Comparison of dermatosis acne vulgaris in obese and non-obese patients

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ABSTRACT

Background: Obesity is a disorder characterized by increased fat deposition in human body. Acne vulgaris is a common skin disease, affecting approximately 9.4% of the world's population, with considerable effect on the quality of life. According to a previously conducted study, the prevalence rate of acne in Pakistan was found to be 5%. Obesity is increasing rapidly in developed and developing world. Acne vulgaris is commonly associated with obesity. The objective of this study is to compare the acne vulgaris in obese and non-obese patients.

Materials and methods: It was a cross-sectional descriptive survey in which 300 obese and 300 non-obese patients were included respectively. Dermatosis, acne vulgaris was observed in the patients selected through inclusion criteria. This study was conducted in The University of Lahore Pakistan. Data was collected from outdoor Patients of skin Department of The University of Lahore Hospital during April 2020 to October 2020, by using questionnaire. Consent was taken before data collection. Data was analyzed through SPSS version 20.

Results: Mean age of obese group was 37.4 ± 13.0 years and non obese group was 30.9 ± 15.6 years. In obese group 161(53.7%) were females, while 139(46.3%) were males respectively. In non-obese patients 193(64.3%) were males and 107(35.7%) were females respectively. In obese group, 115 (38.3%) had acne vulgaris, while in non-obese group 41 (13.7%) were affected with acne (P value < 0.05).

Conclusion: It is concluded that dermatosis acne vulgaris is significantly greater in obese patients as compared to non-obese patients. Obese persons should be given special consideration in terms of proper referral and management.

Keywords:
Acne vulgaris, Obese, Non-Obese

INTRODUCTION

Obesity is the excessive fat deposition in human body that disrupts health. Obesity is being increased rapidly in world.[1] This is due to change in lifestyle.[2] Statistical projections for USA shows that by 2030, 50% population will be obese.[3] The frequency of obesity, is defined as body mass index (BMI) of 30 kg/m^2 or greater has increased 20% in UK and 30% in USA population in thirty years among all ages.[4,5] World Health Organization observed 8.7% prevalence of obesity (BMI >30kg/m^2) in 84 countries worldwide.[6] Survey from National Health and National Examination (NHANES) showed that frequency of obesity has increased from 14.5% to 30.5%. Obesity (BMI >40 kg/m^2) has affected 4.7% population of USA.[7] In 2002 in Iran, the frequency of obesity was 36.7%.[8] Jafar et al. observed 25% obesity in National Health Survey of Pakistan who having BMI of 27 kg/m^2 or greater.[9] According to 2002 Pakistan demographic survey, 28.6% of population were obese.[10]

Yosipovich et al. observed the relation between obesity and dermatologic conditions. Obesity and non obesity has impact on dermatological dermatosis, like acne vulgaris.[4,11]

Acne vulgaris (AV) is most common skin manifestation among all age groups characterized by recurrent inflammation of the pilosebaceous apparatus of skin affecting 85% of the adult group. Cutaneous lesions consist of Black heads and White heads Comedones, erythematous papules, pustules, nodules and cysts mainly over sebaceous gland areas like the face, neck, chest, upper back under the influence of hormone (androgen). If it are not properly addressed, it can be converted into permanent scarring and pigmentation. In AV there is abnormal follicular keratinization, increased production of sebum, Propionibacterium acnes (P. acnes) colonization which leads to inflammation.[12-15]

Along with permanent skin damage like scarring, acne vulgaris induces psychological disability like anger,

anxiety, depression, and at end even suicidal thoughts.[16,17]

Acne vulgaris has impact on socioeconomic condition of populations because in this work, school, college and even university performance is impaired, Unemployment rates are higher.[18]

Obesity and its co-morbidity acne vulgaris has yet not been observed in detail in Pakistan to date. This study is designed to compare frequency of dermatosis acne vulgaris in obese and non-obese patients so that obese persons receive special consideration in terms of health promotion, specific protection, early diagnosis and prompt treatment. These have a significant impact in improving quality of life in order to decrease the economic burden on the community as a whole.

Studies have shown the relationship between obesity and acne vulgaris. A study of 3000 patients age range from 6 to 11 years concluded the mean BMI of patients with acne vulgaris was (19·5) as compare to patients without acne vulgaris (18·2).[19]

Obesity is associated with increase production of androgen and insulin resistance, which induces increase production of sebum from sebaceous gland and ultimately development of acne vulgaris.[20]

Study conducted on obese patients of Chinese population published in 2017.Results showed that among 364 acne vulgaris patients, 148 (40.7%) were male and 216 (59.3%) were female.[19] study was also conducted on 437 obese patients, among them 200 (45.7%) were male and 237 (54.23%) were female. They observed 94 (21.5%) patients were having acne vulgaris.[20]

