Research Article

Sociodemographic Characteristics of Acne among University Students in Damascus, Syria

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Received 15 April 2013; Revised 7 November 2013; Accepted 20 November 2013; Published 2 January 2014

Academic Editor: Suminori Kono

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To estimate the prevalence and identify risk factors that may be associated with acne among university students in Syria, a cross-sectional study was conducted in the Syrian International University for Science and Technology in December 2009. A sample of 500 students was chosen. Each participant was subjected to an interview and clinical examination of acne in addition to height and weight measurements. Acne prevalence was 34.7% (172/496). Male students had higher rate of acne compared to females (42.9% versus 23.6%, $P < 0.0001$) and their acne started significantly at a younger age (18.13 versus 19.04 years old, $P < 0.0001$). Face was the commonest site for acne in both males and females. Washing face frequently per day in both sexes has a significant relation with a decreased prevalence of acne. Moreover, psychological stress particularly when the students were away from family was associated with a significant higher rate of acne. We found that the prevalence of acne steadily increased with increasing body mass index. Acne is a health and psychological problem among university students particularly when affecting the face. Several factors such as gender, body mass index, and stress were found to be associated with acne formation.

1. Introduction

Vulgaris is a common skin disease which is a significant health problem among adolescents and young adults. It affects 85–100% of people at some point in their lives, and it usually begins at puberty. Acne can persist into the 30s and beyond. People of all ethnic backgrounds get acne [1]. More than half of those who experienced acne sought medical treatment. In USA, 61.9% of patients aged 18 years and older were seen in clinics for acne vulgaris [2]. Likewise in the university outpatient clinics, the most common complaint was acne vulgaris [3].

Acne formation is multifactorial. The four primary factors determining acne development are abnormal follicular epithelial desquamation, hyperactivity of the sebaceous glands, proliferation of *Propionibacterium acnes*, and follicular formation [4]. Furthermore, androgens play an important role in the pathogenesis of acne. Several studies in the Middle East reported that emotional stress, premenstrual factors (in

females), and certain foods such as fatty food, sweets, and spices were believed to aggravate acne formation [5, 6]. On the other hand, in Syria, there is a lack of published studies on acne among university students. Studying acne is important because some forms of acne such as inflammatory acne may leave scarring and psychological consequences. Presence of acne has a negative impact on self-esteem and quality of life among adolescents. Therefore, increasing incidence of depression and other psychological disorders may be associated with acne [7]. Our objective of conducting this study was to estimate the prevalence of acne among the students in the Syrian International University for Science and Technology and also to identify some risk factors that may be associated with acne.

2. Methods

A cross-sectional study was conducted in Dara'a district of Damascus, Syria, from the 3rd to 28th of December 2009. The

study was carried out on 2100 students of the Syrian International University for Science and Technology (SIUST). This new establishment (four years old) consists of six faculties: Medicine, Dentistry, Pharmacy, Petroleum Engineering, Business Administration, and Computer Science. A stratified cluster sampling method of three stages was implemented for the sample collection. In the first stage, students from each faculty were stratified according to their year level (first, second, third, and fourth) of study. Proportional to the number of students in each level, certain numbers of individuals were randomly chosen. In the second stage the individuals were stratified again and collected proportionally according to their sex. In the final stage, the chosen students from all faculties were grouped into clusters of manageable size.

A random sample of 500 students was chosen. The selected individuals were informed about the purpose of the study and assured about the confidentiality of the information gathered. Interviewing each participant was carried-out using a well-constructed questionnaire. The questionnaire included demographic (age, sex) and social information (living with or away from family) and life style such as washing body times per week (1-2, 3-5, and >5 times) and washing face times per day (1-2, 3-5 and >5 times) and information about stress frequency (absence, always, and occasional) was also included. In addition, female students were further asked whether acne formation was related to menstrual period. Moreover, clinical examination was carried out by trained two medical doctors who had experience in dermatology. They examined students for the presence and location of acne (such as on the face, shoulder, and others). The clinical examinations were performed at the same time and findings were confirmed between them. Beside that, height and body weight measurements were also taken. Body mass index was categorized into $<20 \text{ kg/m}^2$, $20-24 \text{ kg/m}^2$, $25-29 \text{ kg/m}^2$, and $\geq 30 \text{ kg/m}^2$ [8].

