

Acne Vulgaris in Jeddah Medical Students: Prevalence, Severity, Self-Report, and Treatment Practices

Shadi Zari^{1,2}, Asraa Turkistani³

¹Department of Dermatology, Faculty of Medicine, University of Jeddah, Jeddah, Saudi Arabia

²Division of Dermatology, Faculty of Medicine, McGill University, Montreal, Canada

³Faculty of Medicine, King Abdulaziz University, Jeddah, Saudi Arabia

Email: shadizarimd@gmail.com

How to cite this paper: Zari, S. and Turkistani, A. (2017) Acne Vulgaris in Jeddah Medical Students: Prevalence, Severity, Self-Report, and Treatment Practices. *Journal of Cosmetics, Dermatological Sciences and Applications*, 7, 67-76.

<https://doi.org/10.4236/jcdsa.2017.71007>

Received: January 23, 2017

Accepted: March 10, 2017

Published: March 13, 2017

Copyright © 2017 by authors and Scientific Research Publishing Inc.

This work is licensed under the Creative Commons Attribution International License (CC BY 4.0).

<http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Acne is a common skin disorder of teenagers and continues into adulthood. Research has been limited regarding acne prevalence, perception and health care utilization in Saudi Arabia. The objective of this study was to assess acne prevalence in final year female medical students in Jeddah, Saudi Arabia using the global acne grading system (GAGS) compared with student's self-report of their acne. This is a cross-sectional study conducted among 151 students during 2016, in which students were interviewed subjectively and examined objectively by a trained physician. This study showed that acne was reported subjectively by 83.4% of female students compared to 98% of students assessed objectively by the global acne grading system. 14.6% of students claimed having no acne while it was objectively present, which was statistically significant ($X^2 = 15.4$, $P < 0.001$). 41% visited a dermatologist and 28.5% waited 1 year until seeking a dermatologist. However, 35.8% of students got an over-the-counter drug for their acne. Surprisingly, treatment duration expectation was <1 week in 9.9% compared to >2 months in 39.1% of students. Acne was present in 41.1% of the students parents compared to 83.4% in their siblings. A total of 41.7% of student had trunk acne. 60.9% of students had scarring and 72.8% of them had pigmentation. Moderate to severe acne students had higher siblings acne history of 95.2% ($X^2 = 5.85$, $P < 0.05$), higher scarring of 73.8% ($X^2 = 4.05$, $P < 0.05$), and higher pigmentation of 85.7% ($X^2 = 4.87$, $P < 0.05$) which was statistically significant. Our study confirms that acne is very common in female medical students in Jeddah, Saudi Arabia with a prevalence rate of 98%. Knowledge regarding acne treatment was inadequate demonstrating the need for educational and awareness programs about early treatment that will prevent suffering from acne scarring or pigmentation.

Keywords

Acne, Acne Vulgaris, Acne Prevalence, Acne Treatment, Acne Self-Report

1. Introduction

Acne is one of the most common inflammatory chronic skin diseases that affect teenagers and continues into adulthood. Women are most commonly affected with a mean age for presentation of 24 years [1]. In the US, the prevalence rate of acne is 85% in those aged 12 to 24 years [2]. Only a small percentage of acne patients are treated by a dermatologist or prescribed medications [3]. While there is no associated mortality with acne, suffering mainly is due to permanent scarring, post inflammatory hyperpigmentation and poor self-image [4]. Various studies on acne prevalence showed that patients have a greater degree of acne severity if there is first-degree relative's acne history [5] [6]. There are many studies on twins and families that proved that a first-degree relative acne history has a strong influence on age of onset, severity and treatment [7]. There is abundance in the availability of over the counter (OTC) skin care products in pharmacies and centers promoted to the public. Without seeing a dermatologist, patients will choose OTC treatments that may not control their acne [8]. Inflammatory acne lesions can result in permanent scars, the severity of which may be affected by delay in treatment and by the degree of acne severity [9] [10].