A research was held on acne vulgaris and obesity in 2012. They conducted research on 44 obese and 26 non obese patients. They found 22 (50%) having acne vulgaris among obese group and 13 (50%) having Acne vulgaris among non obese patients with age range from 18 to 26 years .[21]

Another study was conducted on 88 patients, 44 (50%) were having Acne vulgaris with age range from 18 to 30 years. Acne vulgaris patients were consisted of 15 (34.1%) males and 29 (69.5%) females. Male having more body fat percentage (18.2 ± 5.0%).[22]

MATERIALS AND METHODS
The research was carried out in The University of Lahore, Pakistan and data was collected from Department of dermatology, The University of Lahore Hospital from April 2020 to October 2020. Non-probability purposive sampling was used. Basis Obese and non-obese male and female were included all ages,

BMI, clinically diagnosed acne vulgaris with excluded cutaneous treatment for the last two weeks and any oral or parenteral therapy for the last four weeks. Sample size 249 was calculated on the basis of prevalence of acne in Pakistan 5%.[23] By using 97% level of confidence and 3% precision through online calculator.[24] Researcher had taken 300 obese and 300 non-obese patient from OPD of skin Department, The University of Lahore Hospital. After taking informed written consent, all the patient's weight and height were recorded for Body Mass Index by applying formula: Weight in kilograms / square of height in meters, 27 kg/m^2 or greater (obese) or less than 27 kg/m^2 (non-obese).Proforma was used for recording the data. Acne data was analyzed on SPSS version 20.

The weight and height were expressed as mean and standard deviation (SD). The frequency of dermatosis acne vulgaris in obese and non-obese group was expressed in frequency and percentages. Comparison was made by applying Chi Square test for dermatosis between the two groups. P $\leq$0.05 was considered as significant.

RESULTS
The mean age of obese group was 37.4±13.0 years and among non-obese was 30.9±15.6 years (Table- 1).

In obese group, there were 139 (46.3%) male and 161 (53.7%) female while in non-obese group; there were 193 (64.3%) male and 107 (35.7%) female patients (Table 2).

Table 1: Distribution of patients by age

Age (Years)	Obese group (n=300)		Non-obese group (n=300)	
	No.	%	No.	%
1-10	0	0	12	4.0
11-20	32	10.7	78	26.0
21-30	72	24.0	94	31.3
31-40	99	33.0	43	14.3
41-50	53	17.7	38	12.7
51-60	33	11.0	23	7.7
61-70	7	2.3	10	3.3
71-80	4	1.3	2	0.7
Mean ±SD	37.4±13.0		30.9±15.6	

Table 2: Distribution of patients by sex

Sex	Obese group (n=300)		Non-obese group (n=300)	
	No.	%	No.	%
Male	139	46.3	193	64.3
Female	161	53.7	107	35.7
Total	300	100.0	300	100.0

Table 3: Acne vulgaris comparison between obese and non-obese patients

Acne vulgaris	Obese group (n=300) No. (%)	Non-obese group (n=300) No. (%)	P value
Yes	115(38.3)	41(13.7)	0.01
No	185(61.7)	259(86.3)	

In obese group, there were 115 (38.3%) patients with acne vulgaris, while in non-obese group there were 41 (13.7%) patients who had acne vulgaris (Table 3).

DISCUSSION

In present research, the mean age of the obese group was 37.4±13.0 years and in non-obese group was a 30.9±15.6 year. Michela et al. observed age range from 18 to 26 years in obese and non-obese Acne vulgaris patients.[21] Noor et al conducted a study and observed age range from 18 to 30 years among Acne vulgaris patients.[22]

This present research, obese group consist of 46.3% were male and 53.7% were female. While in non-obese group 64.3% were male and 35.7% were female. Noor et al conducted a research and observed that Acne vulgaris was present among 15(34.1%) males and 29(69.5%) females.[22]Lu Ly et al. conducted a study and observed that 148 (40.7%) were male and 216 (59.3%) were female.[19]

In present study, obese group, 115 (38.3%) patients were having Acne vulgaris, while in non-obese group there were 41 (13.7%) patients who had Acne vulgaris .A study of 3000 patients age range from 6 to 11years concluded the mean BMI of patients with Acne vulgaris was (19·5) as compare to patients without Acne vulgaris (18·2). Lu Ly observed obese Chinese patients in 2017, Results showed 364 patients having Acne vulgaris.[19] Al-Mutairi et al observed 94 (21.5%) patients were having Acne vulgaris.[20] Del Prete M et al observed a research and found that 22(50%) were having Acne vulgaris among obese group and 13(50%) were having Acne vulgaris among non-obese patients. [21]

CONCLUSION

Frequency of dermatosis Acne vulgaris is significantly greater in obese group as compared to non-obese group so that obese persons should receive special consideration in terms of proper health promotion, specific protection, early diagnosis, prompt treatment, referral and management.

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