

## Assessment of Knowledge, Perception and Impacts of Acne Vulgaris among Saudi Community

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### ABSTRACT

**Background:** Acne vulgaris is one of the most common dermatological diseases that affect young people. The etiology of acne vulgaris is dependent on genetic factors and environmental and psychological stresses that impact the quality of life.

**Objectives:** Evaluating the knowledge, perception and impact of Acne vulgaris Among Saudi Community and its association with demographics of included subjects.

**Methods:** A questionnaire based on cross-sectional study was distributed among 452 adult populations from KSA for assessment of demographics of included subjects, knowledge and awareness of acne risk factors, health belief and preventive behavior.

**Results:** Most subjects were aged 46-69 years old. Most of participants were females, married and highly educated. The prevalence of acne was 12%. Genetics and psychological stressors were the most important risk factors for acne. The level of knowledge was about acne and its risk factors were found to be good in 62% of subjects. The level of knowledge was significantly associated with higher education and female gender. The most common reported psychological effects of acne were embracement and depression.

**Conclusion:** A high level of awareness about acne was found among most of the participants and it was significantly associated with female gender and higher education levels. The prevalence of acne was low (12%) however it cannot be generalized all over KSA. Acne critically impacts the social behavior, increased depression among patients.

**Keywords:** Acne, dermatology, KSA

### INTRODUCTION

Acne vulgaris is one of the most common dermatological diseases that affect young people<sup>(1, 2)</sup>. The etiology of acne vulgaris is dependent on genetic factors and environmental and psychological stressors<sup>(3)</sup>. Other factors could also contribute to enhancing the acne development as puberty, menstrual cycles, high carbohydrate diet, as well as infection<sup>(4-6)</sup>. Four key elements are associated with the pathogenesis of acne like higher production of sebum, agitated cornification of the pilosebaceous unit, pathogenic microbial flora, and inflammation<sup>(7-12)</sup>.

Acne is a multi-factorial chronic and inflammatory disease that affect the pilosebaceous units of the skin. The most common characteristics of acne vulgaris are development of comedones, papules and pustules. On the other hand, the prevalence of pseudo cysts and nodules are scarce<sup>(13)</sup>. Acne poses a chief impact on psychological life of affected patients however it's being benign condition that

usually cures spontaneously<sup>(14, 15)</sup>. Patients with acne have a

significant psychological dissatisfaction that impacts the social, employment and educational performance<sup>(16, 17)</sup>. Deficient knowledge and wrong beliefs despite high prevalence were found in KSA<sup>(18, 19)</sup>. This study aimed to examine the prevalence, awareness of Saudi population toward acne vulgaris and studying the association between knowledge and demographic of included subjects.

### METHODS

This is a cross-sectional community-based survey among the adult population in KSA aged from 18 to above 70 years old of both genders. This study covered all governorates of KSA during the period from January 2017 to May 2017.

#### **Sample:**

The estimation of the sample size was calculated by Raosoft sample size calculator as the response to all questions was assumed to be 40%. Using a 5%

margin error and a confidence interval of 95% and a population size of 31,742,308 people, the minimum sample size estimated for the study was 377<sup>(20)</sup>. Additional 20 % was added to cover the missing data and the response rate thus a larger sample of 452 participants who were selected randomly from various public places. Informed consent was taken from all subjects included in the study and confidentiality was approved and ethical committee approval was obtained from Faculty of Medicine.

### **Experimental tools**

A self-administered questionnaire was established and adjusted after reviewing the literature of previous studies. This questionnaire comprised of 3 parts for assessment of demographics of included subjects, knowledge and awareness of acne risk factors, health belief and preventive behavior. A score of 1 was given to yes and 0 otherwise. For each subject, a maximum score of 1 was calculated. The knowledge level score was categorised into 2 levels indicated by poor knowledge (0) and good knowledge (1).

This questionnaire was approved by 3 experts after undertaking a pilot study among 70 participants from different districts of KSA. The results of the pilot study were not enrolled in this study.