This study received ethical approval from the Syrian International University for Science and Technology (SIUST). The data were analyzed using SPSS 16.0. The significant difference between proportions or means was tested using chi-square test (χ^2) and t -test, respectively, with P value ≤ 0.05 as the level of significance.

3. Results

Out of the 500 chosen students, only 496 (284 males and 212 females) participated, and hence the responding rate was 99.2%. The prevalence of acne among the students was 34.7% (172/496). As shown in Table 1, there was a significantly higher rate of acne among male students than that among females (42.9% versus 23.6%); $\chi^2 = 23.48$, $P < 0.0001$. The mean age of students with acne was significantly younger in males (18.13 ± 0.59) than in females (19.04 ± 1.10); $t = 6.8$, $P < 0.0001$. The study also found a significant difference in acne location ($\chi^2 = 67.7$, $P < 0.001$) in which both males (96.7%) and females (92%) demonstrated the highest rate of acne on the face followed by the shoulders.

TABLE 1: The Sociodemographic factors associated with acne formation.

Characteristics	Acne positive		χ^2	P value
	Male (%) $N = 284$	Female (%) $N = 212$		
Sex	122 (42.9)	50 (23.6)	23.48	<0.0001
Mean age $\pm$ S.D	18.13 ± 0.59	19.04 ± 1.106	$t = 6.8$	<0.0001
Location				
Face	118 (96.7)	46 (92)	67.7	<0.001
Shoulders	48 (39.3)	17 (34)		
Others	23 (18.9)	7 (14.0)		
Living with family				
Yes	50 (41)	33 (66)	54.9	$<0.0001^*$
No	72 (59)	17 (34)	6.27	$<0.05^{**}$
Stress				
Always	58 (47.5)	26 (52)	27.88	$<0.0001^*$
Absence	23 (18.9)	10 (20)	19.64	$<0.001^{**}$
Occasional	41 (33.6)	14 (28)		
Washing face/day				
1-2	47 (38.5)	19 (38)	8.1	$<0.025^*$
3-5	47 (38.5)	20 (40)	11.21	$<0.004^{**}$
>5	28 (23)	11 (22)		
Washing body/week				
1-2	42 (34.4)	8 (16)	14.0	$<0.001^*$
3-5	51 (41.8)	11 (22)	4.44	$>0.05^{**}$
>5	29 (23.8)	31 (62)		
BMI (Kg/m^2)				
<20	5 (18.5)	3 (8.1)	8.74	0.05*
20-24	55 (36.6)	29 (35.8)	22.6	$<0.0001^{**}$
25-29	29 (47.5)	7 (10.5)		
≥ 30	6 (60)	3 (60)		
Menstrual cycles				
Yes		40		
No		10		

* Male, ** female.

Students who wash their faces more than five time per day showed significantly lower prevalence of acne in males (23%, $\chi^2 = 8$, $P < 0.025$) and females (22%, $\chi^2 = 11.21$, $P < 0.004$).

On the other hand, significantly lower rate of acne was only demonstrated among those males washing their body more than five times per week (23.8%, $\chi^2 = 14.0$, $P < 0.001$), while no significant association was found in females regarding body wash (62%, $\chi^2 = 4.44$, $P > 0.05$).

Our study gave an evidence that acne prevalence significantly increased steadily (18.5%, 36.6%, 47.5%, 60%) and (8.1%, 35.8%, 10.5%, 60%) with the increased body mass index for BMI < 20 , 20-24, 25-29 and $> 30 \text{ kg/m}^2$; ($\chi^2 = 8.74$, $P = 0.05$) and ($\chi^2 = 22.6$, $P < 0.0001$) in both males and females respectively.

