Impact of acne vulgaris on the quality of life among adult acne patients in Brunei Darussalam

Jian Yu LEI [1], Susanne Alexander PULIMOOD [2], Fazean Irdayati IDRIS [1]
[1] Pengiran Anak Puteri Rasidah Sa'adatul Bolkiah (PAPRSB), Institute of Health Sciences, Universiti Brunei Darussalam
[2] Department of Dermatology, Raja Isteri Pengiran Anak Saleha (RIPAS) Hospital, Brunei Darussalam

ABSTRACT

Introduction. Acne vulgaris is a common skin disease which can have a significant negative impact on the patient's life, physically and psychologically. This study aimed to determine the quality of life (QoL) of patients with acne in Brunei Darussalam, the association of severity of acne and severity of scarring with QoL. In addition, this study compared the QoL and acne severity between male and female acne patients. **Materials and Methods.** This was a prospective cross-sectional study consisting of 50 adult acne patients, from the Dermatology clinic in Raja Isteri Pengiran Anak Saleha Hospital, Brunei Darussalam. Participants completed the Dermatology Life Quality Index (DLQI), an assessment on their QoL related to acne. Their acne severity was assessed using the Global Acne Grading System (GAGS) and for acne scar grading with the Goodman & Baron qualitative acne scar grading system. **Results.** Study findings showed that 84% of the acne patients have affected QoL with a mean DLQI score of 6.7, which corresponds to a moderate impairment of QoL. There was a weak correlation between acne severity and QoL (r=0.28, P=0.049). There was no significant association between acne scars grading and QoL (P=0.082), acne severity in relation to gender (P=0.525) and the QoL between male and female acne patients (P=0.132). A weak correlation was found between QoL and duration of acne (r=0.30, P=0.033). **Conclusion:** Most acne patients were, to different degrees affected in their QoL by the presence of acne. Most patient with acne attending the Dermatology Department Outpatient at RIPAS Hospital reported moderate impact on their daily QoL measures, which may require attention from Healthcare professionals treating this group of patients. People suffering from acne should also seek help early from the healthcare professionals to prevent potential impairment to QoL due to acne.

Keywords: Acne vulgaris, Quality of Life, Adult, Brunei

INTRODUCTION

Acne vulgaris is a common skin disease, affecting more than 80% of adolescents and often continuing into adulthood to about 8% at the age of 25. [1] Acne vulgaris is often misunderstood as a simple puberty-related condition but in fact, it has a significant negative impact on the patient's life. [2] It can affect patient's life physically as well as psychologically including anxiety, depression, embarrassment, lower self-esteem and social withdrawal. [3, 4] These adverse psychological involvements affect quality of life (QoL), not only in adolescents but also in adult acne patients. [5, 6] Furthermore, up to 20% of teenagers are affected by facial scarring due to acne and can persist into adulthood, which nega-

Correspondence author: Jian Yu LEI
Pengiran Anak Puteri Rasidah Sa'adatul Bolkiah (PAPRSB), Institute of Health Sciences, Universiti Brunei Darussalam
E mail: jianyu94@live.com

tively affects self-esteem. [7] Psychological impacts of acne may be due to the appearance of facial acne or scarring from previous acne or both.

The effect of acne on an adolescent's life can be life long and difficult to heal and yet acne is often considered a minor problem by the healthcare professions and lay people. [8] The psychological impact of acne differs in each patient, even in patients of the same acne severity. Therefore, intensive treatment may be advocated for some patients regardless of their acne severity. [9] Furthermore, treatment for acne has shown significant improvement in patients' QoL. [10]

The impact of acne vulgaris on quality of life may differ in countries with different cultures. This study aimed to determine the QoL of acne patients in Brunei Darussalam, which may help to increase awareness on the psychological impact of acne vulgaris in Brunei Darussalam.

MATERIALS AND METHODS

Study Design, Population and Sample: A cross-sectional tertiary care hospital-based study was conducted from January to March 2015 using convenient sampling method of all patients with acne complains attending the Dermatology clinic in RIPAS Hospital every Monday and Wednesday during the study period. All male and female acne patients, aged 18 years old and above, who can understand Malay and English, without other skin diseases and gave informed consent were eligible to participate in this study. Exclusion criteria were adolescents below the age of 18, those on medications that may cause acne and those who had concomitant diseases that could affect QoL.

