

Prevalence and quality of life of secondary school students with acne vulgaris in Riyadh, Saudi Arabia

Khalid A. Bin Abdulrahman¹, Mohammed Abdullah Almudawi², Saud Turki Alhazani², Fahad Shaker Alshehri², Khaled Abdulsalam Almodeth², Ali Thabet Alanazi²

(1) Department of medical education, College of Medicine, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia.

(2) College of Medicine, Imam Mohammad Ibn Saud Islamic University, Riyadh, Saudi Arabia.

Correspondence:

Khalid Bin Abdulrahman, MD, ABFM, MHSc (MEd)

Professor of Family Medicine & Medical Education

College of Medicine, Imam Mohammad Ibn Saud Islamic University (IMSIU)

P.O. Box: 7544 – Othman Bin Affan Rd, Al-Nada, Riyadh 13317 – 4233, Saudi Arabia

Mobile: +966 505445384

Email: kab@imamu.edu.sa

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Abstract

Background: Acne vulgaris is one of the most common dermal medical conditions that affect adolescents and young adults. The psychosocial impacts of acne appear in terms of social, vocational, and academic performance. This study aimed to determine the self-reported prevalence of acne and its repercussions on the quality of life of high and secondary school pupils in Riyadh region of Saudi Arabia.

Methodology: This cross-sectional study was conducted among secondary and high school students in Riyadh, Saudi Arabia. The study was conducted among 901 students from different schools in the Riyadh region who were randomly included using a questionnaire distributed online. The Cardiff Acne Disability Index was used to assess the quality of life of acne students. After collecting the data, MS Excel was used for data entry, cleaning, and coding. SPSS version 23 (SPSS Inc, Chicago, IL, USA) was used for data analysis.

Results: The prevalence of acne among students was 57.4 %. According to the Cardiff Acne Disability Index, 19.4 % of patients with acne had a high disability, 40.1 % had a moderate disability, and 40.5 % had a low disability. The index score in this study ranged from 0 (16 patients showed a score of zero with a percentage of 3.1%) to 15 (16 patients showed a score of 15 with a percentage of 3.1%) with a mean score of 6.15 (standard deviation=3.79).

Conclusion: This study confirmed the results of previous studies that acne causes quality of life disabilities among school-age students. Our study showed a high prevalence of acne among students with a more significant negative impact than previous studies.

Keywords: Acne vulgaris, teens, quality of life, Saudi Arabia

Background

Acne vulgaris is one of the most common dermal medical conditions that affect adolescents and young adults [1]. The causes of acne vulgaris are related to many factors that influence its etiology, associated with genetic and environmental factors [2]. According to community base studies conducted during the last decade, the prevalence of acne ranged between 49.8 % and 93.2 % of school students [3]. Furthermore, approximately 14 % of dermatologist consultations were related to acne problems [4]. Clinically, acne is known as a wide range of skin lesions, including papules, comedones, pustules, nodules, and scars [5]. Acne is a chronic multifactorial inflammatory skin disease of the pilosebaceous unit [6].

Acne vulgaris is a benign condition that can resolve spontaneously without needing treatment. However, it has a significant psychological impact on affected individuals, negatively affecting their quality of life (QoL) [7]. Many previous studies conducted to assess the psychosocial impact of acne showed great dissatisfaction with their appearance, a high level of embarrassment, a high level of self-consciousness, and lack of self-confidence among patients with acne [8,9]. High morbidity of psychological events was reported among patients with acne; minor cases can lead to mortality due to suicide [10,11]. The psychosocial impacts of acne appear in terms of social, vocational, and academic performance. Patients with acne may have a poor self-body image, high anxiety, depression, anger, frustration, low self-esteem, confidence, social isolation, and restriction of activities [12].

Acne patients also reported social dysfunction, including concerns regarding social interaction with the opposite gender, their appearance, interactions with strangers, and fair employment opportunities [13,14]. The levels of social, psychological, and emotional impairment that have been reported among acne patients may be similar to those reported in some chronic diseases, including asthma, epilepsy, diabetes, and arthritis, and do not necessarily have a positive correlation with dermatological damage and real cosmetic problems [15]. Therefore, it is crucial to evaluate the effect of acne on quality of life.

