

RESULTS

I - Demographic characteristics of the family members:

The mean age of the family members was 36.3 (range 18–67) years; 74% of them were females. The mean size of families was 7.6; 59% of them live in rural areas. Most of family members were married (82%), uneducated (41%) and either one of the parents (37%) or spouses (34%) of the patients. Most of the caregivers were housewives (54%). see details in **Table (2)**.

Table (2): Demographic characteristics of family members: (n = 100)

Subject characteristics		Mean	SD
Age (years)		36.3	10.6
Family size		7.6	3.2
		%	
Gender	Male	26	
	Female	74	
Residence	Urban	41	
	Rural	59	
Marital status	Married	82	
	Single	14	
	Widowed	4	
Educational level	Uneducated	41	
	Primary	30	
	Secondary	26	
	University	3	
Employment status	Employed	36	
	Housewife	54	
	Unemployed	6	
	Student	4	
Relationship to patient	Parent	37	
	Spouse	34	
	Son/Daughter	4	
	Sibling	25	

II - Demographic characteristics of the patients:

The mean patients' age was 25.4 (range 18–67) years; 38 % were males and 62 % were females. Mean duration of overall diseases was 26.2 (range 1-360) months. Most of the patients are married (41%), enrolled in primary educational level (44%), and either students (34%) or employed (29%). Details are shown in **Table (3)**.

Table (3): Demographic characteristics of patients: (n = 100)

Patient characteristics		Mean	SD
Age (years)		25.4	15.1
Duration of disease (months)		26.2	47.6
		%	
Gender	Male	38	
	Female	62	
Marital status	Underage	29	
	Married	41	
	Single	27	
	Engaged	3	
Educational Level	Preschool	7	
	Uneducated	17	
	Primary	44	
	Secondary	26	
	University	6	
Employment Status	Underage	5	
	Employed	29	
	Housewife	19	
	Unemployed	13	
	Student	34	

III - Dermatological characteristics of patients:

Patients suffered from one of 18 skin diseases classified into to 2 groups: inflammatory (10 dermatoses) and noninflammatory (8 dermatoses). Details about percentage of cases, gender distribution, mean patients' age and duration of the diseases are shown in **Table (4)**

Table (4): Dermatological characteristics of patients (n = 100)

Diagnosis		% (Male/female)	Mean patient age (years) (Male/female)	Mean disease duration (months) (Male/female)
Group I (Inflammatory)	Acne vulgaris	14 (4/10)	17.9 (17.8/18)	17.7 (13.8/19.3)
	Psoriasis	12 (7/5)	30.7(33.6/26.6)	32.8 (49/10)
	Leprosy	11 (5/6)	30.6(30.6/30.5)	35.4 (50.2/23)
	Eczema	8 (5/3)	24.4(31.4/12.7)	8.8 (10.8/5.3)
	Ichthyosis	6 (3/3)	10.2 (15/5.3)	121.3 (180/62.7)
	Lichen planus	6 (3/3)	44.2 (55/33.3)	23 (27/19)
	Urticaria	4 (3/1)	31 (35.3/18)	5.3 (6/3)
	Bullous disease ^a	2 (2/0)	54 (54/0)	48 (48/0)
	Seborrheic dermatitis	2 (1/1)	24.5 (33/16)	2 (2/2)
	Overall	65 (33/32)	27 (32.5/21.4)	32.1(43.6/20.2)
Group II (Noninflammatory)	Vitiligo	9 (1/8)	19 (19/19)	24.3 (18/25.1)
	Tinea versicolor	8 (4/4)	26.3(37.8/14.8)	2.8 (2.5/3)
	Alopecia areata	5 (0/5)	18.2 (0/18.2)	4.2 (0/4.2)
	Scleroderma	2 (0/2)	23 (0/23)	72 (0/72)
	Melasma	6 (0/6)	29.8 (0/29.8)	15.7 (0/15.7)
	Viral wart	2 (0/2)	11.5 (0/11.5)	2.5 (0/2.5)
	Haemangioma	2 (0/2)	11.5 (0/11.5)	11.5 (0/8)
	Milia	1 (0/1)	38 (0/38)	8 (0/11.5)
	Overall	35 (5/30)	22.31 (34/20.4)	15.3 (5.6/16.9)

^aIncludes dermatitis herpetiformis = 1; pemphigus vulgaris = 1.

