

## The Impact of Chronic Spontaneous Urticaria on Quality of Life: A Study From South India

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### **Abstract:**

**Background:** Chronic spontaneous urticaria (CSU) is a common skin disorder, which is rarely fatal, but significantly deteriorates the patient's quality of life (QOL). Some symptom domains such as itch, pain and associated wheals, as reported by the patient serves as the primary source of assessment.

**Aim:** The study was designed to assess the QOL in Indian patients with CSU and its relation to the disease severity.

**Subjects and Methods:** To measure impairment of QOL in CSU patients, we used the urticaria specific QOL instrument, Chronic Urticaria Quality of Life Questionnaire (CU-Q2oL) as well as dermatology specific QOL instrument, Dermatology Life Quality Index (DLQI). Patients were requested to record their symptoms for calculation of urticaria activity score UAS. **Results:** We enrolled 60 patients. Both DLQI & CU-Q2oL mean scores were increased with severity of CSU when measured with UAS. The domains indicative of greater impairment of quality of life using DLQI were symptoms and feelings followed by daily activities. The highest mean scores in CU-Q2oL were in the domains of sleep disturbances, life activities. We also observed significant correlation among domains of DLQI and CU-Q2oL.

**Conclusions:** This study demonstrates that both DLQI and CU-Q2oL questionnaire are reliable, valid and sensitive tools in QOL assessment in CSU and correlated well with UAS score.

**Keywords:** CSU, CU-Q2oL, DLQI, UAS, QOL.

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### **I. Introduction**

Chronic spontaneous urticaria (CSU) is characterized by recurrent unpredictable episodes of itching and wheals, with or without associated angioedema for more than six weeks duration. CSU has been demonstrated to have a substantial impact on health related quality of life (QOL). Itching and other physical symptoms associated with urticaria may have a negative impact on patient's functional well being and social relationships.<sup>1</sup>

There has been a near exponential increase in the utility of QOL evaluation and patient reported outcome measures as a technique of clinical research in CSU. The anguish expressed by many CSU patients has been explored extensively in western literature over past decade. Surprisingly, very few studies were done in India assessing the QOL impairment in CSU.<sup>2</sup> Thus the present study was conducted to assess the impact of CSU on quality of life in Indian patients.

### **II. Patients And Methods**

This study was conducted in a tertiary care hospital, South India over a period of six months from February 2015 to July 2016. Patients attending the outpatient department of dermatology with complaints of CSU, volunteering for the study were screened for eligibility. Patients between the age of 18 and 60 years and who were well versed with English language were included.

Patients with associated concomitant diseases as well as pregnant, lactating females or with other skin disorders that are known to affect the QOL were excluded. Documented consent was taken from all study participants.

Activity of the disease was measured using urticaria activity score (UAS), which is based on daily recording of intensity of itching and number of wheals by patient for 7 consecutive days.<sup>3</sup> The UAS scores ranged from 0 to 42. Subjects were classified according to disease activity using UAS score as well-controlled urticaria (1–6), mild urticaria (7–15), moderate urticaria (16–27) and severe urticaria (28–42). Quality of life was measured using dermatology specific instrument, dermatology life quality index (DLQI)<sup>4</sup> and urticaria specific instrument, chronic urticaria quality of life questionnaire (CU-Q2oL).<sup>5</sup> Patient reported measures were studied in relation to UAS

### **III. Results**

#### **Socio demographic data**

Our study included a total of 60 patients (22 males= 36.7%, 38 females=63.3%, mean age 34.46 years). With respect to the duration of the disease as reported by the participants, 33.3% were found to have the condition for 6 weeks - 2 years, 46.7% participants had between 2- 5 years, while 20.0% reported urticaria for more than 5 years. Patients included those attending their first consultation to our outpatient department (45.0%) and those who were already being followed up by physician prior to the study (55.0%). Angioedema was associated with CSU in 13.3% of patients.

With respect to the severity of CSU according to UAS scoring reported by patients, 21.7% of patients had well controlled, 50.0% had mild and 20.0% had moderate CSU, while 8.3% had severe CSU (Table 1). Evaluation of quality of life:

#### **QOL and gender**

Quality of life was found to be more affected in females (mean DLQI=8.16, mean CU-Q2oL =48.08) compared to males (mean DLQI=4, mean CU-Q2oL =41.50) with statistically significant differences in the daily activities domain of the DLQI (p=.001) and in the limits (p=0.04) domain of the CU-Q2oL.

