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## **Acne Vulgaris Awareness and Impact on Quality of Life and Psychological Status of Adolescent School Children in Jazan, Saudi Arabia**

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### **Abstract**

Background: Acne vulgaris is the most common cutaneous disorder affecting adolescents and young adults and has a considerable impact on their quality of life. Objective: The purpose of this study was to assess the knowledge and perceptions of adolescent school children in Jazan about acne vulgaris and its impact on quality of life and psychological status of affected adolescents. Methods: A cross-sectional study was conducted among a sample of 440 students of intermediate and Secondary Schools of Jazan region, Saudi Arabia, CADI as well as MHI-5 questionnaires were used for data collection. Results: Overall prevalence of self-reported acne among adolescents was 65.1%. Females were more affected than males (71% to 60%). Only 31.2% consider acne as a disease. Impaired QoL of adolescents showed 17.2% of adolescents had high disability scores (19% of females compared to 15.2% of males).

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Severe psychological impairment is found among 7.3% of adolescents with no difference between sexes. Conclusion: Prevalence of acne is high among adolescents in Jazan. Awareness about acne showed poor Knowledge among adolescents. These results signal the need for better health education for adolescents on this common problem and for psychological assessment and support as part of management plans for affected ones.

**Keywords:** Acne vulgaris; adolescent; students; cross sectional; awareness; psychological impact; prevalence; quality of life; Jazan; Saudi Arabia.

## **1. Introduction**

Acne vulgaris is the most common cutaneous disorder affecting adolescents and young adults [1]. There are many factors recognised in the aetiology of acne vulgaris; causes could be attributed to both genetic and environmental Factors [2]. Community based studies conducted within the last decade have reported prevalence rates from 49.8% to 93.2%. It is a chronic multi factorial, pleomorphic inflammatory skin disease of the pilo - sebaceous units. Acne vulgaris is characterized by formation of comedones, erythematous papules and pustules. Nodules and pseudo cysts are less common, and scarring occurs in some cases [3].

Although acne vulgaris is considered to be a benign condition that resolves spontaneously, it has a considerable psychological impact on affected individuals [4].

Previous studies on the psychosocial impact of acne have documented dissatisfaction with the appearance, embarrassment, self-consciousness and lack of self-confidence in acne patients [5,6].

Patients with acne can experience significant psychological morbidity and, rarely, mortality due to suicide [7,8]. The psychosocial impacts are evident in terms of social, vocational and academic performance. Patients may suffer from poor body image, anxiety, depression, anger, frustration, diminished self-esteem and confidence, social isolation and restriction of activities [9].

Many studies has found that respondents did not believe acne to be a disease, but rather a normal phase of adolescence [10,11]. Deficient knowledge and wrong beliefs despite high prevalence were found [11].

A few studies were conducted in Saudi Arabia, results show no major differences in the beliefs, perception and psychological impact on acne patients from a developing society compared to more developed societies [6,12].

No study was done in Jazan region before to explore the awareness about this common problem among adolescents and its impact on the psychological status of affected individuals. This article will present the knowledge and perceptions of adolescent school children in Jazan about acne vulgaris and its impact on quality of life and psychological status of affected adolescents.

## **2. Materials and Methods**

### **2.1. Study Area and Design**

The Study is carried out in Jazan city, capital of Jazan (also called Gizan) region, one of the thirteen regions of the Kingdom of Saudi Arabia. Jazan is a port city located on the Red Sea coast in the south western part of the country. It has an estimated population of 105,193 from the total region estimated population of 1.5 million according to the last population census conducted in 2010.

A cross sectional survey design was used for the study and study population are adolescent students of intermediate and secondary schools (12-19) years old in Jazan city. The study was carried out during August to December 2015.

## **2.2. Sample Size and Design**

Following Cochran in 1977 [13], sample size was determined on the bases of the standard formula for cross-sectional surveys. Based on the values 50% (as no previous estimate of prevalence of Acne Vulgaris in Jazan city), desired marginal error = 0.05 and confidence level 95% plus a non-response rate 10%, the estimated sample size was 440 students.