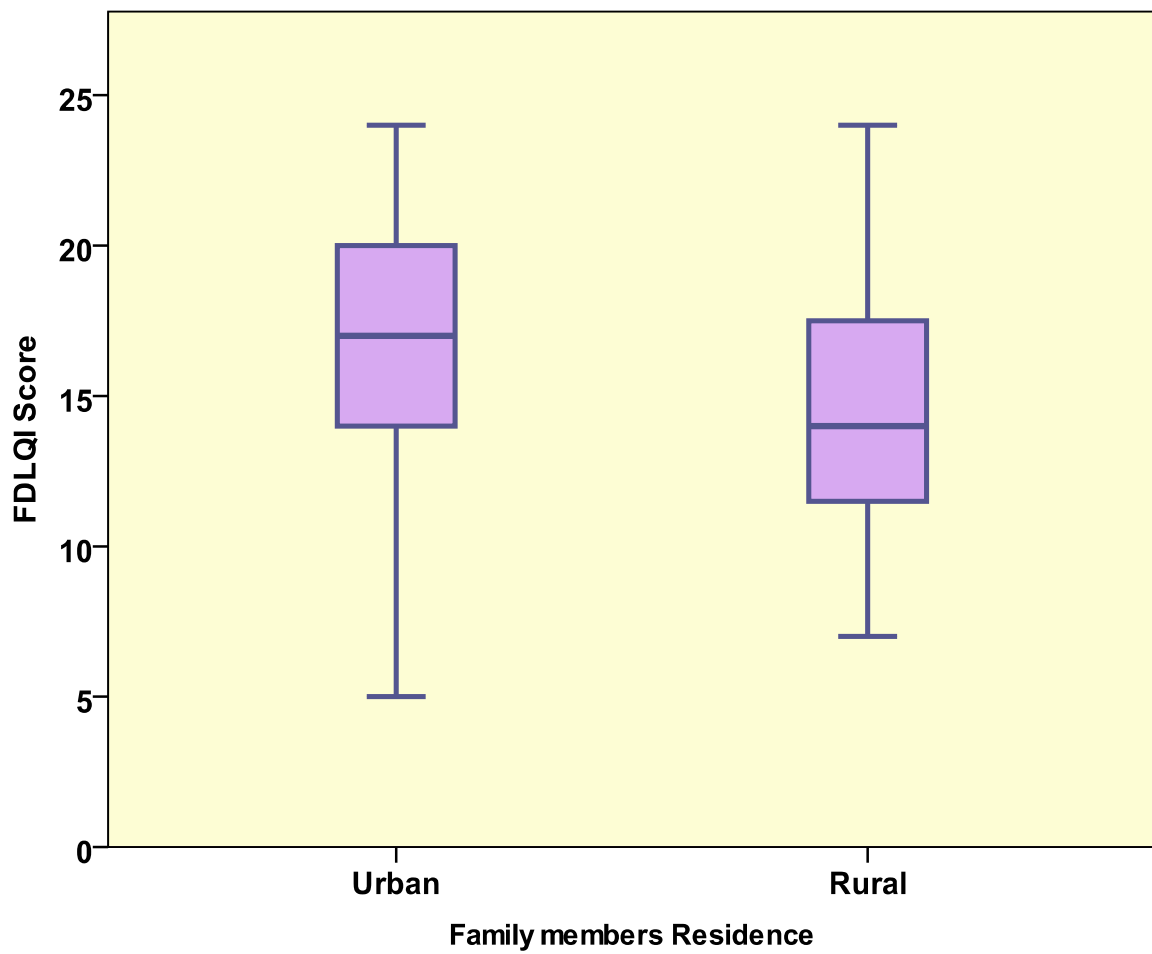
IV - Impact of demographic characteristics on FQoL:

Impact of skin diseases on family members who live in urban areas was significantly higher than those live in rural areas ($p < 0.05$). On the other hand, there was statistically insignificant difference as regard gender, marital status, educational level, employment status and relationship to patient. See details in **Table (5) & Figure (5)**.

Table (5): FDLQI score distribution in various family member groups:-

		No	Mean \pm SD	Range	P
Overall FDLQI score		100	15.41 \pm 4.7	5-24	
Gender	Male	26	14.9 \pm 5.2	5-24	0.5
	Female	74	15.6 \pm 4.5	7-24	
Residence	Urban	41	16.8 \pm 4.8	5-24	0.01
	Rural	59	14.5 \pm 4.4	7-24	
Marital status	Married	82	15.3 \pm 4.8	5-24	0.7
	Single	14	15.4 \pm 4.1	8-22	
	Widowed	4	17.3 \pm 3.7	13-22	
Educational Level	Uneducated	41	15.2 \pm 4.4	8-23	0.6
	Primary	30	16.3 \pm 5.3	7-24	
	Secondary	26	15 \pm 4.5	5-22	
	University	3	13.3 \pm 2.9	10-15	
Employment Status	Employed	36	15.3 \pm 4.8	5-24	0.97
	Housewife	54	15.6 \pm 4.7	7-24	
	Unemployed	6	14.7 \pm 4.8	8-21	
	Student	4	15.5 \pm 4.9	10-22	
Relationship to patient	Parent	37	14.5 \pm 4.4	7-24	0.1
	Spouse	34	15.9 \pm 4.96	5-24	
	Son/Daughter	4	20 \pm 3.9	15-24	
	Sibling	25	15.4 \pm 4.4	7-22	

Figure (5): Box plot showing FDLQI score (mean \pm SD and range) in urban and rural areas