### **Statistical analysis**

The analysis of enrolled data was done using the Statistical Package for Social Sciences (SPSS, version 20). Other tests were done including ANOVA, T-test and Chi-squared test for determining the association of respondents' demographics with knowledge, health beliefs and prevention behavior of acne vulgaris.

## **RESULTS**

### **1-Demographics of the studied subjects:**

The socio-demographic characteristics are shown in table (1) showing that the majority of subjects were aged 46-69 years old. Most of participants were females, married and highly educated.

**Table 1: socio-demographic characteristics (N=452)**

	Frequency	Percentage (%)
<b>Age (Year)</b>		
<b>18 - 45</b>	152	33.6%
<b>46.00 - 69</b>	288	63.7%
<b>70+</b>	12	2.7%
<b>Gender</b>		
<b>Female</b>	293	64.8%
<b>Male</b>	159	35.2%
<b>Education level</b>		
<b>Primary education</b>	29	6.5%
<b>High School</b>	104	23%
<b>Collage degree</b>	270	59.7%
<b>Post-graduate</b>	49	10.8%
<b>Employment</b>		
<b>Employed</b>	362	80.1%
<b>Jobless</b>	90	19.9%
<b>Income Level</b>		
<b>High</b>	98	21.7%
<b>Medium</b>	220	48.7%
<b>Low</b>	134	29.6%
<b>Marital status</b>		
<b>Married</b>	308	68.1%
<b>Non-married</b>	144	31.9

### **2- Prevalence of acne vulgaris**

54 subjects out of 452 were suffering from acne vulgaris and 75.8% of them never had acne while 12.2% of them don't know if they suffered from acne or not (Table. 2 & Fig. 1).

**Table 2: Do you suffer from acne vulgaris?**

Do you suffer from acne vulgaris?	Frequency	Percent (%)
No	343	75.8%
I don't know	55	12.2%
Yes	54	12%
Total	452	100,0

