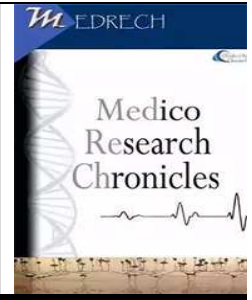




## MEDICO RESEARCH CHRONICLES

ISSN NO. 2394-3971

DOI No. 10.26838/MEDRECH.2022.9.6.663

Contents available at [www.medrech.com](http://www.medrech.com)

### QOL IMPROVEMENT WITH IN ADOLESCENTS WITH FACIAL ACNE VULGARIS BEFORE AND AFTER TREATMENT

Md. Sohel Haider

Assistant Professor, Dept. of Dermatology and Venereology, Shaheed Tajuddin Ahmad Medical College,, Gazipur, Bangladesh.

#### ARTICLE INFO

##### Article History

Received: November 2022

Accepted: December 2022

**Key Words:** Adolescent, QOL, Acne vulgaris, Treatment.

##### Corresponding author

M. S. Haider\*

#### ABSTRACT

**Background:** Acne is a common adolescent problem, affecting more than 85 percent of teenagers, as well as some adults. Although some consider acne to be merely a cosmetic problem, it may have significant and enduring emotional and psychological effects. Adolescent facial acne vulgaris impairs their quality of life (QOL). **Objective:** To assess QOL improvement with in adolescents who have facial acne vulgaris. **Materials and Methods:** This was a cross-sectional comparative study carried out at Dept. of Dermatology and venatarology, Shaheed Tajuddin Ahmad Medical College Hospital, Gazipur, Bangladesh from March to September 2022. Total of one hundred (100) adolescents aged 15-20 years clinically examined for facial acne vulgaris were studied. Study was explained to the subjects and their parents via a letter and an informed consent was obtained from the parents. Quality of life before and after 6 weeks of treatment with 10% benzoyl peroxide was assessed using the Cardiff acne disability index. Data was analyzed using SPSS 19. The differences in quality of life scores were tested using non-parametric tests. Level of significance of all tests was  $p < 0.05$ . **Results:** Total One hundred (100) adolescents completed were study. Study population was made up of 42 (42%) males and 58 (58%) females. Before treatment, 90% of the adolescents had an impaired QOL and this decreased to 76% of adolescents' post- treatment. Post-treatment, the median CADI score improved to 2 from a pre-interventional score of 4,  $p < 0.001$ . Improvement was observed in all the components of the CADI especially with the question, "how bad do you think your acne is now" with a percentage reduction from 82% to 56% and this improvement was in more males with improvement from 95% to 67%. Also, post-treatment, moderate to severe clinical severity of acne improved from 49.1% to 10.3%,  $p < 0.001$ . **Conclusion:** Acne is a highly prevalent condition, affecting the majority of people at some point in their lifetimes, most often during adolescence. Treatment of adolescent facial acne leads to improvement of QOL especially in the perception of facial skin appearance and the severity of acne.

#### ORIGINAL RESEARCH ARTICLE

2022, [www.medrech.com](http://www.medrech.com)

## INTRODUCTION

Acne is a common adolescent problem, affecting more than 85 percent of teenagers, as well as some adults [1]. Although some consider acne to be merely a cosmetic problem, it may have significant and enduring emotional and psychological effects. Acne can negatively impact mood, self-esteem, and interpersonal relationships and may lead to depression and suicidal ideation [2, 3, 4]. Several studies have attempted to qualitatively and quantitatively assess the psychological effects of acne in teenagers. Here we review the current literature to determine the impact of acne on quality of life and effects on self-esteem, mood, and psychological disorders in adolescents. A few studies on the influence of treatment of acne vulgaris on QOL have also been documented [5,6,7]. These studies show improvement in QOL with treatment and it is postulated that QOL improvement can enhance treatment adherence. Most of these studies however, were conducted on adults and not on adolescents. Also, there is no data on the influence of treatment on QOL in the adolescents in our locality. Despite the high prevalence of adolescent acne and the vulnerability of adolescents to the psychosocial effects of acne and QOL impairment; little research attention on QOL has been paid to this age group. Instruments for QOL assessment both generic and specific have been used in the few studies on adolescents who have acne [6,8,9,10,11]. The aim of this study was to compare QOL before and after treatment in adolescent facial acne vulgaris. To correlate clinical severity, gender, history of previous acne treatment, family history with quality of life impairment and to determine what items on the QOL instrument are impaired.