Furthermore, adolescents were more likely to be affected by the psychosocial effects of acne than older patients [16]. Many young patients with acne may suffer for years before seeking effective therapy, and most may not seek professional advice for managing acne [17]. However, effective acne treatment has been reported to improve QoL [18].

Few studies have been conducted to assess the quality of life of young patients with acne in Saudi Arabia. These studies did not show significant differences in beliefs, perceptions, and psychological impact of acne in patients from a developing society compared to more developed countries [9,19]. This study aimed to determine the self-reported prevalence of acne and its repercussions on the quality of life in high and secondary school students in Riyadh region, Saudi Arabia.

Methodology

Study design

This cross-sectional study was conducted among secondary and high school students in the Al Riyadh region of Saudi Arabia.

Study Population and Samples

The study was carried out among 901 students from different schools in the Al Riyadh region who were randomly included using a questionnaire distributed online. Inclusion criteria included high- or secondary-school students, aged between 12-19 years, of both genders, residents of Riyadh region, and who agreed to participate in the study. Those who are from outside the Al Riyadh region were excluded. Furthermore, participants who reported having no acne were excluded from the continuous questionnaire; however, they entered the study to assess the prevalence of acne.

Study questionnaire

In this study, we used a questionnaire consisting of two parts. Part one focused on the demographic factors of the participants, including age (categorized as 12-13, 14-15, 16-17, and 18-19), gender (male, female), educational level (from 7th grade to 12th grade), nationality (Saudi, Non-Saudi), family history of acne (Yes, No), duration of acne (<1 year, ≥1 year) and if they take medication for acne (yes, no). Part two consisted of The Cardiff Acne Disability Index, which assessed the quality of life of students with acne. It is a simple 5-item questionnaire designed by Motley and Finlay in 1992. According to the design of the tool, the students were divided into three categories, students with low disability (0-4), moderate disability (5-9), and students with high disability (10-15) due to acne. Scores range from 0 to 15, and the higher the score, the more impaired the quality of life of the adolescent. The tool is available in different languages with full linguistic validation, and the Arabic version was used in this study [20].

The study was carried out after the agreement from the ethics committee of Imam Mohammad Ibn Saud Islamic University. All students were informed about the purpose of the study, and no personal data was collected. Data were stored on a private computer and used only for this study.

Statistical analysis:

After collecting the data, MS Excel was used for data entry, cleaning, and coding. SPSS version 23 (SPSS Inc, Chicago, IL, USA) was used for data analysis. Frequency and percent were used for categorical variables, while mean and standard deviation were used for describing continuous variables. The Chi Square test was used to determine the relationship between demographic factors and Cardiff Acne Disability Index. All statements are considered significant if the p-value equals or exceeds 0.05.

Results

In this study, we collected data from 901 students from the Al Riyadh region, Saudi Arabia. The prevalence of acne among students was 57.4 % of students (N=517) (Figure 1).

Among acne patients, 61.5 % were between 18-19 years of age, while 28.6 % were between 16-17 years of age. Furthermore, 79.5 % of the participants were women, while 20.5 % were males. Considering the level of education, the majority of participants were in 12th grade (47.7), and 93.2 % were Saudi Arabian. Furthermore, 42.6 % of participants with acne reported having a family history, and 60.3 % reported having acne for more than a year. Among the participants, 40.2 % reported having acne medications at the study time (Table 1).

According to the Cardiff Acne Disability Index, 19.4 % of acne patients had high disability levels, while 40.1 % had a moderate disability and 40.5 % had a low disability (Figure 2). The index score ranged in this study from 0 (16 patients showed a score of zero with a percentage of 3.1%) to 15 (16 patients showed a score of 15 with a percentage of 3.1%) with a mean score of 6.15 (standard deviation=3.79).

We could not find a significant correlation between any of the demographic factors and the disability of patients due to acne (Table 2). However, it was found that younger patients showed a higher disability caused by acne than older ones, where 38.5 % of those aged 12-13 years had a high disability compared with 17.6 % of those with 18-19 years. Furthermore, we found that women showed slightly higher disability scores than men, where 43.4 % of males showed low disability compared with 39.8 % of females; however, the difference is insignificant ($P=0.205$). Similarly to age, progress during the education stages decreases the disability caused by acne. Furthermore, non-Saudi patients showed slightly higher levels of disabilities, where 31.4 % of non-Saudi patients showed low disability compared to 41.2 % of Saudi Arabian. Having a family history of acne, duration of acne, or administration of acne medications did not have a significant effect on the disability index of patients.

