



ACNE Vulgaris in Al-Anbar Clinical Descriptive Study

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Abstract:

In this study, the distribution of study variables including age, gender, residence, family history, smoking, treatment with any topical antibiotic and treatment with any systemic drug among patients with Acne vulgaris were studied, it was showed that, the age range between 18 to 22 years was considers more infection with Acne vulgaris in rate 65% than other ages range, and 48% of the infection was female in these ages range, while the age range between 23-25 was male infected with Acne vulgaris in rate (36%). In addition, 55% of infection with Acne vulgaris were lived in urban compared with 45% of infection in rural. According to family history, the results showed that, 63% of these infection were people with an existing family history, and 57% were no smoking. However, 93% of these patients were treated with topical treatment and 84% were treated with systemic drug. However, severity of Acne vulgaris infected disease was classified according to symptoms, the results showed that, the mild infection were appeared in 22%, moderate infection were appeared in 63% and 15 % were appeared as severe infection. A total 100 skin swab samples of patients suffering from Acne vulgaris, the results showed that, out of 100 samples, 83(83%) give positive culture, while 17(17%) samples were negative culture. Out of 83 positive culture on different types of growth media, and the bacterial was identified according to gram stain, the results showed that, 65(78.31%) was classified as gram positive and gram negative bacteria, while 18(27.69%) were related to other types of causative agents. *Staphylococcus aureus* was considered the most commonly bacterial isolates from patients with Acne vulgaris in rate (38%), followed by *Staphylococcus epidermidis* in rate (27.8%), (18.6%) were related to *Propionibacterium acnes*, *micrococcus* spp. in rate (10.9%), and *Corynebacterium* in rate (4.7%). To confirm the isolates of bacteria was used GP-GN ID cards with 64 biochemical tests were used in the computerized Compact Vitek-2 system. The results demonstrated that all (65) isolates were confirmed with ID massage confidence level ranging excellent (probability percentage from 94 to 99.7%, this technique was characterized by fast detection of bacteria. it was found that, all bacterial isolates were identified by culture media and biochemical test, were identified in rate (100%) by this system.

Objective: The aims was clinical descriptive of Acne vulgaris study in Al-Anbar Government, and detection of main bacteria that causes this disease.

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Key Words: Acne Vulgaris, Bacteria Infection, Descriptive Study, Clinical Study.

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Introduction

Acne vulgaris is a prevalent dermatology condition in which hair follicles (hair follicles and their accompanying sebaceous glands) are blocked and/or inflamed (Saleha *et al.*, 2017). Acne can appear as non-inflamed, inflamed, or a mix from both lesions, and it most commonly affects face, but

it can also affect the back and chest (Aktas Karabay & Aksu erman, 2020). Acne most often affects the face, but it can spread to the neck, chest and back, and sometimes even to the entire body (Wattanakrai & Taylor, 2020). Individual lesions are concentrated in the hair follicles and related hairline.

