

PREVALENCE OF ACNE VULGARIS AMONG SECONDARY SCHOOL STUDENTS IN MOSUL CITY

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ABSTRACT

Background: Dermatological disorders are common among adolescents. Skin has important role in the social relationship, acne vulgaris can cause psychosocial stress as the appearance of skin has significant effect on individual's image, all age groups may be affected by acne vulgaris, but the peak incidence is during adolescence due to increased sex hormone production, and leading to negative impact on self-esteem, causing social isolation, anxiety disorders, depression, and even suicidal ideation. **Aim of the study:** The aim of the present study is to calculate the prevalence of acne vulgaris among secondary school students in Mosul city. **Methods:** Across sectional study design was chosen. A total of 700 students of both genders aged 15-21 years participated in the study. The study was carried out in Mosul city, for data collection four secondary schools were chosen, two from the right side and two from the left side, one class from each academic level was selected randomly. All students from selected classes were examined by investigators for dermatological problems. The investigator visited the selected school two times per week. **Results:** The prevalence of acne vulgaris among secondary school was 14.9% with not statistically difference between genders although the male gender was predominated. The acne vulgaris with \geq one year were more frequent than those with $<$ one year, but the difference was statistically not significant ($p=0.155$). Receiving treatment for moderate and severe diseases was more frequent in contrary to patients with mild diseases. The difference between those who receiving the treatment and not, was statistically significant ($p=0.000$). the most frequent age group was 17-19 years in all the levels of the severity with a statistically not significant difference ($p=0.239$). **Conclusions** Acne vulgaris are common among adolescents, there is no gender difference although the male gender is predominant. About contributing factors family history, medications, smoking is reported in acne vulgaris. Students with acne should be seek medical advice and management to avoid unwanted results from lack of treatment such as post inflammatory hyperpigmentation and scars.

INTRODUCTION

Acne Vulgaris: Is a chronic inflammatory disorder of the pilosebaceous unit, clinical picture can vary as comedones, papules, pustules, nodules, and scars, the comedo is the primary lesion of acne seen as a flat or slightly elevated papule, it may be presented as closed comedones (whiteheads), are usually 1-mm yellowish papules or open comedo (blackhead) which are papules with a dilated central opening filled with blackened keratin.^[1]

The disease can be mild, with only a few comedones or papules, to highly inflammatory as nodulocystic acne and diffusely scarring acne. In male patient the acne vulgaris most severe.^[2] The distribution of acne: acne

occurs in areas of highest density of pilosebaceous units (face, neck, upper chest, shoulders, and back).^[3]

Risk factors: Acne vulgaris is a multifactorial disorder. Family history, smoking habits and diet are considered as potential risk factors in development and exacerbation of acne vulgaris. Diets such as dietary fat, sweets, carbonated drinks, and excessive intake of milk are included as risk factors, while diets rich in fish, fruits and vegetables are included as protective factors.^[4]

Pathogenesis: All age groups may be affected by acne vulgaris, but the peak incidence is during adolescence due to increased sex hormone production, With increased androgen production during puberty, sebaceous glands

are enlarged and increase the production of sebum along with hyperkeratinization and keratin plug formation, acne is developing, commensal bacterium *Propionibacterium acnes* can induce inflammation and involved in pathogenesis.^[5] Acne it has psychosocial impact can cause social isolation, anxiety disorders, depression, and even suicidal ideation. Acne is typically found in areas with well-developed sebaceous glands, open and closed comedones represent non-inflammatory acne open comedones, are small (~1 mm), skin-colored papules with no associated erythema and better appreciated upon palpation, stretching, or side-lighting of the skin. while open comedones are dilated follicular opening that is filled with an inspissated core of shed keratin. papules, pustules, and nodules are characteristic of Inflammatory acne. Erythematous papules and pustules are 1 to 5 mm in diameter. Pustules are filled with white purulent material and *Propionibacterium acnes* a normal commensal flora. As the severity of acne progresses, nodules form, are markedly inflamed, indurated and tender. Nodulocystic acne, a severe form of acne, the lesions frequently coalesce to form large, complex, inflamed plaques that can include sinus tracts.^[6]

Diagnosis and treatment: Diagnosis is made by medical history and clinical evaluation. Early effective treatment of acne decreased likelihood of scarring, factors increased likelihood are severity of acne, relapsing acne, and male gender. A primary strategy against scars development is prevention and early treatment.^[7] Nonantibiotic Topical Agents: Benzoyl peroxide 5%, topical antibiotics, clindamycin 1% and erythromycin 2%, topical retinoids (adapalene, tazarotene, and tretinoin).