## MATERIALS AND METHODS

This was a cross-sectional comparative study carried out at Dept. of Dermatology and venatarology, Shaheed

Tajuddin Ahmad Medical College Hospital, Gazipur, Bangladesh from March to September 2022. Total of one hundred (100) adolescents aged 15-20 years clinically examined for facial acne vulgaris were studied. Study was explained to the subjects and their parents via a letter and an informed consent was obtained from the parents. A comparative study was carried out over a 6 weeks' period, who had facial acne and had parental consent were given topical 10% benzoyl peroxide (BPO) to apply on the face morning and evening after washing their face. They were also notified of the possible side effects of BPO (dry skin, peppery sensation, bleaching of hair and clothes). Benzoyl peroxide (10%) was chosen for this study because of its availability, efficacy, ease of use, and cost. They were also told that, they were free to withdraw from the study at any point in time and to stop the treatment if any of them found the side effects unbearable.

### Inclusion criteria:

- Inclusion criteria were adolescents aged 15-20 years; adolescents who were willing to make use of the treatment; adolescents who had parental consent.

### Exclusion criteria:

- Exclusion criteria were adolescents who did not have acne; adolescents who were already having treatment for acne; adolescents who did not have parental consent.

The quality of life of the adolescents was assessed at baseline and six weeks after the topical acne treatment using the Cardiff acne disability index (CADI). The CADI, a well validated questionnaire is a disease specific instrument for acne, derived from the acne disability index (ADI) developed in 1989 by Motley and Finlay and it is designed for use in teenagers and young adults with acne [9,10,12]. The CADI is made up of five questions with four responses. The five questions relate to feeling of aggression, frustration, interference with social life,

avoidance of public changing facilities and appearance of the skin (all over the last month) and an indication of how bad the acne is now. Scores range from 0-3 per question with total scores of 0-15. High scores infer poor QOL and low scores little or no impairment of QOL [13]. Walker et al stratified the CADI as follows; CADI scores of <4 is interpreted as mild, scores of 5-9 as moderate and scores of 10-15 as severe impairment of QOL [13]. Permission was obtained from Finlay, Basra and Lewis Jones, the developers of the questionnaires to make use of the CADI. Clinical evaluation was done; lesions were counted on the face at baseline and at 6 weeks. The type of lesion; open or closed comedones, pustules and severity of acne vulgaris were noted. Data was analyzed using SPSS version 19. Associations between categorical variables were tested using the chi-square test while differences in means of groups were tested using the t-test and analysis of variance. Associations between quantitative variables were tested using Spearman's correlation

coefficient due to non-normal distribution. The differences in quality of life scores were tested using non-parametric tests because the variables were not normally distributed. Logistic regression analysis was used to identify predictors of acne and severity of acne, odds ratio and 95% confidence intervals were reported. The "Enter" variable selection method was used which enters all variables in a block in a single step. Level of significance of all tests was  $p < 0.05$ .

## RESULTS

Total One hundred (100) adolescents completed were study. Study population was made up of 42 (42%) males and 58 (58%) females. Before treatment, 90% of the adolescents had an impaired QOL and this decreased to 76% of adolescents' post-treatment. Table-1 shows a gender based quality of life score distribution before and after- treatment. Pre-treatment, 57.1% of males and 58.6% of females had impairment in their quality of life. This decreased to 42.8% for males and 41.3% for females after treatment.