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Sebum (Lousada *et al.*, 2021). Multiple types of acne occur at the same time (Torzecka *et al.*, 2017); it can be swollen papules, pustules, and nodules; or non-inflammatory acne and pseudocysts. Some dermatologists use scoring scales to more accurately assess the severity of acne in patients (Shukla and Gold, 2021). For example, compare an inflammatory lesion with a standard light composition to determine the grade, which can range from 1 (very mild) to 12 (very severe). In clinical studies of acne, inflamed and non-inflamed lesions are carefully calculated. Regularly (Seité *et al.*, 2019). It is well known that continuous counting is difficult (Kung *et al.*, 2019). Acne vulgaris is more common in adolescents and young adults, but not limited to this age group (Alshammrie *et al.*, 2020). The severity of skin lesions ranges from mild to highly inflammatory and disfigured (Udompanich *et al.*, 2018). Pigmentation, scarring, and negative society Psychological influence. It discusses the pathogenesis, clinical manifestations and diagnosis of acne vulgaris (Alshammrie *et al.*, 2020). Lady effected with acne vulgaris therapy and particular post-pubertal acne suggestions are covered separately (Endres *et al.*, 2021). Human skin is the body's biggest organ and is carry up of a variety of microorganisms, including *Staphylococcus*, *Propionibacterium*, *Streptococcus*, and *Corynebacterium* (Boxberger *et al.*, 2021). *Propionibacterium acnes*, an anaerobic gram-positive bacterium that dominates the fur fat gland units, is a significant resident of the typical human skin microbiome (Peng and Biswas, 2020). It is believed that, along with other detailed descriptions of *P. avidum* (*P. granulosum*), it plays an important role in maintaining skin health and occupies an niche that can be colonized by more pathogenic microorganisms; These organisms are inhibited by chain F. A., thiopeptides, bacteriocins, etc. (McLaughlin *et al.*, 2019). Acne and *Pseudomonas granulosus* are most commonly found in areas of skin rich in sebum, *P. acnes* can be removed from other areas of the body as well (such as the mouth, gastrointestinal tract, and other parts of the body). This suggests that there may be interactions beyond the skin (Plewig *et al.*, 2019). Consistent with its role in maintaining skin health, a decrease in *Propionibacterium* in infected person with chronic epidermal disorders, such as psoriasis and atopic dermatitis (Chang *et al.*, 2018).

Materials and Methods

The information of research were gathered in the specific time from January 2021 to June 2021. The study was conducted in clinical private in AL-Anbar Government, Iraq. A total number of subjects involved in this study was 100 patients (50 male and 50 female), suffering from Acne vulgaris with age range 12-25 years. All patients were from the same ethnic group (Arabic).

Research and Sampling Ethics

A valid consent was achieved from each patients before their inclusion in the study.

Collection of Data Questionnaire

Questionnaire taken from the patients and case sheet included age, gender, residence, family history, smoking, locally treatment and treatment by systemic drug, severity of symptoms.

Inclusion Criteria

The patients who diagnosed as Acne vulgaris had been included in this study. To diagnose Acne vulgaris, the doctor examines the skin, Acne is diagnosed by physician based on clinical diagnosis. The lesions most develop on the face frequently, also in neck, chest, upper arms, and back, which contain the most sebaceous glands.

Exclusion Criteria

Any subject suffering from Acne vulgaris with other skin diseases that interfere with it.

Collection of the Skin Swab Samples

After obtaining the permission from the subjects for examination and sampling. Sterile skin swab was taken from infected area, Swabs were then placed in a tube containing 5ml of Brain Heart Infusion Broth supplemented with 5% fresh blood as a transport medium and as a diagnostic tool. The sample was labeled with the patient's data and number (Ogai *et al.*, 2018).

Identification of Bacterial Isolates by Gram Stain and Biochemical Tests

The identification tests, including cultural, morphological and biochemical characteristics were done for each isolate according to (MacFadden, 2000; Collee *et al.*, 2006).



Identification of Bacterial Isolates with Compact VITEK-2 System

The Compact VITEK-2 System was used to screen and identify all bacterial isolates (BioMerieux). This is a phenotypic kind of identification in which the isolates are identified by biochemical responses. The Vitek-2 card has 64 wells that are used to store various fluorescence biochemical experiments. Phosphatase, urea, nitrate, and actidione tests accounted for 20 of the 64 carbohydrate assimilation tests. The Vitek-2 machine processed the cards automatically, including filling, sealing, and transporting them to the connected 35°C incubator. Each report's output is decoded using a specific algorithmic approach. The databank ID-GP, GN (identification of Gram-positive and Gram-negative bacteria) was used to identify the obtained findings. The ID results from these systems are automatically proposed by the software that comes with them. Only if the first findings indicated "poor discrimination" or "no ID," were the tests repeated, and the repeat result was considered for data analysis. All of the strains were put into culture medium and incubated at 37°C overnight. The phenotypic VITEK-2 Systems technique was utilized to identify a single isolated colony, as per the manufacturer's instructions (BioMerieux).

