



**Daffodil**  
*International*  
**University**

**Project on**

**A study on prevalence of acne vulgaris and its impact on quality of life**

[In the partial fulfillment of the requirements for the degree of Bachelor of  
Pharmacy]

Submitted To

The Department of Pharmacy,  
Faculty of Allied Health Sciences,  
Daffodil International University

Submitted By

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**May 2023**

# APPROVAL

This project paper, “**A study on prevalence of acne vulgaris and its impact on quality of life**”, submitted to the Department of Pharmacy, Faculty of Allied Health Sciences, Daffodil International University, has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Pharmacy and approved as to its style and contents.

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# DECLARATION

I hereby declare that this project report, “**A study on prevalence of acne vulgaris and its impact on quality of life**” is done by me under the supervision of Dr. Sharifa Sultana Associate Professor and Associate Head, I am declaring that this Project is my original work. I also declare that neither this project nor any part thereof has been submitted elsewhere for the award of Bachelor or any degree.

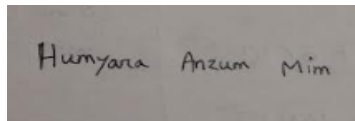
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I might want to communicate my profound applause to the All-powerful Allah who has given me the capacity to finish my undertaking work and the chance to concentrate in this subject.

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Finally, I would like to express my gratitude towards my parents and other family members for their kind cooperation and encouragement which helped me in completion of this project.



## **My Parents**

**The persons who always encourage me in every sphere of my life**

## Abstract

Acne vulgaris is a long-lasting inflammation condition that affects the pilosebaceous cells. The pathogenesis of this pleomorphic disease involves multiple factors. The purpose of this survey to determine which factors, contribute to the progression of Acne vulgaris & to determine the prevalence, severity, and effect of acne on quality of life. Majority 39% of the participants were between the ages of 15-18, 34% were between the ages of -22-19 & 27% participants were between the ages of 23 and 25. Majority of the responders 39% are university level students, 38% participants are college level students & 23% are school level students. Permitting to this survey most of the participants 76% said that they have been suffered with acne vulgaris. According to this survey 41% responders assumed that too much oil production is the cause of acne vulgaris, 32% participants thought that not shedding dead skin cell is the cause of acne vulgaris. 79% responders said that they have been taken medicine for acne vulgaris without doctor suggestion. Majority of the responders were taken doxycycline 51%. Doxycycline is an antibiotic that's why without doctor suggestion this type of medicine taken should be prohibited. Rendering to this survey 55% people exert they were visited dermatologist but 45% responders weren't visited dermatologist regarding acne. In this investigation 47% majority people said that doctor has been given SHBG test for acne diagnosis purpose, 27% said DHEA-S test has been given. According to the survey 34% people told that Benzoyl peroxide has been prescribed, 31% responders told that salicylic acid has been given, 17% participants said doctor has been prescribed antibiotics them for acne management & also 21% responders said physicians has been prescribed birth control to manage acne vulgaris. Rendering this survey most of the responders 95% have been retarded about their acne problem. According to the assessments majority of the responders said that they have been felt aggressive, embarrassed & frustrated about their acne. 85% People with acne have reported in studies that they feel unattractive, embarrassed, or self-conscious because of their complexion. 25% responders said that Corn flakes has been triggered their symptoms, 20% said puffed rice increase their indication, 19% responders assumed doughnuts or pastries has been triggered their symptoms & also 13% said milk shake sugary drinks has been triggered their acne symptoms. Finally said that Acne remains a very common inflammatory dermatosis, which is often associated with significant psychological morbidity.

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# **Chapter 1**

## **Introduction**

## **1. Introduction**

Acne is an illness of the pilosebaceous unit, which consists of hair follicles in the epidermis that are connected to an oil gland. Seborrhoea (excess grease), non-inflammatory lesions (open and closed comedones), inflammatory lesions (papules and pustules), and various kinds of scarring are all clinical characteristics of acne. [1] Acne dispersion correlates to the greatest density of pilosebaceous groups. (face, neck, upper chest, shoulders, and back). Extreme nodulocystic acne is characterized by nodules and tumors. This Seminar provides an overview of the clinical features associated with prevalent acne. (acne vulgaris). Scarring, acne rosacea, chloracne, acne linked with polycystic ovary syndrome, infantile acne, acne inversa, and drug-induced acne have all been discussed previously. [2]

### **1.1 Causes of acne vulgaris**

The risk factors and genes linked to acne outcome and therapy are unknown. Twin research have revealed the significance of genetic factors in persistent weeping acne. In a survey of 1002 Iranian 16-year-olds, a positive family history of acne twice the risk for severe acne, and the heritability of acne was 78% in first-degree relatives of those with acne in a large analysis of Chinese undergraduates. [3] Acne develops sooner in girls, but it affects more boys throughout their adolescence. Acne can appear in black children at a younger age than in white children, owing to the early onset of adolescence. Acne was less prevalent in rural areas, according to a study of 1394 Ghanaian schoolchildren, but the explanations for this are unknown. fortunately, earlier observational studies indicated a contradictory relationship between smoking and acne, later research has demonstrated that smoking worsens acne. [4] Acne may be present in polycystic ovary syndrome, which may be explained by increased insulin resistance and elevated serum dehydroepiandrosterone. Acne can get worse if the skin's surface is blocked by greasy cosmetics (pomade acne), garments, and perspiration. Monomorphic acne is commonly produced by medications like anti-epileptics, and acneiform outbreaks have been linked to anti-cancer medications like gefitinib. [5] Anabolic steroid use to increase muscular mass may be underrated, and it can result in severe forms of acne. Military troops stationed in hot, humid climates are susceptible to developing tropical acne. Dioxin consumption does not cause typical acne, but it can cause severe comedonal acne. [6]

Acne has been linked to diet, sunshine, and skin care practices, but there isn't much data to back up or contradict these theories. Dairy products may raise the risk of acne, according to one systematic review, but all of the field research it consisted of had serious flaws. [7] Previous investigations that attempted to induce acne in young people by giving them large amounts of chocolate were too small and too brief to conclude that there was no impact. The evident lack of acne in native, non-Westernized populations in Guinea and Paraguay has given rise to the hypothesis that high glycaemic loads in Western diets may contribute to acne, possibly by means of hyperinsulinaemia, which increases androgens, insulin-like growth factor 1, and alters retinoid signaling. [8] The concept receives preliminary support from a randomised controlled trial demonstrating that a low glycaemic load diet may improve acne. Despite acne has been linked to an increase in body mass, there is no proof that placing people on strict diets will lessen acne. [9]

## **1.2 Pathogenesis of acne vulgaris**

Bacterial proliferation and inflammation in the pilosebaceous units cause acne to form. Acne is caused by the body's hormone levels altering the function of the pilosebaceous duct. aberrant differentiation of follicular epithelial cells results in stronger intracellular adhesions and decreased shedding. This causes the growth of hyperkeratotic plugs or microcomedones, which expand to create non-inflammatory either open or closed comedones. [10] Acne is caused by androgens, which increase sebum production and cause the formation of comedones. (Figure 1). Sebum production associated with androgens is connected with alterations in the natural flora of the skin. A high amount of androgens in the body is caused by conditions like congenital adrenal hyperplasia, polycystic ovarian syndrome, and endocrine tumors, which are linked to the emergence of acne vulgaris. Acne is frequently found on the face, torso, neck, and back and its spread is dependent on the number and morphology of the pilosebaceous glands. [11] Forming closed or open comedones is a hallmark of non-inflammatory acne. As opposed to popular perception, open comedones, additionally referred to as blackheads, exhibit dark colored hyperkeratotic plugs within the follicular entrance that are related to melanin oxidation rather than dirt. White to flesh-toned enclosed comedones, referred to as whiteheads, lack the center open pore. *Propionibacterium acnes*, a typical member of the superficial flora, invades the pilosebaceous unit employing lipid-rich sebum as a supply of nutrients and

