Original Research Article

Survey of Acne Vulgaris in Selective Districts of Punjab, Pakistan

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Abstract

Acne vulgaris is a common dermal ailment which is reported globally. Currently, a cross sectional survey (manual and online) in selective districts of Punjab region was conducted and it was concluded that disturbance in sebum production and frequent blockage of skin pores occur due to different potent factors which include improper dietary habits, side effects of medication, genetic complications, environmental conditions and lack of awareness of personal hygiene. Thus the future research efforts should be channelized to ensure provision of low coat and side effects free local pharmacognosal products for acne treatment along with its programmed general public awareness.
Keywords: Acne vulgaris; dermal ailment; cross sectional survey; sebum; general public awareness.

INTRODUCTION

Acne is a common but chronic inflammatory dermal disease of the pilosebaceous unit [1]. Acne may start during adolescence and persist or have an onset in adulthood [2]. Recent global disease surveys indicate that acne vulgaris is the eight most common skin diseases, with an estimated global prevalence for all ages of 9.38% [3, 4]. Acne is thought to be caused due to a major factor, excessive sebum production secondary to sebaceous gland hyperplasia [7]. Subsequent hyperkeratinization of the hair follicle prevents normal shedding of the follicular keratinocytes, which then obstruct the follicle and form an unapparent microcomedo [8]. Its onset basically happens due to disturbance in endocrine mechanisms which control the components of sebocyte function—namely lipid synthesis, proliferation and differentiation [5]. Mostly teenagers face this for either shorter or longer duration [6].

Lipids and cellular debris soon accumulate within the blocked follicle. This microenvironment encourages colonization of propionic bacterium acnes, which provokes an immune response through the production of numerous inflammatory mediators. Inflammation is further enhanced by follicular rupture and subsequent leakage of lipids, bacteria, and fatty acids into the dermis [9] and gives rise to following types of acne (Table 1):

Table-1: Types & symptoms of acne vulgaris

Types of acne	Symptoms	Reference
Mild	blackheads or whiteheads	[6]
Moderate	papules(small bumps) or pustules(filled with yellow pus)	[7]
Severe	Nodules(reddish and painful)	[8]

METHODOLOGY

This study was a cross-sectional survey [28] and data based on performa along with online survey were collected from acne patients of districts of Punjab, PK. This survey was designed for the estimation of level of awareness and vigilance towards acne control of general public of Lahore division. The obtained results were analyzed statistically via ANOVA and t-test [10, 19].This study was approved by committee of Minhaj University Lahore. For this purpose, a performa

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was designed to collect data from patients (Table 2). During data collection, the verbal consent and privacy of participants was ensured [12].

Table-2: Survey Performa for frequency of acne in population of Punjab, Pakistan

Gender	a) male		b) female		
Age range	a) 13–17		b) 18–25	c) above25	
Symptoms	**Yes**		**No**		
White heads					
Black heads					
Small red , tender bumps					
Pimples					
Large , solid, painful lumps under skin					
Painful , pus filled lumps					
Body Weight	a) normal		b) overweight	c)obesity	
Skin type	a) Dry		b) oily	c) normal	
Affected areas	a) face		b) forehead	c)shoulder	
Dietary pattern	Inclined to more oily diet & junk foods	Protein rich diet	Unhygienic food	Fizzy drink additional intake	Other drugs intake
Possible causative agents	Genetic factors	Environmental factors	Skin over sensitivity/allergic reaction		Unknown
Medical treatment	Yes		No		

RESULTS & DISCUSSION

The ANOVA results of age groups showed that people belong to age group of 18-25years, significantly suffer more than either younger or older age groups (Table 3). Because reported data highlight that people of this age group are frequent consumers of high fat content containing diets along with poor unhygienic practice and as side effect acne triggers either due to improper diet or pathogenesis [20, 21].

Age Group	Mean± S.E.M. (n)
A	5.6 ± 1.503(5)
B	*15.8 ± 1.83(5)
C	2.8 ± 1.5(5)

*All values are the mean ±S.E.M (n). The results were found significant for age group B at 0.01%.