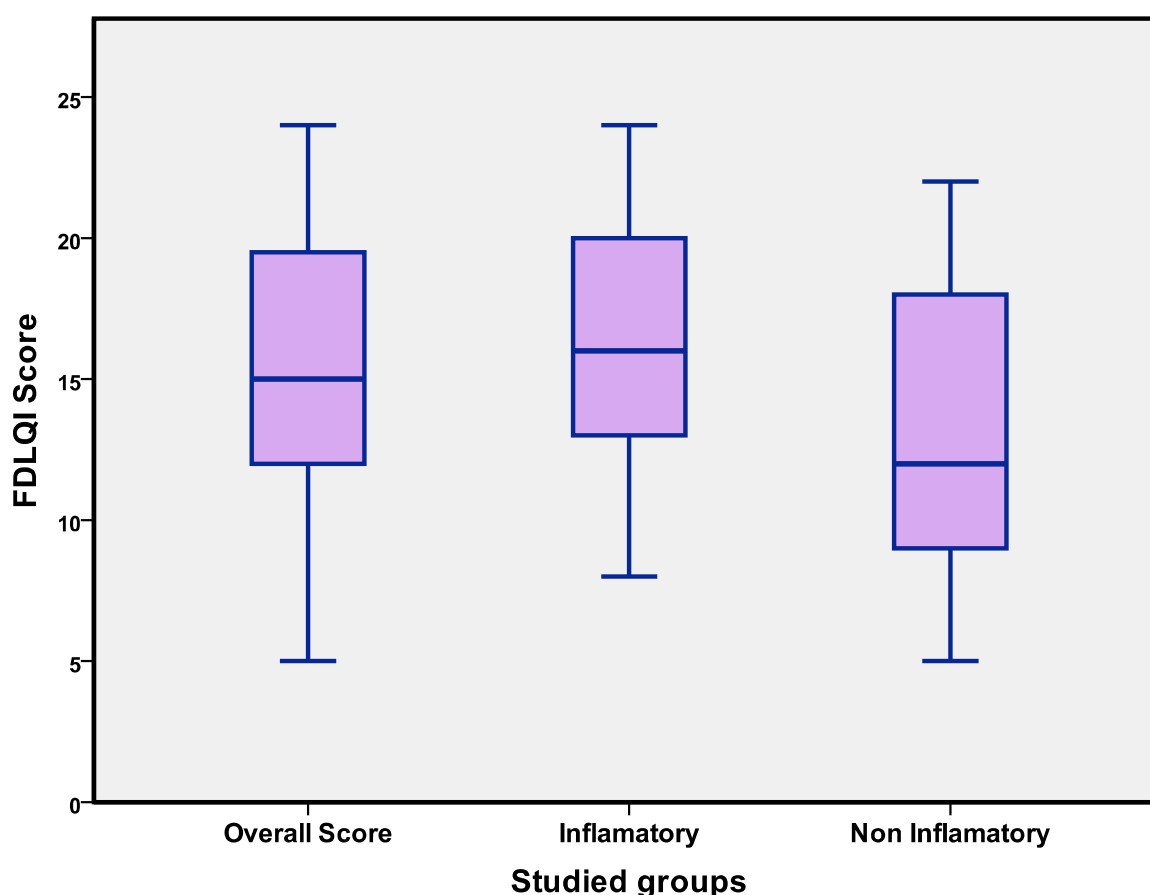
V - FDLQI score overall and among study groups:

The mean FDLQI score of the family members was 15.41 (SD = 4.7, range = 5–24). The impact of inflammatory skin diseases on family members was highly significant ($p < 0.001$) higher than that of non-inflammatory ones. See details in **Table (6) & Figure (6)**.

Table (6): FDLQI score distribution in study groups:-

FDLQI	Overall FDLQI score (n=100)	Group I Inflammatory (n =65)	Group II Noninflammatory (n =35)	P value
Mean \pm SD	15.41 \pm 4.7	16.8 \pm 3.96	12.8 \pm 4.8	0.0001
Range	5 - 24	10 - 24	5 - 22	

Figure (6): Box plot showing FDLQI score (mean \pm SD and range) in the studied groups