Results

In this study, the distribution of study variables including age, gender, residence, family history, smoking, treatment with any topical antibiotic and treatment with any systemic drug among patients with Acne vulgaris were shown in Table (1) figure (1,2,3,4). The results showed that, the age range between 18 to 22 years was considers more infection with Acne vulgaris in rate 65% than other ages, and 48% of the infection was female in these ages, while the age range between 23-25 was male infected with Acne vulgaris in rate (36%). In addition, 55% of infection with Acne vulgaris were lived in urban compared with 45% of infection in rural. According to family history, the results showed that, 63% of these infection were people with an existing family history, and 57% were no smoking. However, 93% of these patients were treated with topical treatment and 84% were treated with systemic drug.

Table 1. Distribution of patients with Acne vulgaris by socio-demographic characteristics

No.	Study variables	patients with Acne vulgaris
	Age (years)	
	12-17	12(12%)
	18-22	65(65%)
	23-25	23(23%)
	Sex	
	Female	
	12-17	8(16%)
	18-22	42(48%)
	23-25	5(10%)
	Male	
	12-17	4(8%)
	18-22	23(46%)
	23-25	18(36%)
	Residence	
	Urban	55(55%)
	Rural	45(45%)
	Family history	
	Yes	63(63%)
	No	37(37%)
	Smoking	
	Yes	43(43%)
	No	57(57%)
	Treatment with topical Antibiotics	
	Yes	93(93%)
	No	7(7%)
	Treatment with systemic drug	
	Yes	84(84%)
	No	16(16%)