Whereas gender based comparison highlighted that 83% acne cases were of females and 39% of males. The root causes might be use of more spicy and oily food, poor hygienic practices, intake of less water, intake of any medication and frequent use of inappropriate and low grade cosmetics [22]. The oil that is made in the skin is called sebum, and it is produced in oil glands called sebaceous glands. Sebum protects the skin and helps to keep it moisturized [5,6]. But if a layer of dead cells blocks the opening of a pore, the sebum can't leave the pore. It builds up in the sebaceous gland, and a blackhead or whitehead develops. If this becomes inflamed, it turns into a pimple [6]. Acne mostly develops on areas of skin that have more oil glands, like the face, chest, back and shoulders [7].The main reason teenagers get acne is

because their bodies make more androgen hormones during puberty [8]. But not all teenagers have acne. For this reason, it is believed that other things play a role too, such as genetic factors and the immune system [7, 8]. Furthermore, table 4 is presenting the t-test results of comparative prevalence of acne at district level.

Table-4: Prevalence of Acne at district level among males and females of Lahore division

Gender	Mean± SD (n)
Male	7.80± 4.44(5)
Female	*16.6± 4.67 (5)

*All values are in Mean±SD(n). The result is significant at p<0.05.

Moreover, the role of body weight was not found as potent factor of acne that is why; ANOVA results showed that people with normal body weight (Group A) are suffering mainly due to acne (Table 5). Because under specific conditions only, high fat and sugar containing diets may stimulate acne [23].

Table-5: Role of Body weight on acne prevalence

Body weight	Mean± S.E.M. (n)
A	*20.4±1.4353 (5)
B	3.2±0.4899 (5)
C	0.8±0.8 (5)

*All values are the mean ±S.E.M (n). The results were found significant for age group A at 0.01%.

Similarly, results related to acne symptoms were quite helpful to know disease pattern, first of all, females are more prone to acne and among them

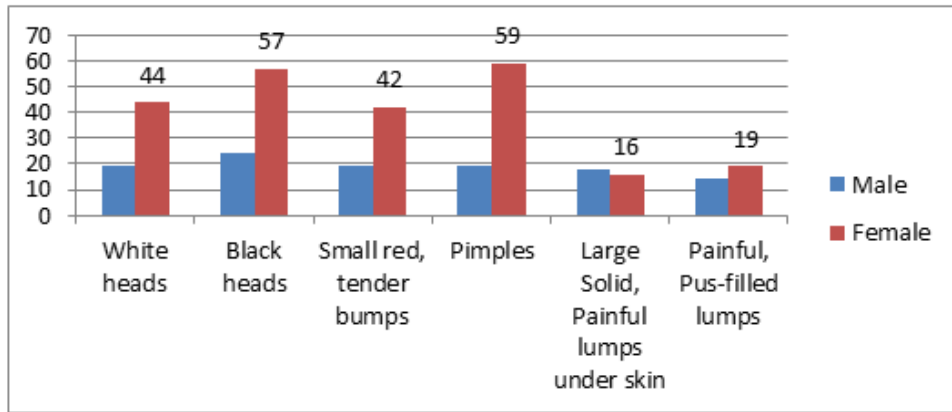majority face pimples, and black and white heads (Figure 1).

Fig-1: Gender based frequency of acne symptoms

In addition to this, when data based on skin type (Figure 2), locations of acne on body (Figure 3), dietary habits of acne vulgaris patients (Figure 4), estimation of causative agents (Figure 5) and gender based medicinal treatment trends observations (Figure 6) clearly indicate that the areas of body which are more exposed to the external environment at greater risk, females suffer more and still ignore its proper treatment. The root causes are not only the intake of imbalance diet, microbial infections, exposure to some aflatoxins [26, 29] but also the lack of awareness about management and control of acne vulgaris [24].
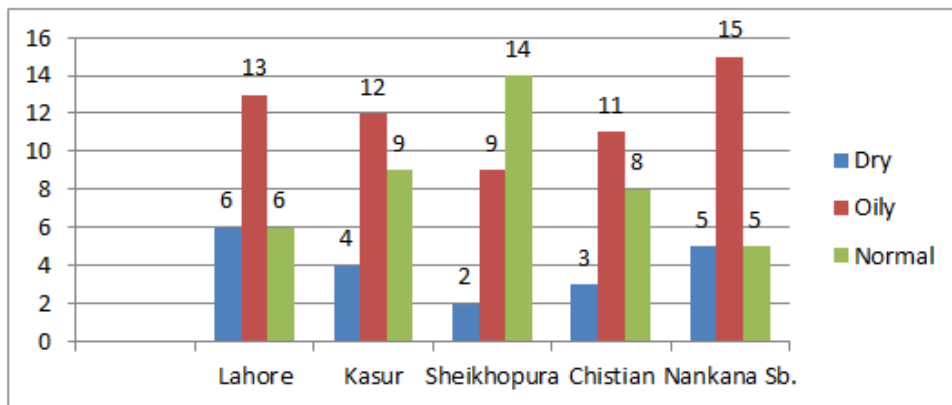