Figure 1: The prevalence of acne among school age students

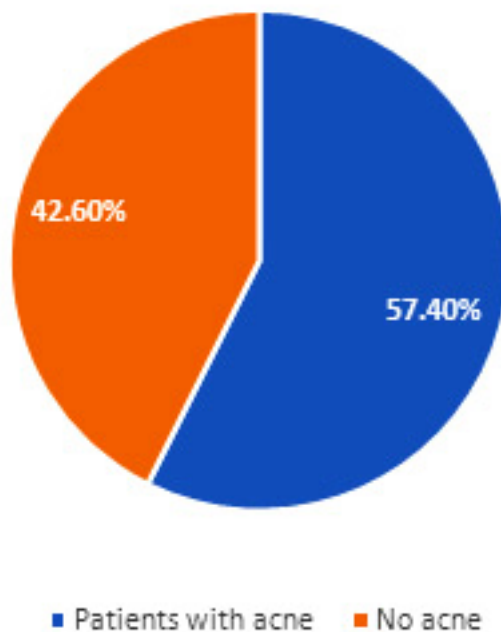


Table 1: Demographic factors of patients with acne (N=517)

| | | Count | Column N % |
|---|------------|-------|------------|
| Age | 12-13 | 26 | 5.0% |
| | 14-15 | 25 | 4.8% |
| | 16-17 | 148 | 28.6% |
| | 18-19 | 318 | 61.5% |
| Gender | Male | 106 | 20.5% |
| | Female | 411 | 79.5% |
| Educational level | 7th grade | 21 | 4.1% |
| | 8th grade | 8 | 1.5% |
| | 9th grade | 16 | 3.1% |
| | 10th grade | 26 | 5.0% |
| | 11th grade | 34 | 6.6% |
| | 12th grade | 412 | 79.7% |
| Nationality | Saudi | 482 | 93.2% |
| | Non-Saudi | 35 | 6.8% |
| Family history of acne | Yes | 220 | 42.6% |
| | No | 297 | 57.4% |
| Duration of acne | ≤1 year | 205 | 39.7% |
| | >1 year | 312 | 60.3% |
| The current administration of acne medication | Yes | 208 | 40.2% |
| | No | 309 | 59.8% |

Figure 2: The disability because of acne according to The Cardiff Acne Disability Index

