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RESEARCH ARTICLE **OPEN ACCESS**

Investigation of the Prevalence of Depressive Illness in Vitiligo Patients: A Cross-sectional Study

Hedyeh Askarpour[1], Rasoul Raesi[2,3], Kiavash Hushmandi[4], Alireza Razzaghi[5], Amirreza Norouzi[6] and Salman Daneshi[7,*]

[1]*Assistant Professor of Psychiatry, Department of Internal Medicine, School of Medicine Imam Khomeini Hospital Jiroft University of Medical Sciences, Jiroft, Iran*
[2]*Department of Nursing, Torbat Jam Faculty of Medical Sciences, Torbat Jam, Iran*
[3]*Department of Health Services Management, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran*
[4]*Nephrology and Urology Research Center, Clinical Sciences Institute, Baqiyatallah University of Medical Sciences, Tehran, Iran*
[5]*Assistant Professor of Epidemiology School of Medicine Children Growth Research Center Research Institute for Prevention of Non-Communicable Diseases, Qazvin University of Medical Sciences, Qazvin, Iran*
[6]*Department of Internal Medicine, School of Medicine Imam Khomeini Hospital Jiroft University of Medical Sciences, Jiroft, Iran*
[7]*Department of Public Health, School of Health, Jiroft University of Medical Sciences, Jiroft, Iran*

Abstract:

Background: Vitiligo, as a progressive skin disease, is associated with the public's negative attitudes toward this condition, as well as numerous social and familial problems that can lead to psychiatric disorders.

Aim: The present study was conducted to determine the frequency of depressive illness in patients with vitiligo.

Methods: This is a cross-sectional descriptive study conducted using census sampling on 178 patients with vitiligo who were referred to the skin clinic of Imam Khomeini Hospital (RA) in Jiroft in 2023. Data were collected face-to-face using the Beck Depression Questionnaire and analyzed using descriptive and inferential statistical tests in SPSS-22 statistical software, with a significance level of p less than 0.05.

Results: The average age of the examined patients was 31.4 ± 6.8 years. Of the participants, 53.3% were women and 46.7% were men. The frequency of individuals exhibiting moderate and severe depressive symptoms was 17.9% and 28.8%, respectively. The prevalence of depressive illness was higher among married women compared to single women.

Conclusion: The high prevalence of depressive illness symptoms in these patients underscores the urgent need for effective interventions and treatment strategies to address this mental health concern. The findings of this study highlight the necessity for continuous surveillance and monitoring of depressive illness prevalence and its risk factors, which will inform the development of effective interventions and policies aimed at mitigating this mental health issue.

Keywords: Skin disease, Vitiligo, Psychological disorders, Depressive illness, Skin, Melanocyte.

*Address correspondence to this author at the Department of Public Health, School of Health, Jiroft University of Medical Sciences, Jiroft, Iran; Tel: 03443310916; E-mail: salmandaneshi008@gmail.com

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1. INTRODUCTION

Vitiligo is a chronic systemic disease characterized by pigmented macules due to the partial or complete loss of melanocytes in the skin [1]. The main etiology of vitiligo is still unknown. However, evidence suggests that auto-immune, genetic, and environmental factors contribute to the development of this condition [2, 3]. Vitiligo is the most common cause of skin depigmentation, with an approximate prevalence of 0.1% to 2% in both children and adults [4]. It affects men and women equally, regardless of race or socioeconomic status [5, 6]. Although the highest incidence occurs in the second and third decades of life, vitiligo can develop at any age, from childhood to adulthood. Nearly one-third of patients with vitiligo are children, and 70-80% of adult patients are diagnosed before the age of 30 [7]. Vitiligo patients may also experience high levels of stress and psychiatric illnesses [8]. Depression, anxiety, cognitive disorders, and social disorders have been reported in these individuals [9, 10]. Vitiligo can significantly affect the quality of life of patients, making psychiatric diseases and the psychosocial aspects of this condition important issues in their lives [11].

