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Original Research Article

A study of psychological impact of acne vulgaris on quality of life using CADI & DLQI scoring in patients attending dermatology OPD in tertiary care hospital

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ABSTRACT

Background: Acne Vulgaris is a chronic inflammatory disease with multifactorial etiology. It is one of the leading reasons for visiting a dermatologist. Acne patients undergo considerable amount of psychological impairment as face is socially and psychologically the most important body region. There is no sufficient data available on the Impact of acne on QoL in Indian patients.
Objectives: To Determine the Impact of Acne Vulgaris on Quality of Life using two different scoring systems i.e. CADI & DLQI**.**
Materials and Methods: It is a hospital based cross-sectional study done at dermatology Opd in tertiary care. It is a one-year study from January 2016 to December 2016. 500 diagnosed cases of acne vulgaris of the age groups 15-30 were studied. Informed written consent and Photographs was obtained from all patients. A complete history, clinical examination, was done in all patients. A baseline 'global acne grading system' was being performed. Quality of life in acne vulgaris patients were studied using pre- structured questionnaire of DLQI (Dermatological life quality index) & CADI (Cardiff acne disability index scoring systems).
Results: Based on GAGS, 80% of the patients were mild, 19% moderate and remaining 1% had severe grading of acne. Majority of the patients had very large effect on quality of life (76%) on DLQI scoring and medium impact in quality of life (86%. 12.4%) on CADI scoring.
Conclusion: The results of the study show that majority had medium & large effect on QoL. Hence the disability caused by acne must be taken into account when individualizing treatment by health professionals and include QoL measurements to provide better care.

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1. Introduction

Acne Vulgaris is the leading reason for visiting a dermatologist. It is a chronic inflammatory disease of pilosebaceous units,[1] with seborrhea, comedones, papules, pustules, and in more severe cases nodules and pseudocysts.[2]

The face, back & chest are the most commonly affected sites. Post-inflammatory macules, pigment changes and scarring also occur. The severity of acne depends on the level of their sebum secretion. Multiple factors have been implicated in causing acne vulgaris. However the basic cause of it is unknown. The various factors implicated are[2] androgens, sebaceous hyperplasia with seborrhea, altered cornification & differentiation, inflammation & immune response, diet etc

Acne is associated with depression, anxiety, and low self-esteem thus impacting the quality of life.

There are a variety of general health related quality of life indices & acne specific health related quality of life. DLQI is specific for evaluating dermatological patients. It consists of 10 questions based on disease

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symptoms, feelings, daily activities, type of clothing, social or physical activities, exercise, job/ education, interpersonal relationship, marriage relationship and treatment.

CADI is only related to acne, containing 5 questions about last month. This is based on -feelings, interference with social life and interaction with the opposite gender, avoidance of public spaces, appearance of skin and perceived severity of state of disease.

2. Objectives

To Determine the Impact of Acne Vulgaris on Quality of Life or in simple terms, well-being using two different scoring systems i.e. CADI & DLQI

3. Materials and Methods

It is a hospital based cross-sectional study. 500 patients of age group 15-30 with acne vulgaris diagnosed on the basis of clinical morphology presenting to Dermatology Outpatient Department were studied. The patients were explained regarding the objectives as well as the method of study. Informed written consent was obtained from all patients. A complete history, clinical examination was done in all patients as per proforma.

A baseline 'global acne grading system' was performed. Photograph was taken for documentation. All patients were required to complete pre-structured questionnaire based on acne specific - Cardiff acne disability index (CADI) and skin disease specific -Dermatological life quality index (DLQI).

3.1. Inclusion criteria

1. Acne Vulgaris patients diagnosed on the basis of clinical morphology with age group 15years - 30 years.

3.2. Exclusion criteria

1. Patients with any systemic illness or endocrinological disease.
2. Patients on drugs interfering the assessment of acne.
3. Non consenting patients.

3.3. Statistical analysis

Collected data was analysed using both descriptive and inferential statistical methods. Data gathered were summarised by frequency and percentage. Mean and standard deviation was also calculated. Data was represented in the form of diagrams. Data obtained from this study were also analysed using chi square test and Pearson coefficient of correlation through SPSS software version 17, considering $p < 0.05$ as statistically significant.

