

ORIGINAL ARTICLE

Prevalence and Correlation of Idiopathic Hirsutism with Body Mass Index

AQSA NAHEED¹, TEHZEEB ZEHRA², RAHILA AAMIR³, SALMA AMBREEN SHAHAB⁴, MAHPARA MAZHAR⁵

¹Associate Professor, Department of Dermatology, Heavy Industry Taxila Education City- Institute of Medical Sciences, Taxila

^{2,3}Assistant Professor, Department of Medicine, Shifa College of Medicine (Shifa Tameer-e-Millat University Islamabad

⁴Lecturer, Department of Medical Education, Heavy Industry Taxila Education City- Institute of Medical Sciences, Taxila

⁵Assistant Professor, Department of Psychiatry, Al Nafees Medical College/Isra University Islamabad

Correspondence to: Dr. Aqsa Naheed, E-mail: aqsanahid@gmail.com Cell: 0323-6513804

ABSTRACT

Objective: To observe the prevalence and association of idiopathic hirsutism with obesity

Study Design: Descriptive cross-sectional, case control study

Place and Duration of Study: Dermatology Clinic, Heavy Industry Taxila Hospital Taxila from 1st July 2020 to 31st December 2020.

Methodology: Two hundred and fifty female patients and age between 12 to 50 years were enrolled. The complaint of hirsutism while their work up for secondary causes of hirsutism was negative were labelled as idiopathic hirsutism as cases and their age and gender matched healthy attendants were taken as controls. Both cases and controls were checked for body mass index and Ferriman Gallwey (FG) scores.

Results: Idiopathic hirsutism was found significantly prevalent and increased body mass index was statistically significantly associated with the idiopathic hirsutism in females. Mean age of idiopathic hirsute cases was less than 30 years. So younger females were found to be more prevalent having hirsutism with increased body mass index. Mild to moderate hirsutism was frequently observed in overweight and obese females, however severe hirsutism was rarely observed.

Conclusion: Idiopathic hirsutism is prevalent and associated with obesity in our females, so obesity management should also be addressed through referrals in derma clinics where hirsute obese/overweight female have reported.

Keywords: Obesity, Hirsutism, Body mass index (BMI), Hirsutism, Excessive hair growth

INTRODUCTION

A frequent clinical disease, hirsutism may be both benign and unpleasant for women. It is widely accepted in today's society that physical beauty is one of the most important factors in success. Good looks are associated with excellent cognitive scores, superior social skills, and good manners. ¹

Hirsutism has a wide range of etiologies.

² Body hair follicles are abundant. Number of hair follicles does not vary much over the course of a person's lifespan. However, follicle sizes, types, and types of hair may alter in response to various variables such as androgens. Hirsutism results from an interplay between systemic androgen concentrations, local hair follicle concentrations, as well as an androgen-sensitivity threshold. Increasing the amount of circulating androgens or increasing the PSU's sensitivity to androgens, or both, are possible methods. ³

Hirsutism presents in a variety of ways, including varying degrees of severity, menstrual history, body mass index, and familial history.

⁴ Hirsutism was shown to have a significant effect on health-related quality of life indicators in a research. ⁵ Other health issues are linked with idiopathic hirsutism, which is significant. A research by Bakry and colleagues⁶ found a link between insulin resistance and the risk of cardiovascular disease. According to Amiri⁷, the prevalence of IH in all hirsute patients was 7.74 percent.

This pandemic has expanded to many countries and has a number of unfavorable effects. Many variables are known to contribute to this issue in industrialized and developing nations.

The biological, social, cultural, and gender differences that exist between men and women make obesity a differentiating factor for both. They do this via regulating hormones, cytokines, and other immune system messenger chemicals in the AT. As a result of these hormones, fat distribution patterns are determined. Obesity is strongly related to depression, anxiety disorders, neurodegenerative illnesses, and sleep problems in terms of mental health ⁹ There is a lot of discussion in the literature on the psychological effects of obesity in teenagers, including stigmatization, reduced quality of life, and depression. ¹⁰

So obesity and hirsutism is a nasty combination in terms of outlooks as well as physical and mental health, particularly in female patients. The mechanism of their relationships and hence their management as combined strategy should be the target whenever they are found simultaneously. This thought led us start this research project to see the relationship of these two problems in our patients so to make a long-term management strategy in our clinics addressing both, the BMI and hirsutism.

MATERIALS AND METHODS

This descriptive cross-sectional, case control study was conducted at Dermatology Clinic, Heavy Industry Taxila Hospital Taxila from 1st July 2020 to 31st December 2020 and comprised 250 female patients. They were divided in two groups; case and control. Those hirsute patients who met the inclusion criteria were taken as cases (118 females) and their age and gender matched attendants were taken as controls (132 females). Patients using long term steroids, polycystic ovarian syndrome (PCOS),

adrenal hyperplasia, malignancies, long term use of multivitamins, end stage renal and liver disease were excluded. Both cases and controls were checked for BMI and FG score. Patients demographic and other details i.e. gender, marital status, age, height, weight, BMI and FG score were recorded. The data entered and analyzed through SPSS-26. Age height, weight and BMI among cases and controls were compared using t-test. To correlate the sub groups of hirsutism and obesity among cases and controls, chi square and Fischer's exact test were performed and expressed as p-value, when <0.05, was considered statistically significant.

