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Original Research Article

Clinical profile and lifestyle factors in women with different severities of hirsutism

Sagarika Betkerur¹, Neetha Nandan^{1*}, Aparna Rajesh²

¹Department of Obstetrics and Gynecology, K. S. Hegde Medical Academy, Mangaluru, Karnataka, India

²Department of Obstetrics and Gynecology, Kasturba Medical College, Mangaluru, Karnataka, India

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*Correspondence:

Dr. Neetha Nandan,

E-mail: nvyas_21@yahoo.com

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ABSTRACT

Background: Hirsutism is excessive hair growth in androgen dependent areas in women. It is noted in 10% women in the reproductive age group. Aim of the study was to identify the clinical profile and cause for hirsutism and to assess the role of diet and lifestyle factors in hirsute women.

Methods: It is a hospital based observational study. A total of 300 women in reproductive age group were given a self-administered pictorial representation for scoring according to modified Ferriman-Gallway score.

Results: 95 participants gave a positive response of score more than 8. Examination confirmed 85 participants had hirsutism, out of which 63 had mild hirsutism, 22 had moderate hirsutism and none had severe hirsutism. Polycystic ovarian syndrome (54.5%) was the major cause in moderate hirsutism. Features of hyperandrogenism (53%) were more prevalent in moderate hirsutism. Most of participants (31.6%) with moderate hirsutism used multiple methods for removal of hair like waxing, shaving and threading. Women with moderate hirsutism had outside food more frequently and had more of meat, fried items, alcohol. Social impact was significantly more in women with moderate hirsutism.

Conclusions: Polycystic ovarian syndrome is a major cause for moderate hirsutism and they had more features of hyperandrogenism. The preferred method of hair removal is waxing and multiple methods were often used by those having moderate hirsutism. Consumption of more of non-vegetarian food, fried food and alcohol was significant in moderate hirsute women. The study underscores the importance of diet and lifestyle factors in women suffering with hirsutism.

Keywords: Hirsutism, Diet, Lifestyle, Quality of life, Modified Ferriman-Gallway score

INTRODUCTION

Hirsutism is characterized by the presence of coarse terminal hairs in women which are relatively sensitive to androgens. They have a male pattern like hair growth which includes areas like upper lip, chin, chest, breast, abdomen, back and anterior thighs.

The prevalence of hirsutism is 10% in general populations.¹ The age of onset of hirsutism for women of 20 years or lesser was 40% and women with more than 20 years was 60% with a mean age at onset being 22.23 years.¹

Hirsutism can be evaluated and quantified easily by using modified Ferriman-Gallway (MFG) score. In 1961, Ferriman and Gallway devised a scoring system comprising eleven androgen-dependent sites to assess hirsutism.² Subsequently, they refined this system to encompass only nine sites, resulting in the modified Ferriman-Gallway scoring system, which is now acknowledged as the standard quantitative measure for defining hirsutism. An objective assessment of hirsutism involves measuring and grading hair growth based on the modified Ferriman-Gallway scale. Hirsutism is defined as a score of 8 or more.

Hirsutism can be because of several reasons. Researchers have also suggested that age, socioeconomic status, ethnic, cultural, and genetic elements, as well as lifestyle and diet, significantly influence the occurrence of hirsutism. Hence, the aim of our study is to identify etiological factors and find the clinical profile of women with different severities of hirsutism. To also assess the relation of diet and lifestyle factors with the severities of hirsutism.

METHODS

It was a hospital based observational study. The study was conducted department of obstetrics and gynecology in K.S. Hegde Hospital, Mangaluru from October 2022 to April 2024. After approval from the Institutional Ethics Committee (INST.EC/EC/167/2022; REG.NO.EC/NEW/INST/2020/834), women who were satisfying the inclusion criteria that is age group between 18–45 years were enrolled after obtaining written informed consent. Exclusion criteria were below 18 years and above 45 years, on anti-androgenic and combined oral contraception treatment, pregnant and lactating women and women who did not consent.