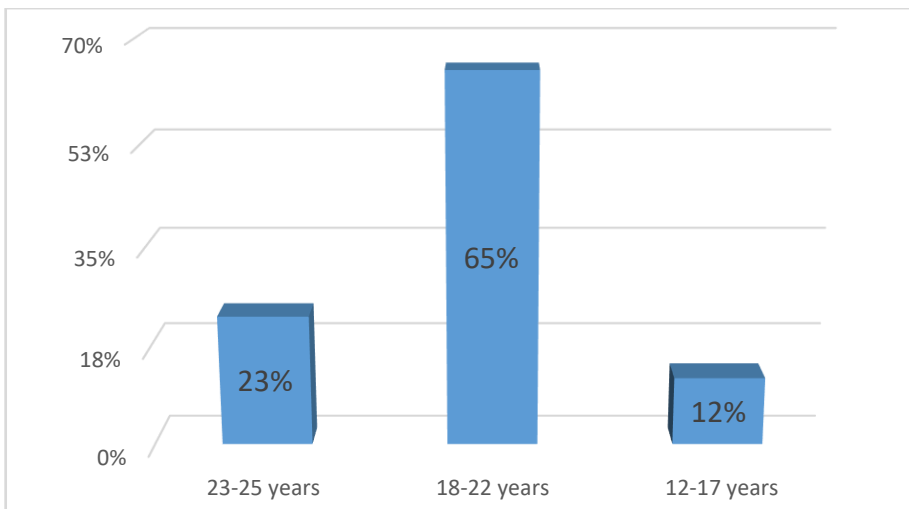


Figure 1. Distribution of patients with Acne vulgaris according to age range

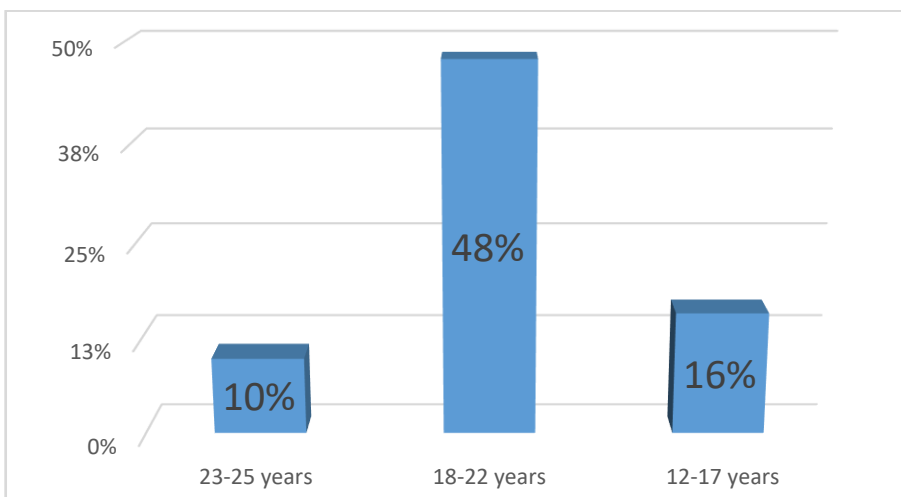


Figure 2. Distribution of female patients with Acne vulgaris according to age range

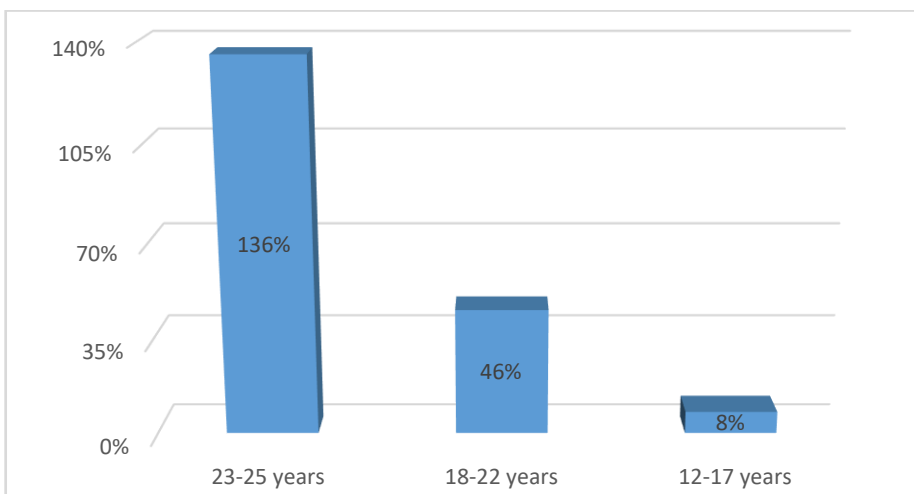


Figure 3. Distribution of male patients with Acne vulgaris according to age range



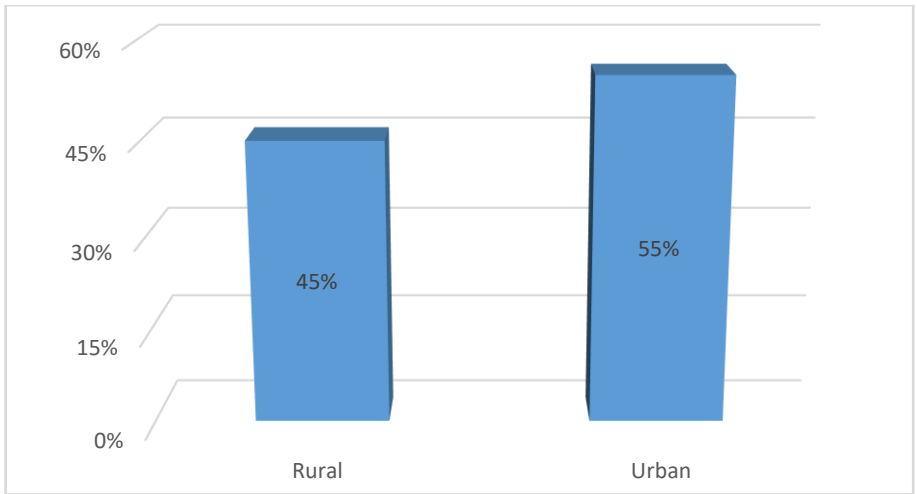


Figure 4. Distribution of patients with Acne vulgaris according to residence

However, severity of Acne vulgaris infected disease was classified according to symptoms, the results showed that, the mild infection were appeared in 22%, moderate infection were appeared in 63% and

15 % were appeared as severe infection. The results were showed in Table (2).