Data Collection Procedures: Participant Information Sheet was given to patients attending their appointments for acne at the Dermatology Clinic in RIPAS Hospital. Written consents were obtained for those who agreed to participate. Participants completed a data collection proforma on their sociodemographics (age, gender, ethnicity, job, marital status, family income, family history of acne, and duration of acne) and the Dermatology Life Quality Index (DLQI), an assessment on their QoL related to acne. Their acne severity was assessed using the Global Acne Grading System (GAGS) and acne scar grading using the Goodman & Baron qualitative grading by the investigator.

Research Instruments: The Dermatology Life Quality Index or DLQI is a simple 10-question validated questionnaire available in Malay and English. It was the first QoL instrument used specifically in the Dermatology field. [11] DLQI measures symptoms and feelings (questions 1 and 2), daily activities (questions 3 and 4), leisure (questions 5 and 6), work and school (question 7), personal relationships (questions 8 and 9) and treatment (question 10). The possible maximum score is 3 for each question which gives a to-

Table 1: Global Acne Grading System (GAGS).

Location (Factor)	Lesion (Score)	Factor X Score
Nose (1)	More than one comedone = 1 More than one papule = 2 More than one pustule = 3 More than one nodule = 4	1-4
Chin (1)		1-4
Forehead (2)		2-8
Cheeks (2)		2-8
Chest (3)		3-12
Upper Back (3)		3-12
	Total Score	

Note: The total score of 1-18 is considered mild acne, 19-30 moderate acne and >31 severe acne.

Table 2: Goodman and Baron's post-acne scarring grading system.

Grade	Description
1 - Macular	Erythematous skin, hyper- or hypopigmented flat marks, visible to patient or observer irrespective of distance
2 - Mild	Mild atrophy or hypertrophy which can be noticed at a distance of 50cm or greater (social distances) and may be covered adequately by make up
3 - Moderate	Moderate atrophy or hypertrophy that is obvious and not easily covered by makeup but still able to flattened by manual stretching of the skin
4 - Severe	Severe atrophy or hypertrophy which is obvious and cannot easily covered by makeup and is not able to be flattened by manual stretching of the skin

tal of 30 in DLQI scoring. A score of 0-1 means no impairment in QoL, 2-5 mild impairment, 6-10 moderate impairment, 11-20 very large impairment and 21-30 extremely large impairment. The Global Acne Grading System (GAGS) is a numerical acne scoring system which scores acne by assessing the type of lesions present on six locations i.e. forehead, left and right cheeks, nose, chin, chest and upper back (Table 1). [12]

The Goodman and Baron's post-acne scarring grading system is a qualitative global scarring grading system that was used in this study to assess the acne scars (Table 2). [13] This acne scarring grading system has four grades.

Statistical Analysis: All data collected were analysed using IBM SPSS Statistics version 21.0 (For windows). Statistical analysis were carried out to compare the QoL between patients with and without family history of acne, QoL between male and female acne patients, to determine the association between severity of acne, severity of acne scarring and QoL in acne patients and to compare acne severity between male and female acne patients. Mann-Whitney test was used to compare the QoL between male and female acne patients, Pearson's correlation was used to evaluate the relationship between severity of acne (GAGS) and QoL (DLQI) in acne patients, Kruskal-Wallis test was used to determine the association between acne scars grading and QoL and Chi-Square test was used to compare acne severity between male and female acne patients. Two-sided test was used for all hypothesis tests with p <0.050 as statistically significant.

Ethical Consideration: This study was approved by the Medical and Health Research Ethics Committee (MHREC), Ministry of Health, Brunei Darussalam, and Ethics Committee of PAPRSB Institute of Health Sciences (IHSREC).

RESULTS

Sociodemographic characteristics: 50 patients were approached and all consented to participate. The ages ranged from 18 to 52 years old with mean age of 24.3 (6.3) years. The demographic is shown in Table 3.

Table 3: Demographics of patients.