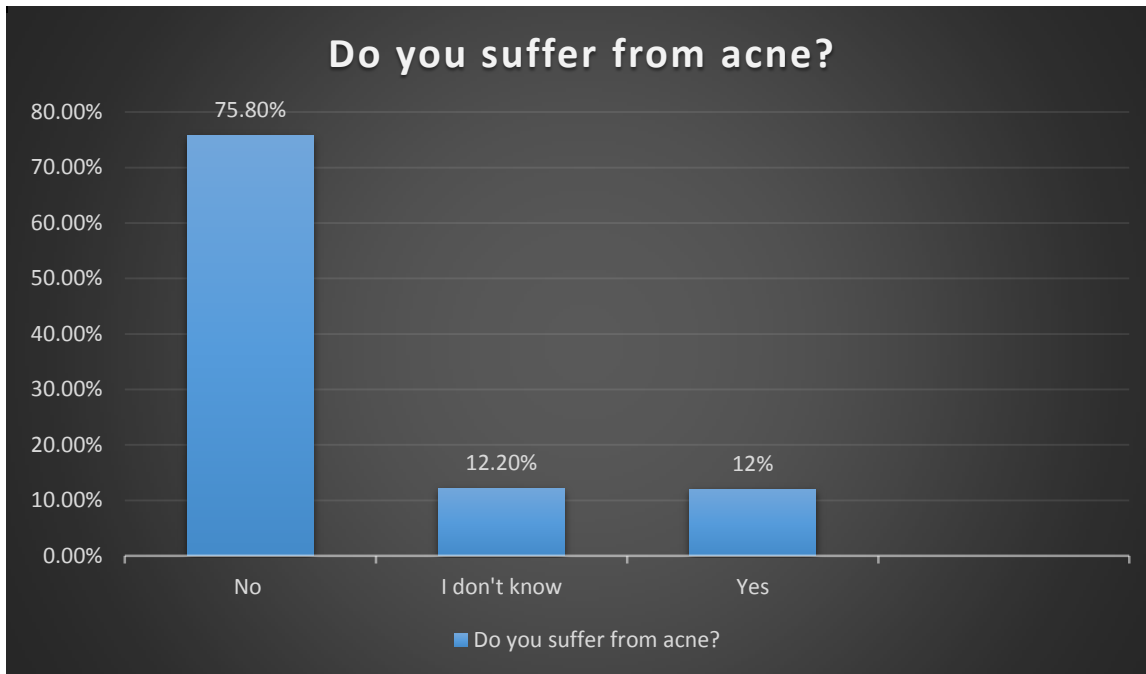


Fig. 1: Do you suffer from acne

**3-Community health beliefs regarding acne vulgaris and their perceptions related to it:**

As for the awareness and perception of included subjects toward acne risk factors and prevention, table. 3 showed that the majority of subjects had no family history of acne (63.5%) or a history of other dermatological diseases (61.3%). Most of the included subjects have confirmed that acne is a preventable disease (60.6%), genetics and psychological distress are common risk factors for acne in 62.2% and 53.3% of subjects respectively. Only 17% of subjects answered yes to the question about the risk of CVD in acne patients but 64.2% don't know and 18.8% had no knowledge about its impact.

About 85.2% of patients thought that acne could affect all age groups but 53.4% of them don't know. The social shame of acne was found in 29.2% of patients, 31.2% said no and 39.6% don't know. The majority of subjects thought that acne is a curable disease however 69.9% don't know if acne is infectious disease or not.

**Table 3: Awareness and beliefs toward acne vulgaris**

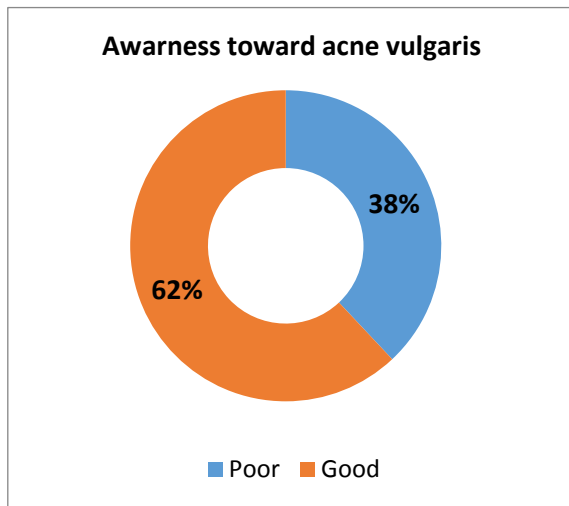
	No	Yes	Don't Know
<b>Q1: Family history of acne vulgaris?</b>	<b>287(63.5%)</b>	<b>78(17.3%)</b>	<b>87(19.2%)</b>
<b>Q2:History of skin diseases?</b>	<b>277(61.3%)</b>	<b>150 (33.2%)</b>	<b>25 (5.5%)</b>
<b>Q3: Is acne vulgaris a preventable disease?</b>	<b>57(12.6%)</b>	<b>274(60.6%)</b>	<b>121(26.8%)</b>
<b>Q4: Is heredity a risk factor for acne vulgaris?</b>	<b>40(8.8%)</b>	<b>281(62.2%)</b>	<b>131(29%)</b>
<b>Q5: Is psychological distress a risk factor for acne vulgaris?</b>	<b>67(14.8%)</b>	<b>241(53.3%)</b>	<b>144 (31.9%)</b>
<b>Q6: Is acne vulgaris a predisposing factor for cardiovascular diseases?</b>	<b>85(18.8%)</b>	<b>77(17%)</b>	<b>290(64.2%)</b>
<b>Q7: All ages groups are susceptible to acne vulgaris?</b>	<b>29(6.4%)</b>	<b>263(58.2%)</b>	<b>160(35.4%)</b>
<b>Q8: Do you feel socially ashamed If you have acne vulgaris?</b>	<b>141(31.2%)</b>	<b>132 (29.2%)</b>	<b>179(39.6%)</b>
<b>Q9: Is there a cure for acne vulgaris?</b>	<b>55(12.2%)</b>	<b>325(71.9%)</b>	<b>72(15.9%)</b>
<b>Q10: Is acne vulgaris an infectious disease?</b>	<b>312(69 %)</b>	<b>54(12%)</b>	<b>86(19%)</b>

**4- Level of awareness**

The majority of subjects had good knowledge about acne vulgaris (62%) and only 38% of them had insufficient knowledge (Fig.2).