One male and one female intermediate and secondary school were randomly selected from the list involving all Jazan schools. Probability proportional to size sampling (PPS) was utilized to determine the number of students from each selected school in the first stage and then systematic sampling was applied to select students from each selected school in the second stage.

## **2.3. Data collection**

Data was collected using a self-administered questionnaire consisting of 4 main parts: demographic information of participants, questions to determine participants' awareness about acne vulgaris, the quality of life and psychological status of those affected by acne. Variables related to awareness are knowledge about acne, causing and aggravating factors, sources of information and health seeking behaviour.

The Cardiff Acne Disability Index (CADI) was used in the 3rd part to assess the impairment in quality of life of affected adolescents. It is a 5 item simple questionnaire designed by Motley and Finlay in 1992. Scores range from 0 to 15 and the higher a score the more impaired the quality of life of the adolescent. The tool is available in different languages that have full linguistic validation and the Arabic version was used in this study [14].

The 4th part is to determine the psychological impact of acne on the affected adolescents using the Mental Health Inventory 5 item questionnaire in Arabic language [15]. This tool has been field tested in extensive populations. The score is calculated by adding up the points of each question which ranges from 1 to 6 and then transforming the raw scores to a 0–100-point scale [16].

## **2.4. Data analysis**

SPSS version 20 (SPSS Inc, Chicago, IL, USA) was used for data analysis. Statistical analysis involved descriptive statistics as well as inferential statistics. Descriptive statistics included simple tabulation, frequencies

and proportion for categorical variables including cross-tabulations. Continuous variables were presented as mean  $\pm$  standard deviation (SD). The differences between mean values of total MHI-5 and total CADI were assessed by t-test. Other categorical variables were compared for significance using Chi Square test. A P-value less than 0.05 was used to indicate statistical significance.

### 2.5. Ethical consideration

Ethical clearance was obtained from the General Directorate of Education in Jazan region. Written consent forms were also obtained from parents or legal guardians of participating adolescents. Data privacy and confidentiality were maintained throughout the research.

## 3. Results and discussion

### 3.1. Demographic characteristics of studied population

The response rate for the distributed questionnaires was 98.8% (435 from the target of 440 students). The mean age of the participants was 16.2 years (SD=1.5). Students from secondary schools constituted 70.3% of the target population. Most of the sampled students (55.9%) were in the 12 to 16 year old age group. Fifty two percent of the students were males and 48.0% were females (Table 1).

**Table 1:** Distribution of study participants according to sex, age and School level

Characteristic	Male	Female	Total
	N (%)	N (%)	N (%)
<b>Age Groups</b>			
12-16 years	142(62.8)	101(48.3)	<b>243(55.9)</b>
17-19 years	84(37.2)	108(51.7)	<b>192(44.1)</b>
<b>School level</b>			
Intermediate	73(32.3)	56(26.8)	<b>129(29.7)</b>
Secondary	153(67.7)	153(73.2)	<b>306(70.3)</b>
<b>Total</b>	226(100.0)	209(100.0)	<b>435(100.0)</b>

### 3.2. Reported prevalence of acne vulgaris

Overall prevalence of self-reported acne among studied adolescents was 65.1%. Females are more affected than males with a ratio of about 1.2:1 (71% to 60%).

These results are consistent with other studies conducted in other parts of Saudi Arabia where prevalence was

found to be more than 50% [12, 17]. The females were also found to be more affected on these studies in Saudi Arabia [6, 12, 17].

Studies worldwide have also concluded that acne is a common problem among adolescents. About 60% adolescents self-reported acne in Nigeria and in Japan [18, 19]. Prevalence was also more among Japanese females compared to males (64.8% 51.6%) [19]. Studies done in Malaysia, Korea and UK reported acne prevalence ranging from 50% to 78.9%. [20, 21, 22].

Table (2) show the prevalence of acne among studied adolescents in respect to their sex, age and school level with a statistically significant *P* value of less than 0.05 for all results.