The attention to the psychosocial aspects of vitiligo is crucial, as previous studies indicate that these factors are integral to understanding this skin disease. The varying prevalence of mental disorders such as depression, anxiety, and stress across different geographical and cultural contexts suggests that cultural factors, clothing styles, and other societal influences significantly impact the severity and prevalence of these mental health issues [12-14]. Research has shown that the aesthetic implications of vitiligo lead to a higher prevalence of mental illnesses in affected individuals compared to healthy populations [13, 15]. Although different studies report varying prevalence and severity of mental disorders, they consistently highlight a greater incidence of these conditions, including depression, anxiety, and stress [16-18]. According to the definition of the American Psychiatric Association in the DSM-5, unipolar depression is characterized by the presence of five or more symptoms most days for at least two consecutive weeks, with at least one symptom being either a low mood or a lack of pleasure [19-21]. Symptoms include low mood, lack of pleasure, insomnia or hypersomnia, changes in appetite or weight, psychomotor slowness or restlessness, low energy, poor concentration, feelings of worthlessness or guilt, and frequent thoughts about death and suicide. These symptoms must cause significant distress or disruption in social relationships and cannot be attributed to other psychological disorders, substance abuse, or medical conditions [19-21].

In a study by Salzer and Schallreuter involving 117 vitiligo patients, 75% were found to have mental disorders, including depression [22]. Agarwal reported a 20% prevalence of depression among vitiligo patients in London [23]. Sharma and colleagues noted a 10% prevalence in New Delhi [24]. Mattoo *et al*. found that 22% of vitiligo patients experienced depression, compared to 29% of psoriasis patients in their study of 113 vitiligo and 103 psoriasis patients [25]. The long treatment duration and chronic nature of vitiligo often lead to mental health issues, including depression. Early diagnosis and treatment of depression can help prevent worsening of the condition [26, 27]. The significant impact of vitiligo on patients' quality of life, along with the high prevalence of psychiatric disorders, particularly depression, necessitates an investigation into the frequency of these disorders. Understanding the factors influencing them is crucial for developing effective diagnostic and treatment strategies to mitigate complications. This study aims to fill a gap in the literature regarding the mental health of vitiligo patients in Jiroft, Iran, by providing localized data to inform healthcare practices and policies. Consequently, this research was conducted to assess the prevalence of depressive illness among vitiligo patients referred to Imam Khomeini Hospital in Jiroft in 2023.

2. METHODS AND MATERIALS

This study is a cross-sectional descriptive analysis conducted using census sampling on 178 vitiligo patients referred to the skin clinic of Imam Khomeini Hospital (RA) in Jiroft in 2023. Inclusion criteria required patients to be at least 18 years old, referred to the dermatology clinic, and to provide informed consent for participation. Patients who reported a history of psychiatric disorders prior to the onset of vitiligo symptoms were excluded from the study. The data collection tool for this study is comprised of two parts. The first part recorded the demographic information of patients, including age, gender, marital status, and duration of vitiligo. After obtaining informed written consent, patients participated in the study and completed the Beck Depression Inventory (BDI). The second part involved the Beck Depression Inventory version 2 (BDI-II),

which measures the symptoms and feedback of depressed patients. Its items are based on common attitudes and symptoms observed in individuals with depression. The content of this questionnaire comprehensively reflects the symptomatology of depression, with an emphasis on cognitive aspects. It includes two items related to emotions, two items focused on observable behaviors, and one item addressing interpersonal semiotics. The scale measures varying degrees of depression, ranging from a minimum score of 0 to a maximum of 63. The scoring categories are as follows:

- 0 to 13: no or minimal depression
- 14 to 19: mild depression
- 20 to 28: moderate depression
- 29 to 63: severe depression.

The validity and reliability of the Persian version of this questionnaire have been confirmed in a study by Ghasemzadeh *et al.*, which reported a Cronbach's alpha coefficient of 0.87 [28]. The collected data were statistically analyzed to determine the frequency of depressive illness in the research sample and its relationship with the duration of vitiligo and demographic variables. Statistical analysis was performed using SPSS software version 26 for Windows. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were employed to summarize the data, while chi-square and correlation tests were used for analytical statistics. The significance level (p) in this study was set at less than 0.05. Prior to commencing the investigations, ethical approval for the research was obtained. All participants provided oral informed consent to be included in the study. The collected data were used solely for research purposes, and the questionnaires were completed without recording the names or surnames of the participants. No personal identifying information was disclosed when publishing the results. The participants were assured that their information would be kept completely confidential and collected exclusively for research purposes.

