Opinions and Perceptions on Acne: A Community-Based Questionnaire Study in Thai Students

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Objective: *To evaluate the opinions and perceptions on acne and the effect of acne on the quality of life in Thai teenagers.*
Material and Method: *Five hundred ninety seven students of five high schools in Bangkok were administered a self-reported questionnaire about acne. Of these, 537 students were further examined by dermatologists to grade acne severity.*
Results: *The study population consisted of 392 (65.7%) female and 205 (34.3%) male. More than half believed that inadequate sleep, stress, sweat/exercise/hot weather, cosmetics, pre-menstrual period, oily food, and sun exposure aggravated their acne. Regarding Dermatology life quality index (DLQI), the question concerning embarrassment had the highest mean DLQI score, which reflect the most impact by acne.*
Conclusion: *Some of the Thai adolescents still had misconceptions about the disease. Even mild acne can have an extremely large effect on their quality of life.*

Keywords: *Acne, Opinions, Perceptions, Thai*

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Acne vulgaris is a chronic inflammatory disease of pilosebaceous unit commonly affects 80% of the adolescent population[1,2]. Therapeutic success of long-lasting conditions, like acne, is significantly influenced by the level of knowledge and health beliefs[3]. Although there is a high prevalence of acne among teenagers, there is still the propagation of numerous misconceptions about the causes, aggravating factors, and management of the condition among them[4-6]. For some patients, acne was misconceived as a normal physiologic stage of puberty and some even waited more than one year before seeking medical treatment[7,8]. Unfortunately, the delay in obtaining adequate treatment of acne has been shown to increase the risk of scarring[8].

Many studies have evaluated opinions and perceptions about acne among teenagers in different areas of the world[3,5-7,9-13], and beliefs about acne vary significantly by race and ethnicity[4].

In Thailand, there have not been any community-based studies on the knowledge and understanding of the disorder. Such information may lead to the design of educational programs about the condition, creating awareness about the availability of appropriate treatment, optimizing patient compliance, and therefore, lead to prevention of unnecessary suffering.

Thus, the objectives of the present study were to evaluate the opinions and perceptions on acne and the effect of acne on the quality of life in Thai teenagers.

Material and Method

Study design

This community-based study was approved by the ethics committee of Siriraj Hospital Mahidol University, Bangkok, Thailand. It was conducted in four high schools in Bangkok, Suwannaram-Wittayakom School, Yothinburana School, Saint John's

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school, and Bodindecha School, by dermatologists from the above five institutes between April 2005 and July 2005.

The present study consisted of a self-reported questionnaire as well as an objective acne assessment by a dermatologist. The schools in Bangkok were selected by simple random sampling technique.

Participants

Five hundred ninety seven students in grade 10 and 11 attending selected schools and presenting on the recruited date were eligible to participate in the present study as their parents gave written informed consent. They were informed that they could refuse to participate in the study or withdraw from the study at any time.

Instruments

This self-reported questionnaire was designed according to the purpose of the present study. The questionnaire consisted of the following parts: demographic data, history of acne, facial products used, beliefs about aggravating factors, sources of information about acne, treatment, course of disease and average monthly expenses on acne treatment. Participants were also asked to evaluate the severity of their acne.

Questions regarding the quality of life were evaluated using validated Thai version of Dermatology Life Quality Index (DLQI)[14] for which Dr. AY Finlay had kindly given formal permission to Dr. Kulthanan to use. The DLQI questionnaire contains 10 questions referring to the previous seven days. It is divided into six domains, including symptoms and feelings, daily activities, leisure, work and school, personal relationship, and treatment difficulties. All patients were asked to complete the questionnaires by themselves. Each question had five possible answers: "not relevant (not applicable)", "not at all", "a little", "a lot", or "very much" with the corresponding scores of 0, 0, 1, 2, and 3, respectively. The questions are simple and short and answers take only a few minutes to complete. The DLQI total score is calculated by adding the scores of all 10 questions, with the maximum score being 30 and the minimum score being 0. The higher is the score, the greater is the impairment of the quality of life. The DLQI score were interpreted as follows: 0-1 = no effect at all, 2-5 = small effect, 6-10 = moderate effect, 11-20 = very large effect, 21-30 = extremely large effect[15].

