



Daffodil
International
University

Project on

**A survey on prevalence complications and treatment
approaches of acne vulgaris at Shaheed Suhrawardy Medical
College Hospital, Dhaka**

Submitted To

The Department of Pharmacy
Faculty of Health & Life Sciences
Daffodil International University

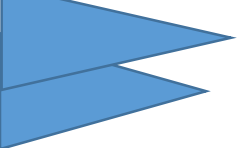
[In the partial fulfillment of the requirements for the degree of Bachelor of
Pharmacy]

Submitted By

Nahida Akter
Student ID: 201-29-1671
Department of Pharmacy
Faculty of Health & Life Sciences
Daffodil International University

.....

April 2024



APPROVAL

This project paper, “**A survey on prevalence complications and treatment approaches of acne vulgaris at Shaheed Suhrawardy Medical College Hospital, Dhaka**”, 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.

BOARD OF EXAMINERS

.....

Dr. Muniruddin Ahmed

Professor and Head

Department of Pharmacy

Faculty of Health & Life Sciences

Daffodil International University

.....

Internal Examiner 1

.....

Internal Examiner 2

.....

External Examiner 3

DECLARATION

I hereby declare that this project report, “**A survey on prevalence complications and treatment approaches of acne vulgaris at Shaheed Suhrawardy Medical College Hospital, Dhaka**” is done by me under the supervision of Dr. Md. Sarowar Hossain Associate Dean & Associate Professor, 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.

Supervised by



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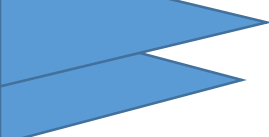
Dr. Md. Sarowar Hossain
Associate Dean & Associate Professor
Department of Pharmacy
Faculty of Health & Life Sciences
Daffodil International University.

Submitted By



.....

Nahida Akter
Student ID: 201-29-1671
Department of Pharmacy
Faculty of Health & Life Sciences
Daffodil International University



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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.

My teacher,

The persons who guided me in this process and the committee who kept me on track.

Abstract

Acne vulgaris is a common dermatological condition affecting individuals worldwide, with substantial implications for quality of life. This study aims to investigate the prevalence of acne vulgaris and its impact on the quality of life among patients attending Shaheed Suhrawardy Medical College & Hospital. A cross-sectional study design was employed, involving a sample of patients diagnosed with acne vulgaris. Data collection included demographic information, acne severity assessment, and quality of life evaluation using standardized instruments. Regarding the poll to be completed, the majority of those who responded (76%), stated that they had experienced acne vulgaris. 32% of those surveyed believed that acne vulgaris is caused by not shedding dead skin cells, whereas 41% of respondents said that acne vulgaris is caused by excessive oil production. 51% of respondents, or most of them, were taking doxycycline. According to this poll, 55% of respondents said they had seen a dermatologist, but 45% said they had not seen one for acne. In this study, the majority of respondents (47%) stated that the doctor had administered the SHBG test to diagnose acne, whereas 27% indicated the DHEA-S test had been administered. 34% of respondents stated they had been administered benzoyl peroxide, 31% said they received a prescription for salicylic acid, and 17% of participants claimed they had been prescribed antibiotics by their doctor to treat their acne. 95% of respondents said they were stupid about their acne issue. The majority of respondents stated that they have experienced feelings of aggression, embarrassment, and frustration due to their acne. According to research, 85% of people with acne say that their complexion makes them feel ugly, ashamed, or self-conscious. Twenty percent of respondent's stated puffy rice increased their signs, while twenty percent indicated corn flakes had caused their symptoms. Lastly, it was mentioned that acne is still a highly common inflammatory dermatosis and is frequently linked to serious psychological morbidity.

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Chapter 1

Introduction

1. Introduction

Acne vulgaris, commonly referred to as acne, is a prevalent skin condition affecting millions worldwide, particularly adolescents and young adults. Its impact extends beyond the physical realm, significantly influencing individuals' quality of life, self-esteem, and psychosocial well-being. Understanding the prevalence of acne and its repercussions on various aspects of life is crucial for effective management and intervention strategies. Shaheed Suhrawardy Medical College & Hospital, being prominent medical institutions, serve as hubs for diagnosing and treating various dermatological conditions, including acne vulgaris [1]. This study aims to investigate the prevalence of acne vulgaris among patients visiting these hospitals and assess its impact on their quality of life. Acne vulgaris manifests as non-inflammatory lesions such as comedones (blackheads and whiteheads), inflammatory papules, pustules, nodules, and cysts, primarily affecting areas rich in sebaceous glands like the face, chest, and back. Its development is multifactorial, involving factors such as hormonal changes, genetics, sebum production, bacteria (*Propionibacterium acnes*), and inflammation. While acne is often perceived as a transient phase of adolescence, it can persist into adulthood and have a profound psychological impact [2]. Individuals with acne commonly experience feelings of embarrassment, low self-esteem, depression, and anxiety, leading to social withdrawal and impaired quality of life. Moreover, acne-related scarring can leave lasting marks, both physically and emotionally. Despite its prevalence and impact, studies focusing on the prevalence of acne vulgaris and its consequences on quality of life in Bangladesh, particularly in the context of these hospitals, are scarce. Therefore, this study seeks to bridge this gap by providing comprehensive insights into the prevalence of acne vulgaris and its associated psychosocial implications among patients attending Shaheed Suhrawardy Medical College [3]. By shedding light on the prevalence and impact of acne vulgaris, this study aims to inform healthcare professionals, policymakers, and the general public about the importance of early detection, timely intervention, and holistic management strategies to mitigate the burden of this dermatological condition on individuals' quality of life. Additionally, the findings of this study may contribute to the development of targeted interventions and support systems aimed at improving the overall well-being of individuals affected by acne vulgaris [4].

1.1 Etiology of acne vulgaris

Acne vulgaris, commonly known as acne, is a multifactorial skin condition characterized by the formation of comedones (blackheads and whiteheads), papules, pustules, nodules, and cysts. The etiology of acne vulgaris involves various factors including:

Sebaceous Gland Hyperactivity: Sebaceous glands produce sebum, an oily substance that helps lubricate the skin. In individuals with acne, these glands are often overactive, leading to excessive production of sebum. This excess sebum can clog pores and contribute to the development of acne lesions [5].

Hormonal Influence: Hormonal changes, particularly during puberty, can trigger acne by stimulating the sebaceous glands to produce more sebum. Androgens, such as testosterone, play a significant role in this process. Hormonal fluctuations during the menstrual cycle, pregnancy, and conditions like polycystic ovary syndrome (PCOS) can also exacerbate acne.

Follicular Hyper keratinization: In acne, the cells lining the hair follicles (keratinocytes) can become abnormal, leading to increased stickiness and clumping together. This process, known as follicular hyper keratinization, can obstruct the follicle and contribute to the formation of comedones [6].

Bacterial Infection: The bacterium *Propionibacterium acnes* (P. acnes), which is normally present on the skin, can proliferate in clogged hair follicles and contribute to inflammation. This bacterium produces substances that further aggravate the inflammatory response, leading to the formation of papules, pustules, and more severe acne lesions.

Inflammation: Inflammation is a central component of acne pathogenesis. The presence of excess sebum, follicular hyper keratinization, and bacterial colonization within the follicle trigger an inflammatory response by the immune system. This inflammatory cascade leads to redness, swelling, and pain associated with acne lesions [7].

Genetic Predisposition: There is evidence to suggest that genetics play a role in the development of acne vulgaris. Individuals with a family history of acne are more likely to experience it themselves. Specific genetic variations may influence factors such as sebum

production, follicular keratinization, and immune response, predisposing certain individuals to acne.