grows when sebum production is increased, which causes inflammation by activating complement and releasing metabolic waste products, proteases, and chemotactic factors that draw neutrophils. [12] Cysts, nodules, papules, and pustules are examples of the inflamed acne vulgaris spots that form when comedones burst because the pilosebaceous unit's components extend into the nearby dermis. Cysts can occasionally stick together to create sinuses or channels that drain. Acne-associated bacteria overgrow excessively, ductal keratinocyte hyperproliferation, host inflammatory reaction, and greater sebum secretion all contribute to acne vulgaris. [13] Microcomedone appears in the original lesion as a result of aberrant growth and differentiation during lesion beginning. Then (i) sebum builds up in the follicle lumen, resulting in an open or shut plug (ii) and inflammatory elements escape from a follicle into the dermis follow. Thus, an acne sore develops. Skin health, antigens linked to acne, and the development of acne lesions can all have an impact. Acne virulence factors encoded in the genome of *Propionibacterium acnes*, which was widely published genomic data in 2004, can deteriorate host tissue and cause inflammation. [14] The increase in acne virulence is triggered by a number of molecular signals. One is the existence of the *Propionibacterium acnes* Christie, Atkins, Munch-Peterson (CAMP) factor and a secreted protein that has the co-hemolytic activity of the host acid sphingomyelinase. (ASMase). The creation of medications that prevent or reduce bacterial overgrowth and halt the formation of acne can make use of CAMP and ASMase. [15] It has been discovered that *Propionibacterium acnes* can lyse erythrocytes in a combined manner using the CAMP response. The CAMP reaction was defined as the destruction of sheep erythrocytes by *S. aureus* sphingomyelinase C and the production of CAMP factor by some streptococcal genera. The enzyme then causes cell disintegration after hydrolyzing the sphingomyelin and phospholipids. *Propionibacterium acnes* produces the sialidase bacterial cell wall anchoring factor, which can cause the hydrolysis of sialic acid from the outermost layer of mammalian cells and result in cell death. Recombinant sialidase vaccination of sebocytes has been reported to counteract *Propionibacterium acnes*-induced toxicity in sebocytes, and sialidase-vaccinated ICR mice displayed decreased erythema on the ears. [16] This novel medication might be created to cure acne. Several extracellular hydrolases, including sialidase, endoglycoceramidases, and hyaluronate lyase, are encoded by the *Propionibacterium acnes* DNA. The bacterial proliferation of sebaceous glands is

caused by *Propionibacterium acnes* lipase. In addition to these, inflammatory mediators are produced, response is activated, and chemoattractant molecules that draw polymorphonuclear leukocytes and lymphocytes to the pimples lesion. [17]

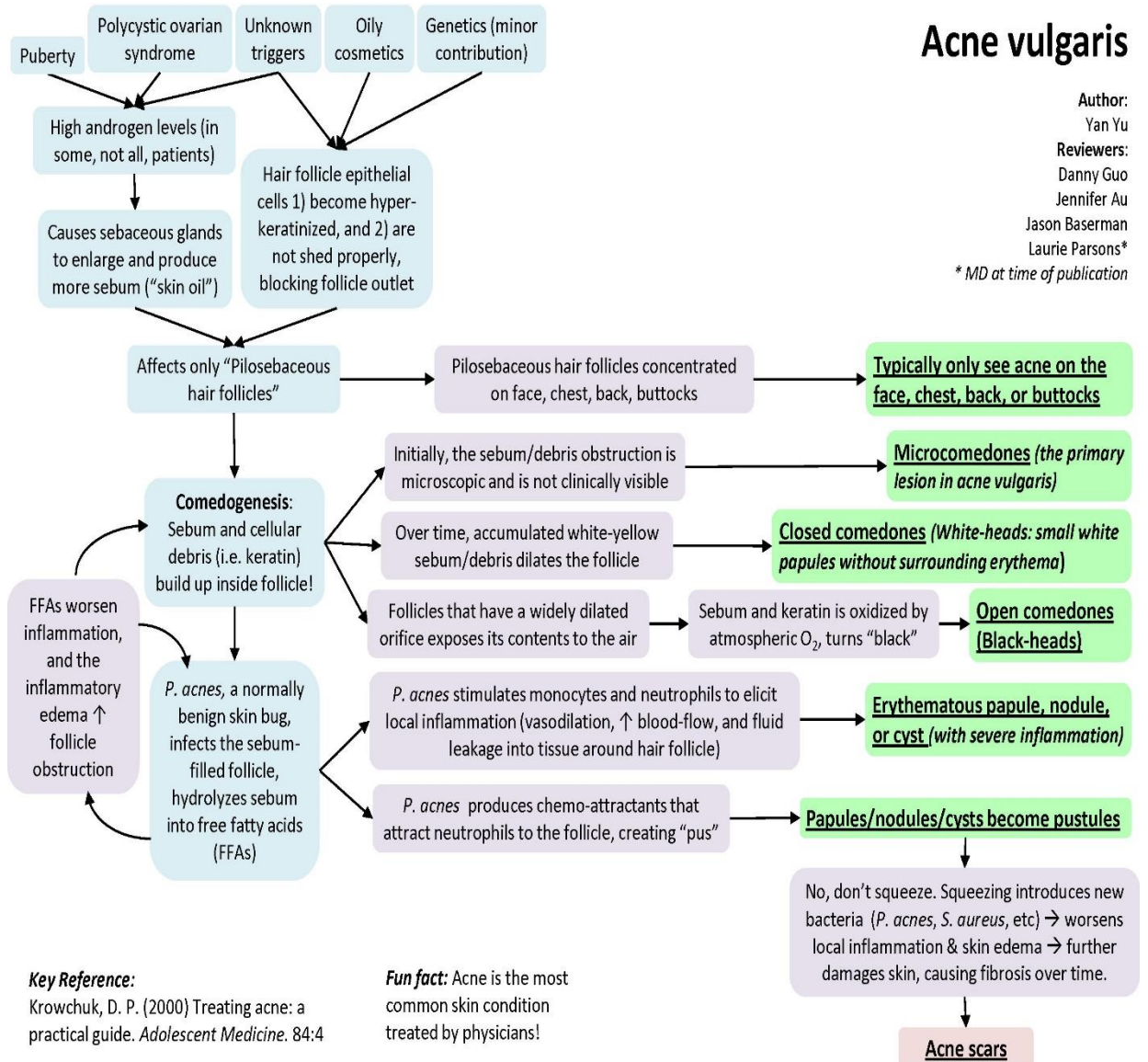


Figure 1: Pathogenesis of acne vulgaris [18]

### **1.3 Diagnosis**

Acne is typically restricted to the face, neck, torso, upper back, and upper arms because these are the body parts with the most sebaceous glands. Sebaceous glands are the focal point of each individual lesion. For the best treatment to be selected, the lesion type must be correctly classified. A comprehensive assessment of lesions and their complications (such as drainage, hemorrhage, and pain) was suggested at the 1990 Joint Meeting on Acne Classification. [19] The three additional variables employed when grading acne are the psychosocial effect, the inability to react to prior treatments, and occupational impairment. Open or closed comedones are non-inflammatory acne blemishes. Acne that presents as noninflammatory lesions is not typically categorized as severe unless the quantity, size, and spread of such lesions are extreme enough to support the label. Papules, pustules, and nodules are the types of inflammatory acne blemishes. These tumors can be nodular, papulopustular, or both. [20] The severity classifications (mild, intermediate, severe) are based on estimates of the number of lesions. Since there are no true cysts in acne, the term "cystic acne" should presumably be dropped (although these cysts can occasionally form as a side effect of the healing of an acne lesion). If there is continuing scarring, prolonged lesion drainage, sinus tracts, or any of these conditions, the phrase "severe acne" may be used. Acne conglobata, acne fulminans, and the follicular occlusion trio are considered to be the most harmful types of acne. [21]

### **Multiple Diagnoses**

Even though the majority of acne evaluations are straightforward, certain circumstances or conditions that overlap one another can be perplexing. The following list, which is not exhaustive, may help with variations evaluation: drug eruptions, perioral dermatitis, iododermas, verruca vulgaris, verruca plana, syringomas, sarcoidosis, trichoepitheliomas, follicular mucinosis, angiofibromas, infectious folliculitis, and keratosis pilaris. [22]

# **Chapter 2**

## Literature Review



## **2.1 Acne Vulgaris: Pathogenesis, Treatment, and Needs Assessment**

Frequent skin disorder acne vulgaris has a significant cutaneous and psychological disease burden. According to investigations, the emotional toll that acne takes on sufferers is on level with that of systemic illnesses like diabetes and epilepsy. In addition to the significant personal burden that acne patients bear, acne vulgaris also places a significant strain on society and the healthcare system. Each year, more than 5 million Americans seek medical treatment for acne, resulting in direct expenses of more than \$2 billion. Dermatologists diagnose acne the most frequently, and non-dermatologists also frequently make this diagnostic. The cause and current irrational fear strategies for acne are complex. The epidemiology, pathogenesis, and management of acne vulgaris are covered in this essay. Additionally, prospective directions in handling the treatment of acne are discussed, as well as the disease burden in the United States. [23]

