

Original Article

Quality of life, depression, anxiety, stress symptoms, and its association with vitiligo extent and distribution: A cross-sectional study

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ABSTRACT

Objectives: Vitiligo, a globally prevalent psychocutaneous disorder (incidence: 0.1–2%), profoundly affects mental health. It often leads to depression and anxiety, particularly when more body surface area (BSA) is involved. Lesions appear on both exposed and unexposed skin, significantly impairing patients' quality of life (QOL). The objectives of the study are to assess depression, anxiety, stress, QOL, and their relationship with BSA in vitiligo patients.

Materials and Methods: We conducted a cross-sectional study with 50 vitiligo patients, gathering sociodemographic data using a self-designed form. BSA affected was calculated using the "rule of nines." Depression, anxiety, and stress were measured using the Depression Anxiety Stress Scale 42. QOL was assessed using the Dermatology Life Quality Index and the World Health Organization QOL questionnaire BREF. Data analysis utilized SPSS version 20.0, adhering to ethical guidelines.

Results: Depression, anxiety, and stress rates were 36%, 38%, and 32%, respectively. Depression prevalence was 21.7% in patients with <10% BSA affected and 100% in those with >80% involvement.

Conclusion: Vitiligo significantly impacts mental health, particularly with greater BSA involvement, leading to heightened depression rates. It is a psychodermatological condition, adversely affecting QOL, highlighting the importance of holistic care in collaboration with mental health professionals.

Keywords: Body surface area, Quality of life, Depression, Anxiety, Stress, Vitiligo extent, Vitiligo distribution

INTRODUCTION

Vitiligo is a condition resulting from loss of melanocytes which causes depigmented patches with a worldwide incidence rate of 0.1–2%.^[1–6] In Indian population, the prevalence is estimated about 4–8.8%.^[7] Multifactorial causation has been proposed for etiology of vitiligo which includes genetic, autoimmune theory, oxidative stress, autocyte toxicity, melanocytorrhagy, neurohumoral, and convergence theory, but the exact cause is still unknown.^[8]

Skin diseases apart from causing physical discomfort also have an impact on patient's personal and social life, triggering emotional responses such as shame, reduced self-assurance, and even mental health issues such as depression and anxiety. Studies have demonstrated depression, anxiety, significant hopelessness, and impairment of quality of life (QOL) in different populations worldwide.^[9,10] These findings were

more debilitating and worrisome for women, especially those affected in the visible areas of body or in those with >25% body surface area (BSA) involvement.^[10] The occurrence of psychiatric conditions in patients with vitiligo varies with rate ranging from 25% to as high as 75%.^[11,12]

Regardless of psychiatric morbidity, vitiligo can influence patient's QOL as the patients may feel stigmatized and discriminated. Vitiligo patients frequently develop negative core beliefs such as feeling self-doubt, inadequacy or lack of love which further directs them into a pattern of maladaptive behavior, and negative emotional state affecting their QOL. Similar to the pattern of psychiatric comorbidities greater impairment in QOL correlated with female gender, greater BSA involvement.^[13–15]

Although there is a significant prevalence of vitiligo in India along with the prevalence of psychological morbidity but

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awareness about depression, anxiety, and stress symptoms in vitiligo is very low. Furthermore, there is a dearth of studies assessing the relationship between psychological comorbidities, especially QOL with extent and pattern of BSA involvement among vitiligo patients. Hence, exploring the relational factors will help in successful intervention for such patients.

The study aimed to examine depression, anxiety, stress, and QOL in vitiligo patients and their association with BSA and pattern of involvement. The primary objectives were to assess the prevalence and severity of depression, anxiety, and stress symptoms among vitiligo patients, assess their QOL using the Dermatology Life Quality Index (DLQI) and the World Health Organization QOL (WHO-QOL) BREF scales, and explore how BSA and pattern of vitiligo involvement relate to their psychological well-being. In addition, the secondary objective involved identifying sociodemographic and clinical factors that might influence the QOL in vitiligo patients.