Women were initially given a self-administered questionnaire in the language they preferred containing a pictorial representation of the 9 anatomical zones and graded according to the Modified Ferriman –Gallway score. Each of the 9 zone (upper lip, chin, chest, upper abdomen, lower abdomen, arms, thigh, upper back, lower back) is rated on a scale of 0-4. Participants were asked to select the response that most accurately reflecting their hair growth pattern. MFG Severity Scoring was done. Score of 0-7 meant no hirsutism, 8-15 mild hirsutism, 16-25 moderate hirsutism and score of 26+ means severe hirsutism. The women with a score of more than or equal to 8 were included in our study. The study was explained and again consent was obtained in their own language. All women with a score of 8 were examined by us for hirsutism and after confirming, they were given a detailed validated questionnaire which included their clinical profile (age, education, profession, socio-economic status, marital and obstetric status, menstrual cycles, BMI), cause of hirsutism, methods of hair removal, lifestyle factors (exercise, alcohol, smoking), diet (in detail) and social impact of hirsutism. The questionnaire was filled by the investigator by one-to-one interview. The confidentiality of all the information gathered was maintained and women had the choice to withdraw their participation at any time during the study and it was assured this would not impact on their medical care.

Statistical analysis

Data was entered in the excel spread sheet and statistical package for the social sciences (SPSS) version 21 (IBM corporation: NY, USA) was used to perform the statistical analysis. Descriptive statistics of the explanatory and outcome variables were calculated by mean and standard deviations for quantitative variables, frequency and

proportions were used for qualitative variables. Chi-square test was used for qualitative variables to find associations. The level of significance is set at p value <0.05.

RESULTS

In this study, total of 300 participants between the age group of 18-45 years were given the self-administered preliminary questionnaire. 95 (31.7%) gave a positive response for hirsutism with modified Ferriman-Gallway score ≥ 8 . We examined all 95 participants and found only 85 (28%) to have hirsutism. Out of 85, majority of the participants 63 (74.1%) had mild hirsutism MFG score 8-15 and a smaller portion 22 (25.9%) had moderate hirsutism MFG score of 16-25, while there was no participant with a score of 26+ or severe hirsutism.

Table 1: Socio-demographic factors and clinical features of the participants.

Socio-demographic factors	MFG		Total 85 (%)
	Mild 63 (%)	Moderate 22 (%)	
Age groups (years)			
20 to 30	55 (87.3)	19 (86.4)	74 (87.1)
>30	08 (12.7)	03 (13.6)	11 (12.9)
Education			
Bachelors	57 (90.5)	20 (90.9)	77 (90.6)
Masters	02 (3.2)	00	02 (2.4)
Upto PUC	04 (6.3)	02 (9.1)	06 (7.1)
Profession			
Labourer	03 (4.8)	01 (4.5)	04 (4.7)
Skilled	52 (82.5)	19 (86.4)	71 (83.5)
Student	08 (12.7)	01 (4.5)	09 (10.6)
Worker	00	01 (4.5)	01 (1.2)
Marital status			
Married	13 (20.6)	3 (13.6)	16 (18.8)
Single	50 (79.4)	19 (86.4)	69 (81.2)
Obstetric history			
Parous	12 (19.0)	03 (13.6)	15 (17.6)
Nulliparous	51 (81.0)	19 (86.4)	70 (82.4)
Socio-economic status			
Lower	05 (7.9)	02 (9.1)	07 (8.2)
Lower middle	17 (27.0)	01 (4.5)	18 (21.2)
Middle	08 (12.7)	02 (9.1)	10 (11.8)
Upper	32 (50.8)	16 (72.7)	48 (56.5)
Upper lower	01 (1.6)	00	01 (1.2)
Upper middle	00	01 (4.5)	01 (1.2)
Body mass index			
Normal	40 (63.5)	16 (72.7)	56 (65.9)
Obese	03 (4.8)	01 (4.5)	04 (4.7)
Overweight	18 (28.6)	05 (22.7)	23 (27.1)
Underweight	02 (3.2)	00	02 (2.4)
Menstrual cycle			
Irregular	13 (20.6)	11 (50.0)	24 (28.2)
Regular	50 (79.4)	11(50.0)	61 (71.8)

Majority of the participants were students, so they were unmarried (81.2%), nulliparous (81.2%), belonging to upper socio-economic status (59%), had a bachelor's degree (90.6%) and were skilled workers (83.5%) (Table 1).

In this study, the mean age was 25 years (20–42 years) and majority of our participants were between 20–30 years of age. The participants noted the onset of hirsutism from a minimum age of 15 years to as late as 39 years (mean was 21 years) and the duration of having hirsutism at the time of study was 5.07 years (1-14 years).

