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Research Article

Psychological Burden and Quality of Life in Stable and Unstable Vitiligo: A Prospective Observational Study

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Abstract

Background

Vitiligo is a chronic depigmenting disease with visible cutaneous changes that may result in serious psychosocial consequences. Although disease activity is clinically relevant for treatment decisions, the relationship between clinical stability and psychological burden is less consistently described. This study aimed to evaluate quality of life and psychological symptoms of patients with stable and unstable vitiligo.

Objective

The objective of this study was to assess quality of life, depression, anxiety and stress in patients with stable and unstable vitiligo and to analyze the correlation between clinical disease stability and psychosocial burden.

Method

It was a prospective observational study done in 125 consecutive patients in the age group of 18–70 years with clinically diagnosed vitiligo who presented to the dermatology outpatient department of Belagavi Institute of Medical Sciences from March 2021 to February 2022. Patients were excluded if they had with pre-existing psychiatric disorder, coexistent chronic skin disease or unwillingness to participate. Clinical characteristics and sociodemographic variables were documented. Quality of life was measured by the Dermatology Life Quality Index (DLQI) and the Vitiligo Impact Scale-22 (VIS-22). Depression Anxiety and Stress Scale-21 (DASS-21) was used to assess Depression, Anxiety and Stress. The chi-square test or Fisher's exact test was used to analyze categorical variables. A p value of <0.05 was considered statistically significant.

Results:

The mean age of participants was 39.65 ± 12.9 years; 65 (52.0%) were female and 60 (48.0%) male. From the 125 patients, 62 (49.6%) had stable vitiligo and 63 (50.4%) had unstable vitiligo. The most common clinical type was generalized vitiligo, which was observed in 55 (44.0%) patients. The mean DLQI was 1.62 ± 2.34 and mean VIS-22 score was 6.28 ± 2.89. In total, 98 (78.4%) patients stated no effect of vitiligo on quality of life and 27 (21.6%) reported a small or moderate effect. Quality of life impairment was more marked in patients with unstable disease: 19 (30.2%) unstable patients had DLQI >1 compared with 8 (12.9%) stable patients (p=0.012). Fifty seven (45.6%) patients reported symptoms of anxiety, ranging from mild to extremely severe. Only one patient

was diagnosed to have depression which was mild depression and generalized unstable vitiligo. Mild to moderate stress was seen in 7(5.6%) patients. Marital status showed a significant association with anxiety and stress.

Conclusion

Unstable vitiligo was associated with greater impairment in dermatology-related quality of life and anxiety was significantly more prevalent than depression in this cohort. The findings support the use of a short psychosocial assessment in routine vitiligo management, especially in patients with active disease and adverse social circumstances.

Keywords: vitiligo; disease stability; quality of life; DLQI; VIS-22; depression; anxiety; stress; DASS-21; psychosocial burden.

Introduction:

Vitiligo is a chronic acquired depigmenting disorder characterized by loss of functional melanocytes and development of sharply demarcated depigmented macules and patches . It affects all ethnic groups and may have a particularly visible psychosocial impact in populations with darker skin phototypes due to the contrast between affected and unaffected skin.[1-3] The clinical course is variable, ranging from relatively stable disease to active disease with the appearance of new lesions or progression of existing lesions.[4]

Vitiligo is not usually associated with major physical disease but because it is visible it can affect self-image, social interaction, interpersonal relationships and mental health. Therefore, quality of life impairment in vitiligo is not necessarily proportional to the extent of cutaneous disease. Previous studies have shown that patients with vitiligo have varying levels of dermatology-specific and disease-specific quality-of-life impairment.[5-7] The patients' experience of the disease may be influenced by factors such as the visibility of the lesion, the duration of the disease, perceived stigma and psychosocial circumstances.[6,8]

Psychiatric and psychological symptoms are also important in dermatological disorders. Patients with chronic visible skin disease may experience depression, anxiety and stress. Recognition of such symptoms is increasingly seen as part of comprehensive dermatological care.[9,10] Instruments specific to vitiligo, such as the Vitiligo Impact Scale-22 (VIS-22), have been developed to capture psychosocial concerns that may not be adequately captured by generic dermatology quality of life measures.[11,12]

The clinical stability of vitiligo may be an important factor in determining psychosocial burden. Active or unstable disease can lead to uncertainty regarding progression, treatment response and future appearance, whereas stable disease may allow for psychological adaptation. However, the relationship between clinical stability and psychological symptoms is not well established especially in Indian tertiary care populations.

Therefore, the current study was directed to assess quality of life and psychological symptoms in patients with stable and unstable vitiligo using the Dermatology Life Quality Index (DLQI), VIS-22 and Depression Anxiety and Stress Scale-21 (DASS-21) highlighting the association between disease stability and psychological burden.

Objectives

Primary objective

To assess the quality of life and psychological burden in patients with stable and unstable vitiligo.

Secondary objectives

1. To compare quality of life impairment in stable and unstable vitiligo.

2. Depression, anxiety and stress were assessed using the DASS-21.

3. To find the relation between disease stability and psychological symptoms.

4. To assess the association of psychosocial outcomes with disease duration and selected sociodemographic characteristics.

5. To evaluate the disease specific psychosocial impact by VIS-22.

Materials and Methods

Study design and setting

This was a prospective observational study conducted in the Dermatology outpatient department of Belagavi Institute of Medical Sciences, Belagavi, Karnataka, India.

The study was conducted over one year, from **March 2021 to February 2022**.

Study population

Patients aged 18–70 years with clinically diagnosed vitiligo attending the dermatology outpatient department were considered for inclusion.

Inclusion criteria

- Patients aged 18–70 years.
- Clinically diagnosed vitiligo.

Exclusion criteria

- Clinically diagnosed psychiatric disorder preceding the onset of vitiligo.
- Coexistent chronic skin disease.
- Patients unwilling to participate.

These eligibility criteria were specified in the original thesis protocol.

Sample size

The calculated minimum sample size was 123. The calculation was based on an assumed prevalence of vitiligo of 8.8%, a 95% confidence level and an absolute error of 5%. A total of **125 patients** were ultimately included.

Ethical considerations

Institutional Ethics Committee approval was obtained before commencement of the study. The study procedure and its purpose were explained to participants, and written informed consent was obtained before enrollment.

