Original Article

Patient perception on precipitating or aggravating factors for acne

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Abstract

Acne is a chronic inflammatory disease of the pilosebaceous glands which is an aesthetically unpleasant and embarrassing condition. Certain factors can precipitate or aggravate this condition. This study was done to identify factors believed by the patients that can precipitate or aggravate acne in our population. One hundred (100) patients with acne attending the Dermatology & Venereology outpatient Department of Bangabandhu Sheikh Mujib Medical University, Dhaka, from April 2014 to September 2014 were enrolled for the study. Patients were enquired about factors which aggravated or precipitated their acne by using a structured questionnaire and recorded for statistical analysis. Female patients (65%) and students (50%) suffered more from acne. Younger patients were more affected by the condition (56%). Use of topical steroid 32%, exposure to sunlight 23%, cosmetics 24%, stressful events, food 14%, skin pricking 16%, premenstrual period and dry weather 7% were found to be responsible for acne aggravation in those participants. Acne is more predominant in female patients and in younger age group who are more concerned with their cosmetic disfigurement. Prevention can be a good option if we can meticulously identify the aggravating factors.

Key words: Acne, skin lesion, pilosebaceous glands

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Introduction

Acne is a chronic inflammatory disease of the pilosebaceous units which is characterized by seborrhea, formation of open and closed comedons, papules, pustules and often nodules.[1] The distribution of acne corresponds to the highest density of pilosebaceous units in face, neck, upper chest, shoulders and back.[2] Nodules and cysts comprise severe nodulocystic acne. To some extent, it affects almost all people aged 15 to 17 years, though study of more than 2000 adults showed that 3% of men and 5% of women still had definite mild acne at the age of 40 to 49 years.[3,4,5] Some of the factors are regarded as precipitating or aggravating factors for acne.

There is solid evidence of a genetic background for this disease.[6,7] A strong correlation of the disease with influences of hormones, especially androgens was found in some studies.[8] Certain foods can also aggravate it.[9] Use of cosmetics can often aggravate acne.[6] Acne flare-ups can occur in approximately 70% of females two to seven days before menstruation. Stress can cause an alteration in the hypothalamic-pituitary axis, which can lead to hormonal and immune system changes. These changes may affect acne development.[10] Among other factors, excessive cleansing of the skin, sunlight exposure, dry skin tight clothing friction, athletic equipment or even backpack were found to be responsible .[1,7,11,12,13]

Some drugs like, halogenated compounds, progestogens, oral contraceptive pill, corticosteroids, isoniazid, and lithium are listed. EGF-receptor antagonists like gefitinib, erlotinib, cetuximab have been identified as a trigger of acne.[14] Psoralens and UVA (PUVA) therapy may sometimes induce or aggravate acne.[9]

Acne is an aesthetically unpleasant and embarrassing condition. Many misconception regarding the causative factors of acne exist among people, and a lack of education on acne possiblydisseminated these myths through ages. There is also controversy on role of different factors among the researchers. The primary purpose of this study was to

find out patient's perception of precipitating/aggravating factors of acne among the Bangladeshi population.

Methods

This was a cross sectional observational study done in the Department of Dermatology and Venereology, Bangabandhu Sheikh Mujib Medical University, Dhaka, from April 2014 to September 2014. One hundred (100) patients selected by purposive sampling, ageing 12-45 years, of both sex with acne attending the outpatient department was enrolled in the study. Patients taking topical or systemic medicine for acne were excluded. After taking the formal consent of the patient; detail history and examination were performed and were recorded in a preset data form. Past history of illness & any systemic disease were inquired cautiously. All reports were properly recorded in the data sheet. Patients were asked about their self-perception on factors that precipitated or aggravated their acne and recorded in the structured data sheet. The research protocol was approved by the ethical committee of Bangladesh College of Physicians & Surgeons (BCPS).