Overall, 28.2% had irregular menses. More (50%) of moderate hirsutism participants had irregular menses whereas 79.4% of mild hirsutism participants had regular menses. We did not find significant difference in body mass index (BMI) and severity of hirsutism.

There was no known cause for hirsutism in 68.2%, 28.3% had polycystic ovarian syndrome (PCOS). PCOS was significantly noted more (54.5%) in moderate hirsute participants (Table 2). Only 3 participants had hypothyroidism. Clinical features of hyperandrogenism like acne, hair thinning and seborrhea were prevalent in the participants especially more in moderate hirsutism (53%) (Table 3).

Waxing (34.1%) was the commonest method used for hair removal followed by shaving (20%). Most of participants (31.6%) with moderate hirsutism used all 3 methods waxing, shaving and threading for removal of hair (Table 4). Most women (90.6%) removed hair 1-2 times/month.

Participants who had food outside more frequently (1-2 times/week or 3-4 times/week) had more of moderate hirsutism (p value=0.022). Participants who had frequent meat and fried food were significantly more in moderate hirsutism group. 88.2% of participants were non-vegetarians with frequent consumption of meat (35.3%), chicken (35.3) and fish (24.7%).

Participants with mild hirsutism (73%) consumed more of pulses frequently. Overall, only 20% consumed fruits and 42.4% ate green leafy vegetables. 59.1% of participants having moderate hirsutism consumed alcohol frequently. Overall, only 14.4% indulged in regular exercise and women with moderate hardly exercised (Table 5).

Table 2: Association of MFG score with cause.

Cause	MFG		Total 85 (%)
	Mild 63 (%)	Moderate 22 (%)	
Hypothyroidism	03 (4.8)	00	03 (3.5)
None	48 (76.2)	10 (45.5)	58 (68.2)
PCOS	12 (19)	12 (54.5)	24 (28.2)
Adrenal cause (androgen secreting tumours, CAH, Cushing's syndrome)	00	00	00
Hyperprolactinemia	00	00	00
Drugs causing hirsutism	00	00	00

Table 3: Association of MFG score with hyperandrogenism.

Hyperandrogenism	MFG		Total 85 (%)
	Mild 63 (%)	Moderate 22 (%)	
Acne	17 (27.0)	06 (27.3)	23 (27.1)
Acne, seborrhoea	03 (4.8)	03 (13.6)	06 (7.1)
Hair thinning	07 (11.1)	03 (13.6)	10 (11.8)
Seborrhoea	04 (6.3)	02 (9.1)	06 (7.1)
None	32 (50.8)	08 (36.4)	40 (47.1)

Table 4: Association of MFG score with methods of hair removal.

Methods	MFG		Total 85 (%)
	Mild 63 (%)	Moderate 22 (%)	
None	02 (3.2)	02 (9.1)	04 (4.7)
Plucking	03 (4.8)	00	03 (3.5)
Shaving	15 (24.0)	02 (9.0)	17 (20.0)
Shaving, waxing	11 (17.5)	03 (13.6)	14 (16.5)
Shaving, waxing, threading	09 (14.3)	09 (31.6)	18 (21.1)
Waxing	23 (36.5)	06 (27.2)	29 (34.1)

Table 5: Association of MFG score with diet and lifestyle.

Lifestyle factors and frequency	MFG		Total	Chi-square value	P value
	Mild, 63 (%)	Moderate, 22 (%)			
Diet					
Non veg	55 (87.3)	20 (90.9)	75 (98.2)	0.204	0.651
veg	08 (12.7)	02 (9.1)	10 (11.8)		
1 to 2 times/month	22 (34.9)	02 (9.1)	24 (28.3)	9.62	0.022*
How often do you eat food from outside?					

Continued.