Also, there is relatively few information in the medical literature on the prevalence, clinical severity and self-report of acne among medical students in Saudi Arabia. This study reports the prevalence and clinical severity of acne in comparison with the self-report of acne in final year female medical students in King Abdulaziz University Hospital (KAUH) in Jeddah, Saudi Arabia. The secondary outcome measures of the percentage of students who visited a dermatologist, how long they waited before seeking treatment, percentage of students who got an OTC drug, treatment duration expectation, family history of acne in parents and siblings, most common areas affected by acne, and the percentage of scarring and pigmentation resulting from their acne were recorded in a questionnaire.

2. Methods

A questionnaire-based cross-sectional study was conducted among 151 final year female medical students attending the medical faculty at King Abdulaziz University during 2016 followed by an objective evaluation of their acne (see Appendix). The study was approved by the Ethics Committee at KAUH and the Research Committee at the University of Jeddah Faculty of Medicine.

Final year female medical students were interviewed using a confidential, anonymous interviewing questionnaire to collect personal data, knowledge, percep-

tion and practice regarding their acne. After students oral consent, they were given a questionnaire to complete. All the students completed the questionnaire that was distributed to them. Upon completion of the questionnaire by students, an intern who was trained earlier by the consultant dermatologist examined the students for the presence of acne lesions. The trained intern then graded the acne severity and was blinded to the study outcome.

Clinical classification of acne severity was done using the Global Acne Grading System (GAGS). Each type of lesion was given a value depending on severity: no lesions = 0, comedones = 1, papules = 2, pustules = 3 and nodules = 4. The score for each area (Local score) is calculated using the formula: Local score = Factor x Grade (0 - 4). The global score is the sum of local scores, and acne severity was graded using the global score. A score of 1 - 18 is considered mild; 19 - 30, moderate; 31 - 38, severe; and >39, very severe [11].

3. Statistical Methods

According to the GAGS, students were classified into four groups: None, mild, moderate, and severe acne. Individuals with moderate and severe acne were included in one group for some evaluations. The primary outcomes of the study were the prevalence and clinical severity of acne in comparison with the self-report of acne in final year female medical students in Jeddah, Saudi Arabia.

The association between clinical acne grade as the dependent variable and other factors as explanatory variables were analyzed by chi-squared test. Analysis of data was done using SPSS Version 13 (SPSS, Inc., Chicago, IL, USA). Data were presented by OR and 95% CI. P values of <0.05 were considered statistically significant.

4. Results

4.1. Acne Severity

Using the GAGS to examine the students, acne was present in 148/151 (98%) of female medical students involved in the study. 106/151 (70.2%) had mild acne, and 36/151 (23.8%) moderate, and 6/151 (4%) had severe acne present (Table 1).

4.2. Acne Self-Rating by Students

According to the Acne self-rating question in the questionnaire, 126 out of 151 (83.4%) medical students have acne. As 91/151 (60.3%), 30/151 (19.9%) and 5/151 (3.3%) rated their acne as mild, moderate and severe respectively (Table 2).

Comparing between patient self-assessment and objectively assessing patient acne by the global acne grading system, it was found in our study that 14.6% (22 students) claimed to have no acne while they were having acne objectively which was statistically significant ($X^2 = 15.426$, $P < 0.001$), OR = 6.727 (95% CI 4.575 - 9.892) (Table 3).

Table 1. Grade of acne severity.

	Frequency	Percent	Cumulative Percent
None	3	2.0	2.0
Mild	106	70.2	72.2
Moderate	36	23.8	96.0
Severe	6	4.0	100.0
Total	151	100.0	

Table 2. How would you rate your current acne?

	Frequency	Percent	Cumulative Percent
None	25	16.6	16.6
Mild	91	60.3	76.8
Moderate	30	19.9	96.7
Severe	5	3.3	100.0
Total	151	100.0	

Table 3. Objective assessment vs. self assessment cross tabulation.

		Self assessment		Total	
		None	Acne		
Objective assessment	None	Count	3	0	3
		% within objective assessment	100.0%	0.0%	100.0%
	Acne	Count	22	126	148
		% within objective Assessment	14.9%	85.1%	100.0%
Total		Count	25	126	151
		% within objective Assessment	16.6%	83.4%	100.0%

4.3. Acne Location

Our study conduct showed a total of 63 (41.7%) students with truncal acne (chest and back). 54 students have more acne on their back compared to 33 students who had more acne on their chest area (**Table 4**), as some students had acne both on their chest and back areas. 85 out of 151 (56.3%) have acne present in more than one area on the face. For acne localized in one area only, it was most commonly present on the forehead 21/151 (13.9%) (**Table 5**).