**Table 4: Respondents' awareness evaluation for acne vulgaris**

Level of awareness	Frequency	Percent (%)
1-4: Poor	172	38
4-8 : Good	280	62
Total	452	100,0



**Figure 2: Level of awareness**

**5- Awareness about preventive behavior**

About 53.3% of patients had a good knowledge about risks of psychological stressors on acne vulgaris (Table 5).

**Table 5: Do you think that psychological pressure is one of the acne vulgaris factors?**

Level of knowledge	Frequency	Percent (%)
Poor knowledge	211	46.7
Good knowledge	241	53.3
Total	452	100,0

**6-Association of the subjects' knowledge with socio-demographic variables**

As shown in table. 6, there was a significant positive association between female gender, high

level of education with good awareness about acne.

**Table. 6: Association between level of knowledge and socio-demographic variables**

Age	Good knowledge	Poor knowledge	p-value
<b>Age</b>	280	172	>0.05
<b>Gender</b>			
<b>Female</b>	215 (73.4%)	78 (26.6%)	<0.001
<b>Male</b>	65 (51.8%)	94 (48.2%)	
<b>Education Level</b>			
<b>Primary education</b>	14 (49.3%)	15 (51.7%)	<0.05
<b>High School</b>	54 (51.9%)	50 (49.1%)	
<b>Collage degree</b>	178 (66%)	92 (34%)	
<b>Post-graduate</b>	34 (69.4%)	15 (30.6 %)	
<b>Employment</b>			
<b>Employed</b>	241 (66.6%)	121 (33.4%)	>0.05
<b>Jobless</b>	39 (43.3%)	51 (56.7%)	
<b>Income Level</b>			
<b>High</b>	63 (64.3%)	35 (35.7%)	>0.05
<b>Medium</b>	142 (65.5%)	78 (34.5%)	
<b>Low</b>	75 (56%)	59 (44%)	
<b>Marital status</b>			
<b>Married</b>	200 (65%)	108 (35%)	>0.05
<b>Non-married</b>	80 (55.6%)	64 (44.4%)	

**7-The psychological impact of acne on patient's life:**

The majority of patients declared that embracement (92.6%) and depression (97.6%) were the most reported impacts of acne followed by a disturbance in the academic performance in 38.9% of subjects and 27.8% of subjects reported interference with their academic performance. But acne didn't force any patient to commit suicide.

**Table. 7: Psychological impact of acne (N= 54)**

	Frequency	Percent (%)
Depression	43	79.6%
Interference with Social relation	15	27.8%
Academic performance	21	38.9%
Embarrassment	50	92.6%
Suicide	----	----

## DISCUSSION

The present study has some limitations including that the prevalence of acne and its impacts on health was self-reported by participants as well as small sample size that can't be representative to all KSA subjects.

The prevalence of acne in the present study was (12%) low when compared with other studies as Al Mashat et al. recently found that the incidence of acne was 64.5% in Saudi residents<sup>(21)</sup>. Also, other studies reported a higher rate of acne (56.2% and 53.4% respectively) than this present study in Saudi people<sup>(22, 23)</sup>. Another study showed that the acne was prevalent in 55.5% of medical students in KSA<sup>(21)</sup>. Although, international studies showed higher levels of acne prevalence in among 60% in Nigeria and Japan<sup>(24, 25)</sup> and it ranged from 50%-78.9% in Malaysia, Korea and UK<sup>(26, 27)</sup>.

The participants defined genetics and psychological stressors were the most important risk factors for acne. Consistent results revealed that many patients thought that acne is a genetically inherited disease and stress was believed in 65% to cause acne<sup>(28)</sup>. However, lower rates were found in other studies that ranged from 18-25%<sup>(17, 29)</sup>. On the same respect stress was also found to be a significant causative factor of acne as Talleb has found<sup>(29)</sup>.