Objective evaluation of acne was performed by dermatologists. The diagnosis of acne was made by clinical features including open and closed comedones, inflammatory papules and pustules and various degrees of scarring[2]. The presence of acne on face and trunk were recorded. Acne grading was performed using a Washington DC acne classification[16]: mild (few to several papules/pustule with no nodule), moderate (several to many papules/pustules and few to several nodules), or severe (numerous and/or extensive papules/pustules and many nodules). The presence and nature of acne scars was also noted. Acne scars were divided into 3 basic types: icepick scars (narrow (<2 mm), deep, sharply demarcated epithelial tracts that extend vertically to the deep dermis or subcutaneous tissue), rolling scars (superficial shadowing and a rolling or undulating appearance to the overlying skin), and boxcar scars (round to oval depressions with sharply demarcated vertical edges)[17].

Procedures

A meeting of principle investigators from five medical schools in Bangkok was arranged prior to the study in order to ensure agreement about the study protocol.

An explanation of the research was given to all students in the study on the test day. To ensure the agreement of acne diagnosis, the survey was administered immediately after a brief explanation of the questionnaire, including photos of clinical appearance of open and closed comedones, papules, pustules, nodules and cyst, type of facial skin and acne severity grading.

Statistical analysis

Data from survey were analyzed using SPSS version 17.0. Descriptive statistics, e.g. mean, median, minimum, maximum, and percentages, were performed to describe demographic data. The data of acne severity, skin type, and location of acne were compared using Pearson's Chi-square test, Fisher's exact test when appropriate. Demographic and clinical data, attitudes toward acne, help seeking behavior, DLQI score and monthly expenses of patients with acne were compared, using Pearson's Chi-squared test and Mann-Whitney U test for qualitative and quantitative data, respectively. P-value of <0.05 was considered to be significant.

Results

Five hundred ninety seven questionnaires were returned, adequately filled in and were evaluated.

Table 1. Demographic data of the 597 participants

Characteristics	Number	(%)
Age, years (n = 597)		
10-12	2	0.3
13-15	316	52.9
16-18	260	43.6
19-20	19	3.2
Sex (n = 597)		
Female	392	65.7
Male	205	34.3
Severity grading by patients* (n = 582)		
Mild	222	38.1
Moderate	328	56.4
Severe	32	5.5
Family history of acne (n = 588)	482	82.0
Objective evaluation by dermatologists		
Severity grading by doctors (n = 519)		
Mild	372	71.7
Moderate	134	25.8
Severe	13	2.5
Type of acne scar+ (n = 353)		
Icepick	165	46.7
Rolling	183	51.8
Boxcar	136	38.5
Severity of acne scar (n = 353)		
Mild	244	69.1
Moderate	76	21.5
Severe	33	9.3
Skin type (n = 537)		
Mixed	232	43.2
Oily	162	30.2
Normal	123	22.9
Dry	20	3.7

* Some participants did not answer the question
+ Some patients had more than one type of scar

The questionnaires were completed until the last question, but sometimes the patients refused to answer the question or gave no opinion. The mean (SD) age of participants was 15.6 (0.9) years, ranged from 12 to 20 years. The study population consisted of 392 (65.7%) girls and 205 (34.3%) boys. Overall, 588 (98.5%) of 597 reported having had acne prior to the time of study or had acne at the time of study. Demographic data was shown in Table 1.

Fig. 1 shows the study subjects of five high schools in Bangkok. Of 597 respondents, 537 students were examined. Five hundred nineteen (86.9%) of 537 students had acne on examination and 372 (71.7%), 134 (25.8%) and 13 (2.5%) were classified as having mild, moderate, and severe acne, respectively. No association between age (p = 0.561, Fisher's exact test) or gender (p = 0.099, X^2 test) and acne severity was found.

