < 0.0001$. The result was compared with other risk factors like Diabetes, Obesity, Intake of Junk food was found to have statistically significant $p < 0.0001$.

Conclusion: This study proved a strong association of increased prevalence of hirsutism in polycystic ovarian syndrome individuals compared to other individuals.

Introduction:

Obesity is a disorder resulting from excessive accumulation of body fat. Obesity is one of the global epidemic hurdles of the developing countries. Obesity occurs due to various reasons such as intake of calorie dense foods, sedentary life style, inappropriate food habits, smoking, metabolic abnormalities and sometimes genetic abnormalities(1,2,3). On the other hand Poly Cystic Ovarian Syndrome has an alarming incidence as Obesity. Obesity and Poly Cystic Ovarian Syndrome have an established medical relationship. Not only Obesity Poly Cystic Ovarian Syndrome offers many other associated risk factors. Poly Cystic Ovarian syndrome is one of the commonest endocrine heterogeneous disorder reported in women occurring as a resultant of genetic abnormalities and other environmental factors. Our study aims at understanding the prevalence of Obesity and other risk stigmas in Poly Cystic Ovarian and Non Poly Cystic Ovarian Individuals and how the presence of one affects the other.

Methods: Cross sectional study designs were done among 143 individuals, the study subjects were selected randomly from outpatient and inpatient department of Obstetrics and gynaecology, Reproductive Medicine and Endocrinology of tertiary care hospital. The tools of measurement were taken with a validated questionnaire of back ground characteristics and questions pertaining to life style changes and obesity among PCOS and Non PCOS individuals. After getting approval from the institutional ethics committee the study was preceded with data collection of the variables.

Results:

Among 143 individuals the overall prevalence of obesity was 21.7% in PCOS and Non-PCOS individuals. The prevalence of hirsutism among PCOS and Non PCOS individuals were 37.7 and 12.2 percentages.

In table 1 shows more number of individuals 43(30.1) were overweight among the study participants, and among the obese

individuals more number of the participants were from class I obesity compared to class II and Class III obesity.

TABLE 1: Prevalence of obesity among study participants

Grade	N (%)	Cumulative percentage
Normal	71 (49.3)	49.7
Overweight	43(30.1)	79.7
Obese class I	20(14.0)	93.7
Obese class II	7(4.9)	98.6
Obese class III	2(1.4)	100.0
Total		143

TABLE 2: Comparison of the study participants who is obese with poly cystic ovary syndrome and non poly cystic ovary syndrome

Grade	PCOS	Non PCOS	Total
Normal	19	51	70
Overweight	20	23	43
Obese class I	9	11	20
Obese class II	1	6	7
Obese class III	3	0	3
Total	51	91	143
Chi square test = 10.14 = $p < 0.05$ (0.038)			

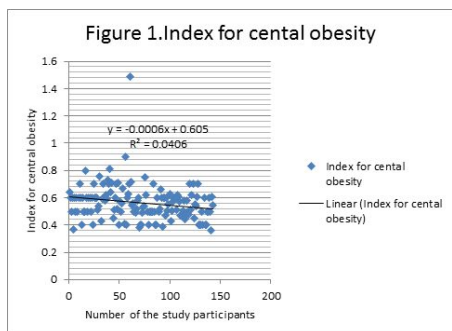
When compared the study participants among obesity and PCOS it has been shown from the above table 2 that more number of the study participants were overweight and obesity class I compared to other individuals. This difference of observation was found to have statistical difference which signifies obese individuals are more prone for PCOS compared to Non PCOS individuals. Were p is less than 0.038(significant).