#### **QOL and angioedema**

The patients with CSU and angioedema had more impairment in quality of life as compared to the patients without angioedema, with statistically significant differences for both DLQI (p=0.002) as well as CU-Q2oL (p=0.004).

#### **QOL and education**

According to both questionnaires, no statistically significant differences were found in quality of life in patients with university education as compared to patients with secondary education.

#### **QOL and physician consultation**

Patients on regular physician consultation had better quality of life compared to the other patients, with statistically significant differences in all domains of DLQI except the treatment domain and overall DLQI score (p=0.006). Likewise there was significant difference in the pruritus (p=0.001), swelling (p=0.009) and sleep problems (p=0.001) domains of the CUQ2OL and overall score (p=0.018).

#### **DLQI and UAS**

The mean overall score in the DLQI was  $6.63 \pm 5.83$ , which indicates there is moderate effect of CSU on patient's quality of life. There was an increase in mean score in all domains of DLQI from well controlled CSU to severe CSU. The domains indicative of greater impairment of quality of life were symptoms and feelings ( $2.72 \pm 1.81$ ) followed by daily activities ( $1.15 \pm 1.61$ ). (Table 2)

With respect to quality of life measured with DLQI in relation to disease activity using multiple comparisons by one way ANOVA test showed, statistically no significant differences in quality of life were found between mild and moderate disease as well as severe and very severe disease. (Table 3)

#### **CU-Q2oL and UAS**

The mean overall score in the CU-Q2oL was  $45.67 \pm 11.954$ . (Table 4) There was an increase in mean score in all domains of CU-Q2oL from well controlled CSU to severe CSU. Statistically significant differences were found between the severities of CSU with respect to different domains of quality of life using CU-Q2oL. The domains indicative of greater impairment of quality of life were sleep problems and impact on life activities (for both median was 10.5). (Table 4)

With respect to quality of life measured with CU-Q2oL in relation to disease activity using multiple comparisons by one way ANOVA test showed, statistically significant differences in quality of life were found according to disease activity. (Table 5)

#### **QOL and correlations**

Table 6 shows the calculations of Pearson's correlations (r) between the domains of the DLQI and those of the SF-36. All the statistically significant correlations between the two questionnaires were positive and found to be strong to moderate, with an r of -0.254 to -0.465. (Table 6).

### **IV. Discussion**

World Health Organization initially introduced the concept of health in 1948. Since then the quality-of-life issues have become increasingly more important in patient care and research. Because true quality of life

value, cannot be measured directly, they are typically evaluated based on the classic principles of item-measurement theory. It states that quality of life can be measured indirectly by asking a series of questions known as “items” and the answers are converted to numerical scores and then summated to yield “domain scores” and “scale scores”.<sup>6</sup>

Present study assessed the severity of CSU and its impact on quality of life of the patients attending the dermatology outpatient department at a hospital in South India using dermatology specific instrument DLQI and urticaria specific instrument CU-Q2oL.

Finlay et al, initially developed DLQI for general dermatologic population, the DLQI has also been applied to patients with CSU. For assessing the quality of life in dermatology patients, it is the most commonly used and has shown high validity, feasibility and simplicity.<sup>4</sup> DLQI has been extensively used reliable and well validated in dermatological conditions in Indian patients.

Poon et al, used DLQI questionnaire in 170 consecutive patients with all forms of chronic urticaria and reported that quality of life is moderately impaired in CSU compared to other types of chronic urticaria.<sup>7</sup> In our study also the mean DLQI score shows there was moderate effect on patient's life. In an Indian study the mean DLQI score reported was 7.16 in a sample of chronic urticaria patients including those with delayed pressure urticaria.<sup>8</sup> Lennox demonstrated that DLQI is a valid, reliable, and useful outcome measure for assessing QOL in patients with CSU.<sup>9</sup> According to recent Global Allergy and Asthma European Network2013 (GA2LEN) recommendations assessment of patients with CSU should include the impact on quality of life using the CU-Q2oL and disease activity using UAS reported by patients.<sup>1</sup>

In an Indian study by Pherwani et al, using CU-Q2oL revealed the involvement of a number of items never realised by the patients themselves. Also seen was a significant inter-item correlation, which might be aggravating each other.<sup>2</sup> Koti et al, in his study concluded that the CU-Q 2oL total scores and the UAS scores were only moderately correlated and this correlation was higher as compared to those of the DLQI and the UAS.