4.4. Acne Treatment Practices

Only 62 out of 151 (41%) students visited a dermatologist regarding their acne (**Table 4**). 43/151 (28.5%) of students waited 1 year before seeing a dermatolo-

gist (**Table 6**). 54 out of 151 (35.8%) students got an acne treatment without a prescription (**Table 4**).

4.5. Acne Treatment Duration Expectation

The treatment duration expectation was less than 1 week in 15/151 (9.9%) of students compared to more than 2 months in 59/151 (39.1%) (**Table 7**).

4.6. Acne Family History

Acne was present in 62/151 (41.1%) of the students parents compared to 126/151 (83.4%) in their siblings (**Table 4**). For student with moderate to severe acne, the higher percentage of siblings history of 95.2% (40/42) was statistically significant ($X^2 = 5.859$, $P = 0.016$), $OR = 0.187$ (95% CI 0.042 - 0.832) (**Table 8**).

Table 4. Response of students to questionnaire.

Questionnaire Number (QN)	Variable	Yes	No	Total	P value X ² test
2	Presence of acne on the back	54	97	151	<0.001
3	Presence of acne on the chest	33	118	151	<0.001
5	Visiting a dermatologist regarding acne	62	89	151	0.028
6	Getting acne treatment without a prescription	54	97	151	<0.001
9	Acne presence in parents	62	89	151	0.028
10	Acne presence in siblings	126	25	151	<0.001
11	Presence of scars	92	59	151	0.007
12	Presence of post inflammatory hyperpigmentation	110	41	151	<0.001

Table 5. Response of students to acne location on the face.

QN	Variable	None	Forehead	Right cheek	Left cheek	Nose	Chin	More than one side	Total	P value X ² test
4	Acne location on the face	14	21	5	10	3	13	85	151	<0.001

Table 6. Response of students to duration until seeking a dermatologist.

QN	Variable	None	Less than 3 months	3 to 6 months	6 to 12 months	More than one year	Total	P value X ² test
7	Waiting before seeing a doctor	47	15	28	18	43	151	<0.001

Table 7. Response of students regarding treatment duration expectation.

QN	Variable	None	Less than 1 week	1 week to 1 month	1 - 2 months	More than 2 months	Total	P value X ² test
8	Acne treatment duration expectation	24	15	27	26	59	151	<0.001

4.7. Presence of Scarring and Post-Inflammatory Hyperpigmentation

Scars were present in 92/151 (60.9%) of students (**Table 4**). Post inflammatory hyperpigmentation (PIH) was present in 110/151 (72.8%) of students (**Table 4**). In moderate to severe acne students, 73.8% (31/42) had scarring and 85.7% (36/42) had PIH which was statistically significant ($X^2 = 4.056$, $P = 0.044$), OR = 0.451 (95% CI 0.206 - 0.989) (**Table 9**) and ($X^2 = 4.87$, $P = 0.027$), OR = 0.352 (95% CI 0.136 - 0.914) (**Table 10**) respectively.

Table 8. Modified acne grading vs. brothers and sisters acne.

	Risk Estimate		
	Value	95% Confidence Interval	
		Upper	Lower
Odds ratio for modified grading (none & mild vs. moderate & severe)	0.187	0.042	0.832
For cohort brothers and sisters acne (none & mild)	0.828	0.736	0.932
For cohort brothers and sisters acne (moderate & severe)	4.431	1.092	17.976
Number of valid cases	151		

Table 9. Modified acne grading vs. scars.

	Risk Estimate		
	Value	95% Confidence Interval	
		Upper	Lower
Odds ratio for modified grading (none & mild vs. moderate & severe)	0.451	0.206	0.989
For cohort scars (none & mild)	0.758	0.593	0.969
For cohort scars (moderate & severe)	1.681	0.970	2.914
Number of valid cases	151		

Table 10. Modified acne grading vs. pigmentation.

