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Clinical Profile of Acne Vulgaris: An Observational Study in a Tertiary Care Teaching Hospital, Bhagalpur, Bajitpur, Kishoreganj, Bangladesh

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Abstract **Original Research Article**

Background: Acne vulgaris is believed to be the most common skin disease affecting adolescence. Though the disease is common, literature is lacking on clinical profile of acne vulgaris from this part of the country. ***Objective:*** The main objective of this study is to delineate the clinical and epidemiological profile of acne vulgaris in patients attending our rural based tertiary care teaching hospital. ***Methods and Materials:*** This was an observational study carried out in the department of Dermatology and Venereology, Jahurul Islam Medical College Hospital from January2022-April 2022, where data of all newly attended male and female acne patients in any age were evaluated to study the clinical pattern, aggravating factors, markers of androgenicity, family history, and association of acne with seborrhea and seborrheic dermatitis. ***Results:*** Out of 200 patients, female (78%), outnumbered male (22%). Female to male ratio was 3.55:1. Mean age of patients was 19.64 years, and the mean age of onset of acne in patient was 17.41 years.16-20 years (44.5%) was the most common age group. Face was affected in (99%) followed by back (24%). Grade-1 acne was present in (50.5%) outnumbered Grade-2 (41%). Scarring was present in (37.5%) and post-acne pigmentation in (38%). Seasonal exacerbation was found in (56%) and stress exacerbation in (66%). Strongest association noted in our study is with seborrhea (greasy skin) and was present in (66.5%) patients. ***Conclusion:*** In our study female's outnumbered males. 16-20 years was the most common age group. Mean age of onset in females were earlier than males. Grade-1 acne vulgaris formed majority of patients. The strongest association noted was with seborrhea and others being stress and cosmetic.

Keywords: Acne vulgaris, Clinical profile, Seborrhea, Stress.

INTRODUCTION

Acne vulgaris is a long-standing chronic skin disease; it involves occlusion and/ or inflammation of pilosebaceous units in the skin [1]. It presents as inflammatory and / or non-inflammatory lesions, affecting mostly the face but also the back, chest and arm. This condition affects 9.4% of the global population, which makes it one of the most prevalent diseases around the world [2]. Acne develops earlier in females than in males. Occasionally it may start at age 7-8 years (adrenarche) and when it does, it portends severe acne. Less commonly acne may make its first appearance in mature adults-after 25 years of age (adult acne). Adult acne is more common in women. It is often, a part of cutaneous hyperandrogenism. Acne waxes and wanes through adolescent years and early adult life, rarely it may persist well in to the fifth and the sixth decade (persistent acne). The disease tends to be more persistent in females but the most severe forms of acne vulgaris occur more frequently in males. Upon the interplay of various factors involved in the development of acne vulgaris, severity of the disease varies markedly from one individual to the other [3-6]. Acne may ruin beauty and it may result in post-inflammatory hyperpigmentation and scarring. As a result of this disease, young people experience considerable psychological trauma and stigma. Scarring from the disease can cause depression, distress, and suicidal tendencies. The rate of depression in acne patients is three times higher than general population [7]. Although acne is one of the most common diseases of the skin, literatures are lacking from this part of the country. Our objectives in this present study are to

know the clinical profile of acne vulgaris and its correlation with various other factors.

METHODS AND MATERIALS

This study was conducted between January 2022-April 2022, in the department of dermatology and venereology, Jahurul Islam Medical College Hospital, a first rural based tertiary care teaching hospital in Bhagalpur, Bajitpur, 110-kilometer North- East of Dhaka City, Capital of Bangladesh. A total of 200 consecutive, eligible, newly attended acne patients in any age group of either gender who consented to participate were included in the study. Patients not willing to participate, patients with drug induced acne and other acneiform lesions, patients presenting with other dermatological diseases with acne and follow-up cases were excluded. The data of each patient was recorded in a predesigned assessment form which included age, gender, marital status, occupation, age of onset, duration of lesions, site of lesions, severity of acne lesions, relation to menstrual cycle, markers of androgenicity, family history of acne and post acne hyperpigmentation and scarring. The severity of acne vulgaris was graded in to four grades using a simple grading system, taking in to account the predominant lesions [8].

Grade-1: Comedones, occasional papules.
Grade-2: Papules, comedones, few pustules.
Grade-3: Predominant pustules, nodules, abscesses.
Grade-4: Mainly cysts, abscesses, wide spread scarring.

Aggravating factors including premenstrual flare, cosmetics use, seasonal variation, stress, smoking and association with seborrhoea and seborrhoeic dermatitis were also noted. The data was analysed using simple statistical method.