TABLE 3: Comparison of study participants who are obese with hirsutism

Variables	Hirsutism individuals	Non Hirsutism Individuals	Total
Normal	13	57	70
Overweight	11	32	43
Class I obese	5	15	20
Class II obese	2	5	7
Class III obese	1	2	3
Total	32	111	143

Chi square test =1.938 p>0.747

From the above table 3, showed there is more number of the study participants were from the obese class I and overweight individuals among hirsutism and non hirsutism individuals. But the difference of observation found to have statistically not significant. Which shows role of obesity does not play a major role in the occurrence of hirsutism. P is more than 0.005 (0.747) statistically not significant.



It has been shown from the above figure 1. Linear pattern of obesity. From this figure more number of individuals who are obese are above the line of linearity were the $R^2=0.0406$ which signifies the protective factor for the association of central obesity

TABLE 4: Comparison of other risk factors of obesity in study participants.

Factors	Normal and Overweight	Obese class I,II,III	P value	Significance
Vegetarian	17	97	0.287	Not significant
Non -vegetarian	2	27		
Junk Food -Monthly	32	39	0.108	Not significant
Junk food -Weekly	38	34		
Degree of lifestyle changes(positive)	19	52	0.007	Significant
Degree of lifestyle changes(Nil)	12	71		
M+/_SD of total calories Mean=2221.21 Standard deviation=2149.684				

It has been found from the above table 4 that there was no association between the type of food and source of food whether food from animal or plant origin. This difference of observation was found statistically not significant, which shows role of diet does not play any factor for hirsutism except for life style changes. And the degree of Central Index in relationship to Obesity was found from the range of 0.3630 – 1.4900 with mean (+/-) Standard Deviation as 0.559(+/-) 0.128.

Discussion:

In women with Poly Cystic Ovarian Syndrome there has been a significant elevated report of Obesity. Obesity seems to play a major role in Poly Cystic Ovarian Syndrome. It has been reported that obesity elaborates the clinical reproductive manifestations of Poly Cystic Ovarian Syndrome (S.S.Lim et al 2012). Poly Cystic Ovarian Syndrome seems to have a strong association with weight gain. Serum concentration levels revealing high testosterone levels, android adiposity (1,2,3). The incidence of parallel epidemic rise of obesity and Poly Cystic Ovarian Syndrome has been established (T.M. Barber et al 2006). More atherogenic lipid profiles are seen in Poly Cystic Ovarian Syndrome especially an

impact involving the HDL metabolism. This has a established results involving increased risks of Cardiovascular system in women (Olivier Valkenburg et al 2008). Similarly in the current study also showed the significant difference among obese and nonobese individuals with relationship to PCOS and Non PCOS individuals.

Obese patients with Poly Cystic Ovarian Syndrome seem to be more hirsute and have a high androgen levels than their lean counter parts and lean counterparts seem to have a lesser cardiovascular risk factors (Hoeger et al 2007). A study by T.M.Barber et al 2006 expresses that increased BMI leads to increased android adiposity and increased lipolysis. This would cause an increased TEFA concentration which would result in increased insulin resistance and hyperinsulinemia thus prevailing a possible mechanism which thereby establishes a connection between adiposity and Poly Cystic Ovarian Syndrome. Weight gain seems to be an important stigma in contributing to Poly Cystic Ovarian Syndrome. Thus the prevalence of obesity is more in women with Poly Cystic Ovarian Syndrome than the Non Poly Cystic Ovarian women. Obesity has an established impact on the pathophysiology of Poly Cystic Ovarian Syndrome. In the current study the role of insulin and hormonal status was not identified hence the limitation of this study can be clearly defined.

Conclusion: This study proved a strong association of increased prevalence of hirsutism in polycystic ovarian syndrome individuals compared to other individuals. And associated factor among obese individuals played a major risk factor for occurrence of PCOS when compared to NON PCOS individuals. The type of life style changes and intake and type of food also has a significant role of obesity among PCOS individuals.

What was known before?

- 1. Sedentary life style has got significant role of obesity

What this study adds

- 1. Obesity can bring about hormonal changes in the human body, one such changes is polycystic ovarian syndrome which has got an strong association as risk factor for the occurrence of the disease.

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