Topical retinoids are used to treat comedone, mild, moderate, and severe acne, for mild pustular and popular inflammatory acne, clindamycin 1% and erythromycin 2%, used alone or in combination with benzoyl peroxide 5%. Topical retinoids are used in treatment and applied in the evening. Moderate inflammatory papules and pustules; topical retinoids with topical antibiotics and benzoyl peroxide if no improvement, adds oral antibiotic.

If nodules present topical retinoids, benzoyl peroxide and oral antibiotics are used. Severe inflammatory papules and pustules; topical retinoids, benzoyl peroxide and oral antibiotics are used. If no improvement adds oral isotretinoin. If nodules present oral isotretinoin is used.^[8]

SUBJECTS AND METHODS

Administrative Agreement: Before data collection administrative agreement was obtained from Scientific Council of Family Medicine of Arab Board for Health Specializations. In addition, an official agreement was obtained from Nineveh Directorate of Education to permit data collection among secondary school students included in the study. Moreover, ethical, and scientific

agreements have been obtained from the Scientific Committee Directorate of Health in Ninawa.

Ethical Consideration: Verbal consent was obtained from each student participant in the study after explaining the objectives of study.

Study design: Observational across sectional study design was chosen to achieve the objectives of study.

Study population: The study included secondary schools' students aged 15-21 years.

Study Sample: The sample size includes all students of one class from each academic level in each school selected in this study. The total number of students examined for dermatological disorders were 700.

Study setting: The study was carried out in Mosul city, for data collection four secondary schools were chosen, two from the right side and two from the left side, one class from each academic level was selected randomly. All students from selected classes were examined by investigator for dermatological problems in private room selected by school administration. The investigator visited the selected school two times per week.

Study period: Data collection and analysis was carried out over a six-month period starting from 1 of February to 30 of July 2023.

Data collection tool: A special questionnaire form has been prepared by an investigator to achieve the objectives of the study. All students included in this study with acne vulgaris were clinically examined by investigator for evidence of acne and interviewed for data collection regarding sociodemographic variables of age, gender, residence, socioeconomic status, duration of disease, severity, does patient receive treatment, and associated risk factors.

Inclusion criteria: All Students with dermatological disorder of both genders range in age between^[15-21] years who agree to participate in the Study.

Exclusion criteria: Students with an age less than 15 years old. Students with an age more than 21 years old.

Statistical analysis: The data collected during the study were summarized in sheets of Microsoft Excel 2007. The statistical analysis performed by using IBM-SPSS 26. The data of the present study was nominal and expressed in frequencies and proportions. The Chi square test (χ^2) used to find the differences among the nominal data, the Freeman-Halton exact test was used instead of Chi square when any cell presents with expected value less than 5 for the table more than 2 by 2. The p-value ≤ 0.05 considered as significant.

Prevalence is the measure of a burden of a disease in community. It's the presence of an event or characteristic at a point of time in a population.

$$\text{Prevalence rate} = \frac{\text{No. of new and old events occurring at a point of time}}{\text{Total population at risk of getting that event}} \times 1000$$

Uses of prevalence

1. Describes the burden of a disease a community.
2. Define the rate of clinical characteristics in subjects with acne vulgaris.

3. Estimates the probability of having a disease given the result of a diagnostic test result.

A prevalence rate is the presence of the acne vulgaris in the community whether old or new cases in defined population. It's not a measure of risk of disease, and not useful in identifying the cause of disease.

RESULTS

Distribution of the study sample according to age groups

The distribution of the study sample according to age groups was illustrated in figure (1) and showed that 260 (37.2%) participants were in age group 15-17 years, 318 (45.4%) participants in age group 17-19 years, and 122 (17.4) participants in age group 19-21 years.

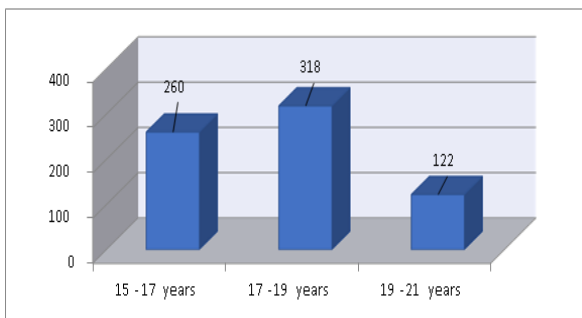


Figure 1: Distribution of the study sample according to age groups.