Environmental Factors: Environmental factors such as exposure to certain pollutants, humid climates, and occupational exposures to oils or greases can exacerbate acne. Additionally, friction from tight clothing or helmets can worsen acne in susceptible individuals [8].

Dietary Factors: While the relationship between diet and acne is complex and not fully understood, some studies suggest that high-glycemic-index foods and dairy products may exacerbate acne in certain individuals. However, more research is needed to elucidate the precise mechanisms involved.

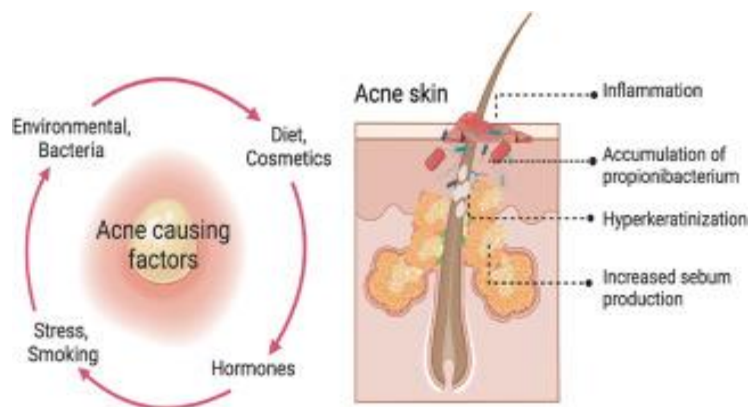


Figure 1: Acne causing factor

1.2 Pathogenesis of acne vulgaris

The growth of the distinctive lesions associated with acne vulgaris is the result of a complex interaction of elements in the pathophysiology of the disorder. This is a summary of the pathogenesis:

1. **Increased Sebum Production:** One of the primary factors in acne pathogenesis is the overproduction of sebum, an oily substance produced by the sebaceous glands. Androgens, particularly testosterone, stimulate these glands to produce more sebum. Excess sebum contributes to the development of acne lesions by providing an environment conducive to the proliferation of acne-causing bacteria and by mixing with dead skin cells to form plugs within hair follicles [9].

2. **Follicular Hyper keratinization:** Normal shedding of skin cells from the lining of hair follicles is disrupted in individuals with acne. Instead of shedding normally, skin cells become stickier and clump together, forming a plug (comedone) that blocks the follicle. This process, known as follicular hyper keratinization, contributes to the formation of both non-inflammatory (open and closed comedones) and inflammatory (papules, pustules, nodules, and cysts) acne lesions.
3. **Bacterial Colonization:** *Propionibacterium acnes* (P. acnes), a bacterium that normally resides on the skin, plays a significant role in the pathogenesis of acne. In the setting of increased sebum production and follicular hyper keratinization, P. acnes can proliferate within the plugged follicles. As P. acnes metabolizes sebum, it produces inflammatory mediators that contribute to the inflammatory response seen in acne lesions. Additionally, the presence of P. acnes within the follicle exacerbates the inflammatory cascade, leading to the formation of inflammatory acne lesions [10].
4. **Inflammation:** Inflammation is a central feature of acne vulgaris. The accumulation of sebum, keratinocytes, and P. acnes within the plugged follicle triggers an immune response, leading to the recruitment of inflammatory cells such as neutrophils and monocytes. These inflammatory cells release cytokines and other mediators that contribute to the characteristic redness, swelling, and pain associated with acne lesions. Inflammatory acne lesions, such as papules, pustules, nodules, and cysts, result from this inflammatory response [11].
5. **Hormonal Influence:** Hormonal factors, particularly androgens, play a significant role in acne pathogenesis. Androgens stimulate sebum production, leading to increased sebum secretion by the sebaceous glands. Hormonal fluctuations during puberty, the menstrual cycle, pregnancy, and conditions such as polycystic ovary syndrome (PCOS) can exacerbate acne by increasing androgen levels. Additionally, hormonal therapies targeting androgens are effective in managing acne in some individuals.
6. **Genetic Predisposition:** Genetic factors contribute to an individual's susceptibility to acne vulgaris. Family history and twin studies have shown that genetics play a role in acne development. Specific genetic variations may influence sebum production, follicular keratinization, immune response, and other factors involved in acne pathogenesis.

In conclusion, follicular hyper keratinization, bacterial colonization, inflammation, hormonal impacts, and genetic susceptibility are some of the factors that contribute to acne vulgaris, which is a complex disorder. In order to create acne treatment strategies that work, it is imperative to comprehend the intricate interactions between these variables [12].

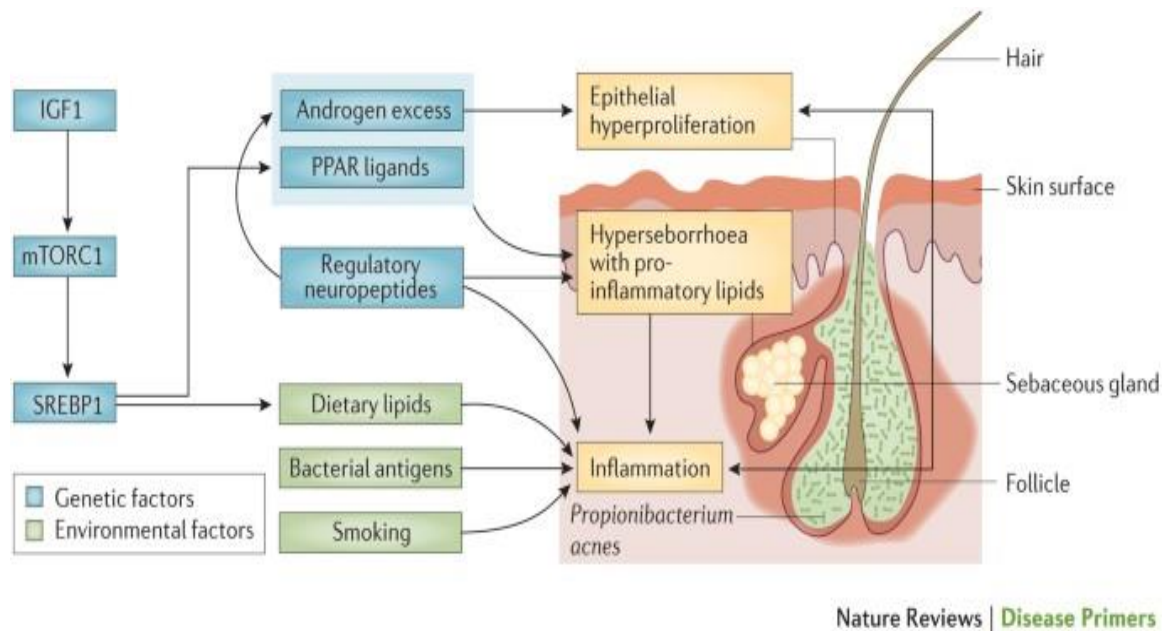


Figure 2: Pathogenesis of acne vulgaris

1.3 Diagnosis Management of Acne vulgaris

Diagnosis:

1. **Clinical Examination:** Diagnosis is primarily based on the appearance of the skin. The dermatologist typically examines the skin to identify the presence of comedones (whiteheads and blackheads), papules, pustules, nodules, or cysts [13].
2. **Medical History:** Understanding the patient's medical history, family history of acne, and any medications or cosmetics used is essential.
3. **Severity Assessment:** Acne severity can be classified as mild, moderate, or severe based on the number and type of lesions present.

4. **Rule out Other Conditions:** Other skin conditions may mimic acne, so it's essential to rule out conditions like rosacea, folliculitis, or perioral dermatitis [14].