	Risk Estimate		
	Value	95% Confidence Interval	
		Upper	Lower
Odds ratio for modified grading (none & mild vs. moderate & severe)	0.352	0.136	0.914
For cohort pigmentation (none & mild)	0.792	0.662	0.947
For cohort pigmentation (moderate & severe)	2.248	1.021	4.950
Number of valid cases	151		

5. Discussion

Acne prevalence was reported to be 85% in the population age of 12 to 24 years [2] [12] [13]. On the acne self-assessment questionnaire, acne was reported by 83.4% of students compared to 98% by the physician's examination. Menon showed acne prevalence determined by the trained observer to be 0.55 (95% CI 0.49 - 0.61), while Self-reported acne prevalence was 0.43 (95% CI 0.37 - 0.49). Not many studies in the literature have analyzed the validity of self-reported acne in comparison with the trained observer diagnosis of acne. The few studies that looked at this problem concluded that there is lack of agreement between self-report and the trained observer acne evaluation, which is similar to our study [14].

Our study showed that 41.7% of students had truncal acne (chest and back). This goes with a previous study that showed that 41% of women have truncal acne [15]. Our study also showed that acne is present more on the back than on the chest area. This shows the importance of always examining the back of an acne patient by the treating physician, to prevent unnecessary scarring from a delay in treating back lesions.

Moderate and severe acne students in our study had a higher percentage in seeking a dermatologist regarding their acne. 28.5% of students in our study waited more than 1 year to see a dermatologist. Although there is an abundant availability of acne treatments, there is underutilization of them. According to one study, treatment of acne is used in only 18% of adolescents suffering from acne [16]. Our study showed that 35.8% of students got an acne treatment without a prescription; which are most probably over the counter drugs. This is comparable to the general estimation that 30% of affected acne patients are likely to use OTC treatments [14]. Surprisingly the treatment duration expectation was less than one week in 9.9% of students and more than 2 months in 39.1% of students only. Based on these numbers, there should be more education regarding the time required to see a full response to medications, which is usually 2 to 3 months [17].

Our study is compatible with another study that showed undergraduate students to have acne by 78% heritability in first-degree relative's [18]. Previous studies showed that moderate to severe acne were strongly associated with first-degree relative's acne history [5] [19]. Students in our study with moderate to severe acne had a higher percentage of sibling's history of 95.2%.

Our study showed that scarring was present in 60.9% of our student's population, in which we postulate that not seeking a dermatologist for treatment is the main reason. A large percentage of students had post inflammatory hyperpigmentation (72.8%); which is likely due to the Middle Eastern ethnic group; who are mostly Fitzpatrick skin types 3 and 4. Also, using over the counter treatments such as exfoliating products or strong toners can contribute to PIH by causing skin irritation [20]. This is why designing a treatment regimen individualized for every patient will help reducing PIH and increasing the patient satisfaction. Our students with moderate to severe acne revealed that 85.7% of them

had PIH. A study done by the Asian acne board showed that 58.2% of patients in their study had PIH [21]. The higher percentage of PIH in our study may be explained again because of darker Fitzpatrick skin types in Arabian skin compared to Asian skin.

One of the limitations of our study is that all the students are females with no male participants. We believe that the results from our female study sample are representative of females in Saudi Arabia of a similar age group. The high acne prevalence in our study compared to other studies may be due to the fact that it was done in a classroom setting and was not clinic based, which allowed us to include many students with mild acne who would not usually seek medical advice. Acne is usually considered a disorder of adolescence. However, there are not many data on the prevalence of acne in the adult population [22]. Although acne is best assessed by a dermatological examination, standardized diagnostic criteria are not available [23].

6. Conclusion

Our study confirms that acne is very common in female medical students in Jeddah, Saudi Arabia with a prevalence rate of 98%. This is the first study in Saudi Arabia to compare acne prevalence and severity using an objective assessment by the GAGS compared to the students self-report of acne. Our study showed a discrepancy between the self-assessment of acne and objective assessment by the physician. Our study also showed that there is a delay in seeking medical advice and that students with higher acne grade were more likely to visit a dermatologist. The importance of having patient's knowledge and treatment practices regarding their acne is fundamental in creating awareness about the treatments effectiveness. This will also lead to the prevention of unnecessary suffering from acne scarring or pigmentation, which was highly prevalent in patients with moderate to severe acne in our study.