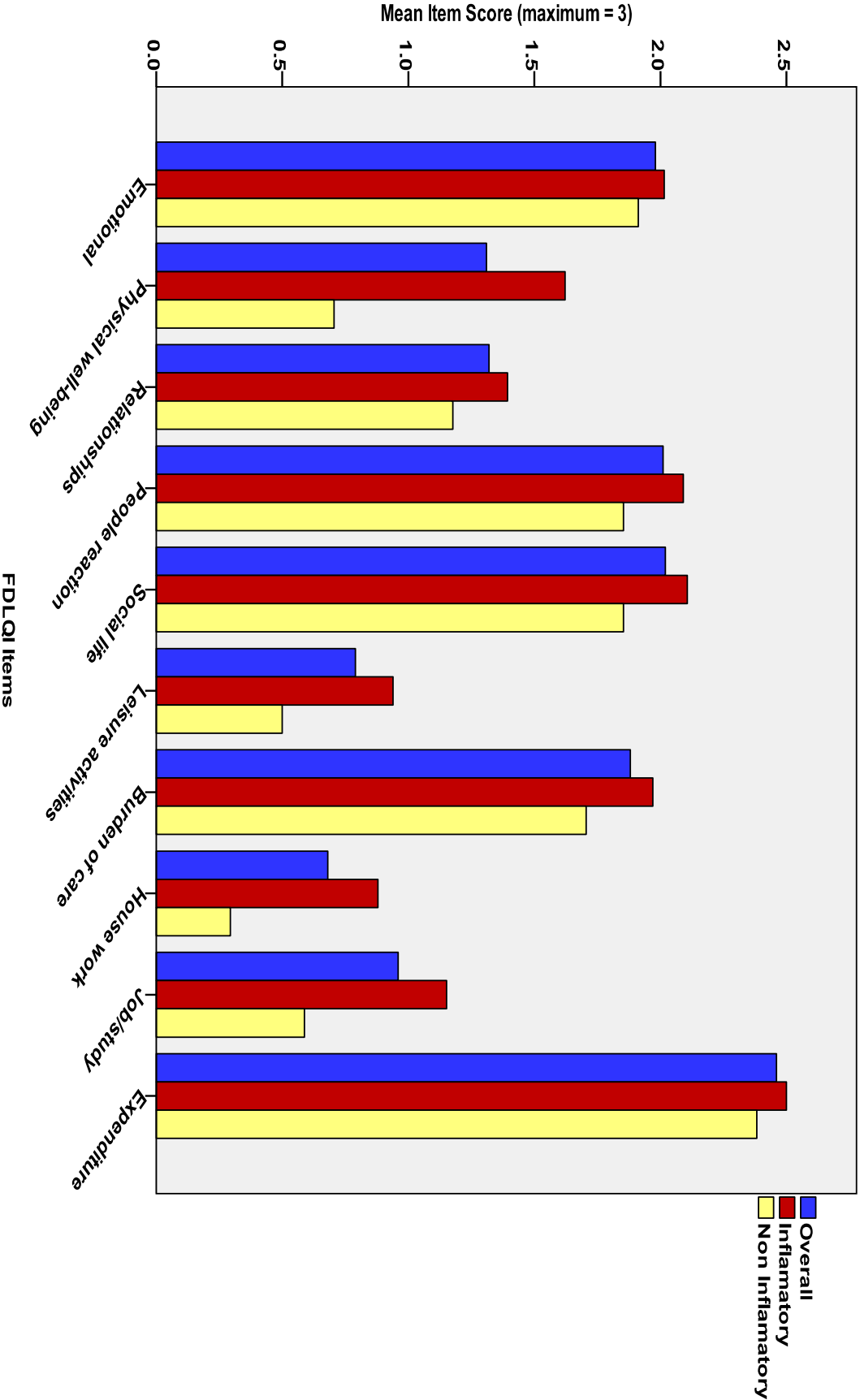
VI - Impact of study groups on different FQoL domains:-

Impact of inflammatory skin diseases on physical well-being, leisure activities, house work and employment/study domains was highly significant higher than that of noninflammatory ones ($p < 0.001$). Moreover, the impact of noninflammatory skin diseases on burden of care was significantly ($p < 0.05$) less than that of inflammatory diseases. On the other hand, there was statistically insignificant difference between impact of inflammatory and noninflammatory skin diseases on emotional, relationships, people reaction, social life and expenditure domains ($p > 0.05$). See details in **Table (7) & Figure (7)**.

Table (7): FDLQI scores for individual items; overall and for inflammatory and noninflammatory groups:-

	Overall	Inflammatory (65)	Noninflammatory (35)	P
	Mean \pm SD	Mean \pm SD	Mean \pm SD	
Emotional	1.98 \pm 0.6	2.02 \pm 0.6	1.91 \pm 0.7	0.3
Physical well-being	1.31 \pm 0.9	1.62 \pm 0.7	0.71 \pm 0.7	0.0001
Relationships	1.32 \pm 0.8	1.39 \pm 0.8	1.18 \pm 0.9	0.1
People reaction	2.01 \pm 0.8	2.09 \pm 0.8	1.85 \pm 0.7	0.07
Social life	2.02 \pm 0.9	2.11 \pm 0.9	1.85 \pm 0.9	0.2
Leisure activities	0.79 \pm 0.8	0.94 \pm 0.8	0.50 \pm 0.7	0.008
Burden of care	1.88 \pm 0.7	1.97 \pm 0.7	1.71 \pm 0.7	0.04
House work	0.68 \pm 0.8	0.88 \pm 0.81	0.29 \pm 0.5	0.0001
Job/study	0.96 \pm 0.8	1.15 \pm 0.78	0.59 \pm 0.8	0.0001
Expenditure	2.46 \pm 0.69	2.5 \pm 0.71	2.38 \pm 0.7	0.3

Figure (7): Mean FDLQI scores for individual items; overall and for inflammatory and noninflammatory groups.



VII - Impact of Different Skin Diseases on FQoL

A. Impact of inflammatory skin diseases on FQoL:

The impact of ichthyosis on FQoL was highly significant ($p < 0.001$) higher than that of other inflammatory diseases except bullous diseases where there was statistically insignificant difference between them ($p > 0.05$). Also, the impact of bullous diseases on FQoL was significantly higher than that of other inflammatory diseases except urticaria where there was statistically insignificant difference between them ($p > 0.05$). There was statistically insignificant difference ($p > 0.05$) in the impact on FQoL between other inflammatory skin diseases. Details are shown in **Table (8) & Figure (8)**.

Table (8): FDLQI score distribution in inflammatory skin diseases.