Management:

The management of acne vulgaris aims to reduce sebum production, unclog pores, decrease inflammation, and prevent bacterial overgrowth. It may involve a combination of the following approaches:

1. **Topical Treatments:**

- **Retinoids:** They help unclog pores and reduce inflammation.
- **Benzoyl Peroxide:** Kills bacteria and reduces inflammation.
- **Topical Antibiotics:** Such as clindamycin or erythromycin to kill acne-causing bacteria.
- **Azelaic Acid:** Helps to unclog pores and reduce inflammation.
- **Salicylic Acid:** Helps to exfoliate the skin and prevent clogged pores [15].

2. **Oral Medications:**

- **Oral Antibiotics:** Used for moderate to severe acne to reduce bacteria and inflammation. Examples include doxycycline and minocycline.
- **Oral Contraceptives:** For females with hormonal acne.
- **Isotretinoin (Accutane):** Reserved for severe, nodular acne unresponsive to other treatments. It's highly effective but has potential side effects and requires careful monitoring [16].

3. **Procedures:**

- **Extraction:** Removal of comedones by a dermatologist.
- **Chemical Peels:** Help to unclog pores and reduce inflammation.
- **Laser and Light Therapies:** Can reduce bacteria and inflammation [17].

4. **Lifestyle and Home Care:**

- Gentle cleansing with a mild cleanser twice a day.
- Avoiding harsh skincare products and over washing the face.
- Using non-comedogenic moisturizers and makeup products.
- Avoiding picking or squeezing lesions to prevent scarring [18].

5. Diet and Lifestyle Modifications:

- Some evidence suggests that certain dietary factors, such as dairy and high-glycemic-index foods, may exacerbate acne in some individuals.
- Stress management techniques may also help reduce acne flare-ups in some people.

6. Follow-up and Maintenance:

- Regular follow-up visits with a dermatologist to assess response to treatment and adjust as needed.
- Maintenance therapy may be necessary to prevent relapse once acne is under control [19].

Chapter 2

Literature Review

2.1 Acne Vulgaris: Pathogenesis, Treatment, and Needs Assessment

Acne vulgaris, a common skin illness, carries a substantial burden of cutaneous and psychological disorders. Studies show that the psychological toll that acne causes its patients is comparable to that of systemic diseases like diabetes and epilepsy. Acne vulgaris not only causes a great deal of personal hardship for those who suffer from it, but it also has a major negative impact on society and the healthcare system. Over 5 million Americans seek medical attention for acne each year, which leads to over \$2 billion in direct costs. Acne is most commonly diagnosed by dermatologists, while non-dermatologists also diagnose it frequently. Acne has many complex causes and modern illogical fear tactics. The piece discusses the pathogenesis, prevalence, and treatment of acne vulgaris. Furthermore, future approaches for treating acne are examined, along with the prevalence of the condition in the US [20].

2.2 A complete review on acne vulgaris

Long-lasting inflammation of the pilosebaceous cells is caused by acne vulgaris. This pleomorphic illness is multifactorial in its pathophysiology. Despite the fact that there are many ways that acne can present itself, making an accurate diagnosis is crucial to choosing the most effective therapies. Although the previous study has increased our understanding of the pathogenic variables, there is still much to learn. Follicle blockage causes follicular apprehension which is often brought on by the development of the bacteria *Propionibacterium acnes* and the emergence of an inflammatory response. Thankfully, acne is usually easy to diagnose. However, some conditions may sometimes be confused with acne, including periorificial dermatitis, keratosis pilaris, angiofibromas, bacterial folliculitis, and demodex folliculitis. In addition to physical discomfort, acne is associated with substantial psychological suffering [21].

2.3 Hormonal and dietary factors in acne vulgaris versus controls

A chronic inflammatory disease affecting the sebaceous cells is called acne vulgaris. A multitude of factors contribute to the etiology of this pleomorphic illness. Acne manifests itself in many different ways, but determining the appropriate course for management requires accurate diagnosis. Although past research has increased our understanding of the pathologic variables, much more has to be discovered. Follicle obstruction causes follicular

discomfort, which is typically brought on by the development of the bacteria *Propionibacterium acnes* and the onset of an inflammatory response. While it is usually easy to diagnose acne, there are other conditions that can occasionally be confused with acne, including keratosis pilaris, periorificial dermatitis, angiofibromas, bacterial folliculitis, and demodex folliculitis. Together with physical difficulty, acne is associated with substantial psychological suffering [22].

2.4 Effects of Diet on Acne and Its Response to Treatment

There is much work to be done in understanding the genesis of acne vulgaris. It is widely acknowledged that the pathogenesis of acne is influenced by a number of factors, including hormonal, genetic, inflammatory, and environmental factors. Although diet affects several of these factors, it has long been addressed in connection with acne. Consuming low-glycemic burden diets results in fewer acne blemishes than high-glycemic load diets, according to a number of research that have looked at the significance of glycemic load and glycemic index of various foods in acne patients. Dairy products have also drawn a lot of discussion when discussing the effects of diet on acne. Acne may be caused more by whey proteins, which are connected to the insulin-tropic effects of milk, than by fat or dairy products alone. Further studies looked into the impact of α -linoleic acid and omega-3 fatty acid consumption in acne sufferers. It was found that diets high in fish and healthful oils, which boost the absorption of omega-3 and omega-6 fatty acids, are beneficial for those with acne. Recent studies on the effects of probiotic supplementation in acne sufferers have shown encouraging results; additional study is necessary to validate these early results. In this overview, we discuss the most current information on diets of American acne patients and how diets may impact acne and treatment of acne [23].

Chapter 3

Purpose of the study

3. Purpose of the study

- The study aims to determine the frequency or occurrence of acne vulgaris among the population studied
- Beyond just determining the occurrence of acne vulgaris, the study also intends to assess how it affects the overall quality of life of individuals who suffer from it.
- The study's goal is to provide a thorough knowledge about the prevalence and effects of acne vulgaris in the population under investigation by examining these two factors.

Chapter 4

Methodology

4. Methodology

Develop a structured questionnaire that covers demographics, awareness about Acne vulgaris, prevalence, and management practices. Employ trained interviewers for face-to-face or telephone interviews, depending on resources.

4.1 Data Collection:

- Some important data has been collected by reviewed number of related article paper from different website like Google scholar, research gate and PubMed.
- Gather evidence associated to Understanding Prevalence & Management of Acne vulgaris, such as the presence of symptoms, family history, triggers, severity, and healthcare utilization.
- The test had 16 short-answer questions around 200 populations was being responded for this assessments.
- Data analysis is the methodical application of statistical and/or logical tools for describing and illustrating, condensing and summarizing, and evaluating data.
- The survey took place at Shaheed Suhrawardy Medical College Hospital, Dhaka from January 18 to March 20, 2024.