Clinical assessment

A structured proforma was used to record sociodemographic characteristics and clinical details, including age, sex, marital status, age at onset, disease duration, family history, treatment history, site of involvement, clinical type and disease stability. A detailed cutaneous examination was performed to determine the distribution and morphology of vitiligo.

For analysis, disease duration was categorized as **<6 months, 6 months–1 year and >1 year**. Clinical stability was categorized into stable and unstable vitiligo according to the clinical assessment used in the thesis.

Assessment of quality of life

Dermatology Life Quality Index

The DLQI was used to assess dermatology-related quality of life. Scores range from 0 to 30, with higher scores indicating greater impairment. The categories used were:

- 0–1: no effect
- 2–5: small effect
- 6–10: moderate effect
- 11–20: very large effect
- 21–30: extremely large effect.

Vitiligo Impact Scale-22

The VIS-22 was used to assess vitiligo-specific psychosocial impact. The scale contains 22 disease-specific questions addressing concerns including helplessness, social interaction, embarrassment, treatment-related issues, marriage and perceived social discrimination.

The scoring categories used in the thesis were:

- 0–5: no impact
- 6–15: small/mild impact

- 16–25: moderate impact
- 26–40: large impact
- 41–66: very large impact.

Assessment of depression, anxiety and stress

Psychological symptoms were evaluated using the **DASS-21**, which separately assesses depression, anxiety and stress. Each subscale contains seven items scored from 0 to 3; scores are multiplied by two for interpretation according to the conventional DASS scoring system.[13]

The following severity thresholds were used:

Severity	Depression	Anxiety	Stress
Normal	0–9	0–7	0–14
Mild	10–13	8–9	15–18
Moderate	14–20	10–14	19–25
Severe	21–27	15–19	26–33
Extremely severe	≥28	≥20	≥34

The thesis specifies administration of the questionnaires by the principal investigator and use of the above DASS-21 severity categories.

Statistical analysis

Data were entered into Microsoft Excel and analyzed using SPSS. Categorical variables were expressed as frequencies and percentages, while continuous variables were expressed as mean and standard deviation. The chi-square test was used for categorical comparisons, with Fisher's exact test where appropriate. A **p value <0.05** was considered statistically significant.

Results

Demographic and clinical characteristics

A total of **125 patients** were included. The mean age was **39.65 ± 12.9 years**. The largest age group was ≤30 years, comprising 36 (28.8%) patients. Sixty-five (52.0%) patients were female and 60 (48.0%) were male.

Table 1. Demographic characteristics of study participants

Characteristic	n	%
Age group (years)		
≤30	36	28.8
31–40	34	27.2
41–50	26	20.8
51–60	19	15.2
61–70	10	8.0
Sex		
Male	60	48.0

Female	65	52.0
Marital status		
Married	102	81.6
Unmarried	23	18.4
Family history		
Positive	21	16.8
Negative	104	83.2

The study population had a slight female predominance and most participants were married. A positive family history was present in 21 (16.8%) patients.

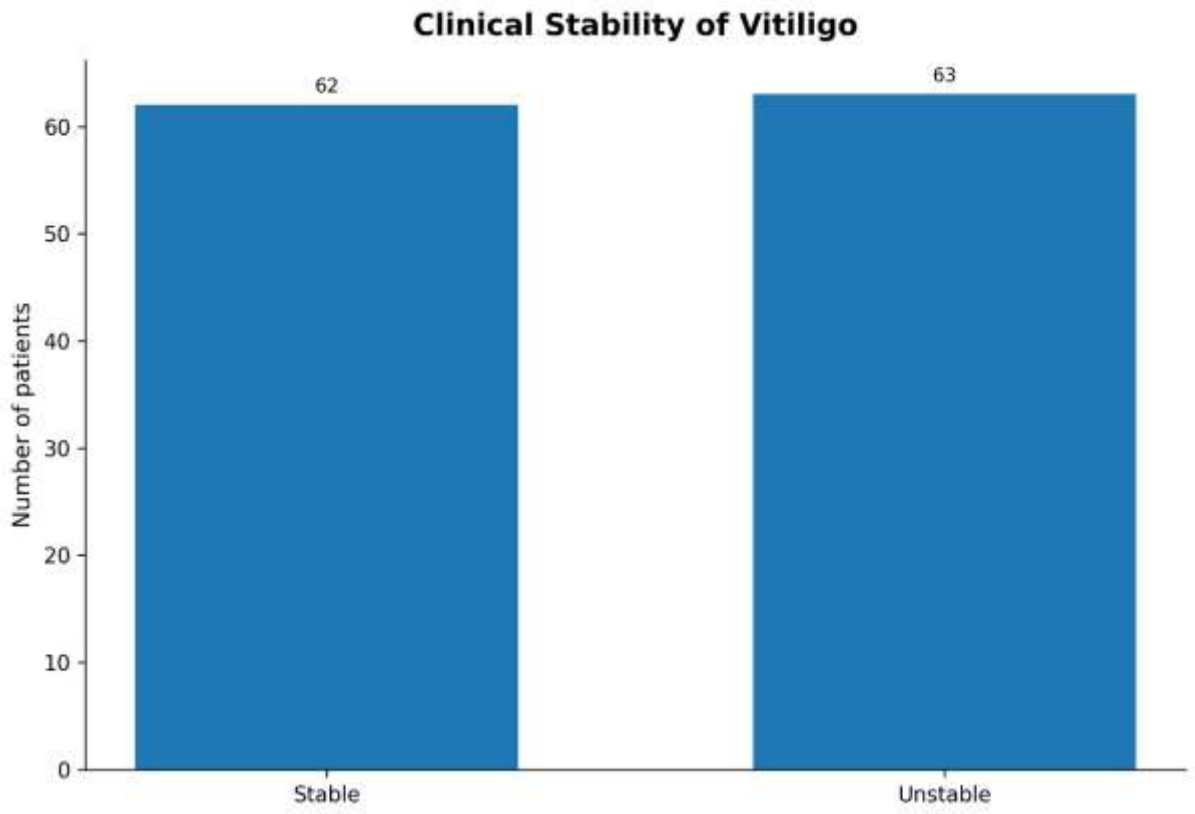
Clinical characteristics

Stable vitiligo was present in 62 (49.6%) patients and unstable vitiligo in 63 (50.4%).

Generalized vitiligo was the most frequent clinical type, followed by focal, acral and segmental disease.