Results

Acne was present more in patients of age group 16 – 25 years. Of them 59.0% patients were in age group 16 – 20 years and 24.0% were in age group 21-25 years. Mean (SD) age was 20.58±5.18 within range of 12 to 45 years. Female patients were more in the study with a male to female ratio of 1: 1.85. Highest patients were student (50.0%) followed by service holder (24.0%), housewife (11.0%) and unemployed (4.0%). Age of onset of lesion was highest (56%) in age group 16-20 years. Only 29% had positive family history for acne. (Figure-1 & Table-I)

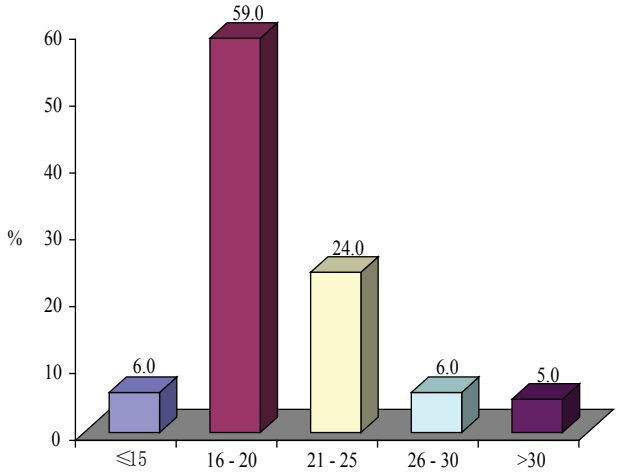

Figure-1: *Bar diagram of patients by age*

Table-I: Baseline demography of participants (n=100)

Age	Frequency	Percentage
12-15	6	6.0
16 – 20	59	59.0
21 – 25	24	24.0
26 – 45	11	11.0
Sex		
Male	35	35.0
Female	65	65.0
Occupation		
Service	24	24.0
Housewife	11	11.0
Unemployed	4	4.0
Student	50	50.0
Other	11	11.0
Age of onset of lesion		
12-15	21	21.0
16-20	56	56.0
21-25	16	16.0
26-45	7	7.0
Total	100	100.0

Highest number of patients had palpules (98.0%), followed by comedone (96.0%) and pustule (42.0%). Cysts were present in only 5 (5.0%) cases. (Table-II)

Table-II: Types of lesions of the study participants (n=100)

Lesion	Percentage (%)
Palpules	98.0
Comedone	96.0
Pustule	42.0
Cysts	5.0

Cheek (90.0%), forehead (84.0%) and chin (74.0) were the most common sites of lesion followed by nose (29.0%), shoulder (19.0%), upper back (18.0%), chest (17.0%), back of neck (6.0%), front of neck (5.0%) and lower back (2.0%) respectively. (Table-III)

Table-III: Distribution of lesions in different body parts

Body Part	Percentage (%)
Cheek	90.0
Forehead	84.0
Chin	74.0
Nose	29.0
Shoulder	19.0
Upper back	18.0
Chest	17.0
Back of neck	6.0
Front of neck	5.0
Lower back	2.0

Pigmentation 86(86%) was present in highest number of cases followed by scar 21%, pitting 10% and cysts 5% respectively. Out of 100 patients, 53 patients had moderate severity type of lesions. Most of the lesions (71.0%) were inflammatory.

In any stressful event acne flared up in 19(19.0%) cases. Dry weather aggravated acne in 7.0% cases. Premenstrual period was an aggravating factor in 9(9.0%) cases. Aggressive face washing was related to acne in only 1(1.0%) case. Use of topical steroid caused 32(32.0%) cases of acne aggravation. Exposure to sunlight induced 23(23.0%) cases of acne flare up. Cosmetics 24(24.0%), food 14(14.0%) and skin pricking 16(16.0%) were also responsible for acne aggravation. (Table-IV)

Table-IV: Distribution of patients by precipitating/ aggravating factors

Acne precipitating/ aggravating factors	Frequency	Percentage
Stressful event	19	19.0
Weather		
Humid	5	5.0
Dry	7	7.0
Hot	4	4.0
Cold	3	3.0
Premenstrual period	9	9.0
Aggressive washing	1	1.0
Using steroids		
Topical	32	32.0
Systemic	2	2.0
Medication other than steroids	9	9.0
Exposure of sunlight	23	23.0
Cosmetics	24	24.0
Food	14	14.0
Skin pricking	16	16.0

Discussion

Acne is typically vacillating in its course. There are periodic flares, some of which may be accounted for by various triggers and aggravating factors. It is therapeutically rewarding to identify the concerned triggers and aggravating factors and be able to deal with them.