4. Results

A total of 500 patients clinically diagnosed as acne vulgaris were studied in a tertiary care hospital. Age group between 15 & 30 were studied. Majority of the patients belonged to the age group 21 - 25. Mean age in this study is 21.45 ± 2.220 years. Out of 500 acne vulgaris patients 376 were females, amounting to 75.2%. Thus females were the majority in this study compared to male (124, 24.8%).

Majority of the patients (88.4%) age of onset were between 15 - 20 years. Mean age of onset → 18.57 years with SD of 1.500. Family h/o acne vulagaris were positive in only 35% of the patients in this study. Out of the remaining 65.4%, majority were mother and sister. Majority of the patients in this study were students (91.2%). Remaining were coolie by occupation (8%), followed by home maker and teacher.

Face was the most common site involved in the patients with acne vulgaris in this study (98.6%). Chest and upper back were rarely involved. In this study, comedones were present in 96.4% of patients, papules in 46.8%, pustules in 4.6%, nodules and cyst in 1%.

According to global acne grading system, 80% of the patients were mild. 19% moderate and remaining 1% severe. Triggering factors for acne vulgaris were diet (4.6%), cosmetics (4%), stress (2.8%), sweating (1.4%) and smoking in 1.2%.

Based on DLQI scoring, majority had very large effect on quality of life (76%) and 2% had extremely large effect on quality of life (Table 2). Mean DLQI is 13.29. Mean CADI score is 7.57. Majority had medium impact in quality of life (86%). 12.4% had high impact and 1.6% had low impact on quality of life (Table 3).

1% of the patients studied with mild grade acne & 25% with severe acne had small effect on QoL based on DLQI. 80% of the patients with small effect on QoL had mild acne. 84% with moderate effect had mild acne. 50% with severe acne had very large effect on QoL. 77.8% with extremely large effect on QoL had moderate acne based on GAGS. DLQI is significantly related to global acne grading system. p=0.0001 (chi square test) r=.119 (Pearson's correlation).

1.8% of the patients studied with mild grade acne had low effect on QoL based on CADI. 87.5% of the patients with low effect on QoL had mild acne. 83.5% with medium effect had mild acne. 50% with severe acne had medium effect & another 50% had high effect on QoL. 53.2% & 43.5% with high effect on QoL based on CADI had mild & moderate acne respectively based on GAGS. CADI is significantly related to GAGS p=0.0001 based on chi square test and r=0.218 based on Pearson's correlation.

CADI and DLQI scoring system correlated significantly according to Pearson's correlation r=0.221 (Table 4) & highly significant based on Fischer's test ($p < 0.0001$).

Table 1: Distribution of types of acne lesions among the patients

Lesions		Count
Comedones	Nil	18(3.6%)
	Present	482(96.4%)
	Total	500(100.0%)
Papules	Nil	266(53.2%)
	Present	234(46.8%)
	Total	500(100.0%)
Pustules	Nil	477(95.4%)
	Present	23(4.6%)
	Total	500(100.0%)
Nodules/ cyst	Nil	495(99.0%)
	Present	5(1.0%)
	Total	500(100.0%)

Table 2: Frequency and percentage distribution of DLQI

	Frequency	Percent
Small effect	5	1.0
Moderate effect	107	21.4
Very large effect	379	75.8
Extremely large effect	9	1.8
Total	500	100.0