## **2.2 A complete review on acne vulgaris**

Acne vulgaris is a long-lasting inflammation condition that affects the pilosebaceous cells. The pathogenesis of this pleomorphic disease involves multiple factors. Even though there are numerous acne manifestations, diagnosing acne correctly is essential for selecting the best treatments. There is still a lot to learn, even though earlier research has improved our knowledge of the pathogenic factors. Follicular discomfort, which is frequently triggered by the growth of the bacteria *Propionibacterium acnes* and the induction of an inflammatory reaction, is brought on by follicle blockage. Fortunately, the identification of acne is typically simple, a few disorders, such as periorificial dermatitis, keratosis pilaris, angiofibromas, bacterial folliculitis, and demodex folliculitis, can occasionally be mistaken for acne. Acne is linked to significant psychological distress in along with bodily discomfort. [24]

## **2.3 Hormonal and dietary factors in acne vulgaris versus controls**

Acne vulgaris is a long-lasting inflammation condition that affects the pilosebaceous cells. The pathogenesis of this pleomorphic disease involves multiple factors. Even though there are numerous acne manifestations, diagnosing acne correctly is essential for selecting the best treatments. There remains a lot to learn, even though earlier research has improved our knowledge of the pathogenic factors. Follicular discomfort, which is frequently

triggered by the growth of the bacteria *Propionibacterium acnes* and the induction of an inflammatory reaction, is brought on by follicle blockage. Fortunately, the identification of acne is typically simple, a few disorders, such as periorificial dermatitis, keratosis pilaris, angiofibromas, bacterial folliculitis, and demodex folliculitis, can occasionally be mistaken for acne. Acne is linked to significant psychological distress in along with bodily discomfort. [25]

#### **2.4 Effects of Diet on Acne and Its Response to Treatment**

The etiology of acne vulgaris remains to be better understood. It is well known that a variety of variables, such as genetic, hormonal, inflammatory, and environmental effects, have a bearing on the pathophysiology of acne. Diet has long been discussed in relation to acne since it has consequences for a lot of these variables. Numerous studies have examined the importance of the glycemic load and glycemic index of different foods in acne patients, and they have found that those who ingest low glycemic burden diets have fewer acne blemishes than those who ingest high glycemic load diets. Considering dietary impacts on acne, dairy has also received a lot of attention. Whey proteins, which are linked to milk's insulin tropic impacts, may be more of a factor in formation of acne than fat or dairy itself. In additional research, the effects of omega-3 fatty acid and -linoleic acid intake in people with acne were investigated. It was discovered that people with acne are helped by diets high in fish and healthy oils, which increases omega-3 and omega-6 fatty acid ingestion. Promising results have been found in recent investigations on the effects of probiotic administration in acne sufferers; however, more research is required to confirm these preliminary findings. In this summary, we address the most recent data on US acne patients' diets and how those diets may affect acne and acne treatment. [26]

# **Chapter 3**

## **Methodology**

### **3.1 Data collection procedure**

A big or small proportion of project participants, consumers, and/or stakeholders may be surveyed to collect a wealth of quantitative and qualitative data.

- I have started work for this survey in January 2023
- A survey created using a questionnaires' was being circulated on face to face individually.
- Some important data has been collected by reviewed number of related article paper from different website like google scholar, research gate and PubMed.

### **3.2 Sample size**

- I have tried my best to collect all data from different profession people for gathering different types of information.
- The examination is led by a questionnaires oriented survey, around **200 populations** was being responded for this assessments.

### **3.3 Survey questionnaires**

- The test had 15 short-answer questions and took roughly four to five minutes to finish. The survey includes the following information: (1) prologue; (2) sociosegment statistics (age, gender, instructional level, and occupation status); and (3) Acne causes and impact, (4) Acne prevention & treatment.

### **3.4 Data analysis strategy**

Data analysis is the methodical application of statistical and/or logical tools for describing and illustrating, condensing and summarizing, and evaluating data. Microsoft Excel was used to analyses the data.

# **Chapter 4**

## Purpose of the study

#### **4.1 Purpose of the study**

The inflammatory dermatosis known as acne is still highly widespread and frequently accompanied by severe psychological morbidity.

- To determine which factors, contribute to the progression of Acne vulgaris.
- To learn how the investigation was aided by their awareness and prevention efforts.
- To identification of people of all ages who suffer from acne vulgaris.
- The project's goals include gaining a thorough understanding of the medical problem being researched.
- To better comprehend the many diagnostic methods that are employed to recognize this illness.
- The objective of the current study was to determine the prevalence, severity, and effect of acne on quality of life.
- To learn how to prevent acne vulgaris.

# **Chapter 5**

## **Results & Discussion**

## 5.1 Age range of responders

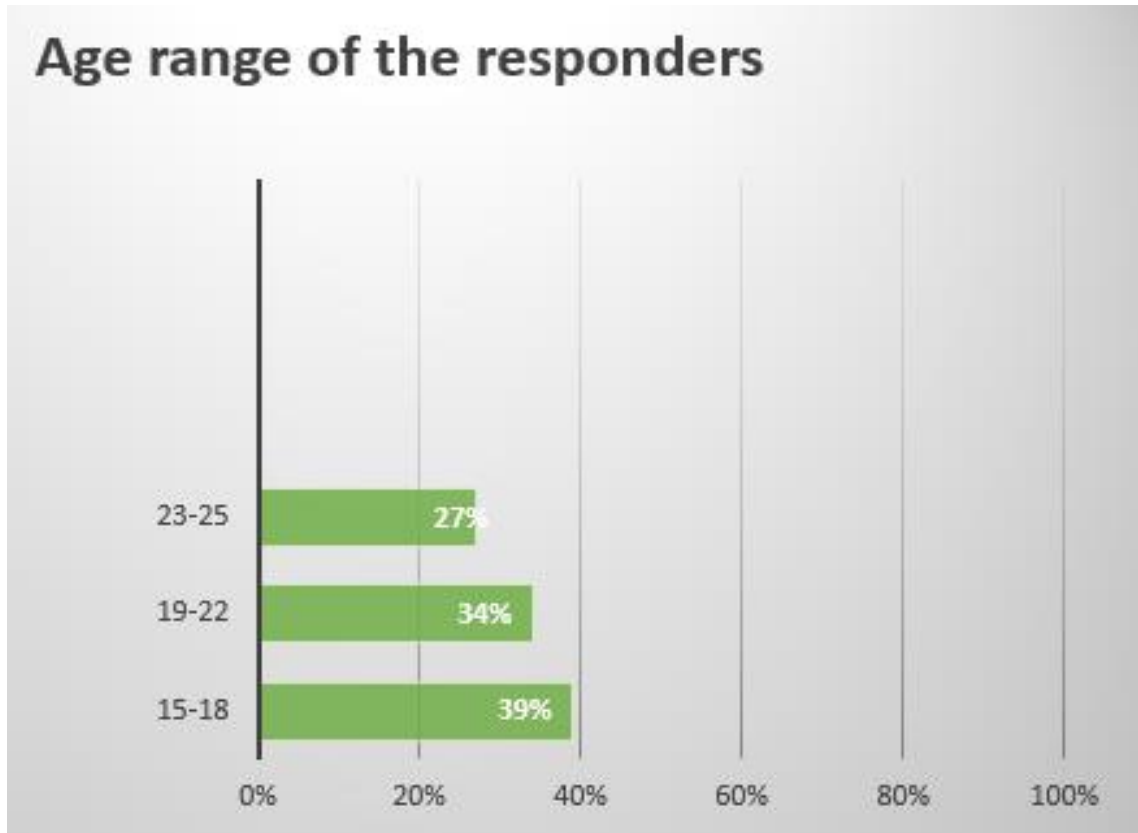


Figure 2: Age range of responders

Here many age ranges people have been responded in survey assessment. Majority 39% of the participants were between the ages of 15-18, 34% were between the ages of -22-19 & 27% participants were between the ages of 23 and 25.



