

Prevalence of depression and anxiety among adults with vitiligo in a Malaysian tertiary hospital

Yen Loo Ting, MRCP, Ting Guan Ng, AdvMDerm

Department of Dermatology, Hospital Tengku Ampuan Rahimah, Klang, Selangor, Malaysia

ABSTRACT

Introduction: Vitiligo is a chronic disorder resulting in skin depigmentation with reported global prevalence of 1-2%. This disease is often accompanied by psychosocial distress owing to the cosmetic disfigurement associated with it. The primary objective of this study was to determine the prevalence of depression and anxiety among adults with vitiligo in a local tertiary hospital. In addition, this study also evaluated the association of depression and anxiety with patients' characteristics.

Materials and Methods: This cross-sectional study was conducted among vitiligo patients aged 18 years and older in Hospital Klang, Selangor between October 2021 and June 2022. Assessment instruments used were Vitiligo Area Scoring Index (VASI) and Hospital Anxiety and Depression Scale (HADS). Demographic data and clinical characteristics of vitiligo patients were recorded.

Results: Of the 100 participants, 12 (12%) and 21 (21%) had depression and anxiety, respectively. The mean depression score (HADS-depression component) was 3.4 (SD 3.4) and mean anxiety score (HADS-anxiety component) was 4.7 (SD 3.9). There were significantly higher number of patients with abnormal HADS-D score in the age group of 35-51 years ($p=0.029$), single status ($p=0.001$), with employment ($p=0.014$) and disease duration <2 years ($p=0.004$). Patients in the divorced/widowed group had a significant association with anxiety ($p=0.011$).

Conclusion: The prevalence of depression was 12% while anxiety was 21% in our cohort. Vitiligo has a significant psychosocial impact, thus clinicians should actively evaluate the mental health of these patients with the use of screening tools such as HADS and provide appropriate referrals and management.

KEYWORDS:

Depression, anxiety, psychiatric comorbidities, mental health

INTRODUCTION

Vitiligo is an acquired chronic depigmenting skin disorder, which is due to the loss of melanocytes function in the skin, hair or both. This results in depigmentation characterised by whitish macules or patches with typical sharp margin on the skin, and greying of hair.¹⁻⁴ The exact pathogenesis of vitiligo has remained unclear, although various factors such as

autoimmune, genetic and environmental factors have been thought to place a role in the development of the disease.^{1,5} It is estimated that 1-2% of the world population suffered from this condition, with an equal distribution in both genders and across all ethnic groups.^{6,7} The disease onset can occur in any age, but those whose disease initiation before the age of 20 is up to 50%.^{8,9} Unfortunately, there has not been any curative treatment for this condition although there are various treatments/interventions available to manage vitiligo such as topical corticosteroids, calcineurin inhibitors, phototherapy, and camouflage.⁶ The disease is not a life-threatening condition by itself, it nonetheless poses a great cosmetic problem, which would in turn affect a person's emotional and psychological well-being.¹⁰

Psychological distress is more pronounced in those with darker skin due to the greater contrast between their normal skin colour and their white-coloured skin lesions. Other factors that would affect patients as such are gender; women more than men, age; younger patients more than older patients, marital status; married women more than single women, and site of lesions; exposed area more than area less visible.¹¹ A meta-analysis of the prevalence and odds of depression in patients with vitiligo found a wide range prevalence between 8 and 33% across 17 studies, depending on the diagnostic tool used.¹²

Anxiety disorder, on the other hand, is characterised by the feeling of worry and uneasiness that are commonly generalised and present an overreaction to a problem that appears to be threatening.¹³ Anxiety disorder often precedes depression in response to stressors and warrants higher awareness and greater attention as it can negatively affect adherence to treatment and overall quality of life.¹⁴ As psychological disorders were found to be more common in individuals with vitiligo compared to the general population¹⁵, an assessment of psychological state should be performed during routine clinical evaluation.

There are numerous studies around the world assessing the prevalence of psychological impacts in adult patients with vitiligo. To date, there has been limited data regarding depression and anxiety symptoms in vitiligo patients in the local population. We aim to determine the prevalence of depression and anxiety among adults with vitiligo in a local tertiary hospital and secondarily to evaluate the association of depression and anxiety with patients' characteristics.