Table 2. Clinical characteristics of vitiligo

Clinical characteristic	n	%
Disease stability		
Stable	62	49.6
Unstable	63	50.4
Clinical type		
Generalized	55	44.0
Focal	40	32.0
Acral	20	16.0
Segmental	10	8.0
Disease duration		
<6 months	35	28.0
6 months–1 year	63	50.4
>1 year	27	21.6



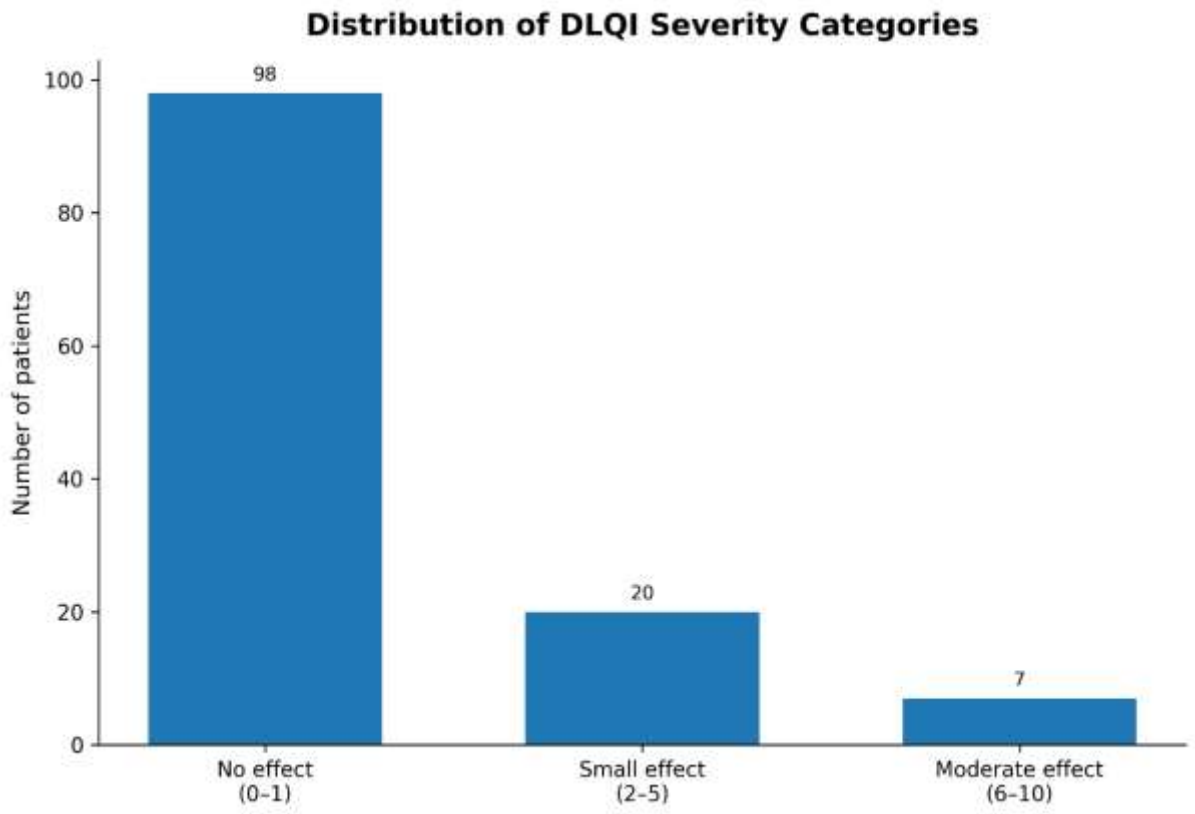
Overall quality of life

The mean DLQI was **1.62 ± 2.34**. Overall, 98 (78.4%) patients had a DLQI of 0–1, indicating no effect of vitiligo on quality of life. Twenty patients (16.0%) had a small effect and seven (5.6%) had a moderate effect. No patient had a very large or extremely large DLQI category.

Table 3. Overall DLQI distribution

DLQI category	Score	n	%
No effect	0–1	98	78.4
Small effect	2–5	20	16.0
Moderate effect	6–10	7	5.6
Very large effect	11–20	0	0
Extremely large effect	21–30	0	0
Total		**125**	**100**

The 27 patients with some degree of QoL impairment included 20 with small and seven with moderate impairment. More than half of these patients had disease duration <6 months.



Vitiligo-specific quality-of-life impact

The mean VIS-22 score was **6.28 ± 2.89**. Sixty-two (49.6%) patients had a score of 0–5, indicating no impact, while 63 (50.4%) had a score of 6–15, indicating a small/mild impact.

Table 4. VIS-22 distribution

VIS-22 category	Score	n	%
No impact	0–5	62	49.6
Small/mild impact	6–15	63	50.4
Moderate or greater impact	>15	0*	0*
Total		**125**	**100**

*No patients in the reported thesis results were categorized above the 6–15 range.

Quality of Life According to Disease Stability

Among the 62 patients with stable vitiligo, 54 (87.0%) had no effect on quality of life, seven (11.0%) had a small effect and one (2.0%) had a moderate effect.

Among the 63 patients with unstable vitiligo, 44 (69.84%) had no effect, 13 (20.63%) had a small effect and six (9.5%) had a moderate effect.

The association between disease stability and DLQI was statistically significant (**p=0.012**).