Chapter 5

Results & Discussion

5.1 Age range of responders

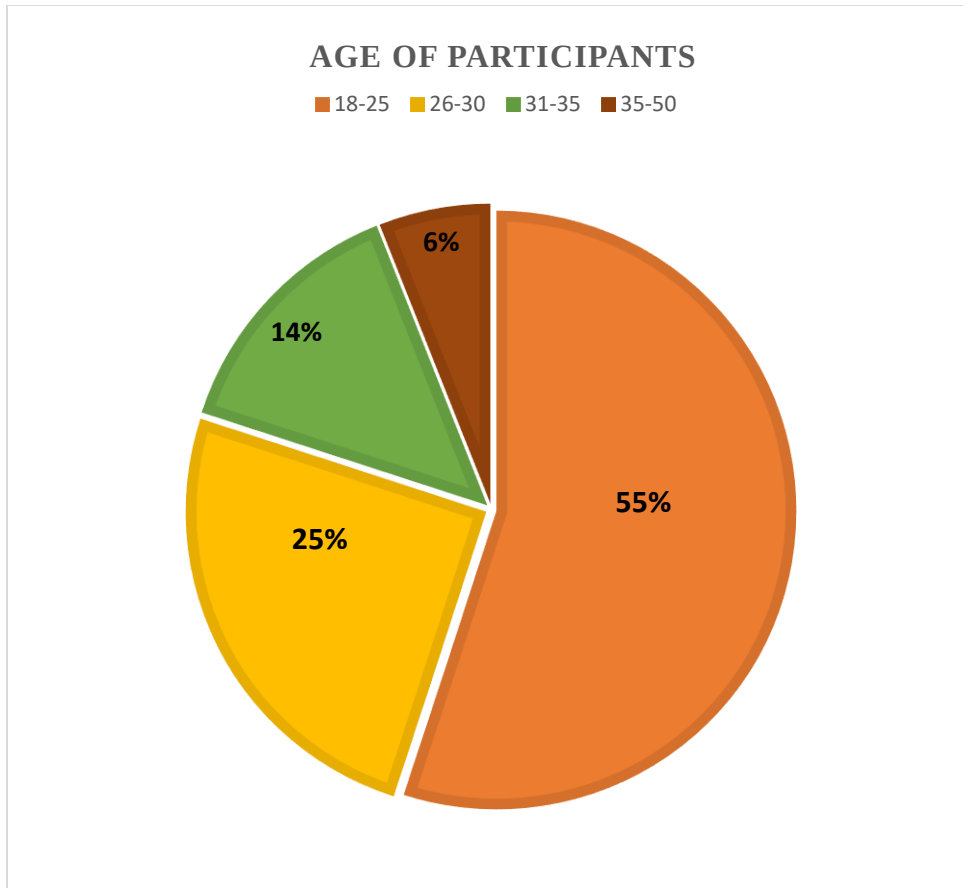


Figure 3: Age range of responders

This assessment has been done by given response in different age group. In this investigation maximum 55% of the responders were between the ages of 18-25, 25% of the responders were between the ages of 26-30 & 14% of the responders were between the ages of 31-35.

5.2 Study level of responders

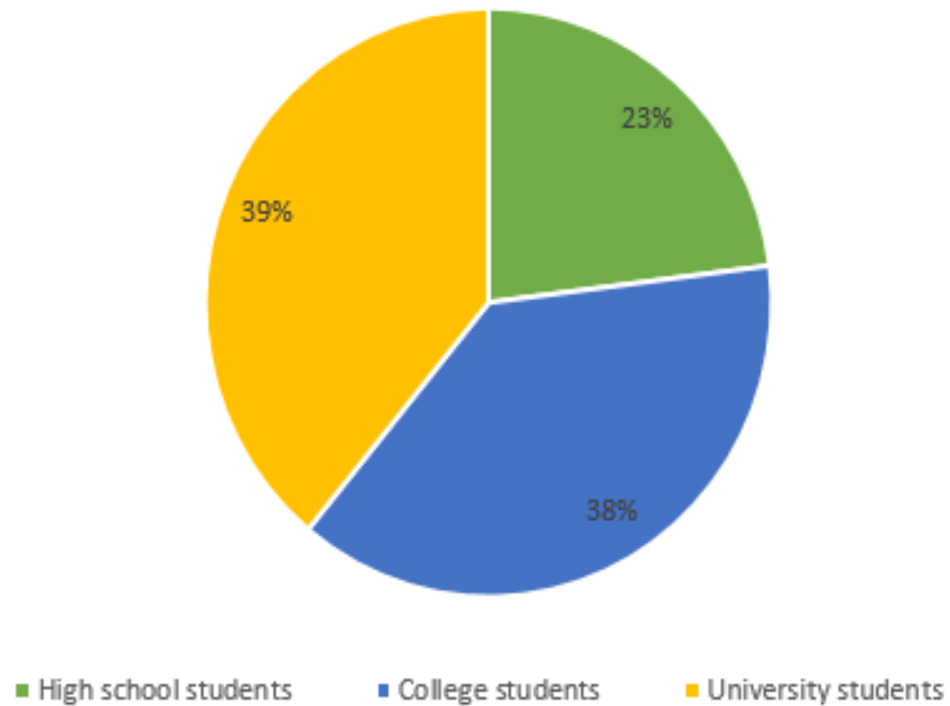


Figure 4: Study level of responders

The greatest number of responders 39% are university students, 38% are college students, and 23% are school students were, based to the research. Teenagers are the most typically victimized with acne vulgaris.

5.3 Ratio of affected person by Acne vulgaris

Q: Do you have acne vulgaris?

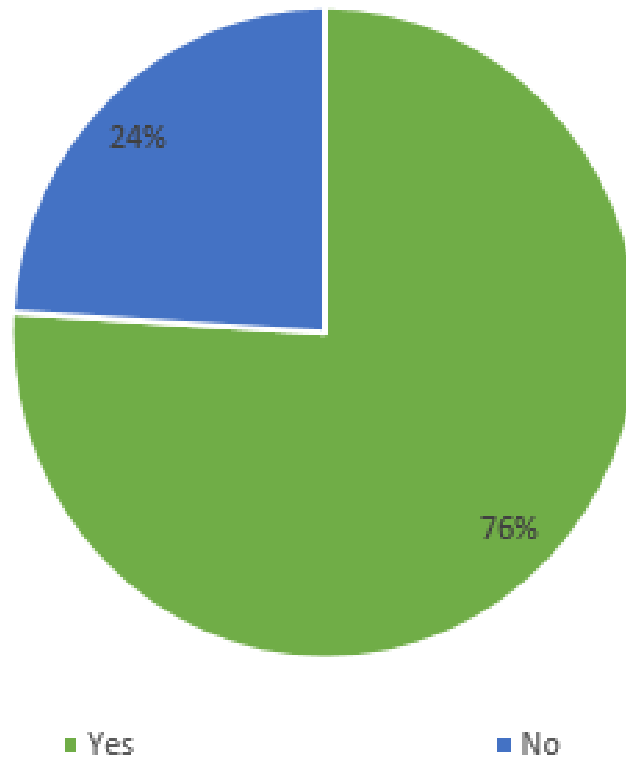


Figure 5: Affected with acne vulgaris

Regarding the study to be completed, the majority of those who responded (76%), stated that they had experienced acne vulgaris. Conversely, among minorities, 24% claim never to have had acne. Acne can range from mild to severe and can cause emotional distress and scarring if left untreated.

5.4 Family history

Q: Do you have a family history (like father, mother and siblings) who has or had Acne vulgaris?

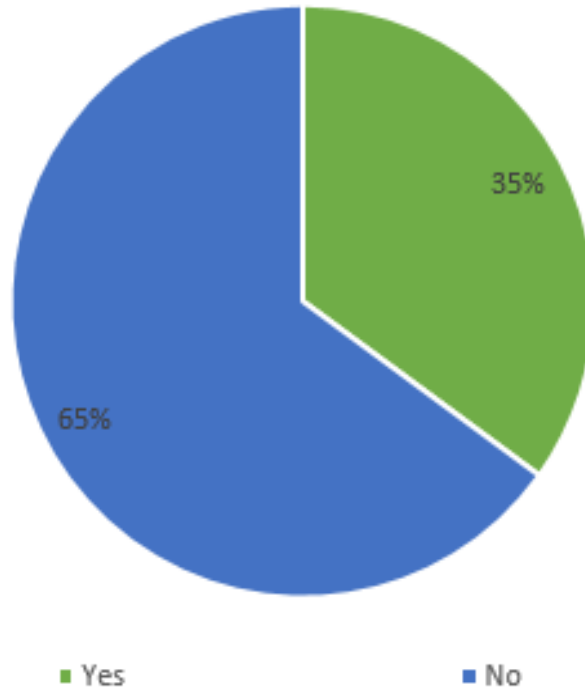


Figure 6: Family history

Based on the evaluations, 65% of the respondents have been stated that their family members have no have acne vulgaris, whereas 35% have been reported that their family member have acne vulgaris. Teenagers and young adults are particularly susceptible to acne vulgaris due to hormonal changes that occur during puberty, which can lead to increased oil production in the skin and clogged pores.

