

Original Article

Quality of life assessment among patients with atopic eczema attending dermatology clinics in Hong Kong 對香港皮膚科門診的異位性皮膚炎患者當中的生活質素評估

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Objective: Atopic eczema (AE) is a common chronic skin disease worldwide with increasing prevalence in recent years. Literatures found its impact on health related quality of life (HRQoL) was significant for both children and adults. This study aimed to measure the HRQoL of local Chinese population with AE and make comparison with that of the Hong Kong (HK) general population. **Methods:** It was a multi-center cross-sectional descriptive study carried out from October 2008 to February 2009 at the government dermatology clinics. Patients of age 3 to 65 years old fulfilled the criteria of AE based on The UK Working Party's Diagnostic Criteria for AE were invited to join the study. The subjects were given standardized quality-of-life questionnaires to assess the HRQoL. The investigator assessed their clinical severity by Objective SCORAD. **Results:** One hundred twenty patients (70 children and 50 adults) were recruited. The scores of SF-36 of the patients with AE were found to be significantly lower than that of the Hong Kong sex- and age-matched healthy controls. The association between physician-assessed clinical severity (SCORAD) and patient-reported HRQoL was weak. **Conclusion:** The clinical assessment of disease severity is not sensitive enough to assess the HRQoL of AE patients.

目的：異位性皮膚炎是一種全球性常見的慢性皮膚病，其患病率近年正在不斷飆升。醫學文獻發現其對小童及成人的健康相關生活質素皆有重要影響。本研究旨在紀錄本地華裔異位性皮膚炎群組的健康相關生活質素，並與香港普遍人口作一比較。方法：此為多中心橫斷面描述性研究，於二零零八年十月至二零零九年二月在公立皮膚科門診，邀請三至六十五歲符合「英國異位性皮膚炎工作小組診斷標準」的患者參加進行研究。參與者會收到一份標準化的生活質素問卷，以估量其健康相關生活質素；而調查員則運用客觀濕疹嚴重程度計分方法評估其病情嚴重性。結果：計有七十名小童及五十名成人共一百二十名異位性皮膚炎病患參與了本研究，他們的簡易格式（36項）健康調查得分，明顯地低於同齡同性別的健康人仕對照組。醫師評估臨床嚴重性（濕疹嚴重程度計分）與病人報告的健康相關生活質素的相關性，在統計上僅微弱存在。結論：異位性皮膚炎患者的臨床病情嚴重性評估，並不能充份靈敏地反映出他們的健康相關生活質素。

Keywords: Atopic eczema, health related quality of life, SF-36, SCORAD

關鍵詞：異位性皮膚炎，健康相關生活質素，簡易格式（36項）健康調查，濕疹嚴重程度計分

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Introduction

Atopic Eczema (AE) is a major public-health problem worldwide which affects 2 to 7% of the adult population and 10 to 15% of children.¹ It has significant impact on quality of life in both children² and adult³ patients. This impact of AE in

patients was shown to be even stronger than that of psoriasis patients.⁴ This results in psychosocial disturbances in patients especially of self-image, which may lead to damage in self-esteem and their ability to cope with the disease and adherence to treatment.⁵ Because of the importance of psychological consequences, assessment of quality of life of AE patients by physicians is highly advisable.

The relationship between severity of skin diseases and quality of life was not always unidirectional.⁶ Patients with mild AE may report severe subjective symptoms of disfigurement, social stigma or some disruption of the lifestyle resulting from skin disease that may endanger quality of life. Also, there was very limited data looking into this aspect of the disease of these patients in local population. The current study assessed the health related quality of life (HRQoL) in Chinese population of patients with AE and their correlations between the clinical severity of the disease. It provides more information on the impact of the diseases in Hong Kong population. Besides, it can help identifying the effective way to measure the quality of life of patient and assist future study on AE.

Methodology

This was a multi-center cross-sectional descriptive study. It was performed from October 2008 to February 2009. All patients ranging from 3 to 65 years old fulfilled the criteria of AE based on The UK Working Party's Diagnostic Criteria for Atopic Dermatitis were included. They were recruited into the study by one investigator in a convenience manner. The study was performed at seven government dermatological clinics. These included Wan Chai Social Hygiene Clinic (SHC), Sai Ying Pun Dermatological Clinic (DC), Yau Ma Tei DC, Cheung Sha Wan DC, Yung Fung Shee DC, Tuen Mun SHC and Fanling Integrated Treatment Centre. The study protocol was approved by the Ethics Committee, Department of Health, HKSAR. The participation was on voluntary basis.