Table 5. DLQI according to disease stability

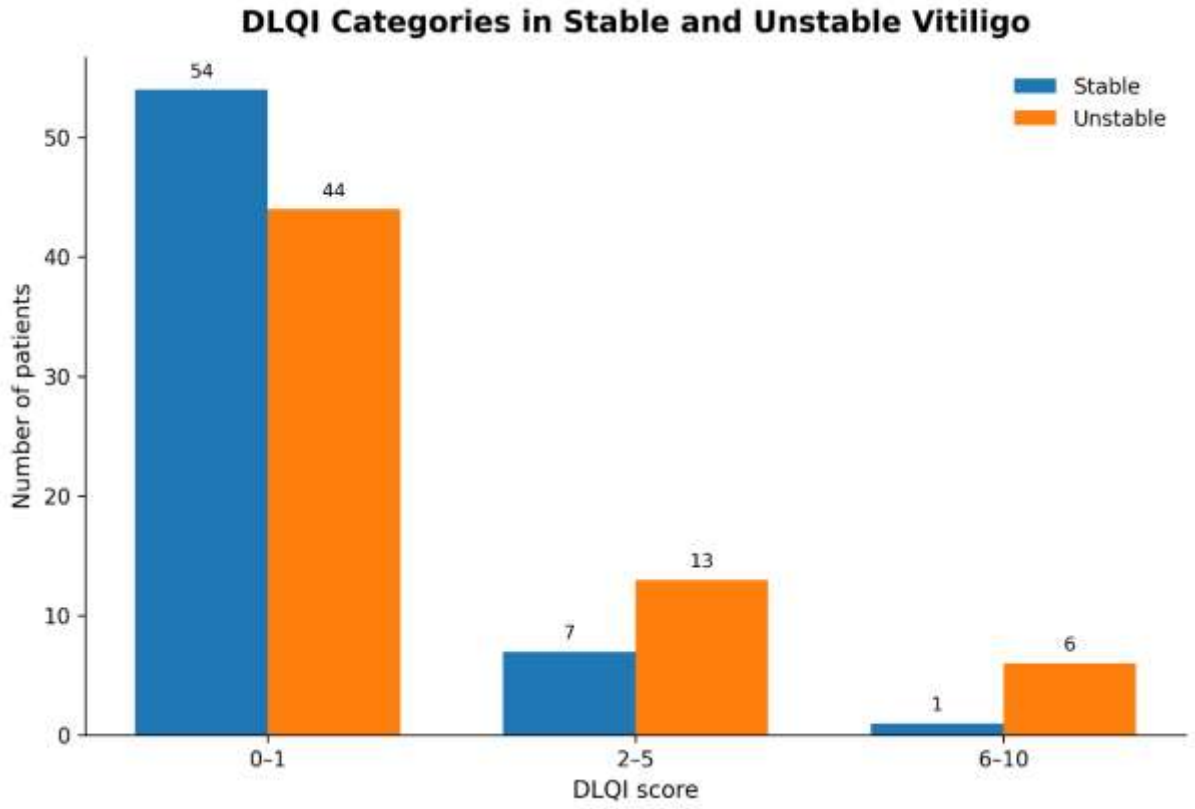
DLQI category	Stable, n (%)	Unstable, n (%)
0–1	54 (87.0)	44 (69.84)
2–5	7 (11.0)	13 (20.63)
6–10	1 (2.0)	6 (9.5)
Total	**62 (100)**	**63 (100)**

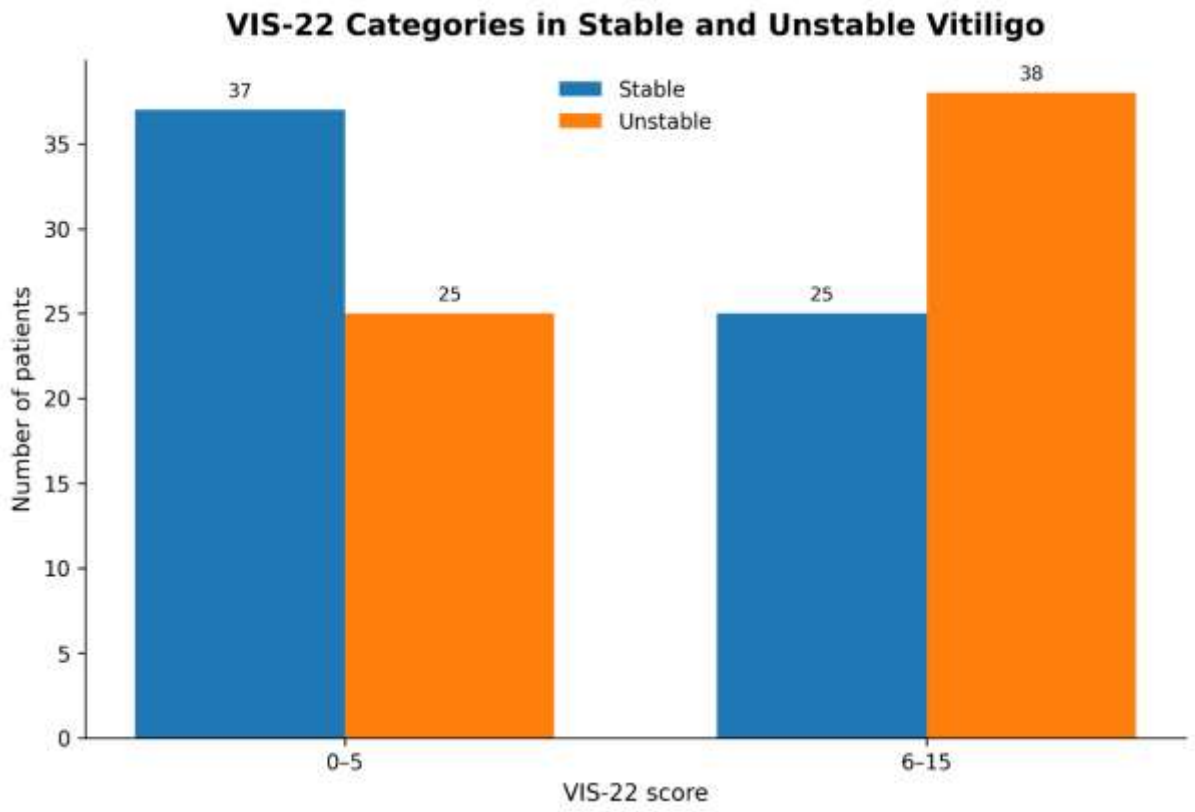
p=0.012

For VIS-22, 37 (59.7%) stable patients had no impact compared with 25 (39.7%) unstable patients. Conversely, 25 (40.4%) stable patients and 38 (60.3%) unstable patients had a score of 6–15.

Table 6. VIS-22 according to disease stability

VIS-22 category	Stable, n (%)	Unstable, n (%)
0–5	37 (59.7)	25 (39.7)
6–15	25 (40.4)	38 (60.3)
Total	**62 (100)**	**63 (100)**





Quality of Life According to Disease Duration

The proportion of patients without DLQI impairment was lowest among those with disease duration <6 months.