5.5 Causes of acne vulgaris

Q: Do you know causes of Acne vulgaris?

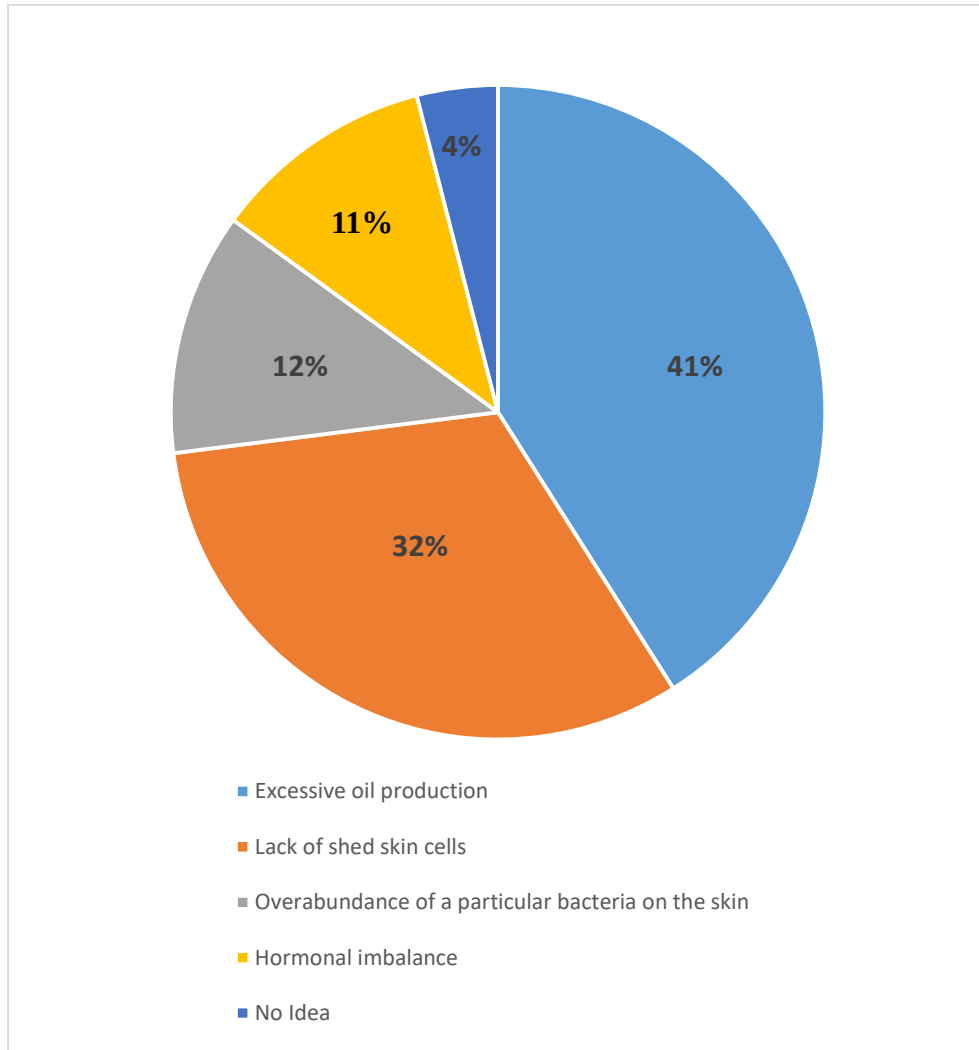


Figure 7: Causes of acne vulgaris

Based on the results of the study, 41% of those surveyed believed that excessive oil production was the root cause of acne vulgaris, 32% believed that the lack of shed skin cells was the reason, 12% believed that an overabundance of a particular bacteria on the skin was the trigger, and 11% believed that hormonal imbalance was the cause of acne.

5.6 Taken medicine without doctor suggestion

Q: Have you taken any medicine for acne vulgaris without doctor advice?

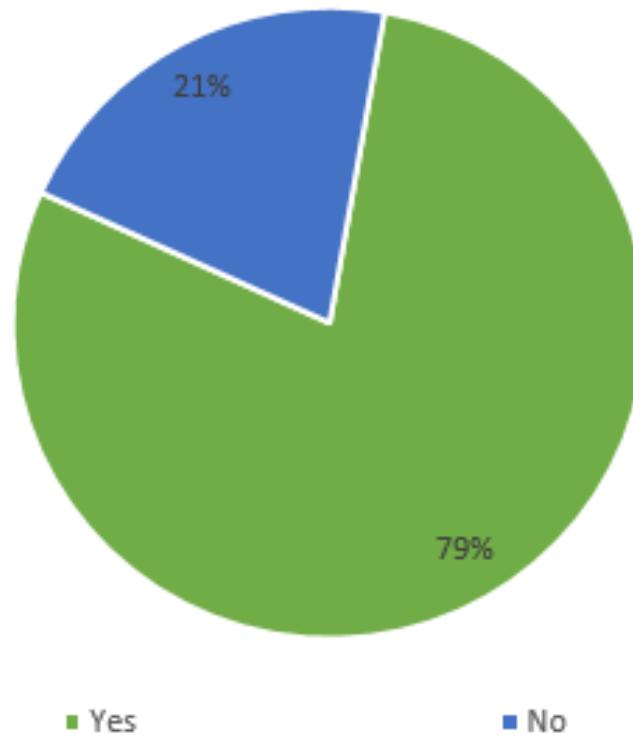


Figure 8: Taken medicine without doctor suggestion

According to this research, 79% of participants admitted to taking acne medication on their own lacking a prescription. The possibility that consuming medicines prior first seeing a doctor puts you at risk for side effects, which is one of the largest concerns.

5.7 Taken medicine

Q: If yes, which type of medicine have you been used for relieving Acne vulgaris?