Table 1. Determination of demographic variables of vitiligo patients.

Variables		Frequency	Percent
Age	<20	17	5.9
	20-35	97	54.4
	35-50	43	24.1
	50-65	19	10.6
	65-80	2	1.4
Gender	Women	95	53.3
	Men	83	46.7
Marital status	Single	63	35.3
	Married	110	61.7
	Other (widow or divorced)	5	3
Duration of vitiligo disease (Years)	< 5	94	52.8
	5-10	43	24.1
	>10	41	23.1

3. RESULTS

In this study, 178 patients with vitiligo were examined. Table 1 presents the demographic information of the patients. The average age was 31.4 ± 6.8 years, with a minimum age of 18 and a maximum age of 68 years. The highest frequency was observed in the age group of 20 to 35 years, comprising 97 individuals (54.4%), while the lowest frequency was in those over 65 years, with only 2 individuals (1.4%). Patients aged 35 to 50 years accounted for 24.1% of the sample, making them the second most frequent group after those aged 20 to 35. Among the patients, 53.3% were women and 46.7% were men, with 61.7% being married. Regarding the duration of vitiligo, 94 patients (52.8%) had the condition for less than 5 years, 43 patients (24.1%) had it for 5 to 10 years, and 41 patients (23.1%) had it for more than 10 years.

Table 2 presents data on depressive illness among vitiligo patients. The average depressive illness score for the participants was 29.64, indicating severe depressive illness. In terms of prevalence, 46 individuals (25.8%) had no depressive illness, 49 individuals (27.5%) experienced mild depressive illness, 32 individuals (17.9%) had moderate depressive illness, and 51 individuals (28.8%) were classified as having severe depressive illness.

- 0 to 13: no or minimal depression
- 14 to 19: mild depression
- 20 to 28: moderate depression

29 to 63: severe depression

Table 2. Determining the frequency of depressive illness in vitiligo patients.

Variable	Frequency	Percent	Mean	Standard Deviation
No or minimal depression	46	25.8	29.64	6.73
Mild depression	49	27.5		
Moderate depression	32	17.9		
Severe depression	51	28.8		

Table 3 shows information related to depressive illness in patients with vitiligo based on age, gender, marital status, and duration of the disease. The highest frequency of depressive illness is observed in the age group of 20 to 35 years, followed by the age group of 35 to 50 years. Statistically, there is a significant relationship between the prevalence of depressive illness and age (p-value < 0.05). Among the 83 individuals with depressive illness, 58 (69.8%) were women and 25 (30.2%) were men, indicating that depressive illness is more common in women with vitiligo than in men, with a statistically significant relationship to gender (p-value < 0.05). Out of 83 individuals with depressive illness, 59 (71.1%) were married, 20 (24.1%) were single, and 4 (4.8%) were divorced or widowed. This indicates that the prevalence of depressive illness is higher among married individuals with vitiligo compared to other groups. There is a statistically significant relationship between the

prevalence of depressive illness and marital status (p-value < 0.05).In the group with depressive illness, the highest prevalence was observed in those with less than 5 years of vitiligo, followed by those with over 10 years, and 0finally, those with 5 to 10 years. Statistically, there is a significant relationship between the prevalence of depressive illness and the duration of vitiligo (p-value < 0.05).

4. DISCUSSION

The therapeutic and social effects of skin diseases are becoming increasingly significant. Individuals with skin conditions often experience heightened grief, which can diminish with successful treatment [29, 30]. Given that vitiligo treatment is lengthy and challenging, many patients suffer from mental health issues, including depression. Therefore, it is crucial to understand and address the social and psychological consequences of vitiligo, which is both incurable and progressive. There may be a relationship between stress and the clinical exacerbation of the disease; thus, therapeutic measures such as teaching relaxation skills and other psychotherapies could be beneficial [31, 32]. This study was conducted to determine the frequency of depressive illness in vitiligo patients referred to Imam Khomeini Hospital in Jiroft in 2023.