Table 3: Frequency and percentage distribution of CADI

	Frequency	Percent
Low	8	1.6
Medium	430	86.0
High	62	12.4
Total	500	100.0

Table 4: Correlationof CADI with DLQI

CADI		DLQI				Total
		Small effect	Moderate effect	Very large effect	Extremely large effect	
Low	Count	1	2	5	0	8
	% within CADI	12.5%	25.0%	62.5%	.0%	100.0%
	% within DLQI	20.0%	1.9%	1.3%	.0%	1.6%
Medium	Count	3	93	334	0	430
	% within CADI	.7%	21.6%	77.7%	.0%	100.0%
	% within DLQI	60.0%	86.9%	88.1%	.0%	86.6%
High	Count	1	12	40	9	62
	% within CADI	1.6%	19.4%	64.5%	14.5%	100.0%
	% within DLQI	20.0%	11.2%	10.6%	100.0%	12.4%
Total	Count	5	107	379	9	500
	% within CADI	1.0%	21.4%	75.8%	1.8%	100.0%
	% within DLQI	100.0%	100.0%	100.0%	100.0%	100.0%

CADI and DLQI scoring system correlated significantly according to Pearson's correlation r=0.221 & highly significant based on Fischer's test ($p < 0.0001$)

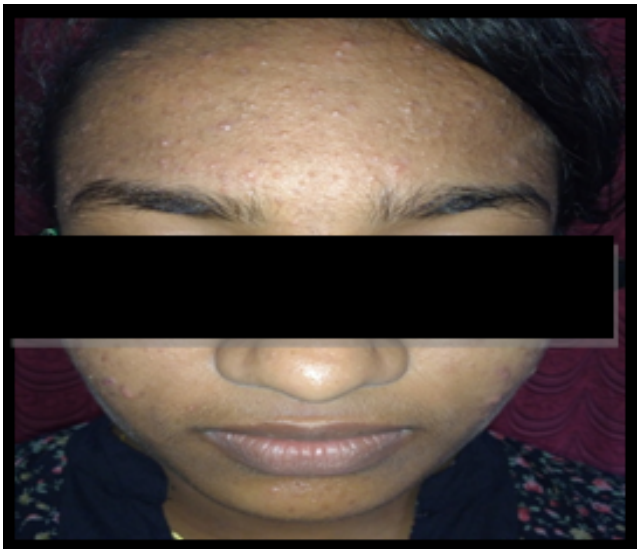

Fig. 1: PredominantlyComedones, Grade 1 Acne Vulgaris with medium CADI & moderate DLQI

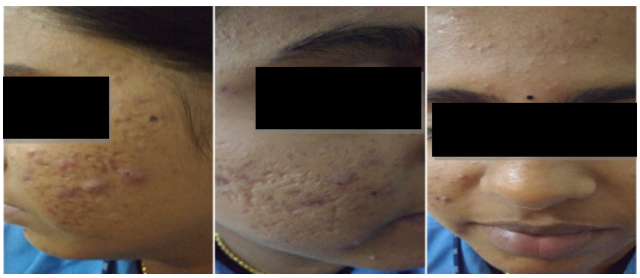

Fig. 2: Nodules, papules over the cheeks andcomedones and papules over the forehead with low effect CADI & small effect DLQI

Fig. 3: Nodulocystic acne with very large effect DLQI & medium CADI

5. Discussion

The mean age of the study population was 21.45 years (ranging from 15 to 30 years with SD = 2.220). Age correlated with the global acne grading system in our study (p=0.0001, chi square test). Many studies like Walker and Lewis-Jones et al, Hanisah et al, Jankovic et al, Pawin et all, Uslu[3–7] et al included age group of 13 to 18 years of age whereas Rapp et al, Jones-Caballero et al, Ismail et all included age group from 11 years[8–10] and few studies age group ranging above 17 years.[11,12] Acne commonly involves the face and in our study facial acne was most common (493, 98.6%). Study done by Martin et al showed that the QoL worsened with increasing severity of facial acne.[13] Hassan et al also reported QoL was affected by the severity.[14]

Majority of the type of lesions (Table 1) present were comedones (482, 96.8%) & papules (46.8%). A Study done by Tasoula et all showed lower prevalence of comedones compared to our study.[15]

There was no gender difference between CADI (p=0.711) & DLQI (p=0.803) score based on chi square test in this study. Study by Cotterill et al[16] showed that females had higher scores, which was also seen in another study by Halvorsen et al.[17]