**Table 2:** Prevalence of acne in study subjects according to some selected criteria

Characteristic	Acne cases/Total	Prevalence	95% CI	P-value
Sex				
<b>Male</b>	135/226	59.7	53.2-65.9	0.015
<b>Female</b>	148/209	70.8	64.3-76.6	
Age Groups				
<b>12-16</b>	147/243	60.5	54.2-66.4	0.025
<b>16 -19</b>	136/192	70.8	64.0-76.8	
School				
<b>Intermediate</b>	68/129	52.7	44.1-61.1	0.000
<b>Secondary</b>	215/306	70.3	64.9-75.1	
<b>Overall prevalence</b>	<b>283/435</b>	<b>65.1</b>	<b>60.4-69.4</b>	

### 3.3. Awareness of adolescents about acne vulgaris

Only 31.2% of studied adolescents consider acne as a disease and 26% know that it's a chronic condition. About 15% recognize it as a communicable disease and 80% as a treatable condition. Table 3 below show the details of adolescents' response to the different variables of knowledge. The results are statistically significant for classification of acne as a disease, as a communicable condition, that it's treatable and where to seek health advice if affected by acne.

The low awareness level and wrong perceptions regarding acne were similarly found in studies conducted in other parts of Saudi Arabia [6, 12, 17]. This reflects the need for mass campaigns and health education regarding the issue among adolescents.

Results on health seeking behavior also indicate low awareness of adolescents on how to get expert help. Only 37% of adolescents said they would consult a medical doctor if affected by acne while 30% said they will do nothing and 23% would seek health advice from a pharmacist. Similar results were seen in Riyadh where 40% of cases sought medical help within 3 months [12] and 38.8% of respondents with acne had sought or were seeking treatment in Japan [19].

The study also found that females had higher knowledge scores than males in all variables of acne studied. More females were specially going to consult a medical professional for acne (46.5%) compared to males (28.3%). This is probably explained by females concern with their self-image and their attention to cosmetic issues.

**Table 3:** Adolescents Knowledge about Acne vulgaris

Characteristics	Male	Female	Total	P-value
<b>Is acne classified as a disease?</b>				0.038
Yes	61(27.0)	74(35.9)	135(31.2)	
No	86(38.1)	81(39.3)	167(38.7)	
I don't Know	79(35.0)	51(24.8)	130(30.1)	
<b>Is acne classified as communicable diseases?</b>				0.000
<b>Yes</b>	23(10.2)	44(21.3)	67(15.5)	
<b>No</b>	151(67.1)	138(66.7)	289(66.9)	
<b>I don't Know</b>	51(22.7)	25(12.1)	76(17.6)	
<b>Is acne classified as a chronic disease?</b>				0.190
<b>Yes</b>	55(24.6)	57(27.8)	112(26.1)	
<b>No</b>	93(41.5)	95(46.3)	188(43.8)	
<b>I don't Know</b>	76(33.9)	53(25.9)	129(30.1)	
<b>Is acne a treatable disease?</b>				0.000
<b>Yes</b>	157(69.8)	190(91.8)	347(80.3)	
<b>No</b>	15(6.7)	6(2.9)	21(4.9)	
<b>I don't Know</b>	53(23.6)	11(5.3)	64(14.8)	
<b>If you get acne what is the best method for dealing with the disease</b>				0.000
<b>Do nothing</b>	81(38.2)	44(22.0)	125(30.3)	
<b>Ask a pharmacist</b>	52(24.5)	43(21.5)	95(23.1)	
<b>Seek friend Advice</b>	19(9.0)	20(10.0)	39(9.5)	
<b>Seek doctor Help</b>	60(28.3)	93(46.5)	153(37.1)	

Regarding adolescents' opinion on causes of acne, highest indicated cause was consumption of fatty food (54%), followed by blockage of a hair follicle (43.9%), skin bacteria, lack of personal hygiene and high temperatures were identified by 39- 40% of adolescents (Figure 1). Those affected by acne has identified

touching of the affected skin area as the most aggravating factor (54%). About 27% indicated specific food items while less than 20% identified dust and anxiety as aggravating factors for their acne and less than 10% attributed it to some drugs. See Figure 2.