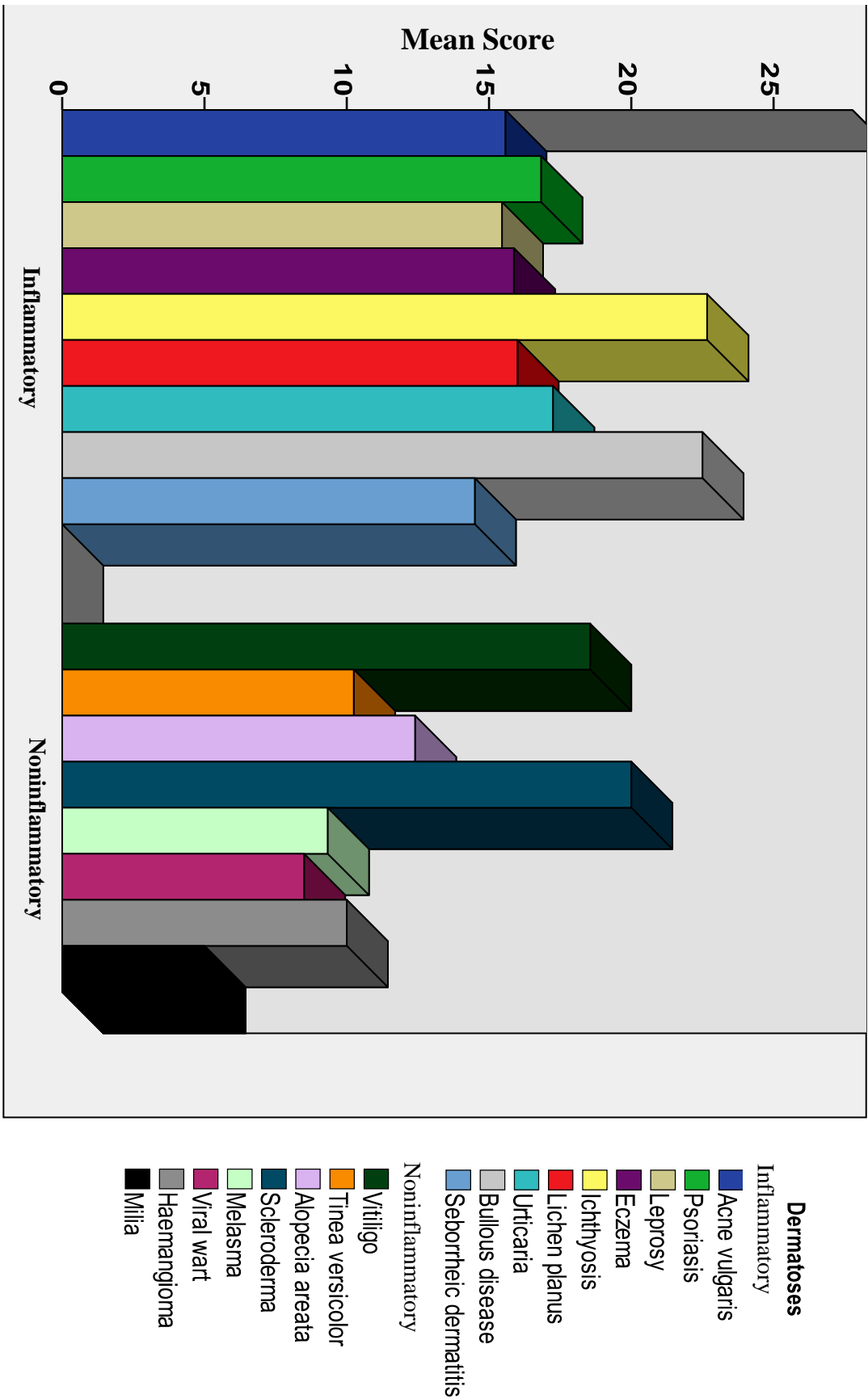
Disease	No	Mean \pm SD	Range	Acne vulgaris	Psoriasis	Leprosy	Eczema	Ichthyosis	Lichen planus	Urticaria	Bullous disease
				P	P	P	P	P	P	P	P
Acne vulgaris	14	15.6 \pm 3.7	10-22								
Psoriasis	12	16.8 \pm 3.4	13-24	0.4							
Leprosy	11	15.5 \pm 3.5	11-21	0.9	0.3						
Eczema	8	15.9 \pm 3.9	11-21	0.8	0.6	0.8					
Ichthyosis	6	22.7 \pm 1.5	20-24	0.0001	0.001	0.0001	0.001				
Lichen planus	6	16 \pm 3.7	12-20	0.8	0.6	0.8	0.95	0.001			
Urticaria	4	17.3 \pm 4	13-22	0.4	0.8	0.4	0.5	0.02	0.6		
Bullous disease	2	22.5 \pm 0.7	22-23	0.01	0.04	0.01	0.02	0.95	0.03	0.09	
Seborrheic dermatitis	2	14.5 \pm 2.1	13-16	0.7	0.4	0.7	0.6	0.005	0.6	0.4	0.02

B. Impact of noninflammatory skin diseases on FQoL:

The impact of vitiligo and scleroderma on FQoL was highly significantly ($p < 0.01$) higher than that of other noninflammatory diseases. On the other hand, there was statistically insignificant difference in the impact on FQoL in between other noninflammatory skin diseases ($p > 0.05$). Details are shown in **Table (9)** & **Figure (8)**.