Table 2. Severity of infected disease according to symptoms

No.	severity of infected disease	Rate
	mild infection	22(22%)
	moderate infection	63(63%)
	severe infection	15(15%)

In the present study, a total 100 skin swab samples of patients suffering from Acne vulgaris, The results showed that, out of 100 samples, 83(83%) give positive culture, while 17(17%) samples were negative culture as shown in Figure (5).

Out of 83 positive culture on different types of growth media, and the bacterial was identified according to gram stain, the results showed that, 65(78.31%) was classified as gram positive and gram negative bacteria, while 18(27.69%) were related to other types of causative agents. *Staphylococcus aureus* was considered the most commonly bacterial isolates from patients with Acne vulgaris in rate (38%), followed by *Staphylococcus epidermidis* in rate (27.8%), (18.6%) were related to *Propionibacterium acnes*, *micrococcus* spp. in rate (10.9%), and *Corynebacterium* in rate (4.7%) as shown in Table (3).

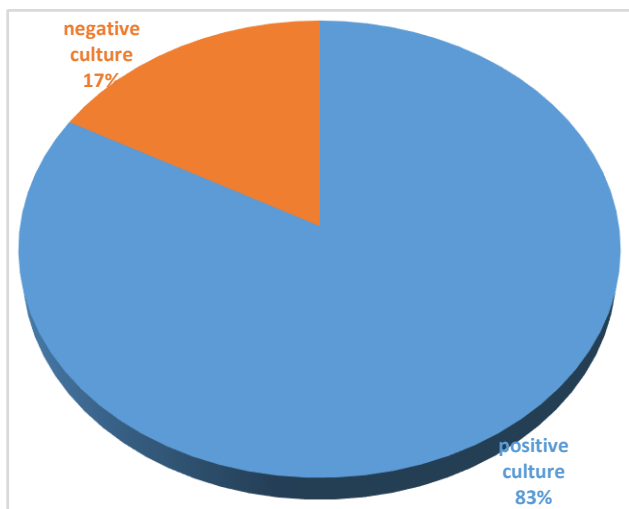


Figure 5. Positive and negative culture of all samples were collected from patients suffering from Acne vulgaris



Table 3. Identification of bacterial isolated from patients suffering from Acne vulgaris

No.	Types of bacteria	Rate
	<i>Staphylococcus aureus</i>	25(38%)
	<i>Staphylococcus epidermidis</i>	18(27.8%)
	<i>Propionibacterium acnes</i>	12(18.6%)
	<i>micrococcus spp.</i>	7(10.9%)
	<i>Corynebacterium</i>	3(4.7%)
Total		65(100%)

To confirm the isolates of bacteria was used automated Compact Vitek-2 system use GP-GN ID cards which contained 64 biochemical tests. The results demonstrated that all (65) isolates were confirmed with ID massage confidence level ranging excellent (probability percentage from 94 to 99.7%, this technique was characterized by fast detection of bacteria. it was found that, all bacterial isolates were identified by culture media and biochemical test, were identified in rate (100%) by this system.

Discussion

The burden of acne vulgaris-related illness is distributed globally. In this demographic, the incidence of Associate in Nursingd has been steadily increasing over time (Li *et al.*, 2017). This ongoing increase indicates an unmet medical specialty need for this condition throughout the world, as well as possible prospects for better dermatologic care access and delivery (Feng *et al.*, 2018). On inflammatory types, open and closed comedones or papules and pustules (Sari *et al.*, 2020). The basement membrane of the PSU surrounds the PSU and give it structural strength for its fundamental parts, including all parts hair follicle anatomy (Elsy & Khan, 2020). Stem cells in skin, when receiving the proper hormones, transform into oleaginous cells and keratinocytes, which produce oil and hair (Kim *et al.*, 2019). Squamous cells, line the central canal of the cyst, which is a component of the PSU (Radi *et al.*, 2020). Sebaceous cells, keratinocytes, and squamous epithelium in surface of duct stimulated and begin to multiply when hormones, mainly androgens (Feng *et al.*, 2018). When the growing ductal lining cells can no longer escape the PSU's body structure, they form a block, preventing secretion production and hair development from