The investigator collected the demographic data of the participants, assessed the disease severity by objective clinical scoring system, Severity Scoring of Atopic Dermatitis (SCORAD)⁷. Adult patients of more than 16 year-old were invited to complete a 36-item Short-Form Health Survey (SF-36) and Dermatology Life Quality Index (DLQI). For children between 14 to 16 year-old, SF-36 and Children's DLQI (CDLQI) were given. Those children aged 3 to 14 year-old completed the CDLQI. All the questionnaires were self-administered either by the patients themselves or with the aid of parents/carers. The investigator checked the completeness of the returned questionnaires.

SCORAD

SCORAD was measured because it is the most extensively tested severity index. The reliability and validity have been tested.⁸ It is determined by the extent of the disorder, the intensity composed of 6 items (erythema, oedema/papules, effects of scratching, oozing/crust formation, lichenification and dryness) and subjective symptoms (itchiness, sleeplessness). An objective SCORAD rated by the physicians has been developed for the overall assessment of disease to exclude the subjective components. It is more representative and well evaluated. The maximum score for this objective SCORAD is now set at 83.⁹ The cut-off values of the objective SCORAD are 15, 40 and more than 40 respectively for mild, moderate and severe disease.

SF-36

The SF-36 is a generic self-report quality of life instrument. It is the most widely used and well validated HRQoL measure.¹⁰ It measures 8 domains of health status by means of 35 different items which include (1) Physical Functioning (PF); (2) Role Physical (RP); (3) Bodily Pain (BP); (4) General Health (GH); (5) Vitality (VT); (6) Social Functioning (SF); (7) Role-Emotional (RE); and (8) Mental Health (MH). In addition, it includes a single item that provides an indicator of perceived change in health over the past one year and does

not contribute to the measurement of any SF-36 domain. The SF-36 asks about health status during the previous 4 weeks. A score of 0 to 100 is calculated for each subscale, with the higher score indicating better HRQoL. The Hong Kong Chinese standard version of the SF-36 has been cross-culturally validated using the original US English SF-36 version in 1998.¹¹ It was confirmed to have high internal consistency and test-retest reliability in the local setting. The normative values of HK population were established after studying 2410 healthy individuals. It was found that the age and gender had significant and substantial effects on SF-36 scores. As a result, our cases were age and sex matched with the normative values for comparison. The healthy controls were standardized to a normal distribution with a mean of 50 and standard deviation of 10 in order to make interpretation easier. If norm-based scoring was above 50, it was above the general population, and vice versa.

DLQI & CDLQI

The DLQI is the first dermatology-specific health related quality of life questionnaire established by Finlay and Khan in 1994.¹² It is one of the most widely used dermatology-specific quality of life instruments. There has been a gradual increase in the international use of DLQI shown in a review article up to December 2007.¹³ The Cantonese version of DLQI and CDLQI were developed and they were found to be valid and reliable tool for assessing the effects of skin problems on HRQoL in our locality.¹⁴

Both DLQI for patients more than 16 year-old and CDLQI for patients less than 16 year-old are self-administered validated simple tools to measure the effect of skin disorder on the quality of life of a patient over the previous 7 days. It consists of 10 questions with relation to different aspects during the week prior to performing the questionnaire. The summation results in a maximum of 30 and minimum of 0. The higher the score, the greater the HRQoL impairment.

Statistics

Statistical analyses were performed using MedCalc for Windows, version 10.3 (MedCalc Software, Mariakerke, Belgium). Continuous variables were expressed as mean \pm standard deviation (SD) or median (range) as appropriate. Descriptive statistic of the variables was used to look at the baseline characteristics of patients with AE. The SF-36 scores of the patients were sex- and age-matched with the normal population of Hong Kong. The unpaired t-test was used to test differences in scores between them. Spearman's rho correlation was used to determine the levels of association between the SF-36, DLQI and CDLQI. All statistical tests were two sided, and statistical significance was taken as $p < 0.05$.