The mean DLQI score was 13.29 i.e. very large effect on QOL with majority (79.8%) having mild grading of acne (GAGS) in our study compared to study done by Walker and Lewis-Jones with low mean CADI score (1.9) and good correlation.[3] In the study done by Shahin et al[18] Mean CADI score was 8.34 with medium effect and our study it was 7.57. Correlation of the scores and acne severity was also showed by another study done by Srivastava et al.[19] Study done by Gupta et al showed no association of QoL with acne severity.[20]

There was highly significant correlation between global acne grading system with CADI & DLQI scores. (r=0.218, r=0.119 respectively, Pearsons correlation). Majority had moderate to large effect (DLQI - 99%), & medium to high effect (CADI- 98.4%) on QoL in this study.

Our present study shows significant correlation between QoL & age based on DLQI score. (p=0.017, chi square test). CADI did not correlate (p=0.789). Study by Pruthi and Babu showed impact of acne on physical and psychosocial aspect of life.[21] But a Study by Salek et al showed no association of age and QoL.[22]

We observed that there was no correlation between triggering factors with acne & scoring in our study. Commonest triggering factors for acne was diet (4.6%) followed by cosmetics (4.0%). In a study done by Ismail et al acne was associated with milk and Icecream intake.[23]

Limitations of this study is that, we do not know what impact acne has on patients who do not choose or cannot come to hospitals for consultation. Therefore, there is a need to replicate this study in community setting to explore the

findings to all acne patients.

6. Conclusion

Our study has showed strong correlation between the QoL and acne and age based on DLQI score which might be due to the effect of social and occupational functioning. Majority of the patients in this study had moderate or medium effect on QoL. Increased severity of acne was directly proportional to the impairment of quality of life.

These scoring indices measuring the quality of life changes gave a small insight into the impact of acne from a patient's outlook thus significantly interfering with social functioning and bringing about impairment in quality of life.

The strength of our study was large number of acne patients surveyed from 15-30 years age mostly students, giving an approximate estimation of psychometric morbidity with hospital based data. To promote patients satisfaction & QOL it's also recommended to set up supportive groups in dermatology department & hospitals. Hence the disability caused by acne must be taken into account when individualizing treatment by health professionals and include QoL measurements to provide better care.

7. Conflict of Interest

There are no conflicts of interest in this article.

8. Source of Funding

None.