Lifestyle factors and frequency	MFG		Total	Chi-square value	P value
	Mild, 63 (%)	Moderate, 22 (%)			
1 to 2 times/week	25 (39.7)	07 (31.8)	32 (37.6)		
3 to 4 times/week	13 (20.6)	11 (50.0)	24 (28.2)		
Every day	03 (4.8)	02 (9.1)	05 (5.9)		
Meat					
1 to 2 times/month	04 (6.3)	00	04 (4.7)	1.69	0.791
1 to 2 times/week	30 (47.6)	10 (45.5)	40 (47.1)		
3 to 4 times/week	16 (25.4)	07 (31.8)	23 (27.1)		
Every day	05 (7.9)	02 (9.1)	07 (8.2)		
No	08 (12.7)	03 (13.6)	11 (12.9)		
Chicken					
1 to 2 times/month	01 (1.6)	00	01 (1.2)	8.44	0.077
1 to 2 times/week	27 (42.9)	17 (77.3)	44 (51.8)		
3 to 4 times/week	23 (36.5)	03 (13.6)	26 (30.6)		
Every day	04 (6.3)	00	04 (4.7)		
No	08 (12.7)	02 (9.1)	10 (11.8)		
Fish					
1 to 2 times/month	12 (19.0)	08 (36.4)	20 (23.5)	6.27	0.179
1 to 2 times/week	22 (34.9)	10 (45.5)	32 (37.6)		
3 to 4 times/week	14 (22.2)	01 (4.5)	15 (17.6)		
Every day	06 (9.5)	01 (4.5)	07 (8.2)		
No	09 (14.3)	02 (9.1)	11 (12.9)		
Eggs					
1 to 2 times/month	07 (11.1)	04 (18.2)	11 (12.9)	1.45	0.835
1 to 2 times/week	40 (63.5)	14 (63.6)	54 (63.5)		
3 to 4 times/week	07 (11.1)	02 (9.1)	09 (10.6)		
Every day	02 (3.2)	00	02 (2.4)		
No	07 (11.1)	02 (9.1)	09 (10.6)		
Fruits					
1 to 2 times/month	21 (33.3)	08 (36.4)	29 (34.1)	0.927	0.819
1 to 2 times/week	28 (44.4)	11 (50.0)	39 (45.9)		
3 to 4 times/week	13 (20.6)	3 (13.6)	16 (18.8)		
Every day	01 (1.6)	00	01 (1.2)		
Green vegetables					
1 to 2 times/month	09 (14.3)	07 (31.8)	16 (18.8)	7.712	0.052
1 to 2 times/week	22 (34.9)	11 (50.0)	33 (38.8)		
3 to 4 times/week	24 (38.1)	03 (13.6)	27 (31.8)		
Every day	08 (12.7)	01 (4.5)	09 (10.6)		
Nuts					
1 to 2 times/month	52 (82.5)	18 (81.8)	70 (82.4)	0.962	0.916
1 to 2 times/week	06 (9.5)	03 (13.6)	09 (10.6)		
3 to 4 times/week	03 (4.8)	01 (4.5)	04 (4.7)		
Every day	01 (1.6)	00	01 (1.2)		
No	01 (1.6)	00	01 (1.2)		
Omega 3					
No	60 (95.2)	22 (100.0)	82 (96.5)	1.08	0.297
Yes	03 (4.8)	00	03 (3.5)		
Maida					
1 to 2 times/month	13 (20.6)	01 (4.5)	14 (16.5)	4.66	0.198
1 to 2 times/week	39 (61.9)	18 (81.8)	57 (67.1)		
3 to 4 times/week	10 (15.9)	02 (9.1)	12 (14.1)		
Every day	01 (1.6)	01 (4.5)	02 (2.4)		
Roti					
1 to 2 times/month	00	01 (4.5)	01 (1.2)	3.07	0.381

Continued.

