

# Disability In Acne Patients – A Hospital Based Study In Rural Population Of Central India

Adarshlata Singh\*, Piyush Agrawal, Sanjiv V. Choudhary and Divya Jain

Department of Dermatology, DMIMS, Nagpur, India

**Abstract:** *Introduction:* Acne vulgaris is chronic inflammatory disease of pilosebaceous unit. It has been found that acne is one of the most common distressing diseases that can affect all aspects of an individual's health-related quality of life (HRQoL), particularly in feelings and emotions, personal relationships, sports, social life and to get employment opportunity. As per best of our knowledge, there was no study on disability in acne patients in rural population of India.

*Aim and Objectives:* The aim was to assess quality of life of patient having acne vulgaris, with the objectives 1) to assess the impact of acne on the rural patients by executing Cardiff Acne Disability Index formula (i.e. physical, social and psychological aspects of the patient's life) 2) to observe any relationship between severity of acne vulgaris and its impact on quality of life.

*Material and Methods:* The patients who came to dermatology OPD having acne vulgaris at AVBRH were enrolled. Quality of life of all enrolled patients of acne vulgaris were evaluated by using Cardiff Acne Disability Index questionnaires. The parameters evaluated were aggressiveness, frustration, embarrassment, effect on social life, relation with members of opposite sex, concern for skin appearance, avoidance of changing facility. Acne grading will be done by IADVL grading system. Statistical analysis done with Chi-square ( $\chi^2$ ) test.

*Result:* Total 81 patients with Acne vulgaris were included. By using the parameters, we analyze a statistical significant impact on quality of life of acne patients were frustration, embarrassment, effect on social life, relation with members of opposite sex, concern for skin appearance and avoidance of changing facility. Aggressiveness was found to be statistically insignificant. It implies that acne is a disease of mild to moderate severity. There was a significant positive relationship between disease severities with scores of CADI.

*Conclusion:* There was impairment in quality of life due to acne in a rural population.

**Keywords:** Acne vulgaris, CADI, QOL, Rural Population.

## INTRODUCTION

The skin is largest organ of our body and on an average, adult skin weighs 8-10 lbs and covers about 22 square ft of surface area on the body [1]. Acne vulgaris (acne) is a disease in which, involvement of the pilosebaceous unit, including the follicular canal, hair follicle and sebaceous glands occur [1, 2]. The *Propionibacterium acnes* colonize the follicular channel and stimulate cytokine production, which eventually leads to the formation of inflammatory lesions. When rupture of the follicular walls takes place, formation of granulomatous lesions and scarring occurs [1, 3].

The onset of acne is commonly occur at adrenarche which is one to two years before visible evidence of puberty (~age 10), however, acne vulgaris may start later, that is in post-teenage years also [1, 2, 4]. Ghodsi and colleagues found, in a study of 1,002 adolescents, that the prevalence of acne was 93.3% [1, 5]. It has been found that acne is a common distressing disease that can affect all aspects of an individual's health-related quality of life (HRQoL), in particular feelings and

emotions, personal relationships, sports, social life and employment chances [1,6]. There is generally a linear relationship between the clinical severity of acne and impairment of HRQoL, although impairment is also dependent upon a person's 'coping ability'. In addition, individuals with little objective evidence of acne may endure severe subjective impairment, greatly affecting their HRQoL [1, 6]. Several acne-specific health related quality of life (HRQoL) instruments now exist, including the assessment of the psychological and social effects of acne (APSEA), the acne disability index (ADI), the Cardiff acne disability index (CADI) and the dermatology-specific quality of life (DSQL) questionnaire [1, 7].

To the best of our knowledge, this may be the first cross-sectional study concerning health-related quality of life (HRQoL) of patients with acne in rural population of central India. This study was carried out to determine the impact of acne and its clinical severity on health related quality of life in a group of patients coming to our dermatology department of AVBR Hospital.