RESULTS

Out of 200 patients included in the study, females were 156(78%) and males were 44(22%), giving a female to male ratio of 3.55:1. The age of patients in case of female ranged from 12-40 years and male 14-35 years with a mean age of 19.64 years. The most common age group involved was 16-20 years, 89 cases (44.5%), followed by 21-25 years, 47 cases (23.5%) (Table-1) P value 0.560.

Table 1: Age and sex distribution of patients

Age in years	Male (n)	Percentage (%)	Female (n)	Percentage (%)	Total (n)	Percentage (%)	p-Value
10-15 yrs.	9	20.45	34	21.79	43	21.5	0.560
16-20 yrs.	24	54.54	65	41.67	89	44.5	
21-25 yrs.	6	13.63	41	26.28	47	23.5	
26-30 yrs.	3	6.84	7	4.49	10	5.0	
>30 yrs.	2	4.54	9	5.77	11	5.5	
Total	**44**	**100.0**	**156**	**100.0**	**200**	**100.0**	

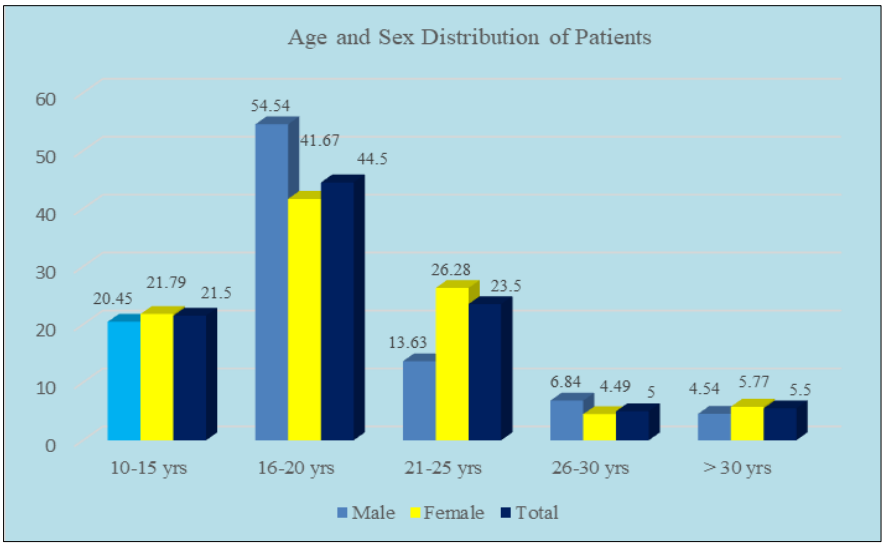

Figure I: Patients Age & Sex Wise Distribution

Age of onset of female patients varied from 10-40 years and the age of onset of male patients were between 11-33 years, with a mean age of onset of patient was 17.41 years, and the mean age of onset of females were 17.33 years earlier than males 17.67 years (Table-2). Majority of patients in this study were either college students 82(41%) or school students 57(28.5%). P value 0.025.

Table 2: Age group wise Onset of Acne Vulgaris

Age in years	Male (n)	Percentage (%)	Female (n)	Percentage (%)	Total	Percentage (%)	p-Value
10-15 yrs.	14	31.81	48	31.16	62	31	0.025[s]
16-20 yrs.	21	47.72	75	48.70	96	48	
21-25 yrs.	7	15.90	26	16.88	33	16.5	
26-30 yrs.	1	2.27	5	3.24	6	3	
>30 yrs.	1	2.27	2	1.29	3	1.5	
Total	**44**	**100.0**	**156**	**100.0**	**200**	**100.0**	