Variables	*n* (%)
Gender	
Male	22 (44.0)
Female	28 (56.0)
Ethnicity	
Malay	44 (88.0)
Chinese	6 (12.0)
Marital Status	
Single	43 (86.0)
Married	7 (14.0)
Job	
Unemployed	7 (14.0)
Students	22 (44.0)
Pink collar workers	7 (14.0)
White collar workers	9 (18.0)
Blue collar workers	4 (8.0)
Family Income	
<BND1,000	12 (24.0)
BND1,000-3,000	23 (46.0)
>BND3,000	8 (16.0)

Table 4: The quality of life impairment with respect to GAGs scores

Category – Impairment to Quality of life (DLQI scores)	*n* (%)	Average DLQI score (SD)	Average GAGs score (SD)
No impairment (0-1)	8 (16.0)	0.88 (0.35)	10.88 (4.70)
Mild impairment (2-5)	17 (34.0)	2.76 (1.25)	13.82 (6.33)
Moderate impairment (6-10)	13 (26.0)	7.15 (0.80)	14.62 (8.80)
Very large impairment (11-20)	11 (22.0)	15.00 (2.97)	19.45 (9.34)
Extremely large impairment (21-30)	1 (2.0)	25.00 (0.00)	20.00 (0.00)

DLQI = Dermatology Life Quality Index, SD = Standard Deviation

QoL of patients: The mean overall DLQI score was 6.7 (5.97), a moderate impairment in QoL (Table 4). The most affected DLQI domain was "Symptoms and feelings" and the least affected domain was "Treatment" (Table 5).

Pearson's correlation test showed a significant correlation between DLQI scores and the duration of acne (p=0.033). The observed correlation coefficient (r) is 0.30, which suggests a positive but weak correlation.

The two median DLQI scores between acne patients with and without family history of acne have no significant difference (p=0.433) (Table 6).

Comparison of QoL between male and female patients: There is no significant difference between the DLQI for male and female patients (p=0.132) (Table 7).

Table 5: DLQI Scores of patients.

DLQI Domain	Mean (SD)
Symptoms and feelings	2.2 (1.59)
Daily activities	1.3 (1.33)
Leisure	1.4 (1.69)
Work and School	0.8 (1.03)
Personal relationship	0.6 (1.03)
Treatment	0.4 (0.67)
Total	6.7 (5.97)
Duration of acne (years)	7.6 (6.01)

DLQI = Dermatology Life Quality Index, SD = Standard Deviation

The association between severity of acne and DLQI scores: Out of the 50 acne patients, mild acne was seen in 34 (68.0%) patients, moderate acne in 14 (28.0%) patients and severe acne in two (4.0%) patients.

Pearson's correlation test shows a significant correlation between DLQI scores and GAGS score (p=0.049). The observed correlation coefficient (r) is 0.28, which suggests a positive but weak correlation.

The association between acne scars grading and QoL: The medians of DLQI score in each acne scar grading showed that patients with acne scar grading of macular or mild grading showed a mild impairment of QoL, and those with moderate to severe scarring showed a moderate impairment of QoL. However, it did not reach statistical significance (p=0.082) (Table 8).

Comparison of acne severity between male and female patients: There is no significant difference in acne severity between

Table 6: DLQI scores between patients and family history of acne.

	Family history of acne			
	Yes	No		
Variables	*n*=36 Median (IQR)	*n*=14 Median (IQR)	*Z* statistic[a]	*P* value[a]
DLQI Scores	4.5 (6)	6.5 (9)	-0.78	0.433

[a]Mann-Whitney Test; DLQI = Dermatology Life Quality Index
IQR = Interquartile range

Table 7: Comparison of DLQI domains between male and female patients.

Variables	Male (*n*=22) Median (IQR)	Female (*n*=28) Median (IQR)	*Z* statistic[a]	*p* value[a]
Symptoms and feelings	2.0 (3)	2.0 (2)	-0.66	0.511
Daily activities	1.0 (1)[b]	1.0 (2)[b]	-1.58	0.115
Leisure	1.5 (3)[b]	0.5 (2)[b]	-1.17	0.243
Work and School	1.0 (2)[b]	0.0 (1)[b]	-1.54	0.123
Personal relationship	0.0 (1)[b]	0.0 (1)[b]	-0.41	0.679
Treatment	0.0 (1)[b]	0.0 (1)[b]	-1.54	0.123
Total	7.0 (10)[b]	4.0 (6)[b]	-1.51	0.132

[a] Mann-Whitney Test [b] Skewed to the right
IQR = Interquartile range DLQI = Dermatology Life Quality Index

Table 8: Association between acne scar grading and QoL in patients.