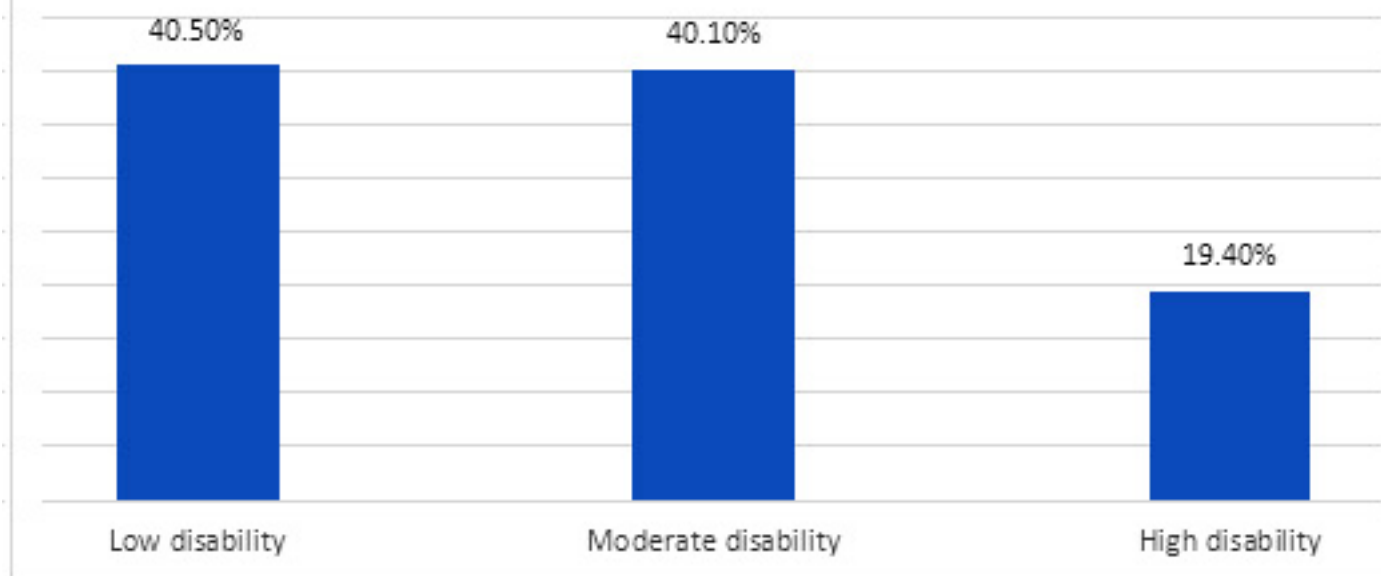


Table 2: The relationship between QoL among acne patients with demographic factors

| | | QoL | | | | | | |
|---|------------|----------------|-------|---------------------|-------|-----------------|-------|-------|
| | | Low disability | | Moderate disability | | High disability | | |
| | | N | N % | N | N % | N | N % | |
| Age | 12-13 | 7 | 26.9% | 9 | 34.6% | 10 | 38.5% | 0.118 |
| | 14-15 | 8 | 33.3% | 13 | 54.2% | 3 | 12.5% | |
| | 16-17 | 64 | 43.2% | 53 | 35.8% | 31 | 20.9% | |
| | 18-19 | 130 | 40.9% | 132 | 41.5% | 56 | 17.6% | |
| Gender | Male | 46 | 43.4% | 35 | 33.0% | 25 | 23.6% | 0.205 |
| | Female | 163 | 39.8% | 172 | 42.0% | 75 | 18.3% | |
| Educational level | 7th grade | 7 | 33.3% | 7 | 33.3% | 7 | 33.3% | 0.427 |
| | 8th grade | 3 | 37.5% | 3 | 37.5% | 2 | 25.0% | |
| | 9th grade | 6 | 37.5% | 8 | 50.0% | 2 | 12.5% | |
| | 10th grade | 8 | 32.0% | 13 | 52.0% | 4 | 16.0% | |
| | 11th grade | 14 | 41.2% | 9 | 26.5% | 11 | 32.4% | |
| | 12th grade | 171 | 41.5% | 167 | 40.5% | 74 | 18.0% | |
| Nationality | Saudi | 198 | 41.2% | 191 | 39.7% | 92 | 19.1% | 0.524 |
| | Non-Saudi | 11 | 31.4% | 16 | 45.7% | 8 | 22.9% | |
| Family history of acne | Yes | 88 | 40.0% | 87 | 39.5% | 45 | 20.5% | 0.524 |
| | No | 121 | 40.9% | 120 | 40.5% | 55 | 18.6% | |
| Duration of acne | ≤1 year | 82 | 40.0% | 80 | 39.0% | 43 | 21.0% | 0.752 |
| | >1 year | 127 | 40.8% | 127 | 40.8% | 57 | 18.3% | |
| The current administration of acne medication | Yes | 89 | 42.8% | 82 | 39.4% | 37 | 17.8% | 0.623 |
| | No | 120 | 39.0% | 125 | 40.6% | 63 | 20.5% | |

Discussion

Acne is considered one of the most prevalent chronic skin disorders, primarily caused by inflammation that causes increasing sebum production in the pilosebaceous unit [2–4]. In this study, our objective was to assess the prevalence of acne, as well as the effects of acne on quality of life in the age group of 12–19 years. According to the students' self-reporting, the prevalence of acne in our study is 57.4 %, higher than reported in a previous study conducted among teenage females in Makkah, with a prevalence of 45.7 % [21]. Furthermore, a previous study conducted among students of both genders in Australia showed that the overall prevalence of acne was 36.1 % [22]. Moreover, another study conducted in the northern region of Saudi Arabia showed that the prevalence of acne among students was 53.5 % [23].