RESULTS

There were 118 (38.3%) females have idiopathic hirsutism, among 118 idiopathic hirsute females, 86 (72.88%) were found overweight or obese, while among 132 controls 61 (46.2%) were found overweight or obese. Mean age of participants was 29±9.7 years. The mean age, height, weight and BMI of cases and controls is shown in Table 1. There was no significant difference between two groups regarding age, however BMI and weight were significantly higher in cases than in controls. Mean height was also more in cases than in controls.

Table 1: Mean age, height, weight and BMI among cases and controls

Variable	Cases	Controls	P value
Age (years)	31.01±9.56	29.96±9.9	0.39
Height (cm)	158.5±5.7	156.1±5.3	0.001
Weight (kg)	72.75±16	63.1±16.7	0.000
BMI (kg/m ²)	28.9±6.2	22.5±5.8	0.000

Table 2: Degrees of hirsutism among different weight categories

BMI category	Degrees of Hirsutism				Total
	No	Mild	Moderate	Severe	
Underweight	21	-	1	-	22
Normal	50	18	12	-	80
Overweight	38	22	12	-	72
Obese	23	39	13	1	76
Total	132	79	38	1	250

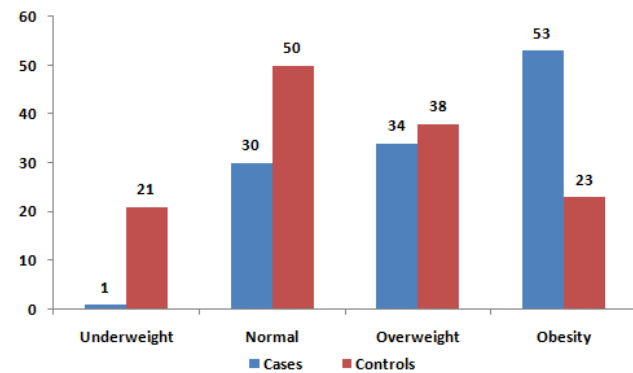


Fig 1: Frequency distribution of body mass index among cases and controls

Frequency of distribution of BMI among cases and controls is shown in Fig. 1: There is statistically significant difference between two groups regarding weight categories with P value of 0.000. When different weight categories were compared with severity of hirsutism, we found that no

hirsutism (FG score <8) was significantly higher in underweight and normal population. Mild hirsutism (FG score 8-15) also found significantly correlated with weight categories, it increases with increasing weight. However moderate hirsutism (FG score 16-24) found in almost same distribution among different weight categories except, under weight. Severe hirsutism was found in only one patient who was obese. Distribution of various degrees of hirsutism in different weight categories is shown in Table 2. However, when we plotted the two variables against the scatter plot, linear association was not found between the two (Fig 2).

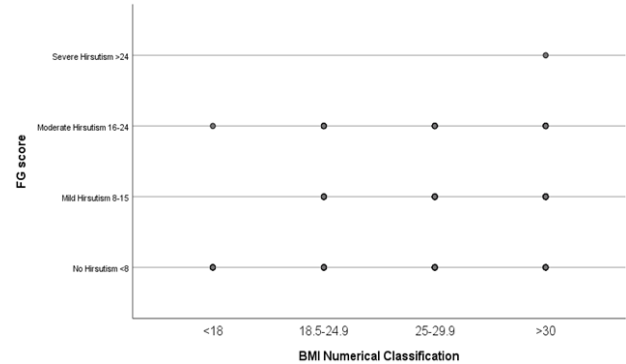


Fig. 2: Scatter diagram showing the association of hirsutism with body mass index

DISCUSSION

We envisioned to see how much the both obesity and hirsutism are combined in our clinics, because they are troublesome when even alone in females and the magnitude of problem, both cosmetic and psychosocial enhances many folds when combined. Though much of the research has already been done on the subject, but this important area of research definitely need reinforcement so to never neglect the preach of healthy life style and weight reduction strategies among, specifically hirsute women.

Our study results have endorsed the finding of previously published literature that overweight and obesity is linked to the higher incidence of the hirsutism. In a study by Fatemi et al¹¹, hirsutism was more common in patients with a higher Body Mass Index. 38.3% of hirsute cohort of their study, belonged to IH. We observed that though PCOS is the leading cause of hirsutism in our population, but idiopathic causes of hirsutism did not remain much behind which may be labelled in future "metabolic hirsutism". Anjum et al¹² demonstrated it 38% in comparison to PCOS related hirsutism 58% and according to Ansarin et al¹³, 35.2% IH prevalence was found in comparison of 62.5% of that related to PCOS. Huma et al¹⁴, in a medical clinic has reported the prevalence of idiopathic hirsutism as 53%. So we are not justified in dealing every hirsute case as PCOS, rather idiopathic causes should also be considered and associations be addressed to manage this problem in our patients.