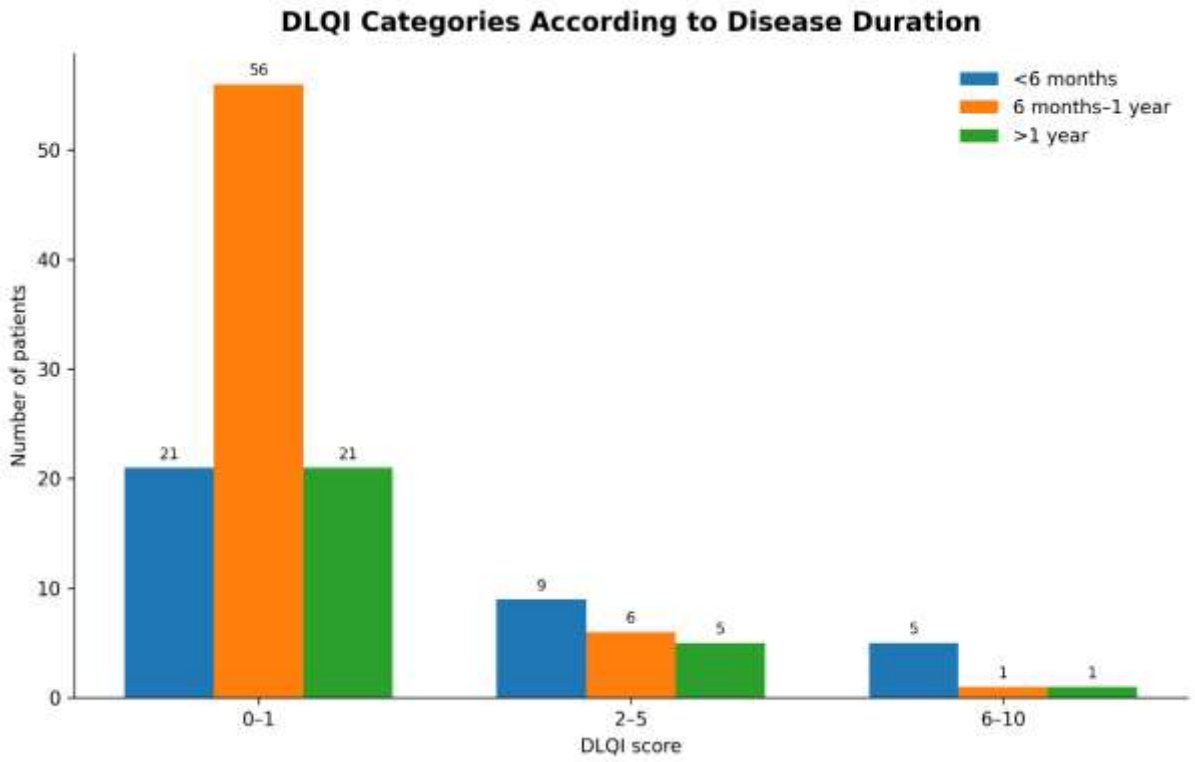
Among patients with disease duration <6 months, 21 (60.0%) had DLQI 0–1, nine (25.71%) had DLQI 2–5 and five (14.29%) had DLQI 6–10. In contrast, 56 (88.89%) of those with disease duration 6 months–1 year had DLQI 0–1. Among patients with disease duration >1 year, 21 (77.78%) had DLQI 0–1.

For VIS-22, 24 (68.57%) patients with disease duration <6 months had scores of 6–15 compared with 22 (34.92%) patients with disease duration 6 months–1 year and 17 (62.96%) patients with disease duration >1 year.

Table 7. DLQI and VIS-22 according to disease duration

Outcome	<6 months n (%)	6 months–1 year n (%)	>1 year n (%)
DLQI 0–1	21 (60.0)	56 (88.89)	21 (77.78)
DLQI 2–5	9 (25.71)	6 (9.52)	5 (18.52)
DLQI 6–10	5 (14.29)	1 (1.59)	1 (3.70)
VIS-22 0–5	11 (31.43)	41 (65.08)	10 (37.04)
VIS-22 6–15	24 (68.57)	22 (34.92)	17 (62.96)

The thesis reports a statistically significant association between disease duration and quality-of-life impact.



Depression, Anxiety and Stress

Depression

Depressive symptoms were uncommon. Of the 125 patients, 124 had DASS-21 depression scores within the normal range. One patient (0.8%) had mild depression.

The patient with mild depression was a **25-year-old unmarried male with generalized unstable vitiligo**.

Table 8. DASS-21 depression according to disease stability

Depression category	Stable, n (%)	Unstable, n (%)
Normal	62 (100)	62 (98.42)
Mild	0	1 (1.58)
Moderate	0	0
Severe	0	0
Extremely severe	0	0

Because only one patient had depression, meaningful statistical inference regarding an association between disease stability and depression cannot be made.

Anxiety

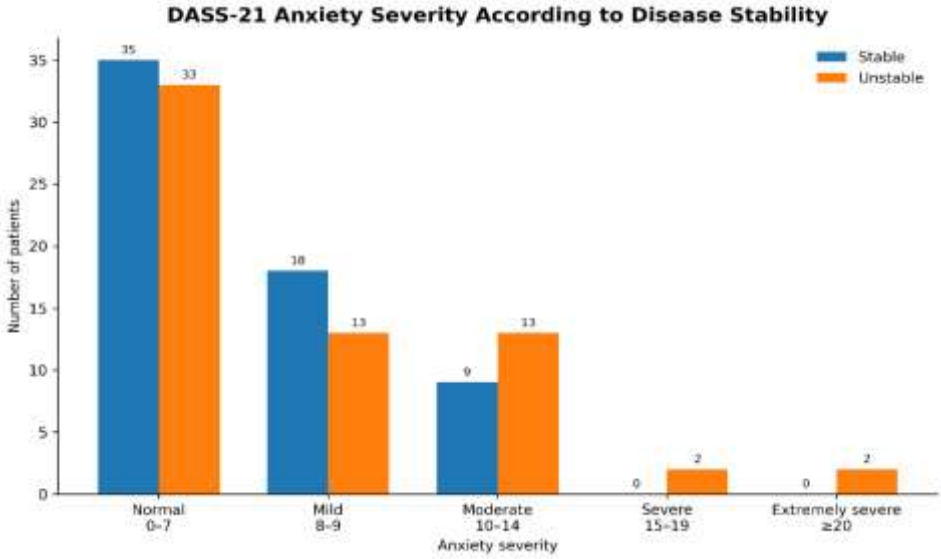
Anxiety was considerably more frequent than depression. Fifty-seven (45.6%) patients had mild-to-extremely severe anxiety.

Among the 62 stable patients, 35 (56.45%) had no anxiety, 18 (29.03%) had mild anxiety and nine (14.52%) had moderate anxiety.