Distribution of the study sample according to gender

Distribution of the study sample according to gender was demonstrated in figure (2) and showed that 382(54.6%) of the study sample was males while 318(45.4%) was females with male to female ratio of 1.20:1.

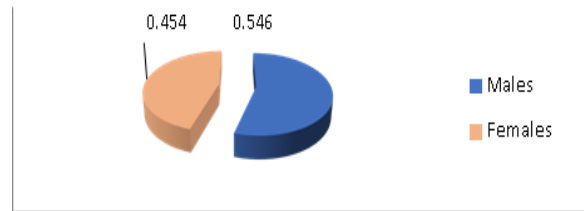


Figure 2: Distribution of the study sample according to gender.

Comparisons of duration and treatment among the levels of disorder severity

Were demonstrated in table (1). It elicited that the dermatological disease with \geq one year were more frequent than those with $<$ one year, but the difference was statistically not significant ($p=0.155$). Receiving treatment for moderate and severe diseases was more frequent in contrary to patients with mild diseases. The difference between those who receiving the treatment and not, was statistically significant ($p=0.000$).

Table 1: Comparisons of duration and treatment among the levels of disorders severity.

Duration of dermatological diseases	Mild (n=42)	Moderate (n=155)	Severe (n=20)	p-value*
	No. (%)	No. (%)	No. (%)	
$<$ one year	20(47.6)	53(34.2)	5(25.0)	0.155
\geq one year	22(52.4)	102(65.8)	15(75.0)	
Receiving treatment				
Yes	14(33.3)	100(64.5)	17(85.0)	0.000
No	28(66.7)	55(35.5)	3(15.0)	

*Chi square test has been used

Comparisons of age, gender, and socioeconomic status among the levels of disorder severity

Were demonstrated in table (2). This table elicited that the most frequent age group was 17-19 years in all the levels of the severity with a statistically not significant

difference ($p=0.239$). The difference among the severity levels concerning the gender and socioeconomic status were statistically not significant ($p=0.503$) and ($p=0.265$).

Table (2): Comparisons of age, gender, and socioeconomic status among the levels of disorder severity.

Age groups	Mild (n=42)	Moderate (n=155)	Severe (n=20)	p-value*
	No. (%)	No. (%)	No. (%)	
15-17	20(47.6)	57(36.8)	7(35.0)	0.239*
17-19	19(45.2)	63(40.6)	8(40.0)	
19-21	3(7.2)	35(22.6)	5(25.0)	
Gender				
Male	26(61.9)	81(52.3)	10(50.0)	0.503**
Female	16(38.1)	74(47.7)	10(50.0)	
Socioeconomic Status				
Poor	1(2.4)	9(5.8)	4(20.0)	0.265*

Moderate	31(73.8)	99(63.9)	13(65.0)
High	10(23.8)	47(30.3)	3(15.0)

* Freeman-Halton Exact test; ** Chi square test has been used

Distribution of the possible contributing factors among the patients with dermatological disorders

Was demonstrated in table (3) and it is clear from this table that positive family history was reported among 16.3% of the patients with Acne.

Table (3): Distribution of the possible contributing factors.

Dermatological diseases	Contributing factor	Yes
		No. (%)
Acne (n=104)	Medications	8(7.7)
	Family history	17(16.3)
	Smoking	15(14.4)
	No contributing factors	64(61.5)

DISCUSSION

The impact of skin disease on the life and psyche of the patient was not considered by therapist and the general population as chronic dermatological disorders are often not life-threatening; skin acne vulgaris can cause psychosocial and occupational impact like or maybe more than other chronic medical disease.^[9]

Prevalence of acne vulgaris among secondary school students: The difference in prevalence among these studies might be due to variation in socioeconomic status, “low classes are vulnerable to skin disorders as a person may be forced to work, which can be a cause of skin disorders”, genes “consanguineous marriage increase the incidence of hereditary skin diseases”, and climate as hot weather and humidity.^[10]

Acne was most prevalent among secondary school students, due to increase sex hormones and sebum production during adolescent period, its prevalence 14.9% in the study sample, such result agrees with studies finding conducted in Hong Kong (9.9%),^[11] and Mauritius (13%).^[10] But in Nigeria the prevalence is higher (35.1%).^{[12][13]}

CONCLUSION AND RECOMMENDATION

Acne vulgaris are common among adolescents, there is no gender difference although the male gender is predominant. About contributing factors family history, medications, smoking is reported in acne vulgaris. Students with acne should be seek medical advice and management to avoid unwanted results from lack of treatment such as post inflammatory hyperpigmentation and scars.

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