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Corresponding Author: Yen Loo Ting

Email: ting_michelle@hotmail.com; p109087@siswa.ukm.edu.my

MATERIALS AND METHODS

Study Design

This was a cross-sectional, single-centre, prospective study conducted in the Dermatology Clinic, Hospital Tengku Ampuan Rahimah, Klang, Selangor from 15 October 2021 to 30 June 2022. A total of 100 patients were recruited with the inclusion criteria of age 18 years and above, clinically diagnosed as vitiligo by a dermatologist and consented for the study. Patients with a history of psychiatric and/or physical abnormalities, chronic illness (e.g. malignancy, autoimmune disease, chronic kidney disease, diabetic with multi-organ target damage) and being significantly affected psychologically by the COVID-19 pandemic (those with numerical rating scale score of ≥ 8) were excluded from the study.

Study Procedures

Eligible patients who consented for the study were required to answer a set of questionnaires which included their demographic information (age, gender, ethnicity, marital status, education level, employment status, monthly income, disease duration, Fitzpatrick's skin type). The Hospital Anxiety and Depression Scale (HADS) was then used to evaluate the state of anxiety and depression of all subjects.

Hospital Anxiety and Depression Scale (HADS)

The HADS questionnaire is a validated tool for screening anxiety and depression. The questionnaire comprises seven questions each for anxiety and depression in which the items are scored on a four-point scale from zero (not present) to three (severe). The score for all items are then totalled up to give sub-scale scores on the HADS-A (HADS-anxiety component) and the HADS-D (HADS-depression component) from 0 to 21. Score less than 7 indicates non-cases, 8-10 as mild, 11-14 as moderate, and 15-21 as severe. For a score more than 7, it has a specificity of 0.78 and sensitivity of 0.9 for anxiety; a specificity of 0.79 and sensitivity of 0.83 for depression.¹⁶ In this study, patients will be classified as normal (0-7 of 21) and abnormal (8-21 of 21) based on their sub-scale scores in HADS-A and HADS-D.

Disease Severity Assessment

Vitiligo Area Scoring Index (VASI)

The VASI was used to measure the disease severity in vitiligo patients. It is a quantitative scale which estimates the overall area of vitiligo patches and the degree of macular repigmentation within these patches. In VASI, the score for 5 separate regions (hands, upper extremities, trunk, lower extremities, and feet) are summed and provide a severity score ranging from 0 to 100, with the higher score indicating more severe disease and vice versa. The face and neck areas are not included in the overall evaluation in VASI but can be assessed separately.

Body Surface Area (BSA)

The "rule of 9s" was used to estimate body surface area (BSA) involved with vitiligo lesions.

Study Analysis

Statistical analyses were performed using Statistical Package for Social Sciences version 22 (SPSS, IBM Corporation,

Chicago, IL, USA). Descriptive statistics for continuous variables were expressed as mean \pm standard deviation (SD) while categorical variables as frequencies and percentages. Comparisons involving categorical data were performed using the chi-square test and Fisher's exact test. Associations between continuous variables were analysed using Kendall tau-b as normality and linearity assumptions were not met. Particularly, the correlation coefficients between 0.1 and 0.25 were considered low, while the value between 0.26 and 0.5 was considered moderate and those over 0.5 were considered high. A multivariate analysis was carried out using multiple logistic regression to determine the independent associated factors of anxiety and depression. Statistical significance was set at $p < 0.05$.

Ethical Approval

This study was approved by the Medical Research and Ethics Committee, Ministry of Health, Malaysia (NMRR-21-1666-59815).

RESULTS

Demographic Characteristics

A total of 100 patients with vitiligo were included in this study. The demographic data and patient characteristics are shown in Table I. Out of 100 study subjects, 53 (53%) were females and 47 (47%) were males with a mean age of 47 years (SD 16.8). Majority of the patients were of Malay ethnicity, 44 (44%), followed by Indian, 40 (40%), Chinese, 14 (14%) and others, 2 (2%). 70 (70%) patients were married, 29 (29%) single and 1 (1%) was divorced/widowed. Regarding education background, 54 (54%) patients completed secondary school, 40 (40%) had tertiary education, 4 (4%) only had primary education and 2 (2%) patients never had formal education. 50 (50%) patients were employed and the remaining were unemployed. Our data revealed 62 (62%) patients came from the lower income group, 28 (28%) patients from the middle-income group and 10 (10%) were from the high-income group.