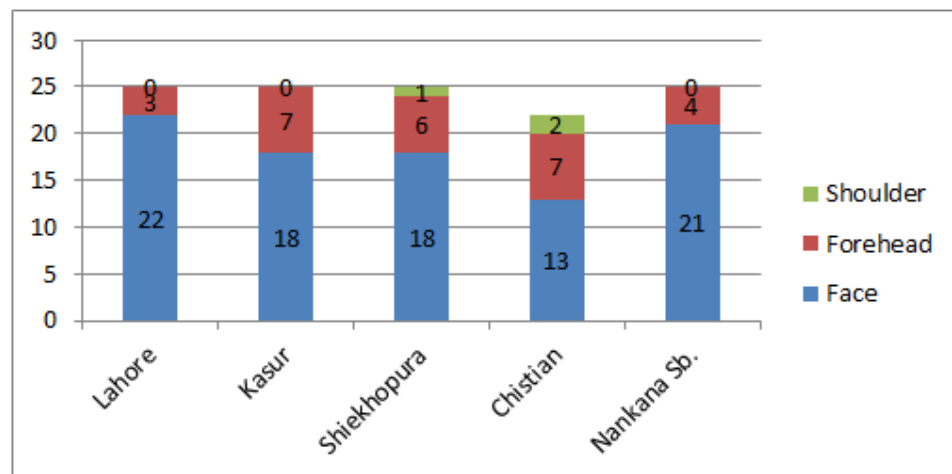**Fig-2: Comparison of skin type at district level of Punjab, Pakistan**

Fig-3: Comparative graphical representation of body affected areas due to acne vulgaris
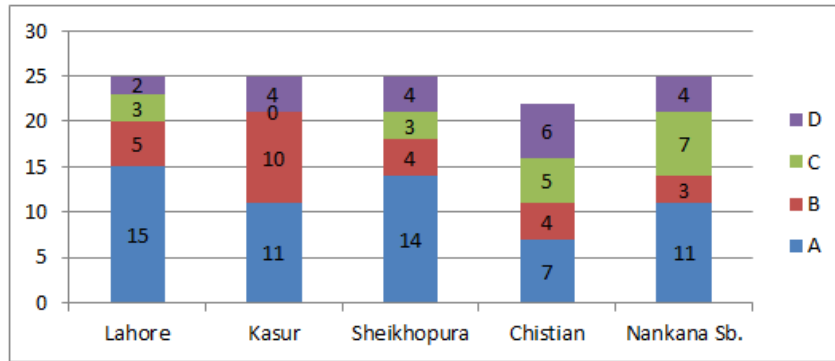
Fig-4: Graphical view of dietary habits causing acne in different districts of Punjab
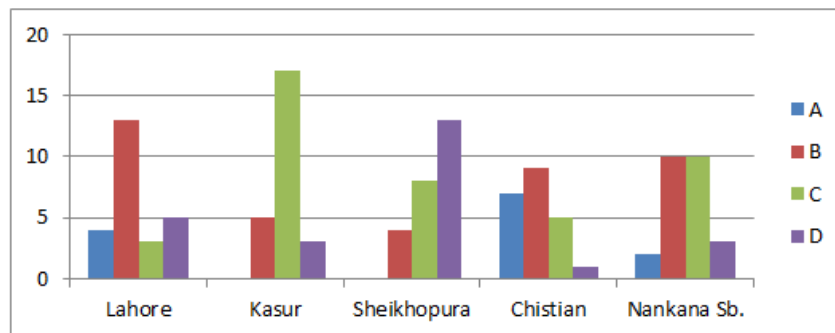

