Original Article

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Correlation of Dermatology Life Quality Index and Vitiligo Extent Tensity Index: A Cross-sectional Study

Dermatology Section

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ABSTRACT

Introduction: Vitiligo is a chronic depigmentary disorder having an autoimmune aetiology. Vitiligo has a severe impact on the quality of life of the individual in our country. Considering the changing socio-economic trend and the arrival of new medicines in the therapeutic armamentarium of dermatologists, there is a need to know whether vitiligo, which had high social stigmata in the past, still continues to have the same impact on Quality of Life (QOL).

Aim: To find out the correlation of Dermatology Life Quality Index (DLQI) in cases of vitiligo using Vitiligo Extent Tensity Index (VETI) score

Materials and Methods: A questionnaire-based cross-sectional study was conducted in Department of Dermatology at Military Hospital, Bareilly, Uttar Pradesh, India, from January 2021 to March 2022. The study involved all patients with vitiligo, aged between 15-60 years including both sexes. The patients were given the DLQI questionnaire and DLQI scores were calculated. The DLQI score was correlated with the VETI score established clinically. The statistical analysis was done using Statistical Package for Social Sciences (SPSS) version 20.0.

Results: A total of 108 patients were recruited which included 41 males and 67 females. The VETI score ranged from 0.5 to 25.7 (5.8±4.187) whereas DLQI score ranged from 1 to 19 (6.73±3.751). Patients with high VETI score (8.84±7.74) had high DLQI score (11-20), thereby correlating the extent of the quality of life compromised. The VETI positively correlated with the DLQI (r-value=0.476; p-value=0.001).

Conclusion: Patients with a high VETI have a severely compromised quality of life. Proper counseling should be done for vitiligo patients apart from conventional medicines being used for treatment.

Keywords: Area involved, Depigmentation, Hypopigmentation, Vitiligo european task force

INTRODUCTION

Vitiligo, a depigmenting skin disorder, is characterised by the appearance of amelanotic, non scaly chalky white patches with distinct margins due to the selective loss of melanocytes [1]. Substantial progress has been made in the understanding of the pathogenesis of vitiligo, and it is now evidently classified as an autoimmune disease, related with genetic and ecological factors, together with metabolic, oxidative stress, and cell detachment abnormalities. Healthy skin is a prerequisite for a person's physical and mental well-being. It forms an important part of their sexual attractiveness and a feeling of self-assurance [2,3].

Vitiligo should not be trivialised as a cosmetic or insignificant disease, as its effects can be psychologically devastating, often with a considerable burden on daily life. In a study conducted by Amer AAA and Gao XH, a significant effect on the Quality of Life (QOL) due to vitiligo was established by using the Dermatology Life Quality Index (DLQI) questionnaire [4].

The Vitiligo European Task Force (VETF) has proposed a system combining analysis of the extent, stage of disease, and disease progression [5]. The Vitiligo Area Scoring Index (VASI) is another scoring system, offers accurate measures of disease severity indexes and treatment evaluation criteria [6]. A new scoring system for the assessment of vitiligo, the Vitiligo Extent Tensity Index (VETI) score, which is conceptualised by Feily A, has been used in this study [7], considering the fact that it is more practical and can be done even in the busy Outpatient Department schedule. Hence, the present study was conducted with the aim to find out the correlation of DLQI in cases of vitiligo using the VETI score.

MATERIALS AND METHODS

This questionnaire-based cross-sectional study was conducted in Department of Dermatology at Military Hospital, Bareilly, Uttar Pradesh, India, from January 2021 to March 2022. The study was approved by the Institutional Ethical Committee of the hospital and informed consent was obtained from all the participants of the study before the questionnaire was given.

Inclusion and Exclusion criteria: All the clinically diagnosed cases of vitiligo aged between 15-60 years including both sexes were included in the study. Patients who were concurrently suffering from any other cutaneous disorder, whether on or off therapy were excluded from the study.

All those vitiligo patients who qualified the above criteria and who reported during the study period formed the sample population and were given the DLQI questionnaire.

Dermatology Life Quality Index (DLQI)

DLQI questionnaire is a widely validated tool for the measurement of Quality of Life (QOL) conceptualised by Finlay AY, for clinical use [8]. The questionnaire consisted of 10 questions with four-point scale with a score from 0 to 3. The DLQI was calculated by summing the score of all 10 questions with a maximum score of 30 and a minimum of 0.

- Score 0-1: No effect at all on patients life;
- Score 2-5: Small effect on patients life;
- Score 6-10: Moderate effect on patients life;
- Score 11-20: Very large effect on patients life,
- Score 21-30: Extremely large effect on patients life.