MATERIALS AND METHODS

The study was done at a tertiary care center in Haryana from October 2021 to May 2022, in collaboration between the psychiatry and dermatology departments. Ethical approval was obtained from the university's ethics committee (reference number RT/2021/689-728, dated April 22, 2021), adhering to the principles of the Declaration of Helsinki.

Purposive sampling was employed to select a cohort of 50 participants. Inclusion criteria encompassed individuals aged 18–65 years with minimum disease duration of 1 year, attending the vitiligo clinic in the dermatology outpatient department. Exclusions were made for patients with critical illness or cognitive impairment, as well as those presenting with other physical and psychiatric comorbidities.

Sociodemographic details were collected using a self-designed performa. The extent of body area affected by vitiligo was assessed using the rule of nines, which divides the body surface into areas representing 9% or multiples thereof of the total BSA.^[16-18] Based on the pattern of involvement, lesions were divided into “exposed” (face and hand), “unexposed” lesions (rest of the areas such as the abdomen, chest, back, genital areas, legs, and others), and both exposed and unexposed area involvement.^[1]

The Depression Anxiety Stress Scale (DASS-42) was employed to evaluate depression, anxiety, and stress levels.^[19,20] Assessment of QOL among vitiligo patients involved the use of the DLQI and the WHO-QOL BREF scale. The DLQI consists of 10 items that gauge the impact of dermatological conditions on various facets of patients' lives, including symptoms, daily activities, relationships, and treatment options.^[21] The WHO-QOL BREF is a 26-item instrument that measures four domains of QOL: Physical

health, psychological well-being, social relationships, and environmental factors.^[22]

The collected data were analyzed using SPSS software version 20.0. Sociodemographic variables were analyzed through frequency distribution and mean. Comparison of depression, anxiety, and QOL across different groups based on BSA was carried out using Chi-square and Analysis of Variance (ANOVA) tests. Logistic regression analysis was employed to predict whether the extent of BSA affected could influence depression, anxiety, and QOL.

RESULTS

The sociodemographic of the participants included an average age of around 32 years old with a standard deviation of 11.07. Marital status showed that 66% were married and gender was evenly split at 50% male and 50% female. Religion was predominantly Hindu (98%), with a 2% Muslim representation. 62% of the participants came from rural areas, while 38% came from urban areas. Nuclear families constituted 82%, with the remainder from joint families (18%). Education-wise, 64% had below graduate-level qualifications, while 36% were graduates or higher. Regarding occupation, 58% were employed, while 42% were unemployed. Socioeconomic status varied that 44% were in the lower bracket, 52% in the middle, and 4% in the upper category. The average duration of vitiligo was 6.64 years, with a standard deviation of 6.65. Vitiligo types included vitiligo vulgaris (56%), acrofacial (20%), vitiligo focal (18%), vitiligo universalis (4%), and vitiligo segmental (2%). Most participants had both exposed and unexposed areas affected by vitiligo (62%), with some having solely exposed (22%) or unexposed areas (16%). BSA involvement ranged from <10% (46%) to 80–100% (4%).

DASS-42 scale was used to assess the severity of depression, anxiety, and stress, and most participants had normal levels of depressive (64%) and anxiety symptoms (62%). Mild (10%), moderate (16%), severe (6%), and extremely severe (4%) levels of depressive symptoms were less common. Anxiety levels included mild (12%), moderate (12%), severe (10%), and extremely severe (4%) cases. Stress symptoms predominantly fell within the normal range (68%), with mild (22%), fewer moderate (6%), and severe (4%) cases.

Regarding QOL, the WHO-QOL BREF assessment revealed moderate well-being in physical (mean = 71.28, standard deviation [SD] = 17.82), psychological (mean = 59.18, SD = 18.30), social relationship (mean = 62.18, SD = 19.24), and environment (mean = 70.22, SD = 18.02) domains. According to DLQI, the mean score was found to be 6.92 (5.52).