## 5.2 Location of responders

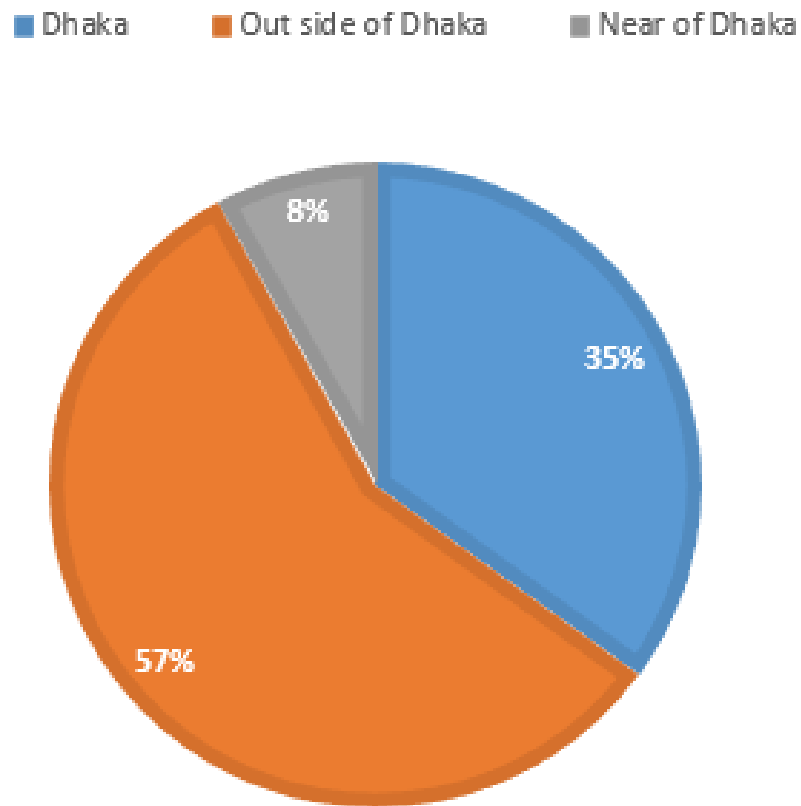


Figure 3: Location

Different places person has been participated in my survey. Here majority of the responder 57% located outside of Dhaka & 35% participants located inside Dhaka.

### 5.3 Study level of responders

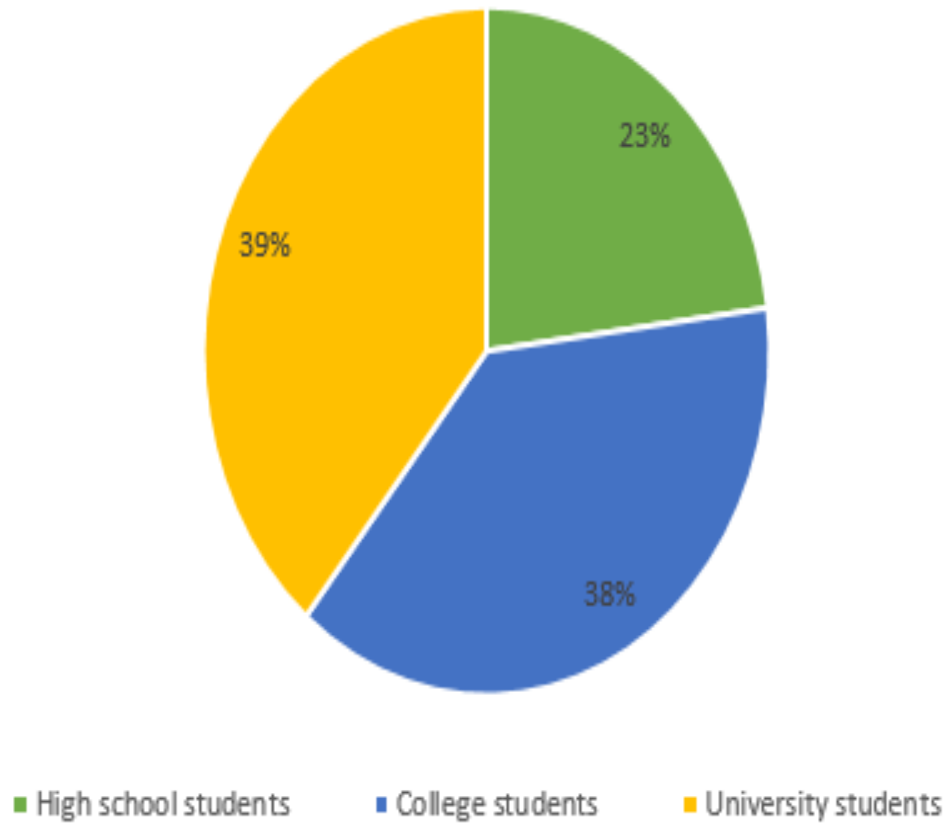


Figure 4: Study level of responders

Acne vulgaris most commonly affected adolescent. According to the investigation majority of the responders 39% are university level students, 38% participants are college level students & 23% are school level students.

#### 5.4 Do you have acne vulgaris?

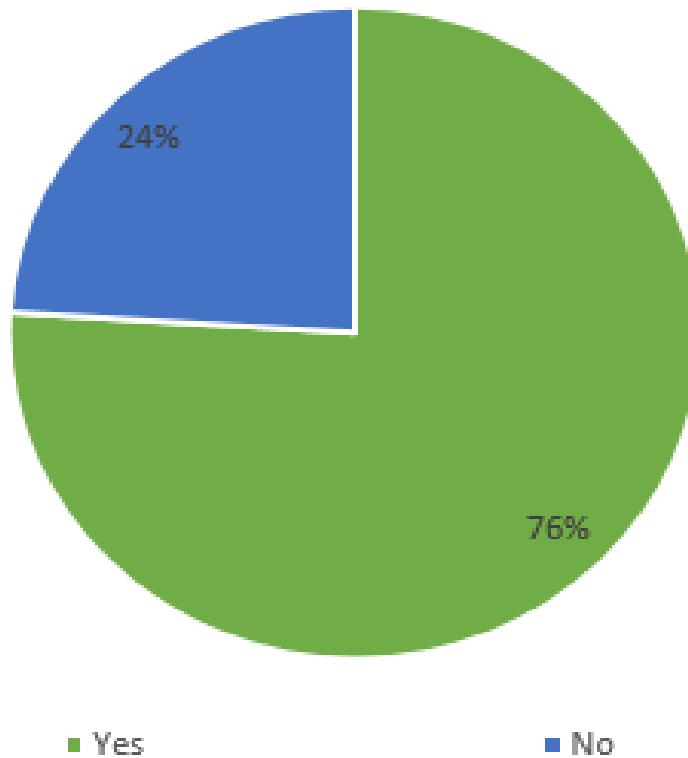


Figure 5: Affected with acne vulgaris

Acne vulgaris is the development of comedones, papules, pustules, nodules, and/or cysts as a consequence of pilosebaceous units becoming obstructed and inflamed. (hair follicles and their accompanying sebaceous gland). On the cheeks and upper trunk, acne appears. Adolescents are most frequently affected. Permitting to this survey most of the participants 76% said that they have been suffered with acne vulgaris. On the other hands minor people 24% exert that they haven't suffered acne.

### 5.5 Did your parents have acne vulgaris?

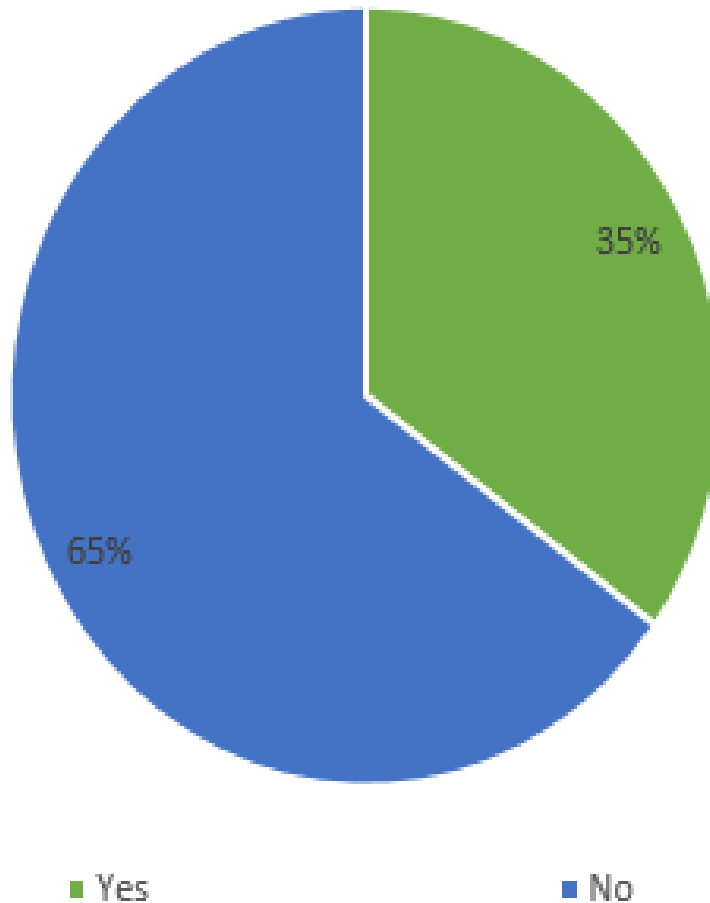


Figure 6: Affected with acne vulgaris in parents

Ages 14 to 17 for females and 16 to 19 for boys are when acne is most prevalent. Most people struggle with acne intermittently for years before their symptoms start to get better as they age. When an individual is in their mid-20s, acne frequently goes away. According to the assessments 65% responders said that their parents have no acne but few participants 35% said their parent's acne.