Skin type and acne

On physical examination of 519 subjects with acne, the students were classified by skin types into a combination skin (43.5%), oily skin (31.2%), normal skin (22.0%), and dry skin (3.3%). Skin type of participants was significantly associated with the severity of acne. Individuals with seborrhea significantly had a higher proportion of moderate/ severe acne comparing with those having other skin types (p<0.001, Fisher's exact test).

Correlation with family history

Of 588 participants with acne, 482 (82.0%) reported a positive family history of acne. Female significantly had a positive family history of acne (p<0.001, Fisher's exact test). Nevertheless, there was no statistically significant correlation between the severity of acne and family history of acne (p = 0.265, X^2 test).

Opinion about acne

Although 82.0% (482/ 588) of the respondents with a history of acne believed that acne could resolve spontaneously, 395 students (67.2%) still seek medical treatment for their acne. However, the ones who believed that acne can spontaneously resolve itself significantly seek no treatment (p = 0.005, Fisher's exact test) compared with those who believed that acne cannot be spontaneously cured.

Attitude towards aggravation of acne

The respondents reported having acne were asked about factors that affect their acne. More than half believed that inadequate sleep, stress, sweat/ exercise/hot weather, cosmetics, pre-menstrual period, oily food, and sun exposure aggravated their acne. However, soft drinks, oily hair products, drug, hair

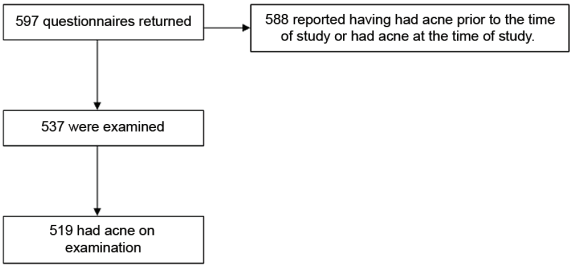

Fig. 1 Study subjects of five high schools in Bangkok.

sprays, chocolate, and hormonal pills were believed by the majority not to relate to their acne. The result is shown in Fig. 2. Additional analysis on gender significantly showed that girls were more likely to believe that stress, cosmetic products, and oily food may aggravate their acne, with p-value of 0.001 (Fisher's exact test), <0.001 (Fisher's exact test) and 0.037 (Fisher's exact test), respectively.

Self-management of acne and treatment history

To alleviate acne lesions, frequent face washing was the most reported method (64.8%), followed by squeezing the comedone (58.8%), and using medicated face wash (39.5%).

Of the 588 participants who reported having acne, 395 (67.2%) had sought or were seeking treatment, 181 (45.8%) sough medical treatment either from a general practitioner or a dermatologist. About half of them (48.3%) had tried over-the-counter products. Subjects thinking that their acne was severe ($p<0.001$) or having facial acne ($p = 0.006$) were more likely to have sought help for their acne. However, nine of 13 (69.2%) who actually have severe acne had never sought treatment for their acne. There was no statistically difference association between objective acne severity or gender and help seeking behavior.

In term of help seeking, 126 of 181 students (69.6%) preferred visiting a private skin clinic, 13.3% preferred visiting a public hospital, 9.9% preferred visiting private hospital, and 7.7% had visited a general practitioner.

Subjective acne severity

There was a fair agreement between objective and subjective acne severity grading (8 = 0.28, $p<0.001$) as shown in Table 2. Of students who had mild acne, more than half (194 of 369) perceived that they had moderate to severe acne. Even there was no significant difference in acne severity between girls and boys ($p = 0.099$, X^2 test), girls significantly evaluated themselves as having more severe acne than boys ($p = 0.032$, X^2 test).