Acknowledgements

Thanks to Prof. Talal Zari for performing the statistical analysis for this study.

References

- [1] Preneau, S. and Dreno, B. (2012) Female Acne—A Different Subtype of Teenager Acne? *Journal of the European Academy of Dermatology and Venereology*, **26**, 277-282. <https://doi.org/10.1111/j.1468-3083.2011.04214.x>
- [2] Bhate, K. and Williams, H.C. (2013) Epidemiology of Acne Vulgaris. *British Journal of Dermatology*, **168**, 474-485. <https://doi.org/10.1111/bjd.12149>
- [3] Bowe, W.P. and Shalita, A.R. (2008) Effective Over-the-Counter Acne Treatments. *Seminars in Cutaneous Medicine and Surgery*, **3**, 170-176. <https://doi.org/10.1016/j.sder.2008.07.004>
- [4] Zaenglein, A.L., *et al.* (2016) Guidelines of Care for the Management of Acne Vulgaris. *Journal of the American Academy of Dermatology*, **74**, 945-973. <https://doi.org/10.1016/j.jaad.2015.12.037>
- [5] Di Landro, A., *et al.* (2012) Family History, Body Mass Index, Selected Dietary Fac-

- tors, Menstrual History, and Risk of Moderate to Severe Acne in Adolescents and Young Adults. *Journal of the American Academy of Dermatology*, **67**, 1129-1135.
- [6] Tan, H.H., Tan, A.W., Barkham, T., Yan, X.Y. and Zhu, M. (2007) Community—Based Study of Acne Vulgaris in Adolescents in Singapore. *British Journal of Dermatology*, **157**, 547-551. <https://doi.org/10.1111/j.1365-2133.2007.08087.x>
- [7] Karciauskiene, J., Valiukeviciene, S., Stang, A. and Gollnick, H. (2014) The Prevalence and Risk Factors of Adolescent Acne among Schoolchildren in Lithuania: A Cross-Sectional Study. *Journal of the European Academy of Dermatology and Venereology*, **28**, 733-740. <https://doi.org/10.1111/jdv.12160>
- [8] Del Rosso, J.Q., Gold, M., Rueda, M.J., Brandt, S. and Winkelman, W.J. (2015) Efficacy, Safety, and Subject Satisfaction of a Specified Skin Care Regimen to Cleanse, Medicate, Moisturize, and Protect the Skin of Patients Under Treatment for Acne Vulgaris. *The Journal of Clinical and Aesthetic Dermatology*, **8**, 22.
- [9] Fabbrocini, G., *et al.* (2010) Acne Scars: Pathogenesis, Classification and Treatment. *Dermatology Research and Practice*, **2010**, Article ID: 893080.
- [10] Shamban, A.T. and Narurkar, V.A. (2009) Multimodal Treatment of Acne, Acne Scars and Pigmentation. *Dermatologic Clinics*, **27**, 459-471. <https://doi.org/10.1016/j.det.2009.08.010>
- [11] Doshi, A., Zaheer, A. and Stiller, M.J. (1997) A Comparison of Current Acne Grading Systems and Proposal of a Novel System. *International Journal of Dermatology*, **36**, 416-418. <https://doi.org/10.1046/j.1365-4362.1997.00099.x>
- [12] Burton, J.L., Cunliffe, W.J., Stafford, I. and Shuster, S. (1971) The Prevalence of Acne Vulgaris in Adolescence. *British Journal of Dermatology*, **85**, 119-126. <https://doi.org/10.1111/j.1365-2133.1971.tb07195.x>
- [13] Tan, J.K. and Bhate, K. (2015) A Global Perspective on the Epidemiology of Acne. *British Journal of Dermatology*, **172**, 3-12. <https://doi.org/10.1111/bjd.13462>
- [14] Menon, C., Gipson, K., Bowe, W.P., Hoffstad, O.J. and Margolis, D.J. (2008) Validity of Subject Self-Report for Acne. *Dermatology*, **217**, 164-168. <https://doi.org/10.1159/000136655>
- [15] Dumont-Wallon, G. and Dreno, B. (2008) Specificity of Women Older than 25 Years of Age. *Presse Medicale*, **37**, 585-591. <https://doi.org/10.1016/j.lpm.2007.07.014>
- [16] Cheng, C.E., Irwin, B., Mauriello, D., Liang, L., Pappert, A. and Kimball, A.B. (2010) Self-Reported Acne Severity, Treatment, and Belief Patterns across Multiple Racial and Ethnic Groups in Adolescent Students. *Pediatric Dermatology*, **27**, 446-452. <https://doi.org/10.1111/j.1525-1470.2010.01286.x>
- [17] Feldman, S., Careccia, R.E., Barham, K.L. and Hancox, J. (2004) Diagnosis and Treatment of Acne. *American Family Physician*, **69**, 2123-2130.
- [18] Wei, B., *et al.* (2010) The Epidemiology of Adolescent Acne in North East China. *Journal of the European Academy of Dermatology and Venereology*, **24**, 953-957. <https://doi.org/10.1111/j.1468-3083.2010.03590.x>
- [19] Ballanger, F., Baudry, P., N'Guyen, J.M., Khammari, A. and Dréno, B. (2006) Heredity: A Prognostic Factor for Acne. *Dermatology*, **212**, 145-149. <https://doi.org/10.1159/000090655>
- [20] Alexis, A.F. (2014) Acne Vulgaris in Skin of Color: Understanding Nuances and Optimizing Treatment Outcomes. *Journal of Drugs in Dermatology*, **13**, s61-s65.
- [21] Abad-Casintahan, F., *et al.* (2016) Frequency and Characteristics of Acne-Related Post-Inflammatory Hyperpigmentation. *The Journal of Dermatology*, **43**, 826-828. <https://doi.org/10.1111/1346-8138.13263>