Furthermore, in a previous study conducted in Turkey, the authors found that the prevalence of acne among high school students was 23.1 % [24]. Again, our prevalence of acne was lower than the previous study conducted in the Riyadh region, where acne vulgaris among adolescents was 68.2 %, and the mean age of onset was 15.5 years [25]. In addition, other reports showed a higher prevalence of acne among school-aged students, between 70.0 % and 90 % [12,26,27]. On the

other hand, our results follow a previous study conducted in Greece, with a prevalence of 59.2 % [28].

In our study, we found that women represented a higher percentage of acne patients, with 79.5% of female patients. This is different to the results of other studies, which showed that the prevalence of acne is more frequent among boys than girls [17,29,30]. The difference in the results considering the higher female percentage of acne patients could be due to our study depending on a self-reported questionnaire distributed online. Thus, the distribution of women/men could not be associated with the actual distribution among patients. Furthermore, in our study, almost two-thirds of students with acne (60.3%) of both genders reported more than one year of acne duration. A study in Japan showed that 23.4 % of adolescents with acne reported acne for 1–2 years, and 29.5 % reported more than two years [31].

Skin disease, including acne vulgaris, is associated with many consequences that may significantly affect patients' quality of life. The effect of acne on quality of life has been investigated for the past 30 years. In this study, we relied on the Arabic version of the CADi questionnaire. In our study, the Arabic version of the tool showed Cronbach's alpha of 0.82, which is similar to Cronbach's alpha of other tool translations [29]. This finding indicates that the Arabic version of the CADi questionnaire

is reliable for measuring acne-causing disabilities among the Arabic-speaking population. Furthermore, the questionnaire consists of 5 questions that are easy to administer, could be used among young participants aged 12-19 years, and could be used as a practical tool in routine clinical practice. In our study, the mean Cardiff acne disability index was 6.15 (3.79), which is significantly higher than other previous studies, including the study by Peric J et al., who reported a mean score of 2.9 [29], a previous study conducted in 2012 in Serbia which showed a CADI score of 3.6 [32] and another study conducted in Scotland which reported a score of 1.9 [26].

Another study by Alfalogy et al. in Makkah, Saudi Arabia, showed that the mean CADI was 4 ± 2.3 [21]. A survey by Bajawia S et al. among adolescent students in the Jazan region, Saudi Arabia, showed mean and median scores are 5.4 and 5.0, respectively, for women and males [3]. Furthermore, in our study, 19.4 % of patients with acne had a high disability, 40.1 % had a moderate disability, and 40.5 % had a low disability. In a previous study, the authors reported that 56.7 % of the participants had a mild disability due to acne, 30 % had a moderate disability, and 13.3 % had a severe disability [21]. Moreover, another study showed that 17.2 % of participants had high disability scores [3]. This indicates that acne had a significant effect on their well-being. In another study conducted in Malaysia, the authors reported that 1.8 % of the participants scored 13 on the CADI tool, which meant severe impairment [33].

Furthermore, other studies showed that 20 % of students with acne had moderate to severe effects of acne in terms of affecting their quality of life [26,32]. These results indicated that teenagers are mildly affected by acne in their lives. However, our results showed a higher prevalence of students who reported high disabilities.

Limitations

This study has some limitations, including the requirement of using a self-reported questionnaire, which could lead to personal bias. Some students may not be able to determine their conditions, which can lead to an increase in the prevalence of acne in this study. Furthermore, most participants were older, which may be due to the use of online means, which are easier to use by older adolescents than younger ones. Additionally, the study relies on some information from previous months, which may lead to some recall bias.

Conclusion

In conclusion, this study confirmed the results of previous studies that acne causes quality of life disabilities among school-age students. Our study showed a high prevalence of acne among students with a more significant negative impact than previous studies.

Authors' Contributions:

All authors participated in the concept and design, analysis and interpretation of the data, drafting and revising of the

article, and have seen and approved the final version of the manuscript.

Availability of data and Materials:

All data supporting the study findings are contained in this manuscript.

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Conflict of interests:

The authors declare that they have no conflict of interest.

Ethical considerations

The institutional review board approved the study at Imam Mohammad Ibn Saud Islamic University (project number 244-2022; approval date, 08 May 2022). All writing is done in accordance with the ethical principles of the Declaration of Helsinki. A brief description of the study was included with the survey link, with a full explanation on the front page. Participants were told that consent was given by filling out the survey. Throughout the study, the consent of all participants and the data were collected in complete confidence.

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