continuing at a lower level (Radi *et al.*, 2020). The pressure inside the unit provoke nutritional infusion to the cells below, restricting their metabolism and creating a perfect hypoxic environment for (*Propionibacterium acnes*) to active. Furthermore, the excess sebum offers nourishment in the form of a range of fatty acids to bacteria that are rapidly growing within the PSU (Dhurat *et al.*, 2021). people with age 18–25 years have the greatest activity of phytotoxin from tobacco products globally, and while the rate of use has been falling in industrialized areas, developing countries rate were increase, significantly in men. (Radcliff, 2019). The popularity of electronic cigarettes has boosted phytotoxin use in recent years, especially among late teenagers (Sapru *et al.*, 2020) Medical researcher suggest a dose-dependent were related to smoking with acne incident, in prevalence and severity, suggesting pathological effects of nicotine (Monib *et al.*, 2020). In some surveys, the frequency of comedones in both sexes during adolescence exceeds 100%. (Plewig *et al.*, 2019). The incidence of skin illness varies by sexes and age groups, with females displaying symptoms earlier than men, owing to the earlier beginning of life (Gaml-Sørensen *et al.*, 2021). In late adolescence, males had more severe acne than girls, which is consistent with androgens being a powerful input to secretory secretion (Vera *et al.*, 2017). Acne prevalence has been found to be highly correlated with sexual development at a particular age (Hu *et al.*, 2021). Women, unsurprisingly, are seeing a rise in skin disease. Seasonal variations in acne vulgaris have been discovered in certain research, with the colder months being linked to aggravation and the hotter months indicating recovery (Ernst *et al.*, 2021). Many research that looked at the psychological impact of skin disease came up with mixed conclusions (Altunay *et al.*, 2020). Because of improved therapy, the prevalence of severe acne has decreased over the last 20 years (França & Keri, 2017). Treatment affects the final prevalence statistic for acne, and this must be taken into consideration when compiling data. Social variables, such as female-targeted company advertisements, might explain the disparity in patients seeking therapeutic advice (Heng & Chew, 2020). More study on gender disparities in skin disease prevalence and acne treatment might corroborate this trend (Kim *et al.*, 2017). Although depression is a prevalent comorbidity in acne patients, it's debatable if acne is the root of the problem (Altunay



et al., 2020). The genetic element of acne has been delineated in twin studies, with some studies citing late adolescent acne patients having a minimum of one first-degree relative with this condition (Common *et al.*, 2019). Human free phagocyte substance genes, haemoprotein 450 genes, and even bound glycoproteins are concerned within the genetic predisposition to acne (Stocco *et al.*, 2020). The treatment of disease of the skin vulgaris in late adolescence is approached in abundant an equivalent approach as within the remainder of the population (Awan, 2017). cocci aureus and bacteria genus spp. were found in aerobic cultures whereas a lot of cocci aureus and *Propionibacterium acne* liable for acne, were found in anaerobic cultures (Weber *et al.*, 2019). Since the foremost frequent bacterium isolated from acne patients were *Staphylococcus aureus*, it's attainable that acne acne vulgaris is especially caused by *Staphylococcus aureus* instead of *Propionibacterium cane* (Okuda *et al.*, 2018). This can be in distinction to some reports which concerned each cocci epidermidis and *Propionibacterium acnes* as bacterium inflicting acne (Mustarichie *et al.*, 2020). It should be all over that countries have an effect on the bacteria concerned in acne vulgaris (El-Tonsy *et al.*, 2018).

Conclusion

Acne vulgaris this disease frequent skin problem among teenagers, especially after puberty. The main causative agents of this disease was bacterial infection, *Staphylococcus aureus* was main bacteria that caused Acne vulgaris. Females were more infected of this disease in early age, while males were more infected al late age.

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