**Table-1:** Histogram of impairment of QOL before and after treatment (N=100)

	Before Treatment e	After Treatment	Total
<b>Male</b>	24(57.1%)	18(42.8%)	42(42%)
<b>Female</b>	34(58.6%)	24 (41.3%)	58(58%)

**Table-2:** Change in clinical severity of acne pre and post treatment (N=100)

Variable	Male	Female	Total
Pre-intervention severity			
Mild	15(35.7%)	21(36.2)	36(36%)
Moderate	22(52.4%)	35(60.3%)	57(57%)
Severe	5(11.9%)	2(3.4%)	7(7%)
Post-intervention severity			
Mild	28(66.7%)	38(73.08%)	66(66%)
Moderate	14(33.3%)	20(34.5%)	34(34%)
Severe	0(0.0)	0(0.0)	0(0.0)

Change in the clinical severity pre-treatment and post treatment is shown in Table 2. Overall, mild acne increased from 36% pre-treatment to 66% post treatment. Among males, clinically mild acne increased

from 35.7% pre-intervention to 66.7% post-treatment. Change among females was similar (Table 2). Pre-treatment, 34% of the students had moderate to severe QOL impairment. Also, pre-treatment, 66% of the students had

mild QOL impairment which improved to 80% post treatment. Moderate/severe acne decreased from 36% pre- treatment to 66% post treatment and mild acne percentage

increased from 57% pre- treatment to 34% post- treatment. This change was significant at  $p < 0.001$ .

**Table-3:** Histogram of pre-treatment and post-treatment response to the items on the CADI (N=100)

	Pre-treatment	Post-treatment	Total
<b>Feelings of embarrassment, aggression, frustration</b>	14(24.1%)	9(21.4%)	23(23%)
<b>Interference with social life</b>	6(10.3%)	4 (9.5%)	10(10%)
<b>Avoidance of public facilities</b>	8(13.8%)	5(11.9%)	13(13%)
<b>Feelings on skin appearance</b>	14(24.1%)	10(23.8%)	24(24%)
<b>How bad is acne now</b>	16(27.6%)	14(33.3%)	30(30%)

Among males a decrease in impairment in all items of the Cardiff scale was observed. Feelings of aggression, frustration and embarrassment decreased from 24.1% pre-treatment to 21.4% post-treatment. Interference with social life decreased from 10.3% pre- treatment to 9.5% post- treatment. Avoidance of public facilities decreased from 13.8% to 11.9%. Impairment in skin appearance decreased from 24.1% pre-treatment to 23.8% post treatment. Responses to feelings on how of bad acne is now decreased from 27.6% pre- treatment to 33.3% post treatment (Table-3).

### DISCUSSION

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous follicles, common in adolescents, characterized by comedones, papules, pustules, cysts, nodules, and occasionally scars [14]. The term acne is derived from Greek word 'acme' which means 'prime of life'. Although generally considered to be a benign, self-limiting condition, acne may cause severe psychological problems or disfiguring scars that can persist for a lifetime [15]. However, the prevalence of acne was

reported to be lower in some studies [16]. In our study of QOL before and after treatment of adolescents who have facial acne vulgaris. Acne vulgaris is well documented to have negative effects on QOL [2,3,11,17,18]. Studies on QOL affectation by acne vulgaris in adolescents are few and there is no documented influence of treatment on this QOL. Total One hundred (100) adolescents completed were study. Study population was made up of 42 (42%) males and 58 (58%) females. Before treatment, 90% of the adolescents had an impaired QOL and this decreased to 76% of adolescents' post-treatment. Table-1 shows a gender based quality of life score distribution before and after- treatment. Pre-treatment, 57.1% of males and 58.6% of females had impairment in their quality of life. This decreased to 42.8% for males and 41.3% for females after treatment. This study population was considered adequate since other studies on QOL and treatment of acne by Kaymak et al and Kobayashi et al had a population of 78 and 79 respectively [19]. Pre-treatment median CADI score was 4 and this reduced to 2 which were statistically significant