Diet, stress, heat, sweating and hygiene were also the most common identified exacerbating factors among other studies [6, 18, 19, 23, 24 ].

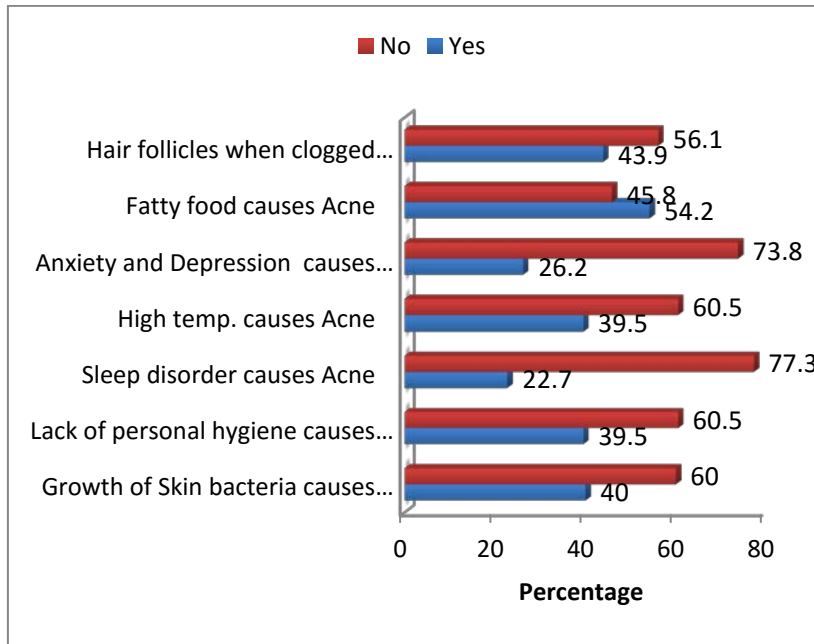


Figure 1: Students perception's regarding Acne causes

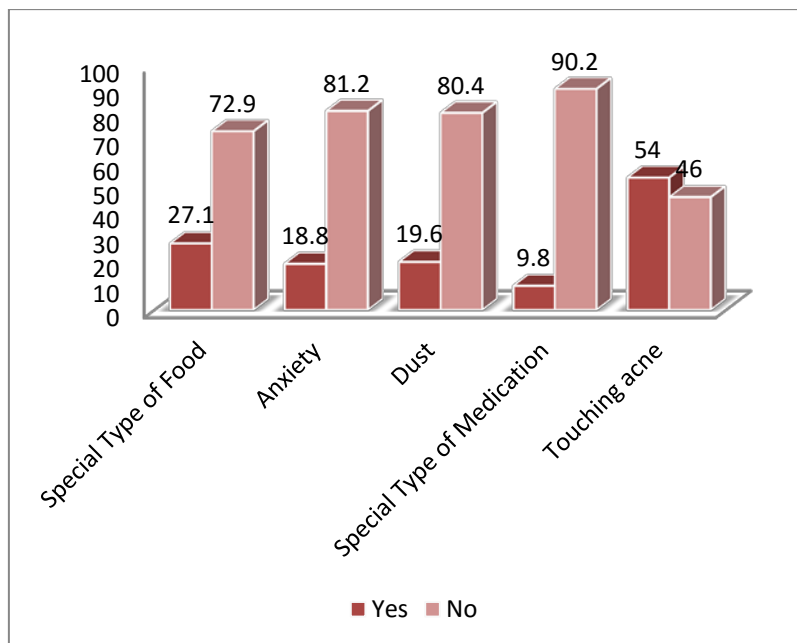


Figure 2: Factors contributing to severity of Acne among affected adolescents

### 3.4. Effect of Acne Vulgaris on Quality of Life (QoL) of Adolescents

Results show impaired QoL of adolescents affected by acne; 17.2% of adolescents had high disability scores indicating that acne had a great effect on their wellbeing. High disability scores are found in 19% of females compared to 15.2% of males. Moderate disability was detected in 35% of females and 32% of males and mild disability was found in 46% of females and 52% of males. Table (4) shows the Cardiff Acne Disability Index scores of adolescents with acne with a highest score of 15 and lowest score of 0 on the 15 points scale. The mean and median scores are 5.4 and 5.0 respectively for both sexes.