Idiopathic hirsutism and obesity linkage as shown in our study is also supported by the fact that IH is associated with insulin resistance which is also seen in obesity.^{15,16} Cakir et al¹⁷ has beautifully demonstrated the correlation

between different obesity parameters and hormonal essays linked with different causes of hirsutism.

Mean age of the cases in our study resembles that of other published literature for hirsutism that is 24.6 ± 6.9 years in one study¹⁸ and 29.42 ± 10.83 years in another study.¹⁹ This indicates that younger obese females for some reasons are more prone to develop hirsutism. However, the absence of linear association between hirsutism and obesity necessitate the search for the factors which are additional in obese female to cause hirsutism.

CONCLUSION

Idiopathic hirsutism and obesity have significant combined prevalence in our clinics so should be dealt seriously in terms of diagnosis, management and follow-up for observation of future medical and psychological outcomes.

REFERENCES

- Zachurzok A, Pasztak-Opilka A, Forys-Dworniczak E, Drosdzol-Cop A, Gawlik A, Malecka-Tendera E. Are psychosocial consequences of obesity and hyperandrogenism present in adolescent girls with polycystic ovary syndrome? *Int J Endocrinol* 2018;2018.
- Bonakdaran S, Kiafar B, Barazandeh Ahmadabadi F. Evaluation of insulin resistance in idiopathic hirsutism compared with polycystic ovary syndrome patients and healthy individuals. *Australas J Dermatol* 2016;57(1):e1-4.
- Oner G. Hirsutism: diagnosis and treatment. *J Metab Syndr* 2012;1: 3.
- Abdul-Aziz A, Nayaf MS, Maulood KJ. The relationship of body mass index and hirsutism in adult females. *Our Dermatology Online* 2015;6(3):2760-9.
- Khomami MB, Tehrani FR, Hashemi S, Farahmand M, Azizi F. Of PCOS symptoms, hirsutism has the most significant impact on the quality of life of Iranian women. *PLoS One* 2015;10(4):1-10.
- Bakry OA, Al Gayed EMA, Seadan AGM. Assessment of obesity, dyslipidemia, and insulin resistance in idiopathic hirsutism: A case-control study. *J Egypt Women's Dermatologic Soc* 2020;17(2):113-8.
- Amiri M, Fallahzadeh A, Sheidaei A, Mahboobifard F, Ramezani Tehrani F. Prevalence of idiopathic hirsutism: A systematic review and meta-analysis. *J Cosmet Dermatol* 2021;2:16-7.
- Uzogara SG. Assessment of obesity, presumed and proven causes and prevention strategies: a review. *adv obesity, Weight Manag Control* 2016;5(1):199-217.
- Weschenfelder J, Bentley J, Himmerich H. Physical and Mental Health Consequences of Obesity in Women. *Adipose Tissue* 2018;2018.
- Morrison KM, Shin S, Tarnopolsky M, Taylor VH. Association of depression & health related quality of life with body composition in children and youth with obesity. *J Affect Disord* 2015;172:18-23.
- Fatemi-Naeini F, Najafian J, Jazabi N, Nilforoushzadeh MA. Hirsutism and body mass index in a representative sample of Iranian people. *J Isfahan Med Sch* 2014;31(269): 2271-6.
- Usman Anjum DM, Yasmin DS, Riaz DH, Shah DSH. Hirsutism; Etiological Profile in Abbottabad, Pakistan. *Prof Med J* 2016;23(06):741-5.
- Ansarin H, Aziz-Jalali MH, Rasi A, Soltani-Arabshahi R. Clinical presentation and etiologic factors of hirsutism in premenopausal Iranian women. *Arch Iran Med* 2007;10(1):7-13.
- Huma A, Qazi M, Pathan NF, Malik D-S, Metlo M, Jamali AA, et al. Prevalence of Hirsutism among Females with Chronic Obstructive Pulmonary Disease and Hyperthyroidism at Tertiary Care Hospital of Sindh, Pakistan. *J Pharm Res Int* 2021;33(March):44-50.
- Talaei A, Adgi Z, Mohamadi Kelishadi M. Idiopathic hirsutism and insulin resistance. *Int J Endocrinol* 2013;2013.
- Unluhizarci K, Karaca Z, Kelestimur F. Role of insulin and insulin resistance in androgen excess disorders. *World J Diabetes* 2021;12(5):616-29.
- Wondmkun YT. Obesity, insulin resistance, and type 2 diabetes: Associations and therapeutic implications. *Diabetes, Metab Syndr Obes Targets Ther*. 2020;13:3611-6.
- Mahajan VK, Singh Chauhan P, Chandel M, Singh Mehta K, Karan Singh V, Sharma A, et al. Clinico-investigative attributes of 122 patients with hirsutism: A 5-year retrospective study from India. *Int J Women's Dermatol* 2021;7(3):237-42.
- Wankhade VH, Shah VH, Tomar SS, Singh RP. Clinical and Investigative Study of Hirsutism. *J Clin Diagnostic Res* 2019;1-6.