Among the 63 unstable patients, 33 (52.38%) had no anxiety, 13 (20.63%) had mild anxiety, 13 (20.63%) had moderate anxiety, two (3.18%) had severe anxiety and two (3.18%) had extremely severe anxiety.

Table 9. DASS-21 anxiety according to disease stability

Anxiety category	Stable, n (%)	Unstable, n (%)
Normal	35 (56.45)	33 (52.38)
Mild	18 (29.03)	13 (20.63)
Moderate	9 (14.52)	13 (20.63)
Severe	0	2 (3.18)
Extremely severe	0	2 (3.18)



Stress

Stress symptoms were relatively uncommon. Among stable patients, 60 (96.77%) had no stress and two (3.23%) had mild stress.

Among unstable patients, 57 (90.48%) had no stress, five (7.93%) had mild stress and one (1.59%) had moderate stress.

Table 10. DASS-21 stress according to disease stability

Stress category	Stable, n (%)	Unstable, n (%)
Normal	60 (96.77)	57 (90.48)
Mild	2 (3.23)	5 (7.93)
Moderate	0	1 (1.59)
Severe/extremely severe	0	0

Marital Status and Psychological Symptoms

Marital status showed an important association with psychological symptoms. Of 102 married patients, none had depression, whereas one of 23 unmarried patients had mild depression.

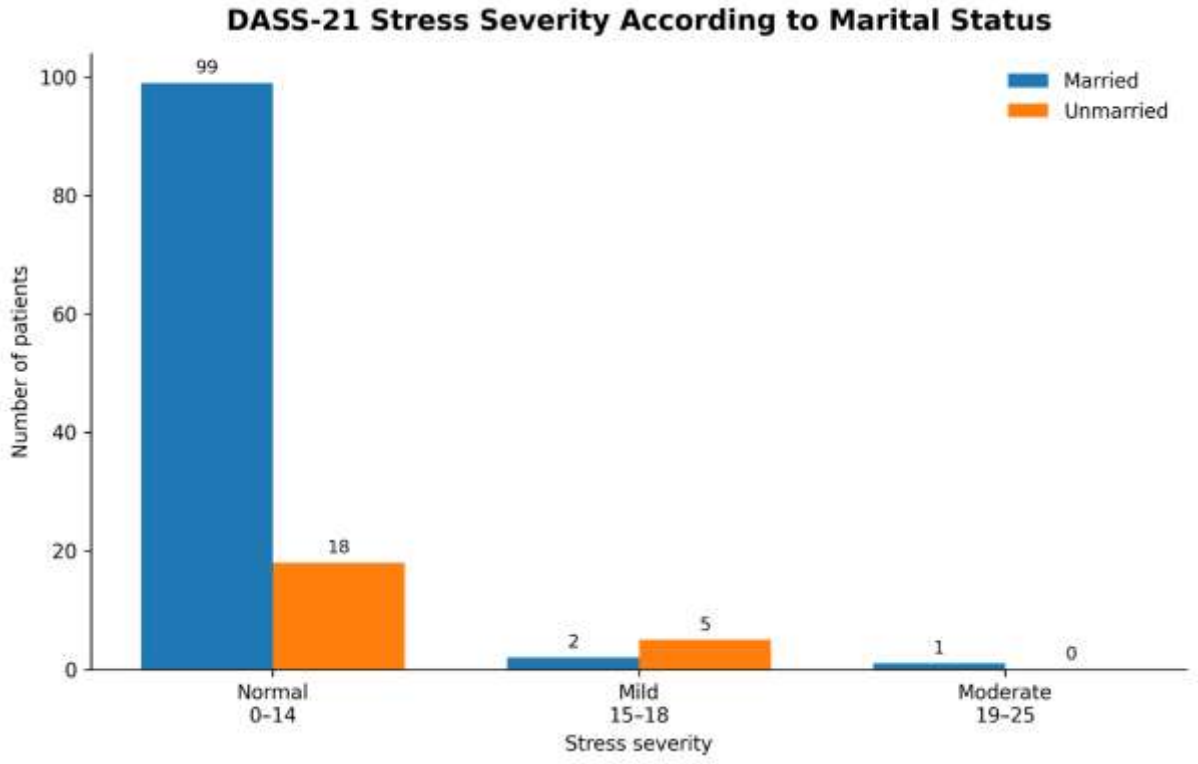
The source thesis reported a statistically significant association between marital status and anxiety. Among unmarried patients, moderate anxiety was substantially more frequent than among married patients. Stress was also significantly associated with marital status (p=0.001).

Table 11. DASS-21 stress according to marital status

Stress category	Married, n (%)	Unmarried, n (%)
Normal, 0–14	99 (97.1)	18 (78.3)
Mild, 15–18	2 (1.96)	5 (21.7)
Moderate, 19–25	1 (0.94)	0
Total	**102 (100)**	**23 (100)**

p=0.001

In the overall cohort, 5 of the 7 patients with mild-to-moderate stress were unmarried.



Sex and Anxiety

Among 65 female patients, 29 (44.61%) had mild-to-extremely severe anxiety, compared with 28 (46.67%) of 60 male patients. The difference was not statistically significant.

This finding suggests that, within this cohort, sex alone was not a major determinant of anxiety symptoms.

Exposed-Site Involvement

Among patients with involvement of exposed areas, 78 (80.41%) had DLQI 0–1, 14 (14.43%) had DLQI 2–5 and five (5.16%) had DLQI 6–10. Among those without exposed-site involvement, the corresponding proportions were 71.43%, 21.43% and 7.14%.

VIS-22 scores of 6–15 were present in 47 (48.4%) patients with exposed-site involvement and 16 (57.1%) patients without exposed-site involvement.

These results did not demonstrate a clear excess of measured quality-of-life impairment solely on the basis of exposed-site involvement in this cohort.

Discussion

There is a growing awareness that vitiligo is a disease that has implications beyond pigmentary change. Although the disease is not generally associated with major physical disability, visible depigmentation can influence self-perception, interpersonal relationships and social functioning.[1,5,6] In this prospective study, we evaluated these dimensions using dermatology-specific and vitiligo-specific quality of life instruments and DASS-21.