Lifestyle factors and frequency	MFG		Total	Chi-square value	P value
	Mild, 63 (%)	Moderate, 22 (%)			
1 to 2 times/week	6 (9.5)	02 (9.1)	8 (9.4)		
3 to 4 times/week	18 (28.6)	07 (31.8)	25 (29.4)		
Every day	39 (61.9)	12 (54.5)	51 (60.0)		
Rice					
1 to 2 times/week	05 (7.9)	01 (4.5)	06 (7.1)	1.49	0.475
3 to 4 times/week	02 (3.2)	02 (9.1)	400 (4.7)		
Every day	56 (88.9)	19 (86.4)	75 (88.2)		
Pulses					
1 to 2 times/week	08 (12.7)	08 (36.4)	16 (18.8)	8.15	0.017*
3 to 4 times/week	09 (14.3)	05 (22.7)	14 (16.5)		
Every day	46 (73.0)	09 (40.9)	55 (64.7)		
Fried food					
1 to 2 times/month	04 (6.3)	02 (9.1)	06 (7.1)	10.56	0.014*
1 to 2 times/week	44 (69.8)	07 (31.8)	51 (60.0)		
3 to 4 times/week	13 (20.6)	12 (54.5)	25 (29.4)		
Every day	02 (3.2)	01 (4.5)	03 (3.5)		
Oil					
Coconut	22 (34.9)	10 (45.5)	32 (37.6)	4.24	0.374
Palm oil	03 (4.8)	01 (4.5)	04 (4.7)		
Sunflower	36 (57.1)	09 (40.9)	45 (52.9)		
Sunflower, groundnut	01 (1.6)	00	01 (1.2)		
Vegetable	01 (1.6)	02 (9.1)	03 (3.5)		
Milk					
1 to 2 times/month	09 (14.3)	03 (13.6)	12 (14.1)	2.1	0.552
1 to 2 times/week	23 (36.5)	09 (40.9)	32 (37.6)		
3 to 4 times/week	8 (12.7)	05 (22.7)	13 (15.3)		
Every day	23 (36.5)	05 (22.7)	28 (32.9)		
Alcohol					
No	44 (69.8)	09 (40.9)	53 (62.4)	5.81	0.016*
Yes	19 (30.2)	13 (59.1)	32 (37.6)		
Frequency of alcohol consumption					
No	44 (69.8)	09 (40.9)	54 (63.5)	10.76	0.005*
1 to 2 times/month	15 (23.7)	13 (59.1)	27 (31.8)		
1 to 2 times/week	04 (6.3)	00	04 (4.7)		
Exercise					
No	52 (82.5)	21 (95.5)	73 (85.9)	2.24	0.134
Yes	11 (17.5)	1 (4.5)	12 (14.1)		
Smoking					
No	54 (85.7)	16 (72.7)	70 (82.4)	1.89	0.169
Yes	9 (14.3)	6 (27.3)	15 (17.6)		

* P value <0.05.

Table 6: Association of MFG score with social impact.

Social impact	MFG		Total 85 (%)
	Mild 63 (%)	Moderate 22 (%)	
Very much	04 (6.3)	01 (4.5)	05 (5.9)
A lot	07 (11.1)	08 (36.4)	15 (17.6)
A little	25 (39.7)	09 (40.9)	34 (40)
None at all	27 (42.9)	04 (18.2)	31 (36.5)

A significant portion of participants with moderate hirsutism (36.4%) had ‘a lot’ social impact compared to

mild hirsutism (11.1%). People with mild hirsutism had 42.9% ‘none at all’ and 39.7% ‘a little’ social impact (Table 6).

DISCUSSION

In our study, the participants were mainly students so they were young, belonging to upper SES, well educated. Most of the women were single (81%). We did not find significant infertility problem in hirsute women in our study as all those who were married had conceived at least once. The most common underlying cause we found in our study was PCOS and it was significantly higher (54.5%) in

moderate hirsute women. Menstrual irregularity, acne, hair thinning and seborrhoea which are associated with PCOS were also seen in moderate hirsute participants. In addition to PCOS, idiopathic hirsutism was another prevalent cause in our study, characterized by normal ovulatory function and androgen levels but probably increased peripheral sensitivity to androgens. Ovarian causes mainly encompass conditions like PCOS and androgen secreting ovarian tumours. Adrenal factors involve disorders such as Cushing's syndrome, androgen-secreting adrenal tumours, and congenital adrenal hyperplasia (CAH), often linked to 21-hydroxylase deficiency. Uncommon causes involve the hyperandrogenic-insulin resistant-acanthosis nigricans syndrome (HAIRAN). Hirsutism may also arise from hyperprolactinemia, which increases adrenal dehydroepiandrosterone sulphate (DHEA-S) production. Additionally, androgenic drugs play a significant role in hirsutism development. Around 20% of patients may develop idiopathic hirsutism (IH), which is marked by normal androgen levels and normal ovarian function.³ The increased hair growth in these cases is believed to be linked to peripheral androgen activity disorders. Hyperprolactinemia may have a direct effect on ovarian and adrenal steroidogenesis or decreased production of sex hormone binding globulin but the exact reason is unknown. In hypothyroidism, 20% may have hyperprolactinemia which can increase androgen production and contribute to hirsutism. Iranian study results indicated that among their patients, 62.5% were diagnosed with PCOS, 35.2% were classified as idiopathic, 0.4% had CAH, 0.1% had prolactinoma, and 1.8% remained undetermined.⁴ Studies suggest that idiopathic hirsutism accounts for up to 20-40% of cases of hirsutism.⁵ We did not find other endocrine and metabolic diseases associated with hirsutism in our study. Signs of virilisation (male pattern alopecia, clitoromegaly, deepening of voice) were very minimum as we did not have participants with androgen secreting conditions.