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## V. Tables

**Table 1:** socio demographic data

Age (years) (mean )	34.46
>30 years (%)	34 (56.7%)
<30 years (%)	26 (43.3%)
Gender	
Male (%)	22 (36.7%)
Female (%)	38 (63.3%)
Duration of CSU	
6 weeks - 2 year	20 (33.3%)
2 - 5 years	28 (46.7%)
> 5 years	12 (20.0%)
Education	
Secondary school	25 (41.7%)
University	35 (58.3%)
Physician consultation	
no	27 (45.0%)
yes	33 (55.0%)
Number of patients according to severity of urticaria using UAS	
well controlled =1-6	13 (21.7%)
mild =7-15	30 (50.0%)
moderate =16-27	12 (20.0%)
severe =28-42	5 (8.3%)
Association of angioedema (number & percentage of patients)	
Yes	8 (13.3%)
No	52 (86.7%)

**Table 2:** Kruskal Wallis test to determine stochastic dominance between different urticaria activity score and

### DLQI

	Well controlled CSU	Mild CSU	Moderate CSU	Severe CSU	overall score	median	Kruskall wallis test value	P-value
DLQI	1.54±0.78	4.37±1.75	12.08±3.06	20.40±1.67	6.63±5.83	5	47.26	< 0.001
Symptoms and feelings	0.62±.77	2.43±0.97	4.42±1.16	5.80±0.44	2.72±1.81	2.5	42.10	< 0.001
daily activities	0.00±.00	0.37±0.62	2.92±0.79	4.60±0.89	1.15±1.61	0	45.53	< 0.001
LEISURE	0.00±.00	0.03±0.18	1.17±1.03	3.60±0.89	0.55±1.16	0	42.24	< 0.001

work and school	0.00±.00	0.67±0.48	1.75±0.45	2.40±0.55	0.88±0.85	1	43.07	< 0.001
Personal relations hips	0.00±.00	0.00±0.00	0.17±0.39	1.80±0.45	0.18±0.54	0	45.10	< 0.001
TREATMENT	0.92±.64	0.87±0.73	1.67±.49	2.20±1.30	1.15±0.84	1	15.59	0.001

**Table 3:** Multiple comparisons of disease activity with DLQI and its domains using one way ANOVA test

Disease activity		Symptoms & feelings	Daily activities	Leisure	Work & school	Personal relations	Treatment	DLQI
Mild	moderate	< 0.001	0.464	1.000	< 0.001	1.000	< 0.001	1.000
	severe	< 0.001	< 0.001	< 0.001	< 0.001	0.313	< 0.001	0.082
	very severe	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.009
moderate	mild	< 0.001	0.464	1.000	< 0.001	1.000	< 0.001	1.000
	severe	< 0.001	< 0.001	< 0.001	< 0.001	0.142	< 0.001	0.013
	very severe	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002
Severe	mild	< 0.001	< 0.001	< 0.001	< 0.001	0.313	< 0.001	0.082
	moderate	< 0.001	< 0.001	< 0.001	< 0.001	0.142	< 0.001	0.013
	very severe	.049	< 0.001	< 0.001	0.034	< 0.001	< 0.001	1.000
very severe	mild	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.009
	moderate	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002
	severe	.049	< 0.001	< 0.001	0.034	< 0.001	< 0.001	1.000