- [22] Goulden, V., Stables, G.I. and Cunliffe, W.J. (1999) Prevalence of Facial Acne in Adults. *Journal of the American Academy of Dermatology*, **41**, 577-580.
- [23] Schäfer, T., Nienhaus, A., Vieluf, D., Berger, J. and Ring, J. (2001) Epidemiology of Acne in the General Population: The Risk of Smoking. *British Journal of Dermatology*, **145**, 100-104. <https://doi.org/10.1046/j.1365-2133.2001.04290.x>

Appendix

Questionnaire content distributed to medical students:

- 1) How would you rate your current acne?
1. None 2. Mild 3. Moderate 4. Severe
- 2) Do you have pimples in your back?
1. Yes 2. No
- 3) Do you have pimples in your chest?
1. Yes 2. No
- 4) Where is the location of your acne on the face?
0. none 1. forehead 2. Right cheek 3. Left cheek
4. Nose 5. Chin 6. More than one side
- 5) Have you visited a dermatologist regarding your acne in the past year?
1. Yes 2. No
- 6) Have you visited a pharmacy and got medicine without a prescription?
1. Yes 2. No
- 7) How long did you wait before seeing a doctor?
0. none 1. Less than 3 months 2. 3 to 6 months
3. 6 to 12 months 4. More than 1 year
- 8) How long do you expect your acne treatment to take?
0. none 1. Less than 1 week 2. 1 week to 1 month
3. 1 - 2 months 4. more than 2 months
- 9) Did any of your parents have acne in the past?
1. Yes 2. No
- 10) Did any of your brothers and sisters have acne in the past?
1. Yes 2. No
- 11) Is your acne causing any scars?
1. Yes 2. No
- 12) Is your acne causing any pigmentation?
1. Yes 2. No

Submit or recommend next manuscript to SCIRP and we will provide best service for you:

Accepting pre-submission inquiries through Email, Facebook, LinkedIn, Twitter, etc.

A wide selection of journals (inclusive of 9 subjects, more than 200 journals)

Providing 24-hour high-quality service

User-friendly online submission system

Fair and swift peer-review system

Efficient typesetting and proofreading procedure

Display of the result of downloads and visits, as well as the number of cited articles

Maximum dissemination of your research work

Submit your manuscript at: <http://papersubmission.scirp.org/>

Or contact jcdsa@scirp.org