Vitiligo Extent Tensity Index (VETI)

The vitiligo involvement percentage was calculated using the new assessment scale called VETI. The VETI score is a new system that proposes to measure the extent of vitiligo by a numerical score and combines analysis of the extensity and severity of vitiligo and produce

a constant and reproducible number like Psoriasis Area Severity Index (PASI). The percentage of extension involvement (p) evaluates using the rule of nines as already used in burn assessment, where estimation of body surface area is based on assigning percentages to different body areas. The entire head is estimated as 9% (4.5% for anterior and posterior). The entire trunk is estimated at 36% and can be further broken down into 18% for anterior components and 18% for the back [9]. Five sites affected, head (h), upper limbs (u), trunk (t) and lower limbs (l) and genitalia (g) are separately scored by using five stages of disease tensity (T):

- Stage 0: Normal skin
- Stage 1: Hypopigmentation (including trichrome and homogeneous lighter pigmentation).
- Stage 2: Complete depigmentation with black hair and with perifollicular pigmentation.
- Stage 3: Complete depigmentation with black hair and without perifollicular pigmentation.
- Stage 4: Complete depigmentation with compound of white and black hair with/without perifollicular pigmentation.
- Stage 5: Complete depigmentation plus significant hair whitening.

The total body VETI is calculated using the following formula that includes contributions from all body regions:

VETI score calculation: (Percentage of head involvement×grade of tensity)+(Percentage of trunk involvement×grade of tensity) 4+ (Percentage of upper limb involvement×grade of tensity) 2+ (Percentage of lower limbs involvement×grade of tensity) 4+ (Percentage of genital involvement×grade of tensity) 0.1.

The coefficients reported in this formula are based on percent of skin surface by the rule of nines. Accordingly the coefficient of head is 1 (9:9=1), trunk and lower limb is 4 (36:9=4), upper limb is 2 (18:9=2) and genitalia is almost 0.1 (1:9=0.1).

Percentage of involvement: P

Tensity: T

VETI: (Ph×Th)+(Pt×Tt) 4+(Pu×Tu) 2+(Pl×Tl) 4+(Pg×Tg) 0.1

5+20+10+20+0.5=55.5

The maximum score of VETI was 55.5.

For example, if just 25% of the surface of the trunk is involved having perifollicular pigmentation in the depigmented macules, the VETI is calculated as follows:

Ph, Th,Pu, Tu, Pl, Tl, Pg,Tg will be zero, Pt=0.25 Tt=2

VETI: (0×0)+(0.25×2) 4+(0×0) 2+(0×0) 4+(0×0) 0.1=2

STATISTICAL ANALYSIS

The data from the case record form was entered in Microsoft Excel 2016 and analysed using the Statistical Package for Social Sciences (SPSS, IBM) software package version 20.0. A comparisons of quantitative variables between study groups was done using Analysis of Variance (ANOVA). For comparing categorical data Chi-square test was performed and the Fisher's-exact test was used when the expected frequency is less than 5. Pearson correlation was also used. A p-value <0.05 was considered statistically significant.

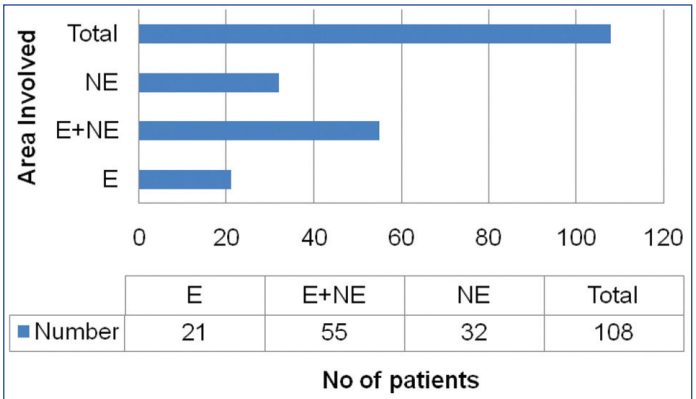
RESULTS

A total of 108 patients were involved in this study and comprised of 67 (62.04%) female and 41 (37.96%) male patients. Their age group ranged from 15-60 years, mean age and SD was 34.56±11.54 [Table/Fig-1].

A total of 21 (19.4%) patients had vitiligo in the exposed areas, 32 (29.6%) patients in the non exposed areas, and the remaining 55 (50.9%) patients in both the exposed and non exposed areas [Table/Fig-2].

Demographic data	n (%)
Age (years)	
<20	10 (9.3%)
21-30	35 (32.4%)
31-40	31 (28.7%)
41-50	18 (16.7%)
51-60	14 (12.9%)
Gender	
Male	41 (37.96%)
Female	67 (62.04%)
Total	108

[Table/Fig-1]: Demographic profile of patients.