## MATERIAL AND METHOD

This was descriptive study, 81 patients included who attended the OPD, department of Dermatology,

\*Address correspondence to this author at the Department of Dermatology, JNMC DMIMS Sawangi (Meghe) Wardha Maharashtra, India; Tel: 09765404086; Fax: 07152-287714; E-mail: dradarshlata@yahoo.co.in

A.V.B.R.H., Wardha. Verbal informed consent was taken from all patients. They were assured that their responses were anonymous and confidential. Institutional ethics committee clearance was taken for study.

**Inclusion criteria** were as follows: 1) Patients having age 10 yrs. of above 2) Both males and females were enrolled 3) Patients having acne for more than 6 weeks. **Exclusion criteria** were as follows: 1) Patients who were below 10 yrs. of age 2) Presence of chronic dermatological and non dermatological diseases other than acne vulgaris who may affect the quality of life 3) Patients having acne for less than 6 weeks.

**Copyright permission** for using CADI in our study was taken from Dr. A. Y. Finlay, Professor & H. O. D. of department of Dermatology, Wales's college of Medicine, Cardiff University, Wales, U. K.

**Cardiff Acne Disability Index (CADI)** is a well-validated self-reported questionnaire consisting of five questions with four response categories (0–3) [8]. The CADI questionnaires were as follows: (1) As a result of acne, during 1 month how much aggressive, frustrated or embarrassed have you been? (2) Do you think acne interfered with your daily social life, social events or relationship with members of opposite sex? (3) Do you avoid public changing facilities because of acne? (4) How would you grade your concern for skin appearance due to acne? (5) Mention how big problem your acne is now to you? There were 4 answers for each of the CADI question: no problem at all, mild, moderate and severe which were graded as 0, 1, 2 and 3 respectively. Finally the sum of all answers was calculated. The maximum score could be 15 and the minimum 0. CADI interpretation: If the sum of CADI score lies in the range 0- 4 then we grade it as mild, 5- 9 was moderate and 10-15 as high. The parameters evaluated through the CADI questionnaire were aggressiveness, frustration, embarrassment, effect on social life, relation with members of opposite sex, concern for skin appearance, avoidance of changing facility and patient's own grading of their acne.

In our study we assessed the severity of acne according to clinical grading as suggested in IADVL taking into account the predominant lesions [9].

Grade 1 = comedones and few papules,

Grade 2 = papules, comedones and few pustules,

Grade 3 = predominant pustules, nodules and abscesses and

Grade 4 = mainly cysts, abscesses and widespread scarring.

## Data Analysis

Data entry and data analysis done by using Statistical package for social sciences (SPSS, version 16.0). P value  $\leq 0.05$  regarded as statistically significant. Statistical tests included Chi-square ( $\chi^2$ ) test to compare between the proportions of different "characteristics" among low scores with the same proportions among high scores.

## RESULTS

According to Table 1 the female patients 51(62.96%) and male patients 30(37.04%) were present, which is comparable with other studies [1, 10, 11]. Studies done in past show that male: female ratio was 0.41:1 [12]. Similarly, in our study, ratio was 0.59:1. Similar to other Indian studies most common age group affected was 10-20 years [13].

**Table 1: Age & Gender-Wise Distribution**

Age group	Male	Female
10-20	20(24.69%)	27(33.33%)
21-30	8(9.88%)	22(27.16%)
31-40	2(2.47%)	2(2.47%)
Total	30(37.04%)	51(62.96%)

According to Table 2 there was significant impact in all parameters except aggressiveness which was same as in other studies. It has been observed that social and psychological impacts of acne are sometimes so complicated that it can cause serious problems in patients' body image, self-esteem, socialization and even may lead to feel of anger [14].

According to Table 3 the IADVL grading [9], 56(76.55%) the patients were in mild to moderate (grade 1 & 2) and in severe (grade-3 & 4) acne was present in 19(23.43%).

On CADI scoring as in Table 4 the 50 (61.73 %) have mild and 31 (38.27 %) have moderate impairment of life, while none patient have severe or no impact of acne on quality of life.