The study involved 125 patients with a mean age of 39.65 ± 12.9 years. The largest age group was patients aged ≤30 years, accounting for 28.8% of the cohort. There was a slight female predominance, with 52% of the participants being female. Generalized vitiligo was the most common clinical type accounting for 44% of the cases. These findings are mostly in accordance with the clinical heterogeneity reported in Indian vitiligo populations.[3,7]

Unstable disease was present in about half of the study population. Specifically, 63 (50.4%) patients had unstable vitiligo and 62 (49.6%) stable vitiligo. Clinical instability is important because the continued evolution of new lesions or progression of existing lesions may increase the uncertainty of prognosis and treatment response. Thus recent approaches to the assessment of vitiligo have focused on clinical markers of activity.[4]

Quality of life

The overall burden of quality of life in this cohort was relatively low on assessment with the DLQI. The mean DLQI was 1.62 ± 2.34 and 78.4% of the patients had a score of 0-1 . A minority (21.6%) reported a mild to moderate impact on the quality of life.

This study's relatively low DLQI contrasts with the wide range of scores seen across previous vitiligo populations. Studies have demonstrated considerable heterogeneity in quality-of-life impairment, indicating differences in patient populations, cultural context, disease characteristics and assessment methods.[5,6,14] Parsad et al. showed that vitiligo has measurable effects on quality of life, however subsequent studies have shown that demographic and clinical factors may alter the magnitude of this effect.[5]

In the present study, a statistically significant association between disease stability and DLQI was demonstrated (p=0.012). DLQI >1 was found in only 12.9% of stable patients versus 30.2% of unstable patients. Moreover, the moderate impact group was more often characterized by unstable patients.

Clinically, this finding is reasonable. Active disease may contribute to uncertainty about the future course and may reinforce concerns about appearance and effectiveness of treatment. However, causation cannot be inferred as the present study was observational and evaluated disease stability and psychological outcomes at the same clinical encounter.

Length of illness

Quality-of-life impairment was also correlated with disease duration. The highest proportion of DLQI impairment was seen in patients with disease duration <6 months (40% had scores >1 compared with 11.11% among those with disease duration of 6 months–1 year).

VIS-22 followed the same pattern. More than two-thirds of patients with disease duration < 6 months had a score of 6–15 compared with approximately one-third of patients with disease duration 6 months–1 year.

This may indicate that the psychosocial burden is most pronounced in the period immediately

following diagnosis or in the early phase of disease. New visible depigmentation can increase uncertainty, concerns about prognosis and increased attention to appearance Alternatively, patients with more recent disease may seek medical attention due to greater concern, while those with longer-standing disease may have developed adaptation or different treatment-seeking behavior. These explanations are speculative and require prospective longitudinal evaluation.

Disease-specific burden and VIS-22

The mean VIS-22 score was 6.28±2.89 and approximately 50% of the patients reported some degree of disease-specific impact. The VIS-22 was designed to address psychosocial concerns in vitiligo and may capture aspects of the disease experience not fully addressed by a general dermatology QoL instrument.[11,12]

The difference between DLQI and VIS-22 findings is remarkable. DLQI showed that 78.4% of patients had no measurable impact and in VIS-22, 49.6% of patients had no impact. This implies that a disease-specific instrument may be more sensitive to concerns that are less obvious on a generic dermatological QoL scale. VIS-22 was created in the Indian context and addresses issues of stigma, social interaction, marriage, treatment and perceptions related to vitiligo.[11,12] Therefore, its use may be especially relevant in settings where cultural perceptions of visible skin disease impact social functioning.

Depression

Depression was relatively rare in the present cohort. On DASS-21, one patient (0.8% of the study population) had mild depression. The patient was a 25-year-old unmarried male suffering from generalized unstable vitiligo.

The prevalence is too low for meaningful comparison of depression between stable and unstable groups. The one case of depression positivity was in an unstable patient but this should be considered as a descriptive observation rather than as evidence of an association.

It is an important methodological problem. A study may find psychological vulnerability in one patient but not have the number of events to support an epidemiological relationship. Psychological morbidity among patients with vitiligo has been reported in the literature, but estimates of its prevalence vary widely depending on the tool used, the population studied, and the threshold applied.[9,10,15]

Thus, the main contribution of the present study is not to show that unstable vitiligo causes depression, but rather to show that psychological symptoms, and especially anxiety, may occur even when overt depressive symptoms are uncommon.

Anxiety

Anxiety was significantly more prevalent than depression. 57 (45.6%) patients reported mild to extremely severe anxiety on DASS-21 in total.

Among stable patients, 43.55% had some degree of anxiety, compared with 47.62% of unstable patients. However, severe or extremely severe anxiety was only observed in the unstable group, but the study was not powered to assess a statistically significant relationship between stability and severity of anxiety.

The finding is in keeping with the broader psychodermatology literature in which anxiety may be an important component of psychological morbidity associated with chronic visible skin disorders.[9,10] Anxiety in vitiligo may be related to worry about social perception, appearance and disease progression, even in the absence of depressive symptoms.

Marriage Status

A key finding was the association between marital status and psychological symptoms. The study population was predominantly married, with 102 (81.6%) married and 23 (18.4%) unmarried. Anxiety and stress were higher in patients who were not married. Stress was significantly associated with marital status ($p=0.001$).

This finding should be understood in the sociocultural context of vitiligo. Concerns about marriage, rejection and social acceptance

may be associated with visible depigmentation, especially in cultures where appearance may affect matrimonial expectations.[16,17] However, marital status is also a proxy for a number of potentially relevant factors including age, social support and socio-economic circumstances. It should therefore not be considered as an independent causal determinant from the present analysis.

Sex and anxiety

There was no significant difference in anxiety between male and female patients in the study. 44.61% of female and 46.67% of male patients reported anxiety ranging from mild to extremely severe.

Sex-related differences in psychological morbidity among vitiligo patients have been variably reported in previous studies.[15,17] The lack of a significant sex difference in this cohort suggests that psychosocial screening should not be limited to women or to any specific demographic subgroup.

Participation of exposed sites

One would intuitively expect that visible involvement would affect psychosocial burden, as depigmented lesions on exposed areas may be more readily noticed . However, in the present data, DLQI or VIS-22 impairment was not significantly increased in patients with exposed-site involvement.

This finding highlights the complexity of psychosocial burden in vitiligo. The visibility of the objective lesion is only one side of the patient's subjective experience. Perceived stigma, social support, cultural context, coping methods, and individual beliefs may be as or more important than anatomical distribution of lesions.[6,14]

Clinical Implications

The findings have a number of practical implications.

First, the clinical evaluation of vitiligo should not be limited to evaluating disease activity and selecting treatment. A brief quality of life assessment may identify patients whose subjective burden is greater than expected from their skin findings.