Fig-5: Comparative graphical representation of possible causative agents of acne vulgaris
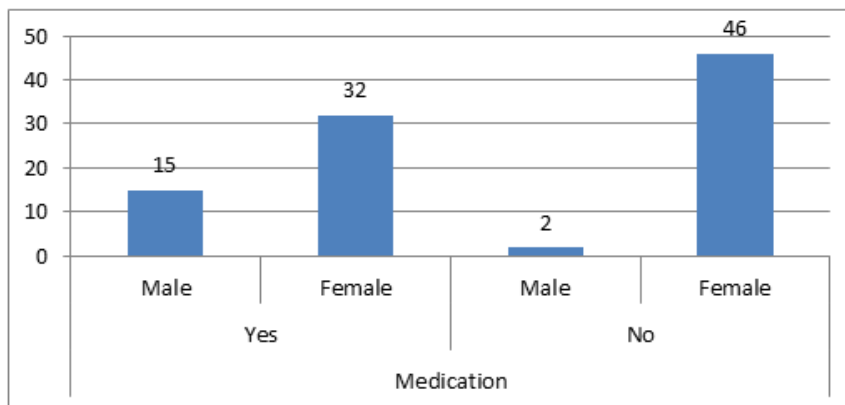

Fig-6: Pattern of intake of medication among acne patients

CONCLUSION AND FUTURE PERSPECTIVE

People with acne often try out different things to improve the appearance of their skin. There are a lot of different recommendations when it comes to acne, involving things like facial toners, sunlight and specific diet [9]. Either lotions or hydrogels are recommended for skin care. Greasy creams can clog the pores in your skin even more. Soap-free cleansing products that have a similar slightly acidic pH to skin are a good idea too. There are also a number of medications for acne, to be applied to the skin or swallowed. Some treatment approaches and medications have been proven to effectively reduce acne, while others have not. Examples of effective treatments include benzoyl peroxide, antibiotics and retinoids [10]. Acne treatment usually requires patience; most products have to be used for a long time before there is a noticeable improvement. The treatment may take months or even years. Every treatment can have side effects, too [10, 11]. That is why; cost effective and local pharmacognosal products [25, 27] should be manufactured and promoted by future researchers and practitioners along with general public awareness campaigns at national and international levels about skin hygiene, care and in time cure of acne vulgaris [30].

REFERENCES

1. Tuchayi, S. M., Makrantonaki, E., Ganceviciene, R., Dessinioti, C., Feldman, S.R., & Zouboulis, C.C. (2015). Acne vulgaris. *Nat Rev Dis Primers, 1,* 15029.
2. Adebamowo, C.A., Spiegelman, D., Danby, F.W., Frazier, A.L., Willett, W.C. and Holmes, M.D.

(2005). High school dietary dairy intake and teenage acne. *J. Am. Acad. Dermatol., 52* (2):207–214.

3. Vos, T. (2012).Years lived with disability (YLDs) for 1160 sequelae of 289 diseases and injuries 1990–2010: a systematic analysis for the global burden of disease study 2010. *The Lancet, 380*(9859), 2163–96.

4. Stathakis, V., Kilkenny, M. & Marks, R. (1997). Descriptive epidemiology of acne vulgaris in the community. *Australas J. Dermatol., 38*(3), 115–23.

5. Zouboulis, C.C., Katsambas, A.D. and Kligman, AM. (2014). Pathogenesis and treatment of acne and rosacea: Heidelerg: Springer.

6. Cao, H., Yang, G., Wang, Y., Liu, J.P., Smith, C.A., Luo, H. (2015). Complementary therapies for acne vulgaris. *Cochrane Database Syst. Rev.,* (1): CD009436.

7. Degitz, K and Ochsendorf, F. (2017). Acne. *J Dtsch Dermatol Ges, 15*(7): 709-722.

8. Deutsche, V. (2011). Dermatologische Gesellschaft (DDG). *Behandlungder Akne (S2k-Leitlinie), AWMF-Registernr,* 013-017.

9. Nast, A., Dreno, B., Bettoli, V., BukvicMokos, Z., Degitz, K., Dressler, C. (2016). European evidence-based (S3) guideline for the treatment of acne - update 2016 - short version. *J EurAcadDermatolVenereol, 30*(8): 1261-1268.

10. Williams, H.C., Dellavalle, R.P., Garner, S. (2012). Acne vulgaris. *Lancet, 379*(9813): 361-372.

11. Kozak, M. and Piepho, H.P. (2018). What's normal anyway? Residual plots are more telling than significance tests when checking ANOVA assumptions. *Journal of Agronomy and Crop Science, 204*(1), 86-98.