Disease	No	Mean \pm SD	Range	Vitiligo	Tinea versicolor	Alopecia areata	Scleroderma	Melasma	Viral wart
				P	P	P	P	P	P
Vitiligo	9	18.6 \pm 2.1	15-22						
Tinea versicolor	8	10.3 \pm 2.1	7-13	0.0001					
Alopecia areata	5	12.4 \pm 3.1	9-17	0.0001	0.1				
Scleroderma	2	20 \pm 2.8	18-22	0.4	0.0001	0.0001			
Melasma	6	9.3 \pm 2.1	7-12	0.0001	0.5	0.04	0.0001		
Viral wart	2	8.5 \pm 0.7	8-9	0.0001	0.3	0.05	0.0001	0.7	
Haemangioma	2	10 \pm 1.4	9-11	0.0001	0.9	0.2	0.0001	0.7	0.5

Figure (8): FDLQI score distribution in different dermatoses



VIII - Impact of different skin diseases on individual items of FQoL: See details in Table (10) & Figure (9)

1- Expenditure (mean score = 2.46)

Most dermatoses included in the study had a severe effect except leprosy, tinea versicolor, viral wart, haemangioma and milia which had moderate effects.

2- Social life (mean score = 2.02)

Social life was the second most frequently expressed aspect of families' lives. Most of diseases had a severe effect except psoriasis, eczema, urticaria, lichen planus, melasma and alopecia which had a moderate effect, and tinea versicolor, wart, haemangioma and milia which had a mild effect.

3- People reaction (mean score = 2.01)

Urticaria, viral wart and milia had a mild effect on people reaction domain. Most other diseases had either moderate effect (acne vulgaris, eczema, bullous disease, seborrheic dermatitis, alopecia areata, tinea versicolor, melasma and haemangioma) or a severe effect (rest of diseases).

4- Emotional domain (mean score = 1.98)

Ichthyosis, lichen planus, bullous disease, vitiligo, alopecia areata and scleroderma had a severe effect. All other skin diseases had moderate effects except viral wart and milia which had a mild effect.

5- Burden of care (mean score = 1.88)

Psoriasis, Ichthyosis, bullous disease, vitiligo and alopecia areata had severe effects. All other skin diseases had a moderate effect except melasma which had a mild effect and milia which had no effect.

6- Relationships (mean score = 1.32)

Most skin diseases of the study had moderate effect on relationships except acne vulgaris, seborrheic dermatitis, alopecia areata and scleroderma which had a mild effect. On the other hand, there was no effect for melasma, hemangioma and milia.

7- Physical well-being (mean score = 1.31)

Ichthyosis, urticaria, bullous disease and scleroderma had a severe effect on the physical well-being. On the other hand, milia had no effect. Other diseases had either a mild effect (alopecia, tinea versicolor, melasma, wart and haemangioma) or a moderate effect (rest of diseases).

8- Job/study (mean score = 0.96)

Melasma, viral wart and milia had no effect. On the other hand, bullous disease had a severe effect. Other diseases had either a mild effect (acne vulgaris, lichen planus, seborrheic dermatitis, alopecia areata, tinea versicolor and haemangioma) or moderate effect (rest of diseases)

9- Leisure activities (mean score = 0.79)

Ichthyosis, urticaria, bullous disease and scleroderma had moderate effects. Most other diseases had either no effect (seborrheic dermatitis, viral wart, haemangioma and Milia) or a mild effect (rest of diseases)