Secondly, unstable disease seems to be particularly relevant, since it was related to a greater DLQI impairment. Thus, early psychosocial assessment in addition to dermatological treatment may benefit patients with active disease.

Third, anxiety was far more common than depression in this cohort. Thus, screening for depressive symptoms alone may miss a significant number of patients with psychological distress.

Finally, unmarried patients showed higher anxiety and stress burden. Although this association is not causal, it emphasizes the necessity of addressing social and interpersonal issues during dermatology consultations.

Strengths of the study

Major strengths of the study are:

1. Prospective recruitment of patients with clinically diagnosed vitiligo.
2. Presence of stable and unstable disease
3. Use of generic dermatology and vitiligo-specific measures of quality of life.
4. Individual evaluation of depression, anxiety and stress.
5. Psychosocial outcomes by disease duration and sociodemographic characteristics.
6. Use of a validated vitiligo-specific instrument developed and studied in an Indian population.[11,12]

Limitations

There are some limitations to consider.

- This study was conducted at a single center, with patients attending a tertiary-care dermatology clinic, which may limit generalizability.
- Secondly, although participants were prospectively recruited, the analysis of psychological burden was essentially based on assessment at a particular point in the disease course. Longitudinal follow-up would be needed to determine whether changes in disease activity precede changes in psychological outcomes.
- Third, DASS-21 is a screening tool, not a diagnostic psychiatric interview. Hence, a

positive score should not be interpreted as a formal psychiatric diagnosis.[13]

- Fourth, the fact that only one patient had depressive symptoms limited the possibility to statistically examine the relation between disease stability and depression.
- Fifth, we did not include potential confounders such as socioeconomic status, previous treatment response, disease extent and individual coping mechanisms in a multivariable model.
- Finally, a healthy control group was not included in the study, which made it impossible to compare the prevalence of psychological symptoms with the general population.

Conclusion

This prospective observational study of 125 patients had clinically unstable vitiligo in almost half of the patients. Overall dermatology-specific quality-of-life impairment was low; however, unstable vitiligo was associated with significantly greater DLQI impairment than stable disease. Shorter disease duration was also associated with greater burden of quality of life.

Depression was rare; only one patient presented with mild depression symptoms; therefore, the study does not provide sufficient evidence to establish the relationship between disease stability and depression. Meanwhile, anxiety was relatively common (45.6% of patients), stress was present in 5.6%. Stress was significantly associated with marital status (p=0.001). An association between marital status and anxiety was reported in the source thesis, but the corresponding statistical table and p-value are not available in the present manuscript and require verification before submission.

These findings support a holistic strategy to vitiligo management, where assessment of disease activity is complemented by assessment of quality of life and psychological well-being, especially in patients with unstable or recently diagnosed disease.

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Conflict of interest

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References

1. Picardo M, Dell'Anna ML, Ezzedine K, Hamzavi I, Harris JE, Parsad D, et al. Vitiligo. Nat Rev Dis Primers. 2015;1:15011.
2. Ezzedine K, Lim HW, Suzuki T, Katayama I, Hamzavi I, Lan CC, et al. Revised classification/nomenclature of vitiligo and related issues: the Vitiligo Global Issues Consensus Conference. Pigment Cell Melanoma Res. 2012;25(3):E1-E13.
3. Ezzedine K, Eleftheriadou V, Whitton M, van Geel N. Vitiligo. Lancet. 2015;386(9988):74-84.
4. Benzekri L, Gauthier Y. Clinical markers of vitiligo activity. J Am Acad Dermatol. 2017;76(5):856-862.
5. Parsad D, Dogra S, Kanwar AJ. Quality of life in patients with vitiligo. Health Qual Life Outcomes. 2003;1:58.
6. Kostopoulou P, Jouary T, Quintard B, Ezzedine K, Marques S, Boutchnei S, et al. Objective vs subjective factors in the psychological impact of vitiligo: the experience from a French referral centre. Br J Dermatol. 2009;161(1):128-133.
7. Vora RV, Patel BB, Chaudhary AH, Mehta MJ, Pilani AP. A clinical study of vitiligo in a rural set up of Gujarat. Indian J Community Med. 2014;39(3):143-146.
8. Mishra N, Rastogi MK, Gahalaut P, Agrawal S. Dermatology specific quality of life in vitiligo patients and its relation with various variables: a hospital based cross-sectional study. J Clin Diagn Res. 2014;8(6):YC01-YC03.
9. Picardi A, Abeni D, Melchi CF, Puddu P, Pasquini P. Psychiatric morbidity in dermatological outpatients: an issue to be

recognized. Br J Dermatol. 2000;143(5):983-991.

10. Picardi A, Adler DA, Abeni D, Chang H, Pasquini P, Rogers WH, et al. Screening for depressive disorders in patients with skin diseases: a comparison of three screeners. Acta Derm Venereol. 2005;85(5):414-419.
11. Krishna GS, Ramam M, Mehta M, Sreenivas V, Sharma VK, Khandpur S. Vitiligo impact scale: an instrument to assess the psychosocial burden of vitiligo. Indian J Dermatol Venereol Leprol. 2013;79(2):205-210.
12. Shivaswamy A, Palit A, Inamadar AC. Validation of vitiligo impact scale-22 among North Karnataka population. Clin Dermatol Rev. 2020;4(1):31-35.
13. Tran TD, Tran T, Fisher J. Validation of the Depression Anxiety Stress Scales (DASS) 21 as a screening instrument for depression and anxiety in a rural community-based cohort of northern Vietnamese women. BMC Psychiatry. 2013;13:24.
14. Radtke MA, Schäfer I, Gajur A, Langenbruch A, Augustin M. Willingness-to-pay and quality of life in patients with vitiligo. Br J Dermatol. 2009;161(1):134-139.
15. Kota RS, Vora RV, Varma JR, Kota SK, Patel TM, Ganjiwale J. Study on assessment of quality of life and depression in patients of vitiligo. Indian Dermatol Online J. 2019;10(2):153-157.
16. Chaturvedi SK, Singh G, Gupta N. Stigma experience in skin disorders: an Indian perspective. Dermatol Clin. 2005;23(4):635-642.
17. Sangma LN, Nath J, Bhagabati D. Quality of life and psychological morbidity in vitiligo patients: a study in a teaching hospital from north-east India. Indian J Dermatol. 2015;60(2):142-146.