[Table/Fig-2]: Area wise involvement of vitiligo patients.
E: Exposed, NE: Non exposed

The VETI score calculated for all 108 cases ranged from 0.5 to 25.7 (5.8±4.187) and DLQI score ranged from 1 to 19 (6.73±3.751). The VETI scores for male patients ranged from 0.5 to 11.7 (5.3±10.15 and for female patients ranged from 0.5 to 20.6 (6.11±10.28). The DLQI scores for male patients ranged from 1 to 10 (4.34±3.75) and for female patients it ranged from 1 to 19 (8.19±3.76). Female vitiligo patients (n=50, 74%) had high DLQI scores with moderate and very large effect on the QOL than male patients (n=11, 27%). The difference in the DLQI amongst the male and female population was significant (p-value=0.001) and non significant when it came with respect to the area of vitiligo involvement or the age group of the patients [Table/Fig-3].

Parameters		DLQI group 0-1	2-5	6-10	11-20	Total	Chi-square value	p-value
Age group (years)	<20	0	3	6	1	10	20.501	0.058
	21-30	2	10	13	10	35		
	31-40	2	11	14	4	31		
	41-50	0	8	10	0	18		
	>50	2	9	3	0	14		
Gender	Female	2	15	35	15	67	26.411	0.001
	Male	4	26	11	0	41		
Area	Exposed	2	3	11	5	21	10.993	0.089
	Non exposed	0	13	13	6	32		
	Exposed and non exposed	4	25	22	4	55		
Total		6	41	46	15	108		

[Table/Fig-3]: Association of DLQI scores with age, sex and area of involvement.
*QoL was most severely affected in females than males and difference was statistically significant (p-value <0.05)

Results of the ANOVA test conducted showed a significant positive association between the age versus DLQI and VETI versus DLQI [Table/Fig-4]. The r-value of -0.312 showed correlation between

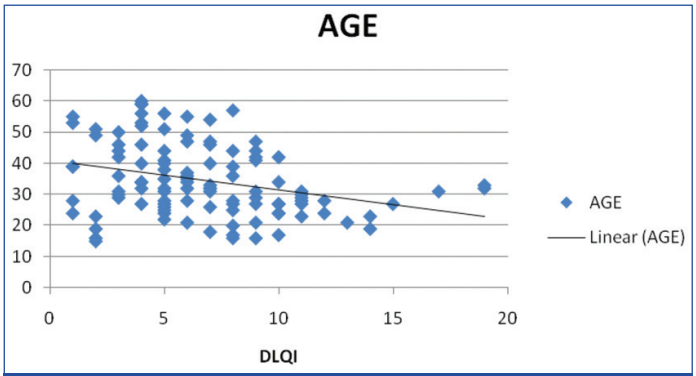
Parameters		N	Mean	Standard deviation	Standard error	95% Confidence interval for mean		Minimum	Maximum	F	p-value
	DLQI score					Lower bound	Upper bound				
Age	0-1.0	6	39.67	12.61	5.15	26.43	52.90	24.00	55.00	4.12	0.008
	2-5.0	41	37.88	12.59	1.97	33.91	41.85	15.00	60.00		
	6-10.0	46	33.37	10.92	1.61	30.13	36.61	16.00	57.00		
	11-20.0	15	27.07	4.22	1.09	24.73	29.40	19.00	33.00		
	Total	108	34.56	11.55	1.11	32.35	36.76	15.00	60.00		
VETI	0-1.0	6	2.73	2.52	1.03	0.09	5.38	0.50	6.00	4.569	0.005
	2-5.0	41	5.03	2.29	0.36	4.31	5.76	1.00	9.80		
	6-10.0	46	5.90	3.58	0.53	4.84	6.97	0.50	15.00		
	11-20.0	15	8.84	7.74	2.00	4.55	13.13	0.50	25.70		
	Total	108	5.80	4.19	0.40	5.01	6.60	0.50	25.70		

[Table/Fig-4]: Association between the age versus DLQI and VETI versus DLQI.
p-value <0.05 considered significant

age of the patient and DLQI (p-value=0.001). The r-value of 0.476 also showed a positive correlation between VETI and DLQI (p-value=0.001) [Table/Fig-5]. The mean DLQI for the exposed group was 8.57±4.23, for the non exposed group it was 7.13±3.86, and for the exposed and non exposed group it was 5.8±3.23. Younger the patients higher was the DLQI, [Table/Fig-6]. In certain case even though the VETI score was low, a high DLQI score is seen; these are the patients with vitiliginous patches on the exposed areas of the body (acrofacial vitiligo) who were part of the exposed group (n=10).