As per the cited article,^[23] vitiligo is classified into four groups based on affected skin extent: Limited (<10%), moderate (10–30%), severe (30–80% BSA), and universal (>80%)

pigmentation. To ensure consistency and comparability, we have used this widely adopted classification. As shown in Table 1, quality of life impairment was found to be significantly prominent with greater BSA involvement using both scales.

As shown in Table 2, the result of ANOVA test indicates that there is a significant difference in QOL among the different groups according to the pattern of involvement. Nonetheless, there was no notable distinction observed when employing the WHO-QOL.

Multiple linear regression was utilized to analyze the relationship between predictor variables and the continuous dependent variable, which was the total score of DLQI. The selection of predictor variables was based on their perceived significance in influencing the QOL among vitiligo patients. We incorporated six independent demographic characteristics (age, sex, locality, marital status, education, occupation, and type of family) as potential predictors. For variable selection, we employed the “Enter” method in multiple linear regression. This choice was motivated by its simplicity and comprehensive analysis. Model 1 included the six demographic characteristics as predictors, but the results showed that these variables could not notably clarify QOL impairment and did not significantly predict QOL impairment in vitiligo patients.

To explore further, we introduced the variable “Body surface area” in Model 2, which represents the extent of vitiligo involvement. The results from Model 2 indicated a statistically significant correlation, clarifying the QOL impairment ($F = 36.309, P < 0.001$). The inclusion of “Body surface area” significantly increased the explanatory variance from 12.2% to 51.7%.

DISCUSSION

Psychiatric disorders often manifest among individuals with vitiligo, but their prevalence varies considerably across studies. To gain a deeper understanding of the occurrence of

these psychiatric comorbidities and the impact on the QOL of vitiligo patients, it is crucial to elucidate the role of mental health professionals in their care. While limited data exist on mental health disorders in the Indian context, this study employs the (DASS-42).^[19,20] This instrument comprises three self-administered scales explicitly created to assess the conditions of depression, anxiety, and stress. Its universal applicability makes it suitable for diverse populations.

QoL is a multifaceted construct that comprises physical and psychological well-being, level of independence, social interactions, personal beliefs, and interaction with one’s environment. Although numerous studies have explored QoL in vitiligo patients, there is a dearth of data utilizing both the DLQI and the WHO-QOL questionnaire.^[24] The DLQI, featuring ten items, offers insights into how skin diseases affect an individual’s QoL. In contrast, the WHO-QOL is a comprehensive, cross-culturally validated tool that delves into various facets of QoL. The concurrent use of both instruments in this study fortifies the robustness of its findings.

In our study, 54% of patients exhibited more than 10% BSA involvement, diverging from a study in Maharashtra which reported that 80% of patients had <10% involvement, possibly due to regional disparities.^[25] The mean duration of illness in our hospital-based study was 6.64 years (ranging from 1 to 34 years). The majority (56%) of patients presented with vitiligo vulgaris, followed by acrofacial vitiligo (20%), focal vitiligo (18%), vitiligo universalis (4%), and segmental vitiligo (2%), aligning with the findings of a study by Daniel and Sivanesan.^[26] Most patients (62%) exhibited lesions on both exposed and unexposed skin areas, in line with previous research.^[27]

Depression, anxiety, and stress symptoms were prevalent in our study at rates of 36%, 38%, and 32%, respectively. Conversely, a rural-based Indian study identified depression as the most common psychiatric morbidity among vitiligo patients.^[28] Variations in diagnostic tools and cultural factors may underlie these discrepancies.

Table 1: Comparison of quality of life score with BSA involvement in study sample ($n=50$).