## 5.6 Causes of acne vulgaris

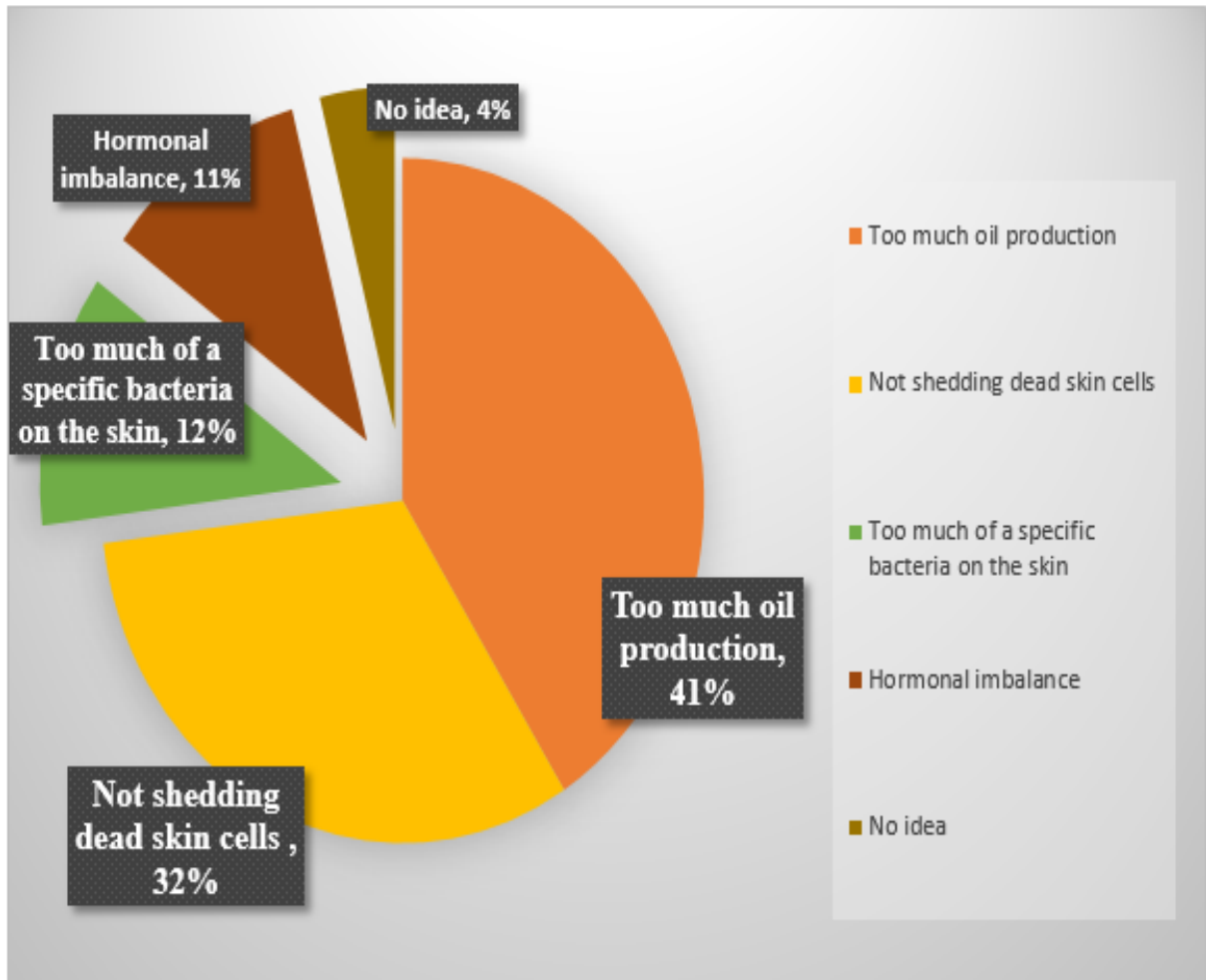


Figure 7: Causes of acne vulgaris

According to this survey 41% responders assumed that too much oil production is the cause of acne vulgaris, 32% participants thought that not shedding dead skin cell is the cause of acne vulgaris, 12% assumed that too much of a specific bacterium on the skin is the causes of acne vulgaris & also 11% people thoughts hormonal imbalance is the causes of acne.

### 5.7 Have you taken any medicine for acne vulgaris without doctor advice?

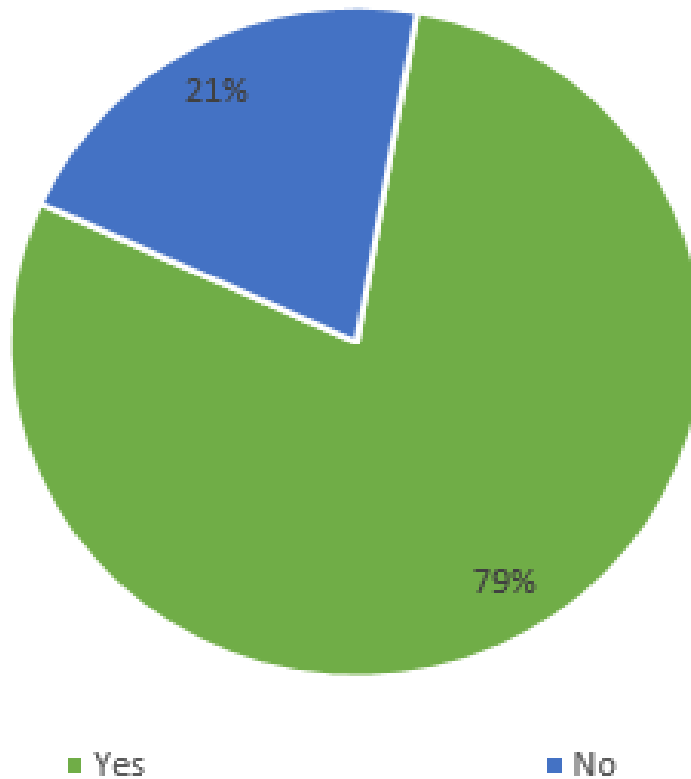


Figure 8: Medicine taken without doctor consultation

Most of the general people has been taken medicine for any disease without doctor consultation. That's why they have been suffered many adverse effect because they didn't aware the proper use of drug. In this survey has been shown 79% responders said that they have been taken medicine for acne vulgaris without doctor suggestion.