Table 2. Subjective and objective severity of acne

Subjective acne severity	Objective acne severity, n = 513				Weighted kappa
	Mild	Moderate	Severe	Total	
Mild	175	11	0	186	0.28
Moderate	188	102	8	289	
Severe	6	18	5	29	
Total	369	131	13	513	

Total of 537 subjects were examined

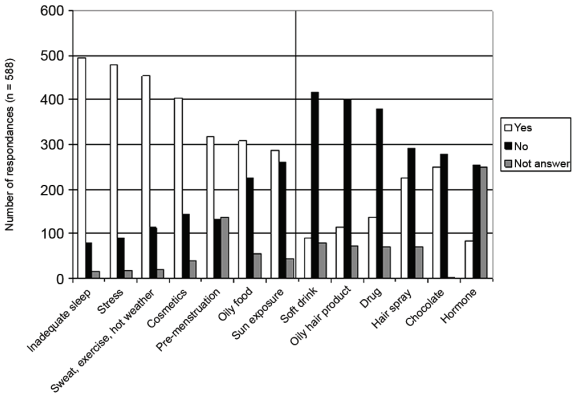

Fig. 2 Opinion about the factors aggravating acne lesions. (A) factors believed to aggravate acne according to >50% of respondents. (B) factors believed not to affect acne according to >50% of respondents.

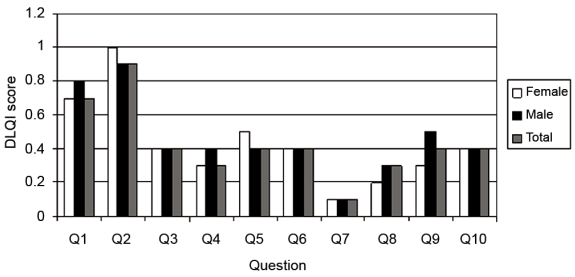

Fig. 3 The mean scores of each DLQI question.

Acne and quality of life

The median total DLQI score was 3.0 ranges from 0 to 22. The total DLQI score of patients with both facial and truncal acne were found to be higher than those with isolated facial acne with the median score of 3.5 and 2.5 respectively ($p<0.001$, Mann-Whitney U test). The mean DLQI score of each question was shown in Fig. 3 and Table 3. Question 2 concerning embarrassment had the highest mean DLQI score, which reflect the most impact by acne, followed by question 1 (symptoms of acne).

Both subjective severity grading and objective severity grading were significantly associated with the DLQI score ($p<0.001$, Mann-Whitney U test). It was demonstrated that the more severe grade of acne, the higher of the DLQI score. Surprisingly, four out of five subjects (80%) who reported DLQI score over 20, which is interpreted as having an extremely large effect on the patients' life[15], had mild acne.

Table 3. The DLQI score of each question

Question	Sex	No.	Mean DLQI (SD)	Range
Itching	All	597	0.7 (0.8)	0-3
	Female	392	0.7 (0.8)	
	Male	205	0.8 (0.8)	
Embarrassment	All	597	0.9 (1.0)	0-3
	Female	392	1.0 (1.0)	
	Male	205	0.9 (1.0)	
Shopping problems	All	597	0.4 (0.8)	0-3
	Female	392	0.4 (0.8)	
	Male	205	0.4 (0.7)	
Clothes choice	All	597	0.3 (0.6)	0-3
	Female	392	0.3 (0.7)	
	Male	205	0.4 (0.7)	
Social activities	All	597	0.4 (0.8)	0-3
	Female	392	0.5 (0.8)	
	Male	205	0.4 (0.7)	
Sport	All	597	0.4 (0.7)	0-3
	Female	392	0.4 (0.7)	
	Male	205	0.4 (0.7)	
Work and study	All	597	0.1 (0.3)	0-3
	Female	392	0.1 (0.4)	
	Male	205	0.1 (0.3)	
Interpersonal problem	All	597	0.3 (0.6)	0-3
	Female	392	0.2 (0.6)	
	Male	205	0.3 (0.5)	
Sexual difficulties	All	597	0.4 (0.7)	0-3
	Female	392	0.3 (0.7)	
	Male	205	0.5 (0.7)	
Treatment	All	597	0.4 (0.7)	0-3
	Female	392	0.4 (0.7)	
	Male	205	0.4 (0.7)	

DLQI = dermatology life quality index

There was no statistical difference in DLQI score between genders (p = 0.74, Mann-Whitney U test) or those with and without acne scar (p = 0.124, Mann-Whitney U test).