Variable	BSA (<10%)	BSA 10–30%	BSA 30–80%	BSA 80–100%	Chi-square (p)/f-value (ANOVA) (P)
DLQI [#]					
Effect Present	17 (73.9%)	21 (100%)	4 (100%)	2 (100%)	8.00 (0.046)*
No Effect	6 (26.1%)	0 (0%)	0 (0%)	0 (0%)	
WHO-QOL [#]					
Physical health	78.39 (15.75)	66.24 (17.46)	64.25 (21.33)	56.50 (17.68)	2.70 (0.06)
Psychological	68.30 (14.82)	51.24 (18.24)	50.00 (20.99)	56.00 (0.00)	4.31 (0.009)**
Social	71.57 (17.70)	51.76 (14.07)	70.50 (27.25)	47.00 (4.24)	5.90 (0.002)**
Environment	75.35 (16.34)	67.95 (19.04)	59.50 (19.62)	56.50 (9.19)	1.65 (0.19)
Total score	293.61 (48.94)	237.19 (49.65)	244.25 (84.81)	216.00 (31.11)	5.09 (0.004)**

[#]DLQI: Dermatology Life Quality Index, [#]WHO-QOL: World Health Organization-Quality of life, BSA: Body surface area, ANOVA: Analysis of Variance.

*Significant at $P < 0.05$ **Significant at $P < 0.01$

Table 2: Comparison of quality of life score with pattern of involvement in study sample ($n=50$).

Variable	Mean (Standard deviation)	F (ANOVA) (P)
DLQI [#] score		8.63 (0.001)**
Only exposed	2.27 (1.68)	
Only unexposed	5.13 (2.47)	
Exposed and unexposed	9.03 (5.84)	
WHO-QOL [#]	Exposed	Un exposed
Physical health	76.27 (14.93)	78.38 (19.68)
Psychological	62.09 (12.28)	68.13 (18.19)
Environment	76.18 (16.69)	72.00 (16.89)
Social	67.63 (17.66)	59.38 (27.22)
Total score	282.27 (48.80)	277.8 (71.18)

[#]DLQI: Dermatology Life Quality Index, [#]World Health Organization-Quality of life, ANOVA: Analysis of Variance. **Significant at $P<0.01$

The mean DLQI score in our study was 6.92, indicating a moderate impact on QoL, akin to findings by Wong and Baba.^[29] However, Kota *et al.* reported a higher mean DLQI score in North India, possibly due to increased social awareness efforts.^[30]

Our study unveiled a significant impact on QoL among patients with greater BSA involvement, mirroring findings in a Malaysian study that observed a positive correlation between BSA involvement and DLQI scores.^[27] Moreover, our study uniquely employed the WHO-QOL scale, highlighting a decline in physical, psychological, environmental, and social domains as BSA involvement increased. This novel exploration of the correlation between these domains and BSA involvement has not been undertaken in prior studies.

Patients with lesions on both exposed and unexposed skin areas experienced a notable reduction in QoL, corroborating the observations of Silverberg and Silverberg.^[15]

This study's limitations include a relatively small sample size, which limits the generalizability of the results. In addition, our hospital-based, purposive sampling methodology confines the applicability of our findings to the broader population. We did not assess other stressors or life events, and the absence of a healthy control group makes it challenging to isolate the specific effects of vitiligo.

CONCLUSION

The findings of this study underscore the significant risk of psychiatric manifestations among patients grappling with vitiligo. When emotional factors are not adequately addressed, there is a notable increase in the overall morbidity experienced by these patients. In essence, our study concludes that a larger extent of vitiligo is closely linked with

heightened psychiatric morbidity, notably depression, and a diminished QOL.

Hence, establishing a connection with a psychiatrist can prove pivotal in the early assessment of depressive symptoms and related psychosocial issues, ultimately contributing to the enhanced well-being of vitiligo patients.

Looking ahead, future directions in research could involve conducting studies with larger sample sizes, ideally drawn from community samples. This would yield more representative data concerning depression, anxiety, and stress among individuals with vitiligo. Moreover, a prospective, longitudinal study should be considered to assess the potential improvements stemming from pharmacotherapy and psychotherapy interventions. In addition, further longitudinal studies can delve into the identification of risk factors associated with psychiatric morbidity in the context of vitiligo.

Ethical approval

The ethical approval by the Research ethical committee of University of health sciences PGIMS ROHTAK Haryana with reference number RT/2021/689-728, dated April 22, 2021.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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