### 5.8 If yes which type of medicine have been taken?

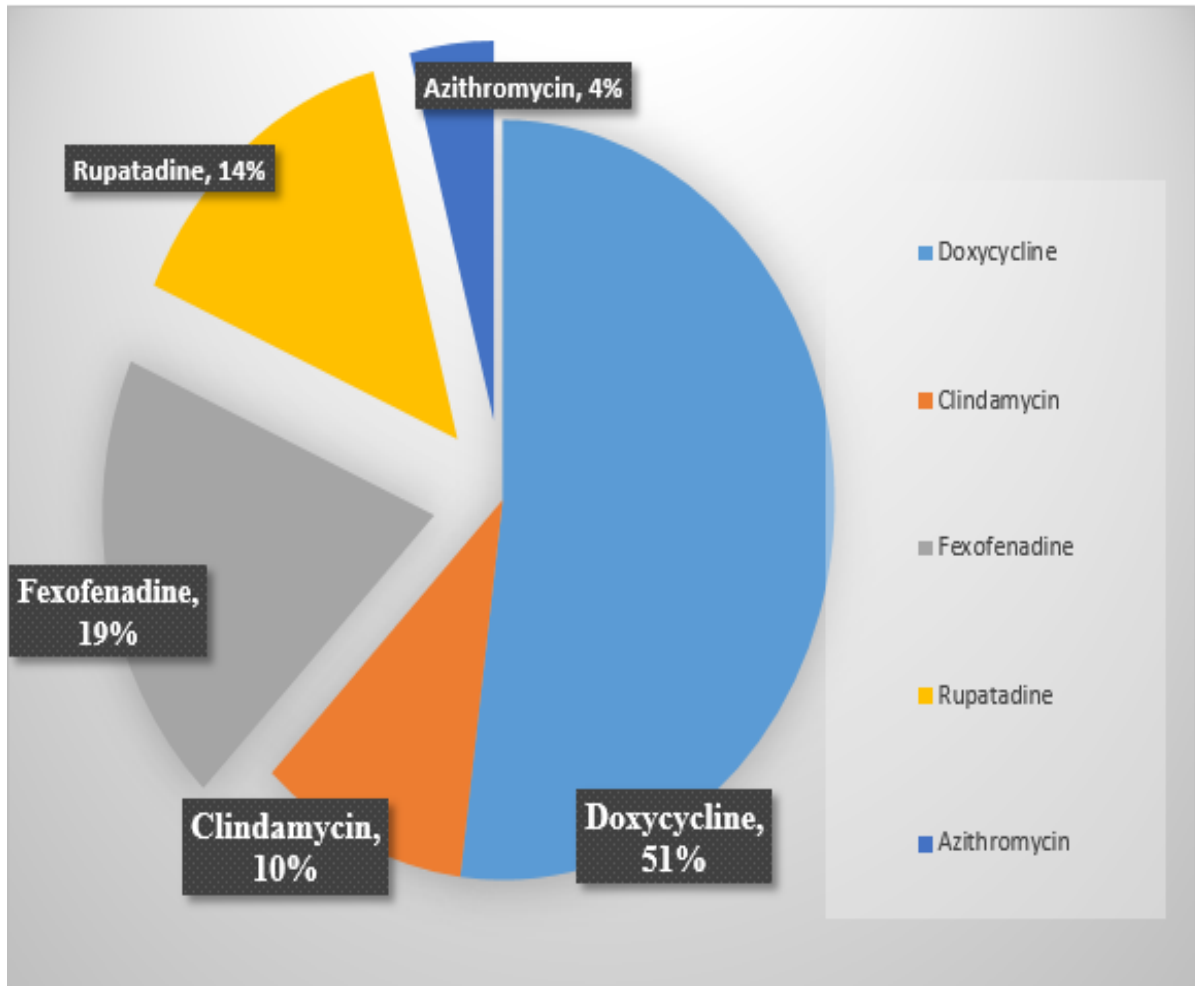


Figure 9: Taken medicine

According to the survey majority of the responders were taken doxycycline 51%. Doxycycline is an antibiotic that's why without doctor suggestion this type of medicine taken should be prohibited. Anti-histamine fexofenadine & rupatadine taken some responders. Any kind of medicine without doctor consultancy should be prevented.

### 5.9 Have you ever been visiting dermatologist regarding acne?

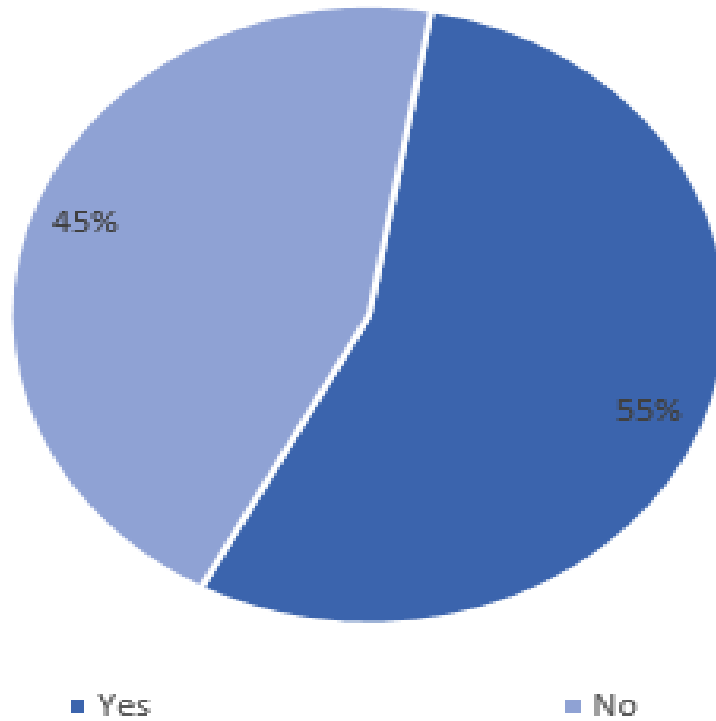


Figure 10: Visiting dermatologist

A dermatologist is a physician who focuses on diseases of the skin, hair, and nails. Rendering to this survey 55% people exert they were visited dermatologist but 45% responders weren't visited dermatologist regarding acne.



### 5.10 What kind of diagnosis did the doctor make?

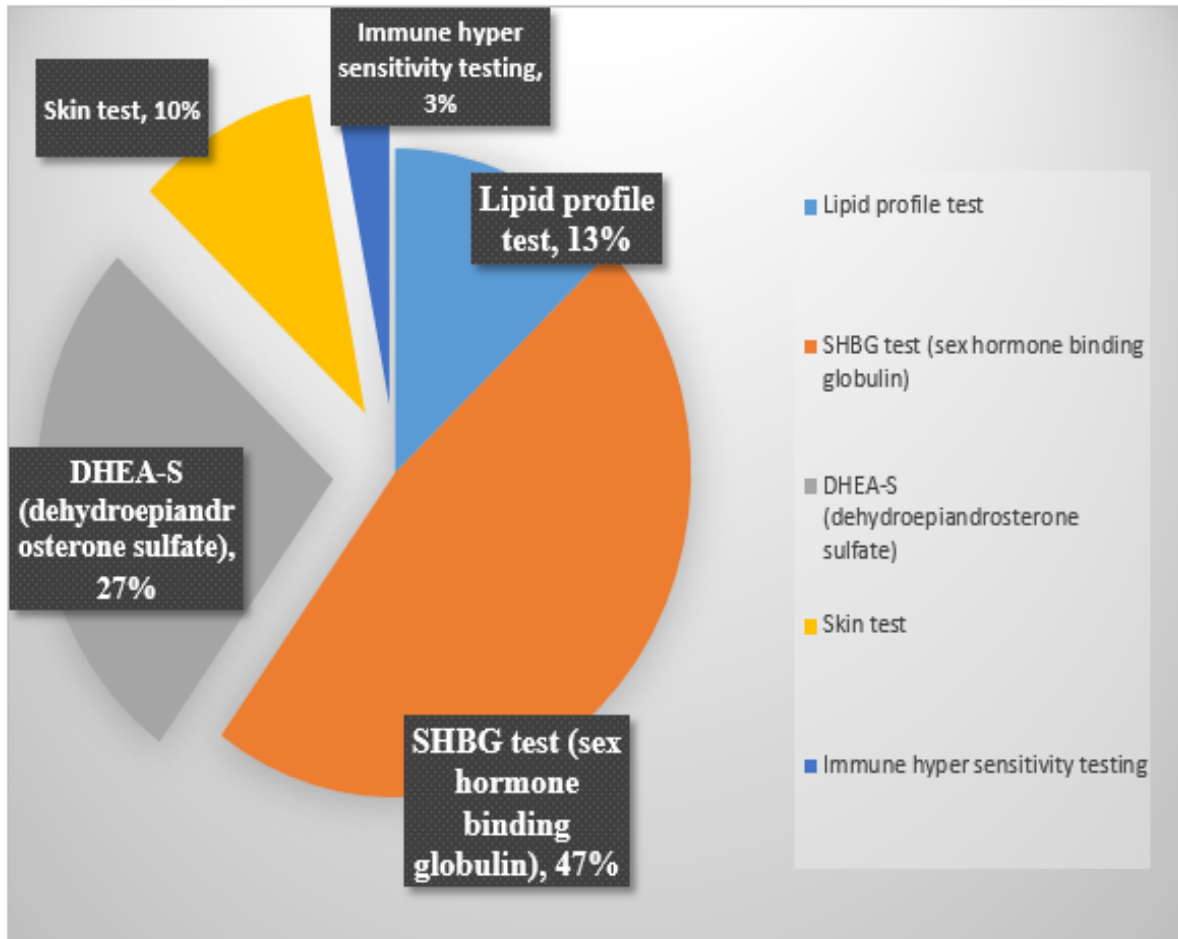


Figure 11: Diagnosis process

The skill or action of diagnosing a disease based on its signs and symptoms is the definition of DIAGNOSIS. In this investigation 47% majority people said that doctor has been given SHBG test for acne diagnosis purpose, 27% said DHEA-S test has been given, 10% said skin test has been provided & 13% people said that doctor has been given lipid profile test for acne identifying.