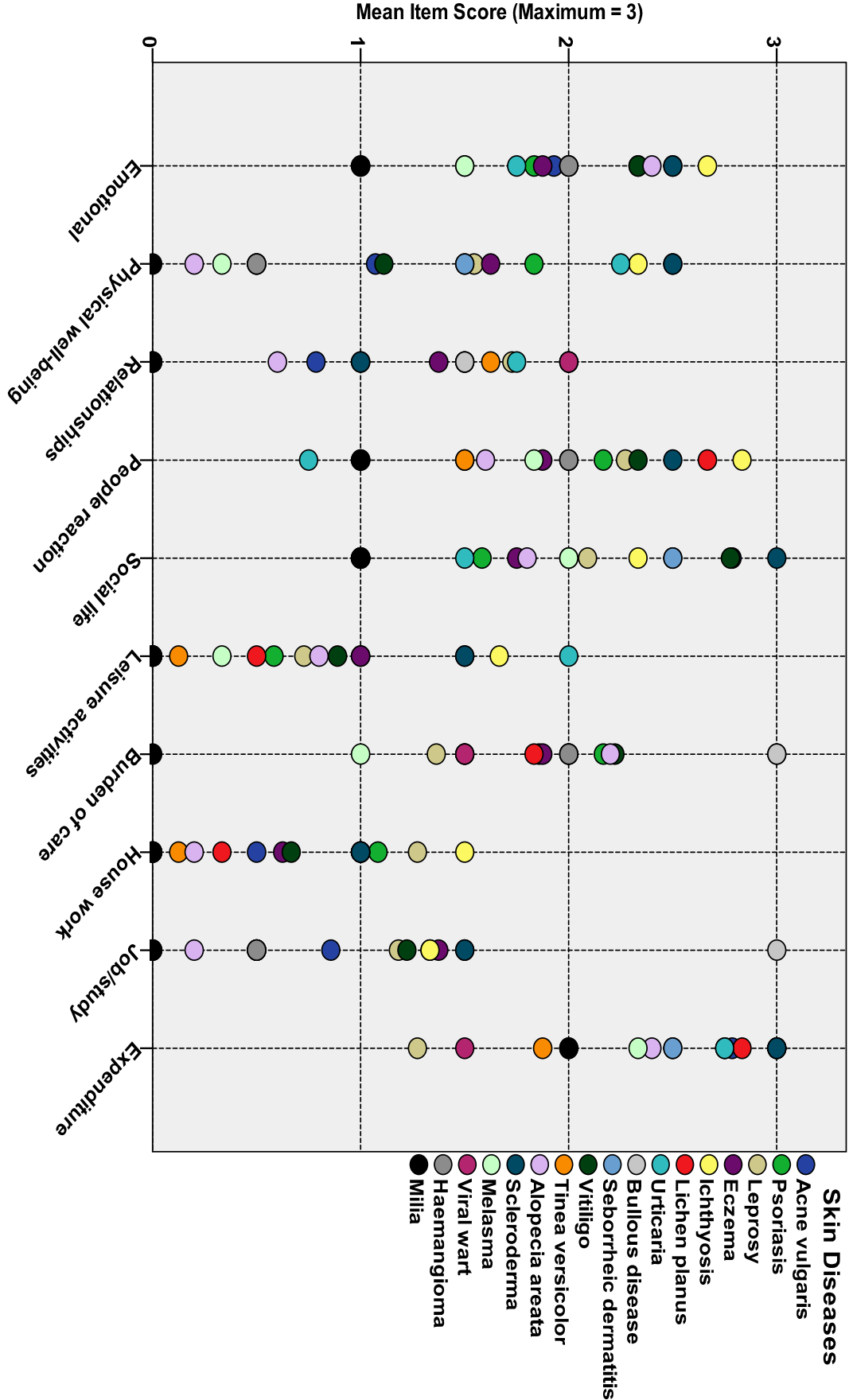
10- House work (mean score = 0.68)

Melasma, viral wart, haemangioma and milia had no effects. Other diseases had either moderate effects (psoriasis, leprosy and ichthyosis) or mild effect (rest of diseases).

Table (10): Mean score of impact of different skin diseases on individual items of FQoL*

Diagnosis	Emotional	Physical well-being	Relationships	People reaction	Social life	Leisure activities	Burden of care	House work	Job/study	Expenditure
Acne vulgaris	1.93	1.07	0.79	2	2.79	1	1.86	0.5	0.86	2.79
Psoriasis	1.83	1.83	1.5	2.17	1.58	0.58	2.17	1.08	1.33	2.75
Leprosy	2	1.55	1.73	2.27	2.09	0.73	1.36	1.27	1.18	1.27
Eczema	1.88	1.63	1.38	1.88	1.75	1	1.88	0.63	1.38	2.5
Ichthyosis	2.67	2.33	2	2.83	2.33	1.67	3	1.5	1.33	3
Lichen planus	2.33	1.5	1.5	2.67	2	0.5	1.83	0.33	0.5	2.83
Urticaria	1.75	2.25	1.75	0.75	1.5	2	2	1	1.5	2.75
Bullous disease	2.5	2.5	1.5	2	2.5	1.5	3	1	3	3
Seborrheic dermatitis	2	1.5	1	1.5	2.5	0	2	1	0.5	2.5
Vitiligo	2.33	1.11	2	2.33	2.78	0.89	2.22	0.67	1.22	3
Tinea versicolor	1.5	0.5	1.63	1.5	1	0.13	1.5	0.13	0.5	1.88
Alopecia areata	2.4	0.2	0.6	1.6	1.8	0.8	2.2	0.2	0.2	2.4
Scleroderma	2.5	2.5	1	2.5	3	1.5	1.5	1	1.5	3
Melasma	1.5	0.33	0	1.83	2	0.33	1	0	0	2.33
Viral wart	1	0.5	2	1	1	0	1.5	0	0	1.5
Haemangioma	2	0.5	0	2	1	0	2	0	0.5	2
Milia	1	0	0	1	1	0	0	0	0	2
Mean Score	1.98	1.31	1.32	2.01	2.02	0.79	1.88	0.68	0.96	2.46

Figure (9): Impact of different skin diseases on individual items of FQoL



IX - Factor analysis

Factor analysis of the data identified the two main factors retaining those factors with eigenvalues > 1 ; the first factor have an eigenvalue of 3.685 and accounted for about 36.85% of the common variance, while the second smaller factor have an eigenvalue of 1.395 and accounted for about 13.95% of the variance. The two factors together accounted for about 50.8% of the common variance, which is higher than the minimum recommended (i.e. 50%) for a stable factor solution. Details are shown in **Table (11)**.