Variables	*n*	DLQI Score Median (IQR)	X^2 statistic (*df*)[a]	*p* value[a]
Acne Scar grading				
Macular	11	2.0 (7)[b]		
Mild	18	4.5 (6)[b]		
Moderate/Severe	21	7.0 (11)[b]	5.00 (2)	0.082

[a]Kruskal-Wallis test; [b] Skewed to the right

Table 9: Comparison of acne severity between male and female patients.

Variable	*n*	Male *n* (%)	Female *n* (%)	X^2 statistic[a] (*df*)	*p* value[a]
Acne severity					
Mild	34	16 (72.7)	18 (64.3)	0.40 (1)	0.525
Moderate/Severe	16	6 (27.3)	10 (35.7)		

[a]Chi-square test for independence

male and female patients (p=0.525) (Table 9).

DISCUSSION

Acne vulgaris is often considered as a simple disease occurring during adolescence. However, it can cause impairment to one's QoL and can progress into adulthood. Our study showed that QoL in 84% of acne patients attending the dermatology clinic in RIPAS hospital was affected to varying degrees which is in agreement with another similar study in Nigeria. [14] However, this study used the Cardiff Acne Disability Index (CADI) to assess QoL and 85% of the respondents had their QoL affected. Many studies have shown that acne can impact patients' QoL psychologically due to low self-esteem, self-embarrassment, feelings of unworthiness; physically due to symptoms of acne (e.g. pain, itch) and daily routine usage of treatments. [2, 4-6, 14-18]

Our study found that there is impaired QoL with a mean DLQI score of 6.7 (moderate impairment) whereas a study carried out in Sarawak, Malaysia showed a mean DLQI score of 4.1 (mild impairment). [3] The higher mean DLQI score in our study might be due to the exclusion of adolescents below 18 years old as several studies have shown that QoL are more affected in older acne patients. [5]

Our study showed weak correlation between QoL and the duration of acne. However, a study from Iran by Safizadeh *et al*.

showed that QoL is independent of disease duration. [2] The mean duration of acne (7.6 years) in our study is longer than the study by Safizadeh *et al.* (4.2 years). This might be because our study included patients who are above 18 years old who are more likely to have a longer duration of acne.

Interestingly, patients with family history of acne had less impairment of QoL compared to those without although the difference was not significant. A possible explanation for this is perhaps the family is experiencing or had experienced the same problem and hence, may provide more support and assurance to the patient.

Anecdotally, females are known to be more concerned about their facial appearance than males. Despite that, the findings from this study as well as several other studies have shown that there is no significant difference in the QoL between male and female acne patients. [2, 4, 15] This is in contrast to the study from Iraq by Ismail *et al.*, which showed that QoL impairment was worse in female patients. [16]

It would be logical to hypothesise that the greater the severity of acne, the more impact it has on the QoL. Findings from many studies remain inconsistent on this hypothesis. Some studies have shown that QoL has a significant correlation with the severity of acne. [6, 15, 16, 18] However, there are also several studies which have shown otherwise.[2, 14, 19] Our study has shown that there is a weak correlation between QoL and the severity of acne. The weak correlation may indicate that acne severity based on acne lesions itself do not reflect the overall impact of acne on the patient's QoL. Other subjective factors such as individuals' tolerance, family support, acceptance of the disease and social stigma may play a part in the impact of acne.

Our study showed that the median DLQI score increases with acne scarring severity. However, the difference is not statistically significant due to the small sample size of each group. It is important to study the effect of acne scar on the QoL because some physicians may not manage the scars until the patients complain of them.

In addition, our study showed no significant difference between the acne severity between male and female patients. However, a study done by Noorbala *et al.* in Iran, found that severe acne was significantly more common among males than females. [15]

There were few limitations in our study. It is a hospital-based study of acne patients in a tertiary care centre, hence acne patients from peripheral clinics were not included. This study has a small sample size due to the short study period. Also, our study did not include adolescents under the age of 18, where a significant proportion of acne cases would present. Most patients included in this study had been on treatment indicating that their acne may have improved. Furthermore, the questionnaire may invite subjective responses from the patients and threshold for affected QoL may vary in each patient.