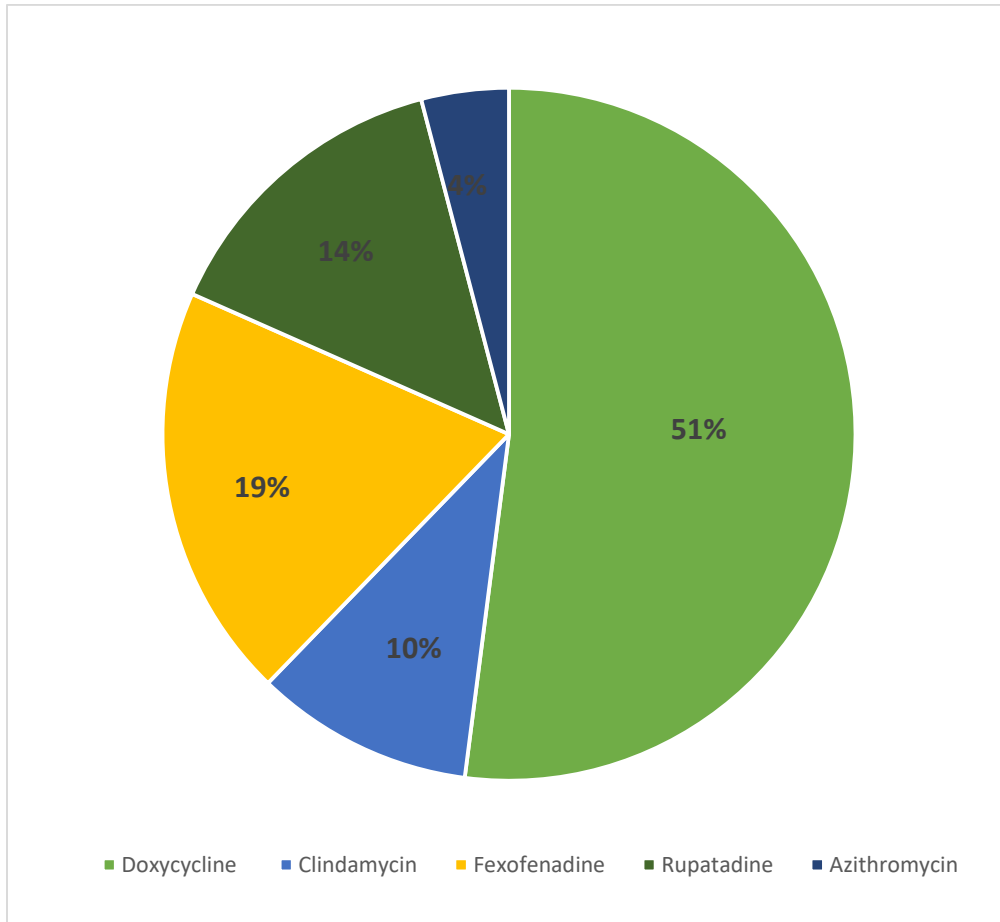


Figure 9: Taken medicine

A large number of respondents 51 percent to the study reported taking doxycycline. Since doxycycline is an antibiotic, using this kind of medication without a prescription should be avoided. Some responders were given Ruptadine and fexofenadine, two antihistamines. Avoid using any form of medication without first consulting a physician.

5.8 Visiting dermatologist

Q: Have you ever been visiting dermatologist regarding acne?

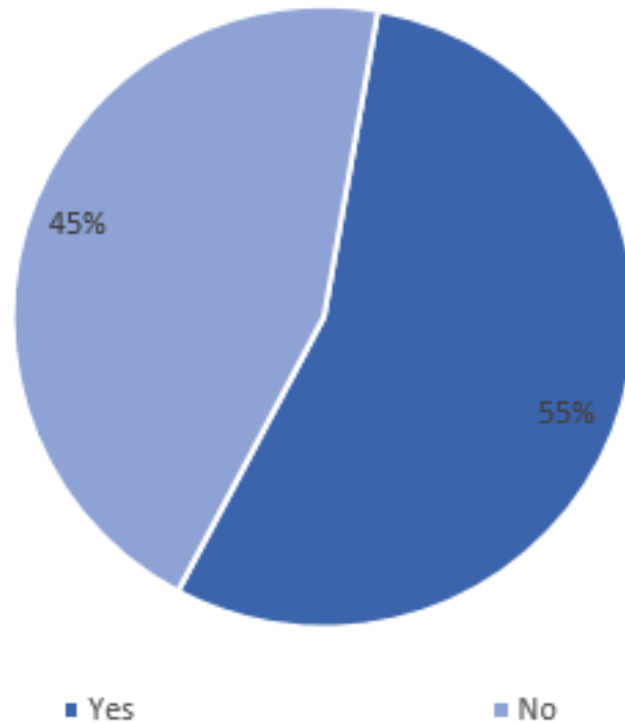


Figure 10: Visiting dermatologist

A dermatologist is a doctor who specializes in conditions affecting the nails, skin, and hair. According to this poll, 55% of respondents said they had seen a dermatologist, but 45% said they had not seen one for acne.

5.9 Diagnosis for Acne vulgaris

Q: Which type of diagnosis did the physician make?

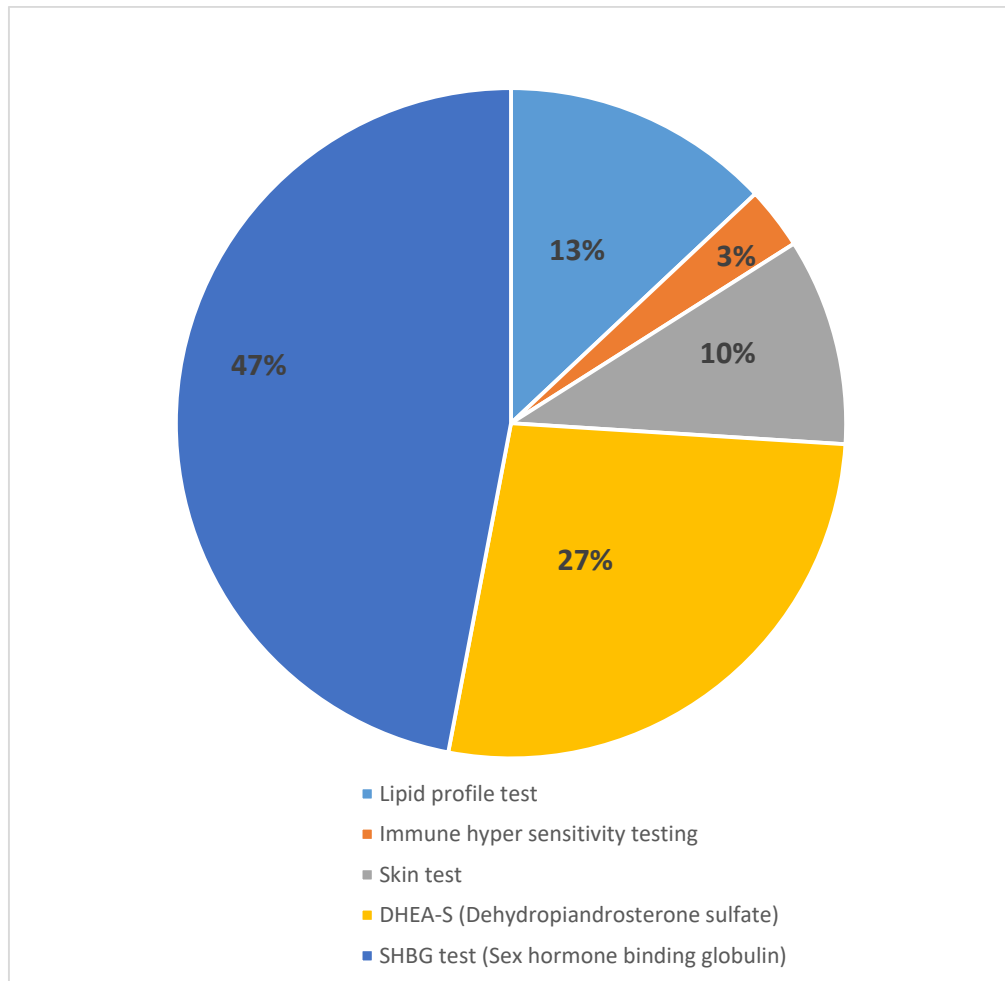


Figure 11: Diagnosis for Acne vulgaris

In the current research, 47% of respondents stated that the doctor had administered the SHBG test to diagnose acne, 27% reported that the DHEA-S test had been administered, 10% mentioned that a skin test had been performed, and 13% stated that the doctor had administered the lipid profile test to recognize acne.