Clinical Characteristics

As shown in Table I, out of 100 patients, most (78 patients, 78%) had vitiligo for more than 2 years duration and the remaining 22 (22%) patients were diagnosed with vitiligo for less than 2 years. With regards to the type of vitiligo, most patients (60, 60%) had the generalised type, followed by 31 (31%) with acrofacial, 6 (6%) with focal and 3 (3%) with segmental vitiligo. Facial involvement was seen in 74 (74%) patients and the remaining had no facial lesions. 20 (20%) patients had genital vitiligo and 80 (80%) patients did not have genital lesions. Only 26 (26%) out of 100 patients used cosmetic camouflage for their vitiligo lesions. As for disease severity, 47 (47%) patients had BSA% involvement of 1%-5%, followed by 33 (33%) patients with BSA involvement more than 5% and 20 (20%) patients with less than 1% BSA involvement. The mean VASI score was 5.49 (SD8.74). Most (66 patients, 66%) received topical treatment alone with the most common skin type being Fitzpatrick's type IV (42 patients, 42%) as all of our patients were of Asian origin.

Depression and Vitiligo

The factors associated with depression in our study

Table I: Demographic and clinical characteristics of study participants

Patient characteristics	Total (n=100), n(%)
Gender	
Male	47 (47)
Female	53 (53)
Age (years), mean (SD)	47 (16.8)
Age group (years)	
18-34	25 (25)
35-51	29 (29)
52-68	36 (36)
69-85	10 (10)
Ethnicity	
Malay	44 (44)
Chinese	14 (14)
Indian	40 (40)
Others	2 (2)
Marital status	
Single	29 (29)
Married	70 (70)
Divorced/widowed	1 (1)
Education	
None	2 (2)
Primary	4 (4)
Secondary	54 (54)
Tertiary	40 (40)
Employment	
Employed	50 (50)
Unemployed	50 (50)
Monthly income (RM)	
No or Low (0-3000)	62 (62)
Middle (3001-5000)	28 (28)
High (>5000)	10 (10)
Disease duration	
<2 years	22 (22)
>2 years	78 (78)
Involvement of face	
Yes	74 (74)
No	26 (26)
Involvement of genital	
Yes	20 (20)
No	80 (80)
Use of camouflage	
Yes	26 (26)
No	74 (74)
Types of vitiligo	
Segmental	3 (3)
Generalised	60 (60)
Acrofacial	31 (31)
Focal	6 (6)
Extent of lesions (BSA, %)	
<1%	20 (20)
1%-5%	47 (47)
>5%	33 (33)
Treatment modalities	
Topical only	66 (66)
Topical + systemic	3 (3)
Topical + phototherapy	27 (27)
Topical + systemic + phototherapy	3 (3)
Others	1 (1)
Fitzpatrick's skin types	
III	9 (9)
IV	42 (42)
V	26 (26)
VI	23 (23)
VASI score, mean (SD)	5.49 (8.74)