It can be concluded that acne vulgaris does have a moderate impact on QoL and a weak correlation was found between acne severity and QoL. The impact of acne vulgaris on the QoL in acne patients of Brunei Darussalam is not less when compared to other countries. There was no significant difference in QoL as well as acne severity in relation to gender. Although the association between severity of acne scars and QoL were present, it was not significant. It is important to note that acne sufferers should seek help as early as possible from healthcare professionals for management of acne scars as well as reduce any impact on patient's QoL due to acne.

ACKNOWLEDGEMENTS

The author would like to express his gratitude to Dr. Hajah Sabrina, the Head of Department of Dermatology clinic in RIPAS Hospital, the nurses in RIPAS Dermatology Clinic, co-investigator, Dr. Pankaj as well as the lecturers from Universiti Brunei Darussalam.

REFERENCES

1: Reich A, Jasiuk B, Samotij D, Tracinska A, Trybucka K, Szepietowski JC. Acne vulgaris: what teenagers think about it. Dermatology nursing / Dermatology Nurses' Association. 2007; 19:49-54, 64.

2: Safizadeh H, Shamsi-Meymandy S, Naeimi A. Quality of life in Iranian patients with acne. Dermatol Research Prac. 2012; 2012:571516.

3: Yap FB. The impact of acne vulgaris on the quality of life in Sarawak, Malaysia. J Saudi Soc Dermatol Dermatolgic Surg. 2012; 16:57-60.

4: Ghaderi R, Saadatjoo A, Ghaderi F. Evaluating of life quality in patients with acne vulgaris using generic and specific questionnaires. Dermatol Research Prac. 2013;2013:108624.

5: Lasek RJ, Chren MM. Acne vulgaris and the quality of life of adult dermatology patients. Arch Dermatol. 1998; 134:454-8.

6: Tasoula E, Gregoriou S, Chalikias J, et al. The impact of acne vulgaris on quality of life and psychic health in young adolescents in Greece. Results of a population survey. Anais Brasileiros de Dermatologia. 2012; 87:862-9.

7: Williams HC, Dellavalle RP, Garner S. Acne vulgaris. Lancet. 2012; 379:361-72.

8: Barankin B, DeKoven J. Psychosocial effect of common skin diseases. Canadian Fam Physician Medecin de famille canadien. 2002; 48:712-6.

9: Hebert AA. The importance of early diagnosis and treatment of acne. Adv Studies Med 2008. 2007; 8:106-12.

10: 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 Euro Acad Dermatol Venereol: JEADV. 2007; 21:219-26.

11: Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI)--a simple practical measure for routine clinical use. Clin Exp Dermatol. 1994; 19:210-6.

12: Doshi A, Zaheer A, Stiller MJ. A comparison of current acne grading systems and proposal of a novel system. Inter J Dermatol. 1997; 36:416-8.

13: Goodman GJ, Baron JA. Postacne scarring: a qualitative global scarring grading system. Dermatol Surg 2006; 32:1458-66.

14: Ogedegbe EE, Henshaw EB. Severity and impact of acne vulgaris on the quality of life of adolescents in Nigeria. Clin Cosmetic Investigational Dermatol. 2014; 7:329-34.

15: Noorbala MT, Mozaffary BN, M. Prevalence of acne and its impact on the quality of life in high school-aged adolescents in Yazd, Iran. J Pakistan Asso Dermatol 2013. 2013; 23:168-72.

16: Ismail KH, Mohammed-Ali KB. Quality of life in patients with acne in Erbil city. Health and quality of life outcomes. 2012; 10:60.

17: Do JE, Cho SM, In SI, Lim KY, Lee S, Lee ES. Psychosocial aspects of acne vulgaris: A community -based study with Korean Adolescents. Ann Dermatol. 2009; 21:125-9.

18: Hanisah A, Omar K, Shah SA. Prevalence of acne and its impact on the quality of life in school-aged adolescents in Malaysia. J Primary Health Care. 2009; 1:20-5.

19: Kokandi A. Evaluation of acne quality of life and clinical severity in acne female adults. Dermatol Research Pract 2010;2010.