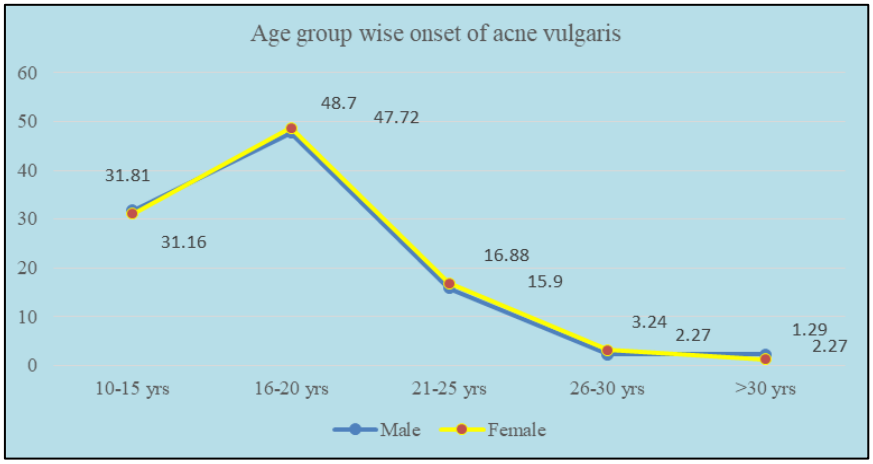

Figure: II Patients Age group wise onset of acne vulgaris

Duration of acne in our study ranged from 1 month-11 years with a mean duration of 27.08 months. Face was affected in 198(99%) patients, followed by back in 48(24%), chest in 25(12.5%). Arm and neck involvement was less and 7% and 2% respectively. Involvement of face was noted in all female patients (Table-3). P value 0.021.

Table 3: Affected Body Site

Site	Male (n)	Percentage (%)	Female (n)	Percentage (%)	Total	Percentage (%)	p-Value
Face	42	56.75	156	72.55	198	68.51	0.021[s]
Back	16	21.62	32	14.88	48	16.60	
Chest	10	13.51	15	6.97	25	8.65	
Arm	4	5.40	10	4.65	14	4.84	
Neck	2	2.70	2	0.93	4	1.38	
Total	**74**	**100.0**	**215**	**100.0**	**289**	**100.0**	

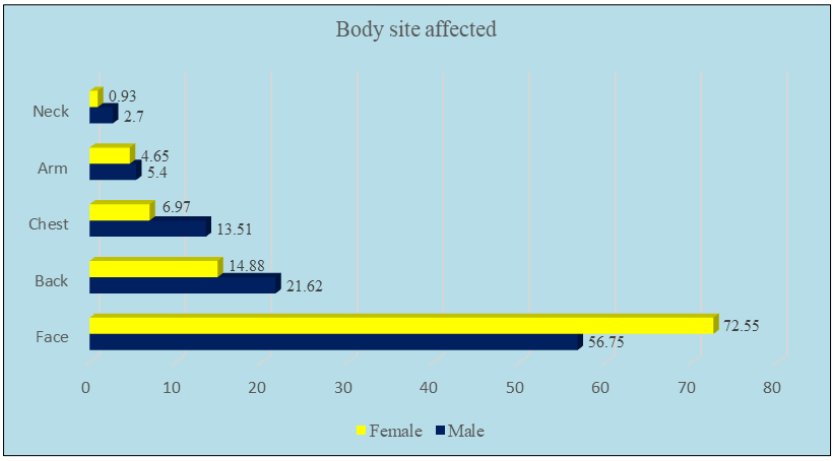

Figure: III Affected Body Site

In this study Grade-1 acne was present in 101(50.5%) patients, followed by Grade-2 in 82(41%), Grade-3 in 13(6.5%) and Grade-4 in 4(2%) patients. Majority of our patients were in Grade-1 and Grade-2. Grade-4 was seen only in 4(2%) female patients (Table-4). P value 0.109.

Table 4: Grade wise Acne

Grade	Male (n)	Percentage (%)	Female (n)	Percentage (%)	Total	Percentage (%)	p-Value
Grade-1	18	40.90	83	53.20	101	50.5	
Grade-2	19	43.20	63	40.38	82	41	
Grade-3	7	15.90	6	3.86	13	6.5	0.109
Grade-4	0	0.0	4	2.56	4	2	
Total	**44**	**100.0**	**156**	**100.0**	**200**	**100.0**	