Table II: Factors associated with depression

Demographic characteristics	Depression (HADS-D)		Sig. (p-value)
	Normal	Abnormal	
Age group ^b			
18-34 years	21 (84.0%)	4 (16.0%)	0.029*
35-51 years	22 (75.9%)	7 (24.1%)	
52-68 years	35 (97.2%)	1 (2.8%)	
69-85 years	10 (100.0%)	0 (0.0%)	
Ethnic ^b			
Malay	39 (88.6)	5 (11.4%)	0.366
Chinese	12 (85.7%)	2 (14.3%)	
Indian	36 (90.0%)	4 (10.0%)	
Others	1 (50.0%)	1 (50.0%)	
Gender ^a			
Male	41 (87.2%)	6 (12.8%)	0.824
Female	47 (88.7%)	6 (11.3%)	
Marital ^b			
Single	20 (69.0%)	9 (31.0%)	0.001**
Married	67 (95.7%)	3 (4.3%)	
Divorced/widowed	1 (100.0%)	0 (0.0%)	
Education ^b			
None	2 (100.0%)	0 (0.0%)	0.795
Primary	4 (100.0%)	0 (0.0%)	
Secondary	46 (85.2%)	8 (14.8%)	
Tertiary	36 (90.0%)	4 (10.0%)	
Employment ^a			
Employed	40 (80.0%)	10 (20.0%)	0.014*
Unemployed	48 (96.0%)	2 (4.0%)	
Monthly income ^b			
No income	21 (91.3%)	2 (8.7%)	0.897
<RM1000	5 (100.0%)	0 (0.0%)	
RM1001-RM3000	28 (82.4%)	6 (17.6%)	
RM3001-RM5000	25 (89.3%)	3 (10.7%)	
RM5001-RM10000	8 (88.9%)	1 (11.1%)	
>RM10000	1 (100.0%)	0 (0.0%)	
Disease duration ^b			
<2 years	15 (68.2%)	7 (31.8%)	0.004*
>2 years	73 (93.6%)	5 (6.4%)	
Clinical characteristics			
Involvement of face ^b			
Yes	63 (85.1%)	11 (14.9%)	0.177
No	25 (96.2%)	1 (3.8%)	
Involvement of genital ^b			
Yes	15 (75.0%)	5 (25.0%)	0.060
No	73 (91.3%)	7 (8.8%)	
Use of camouflage ^b			
Yes	23 (88.5%)	3 (11.5%)	1.000
No	65 (87.8%)	9 (12.2%)	
Types of vitiligo ^b			
Segmental	3 (100.0%)	0 (0.0%)	0.614
Generalized	51 (85.0%)	9 (15.0%)	
Acrofacial	29 (93.5%)	2 (6.5%)	
Focal	5 (83.3%)	1 (16.7%)	
Extent of lesion ^b			
<1%	19 (95.0%)	1 (5.0%)	0.612
1%-5%	41 (87.2%)	6 (12.8%)	
>5%	28 (84.8%)	5 (15.2%)	
Treatments ^b			
Topical only	58 (87.9%)	8 (12.1%)	0.004*
Topical + systemic	0 (0.0%)	3 (100.0%)	
Topical + photo-therapy	26 (96.3%)	1 (3.7%)	
Topical + systemic + photo-therapy	3 (100.0%)	0 (0.0%)	
Others	1 (100.0%)	0 (0.0%)	
Fitzpatrick's skin types ^b			
III	7 (77.8%)	2 (22.2%)	0.401
IV	37 (88.1%)	5 (11.9%)	
V	22 (84.6%)	4 (15.4%)	
VI	22 (95.7%)	1 (4.3%)	

*p< 0.05

**p<0.001

^aChi Square^bFisher Exact test

Table III: Factors associated with anxiety

Demographic characteristics	Anxiety (HADS-A)		Sig. (p-value)
	Normal	Abnormal	
Age group ^b			
18-34 years	20 (80.0%)	5 (20.0%)	0.204
35-51 years	19 (65.5%)	10 (34.5%)	
52-68 years	31 (86.1%)	5 (13.9%)	
69-85 years	9 (90.0%)	1 (10.0%)	
Ethnic ^b			
Malay	35 (79.5%)	9 (20.5%)	0.723
Chinese	11 (78.6%)	3 (21.4%)	
Indian	32 (80.0%)	8 (20.0%)	
Others	1 (50.0%)	1 (50.0%)	
Gender ^a			
Male	40 (85.1%)	7 (14.9%)	0.158
Female	39 (73.6%)	14 (26.4%)	
Marital ^b			
Single	19 (65.5%)	10 (34.5%)	0.011*
Married	60 (85.7%)	10 (14.3%)	
Divorced/widowed	0 (0.0%)	1 (100.0%)	
Education ^b			
None	2 (100.0%)	0 (0.0%)	0.809
Primary	3 (75.0%)	1 (25.0%)	
Secondary	41 (75.9%)	13 (24.1%)	
Tertiary	33 (82.5%)	7 (17.5%)	
Employment ^a			
Employed	38 (76.0%)	12 (24.0%)	0.461
Unemployed	41 (82.0%)	9 (18.0%)	
Monthly income ^b			
No income	19 (82.6%)	4 (17.4%)	0.542
<RM1000	4 (80.0%)	1 (20.0%)	
RM1001-RM3000	23 (67.6%)	11 (32.4%)	
RM3001-RM5000	24 (85.7%)	4 (14.3%)	
RM5001-RM10000	8 (88.9%)	1 (11.1%)	
>RM10000	1 (100.0%)	0 (0.0%)	
Disease duration ^b			
<2 years	14 (63.6%)	8 (36.4%)	0.072
>2 years	65 (83.3%)	13 (16.7%)	
Clinical Characteristics			
Involvement of face ^a			
Yes	59 (79.7%)	15 (20.3%)	0.762
No	20 (76.9%)	6 (23.1%)	
Involvement of genital ^b			
Yes	15 (75.0%)	5 (25.0%)	0.759
No	64 (80.0%)	16 (20.0%)	
Use of camouflage ^a			
Yes	21 (80.8%)	5 (19.2%)	0.797
No	58 (78.4%)	16 (21.6%)	
Types of vitiligo ^b			
Segmental	1 (33.3%)	2 (66.7%)	0.070
Generalized	45 (75.0%)	15 (25.0%)	
Acrofacial	28 (90.3%)	3 (9.7%)	
Focal	5 (83.3%)	1 (16.7%)	
Extent of lesion ^b			
<1%	15 (75.0%)	5 (25.0%)	0.687
1%-5%	39 (83.0%)	8 (17.0%)	
>5%	25 (75.8%)	8 (24.2%)	
Treatment ^b			
Topical only	50 (75.8%)	16 (24.2%)	0.472
Topical + systemic	2 (66.7%)	1 (33.3%)	
Topical + photo-therapy	24 (88.9%)	3 (11.1%)	
Topical + systemic + photo-therapy	2 (66.7%)	1 (33.3%)	
Others	1 (100.0%)	0 (0.0%)	
Fitzpatrick's Skin Types ^b			
III	6 (66.7%)	3 (33.3%)	0.503
IV	34 (81.0%)	8 (19.0%)	
V	19 (73.1%)	7 (26.9%)	
VI	20 (87.0%)	3 (13.0%)	