Stress was also confirmed by Amado et al. study (71%) and Al-Hoqail study (80%) to be related to higher acne prevalence<sup>(22, 30)</sup>.

The level of knowledge was about acne and its risk factors were found to good in this study. Also, high level of knowledge about acne was found in the study of Darwish and Al-Rubaya in 2013<sup>(28)</sup>. But lower levels of knowledge were reported in other parts of KSA including Assir region<sup>(29)</sup>, Riyadh<sup>(22, 23)</sup>.

The level of knowledge was significantly associated with higher education and female gender and this comes on the same line with other studies conducted in KSA<sup>(22, 23, 29)</sup>.

The most common reported psychological effects of acne were embracement and depression. In agreement with this results, depression followed by acne impact on social relationships were the most common complications reported by acne patients in KSA<sup>(21)</sup>. Similarly, acne was found to increase the embarrassment and decrease the self-confidence

in the majority of patients<sup>(22)</sup>. However, another study in Al-Qassim showed that acne showed no or minimal effects relationships and performance<sup>(23)</sup>.

## CONCLUSION

A high level of awareness about acne was found among most of the participants which was significantly associated with female gender and higher education levels. The prevalence of acne was low (12%) however it can't be generalized all over KSA. Acne critically impacts the social behavior, increased depression among patients. Further studies are recommended to clinically diagnose acne, studying the long term consequences and quality of life in acne patients.

## REFERENCES

1. Ullah G, Noor SM, Bhatti Z, Ahmad M, Bangash AR(2014): Comparison of oral azithromycin with oral doxycycline in the treatment of acne vulgaris. Journal of Ayub Medical College, Abbottabad: JAMC., 26: 64-67.
2. Babaeinejad S, Khodaeiani E, Fouladi RF(2011): Comparison of therapeutic effects of oral doxycycline and azithromycin in patients with moderate acne vulgaris: What is the role of age?. The Journal of dermatological treatment, 22: 206-210.
3. Tasoula E, Gregoriou S, Chalikias J, Lazarou D, Danopoulou I, Katsambas A, Rigopoulos D (2012): The impact of acne vulgaris on quality of life and psychic health in young adolescents in Greece. Results of a population survey. Anais brasileiros de dermatologia, 87: 862-869.
4. Albuquerque RG, Rocha MA, Bagatin E, Tufik S, Andersen ML(2014): Could adult female acne be associated with modern life? Archives of dermatological research, 306: 683-688.
5. Nakase K, Nakaminami H, Noguchi N, Nishijima S, Sasatsu M(2012): First report of high levels of clindamycin-resistant Propionibacterium acnes carrying erm(X) in Japanese patients with acne vulgaris. The Journal of dermatology, 39: 794-796.
6. Cho EB, Ha JM, Park EJ, Kim KH, Kim KJ(2014): Heredity of acne in Korean patients. The Journal of dermatology, 41: 915-917.
7. Kistowska M, Meier B, Proust T, Feldmeyer L, Cozzio A, Kuendig T, Contassot E, French LE(2015): Propionibacterium acnes Promotes Th17 and Th17/Th1 Responses in Acne Patients. The Journal of investigative dermatology, 135: 110-118.