Based on the findings of the present study, the frequency of individuals with moderate and severe depressive illness symptoms was 17.9% and 28.8%, respectively. Although there are not many studies on the prevalence of depressive illness in vitiligo patients, previous research partially supports these results. In the study by Salzer and Schallreuter involving 117 vitiligo patients, 75% had mental disorders, including depressive illness [22]. Agarwal reported a prevalence of 20% for depressive illness among vitiligo patients in London [23]. Sharma and colleagues found a prevalence of 10% in New Delhi [24], while Mattoo *et al*. reported 22% in vitiligo patients and 29% in psoriasis patients in their study [25]. In the study by Porter and colleagues investigating nervous reactions in chronic skin diseases, it was found that the impact of skin diseases on affected individuals is significant, particularly among young people and those with lower socioeconomic status, who tend to tolerate the disease less [33]. Another study by the same author involving 158 vitiligo patients indicated that between half to a quarter of these patients experienced considerable worry and anxiety when meeting strangers, interacting with the opposite sex, or wearing revealing clothing. This anxiety often stems from mental disorders such as depressive illness, with many patients feeling victimized by incomplete or negative comments from others [34]. In a study conducted by Kents *et al*. involving 668 patients with vitiligo, 35% of respondents reported an increase in the psychological effects of vitiligo in their daily lives [35].

In the present study, it was found that 46.7% of the patients exhibited moderate or severe depressive illness symptoms. The study by Esfandiarpour and Afsharzadeh reported that 38.34% of vitiligo patients had a depressed mood, with 30.83% experiencing severe depressive illness [36]. In a meta-analysis conducted by Sadeghirad *et al*., the prevalence of depressive illness in vitiligo patients in Iran was reported as 1.4% [37]. Hajebi *et al*. estimated the prevalence of depressive illness in Iranian vitiligo patients to be 15.6% [38]. Furthermore, a 10-year study by Patel *et al*. involving over 87 million inpatients across the United States found that hospitalized patients with depressive disorder had an 11.3% higher prevalence of vitiligo compared to those without it, which was reported at 6.8% [39]. Studies indicate that individuals with skin problems in prominent areas of the body may experience visible depression and low self-esteem [40]. People with attractive appearances are often judged more favorably by men and receive better treatment in social interactions with peers, friends, and strangers. In contrast, individuals

Table 3. Comparison of frequency of depressive illness in vitiligo patients according to age, gender, marital status, and Duration of vitiligo disease.

Variables		Depressive Illness		*p*-value
		Yes Number (percent %)	No Number (percent %)	
Age	<20	9 (10.8)	8 (8.4)	0.02
	20-35	42 (50.6)	55 (87.8)	
	35-50	24 (28.9)	19 (20)	
	50-65	7 (8.4)	12 (12.6)	
	65-80	1 (1.3)	1 (1.1)	
Gender	Women	58 (69.8)	37 (38.9)	0.000
	Men	25 (30.2)	58 (61.1)	
Marital status	Single	20 (24.1)	43 (45.2)	0.001
	Married	59 (71.1)	51 (53.2)	
	Other (widow or divorced)	4 (4.8)	1 (1.2)	
Duration of vitiligo disease (Years)	< 5	34 (40.9)	60 (63.1)	0.000
	5-10	23 (27.7)	20 (21.1)	
	>10	26 (31.4)	15 (15.8)	

with obvious physical defects must exert extra effort to maintain proper relationships. Their interactions with peers can feel forced and tense, with artificiality evident in both verbal and non-verbal communications [41]. There is a consensus that family members provide the most support to those with unattractive appearances due to skin diseases, as these individuals often face significant challenges when interacting with strangers [42]. Considering the relatively high prevalence of depressive illness in these patients and its destructive effects on their lives, any clinical measures that reduce the development and visibility of the disease could also offer psychological benefits. In cases like vitiligo, which is both incurable and progressive, recognizing and treating the social and psychological consequences of the disease may be useful.