*p< 0.05

^aChi Square

^bFisher Exact test

Table IV: Logistic regression analysis of variables associated with HADS-D

Variables	Adjusted OR [95% CI]	p-value
Employment		
Employed	Reference	0.063
Unemployed	0.203 [0.038,1.087]	
Involvement of face		
Yes	Reference	0.244
No	0.272 [0.031, 2.431]	
Involvement of genital		
Yes	Reference	0.110
No	0.300 [0.069,1.315]	
Disease duration		0.006*
<2 years	Reference	
>2 years	0.140 [0.034,0.575]	

Treatment was excluded as it has wide CI.

Table V: Logistic regression analysis of variables associated with HADS-A

Variables	Adjusted odd ratio [95% CI]	p-value
Gender		
Male	Reference	0.246
Female	1.889 [0.645,5.530]	
Disease duration		0.048*
<2years	Reference	
>2years	0.308 [0.096,0.990]	
Vitiligo		
Segmental	Reference	0.193
Generalised	0.178 [0.013,2.400]	
Acrofacial	0.045 [0.003,0.767]	0.032*
Focal	0.161 [0.006,4.527]	0.283

Type of treatment was excluded due to collinearity issues (wide CI).

participants are summarised in Table II. The overall mean depression score (HADS-D) for all study subjects (n=100) was 3.4 (SD 3.4). 88 (88%) patients scored 'normal' and 12 (12%) scored 'abnormal' in HADS-D. There was a statistically significant higher number of patients with abnormal HADS-D score in the age group of 35-51 years (24.1%, n=7), followed by 18-34 years (16%, n=4) and 52-68 years (2.8%, n=1), with p=0.029. More single patients (31%, n=9) were found to have abnormal HADS-D score as compared to patients who were married (4.3%, n=3), with a significant p-value of 0.001. On the other hand, there were statistically significant relationships between depression and employment status. Abnormal HADS-D score were recorded more frequently in patients with employment (20%, n=10) as compared to unemployed patients (4%, n=2), with p-value 0.014.

As for clinical characteristics (Table II), a significantly higher number of patients with vitiligo for >2 years duration (31.8%, n=7) (p=0.004) were found to have depression. In addition, those who were on topical plus systemic treatment (100%, n=3) also reported significant abnormal HADS-D score (p=0.004).

From our analysis of demographic characteristics (Table II), there were no statistically significant relationships between ethnicity, gender, education level and income level with depression in this cohort. Other clinical characteristics like type of vitiligo, facial and genital involvement, use of

camouflage, BSA (%) involvement and Fitzpatrick's skin types were also found to have negative relationships with depression.