**Table 4:** Kruskal Wallis test to determine stochastic dominance between different urticaria activity score and CUQ2OL

	Well controlled	Mild	moderate	severe	Total score	median	Kruskall wallis test value	P-value
Pruritus	2.38±0.51	4.40±0.81	6.33±0.98	9.00±1.00	4.73±1.99	5	47.039	< 0.001
Swelling	2.15±0.38	2.30±0.65	2.83±0.72	4.00±1.00	2.52±0.81	8	21.044	< 0.001
Impact on life activities	8.15±0.90	10.50±2.19	13.92±1.83	17.40±2.70	11.25±3.27	10.5	36.590	< 0.001
Sleep problems	7.00±2.08	10.40±1.98	15.00±2.86	18.20±3.11	11.23±4.03	10.5	38.639	< 0.001
Limits	6.31±1.11	6.80±1.73	8.83±2.21	8.60±1.14	7.25±1.92	7	13.890	0.003
Looks	6.85±1.07	8.03±1.79	9.92±2.61	14.40±.89	8.68±2.68	8	23.239	< 0.001
CU-Q2OL	32.85±2.76	42.43±4.55	56.83±5.41	71.60±5.22	45.67±11.95	43	48.068	< 0.001

**Table 5:** Multiple comparisons of disease activity with CUQ2OL and its domains using one way ANOVA test

Disease severity		Pruritus	Swelling	impact_life	Sleep problems	Limits	Looks	CU_Q2OL
Mild	moderate	< 0.001	1.000	0.004	< 0.001	1.000	0.324	< 0.001
	severe	< 0.001	0.069	< 0.001	< 0.001	0.003	0.001	< 0.001
	very severe	< 0.001	< 0.001	< 0.001	< 0.001	0.076	< 0.001	< 0.001
moderate	mild	< 0.001	1.000	0.004	< 0.001	1.000	0.324	< 0.001
	severe	< 0.001	0.118	< 0.001	< 0.001	0.005	0.022	< 0.001
	very severe	< 0.001	< 0.001	< 0.001	< 0.001	0.191	< 0.001	< 0.001
Severe	mild	< 0.001	0.069	< 0.001	< 0.001	0.003	0.001	< 0.001
	moderate	< 0.001	0.118	< 0.001	< 0.001	0.005	0.022	< 0.001
	very severe	< 0.001	0.008	0.009	0.067	1.000	< 0.001	< 0.001

very severe	mild	< 0.001	< 0.001	< 0.001	< 0.001	0.076	< 0.001	< 0.001
	moderate	< 0.001	< 0.001	< 0.001	< 0.001	0.191	< 0.001	< 0.001
	severe	< 0.001	0.008	0.009	0.067	1.000	< 0.001	< 0.001

**Table 6:** Pearson’s correlations between DLQI and CUQ2OL and their domains

	pruritus	swelling	Impact on lifeactivities	Sleep problems	limits	looks	CUQ2OL
Symptoms and feelings	0.809 <0.001 1	0.483 <0.001	0.718 <0.001	0.796 <0.001 1	0.589 <0.001 1	0.528 <0.001 1	0.846 <0.001
Daily activities	0.799 <0.001 1	0.560 <0.001	0.767 <0.001	0.770 <0.001 1	0.513 <0.001 1	0.643 <0.001 1	0.867 <0.001
leisure	0.735 <0.001 1	0.576 <0.001	0.694 <0.001	0.764 <0.001 1	0.357 0.005	0.703 <0.001 1	0.824 <0.001
Work and school	0.827 <0.001 1	0.533 <0.001	0.771 <0.001	0.788 <0.001 1	0.478 <0.001 1	0.635 <0.001 1	0.870 <0.001
Personal relationships	0.650 <0.001 1	0.518 <0.001	0.521 <0.001	0.567 <0.001 1	0.284 0.028	0.619 <0.001 1	0.689 <0.001
treatment	0.420 0.001	0.381 <0.003	0.597 <0.001	0.374 <0.001 3	0.250 <0.05 4	0.391 <0.001 2	0.513 <0.001
DLQI	0.857 <0.001 1	0.599 <0.001	0.827 <0.001	0.831 <0.001 1	0.526 <0.001 1	0.686 <0.001 1	0.929 <0.001

## VI. Conclusion

The domains indicative of greater impairment of quality of life using DLQI were symptoms and feelings followed by daily activities. The highest mean scores in CU-Q2oL were in the domains of sleep disturbances, life activities. We also observed significant correlation among domains of DLQI and CU-Q2oL. Limitations of this study are mainly small sample size and only people who are well versed with English language are taken. Assessment of urticaria activity and quality of life is important in chronic spontaneous urticaria.

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