Parameters		Age	VETI	DLQI
Age	Pearson correlation	1.000	0.017	-0.312
	p-value		0.861	0.001
	N	108	108	108
VETI	Pearson correlation	0.105	1.000	0.476
	p-value	0.281		0.001
	N	108	108	108

[Table/Fig-5]: Correlation between age, VETI and DLQI.
p-value <0.05 considered significant

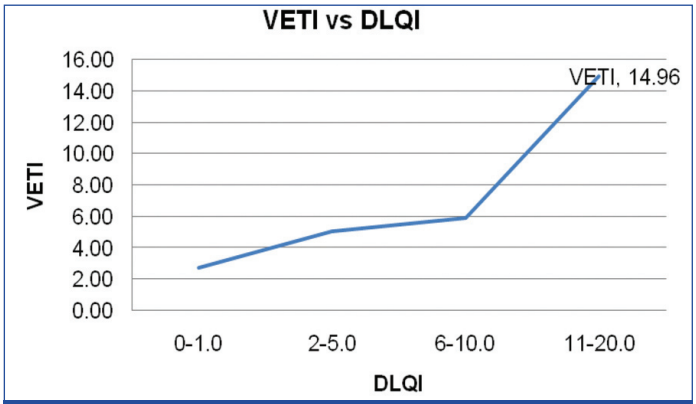


[Table/Fig-6]: Scatter plot showing correlation between age and DLQI.

The VETI score correlated positively with the DLQI score and was significant with p-value <0.05, as depicted in the chart [Table/Fig-7].

DISCUSSION

Vitiligo is a very common illness that one encounters in our day-to-day practice. There are various modalities of therapy available, but yet there is not a single regimen that can completely cure the illness. The illness profoundly affects the psyche of the patient and limits his functionality, because of the stigmata attached. Study conducted by Baidya S et al., compared the QOL in vitiligo patients taking only the exposed areas into consideration [10]. A similar study was conducted by Mishra N et al., where the QOL was compared with the total body surface area [11]. Few more studies have only



[Table/Fig-7]: Graph showing correlation between VETI and DLQI.

correlated the QOL with the DLQI questionnaire like Borimnejad L et al., [12]. Unlike most of the studies quoted above and researched in the review of literature, present study is a unique study in which the scoring system used i.e. VETI can be used by any practicing dermatologist in their busy schedule. Authors have tried to correlate the VETI with DLQI. In the present study, populations have a high DLQI which is proportional to the VETI score. This was similar to the findings of Al-Mubarak L, et al., where the overall score QOL was 17.1. The mean score for males was 11.1, whereas that for females was 23.9 (p-value <0.05). Females scored significantly higher in all 4 dimensions. Patients with exposed disease lesions scored significantly higher than those with unexposed lesions 5 vs 3.4 (p-value <0.05) [13].

In certain cases, even though the VETI score was low, a high DLQI score was seen; these were the patients with vitiliginous patches on the exposed areas of the body (acrofacial vitiligo). This result was consistent with that of Schmid-Ott G et al., where 363 vitiligo patients were assessed using the Experience with Skin Complaints (QES), Adjustment to Chronic Skin Disorders (ASC), and Sense of Coherence (SOC) questionnaires. Out of the total patients, group two representative samples with 52 patients each were identified as comparable for age, gender, and the duration of the skin disease, the first with visible and the second with invisible lesions.The visible lesions group scored higher compared to the the invisible lesions group on the two QES scales self-esteem and refusal, i.e., patients with visible lesions experienced a higher level of stigmatisation [3]. In the present study, older patients had a low DLQI inspite of high VETI score, because of the fact that they have already accepted the illness as a part of their life and felt less stigmatised. In the present study, the total mean DLQI score for the female patients was 8.19 as compared to 4.34 in male patients (female/male ratio=1.89) which is a common finding with Dolatshahi M et al., where one hundred vitiligo patients answered a questionnaire based on the

Dermatology Life Quality Index (DLQI). The mean DLQI score was 7.53 for males and 8.52 for females which was not statistically significant (p-value=0.385) [14].

Limitation(s)

This study has certain limitations. As the study was conducted in a tertiary care centre, most cases fail to seek timely consultation. The initial distress (QOL compromised) which they feel may not be reflective of the subsequent DLQI index calculated when they have reported to this centre. Multicentric case studies with a larger sample size will give a more exact picture of the DLQI in vitiligo patients.

CONCLUSION(S)

Quality of life is severely compromised in all patients of vitiligo, females more than males; younger patients more than older ones; those with vitiligo in the exposed areas more than the non exposed ones. Proper counseling for all patients of vitiligo is imperative and forms an important part of therapy apart from the conventional medicines being used for treatment.

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