The females' attention and concern about their beauty and personal image are probably the cause of their higher disability scores compared to males. These results confirm results from other studies that have concluded impairment of adolescents' quality of life due to acne that was proportional sometimes to the severity of acne [20, 25, 26, 27]. One of the limitations of this study is that clinical grading of acne was not performed and thus it was not compared to the level of disability detected.

**Table 4:** Cardiff Acne Disability Index scores among adolescents with Acne

Index	Indicator	Male	Female	Total	
<b>Cardiff Acne Disability Index</b>	Highest Students Score	15	15	15	
	Lowest students Score	0	0	0	
	Mean Scores *	4.9	5.9	5.4	
	Median Scores	4.0	5.0	5.0	
	<b>CADI Scoring range</b>				
	Less than 5 points (low)	66(52.8)	63(46.0)	129(49.2)	
	5-9 Points (Medium)	40(32.0)	48(35.0)	88(33.6)	
	10-15 Points(High)	19(15.2)	26(19.0)	45(17.2)	

- Significant difference at 5%

### 3.5. Psychological wellbeing of Adolescents affected by Acne Vulgaris

As expected with the impaired quality of life of acne affected adolescents, likewise, their psychological wellbeing is also jeopardized. Using the mental health inventory 5 items (MHI- 5), severe psychological impairment is found among 7.3% of adolescents with no difference between sexes. However, moderate psychological impairment was more common among females (66.3%) compared to 44.8% in males, while low scores indicating mild impairment was found in 48% of males and 31.4% of females (Table 5).

These results show that although acne may be a benign condition, its impact on adolescents' psychological wellbeing and quality of life need to be considered when providing them health advice. Simple reliable tools like the CADI and MHI- 5 can be used by dermatologists to assess the psychological wellbeing of acne patients and perhaps as a follow up of treatment results [27, 28].



**Table 5:** Mental Health Inventory 5 item scores among adolescents with Acne

Mental Health Inventory Index	Highest Student's Score	Male	Female	Total
	Lowest student's Score	12	24	12
	Mean Scores	52.3	55.8	54.1
	Median Scores	52	56	52
	<b>MHIScoring range</b>			
	Less than 50 points (low)	60(48.0)	43(31.4)	103(39.3)
	51-75 Points (Medium)	56(44.8)	84(61.3)	140(53.4)
	75-100(High)	9(7.2)	10(7.3)	19(7.3)
	<b>Total number of students with Acne</b>	<b>125</b>	<b>137</b>	<b>262</b>

#### 4. Limitations

The main limitation in this study is that prevalence of acne is based on self reporting by the adolescent. No clinical examination for confirmation or grading of the severity of acne was performed.

#### 5. Conclusions

Paucity of studies done in Saudi Arabia and in Jazan region makes results of this study a valuable insight on acne vulgaris awareness among adolescents in Jazan and its effect on their quality of life and psychological wellbeing. It serves as a baseline for future researches on the topic.

Prevalence of acne is high among adolescents in Jazan. Results on awareness level show poor knowledge about acne among adolescents, wrong perceptions and reduced health seeking behaviour.

Adolescents affected by acne suffer impaired quality of life and psychological wellbeing. Females are more affected by acne than males psycho-somatically.

#### 6. Recommendations

The research team strongly recommends further studies on this apparently very common problem that significantly affects the health and wellbeing of adolescents. Research projects to cover Jazan province and other parts of Saudi Arabia are needed.

The research team also recommends further studies that include clinical diagnosis and outcomes of management of acne vulgaris. Further analytical studies are recommended that present long term effects and outcomes of acne vulgaris on the psychological wellbeing and quality of life of adolescents in Saudi Arabia.

These results signal the need for better health education for adolescents on this common problem and for psychological assessment and support as part of management plans for affected ones.

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