12. Javed. A., Hashmi. H.I., Shahid. A., Mehmood. S., & Khurshid. S. (2021). Survey of hypocalcaemia frequency in district Lahore, Pakistan. *American Scientific Research Journal for Engineering, Technology, and Sciences (ASRJETS), 81*(1), 101-6.

13. Keusch, G., Fontaine, O., Bhargava, A., Boschi-Pinto, C., Bhutta, Z.A. and Gotuzzo, E. (2006). Diarrhoeal Diseases. *Disease control priorities in developing countries, 2,* 371-388.

14. Gollnick, H.P., Zouboulis, C.C., Akamatsu, H., Kurokawa, I. Schulte, A. (1991). Pathogenesis and pathogenesis related treatment of acne. *J Dermatol, 18,* 489–99.

15. Holmes, R.L., Williams, M. and Cunliffe, W.J. (1972). Pilosebaceous duct obstruction and acne. *Br. J. Dermatol., 87,* 327–32.

16. White, G.M. (1999). Acne therapy. *Adv. Dermatol., 14,* 29–59.

17. Cao, H., Yang, G., Wang, Y., Liu, J.P., Smith, C.A., Luo, H. (2015). Complementary therapies for acne vulgaris. *Cochrane Database Syst. Rev.,* (1): CD009436.

18. Degitz, K., & Ochsendorf, F. (2017). Acne. *J. Dtsch. Dermatol. Ges.,15* (7): 709-722.

19. Chuah, S. Y., & Goh, C. L. (2015). The impact of post-acne scars on the quality of life among young adults in Singapore. *Journal of cutaneous and aesthetic surgery*, *8*(3), 153.

20. Purvis, D., Robinson, E., Merry, S., & Watson, P. (2006). Acne, anxiety, depression and suicide in teenagers: A cross-sectional survey of New Zealand secondary school students. *Journal of paediatrics and child health*, *42*(12), 793-796.

21. Tan, H. H., Tan, A. W. H., Barkham, T., Yan, X. Y., & Zhu, M. (2007). Community-based study of acne vulgaris in adolescents in Singapore. *British Journal of Dermatology*, *157*(3), 547-551.

22. Yueng, M. Z., Indramaya, D. M., & Mustika, A. (2018). Relationship between diet, cosmetics and degree of acne vulgaris in dermatovenereology outpatients at Dr. Soetomo General Hospital, Surabaya. *Althea Medical Journal*, *5*(4), 161-167.

23. Paoli, A., Grimaldi, K., Toniolo, L., Canato, M., Bianco, A., & Fratter, A. (2012). Nutrition and acne: therapeutic potential of ketogenic diets. *Skin pharmacology and physiology*, *25*(3), 111-117.

24. Ip, A., Muller, I., Geraghty, A. W., Platt, D., Little, P., & Santer, M. (2021). Views and experiences of people with acne vulgaris and healthcare professionals about treatments: systematic review and thematic synthesis of qualitative research. *BMJ open*, *11*(2), e041794.

25. Javed, A. (2021). Efficacy of apitherapy for skin regeneration. *American Academic Scientific Research Journal for Engineering, Technology, and Sciences*, *75*(1), 80-85.

26. Javed, A., Jaffar, H., & Mushtaq, S. (2021). A Review: Dermal Ailments Causing Microbiota. *American Academic Scientific Research Journal for Engineering, and Sciences*, *76*(1), 169-177.

27. Javed, A., Usman, M., Akram, N., Kanwal, S., Riaz, I., & Haider, S. M. (2019). Nigella sativa a potent healer for diabetic wounds and its other pharamcognosal attributes. *Haya Saudi J Life Sci, 4*(4), 173-179.

28. Javed, A., Saleem, S., Saeed, M., Raza, H., Shahid, B., & Islam, K. (2021). Influence of Socio-demographic Variables on Prevalence of Hypertension in Lahore Division, Pakistan. *American Academic Scientific Research Journal for Engineering, Technology, and Sciences*, *81*(1), 186-191.

29. Javed, A., Shahid, M. B., Naeem, H., Jam, A. H., Nawaz, A., & Nazeer, A. (2022). Aflatoxins Poisoning. *Haya Saudi J Life Sci, 7*(2), 34-37.

30. Javed, A., Aslam, S., Qayyum, Z., Fatima, A., Sadiq, A., & Kubra, K. T. (2022). Changing Trends of Solanum nigrum Based Pharmacognosy. *Haya Saudi J Life Sci, 7*(2), 29-33.