In this present study a total number of 100 patients presented with acne were enrolled. Highest number of patients were in between age 16-25 years. From this result, it has been clearly focused that the younger age group of patients were more vulnerable to acne. Similar to the present study result, Rizvi and Chaudry, working with Pakistani patients reported that acne vulgaris is a nearly universal skin disease afflicting 79% to 95% of the adolescent population.[6]

Female patients were more predominant than male. Male and female ratio was 1: 1.85 which indicates that female are more vulnerable to the development of acne. Fung et al and Kubota have reported that acne tends to affect more in females than males in Asians.[15,16] In another study Tsai et al have reported that acne is associated with the female gender which is consistent with the present study.[17] Study from Korea published by Yang et al also shows that female sex is more commonly suffered by acne.[18]Higher number of patients from this study were students (50.0%).This finding was expected as the maximum number of patients was in the age group of 16-25 years. Chiu et al. showed that students suffered from acne flares which was associated with increase stress during exam periods.[19] In regard to onset of lesion, maximum (56.0%) patients had age of onset of lesion in age group 16-20 years. Similar result has been reported by Rizvi and Chaudry.[6]

Cunliffe and Gollnickhave reported that premenstrual flares occur in acne patients.[11] The explanation offered is hydration-induced cyclical narrowing of the pilosebaceous orifice between days 16-20 of the menstrual cycle.[9] Progesterone and estrogen have pro- and anti-inflammatory effects, and alteration or modulation of these hormones may be another explanation.[20] In contrast to these findings, in our study only 9% of patients had premenstrual accentuation of acne. Maximum (79.0%) patients were unmarriedand clinical facial acne persisted into middle age in 12% of women and 3% of men.

Highest number of patients in our study had oily skin (86%) and only 6.0% had dry skin. Use of vegetable oils, coconut oil, almond oil, olive oil, and rye oil is popular in Bangladesh. Such oils are traditionally used as moisturizers and revitalizers for body rubs and for hair dressing. Oils forms an occlusive film over the applied area and cause

comedogenesis and aggravation of acne in the acne prone areas of the body.[9] Oils also cause folliculitis in the scalp, and on the limbs and torso which sometimes complicates pre-existent acne. In southern India, mineral-oil based pomades are popular and frequently cause acne on the forehead.[9] Occupational exposure to industrial greases, oils, and petroleum products may cause folliculitis, and trigger acne.[21]

In our patients any stressful event caused acne flares in 19.0% cases. Sulzberger and kligman emphasized on the role of frustrating and stressful event on acne aggravation which is also reflected in our study.[22,23] Aggressive face washing was related to only 1.0% case. Use of topical steroid caused 32.0% cases of acne aggravation. Plewig and Kligmandenotes that topical steroids can cause rapid formation of acneiform eruptions. Role of topical steroids in acne is now an established phenomenon.[24]

Exposure to sunlight induced 23.0% cases of acne flare up in our study. There is report of Europeans developing a type of acne after a beach holiday known as acne Mallorca.[11] A similar phenomenon has been observed in India and is locally referred to as 'Goa acne'.[25]

From this study we found that cosmetics (24.0%), food (14.0%) and skin pricking (16.0%) are also responsible for acne aggravation. Similar result was reported by Kubba, many cosmetics including some sunscreens are comedogenic. Some well-known comedogenic cosmetic ingredients are isopropyl myristate, cocoa butter, lanolin, butyl stearate, stearyl alcohol, and oleic acid.[9]

Our findings of various factors believed by the patients to precipitate or aggravate acne were consistent with findings of other contemporary studies. As social norms and culture are important determinant of our daily customs, it was likely that different population around the world would behave different and the findings would not be very similar in some instances. But some of the factors were common for all groups of people and community, as reflected by our study.

In conclusion we can state that there are some precipitating or aggravating factors responsible for acne flares. Acne is more predominant in female patients and in younger age group and students. Use of topical steroid, cosmetics use, exposure to sunlight, stressful events, skin pricking, food and premenstrual period are the most common precipitating or aggravating factors for acne.

The study conducted did not represent the whole population. The sample size was small. A case-control study could give more direction to the association between acne flare-ups and its precipitating/aggravating factors.