The results of the present study indicated that married women had a higher prevalence of depressive illness compared to single women, with the prevalence of depressive illness being greater in women than in men and higher among married individuals than single individuals. Additionally, the rate of depressive illness based on the duration of vitiligo was highest in those with less than 5 years of history. In the study by Esfandiarpour *et al*., the prevalence of depressive illness was reported as 77% in women and 23% in men, which was statistically significant [36]. Similarly, Gajarzadeh *et al*. found that women with vitiligo suffered from mood disorders such as depressive illness more than men (70% *vs*. 60%) [43]. In Sadeghirad's study, which estimated the prevalence of depressive illness in Iran, it was found that the prevalence among women was 1.95 times higher than that in men, a trend also observed in the population of vitiligo patients [37]. The higher prevalence of depressive illness in women may be attributed to their greater emotional response to skin color changes, the societal emphasis on skin beauty for women compared to men, and the generally more emotional nature of women. The increased prevalence of depressive illness among married women could be linked to cultural factors and specific laws in the country; for instance, if a woman is diagnosed with leprosy without her husband's knowledge, the marriage can be annulled based on the country's constitution, allowing a man to divorce his wife without legal repercussions [44]. This situation highlights the mental burden faced by married women suffering from vitiligo. It appears that what was historically referred to as leprosy was not vitiligo but rather a different condition. In Chen *et al*.'s study, the prevalence of depressive illness in people with vitiligo who had a history of less than 5 years was found to be 85.4% [45]. Al-Harbi's study indicated that the highest prevalence of depressive illness occurred in individuals under 30 years of age and those with a disease duration of less than 10 years [46].

CONCLUSION AND RECOMMENDATIONS

The research findings indicate a significant prevalence of depressive illness among Vitiligo Patients, with 17.9% experiencing moderate symptoms and 28.8% having severe symptoms. This highlights the impact of depressive illness on daily functioning and quality of life, underscoring the need for effective interventions. The study revealed that married women have a higher prevalence of depressive illness compared to single women, potentially due to factors like role strain and gender expectations. Further research is necessary to explore the relationship between marital status and depressive illness in women and to develop targeted interventions. Overall, the findings contribute to understanding the demographics of depressive illness and emphasize the importance of considering factors such as gender and marital status in mental health assessments. The study calls for increased resources for mental health research and services, as well as addressing social determinants like gender inequality to improve mental health outcomes. Ongoing monitoring of depressive illness prevalence and risk factors is essential for developing effective interventions and policies.

LIMITATIONS OF THE STUDY

This study has several limitations, such as the fact that this study is cross-sectional, so its results may not be generalizable. Regarding the limitation in clinical evaluation of the disease extension, patients sent to the hospital are most probably affected by a significant disease. In addition, vitiligo is a disease that has an extent and distribution in different parts of the body and may affect people's mental health to different degrees, which degree of vitiligo was not investigated in this study. The research sample was limited, and intervening variables such as social/economic class and social support were not investigated in this research. It is suggested that in future research, the severity and areas involved in vitiligo disease should be investigated, and research with a larger sample size should be conducted to increase the power of generalization of the findings, as well as variables such as social/economic class and social support that can be found should also be taken into account.

AUTHORS' CONTRIBUTION

A.N.: Study conception and design; H.A.: Data collection; K.H., A.R.: Analysis and interpretation of results; R.R., S.D.: Draft manuscript. All authors reviewed the results and approved the final version of the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This article reports the results of a research project approved by Jiroft University of Medical Sciences with the code of ethics IR.JMU.REC.1402.058.

HUMAN AND ANIMAL RIGHTS

All human research procedures followed were in accordance with the ethical standards of the committee responsible for human experimentation (institutional and national), and with the Helsinki Declaration of 1975, as revised in 2013.

CONSENT FOR PUBLICATION

Written informed consent was obtained from the participants.

STANDARDS OF REPORTING

STROBE guidelines have been followed.

AVAILABILITY OF DATA AND MATERIALS

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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CONFLICT OF INTERESTS

The authors declare no conflict of interest, financial or otherwise.

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