Results

One hundred and twenty-four patients from the seven government dermatology clinics, ranging from 3 to 48 years old, were invited to join the study (Table 1). Among 122 Chinese patients who gave consent to participate in the study, 120 (97%) completed the questionnaires. Two patients refused to participate due to lack of time. Of these 120 patients, 50 were adults and 70 were children. The mean age was 15 years old.

SF-36

The SF-36 of our 66 AE patients of more than 14 year-old was compared with that of the 2410 sex and age-matched Hong Kong healthy controls (Table 2). The mean scores of all of the SF-36 dimensions were lower than that of the healthy controls of Hong Kong. The SF and MH domains were particularly impaired with scores of 38.86 and 46.05 ($p < 0.01$) respectively.

Subgroup analysis of SF-36

Patients with AE showed a lower mean score of physical component summary (PCS) and mental component summary (MCS) than that of the general population in our study. The MCS

decreased significantly with mean score 45.15 ($p < 0.01$).

DLQI & CDLQI

The mean \pm SD of the DLQI and CDLQI were 10.1 \pm 6.4 and 7.7 \pm 6.0 respectively. Compared with mean DLQI of the normal population which

ranged from 0.0 to 0.5,¹³ the quality of life of our patients was impaired.

For the patients in this study, the dimension that scored the highest was symptoms and feelings and the lowest was found to be personal relationships (Table 3 and Table 4).

Table 1. Demographic data of the patients who completed surveys

Characteristics	Children (Age 3 - 16 years old) n=70 (58.3%)	Adults (Age \geq 16 years old) n=50 (41.7%)	Total n=120 (100.0%)
Mean age (year)	10	23	15 Median=14
Gender (n)			
Female	32 (45.7%)	27 (54.0%)	59 (49.2%)
Male	38 (54.3%)	23 (46.0%)	61 (50.8%)
Occupation (n)			
Studying	70 (100.0%)	32 (64.0%)	102 (85.0%)
Working	0 (0.0%)	17 (34.0%)	17 (14.2%)
Unemployed	0 (0.0%)	1 (2.0%)	1 (0.8%)
Mean duration of illness \pm SD (year)	7 \pm 4	17 \pm 8	11 \pm 8
Personal history of (n)			
Asthma	14 (20.0%)	20 (40.0%)	34 (28.3%)
Allergic rhinitis	51 (72.9%)	33 (66.0%)	84 (70.0%)
Family history of atopic disease (n)	54 (77.1%)	34 (68.0%)	88 (73.3%)

Table 2. Comparison of means of eight dimensions, physical and mental component summary scores of SF-36 between 66 patients with atopic eczema and 2410 Hong Kong healthy controls*

Variables	Mean \pm SD	p value [†]
Physical functioning (PF)	48.21 \pm 14.74	0.33
Role-physical (RP)	47.97 \pm 11.10	0.14
Bodily pain (BP)	49.34 \pm 7.57	0.48
General health (GH)	49.89 \pm 10.20	0.93
Vitality (VT)	49.61 \pm 10.67	0.77
Social functioning (SF)	38.86 \pm 14.00	<0.0001
Role-emotional (RE)	49.98 \pm 9.38	0.81
Mental health (MH)	46.05 \pm 11.07	<0.01
Component measures		
Physical component summary (PCS)	49.49 \pm 8.98	0.65
Mental component summary (MCS)	45.15 \pm 11.28	<0.001

*The mean of SF-36 scale scores of healthy controls were standardized to 50 with SD=10

[†]The SF-36 scale scores of atopic eczema patients were compared with healthy controls using unpaired t test

Table 3. Median and interquartile range for Dermatology Life Quality Index total and six dimensions

Variables		Median (interquartile range)
DLQI total	(0-30)	9.5 (5-15)
Symptoms and feelings	(0-6)	3 (2-4)
Daily activities	(0-6)	2 (1-3)
Leisure	(0-6)	2 (0-3)
Work and school	(0-3)	1 (0-1)
Personal relationships	(0-6)	1 (0-1)
Treatment	(0-3)	1 (1-2)

Table 4. Median and interquartile range for Children's Dermatology Life Quality Index total and six dimensions

Variables		Median (interquartile range)
CDLQI total	(0-30)	6.5 (3-11)
Symptoms and feelings	(0-6)	2 (1-3)
Leisure	(0-9)	1.5 (0-3)
School and holiday	(0-3)	0.5 (0-1)
Personal relationship	(0-6)	0 (0-1)
Sleep	(0-3)	1 (0-2)
Treatment	(0-3)	1 (0-1)

Correlation between disease severity measured by SCORAD and HRQoL questionnaires

Table 5 showed the correlation between SF-36 (PCS and MCS) and objective SCORAD was weak (r for PCS & MCS = -0.38 & -0.28 respectively, $p < 0.05$). On the other hand, DLQI and CDLQI correlated moderately with objective SCORAD (r for DLQI & CDLQI = 0.52 & 0.58 respectively, $p < 0.05$).