According to Table 5 on calculating the impairment in percentage from CADI scores, 49(60.49%) patients had 21 - 40 % impairment and 20(24.96%) had 40- 60

**Table 2: Comparison of Disability Parameters**

Parameters	Yes	No	$\chi^2$ -value	Significance/no significance
Aggressiveness	36(44.44%)	45(55.56%)	1.00	No significant
Frustration	51(62.96%)	30(37.04%)	5.44	Significant
Embarrassment	52(64.20%)	29(35.80%)	6.53	Significant
Social life	58(71.60%)	23(28.40%)	15.12	Significant
Relationship with members of opposite sex	25(30.86%)	56(69.14%)	11.86	Significant
Concern for skin appearance	78(96.30%)	3(3.70%)	69.44	Significant
Avoidance of public changing facility	10(12.35%)	71(87.65%)	45.93	Significant

% impact on life. The overall  $\chi^2$ -value was 100.79, which was statistically significant. This is supported by study done in Serbia by Jankovic S *et al.* [15, 16].

If we compare the results of Tables 3 & 4, 76.55% patient have mild to moderate acne and 100 % patient had mild to moderate impairment of life. So there was a significant positive relationship between disease severities with scores of CADI.

**Table 3: Grading of Acne Patients According to IADVL [10]**

Grade	Patients	%
1	35	43.22
2	21	33.33
3	12	14.81
4	7	8.62

**Table 4: Frequency of CADI Range and its Significance**

CADI Range	Frequency	Percentage (%)
0-5	50	61.73
6-10	31	38.27
11-15	0	0.00
Total	81	100.0

**Table 5: The Percentage Impairment from CADI Scores**

% impairment	Frequency	Percentage (%)	$\chi^2$ -value
0-20%	12	14.81	100.79 Significant
21-40%	49	60.49	
41-60%	20	24.69	
61-80%	0	0.00	
81-100%	0	0.00	
Total	81	100.00	

## DISCUSSION

Most of the chronic dermatologic diseases affect patients' life by causing pain, itching, disability in daily activities, psychic pressures (low self-esteem, nervousness), problems in social relationships, family problems, and treatment-related problems such as drugs side effects and imposed treatment costs and time [1, 17]. This is true for acne also as it also affects patients' quality of life. Acne mainly has negative impact on emotions, interpersonal relationships, physical activities, social life, and professional status [1, 6]. Therefore, it is important to give attention to the quality of life of these patients also. As in different cultures the impact of disease on quality of life differs [1, 18], the aim of present study was to investigate the quality of life of patients with acne in rural population of central India. It suggests that in rural setup also there is significant impairment in QoL due to acne. So it requires that health education about acne should given to our teenagers, to understand their disease, know what treatments are available and from whom they should seek advice. There are very few studies in India on assessment of impairment of QoL, none of which has been conducted in the rural setup of India in the best of our knowledge. Hence, this study brings that rural population also have the impairment of QoL because of skin diseases. Previously it was thought that urban populations are more concern about their appearance in comparison to rural population.

## CONCLUSION

Acne has mild to moderate impact on quality of life according to our study. Facial acne is common among adolescents and can cause major impact on their quality of life. It is important for the health professionals

to incorporate quality of life measurements when managing adolescents with acne. Cardiff Acne Disability Index is a useful tool to identify individual with facial acne who had poor quality of life. So health professionals can prevent progression of disease and its impact on quality of life.

## ACKNOWLEDGEMENT

We thank professor Andrew Y. Finlay Department of Dermatology and Wound Healing, CARDIFF University School of medicine, Cardiff U.K. for the formal permission to translate and use CADi in this study.

## CONFLICT OF INTEREST

None.