In our study, waxing emerged as the most preferred method of hair removal, with 34.1% of participants opting for this technique. Many participants (31.6%) used combination of waxing, shaving and threading specially the women with moderate hirsutism. Shaving was the next most common method, used by 20% of the women. The majority of participants (90.6%) reported a hair removal frequency of 1-2 times per month. The preference for waxing is consistent with its effectiveness in providing longer-lasting results compared to other methods like shaving or depilatory creams. Shaving, although less preferred, is still a common method due to its convenience and immediate results.

The high prevalence of non-vegetarian diet is notable in our participants. Studies have shown diets high in animal fat and low in fibre are associated with increased androgen levels which can exacerbate conditions like hirsutism and PCOS.⁶ Eating the right diet represents one approach to alleviate hirsutism. A balanced diet low in animal fat and high in fibre, unsaturated fats and phytoestrogens is

beneficial. It reduces insulin resistance, increases sex hormone binding globulin (SHBG) and reduces testosterone. In contrast, the low consumption of fruits and green leafy vegetables among our participants highlights a potential area for dietary intervention. Studies have shown that diets rich in fruits and vegetables can help regulate hormonal balance and reduce symptoms of hyperandrogenism. For example, a study by Kasim-Karakas et al demonstrated that increased intake of fruits, vegetables, and whole grains could improve metabolic profiles and reduce androgen levels in women with PCOS.⁷ This suggests dietary habits play a crucial role in the management and severity of hirsutism. The association of alcohol consumption with moderate hirsutism highlights the impact of lifestyle choices on androgen metabolism ($p=0.016$). A study found that alcohol intake could elevate serum androgen levels, which might exacerbate hirsutism.⁸ Reducing alcohol intake could be a beneficial strategy in managing androgen levels and mitigating the severity of hirsutism. Physical activity was notably low in our study, with only 14.1% engaging in regular exercise. Physical inactivity can exacerbate metabolic conditions such as obesity and insulin resistance, which are common in women with PCOS and hirsutism. Literature has highlighted that regular exercise could improve insulin sensitivity and reduce androgen levels in women with PCOS, thereby alleviating symptoms of hirsutism.⁹

Drosdzol et al found hirsutism negatively affects quality of life (QOL).¹⁰ Basra et al showed a statistically significant difference in health-related quality of life with a mean score of 68.4 in hirsute and 87.7 in non-hirsute women.¹¹ One theory suggests that the quality-of-life impact of hirsutism may be more severe when the affected area is prominently visible, such as the face. This raises the possibility that a site-specific modified Ferriman-Gallwey scoring system, which gives greater weight to facial hirsutism compared to other body areas, could provide a more accurate assessment of disease severity and monitoring of progress.¹²

Our study's findings are consistent with the literature, where mild to moderate hirsutism is more common. For example, a study by found that mild hirsutism was the most prevalent form, affecting approximately 70% of women with hirsutism, while moderate hirsutism was observed in about 20-30% of cases.¹³ We had 75% of mild hirsutism and 25% of moderate hirsutism.

The limitations of the study are it mainly involves student population. The sample size is not adequate to reach a conclusion. There were no biochemical laboratory tests done to check or confirm for hyperandrogenism.

The emotional challenges faced by women with hirsutism are further exacerbated by cultural and societal pressures. Hirsutism can interfere with daily activities and professional life. It can cause feelings of inadequacy, unattractiveness and loss of confidence. In the last 20

years, there has been increased scrutiny of patients with hirsutism, aiming to enhance comprehension of quantitative assessments and clinical evaluation, variations among racial and ethnic groups, related clinical features, and the psychosocial ramifications on quality of life.

CONCLUSION

Though many of the participants did not have any particular cause for hirsutism, PCOS was found as a major cause for moderate hirsutism. The preferred method of hair removal is waxing and multiple methods were often use those having moderate hirsutism. Women with moderate hirsutism consumed non-vegetarian, fried food and alcohol more frequently. The study underscores the importance of diet and lifestyle factors in women suffering with hirsutism. A holistic approach of managing the right diet and lifestyle habits could improve the quality of life in women suffering from hirsutism.

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