following treatment showing an improvement in QOL. This study demonstrates a significant reduction in CADI following treatment for acne. This reduction in CADI shows that the facial lesions of acne vulgaris can influence an adolescent's QOL and that treatment leads to improvement in QOL. Change in the clinical severity pre- treatment and post treatment is shown in Table 2. Overall, mild acne increased from 36% pre-treatment to 66% post treatment. Among males, clinically mild acne increased from 35.7% pre-intervention to 66.7% post-treatment. Change among females was similar (Table 2). Although studies on QOL improvement in adolescent acne are few, the few studies done show as in this study, an improvement in QOL following treatment in adolescents despite using various QOL scales [8,12]. Pre-treatment, 34% of the students had moderate to severe QOL impairment. Also, pre-treatment, 66% of the students had mild QOL impairment which improved to 80% post treatment. Moderate/severe acne decreased from 36% pre- treatment to 66% post treatment and mild acne percentage increased from 57% pre- treatment to 34% post-treatment. This change was significant at  $p < 0.001$ . Post-treatment, there was a statistical improvement in QOL with a marked improvement in QOL in those, whose QOL was moderately to severely affected by presence of facial acne vulgaris. Also, there was a marked increase post-treatment in the number of students with mild QOL impairment. This study validates the need for treatment of adolescent acne vulgaris. There was no gender difference in the improvement in QOL following treatment, showing that gender has nothing to do with QOL improvement with treatment. Gollnick et al and Zaraa et al following treatment of acne vulgaris also have demonstrated the need for treatment of acne vulgaris, as their study also led to QOL improvement [20]. Post-treatment, improvement was observed in all

the components of the CADI with the highest level of improvement being in the assessment of "how bad the students thought their acne was now". Zaraa et al and Gollnick et al in their studies also reported an improvement in all variables of the CADI following treatment of adolescent acne [9,20]. Among males a decrease in impairment in all items of the Cardiff scale was observed. Feelings of aggression, frustration and embarrassment decreased from 24.1% pre-treatment to 21.4% post- treatment. Interference with social life decreased from 10.3% pre- treatment to 9.5% post- treatment. Avoidance of public facilities decreased from 13.8% to 11.9%. Impairment in skin appearance decreased from 24.1% pre-treatment to 23.8% post treatment. Responses to feelings on how of bad acne is now decreased from 27.6% pre- treatment to 33.3% post treatment (Table-3). This slight improvement in skin appearance may have been due to the post-inflammatory pigmentation from acne despite a reduced lesion count. Gollnick et al also found an improvement in the perception skin appearance in their study which was quite marked unlike in this study where improvement in appearance was not marked [20]. On the scale of interference with social life, there was a slight improvement with no marked gender difference in improvement. Avoidance of public facilities by adolescents had a moderate improvement with more improvement in females. The improvement in components of CADI used in the assessment of QOL in this study, demonstrates the importance of assessment of QOL in adolescents, so their individual needs can be addressed. Also this study revealed gender related improvement in the specific items of the CADI. Males had more improvement on the items concerning embarrassment, perception of skin appearance and how bad acne is now. Females had more improvement on the item of avoidance of public facilities. The reason for this gender

difference in improvement in specific items of QOL despite no significant difference in overall QOL affectation by facial acne is not known. There was a significant improvement in clinical severity of acne vulgaris and this correlated with consequent improvement in QOL. This improvement in lesion severity was irrespective of gender and demonstrated in the three classes of acne severity. This improvement in severity of acne demonstrates the importance of treatment of all grades of severity of acne including mild acne. Improvement in lesion severity following treatment with a consequent improvement in QOL as in this study, has been demonstrated in other studies [17,20].

#### CONCLUSION

Acne is a highly prevalent condition, affecting the majority of people at some point in their lifetimes, most often during adolescence. The treatment of facial acne leads to improvement of QOL with improvement in all components of QOL assessed especially on the component of how the adolescents thought their acne was now irrespective of the severity of the acne. Also, treatment of acne leads to a reduction in severity of acne. Acne should be treated in adolescents irrespective of the severity of the acne.