References

1. Layton AM. Disorders of the sebaceous glands. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. Rook's textbook of dermatology, 8 thed. Oxford: Blackwell Science;2010. Pp. 1820-2.
2. Williams HC, Dellavalle RP, Garner S. Acne vulgaris. The Lancet. 2012;379:361-72.
3. Law MP, Chuh AA, Lee A, Molinari N. Acne prevalence and beyond: acne disability and its predictive factors among Chinese late adolescents in Hong Kong. Clinical and experimental dermatology. 2010 Jan 1; 35(1):16-21.
4. Yahya H. Acne vulgaris in Nigerian adolescents–prevalence, severity, beliefs, perceptions, and practices. International journal of dermatology. 2009 May 1; 48(5):498-505.
5. Cunliffe WJ, Gould DJ. Prevalence of facial acne vulgaris in late adolescence and in adults. Br Med J. 1979; 1(6171):1109-10.
6. Rizvi F, Chaudry MA. Precipitating factors of acne vulgaris in females. Ann Pak Inst Med Sci. 2009;5(2):104-7.
7. Bello CE. CE Credits-Optimizing Acne Vulgaris Treatment-Though often viewed as a minor problem, acne can cause psychological and physical scarring--Conditions that can be alleviated or prevented with. US Pharmacist. 2002;27(4):63-75.
8. Rzany B, Kahl C. Epidemiology of acne vulgaris. JDDG: Journal der Deutschen Dermatologischen Gesellschaft. 2006;4(1):8-9.
9. Kubba R, Bajaj AK, Thappa DM, Sharma R, Vedamurthy M, Dhar S et al. Factors precipitating or aggravating acne. Indian Journal of Dermatology, Venereology and Leprology. 2009;75(7):10.
10. Acne Management Guideline. South African Medical Journal.1999;89(9):1024 – 1034.
11. Cunliffe WJ and Gollnick HPM. Acne: Diagnosis and management. London: Martin Dunitz;2001: p. 49-67.
12. Woodard I. Adolescent acne: a stepwise approach to management. Topics in Advanced Practice Nursing eJournal. 2002;2(2).
13. Mossman J. Preventing and treating acne. US Pharm. 2006;4:34-42.
14. Degitz K, Placzek M, Borelli C, Plewig G. Pathophysiology of acne. J Dtsch Dermatol Ges 2007; 5: 316-323

15. Fung WK, Lo KK. Prevalence of skin disease among school children and adolescents in a Student Health Service Center in Hong Kong. Pediatric dermatology. 2000;17:440-6.

16. Kubota Y, Shirahige Y, Nakai K, Katsuura J, Moriue T, Yoneda K. Communitybased epidemiological study of psychosocial effects of acne in Japanese adolescents. The Journal of dermatology. 2010;37:617-22.

17. Tsai M-C, Chen W, Cheng Y-W, Wang C-Y, Chen G-Y, Hsu T-J. Higher body mass index is a significant risk factor for acne formation in schoolchildren. European Journal of Dermatology. 2010;16:251-3.

18. Yang YC, Cheng YW, Lai CS, Chen W. Prevalence of childhood acne, ephelides, warts, atopic dermatitis, psoriasis, alopecia areata and keloid in Kaohsiung County, Taiwan: a communityâ€based clinical survey. Journal of the European Academy of Dermatology and Venereology. 2007;21:643-9.

19. Chiu A, Chon SY, Kimball AB. The response of skin disease to stress: changes in the severity of acne vulgaris as affected by examination stress. Arch Dermatol. 2003 Jul;139(7):897-900.

20. Williams M, Cunliffe WJ. Explanation of premenstrual acne. Lancet. 1973 ;2:1055-7.

21. Singh R, Reddy BS, Singh G. Acne cornea or oil-acne simulating Pityriasisrubra pilaris. Indian Journal of Dermatology, Venereology, and Leprology. 1976;42(2):79.

22. Sulzberger MB, Zaidens SH. Psychogenic factors in dermatologic disorders. The Medical clinics of North America 32: 1948. pp. 669-85

23. Kligman AM. Postadolescent acne in women. Cutis. 1991;48(1):75-7.

24. Plewig G, Kligman AM. Induction of acne by topical steroids. Arch Dermatol Forsch. 1973;247(1):29-52.

25. Khanna N, Datta Gupta S. Rejuvenating facial massage–a bane or boon?. International journal of dermatology. 2002 1;41(7):407-10.