Cost of acne treatment

Median monthly cost of acne treatment was 500 baht, range from 30 to 12,000, baht per month. The monthly expenses were significantly higher in patients who evaluated themselves as having more severe acne (p = 0.008, Kruskal Wallis test) with the median costs of 169, 500, and 550 baht per month for mild, moderate, and severe acne, respectively. However, no significant association was found between the objective severity of acne and the acne treatment expense (p = 0.068, Kruskal Wallis test).

Discussion

The present study, agreeing with Yahya's study[5], found no difference in acne severity between male and female. Smithard et al[9], on the other hand, reported that boys were more likely to have more severe acne than girls. The discordance of the results may be explained by the difference of instruments used to grade the acne (Global Acne Grading System for Yahya's study and Leeds Acne Grading Technique for Smithard's study).

Increased and altered sebum production under androgen control have been reported to be a pivotal role in pathogenesis of the acne lesions through stimulating keratinocyte proliferation and other inflammatory responses by oxidized lipids[2]. Parallel to this, the present study showed that students with seborrhea significantly had more severe acne comparing with those having other skin types.

Although previous studies[18-24] reported a familial tendency of acne and demonstrated that the risk of suffering from moderate/severe acne is significantly associated with the number of affected family members, no association between acne severity and a family history of acne was found in the present study. The discordance between studies may be some parts due to the recall bias when being asked about family history of acne.

The present study, just as a questionnaire-based study in France and Turkey[6,7], demonstrated that although a large proportion of the respondents believed that acne can resolved spontaneously, most of them still seek medical treatment. The explanation could be even many think that acne will "go away on its own"[25], the appearance of acne on visible body parts in puberty, who are vulnerable both socially and psychologically, may prompt them to go for treatment. In addition, media broadcasting commercial information on acne treatment may influence the help seeking behavior of the patients. However, respondents with mild acne significantly believed that acne can spontaneously resolve and were more likely to seek no treatment for their acne.

The perception that diet is responsible for the development and exacerbation of acne is common and widely distributed in acne patients and medical personnel[6-9,26-28]. Chocolate, fatty foods, and high glycemic index foods are of considerable concern[7,26,29]. In contrast to the Western studies[7,26],

more than half of our Thai students reported that chocolate is not an aggravating factor for their acne. Even though no study on geographic variation of chocolate consumption in children was available, one published data revealed that the amount of candy consumed varied in different locations[30]. The variation in the amount of chocolate intake may be the explanation of the discordance between our result and the Western studies'.

The evidence for the role of a facial hygiene in acne pathogenesis and for face cleansing in its management is mostly of poor quality[31]. Obsessive face-washing has been proposed to exacerbate acne as being traumatizing and may be related to the perception that acne was caused by dirt[31]. Among the respondents who had acne, frequent face washing was the most reported method believed to alleviate acne. However, there was no significant association between acne severity ($p = 0.308$) or the perception that acne is aggravated by dirt ($p = 0.077$) and frequent face-washing behavior.

To date, the benefit of medicated face wash and acne has not been well evidenced[31]. However, 39.5% of the students in the present study still used medicated face wash to alleviate acne.

Even though androgen is well-documented to be involved in the pathogenesis and severity of acne[1], nearly half of the respondents with acne history believed that the hormone has no effect on their acne. This is similar to a study in Turkey that found that a large proportion of students did not accurately identify hormones in the etiology of acne. On the other hand, studies in Canada and Australia[8,28] demonstrated that the hormone was the most implicated in acne by patients and medical students. This possibly reflects that the level of knowledge and beliefs about acne was varied in different parts of the world. There are still some misconceptions about acne among Thai teenagers.