With respect to the relation between degree of stress and acne development, our study showed that the highest

significant prevalence in both males (47.5%, $\chi^2 = 27.88$, $P < 0.0001$) and females (52%, $\chi^2 = 19.64$, $P < 0.001$) was among students who were always subjected to stress compared to those who were occasionally or not subjected to stress. Male students who were living away from their family demonstrated significantly higher rate of acne, $\chi^2 = 54.9$, $P < 0.0001$, but similar finding was not detected among females. Regarding female students, 80% reported acne formation appeared during their menstrual cycles.

4. Discussion

The good response rate (99.2%) reflected the interest of the students in this health problem. The prevalence of acne in this study was lower than reported among university students in Central Saudi Arabia (56.2%), Turkey (40.1%) and also among Singaporean adolescents (88%) [3, 6, 9]. This discrepancy could be attributed to variation in genetics, diet, or social factors (e.g., smoking).

The significant association between acne formation and sex of students that we detected was inconsistent with a study in Saudi [6]. However, similar finding was reported among school-aged adolescents in Malaysia, whereby acne was more common among males compared to females [10]. Males have higher prevalence of acne than females in our study and this conforms to studies in India, Dakar, Portugal, and Korea [11–14]. One of the reasons why men having more acne lesion may be due to increased sebum production [14].

Males with acne that of mean age was significantly younger than females. This finding is consistent with several studies [12, 15, 16]. The result most probably is attributed to the male sex hormones (androgen) which increase during adolescence period. Androgen stimulates sebaceous glands to produce sebum, so hyperandrogenism is closely associated with acne formation [17].

Our significant association between acne occurrence and washing face daily in both sexes is in disagreement with several studies in which they stated that poor hygiene does not cause acne [18, 19]. However, washing body frequently among males, but not in females, was found significantly associated with development of acne. There is a contradicting opinion about the association between acne formation and seasonal variation.

There is a conventional view that acne vulgaris exacerbates in winter, while South India study found acne prevalence is more in summer [12]. However, our study was conducted only during winter season in which, during cold weather, there is decrease in frequency of bathing among adolescents particularly male. That is why we observed significantly higher rate of acne among males with low frequency of bathing.

Degree of stress and its role with acne formation were stated by many authors [5, 14, 20]. They reported that emotional stress acts as an aggravating risk factor for development of acne. Moreover, Law et al., 2009, from his study in Hong Kong, found that higher perceived stress was positive predictor of acne among university students [21]. We confirmed the association between acne prevalence and degree of stress

in which we found that students who always were subjected to continuous stress demonstrated higher rate of acne. Most probably, this relation could be attributed to the increased production of cortisol during emotional stress which in turn increased the sebum production [22, 23].

Male students living within their families have significantly lower prevalence of acne. This could be related to higher dependency of male students on their parents for providing better personal hygiene and nutrition compared to their female counterparts. In addition, less psychological stress could not be excluded. Menstruation and its association with the increase of acne were detected in 80% of our female students which is consistent with several studies that stated that hyperandrogenicity during the menstrual cycle may have contributed to the acne formation [16, 24]. With regard to acne location, face is the commonest site for acne and this conforms to several authors [11–13, 15]. The relation between acne formation and BMI has been studied by many authors [4, 17, 25, 26]. They found that acne was more prevalent among obese persons in women. We detected those obese students of both sexes to have higher acne rate.

Several explanations could explain the reasons and few of them are the excess androgens caused by obesity and psychological stress that could have resulted from being overweight which in turn cause surge of stress hormones that will worsen the acne [17, 25]. In addition, diet may play a role [5]. However, we did not explore the diet factors related to acne in our study.

Our study has several limitations. We did not assess the severity of acne or referred students with bad acne for further management. In addition, the questions on stress were a subjective assessment. A proper tool that measures the degree of stress should be taken into account. Furthermore, statistical analysis to identify the unconfounding factors was not applied.

5. Conclusion

Acne is a health and psychological problem among university students which is highly related to age of youth particularly among males. There were several significant factors associated with acne formation in the study which were gender, BMI, and stress. Locality of acne and frequency of washing were also significantly associated with acne formation.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

Acknowledgments

The authors thank the president of the Syrian International University for Science and Technology (SIUST) and the Scientific Research Committee for granting them the approval and assistance in conducting the study.

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