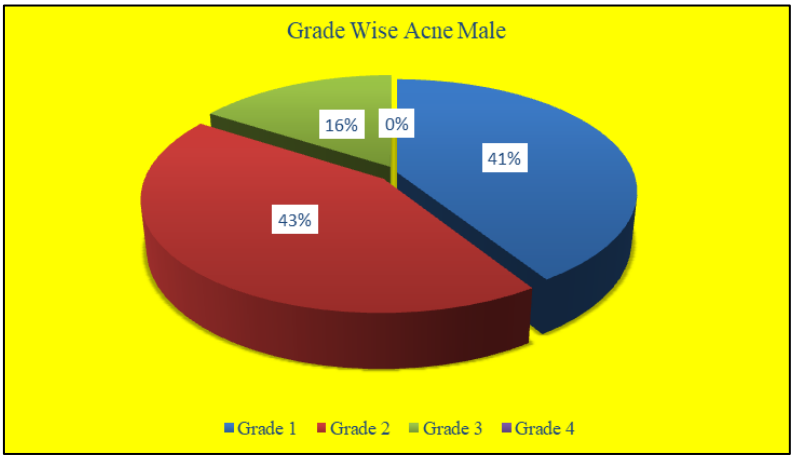

Figure: IV Grade Wise Acne Male

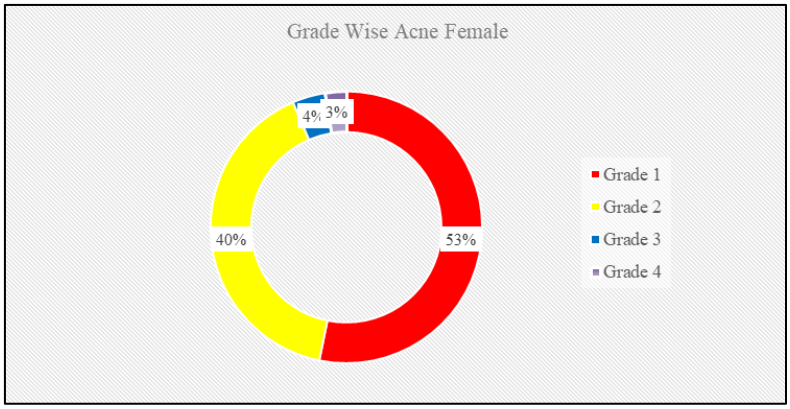

Figure: V Grade Wise Acne Female

Scarring was present in 75(37.5%) patients and all of them had ice-pick scar followed by rolling scar in 25(12.5%), and box-scar in 10(5%), patients. None of the patient had hypertrophic scar or keloids. Scarring was more common in Grade-2 acne patients in our study (Table-5). P value 0.535.

Table 5: Type of acne scars

Type of scar	Male (n)	Percentage (%)	Female (n)	Percentage (%)	Total	Percentage (%)	p-Value
Ice pick	25	64.1	50	70.42	75	68.18	
Rolling	10	25.64	15	21.13	25	22.72	
Box scar	4	10.26	6	8.45	10	9.1	0.535
Hypertrophic	0	0.0	0	0.0	0	0.0	
Keloid	0	0.0	0	0	0	0.0	
Total	**39**	**100.0**	**71**	**100.0**	**110**	**100.0**	

Post acne hyperpigmentation was present in 76(38%) patients. Seasonal variation was seen in 112(56%) with summer exacerbation in 79(39.5%) and winter exacerbation in 33(16.5%) patients. Family history of acne was observed in 76 (33.5%). Exacerbation with use of cosmetics was observed in 43(21.5%) and stress exacerbation in 132(66%). Premenstrual flare was present in 30(15%) female patients and markers of hyperandrogenicity such as irregular menses and hirsutism were seen respectively in 10(5%) and 7(3.5%) female patients. We have found strong association with seborrhoea (greasy skin), and was present in 132(66.5%) patients. Association with seborrhoeic dermatitis was noted in only 21(10.5%) patients. Smoking habit was present in only 4 male patients and was in grade 2 acne vulgaris.