Although the participants were educated about acne severity grading before the distribution of the questionnaire, 42% of acne patients still overestimated the severity of their acne. In parallel to the present study, Uslu et al[6] and Yahya[5] reported that 54% of Turkish high school students and 57% of Nigerian students also overestimate their acne severity. In the present study, although no difference in acne severity was found between gender, girls significantly evaluated themselves as having more severe acne than boys. The result is consistent with the finding of Krowchuk et al[32] that also found that objective acne severity did not correlate with how patients feel about their appearances. The exaggeration of subjective acne grading in the present study may reflect individual's perception and concern of body image. In the present culture where children continuously consume media broadcasting idols with perfect bodies and complexions, the occurrence of acne can be devastating, especially in girls[33,34]. In addition, our study also showed the association of the clinical or subjective severity of acne and disability induced by it. Our data, surprisingly, revealed that even mild acne could cause significant distress in some individuals. Therefore, to deal with acne patients, not only should the physical impact be noted but also the emotional impact of acne should not be overlooked and management protocols should be tailored for each individual.

The limitations of the present study included the restriction of the sample to public schools in Bangkok and the nature of self-reported questionnaire in which some questions may not be filled out. However, strengths of the present study were the use of objective evaluation by dermatologist together with a self-reported questionnaire and a large sample size.

Conclusion

Although 98.5% of the students once experienced acne, some still had misconceptions about the disease and its management. Factors believing to aggravate acne include inadequate sleep, stress, sweat/exercise/hot weather, cosmetic products, pre-menstruation, oily food, and sun exposure. Nearly half of the respondents overestimated their acne severity; even mild acne can have an extremely large effect on their quality of life. Therefore, the public should be informed about its natural history, causes, treatment, and appropriate medical services available to ensure timely treatment.

Potential conflicts of interest

None.

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ความเชื่อและความเข้าใจเกี่ยวกับสิวในวัยรุ่นไทย

ป่วน สุทธิพินิจธรรม, นภดล นพคุณ, กนกวลัย กุลทนันทน์, สุขุม เจียมตน, ณัฏฐา รัชตะนาวิน, กอบกุล อุณหโชค, จิโรจ สินธวานนท์, รัศนี อัครพันธุ์, อารยา มานะผจญ

วัตถุประสงค์: *เพื่อประเมินความเชื่อเกี่ยวกับสิวและผลกระทบที่เกิดจากสิวต่อคุณภาพชีวิตของวัยรุ่นไทย*
วัสดุและวิธีการ: *นักเรียนจากโรงเรียนมัธยม 5 โรง ในกรุงเทพมหานครได้รับการแจกแบบสอบถามเกี่ยวกับสิว และได้รับการตรวจโดยแพทย์ผิวหนังเพื่อประเมินความรุนแรงของสิว*
ผลการศึกษา: *กลุ่มตัวอย่างประกอบด้วยนักเรียนหญิง 392 คน (65.7%) และนักเรียนชาย 205 คน (34.3%) มากกว่าครึ่งของกลุ่มตัวอย่างเชื่อว่าการพักผ่อนไม่เพียงพอ ความเครียด เหงื่อ/อากาศร้อน/การออกกำลังกาย เครื่องสำอาง การมีประจำเดือน อาหารมัน และแสงแดด ทำให้สิวที่เป็นอยู่แย่ลง การประเมินโดยใช้ Dermatology life quality index พบว่าคำถามเกี่ยวกับความอับอายจากสิวมีคะแนนเฉลี่ยสูงสุด ซึ่งสะท้อนถึงผลกระทบจากสิวมากที่สุด*
สรุป: *วัยรุ่นไทยยังคงมีความเชื่อที่ไม่ถูกต้องเกี่ยวกับสิว และแม้แต่สิวที่มีความรุนแรงน้อยก็สามารถส่งผลกระทบอย่างมากต่อคุณภาพชีวิตของวัยรุ่นที่เป็นสิวได้*