### 5.11 Which type of medicine prescribed by doctor?

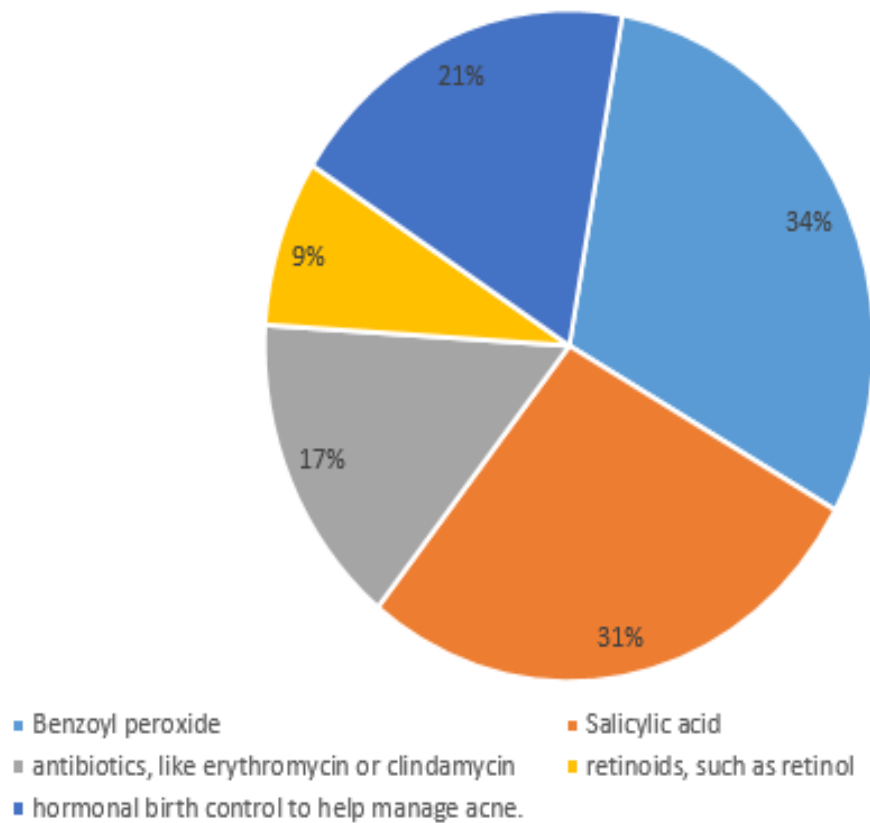


Figure 12: Prescribed medicine

According to the survey 34% people told that Benzoyl peroxide has been prescribed, 31% responders told that salicylic acid has been given, 17% participants said doctor has been prescribed antibiotics them for acne management & also 21% responders said physicians has been prescribed birth control to manage acne vulgaris.

### 5.12 Are you mentally retarded because of your acne vulgaris?

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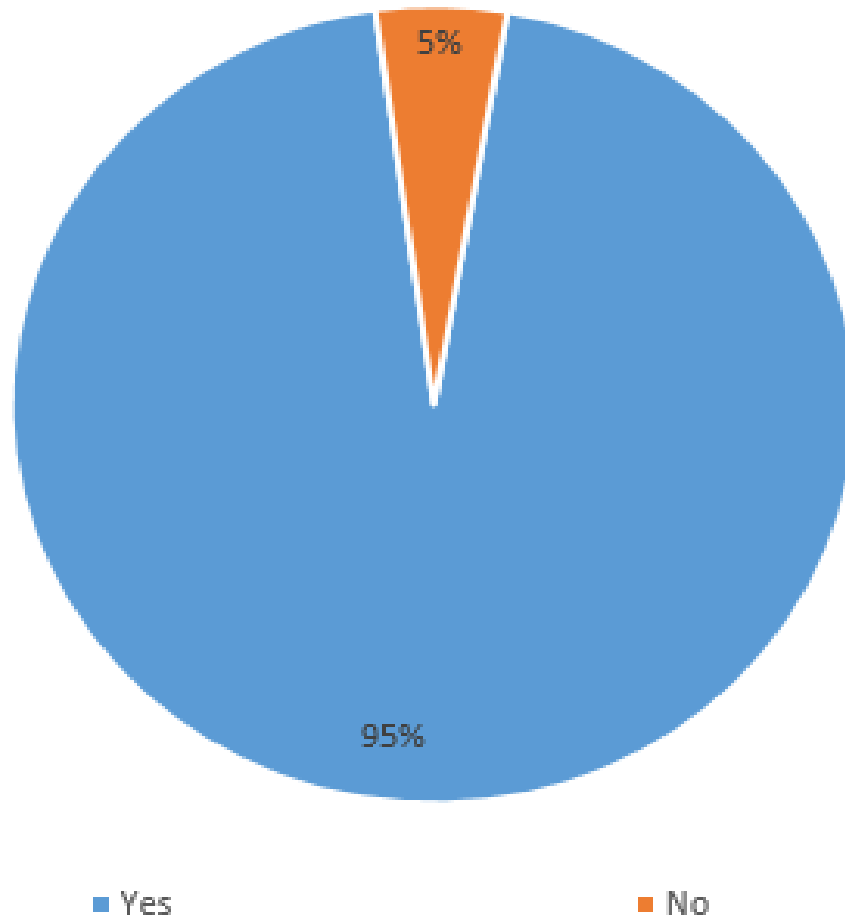


Figure 13: Mental retardation

A higher level of depression, worry, negative self-esteem, and severe acne are all linked. Psychiatric symptoms are more prevalent in late adolescence and in cases of more severe acne. Rendering this survey most of the responders 95% have been retarded about their acne problem.

### 5.13 Have you felt aggressive, embarrassed or frustrated on account of your acne?

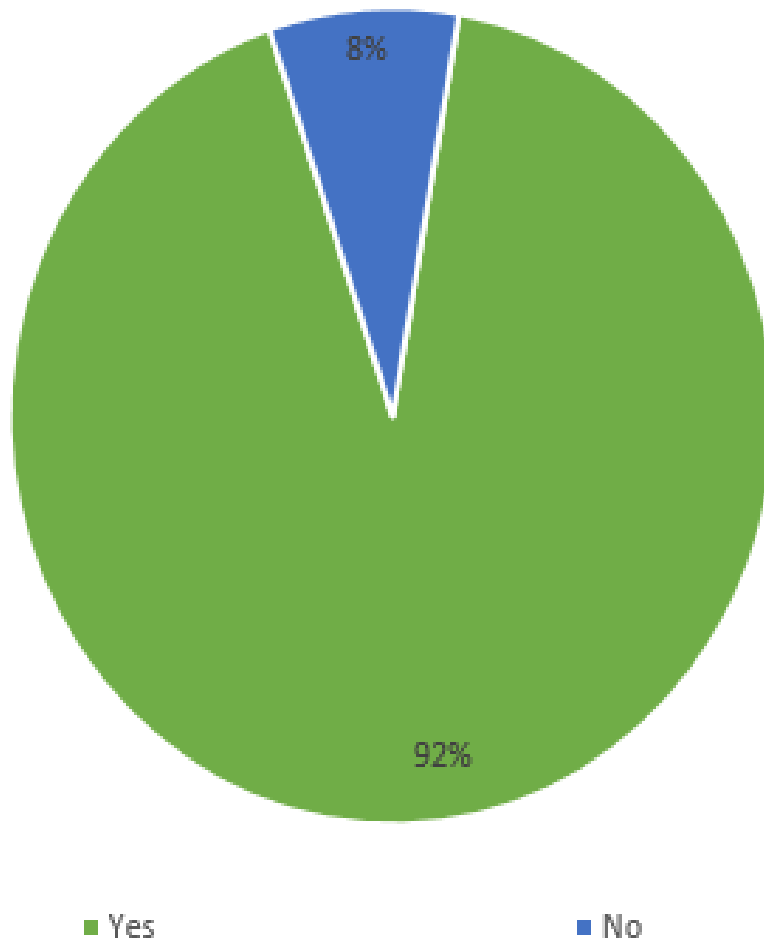


Figure 14: Frustration rate about acne

According to the assessments majority of the responders said that they have been felt aggressive, embarrassed & frustrated about their acne. Everybody shouldn't have panicked about acne because acne gradually control to the increase age.