Anxiety and Vitiligo

The factors associated with anxiety in our study participants are summarised in Table III. The overall mean anxiety score (HADS-A) for all study subjects (n=100) was 4.7 (SD 3.9). 79 (79%) patients scored 'normal' and 21 (21%) scored 'abnormal' in HADS-A. Only marital status was significantly associated with anxiety (p=0.011) in this cohort, in which a higher number of patients with abnormal HADS-A score were found in the divorced/widowed group (100%, n=1), followed by single patients (34.5%, n=10), and married patients (14.3%, n=10).

From our analysis of demographic characteristics (Table III), there were no statistically significant relationships between age, ethnicity, gender, education level, employment status and income level with anxiety in this cohort. All clinical characteristics analysed in this study, namely the disease duration, type of vitiligo, facial and genital involvement, use of camouflage, BSA (%) involvement, treatment and Fitzpatrick's skin types were found to have no significant association with anxiety.

Anxiety and Depression with VASI score

A correlation study was run to further assess the association between VASI score with depression and anxiety among the

patients. Non-parametric, i.e. Kendall tau-b, was chosen as alternative as the data do not meet normal assumptions and there is no linearity between the variables.

The correlation between the VASI score and the total anxiety score ($r=0.092$, $p=0.200$) and the correlation between the VASI score and the total depression score ($r=0.094$, $p=0.204$) were very weak and statistically insignificant.

Predictors of Depression in Vitiligo Patients

A multiple logistic regression was employed to check on the significant predictors of depression within the group of vitiligo patients (Table IV). The final variables that were fit to the model were chosen using simple logistic regression (SLR) and out of the five(s) variables, only one predictor came out as significant.

By having longer years of disease duration (>2 years), it lowers the odds of suffering from depression by 0.140 time, while controlling for other parameters (Table IV). This finding is found to be significant.

Those that do not have vitiligo involvement of the face, have 0.272 times odd lower suffering from a depression while controlling for other parameters, but this finding is not a significant predictor (Table IV).

Those that do not have involvement of genital, have 0.300 times odd lower of suffering from a depression while controlling for other parameters, but this is found to be insignificant (Table IV).

Unemployed patients have 0.203 times odd lower suffering from depression compared to employed while controlling for other parameters, nevertheless it was found to be insignificant as well (Table IV).

Predictors of Anxiety in Vitiligo patients

A multiple logistic regression was employed to check on the significant predictors of anxiety within the group of vitiligo patients (Table V). The final variables that were fit to the model were chosen using SLR and out of the four(s) variables, only one predictor came out as significant.

Participants with a disease duration of more than 2 years have a 0.308 lower odds of getting anxiety compared to those with a shorter duration of disease (Table V). This finding was found to be significant.

Females have a 1.889 times higher odds of suffering from anxiety compared to males, while controlling for other parameters (Table V). However, this finding is insignificant.

Vitiligo with acrofacial type have a significant 0.032 lower odds of suffering from anxiety as compared to segmental type, while controlling for other parameters (Table V). The other vitiligo types are not a significant predictor for anxiety.

DISCUSSION

Vitiligo is a chronic disorder causing skin depigmentation which can result in a profound psychosocial impairment even though this disease is substantially asymptomatic.

Results from qualitative studies supported that vitiligo can cause huge psychological impact on people.¹⁷ This could be due to the stigma associated with the visibility of vitiligo, in addition to unpredictable prognosis and lack of cure which impact on daily social interactions.¹⁸

The prevalence of depression in our study was 12%, and for anxiety 21% in our patients with vitiligo. These results were lower than the systematic review done by Osinubi et al. which revealed a pooled prevalence of 29% for depression and 33% for anxiety.¹⁵ However, there was high heterogeneity between the included studies in this systematic review where multiple different screening tools were being used. In contrast, our prevalence of depression and anxiety was comparable to the study done by Alshahwan et al. in Saudi Arabia which reported 14.1% and 26.6% for depression and anxiety, respectively.¹⁹ They used the same screening tools (HADS questionnaire) as with our study. A study conducted in our neighbouring country, Singapore, in 2011 also found 17.2% of their vitiligo patients to be depressed.²⁰ This finding closely matched our results owing to the fact that we have the same diversity of patients (in terms of race, cultures and skin types) as those in Singapore.