References

1. Blau S, Kanof NB. Acne: from pimple to pit. *N Y J Med*. 1965;65:417–24.
2. Layton AM. Disorders of sebaceous glands. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. Rook's Textbook of Dermatology. 8th Edn.. vol. 42. Oxford: Wiley-Blackwell publication; 2010. p. 1–89.
3. Walker N, Lewis-Jones MS. Quality of life and acne in Scottish adolescent school children: Use of the Children's Dermatology Life Quality Index (CDLQI) and the Cardiff Acne Disability Index (CADI). *J Eur Acad Dermatol Venereol*. 2006;20(1):45–50. doi:10.1111/j.1468-3083.2005.01344.x.
4. Hanisah A, Omar K, Shah SA. Prevalence of acne and its impact on the quality of life in school-aged adolescents in Malaysia. *J Prim Health Care*. 2009;1(1):20–5.
5. Jankovic S, Vukicevic J, Djordjevic S, Jankovic J, Marinkovic J. Quality of life among schoolchildren with acne: results of a cross-sectional study. *Indian J Dermatol Venerol Leprol*. 2012;78(4):454–8. doi:10.4103/0378-6323.98076.
6. Pawin H, Chivot M, Beylot C, Faure M, Poli F, Revuz J, et al. Living with acne. A study of adolescent's personal experiences. *Dermatology*. 2007;215(4):308–14. doi:10.1159/000107624.
7. Uslu G, Sendur N, Uslu M, Savek E, Karaman G, Eskin M, et al. Acne: Prevalence, perceptions and effects on psychological health among adolescents in Aydin, Turkey. *J Eur Acad Dermatol Venereol*. 2008;22(4):462–9. doi:10.1111/j.1468-3083.2007.02497.x.
8. Rapp SR, Feldman SR, Graham G, Fleischer AB, Brenes G, Dailey M, et al. The Acne Quality of Life Index (Acne-QOLI): Development and validation of a brief instrument. *Am J Clin Dermatol*. 2006;7(3):185–92. doi:10.2165/00128071-200607030-00005.
9. Jones-Caballero M, Chren MM, Soler B, Pedrosa E, Penas PF. Quality of life in mild to moderate acne: Relationship to clinical severity and factors influencing change with treatment. *J Eur Acad Dermatol Venereol*. 2007;21(2):219–26. doi:10.1111/j.1468-3083.2006.01907.x.
10. Ismail KH, Mohammed-Ali KB. Quality of life in patients with acne in Erbil city. *Health Qual Life Outcomes*. 2012;10:60. doi:10.1186/1477-7525-10-60.
11. Lasek RJ, Chre MM. Acne vulgaris and the quality of life of adult dermatology patients. *Arch Dermatol*. 1998;134(4):454–8. doi:10.1001/archderm.134.4.454.
12. Balkrishnan R, Mcmichael AJ, Hu JY, Camacho FT, Shew KR, Bouloc A, et al. Correlates of health-related quality of life in women with severe facial blemishes. *Int J Dermatol*. 2006;45(2):111–5. doi:10.1111/j.1365-4632.2004.02371.x.
13. Lawrence DM, Katz M, Robinson TWE, Newman MC, McGarrigle HH, Shaw M, et al. Reduced sex hormone binding globulin and free testosterone levels in women with severe acne. *J Clin Endocr*. 1981;15(1):87–91. doi:10.1111/j.1365-2265.1981.tb02752.x.
14. Hassan J, Grogan S, Clark-Carter D, Richards H, Yates VM. The individual health burden of acne: Appearance- related distress in male and female adolescents and adults with back, chest and facial acne. *J Health Psychol*. 2009;14(8):1105–18. doi:10.1177/1359105309342470.
15. Tasoula E, Gregoriou S, Chalikias J, Lazarou D, Danopoulou I, Katsambas A, et al. The impact of acne vulgaris on quality of life and psychic health in young adolescents in Greece. Results of a population survey. *An Bras Dermatol*. 2012;87(6):862–9.
16. Cotterill JA, Cunliffe WJ. Suicide in dermatological patients. *Br J Dermatol*. 1997;137(2):246–50. doi:10.1046/j.1365-2133.1997.18131897.x.
17. Halvorsen JA, Stern RS, Dalgard F, Thoresen M, Bjertness E, Lien L, et al. Suicidal ideation, mental health problems, and social impairment are increased in adolescents with acne: A population-based study. *J Invest Dermatol*. 2011;131(2):363–70. doi:10.1038/jid.2010.264.
18. Aghaei S, Mazharinia N, Jafari P, Abbasfard Z. The Persian version of the Cardiff Acne Disability Index. Reliability and validity study. *Saudi Med J*. 2006;27(1):80–2.
19. Srivastava S, Bhatia MS, Das P, Bhattacharya SN. A cross sectional study of quality of life and psychiatric morbidity in patients with acne vulgaris. *J Pak Psychiatr Soc*. 2008;5(2):86.
20. Gupta MA, Gupta AK. Psychiatric and psychological co-morbidity in patients with dermatologic disorders: epidemiology and management. *Am J Clin Dermatol*. 2003;4(12):833–42. doi:10.2165/00128071-200304120-00003.
21. Pruthi GK, Babu N. Physical and psychosocial impact of acne in adult females. *Indian J Dermatol*. 2012;57(1):26–9. doi:10.4103/0019-5154.92672.
22. Salek MS, Khan GK, Finlay AY. Questionnaire techniques in assessing acne handicap: Reliability and validity study. *Qual Life Res*. 1996;5(1):131–8. doi:10.1007/BF00435978.
23. Ismail NH, Manaf ZA, Azizan NZ. High glycemic load diet, milk and ice cream consumption are related to acne vulgaris in Malaysian young adults: a case control study. *BMC Dermatol*. 2012;12:13. doi:10.1186/1471-5945-12-13.

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