**5.14 Do you think acne has interfered with your social life and relationship with opposite gender?**

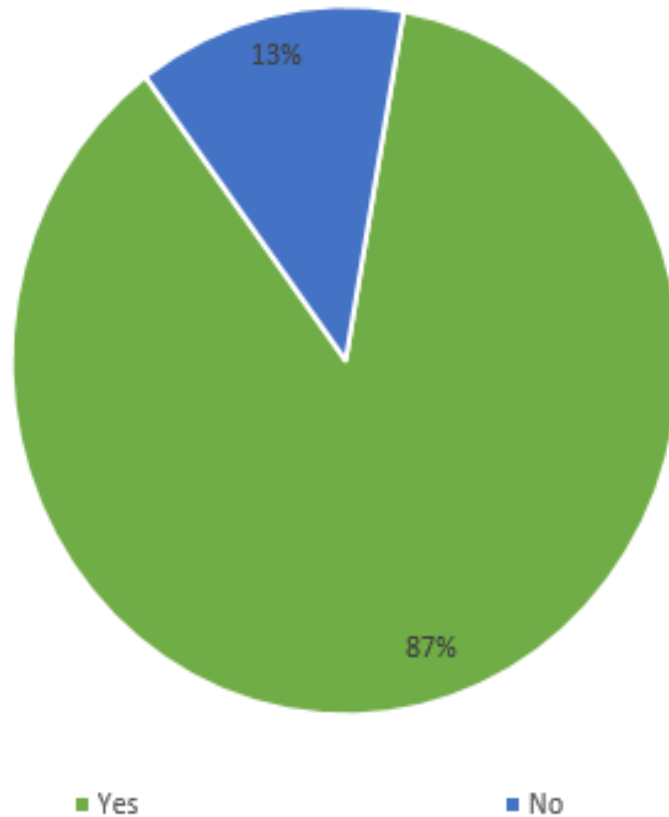


Figure 15: Interfere with social life

85% People with acne have reported in studies that they feel unattractive, embarrassed, or self-conscious because of their complexion. Some teenagers may avoid participating in class, applying for sports teams, or finding a part-time work as a result of these feelings. Some claim that having pimples makes them anxious. Research evidence suggests that the impairment of quality of life can be alleviated by appropriate topical acne treatment.

### 5.15 Do you think which food trigger acne symptoms?

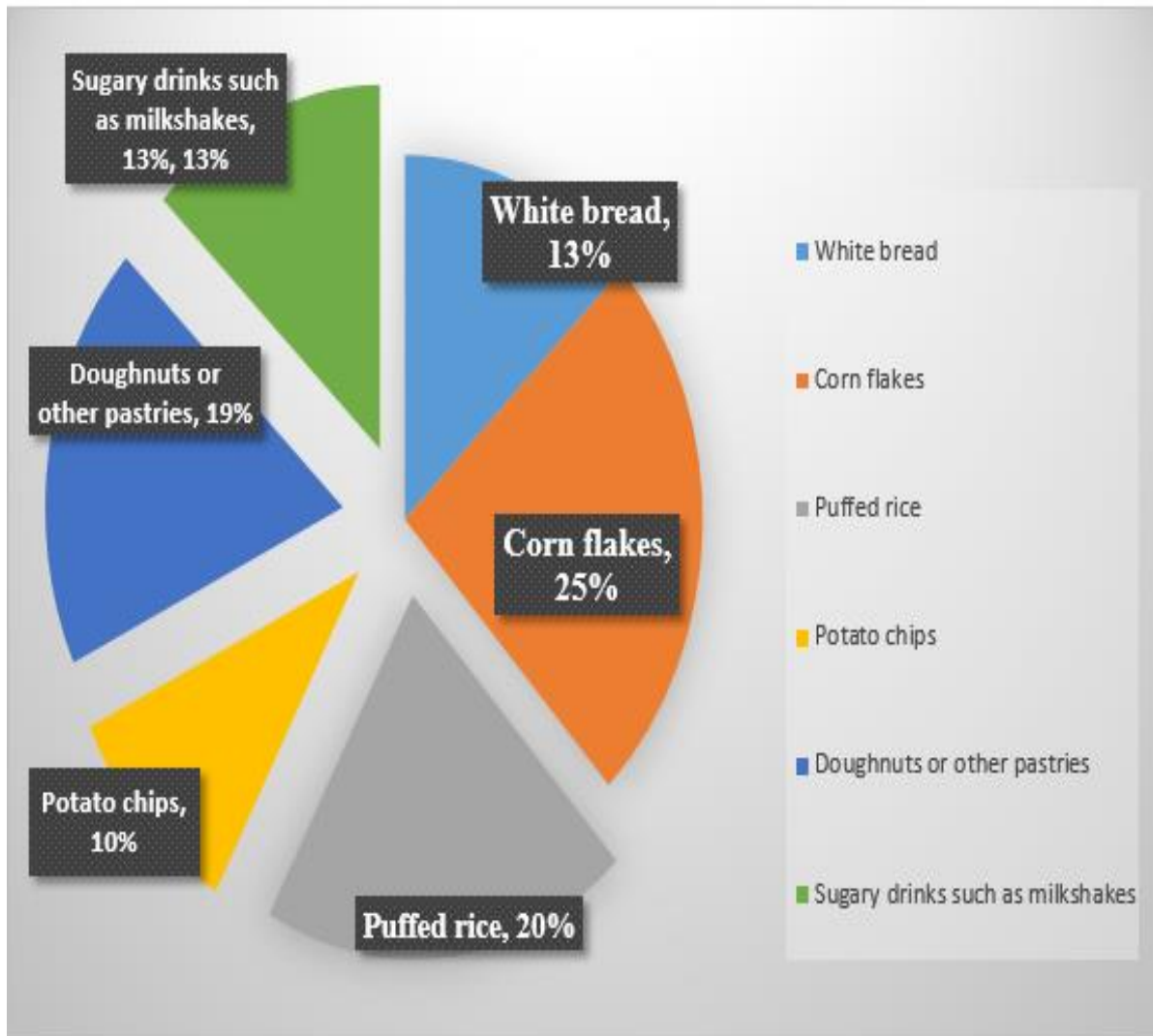


Figure 16: food trigger acne symptoms

Some food triggered acne symptoms. According to the survey 25% responders said that Corn flakes has been triggered their symptoms, 20% said puffed rice increase their indication, 19% responders assumed doughnuts or pastries has been triggered their symptoms & also 13% said milk shake sugary drinks has been triggered their acne symptoms.

# **Chapter 6**

## **Conclusion**

## **6.1 Conclusion**

In Bangladesh, the prevalence of acne vulgaris leads to elevated requests for medical care and financial resources. Acne's complex pathogenesis and management call for continuous study in order to develop best-practice recommendations. In the interim, doctors should stress the use of topical retinoids and avoidance of antibiotic monotherapy in the management of acne, among other evidence-based recommendations. Most of the general people has been taken medicine for any disease without doctor consultation. That's why they have been suffered many adverse effect because they didn't aware the proper use of drug. In this survey has been shown **79%** responders said that they have been taken medicine for acne vulgaris without doctor suggestion. Additionally, in order to improve acne treatment and lessen the significant burden of this common disease, physicians must keep pursuing novel approaches like the use of non-physician providers, tele dermatology, and other technological resources. Rendering this survey most of the responders 95% have been retarded about their acne problem. According to the assessments majority of the responders said that they have been felt aggressive, embarrassed & frustrated about their acne. According to the survey majority of the responders were taken doxycycline 51%. Doxycycline is an antibiotic that's why without doctor suggestion this type of medicine taken should be prohibited. Anti-histamine fexofenadine & rupatadine taken some responders. Any kind of medicine without doctor consultancy should be prevented.



# **Chapter 7**

## **Reference**

## Reference

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