8. **Kircik LH(2014):** Evolving concepts in the pathogenesis of acne vulgaris. *Journal of drugs in dermatology*; JDD, 13: s56.
9. **Demir B, Ucak H, Cicek D, Aydin S, Erden I, Dertlioglu SB (2014):** Changes in serum desnutrin levels in patients with acne vulgaris. *European journal of dermatology*, 24: 589-593.
10. **Contassot E, French LE(2014):** New insights into acne pathogenesis: propionibacterium acnes activates the inflammasome. *The Journal of investigative dermatology*, 134: 310-313.
11. **Bergler-Czop B(2014):** The aetiopathogenesis of acne vulgaris - what's new? *Int J Cosmet Sci.*, 36: 187-194.
12. **Bakry OA, El Shazly RM, El Farargy SM, Kotb D (2014):** Role of hormones and blood lipids in the pathogenesis of acne vulgaris in non-obese, non-hirsute females. *Indian Dermatol Online J*, 5: S9-s16.
13. **Williams HC, Dellavalle RP, Garner S(2012):** Acne vulgaris. *Lancet (London, England)*, 379: 361-372.
14. **Zouboulis CC(2014):** [Acne vulgaris]. *Der Hautarzt; Zeitschrift fur Dermatologie, Venerologie, und verwandte Gebiete*, 65: 733-747; quiz 748-739.
15. **Purdy S, de Berker D(2011):** Acne vulgaris. *BMJ clinical evidence*, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3275168/>
16. **Schnopp C, Mempel M(2011):** Acne vulgaris in children and adolescents. *Minerva Pediatr.*, 63: 293-304.
17. **Poli F, Auffret N, Beylot C, Chivot M, Faure M, Moysse D, Pawin H, Revuz J, Dreno B(2011):** Acne as seen by adolescents: results of questionnaire study in 852 French individuals. *Acta dermato-venereologica*, 91: 531-536.
18. **Uslu G, Sendur N, Uslu M, Savk E, Karaman G, Eskin M (2008):** Acne: prevalence, perceptions and effects on psychological health among adolescents in Aydin, Turkey. *Journal of the European Academy of Dermatology and Venereology: JEADV.*, 22: 462-469.
19. **Al-Hoqail IA(2003):** Knowledge, beliefs and perception of youth toward acne vulgaris. *Saudi medical journal*, 24: 765-768.
20. **Raosoftware(2004):** Raosoftware Sample Size Calculator. Available: <http://www.raosoftware.com/samplesize.html>.
21. **Al Mashat S, Al Sharif N, Zimmo S(2013):** Acne awareness and perception among population in Jeddah, Saudi Arabia. *Journal of the Saudi Society of Dermatology & Dermatologic Surgery*, 17: 47-49.
22. **Al-Hoqail IA(2003):** Knowledge, beliefs and perception of youth toward acne vulgaris. *Saudi medical journal*, 24: 765-768.
23. **Al Robaee AA(2005):** Prevalence, knowledge, beliefs and psychosocial impact of acne in University students in Central Saudi Arabia. *Saudi medical journal*, 26: 1958-1961.
24. **Yahya H(2009):** Acne vulgaris in Nigerian adolescents--prevalence, severity, beliefs, perceptions, and practices. *International journal of dermatology*, 48: 498-505.
25. **Kubota Y, Shirahige Y, Nakai K, Katsuura J, Moriue T, Yoneda K (2010):** Community-based epidemiological study of psychosocial effects of acne in Japanese adolescents. *The Journal of dermatology*, 37: 617-622.
26. **Hanisah A, Omar K, Shah SA(2009):** Prevalence of acne and its impact on the quality of life in school-aged adolescents in Malaysia. *Journal of primary health care*, 1: 20-25.
27. **Do JE, Cho S-M, In S-I, Lim K-Y, Lee S, Lee E-S(2009):** Psychosocial aspects of acne vulgaris: a community-based study with Korean adolescents. *Annals of Dermatology*, 21: 125-129.
28. **Darwish MA, Al-Rubaya AA (2013):** Knowledge, Beliefs, and Psychosocial Effect of Acne Vulgaris among Saudi Acne Patients. *ISRN Dermatology*, 2013: 929340.
29. **Tallab TM(2004):** Beliefs, perceptions and psychological impact of acne vulgaris among patients in the Assir region of Saudi Arabia. *West African journal of medicine*, 23: 85-87.
30. **Amado JM, Matos ME, Abreu AM, Loureiro L, Oliveira J, Verde A, Massa A(2006):** The prevalence of acne in the north of Portugal. *Journal of the European Academy of Dermatology and Venereology: JEADV.*, 20: 1287-1295.