## REFERENCES

- [1] Ritvo, *et al.* BioPsychoSocial Medicine 2011, 5: 11. <http://dx.doi.org/10.1186/1751-0759-5-11>
- [2] Bloom DF. Is acne really a disease? a theory of acne as an evolutionarily significant, high-order psychoneuroimmune interaction timed to cortical development with a crucial role in mate choice. *Med Hypotheses* 2004; 62: 462-9. <http://dx.doi.org/10.1016/j.mehy.2003.11.003>
- [3] Kurokawa I, Danby FW, Ju Q, *et al.* New developments in our understanding of acne pathogenesis and treatment. *Exp Dermatol* 2009; 18: 821-32. <http://dx.doi.org/10.1111/j.1600-0625.2009.00890.x>
- [4] Thiboutot D, Gollnick H, Bettoli V, *et al.* New insights into the management of acne: an update from the Global Alliance to improve outcomes in acne group. *J Am Acad Dermatol* 2009; 60: S1-50. <http://dx.doi.org/10.1016/j.jaad.2009.01.019>
- [5] Ghodsi SZ, Orawa H, Zouboulis CC. Prevalence, severity, and severity risk factors of acne in high school pupils: a community-based study. *J Invest Dermatol* 2009; 129: 2136-41. <http://dx.doi.org/10.1038/jid.2009.47>
- [6] Walker N, Lewis-Jones MS. Quality of life and acne in Scottish adolescent schoolchildren: Use of the children's dermatology life quality index (CDLQI) and the Cardiff acne disability index (CADI). *JEADV* 2006; 20: 45-50. <http://dx.doi.org/10.1111/j.1468-3083.2005.01344.x>
- [7] Martin AR, Lookingbill DP, Botek A, Light J, Thiboutot D, Girman CJ. Health related quality of life among patients with facial acne-assessment of a new acne-specific questionnaire. *Clin Exp Dermatol* 2001; 26: 380-5. <http://dx.doi.org/10.1046/j.1365-2230.2001.00839.x>
- [8] Finlay AY. Quality of life indices. *Indian J Dermatol Leprol* 2004; 70: 143-8.
- [9] Tutakne MA, Chari KV. Acne, rosacea and perioral dermatitis, in Valia RG, Valia AR, Editors. *IADVL textbook and atlas of dermatology 2<sup>nd</sup> ed.* Mumbai, Bhalani Publishing house 2003; pp. 689-710.
- [10] Mosam A, Vawda NB, Gordhan AH, Nkwanyana N, Aboobaker J. Quality of life issues for South Africans with acne vulgaris. *Clin Exp Dermatol* 2005; 30: 6-9. <http://dx.doi.org/10.1111/j.1365-2230.2004.01678.x>
- [11] Gupta MA, Gupta AK, Schork NJ. Psychosomatic study of self-excoriative behaviour among male acne patients. *Int J Dermatol* 1994; 33: 846-8. <http://dx.doi.org/10.1111/j.1365-4362.1994.tb01017.x>
- [12] Smail and Mohammed-Ali Health and Quality of Life Outcomes 2012; 10:60 <http://www.hqlo.com/content/10/1/60>
- [13] Balaji A, Thappa DD. A Hospital based study from south India. *Indian J Dermatol Venereol Leprol* 2009; 75(3).
- [14] Kokandi A. Evaluation of acne quality of life and clinical severity in acne female adults. *Dermatol Res Pract* 2010; 2010; pii: 410809.
- [15] Jankovic S, Vukicevic J, Djordjevic S, Jankovic J, Marinkovic J. Quality of life among school children with acne: results of a cross-sectional study. *Indian J Dermatol Venereol Leprol* 2012; 78454-8.
- [16] Safizadeh H, Shamsi-Meymandy S, Naeimi A. Quality of life in Iranian patients with acne. *Dermatol Res Pract* 2012; 2012: Article ID 571516, 4 pages.
- [17] Jayaprakasam A, Darvay A, Osborne G, McGibbon D. Comparison of assessments of severity and quality of life in cutaneous disease. *Clin Exp Dermatol* 2002; 27: 306-8. <http://dx.doi.org/10.1046/j.1365-2230.2002.01025.x>
- [18] Yun J, Kateralis CH, Weerasinghe A, *et al.* Impact of chronic urticaria on the quality of life in Australian and Sri Lankan populations. *Asia Pac Allergy* 2011; 1: 25-9. <http://dx.doi.org/10.5415/apallergy.2011.1.1.25>

Received on 21-10-2013

Accepted on 11-12-2013

Published on 26-12-2013

DOI: <http://dx.doi.org/10.12970/2310-998X.2013.01.02.2>

© 2013 Singh *et al.*; Licensee Synergy Publishers.

This is an open access article licensed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted, non-commercial use, distribution and reproduction in any medium, provided the work is properly cited.