**CONFLICT OF INTEREST:** None.

#### REFERENCES:

1. Balkrishnan R, Kulkarni AS, Cayce K, et al. Predictors of healthcare outcomes and costs related to medication use in patients with acne in the United States. *Cutis* 2006 Apr;77(4):251-5.
2. Ayer J, Burrows N. Acne: more than skin deep. *Postgrad Med J* 2006 Aug;82(970):500-6.
3. Fried RG, Gupta MA, Gupta AK. Depression and skin disease. *Dermatol Clin* 2005 Oct;23(4):657-64.
4. Fried RG, Wechsler A. Psychological problems in the acne patient. *Dermatol Ther* 2006 Jul;19(4):237-40.
5. Uslu G, Sendur N, Uslu M, et al. Acne: prevalence, perceptions and effects on psychological health among adolescents in Aydin, Turkey. *J Eur Acad Dermatol Venereol* 2008 Apr;22(4):462-9.
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 (CADDI). *J Eur Acad Dermatol Venereol* 2006 Jan;20(1):45-50.
7. Pawin H, Chivot M, Beylot C, et al. Living with acne. A study of adolescents' personal experiences. *Dermatology* 2007;215(4):308-14.
8. Balkrishnan R, McMichael AJ, Hu JY, et al. Correlates of health-related quality of life in women with severe facial blemishes. *Int J Dermatol* 2006 Feb;45(2):111-5.
9. Zaraa I, Belghith I, Ben Alaya N, Trojjet S, Mokni M, Ben Osman A. Severity of Acne and its Impact on Quality of life. *Skinmed.* 2013; 11:148-53.
10. Feldman SR, Fried RG, Herndon JH Jr, Johnson L, Preston N, Gottschalk RW, et al. Digital videography assessment of patients' experiences using adapalene-benzoyl peroxide gel in the treatment of acne vulgaris. *J Drugs Dermatol.* 2012; 11:919-25.
11. Hayashi N, Kawashima M. Efficacy of Oral Antibiotics on Acne Vulgaris and their Effects on Quality of Life: A Multicenter Randomized Controlled Trial Using Minocycline, Roxithromycin and Faropenem. *J Dermatol.* 2011; 38:111-9.
12. Finlay AY. Cardiff Acne Disability Index. Available at: [www.dermatology.org.uk](http://www.dermatology.org.uk). Accessed on 24 July 2009.

13. Walker N, Lewis-Jones MS. Quality of Life and Acne in Scottish Adolescent School Children: Use of the Children's Dermatology Life Quality Index And The Cadiff Acne Disability Index. *J Eur Acad Dermatol Venereo.* 2005; 20:45-50.
  14. Bagatin E, Timpano DL, Guadanhim LRD, Nogueira VMA, Terzian LR, Steiner D Et al. Acne vulgaris: prevalence and clinical forms in adolescents from São Paulo, Brazil. *A Bras Dermatol.* 2014; 89(3):428-35.
  15. Tahir MC. Pathogenesis of acne vulgaris simplified. *Journal of Pakistan association of dermatologist* 2010;20-93-96.
  16. Aktan S, Ozmen E, Sanli B. Anxiety, depression, and nature of acne vulgaris in adolescents. *Int J Dermatol.* 2000; 39 (5):354–357.
  17. Walker N, Lewis-Jones MS. Quality of Life and Acne in Scottish Adolescent School Children: Use of the Children's Dermatology Life Quality Index and The Cadiff Acne Disability Index. *J Eur Acad Dermatol Venereo.* 2005; 20:45-50.
  18. 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; 87:862-9.
  19. Kaymak Y, Taner E, Taner Y. Comparism of Depression, Anxiety and Life Quality in Acne Vulgaris Patients who were Treated with either Isotretinoin or Topical Agents. *Int J Dermatol.* 2009; 48:41-6.
  20. Gollnick HP, Friedrich M, Peschen M, Pettker R, Pier A, Streit V, et al. Effect of adapalene 0.1%/benzoyl peroxide 2.5% Topical Gel on Quality of Life and Treatment Adherence during Long-term Application in Patients with Predominantly Moderate Acne with or without Concomitant Medication - additional Results from the Noninterventional Cohort study ELANG. *J Eur Acad Dermatol Venereol.* 2015;29(4):23-9.
-