Our study found that vitiligo patients in the age group of 35–51 years ($p=0.029$) and being employed ($p=0.014$) were significantly associated with depression. This group are in their productive age, having to work and meet other people in the course of their daily job, would probably be more affected psychologically. The same study done in Singapore also suggested higher risk of depression in their vitiligo patients who were younger than 50 years old.²⁰ This finding was consistent with other international studies showing that younger patients were more prone to depression after being diagnosed with vitiligo when compared to the older patients.^{21,22}

In our study, we found that single patients had a significant association with depression ($p=0.001$). This could be due to the lack of emotional support from a partner or spouse after being diagnosed with a disease which runs a chronic course and with no promising treatment or cure. This is consistent with the findings of Alharbi et al.²³ On the other hand, marital status was found to have no significant association with depression in vitiligo patients in Singapore.²⁰

Undoubtedly, recent disease diagnosis and being on more than one treatment modalities were associated with depression. Results of our study found a significant association with depression when having the disease for less than 2 years duration ($p=0.004$) and using both topical plus systemic treatment ($p=0.004$). This could be explained by uncertainties towards the nature of the disease and availability of therapeutic options when one is new to the disease. Being on more than one treatment modalities also implies a more severe or extensive disease. Our finding is consistent with a similar study done in Saudi Arabia.²³

With regards to the association of anxiety with vitiligo, only marital status showed a significant association in our study. Divorced or widowed patients ($p=0.011$) had significant anxiety and this was followed by patients with single status. A systematic review done by Ezzedine et al., found

statistically significant higher psychosocial burden among unmarried or single relationship status vitiligo patients.²⁴

It was surprising to find that other clinical characteristics such as visible lesion sites, Fitzpatrick's skin types, extent of lesions and VASI scores did not show significant relationships with depression and anxiety. One would expect patients with lesions at exposed sites, darker skin types and extensive vitiligo lesions to suffer from depressive and anxiety symptoms.²⁵ Our findings could be explained by the fact that this study was conducted during the peak of the COVID-19 pandemic in year 2021 to 2022 whereby our country was put under restricted movement control order to curb the spread of COVID-19. This situation had confined majority of Malaysians to their homes, unless there were dire needs to be out and about. By not having physical interactions with others, these could have much reduced the depression and anxiety in relation to the characteristics of vitiligo mentioned above.

Finally, our multiple logistic regression analyses showed lower odds of having depression and anxiety when patients have a disease duration of more than 2 years. On the other hand, Ajose et al. found that vitiligo patients suffer greater psychomorbidity when the disease duration was more than 2 years, likely due to the subsequent realisation of the ineffectiveness of available treatment options.²⁶ Interestingly, our multiple logistic regression analyses also revealed lesser odds of developing anxiety in the group with acrofacial vitiligo subtype. Perhaps, the compulsory rules of wearing face masks and being confined to homes during the pandemic could be possible explanations.

Our study has a number of limitations, including its cross-sectional nature and the lack of a control group. Thus, we were only able to evaluate the association between psychosocial burden and vitiligo, but not causation. The sample size was relatively small as well due to lower patient's attendance at the dermatology clinic during the national restricted movement control order at the height of the pandemic. A longer study period with the recruitment of more patients would be more accurate to evaluate the impact of vitiligo on mental health. In addition, having an age and sex-matched control group would help to better assess the effect of vitiligo on the psychosocial comorbidities.

Recommendations

Assessment of psychological state during clinical evaluation of patients with vitiligo is essential, as also suggested by the British Association of Dermatology guidelines.²⁷ The incorporation of screening tools such as HADS in our daily practice should be considered and those found to have abnormal anxiety or depression scores (HADS-A or HADS-D ≥ 8) should be referred for psychological assessment and treatment. Multidisciplinary approach in treating vitiligo patients with significant psychosocial burden, especially working closely with counsellor and psychiatrist, is very important to reduce disease-related anxiety and stress and thus enhancing the efficacy of therapy. There is also a need for community-based intervention by allied healthcare professionals that aims at increasing society's awareness and acceptance of vitiligo which in turn could reduce stigmatisation to vitiligo patients. Formation of a vitiligo support group supervised by trained nurses will be helpful in

delivering reliable information regarding vitiligo in addition to the provision of mutual support among participants.

CONCLUSION

This study demonstrated that vitiligo has a significant impact on the psychosocial well-being of patients. The prevalence of depression was 12% and anxiety was 21% in our cohort. Factors that significantly affect the mental health of patients with vitiligo include younger age group, single or separated relationship status, employed, shorter disease duration, and being on more than one treatment modalities. It must be emphasised that early recognition and provision of psychological treatment to these patients may lead to better treatment compliance and efficacy.

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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