5.10 Medicine prescribed by doctor

Q: Which type of medicine prescribed by doctor?

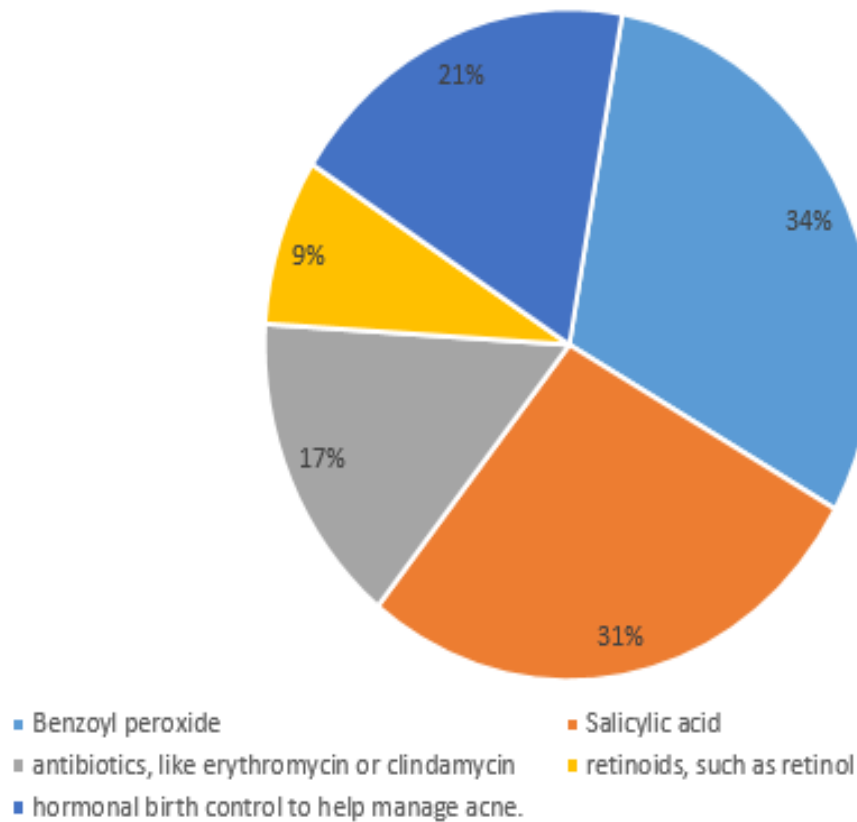


Figure 12: Prescribed medicine

In the investigation, 34% of respondents said they had been prescribed benzoyl peroxide, 31% said they had been stipulated salicylic acid, 17% said their doctor recommended antibiotics to treat their acne, and 21% said their doctor had stipulated birth control to treat their acne vulgaris.

5.11 Mental retardation

Q: Is your acne vulgaris the cause of your mental retardation?

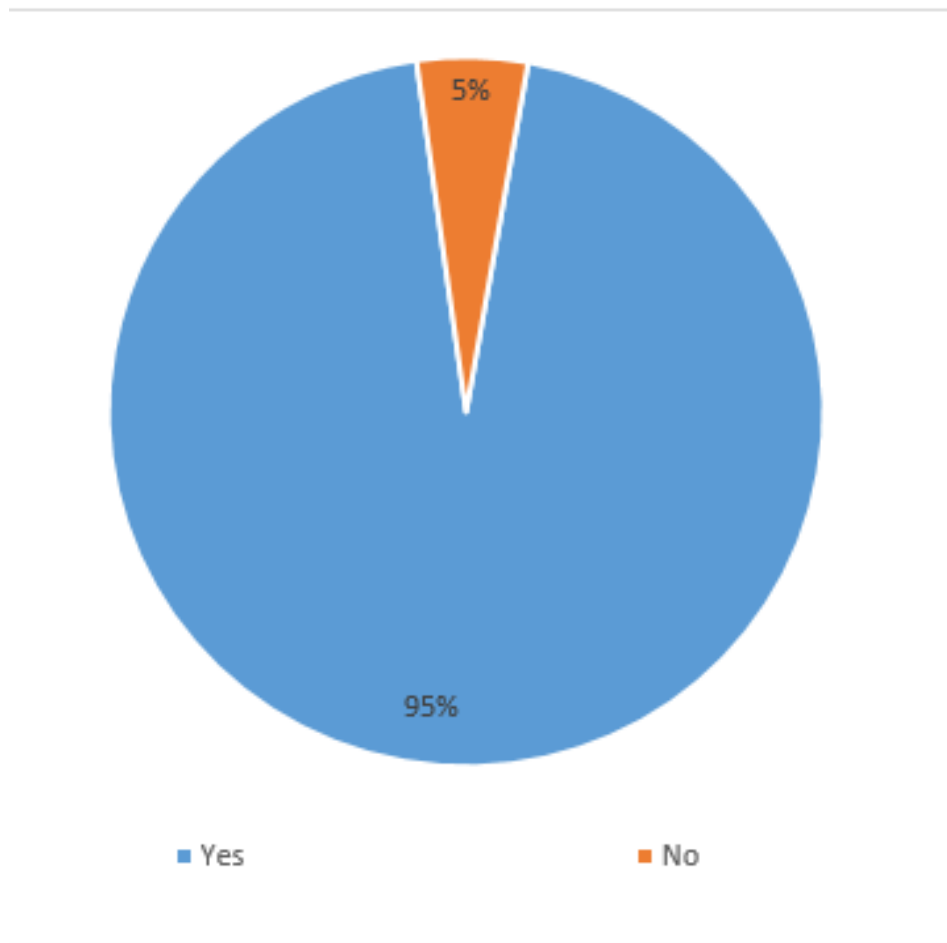


Figure 13: Mental retardation

There is a correlation between severe acne, low self-esteem, anxiety, and greater levels of depression. More serious acne instances and late adolescence are associated with a higher prevalence of psychiatric disorders. When it came to their acne condition, 95% of the respondents to this study said they were retarded.

5.12 Frustration rate about acne

Q: Have you felt aggressive, embarrassed or frustrated on account of your acne?

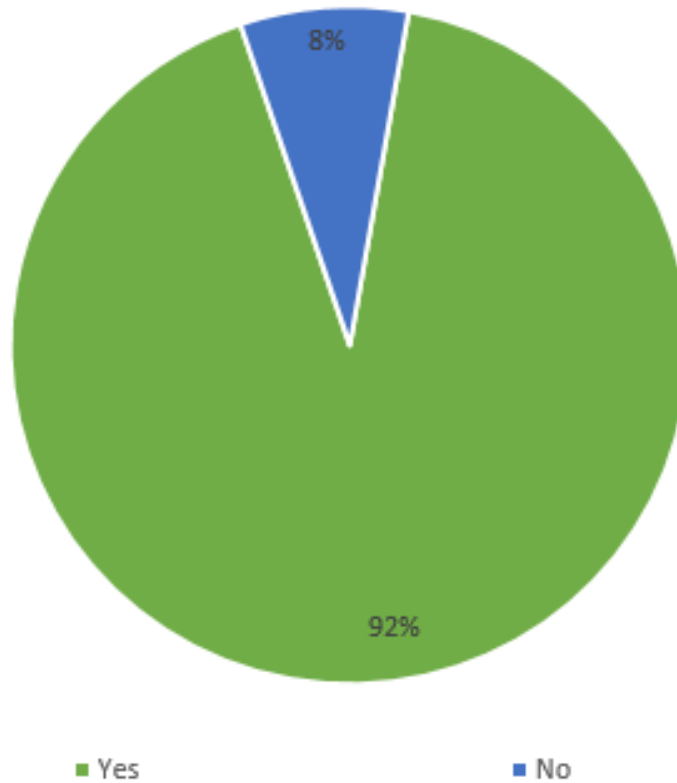


Figure 14: Frustration rate about acne

Based on the evaluations, most of the participants reported feeling hostile, ashamed, and annoyed due to their acne. Nobody should have been alarmed by acne since it usually clears up as people mature.