Correlation between various HRQoL questionnaires

MCS correlated significantly with CDLQI ($r = -0.63$; $p < 0.05$) and DLQI ($r = -0.44$; $p < 0.001$) but not PCS (Table 6). PCS and MCS did not appear to have significant correlation with each other.

Discussion

SF-36

All the domains of SF-36 were found to be lower in our patients when compared with the 2410 sex

and age matched Hong Kong healthy controls. SF was the greatest mental burden in our patients. This was in line with previous studies performed in Denmark¹⁵ and in the U.S.¹⁶ This implied the disease appeared to have a stronger impact on the patient's social and mental QoL. It was however, expected as SF-36 was too insensitive to measure the physical limitations among the patients with AE. Questions, for example, concerning PF like limitations of climbing up one flight of stairs, lifting or carrying vegetables, food stuffs or groceries were unlikely to be affected by mild or moderate disease. On the other hand, literature found patients with AE had better adaptation to the physical symptoms than the mental problems caused by the disease.¹⁷ The impairment may be related to the visible nature of the disease that caused substantial stress to the patients.

Physician has a tendency to concentrate on the physical aspect of the diseases. Improvement in physical symptoms may be followed by an improvement of patient's psychological well-

Table 5. Correlations between SCORAD and multiple HRQoL questionnaires

	Objective SCORAD	No./p	95% C.I.
	Spearman correlations coefficient (r)		
PCS	-0.38	66/p<0.01	-0.57 to -0.15
MCS	-0.28	66/p<0.05	-0.49 to -0.04
DLQI	0.52	50/p<0.001	0.29 to 0.70
CDLQI	0.58	70/p<0.0001	0.40 to 0.72

Table 6. Spearman's correlation coefficients (r) between SF-36 (MCS and PCS), DLQI & CDLQI for the 120 patients studied

		PCS	MCS	DLQI	CDLQI
PCS	Correlation Coefficient		-0.01	-0.29*	-0.18
	n		(66)	(50)	(16)
	95% C.I.		-0.25 0.24	-0.52 -0.01	-0.62 0.35
MCS	Correlation Coefficient	-0.01		-0.44**	-0.63*
	n	(66)		(50)	(16)
	95% C.I.	-0.25 0.24		-0.64 -0.18	-0.86 -0.20
DLQI	Correlation Coefficient	-0.29*	-0.44**		
	n	(50)	(50)		
	95% C.I.	-0.52 -0.01	-0.64 -0.18		
CDLQI	Correlation Coefficient	-0.18	-0.63*		
	n	(16)	(16)		
	95% C.I.	-0.62 0.35	-0.86 -0.20		

*P<0.05, **P<0.01, ***P<0.001

being. However, poor psychological status affects the compliance to treatment which will in turn affect the physical symptoms. It has been shown that appropriate psychological intervention was effective in treating AE and preventing relapse. Holistic care of AE patients without assessment of mental symptoms is therefore impossible.

In this study, the correlation between PCS of SF-36 and DLQI and CDLQI was weak and insignificant statistically. This is understandable as the physical symptoms of AE cannot be accurately assessed by SF-36 as discussed above. Instead, pruritus which was not assessed will be more relevant. If pruritus were also included, the

SF-36 score of AE patients will not be low when compared with other diseases like rheumatoid arthritis. Therefore, whether SF-36 is useful for QoL assessment of AE patients remained controversial.

DLQI & CDLQI

From a review article that studied the use of DLQI over 10 years,¹⁸ the means of DLQI among patients with AE from various research articles ranged from 4.5 to 21.4. The mean of means of DLQI was found to be 12.2. The mean score of DLQI of our patients was 10.1, which was still within the range but slightly lower than the mean of means. All of our patients were recruited in an

out-patient setting with more stable disease, this can explain the discrepancy.