DISCUSSION

Acne vulgaris which affecting the pilosebaceous glands is a chronic disease. Though it is predominating in adolescence data indicates that the age distribution of acne is widening and is happening in both sexes but more prominently in women [9]. In these present study female patients 78% outnumbered male 22%. Female preponderance was also observed by Raghavan JS *et al,* in Kerala India [10], but on the contrary male preponderance was observed by Adityan *et al,* in south India [11]. The mean age of patient in our study was 19.68 years comparable to 19.78 years seen by Adityan *et al,* [11] while Raghavan JS *et al,* and Kane A *et al,* have found the mean age of patient was 23.09 years and 25.58 years respectively [10, 12]. The most common age group involved in this study was 16-20 years (89 cases, 44.5%), followed by 21-25 years (47 cases, 23.5%), same was found in other studies [11, 13], but Raghavan *et al,* have found the most common age group was 21-25 years (38 cases, 38%) followed by 16-20 years (32 cases, 32%) that stands against of our findings [10]. Mean age of onset of acne in this study was 17.41 years and the mean age of onset in female was 17.33 years, which was earlier compared to males 17.67 years. Earlier onset in female was also noted in other studies and presumably be related to their earlier onset of puberty [3, 14, 15]. Duration of acne in this study ranged from 1 month-11 years with an average mean duration of 27.08 months but longer mean duration of45.55 months and 39.81months were observed by Adityan *et al,* and Saxena K *et al,* in their studies respectively [11, 13]. In our study face was affected in 99%, followed by back 24%, chest 12.5%, arm 7%, and neck in 2%. This finding is in accordance with the earlier reported literature [3, 11]. Present study graded the lesions using a simple 4 graded systems [8]. Grade-1 acne was seen in 50.5%, followed by Grade-2 in 41%, Grade-3 in 6.5%, and Grade-4 in only 2% patients. Grade-1 acne vulgaris outnumbered Grade-2, the more inflammatory forms of the disease, same was also observed in south India in Adityan *et al,* study [11]. Scarring is common sequelae of acne and result from severe inflammatory forms of the disease or habitual picking of acne lesions by patient. We found post-acne scarring in 37.5% of our patients. Incidence of post acne scarring in other studies varied from 5.9%-40.2% [6, 11, 12, 16]. Ice-pick scar was the most common and was universally present in all patients of post acne scarring. Same was noted by Layton *et al,* [17] Post inflammatory hyperpigmentation is a common complication of acne vulgaris, particularly in pigmented skin [3] Post acne hyperpigmentation in our study was 38%, while Adityan *et al,* noted (24.6%), and Taylor *et al,* noted (52.6%) in their studies respectively [11,16]. Premenstrual flare is another characteristic of acne. Present study found premenstrual flare in (19.23%) out of 156 female patient but higher frequency of 44% and 57.5% respectively were noted by Raghavan *et al,* and Adityan *et al,* in their studies [10, 11]. The clinical features suggestive of hyperandrogenism such as hirsuitism and irregular menses in this study were 4.49% and 6.4% comparable to hirsutism in 7% and menstrual disturbance in 5% observed by Raghavan *et al,* [10]. But the incidence of hirsuitism and irregular menses in other studies varied between (0%-21%) and (15.5%-48%) respectively [18-20]. We have not found any association between severity of acne and clinical markers of androgenicity. In this present study, 66% patients reported stress as an aggravating factor of acne. Sharma RK *et al,* also found significant association between acne and stress in their school based study [21] Chronic stress has been suggested as a cause of increased androgen secretion, increased sebum production and reducing the immune status [22]. Majority of our patients were either school or college students and stress during examination or other changes that occur in a student's life during examination, such as changes in diet or sleep habits could be a reason for such a higher percentage but Raghavan *et al,* noted stress as an aggravating factor in 10% of the patients [10]. The use of cosmetic is very common in female patients and they use different kinds of commercially available skin whitening cream in their face. In our study, 21.5% patients reported an aggravation of acne after using some form of cosmetic. Khunger and Kumar observed aggravation of acne due to cosmetic in 22% of the patients and Raghavan *et al,* in 26% of patients are in accordance with our study [22, 10]. Although acne is not an inherited condition, there is an inherited predisposition [23, 24]. We observed family history of acne in 33.5% of our patients. Raghavan JS *et al,* observed in 33% of patients [10], similar to our observation. But Saxena K *et al,* observed family history of acne in 52.5% of their patients [13]. The improvement of acne in summer and exacerbation in winter is a conventional dermatological opinion. A Saudi Arabian study has shown that acne exacerbates in winter, and often improves during summer months [25]. In our study, seasonal variation was observed in 56% cases with summer exacerbation in 39.5% and winter exacerbation in 16.5%. Summer exacerbation of acne

was also observed in other studies [10, 11]. This observation was against the conventional view that acne vulgaris exacerbates in winter and improves in summer. Seborrhea plays a central role in the pathogenesis of the disease [11]. In this study, Seborrhea was observed in 66.5% of patient. Saxena K *et al*, observed in 60.8% of patients [13], comparable to our findings but lower frequency of 32% was observed by Raghavan JS *et al*, [10]. Association with seborrhoeic dermatitis in our study was low and was present in 21(10.5%) patients but higher frequency was observed in other studies [10, 11]. The relationship between smoking and acne vulgaris is controversial. The number of smokers in our study was only 4(2%) males and all were in grade 2 acne vulgaris and a valid conclusion cannot be derived from such a small number of patients.

CONCLUSION

To conclude, present study included 200 patients with acne vulgaris and female to male ratio was 3.55:1. The most common age group involved was between 16-20 years and majority being either college (41%) or school (28.5%) student. Mean age of onset of acne was 17.41 years with onset earlier in females. Face was involved in (99%) cases, followed by back. Majority of the patients were in grade 1 and grade 2, and grade 1 outnumbered grade- 2 acne. Scarring and hyperpigmentation, the sequelae of acne were present in more than one third of patients and summer exacerbation was also seen with same frequency. The strongest association noted in our study was with seborrhea and others being stress and cosmetic use. This study brings out the clinical profile of acne vulgaris in a rural based tertiary care teaching hospital in Bhagalpur, North- East of Dhaka City, Capital of Bangladesh. As this study is hospital based and carried out at a tertiary care centre, future studies with more number of patients and even population-based studies are warranted to know the true nature of acne vulgaris in our community.

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