5.13 Interfere with social life

Q: Do you think acne has interfered with your social life and relationship with opposite gender?

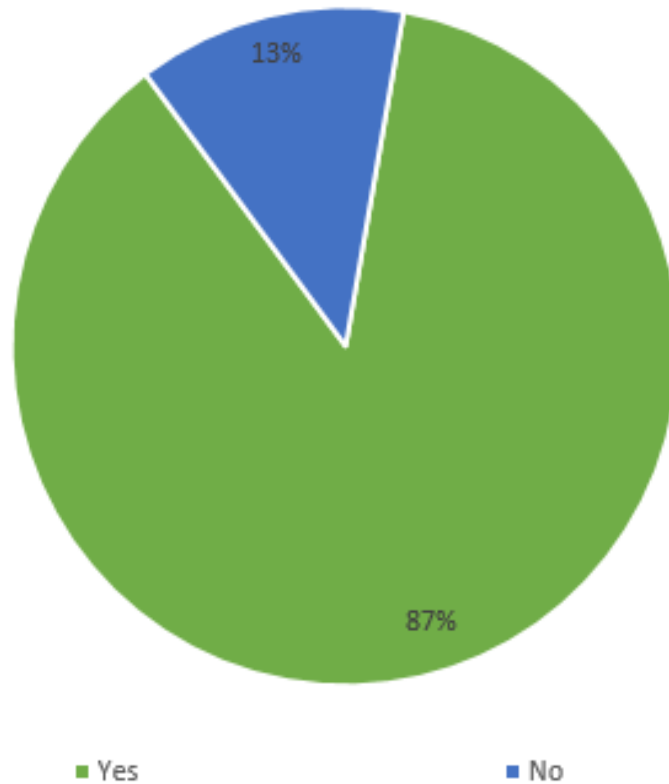


Figure 15: Interfere with social life

According to research, 85% of people with acne say that their appearance makes them feel ugly, ashamed, or uncomfortable. Because of these emotions, some kids can decide not to join in class, try out for sports teams, or look for part-time employment. Some people say they get nervous when they have pimples. Investigation indicates that using the right topical therapies for acne can help reduce the deterioration of the standard of life.

5.14 Food trigger acne symptoms

Q: Do you think which food trigger acne symptoms?

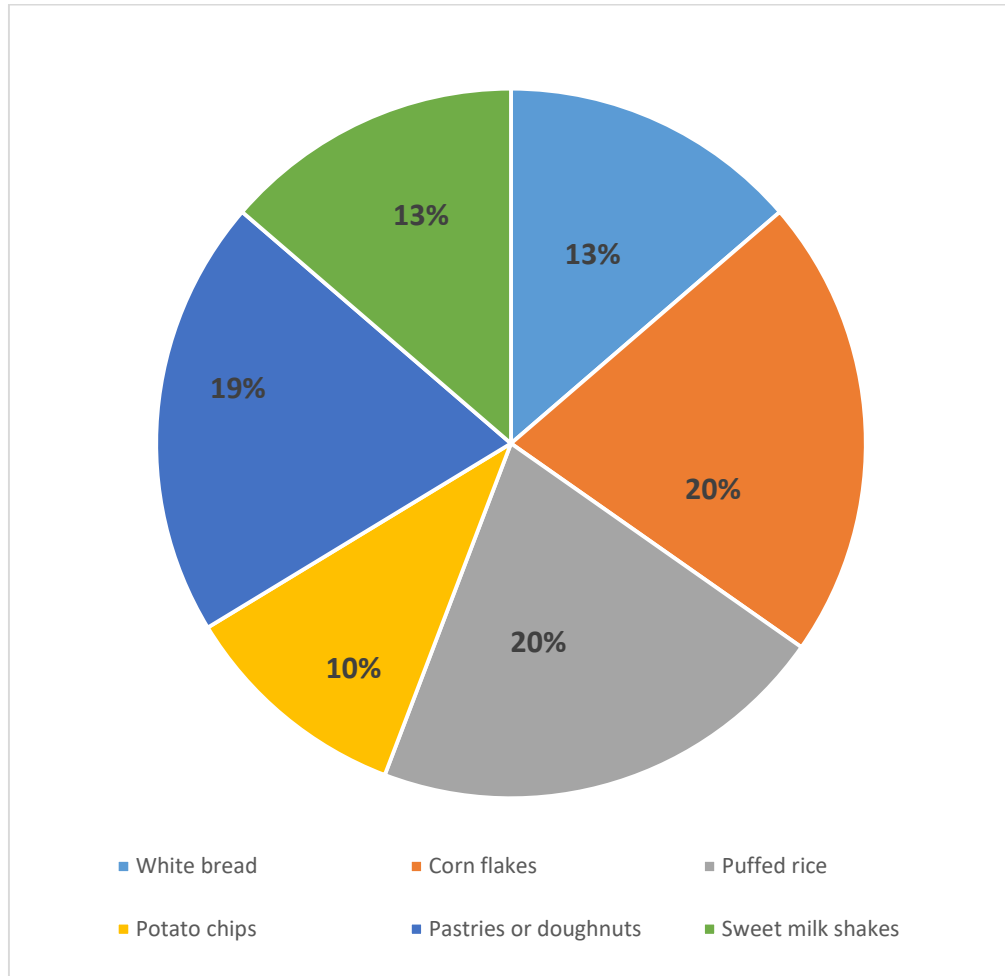


Figure 16: Food trigger acne symptoms

Certain foods made acne worse. In accordance with the research, 25% of respondents claimed that cornflakes had caused their symptoms to flare up, 20% claimed that rice puffs had increased their symptoms, 19% claimed that pastries or doughnuts had caused their symptoms, and 13% claimed that sweet milk shakes had caused their symptoms to worsen.

Chapter 6

Conclusion

6.1 Conclusion

In conclusion, this study sheds light on the prevalence of acne vulgaris and its significant impact on the quality of life among patients attending Shaheed Suhrawardy Medical College & Hospital. The findings underscore the widespread occurrence of acne vulgaris in the studied population and highlight the profound physical, psychological, and social consequences experienced by affected individuals. Through the utilization of validated assessment tools, we have gained insights into the multifaceted burdens imposed by acne vulgaris, ranging from low self-esteem and impaired social interactions to emotional distress and reduced productivity. Such impacts are not only limited to the visible manifestations of the condition but also extend to the psychosocial well-being of individuals, emphasizing the need for comprehensive management strategies that address both the physical and emotional aspects of acne vulgaris. According to this research, 79% of participants admitted to taking acne medication on their own outside a prescription. Furthermore, doctors need to continue exploring new ideas including teledermatology, using non-physician suppliers, as well as additional technological tools in order to better treat acne and reduce the substantial burden of this widespread illness. When it came to their acne condition, 95% of the respondents to this study said they were retarded. Based on the evaluations, most of the participants reported feeling hostile, ashamed, and annoyed due to their acne. A large number of respondents 51 percent to the study reported taking doxycycline. Since doxycycline is an antibiotic, using this kind of medication absent a prescription needs to be avoided. Several respondents were given Ruptadine and fexofenadine, two antihistamines. Further research and collaborative efforts are warranted to develop tailored interventions that mitigate the burdens of acne vulgaris and improve the overall well-being of affected individuals.

Chapter 7

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