The feature measured by the DLQI and CDLQI which had the greatest impact on perceived QoL in our patients was symptoms and feeling – itch and embarrassment. Others, like personal relationships with friends and relatives, were unlikely to be of great relevance to those with mild to moderate AE. The impact of mental health to these patients will be underestimated by DLQI and CDLQI as shown in a review article of HRQoL instruments.¹⁹ This finding was similar to that of a previous study which showed lowest mean scores in personal relationship in DLQI.²⁰ On the other hand, the use of DLQI in another study showed a highly significant improvement in the DLQI mean score in mild to moderate AE after treatment with topical corticosteroids.²¹ However, the major difference was found in the first two questions that was related to symptoms and feeling. Therefore DLQI and CDLQI cannot be a complete measurement of QoL in AE patients.

DLQI and CDLQI are dermatology-specific questionnaires. Although they can be used to assess a wide range of skin conditions, they are not specific enough to assess a particular skin condition like AE. To capture the full range of QoL aspects of a patient, it has been recommended to combine a dermatology-specific instrument with a generic instrument.²² One may combine DLQI and CDLQI with a more emotionally orientated measure such as the mental component of the SF-36 to assess QoL of AE patients. Inclusion of sleep disturbance can also be asked in addition to DLQI.

Objective SCORAD

The relationship between severity of skin disease and impairment of HRQoL is conflicting. There may not be a simple and direct relationship found in some of the literatures.^{23,24} Previous study demonstrated that SCORAD in children with AE

did not correlate well with subjective symptoms.⁷ Others found that the clinical severity was associated with QoL of patients¹⁹ and their families.²⁵ In our study, SCORAD correlated weakly with PCS and MCS of SF-36 and moderately with DLQI and CDLQI. The discrepancy suggested clinical severity SCORAD may not be related to all aspects of HRQoL in AE patients. Thus the clinical assessment of disease severity is not sensitive enough to assess the HRQoL of AE patients. Physicians should assess the psychological impact of AE patients during consultations and multidisciplinary approach may benefit these patients.

In assessing clinical severity of AE, we used SCORAD. Inter-observer variation is present when assessing disease extent, intensity items and identification of representative site. Therefore, only one observer was responsible for data collection in this study so as to eliminate the inter-observer variation in the use of SCORAD. Nonetheless, this study is subjected to limitations. SF-36, as a generic measure, is constructed for general use across all diseases. It allows comparison between different diseases and with normal population. However, it often focuses on physical symptoms that are unlikely to be affected by mild or moderate skin disease. The adoption of this general questionnaire to a skin disease is therefore a problem. DLQI and CDLQI are dermatology – specific questionnaires. They can be more sensitive because they contain questions of particular relevance in dermatology. Moreover, the subjects in our study were recruited in a consecutive manner which may introduce sampling bias to the results even though it was carried out in multiple government dermatology clinics. The study was carried out in dermatology clinics, however a number of cases of AE are managed by family physicians. Subjects recruited in this study may not be able to reflect the AE patients in the community. The most severe cases of AE patients that require in-patient care were also not assessed in our study. Nevertheless, majority of AE patients in real life are managed in out-patient setting.

Conclusion

In this study, the HRQoL assessed by SF-36 of Chinese population with AE attending dermatology clinics in Hong Kong was impaired when compared with that of the normal population. The difference was found to be particularly significant in the mental component. The correlation between physical component of SF-36 and other HRQoL instruments was weak. This is expected as the physical symptoms of AE like pruritus cannot be accurately assessed by SF-36. The use of SF-36 in AE patients is hence controversial. The major difference of our patients in scoring of DLQI and CDLQI was found in the first two questions that was related to symptoms and feeling. Other questions in these questionnaires, like those concerning personal relationship, are unlikely to be affected in mild and moderate AE patients. The emotional aspects of these patients in DLQI and CDLQI were underestimated. The combination of DLQI and CDLQI with a more emotionally orientated measure like MCS of SF-36 can be considered to overcome this problem. Clinical severity SCORAD correlated weakly with other HRQoL instruments. This suggests clinical assessment of AE severity is not sensitive enough to assess the HRQoL of patients.

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