Table (11): Factor analysis: components and their eigenvalues with % of variance explained by each component

Component	Eigenvalues	% of Variance
1	3.685	36.854
2	1.395	13.945
3	0.997	9.973
4	0.870	8.700
5	0.702	7.025
6	0.616	6.157
7	0.530	5.297
8	0.454	4.536
9	0.394	3.938
10	0.358	3.576

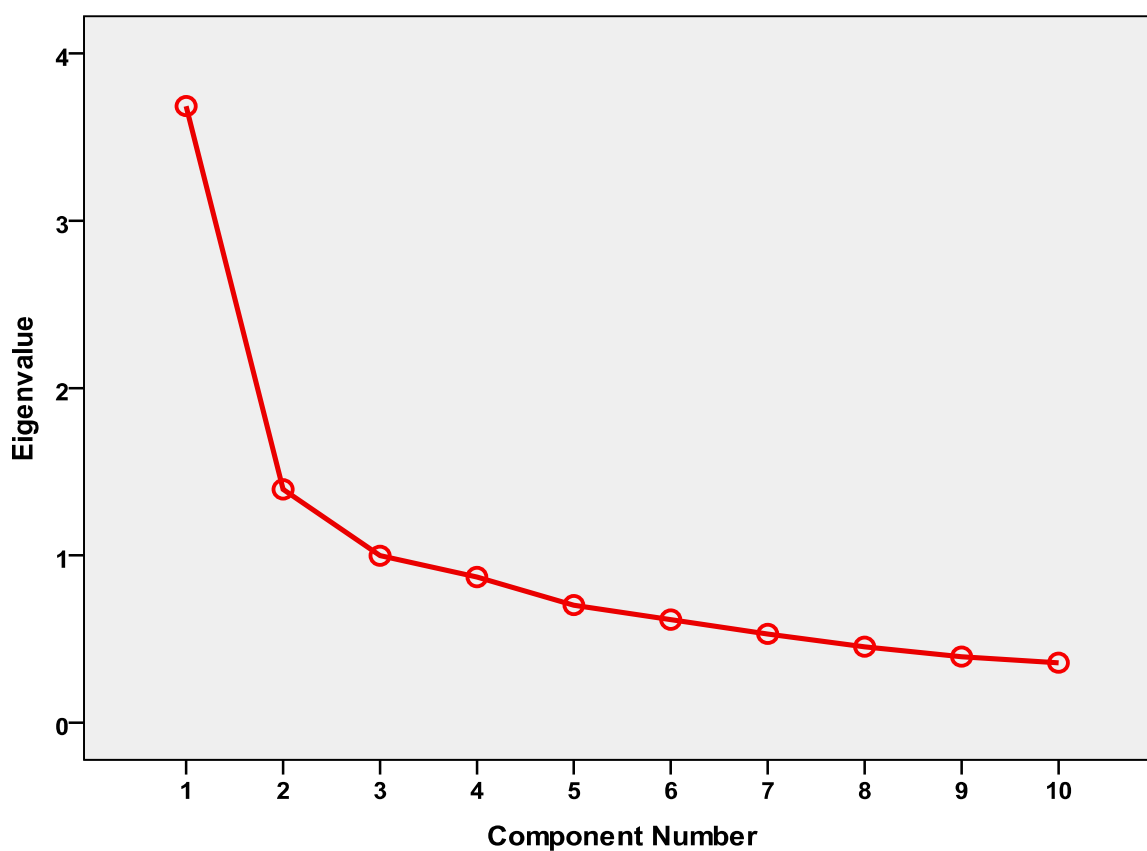
The two extracted factors were significantly ($P < 0.05$) interrelated ($r = 35\%$). These results suggest the unidimensionality of the scale. Details are shown in **Table (12)**.

Table (12): Correlation Matrix of the two Components:-

Component	2	
	r	P
1	0.353	<0.05

Scree plot showing eigenvalue against each factor; from the first factor onwards, the line is almost flat showing each successive factor accounting for smaller and smaller amounts of the total variance; 36.85% of the common variance was explained by the first factor. Details are shown in **Figure (10)**.

Figure (10): Scree plot showing eigenvalue against each factor



Items were loaded on each of the two components with standard regression coefficients of more than 0.50 (**Table 13**). The assignment of a particular item to a component was based on higher loading value. Factors were labeled as physical impact which loaded five items (physical well-being, impact on relationships, leisure activities, additional housework and effect on job/study) and psychosocial impact, which loaded five items (emotional impact, peoples' reaction, social life, burden of care and extra household expenditure)

Table (13): Factor analysis: structure matrix after rotation showing the loadings of different items on two components

FDLQI item	1	2
Emotional	0.423	0.712
Physical well-being	0.800	0.397
Relationships	0.626	0.147
People reaction	0.339	0.568
Social life	0.186	0.677
Leisure activities	0.577	0.560
Burden of care	0.298	0.631
House work	0.788	0.251
Job/study	0.798	0.321
Expenditure	0.059	0.704

IX - Reliability

Internal consistency of the instrument, measured by Cronbach's α coefficient (in 100 subjects) was 0.801 (**Table 14**). This was not improved by deleting individual items (0.765–0.799) (**Table 15**).

Table (14): Reliability statistics

Cronbach's α	Cronbach's α Based on Standardized Items
0.801	0.803

Table (15): Item-total statistics

FDLQI items	Cronbach's α if Item Deleted
Emotional	0.776
Physical well-being	0.765
Relationships	0.798
People reaction	0.788
Social life	0.795
Leisure activities	0.773
Burden of care	0.789
House work	0.779
Job/study	0.772
Expenditure	0.799