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Psychiatric Associations of Vitiligo by Race: A Retrospective Cohort Analysis Using a Large Multicenter Database

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Introduction

Vitiligo is a chronic skin condition characterized by pigment loss [1]. In a hospital-based cross-sectional analysis of 100 vitiligo patients, 55% had a psychiatric comorbidity [2]. Since distribution of psychiatric comorbidities among vitiligo patients across racial groups remains poorly understood, we aimed to analyze these associations using a large multicenter database.

Findings

TriNetX research database was searched on 12 April 2024 for vitiligo patients ≥18 years. Propensity score-matching by age and sex was performed between each demographic cohort. Odds ratios (OR) of developing psychiatric conditions were calculated by race ≥1 day following vitiligo diagnosis.

A total of 101,823 vitiligo patients, including 13,408 Black, 7,106 Asian, and 443 Native American vitiligo patients, were included. After matching, cohorts included 12,800 Black, 6,849 Asian, and 299 Native American vitiligo patients. Black vs. white vitiligo patients had increased odds of developing schizophrenia (OR: 4.31; 95% CI: 2.50–7.43), substance use disorder (OR: 2.14; 95% CI: 1.63-2.80), bipolar disorder (OR: 1.90; 95% CI: 1.43-2.54), suicidal ideation (OR: 1.52; 95% CI: 1.16-1.99), and adjustment disorder (OR: 1.24; 95% CI: 1.11-1.39) (Table 1). Asian vs. white vitiligo patients had lower odds of developing sleep disorders (OR: 0.85; 95% CI: 0.76-0.96), suicidal ideation (OR: 0.63; 95% CI: 0.39-0.99), anxiety (OR: 0.54; 95% CI: 0.49-0.61), adjustment disorder (OR: 0.52; 95% CI: 0.44-0.63), personality disorders (OR: 0.45; 95% CI: 0.21-0.96), depressive episodes (OR: 0.52; 95% CI: 0.45-0.60), eating disorders (OR: 0.37; 95% CI: 0.18-0.76), bipolar disorder (OR: 0.29; 95% CI: 0.15-0.56), and substance use disorder (OR:

Table 1. Incidence and Odds of Developing Psychiatric Comorbidities in Vitiligo Patients Stratified by Racial Group.

Cohort	ICD-10	Incidence		OR (95% CI)
Black (N=12,800) vs. white (N=12,800)		Black	White	
Depressive episode	F32	9.13%	9.16%	1.00 (0.91, 1.09)
Anxiety	F40-48	14.20%	16.22%	**0.86 (0.79, 0.92)**
Sleep disorder	G47	12.25%	11.79%	1.05 (0.96, 1.13)
Substance use disorder	F19	1.30%	0.61%	**2.14 (1.63, 2.80)**
Adjustment disorder	F43	6.19%	5.05%	**1.24 (1.11, 1.39)**
Bipolar disorder	F31	1.06%	0.56%	**1.90 (1.43, 2.54)**
Suicidal ideation	R45.85	1.03%	0.68%	**1.52 (1.16, 1.99)**
Eating disorder	F50	0.37%	0.38%	0.96 (0.64, 1.43)
Personality disorder	F60	0.32%	0.35%	0.93 (0.61, 1.43)
Schizophrenia	F20	0.54%	0.13%	**4.31 (2.50, 7.43)**
Asian (N=6,849) vs. white (N=6,849)		**Asian**	**White**	
Depressive episode	F32	4.68%	8.65%	**0.52 (0.45, 0.60)**
Anxiety	F40-48	9.38%	16.00%	**0.54 (0.49, 0.61)**
Sleep disorder	G47	9.97%	11.52%	**0.85 (0.76, 0.96)**
Substance use disorder	F19	0.15%	0.55%	**0.27 (0.13, 0.54)**
Adjustment disorder	F43	2.73%	5.08%	**0.52 (0.44, 0.63)**
Bipolar disorder	F31	0.16%	0.56%	**0.29 (0.15, 0.56)**
Suicidal ideation	R45.85	0.42%	0.68%	**0.63 (0.39, 0.99)**
Eating disorder	F50	0.15%	0.40%	**0.37 (0.18, 0.76)**
Personality disorder	F60	0.15%	0.32%	**0.45 (0.21, 0.96)**
Schizophrenia	F20	0.16%	0.15%	**1.10 (0.47, 2.60)**
Native American (N=299) vs. white (N=299)		**Native**	**White**	
Depressive episode	F32	9.09%	13.76%	0.63 (0.36, 1.08)
Anxiety	F40-48	13.60%	15.23%	0.88 (0.53, 1.45)
Sleep disorder	G47	11.02%	7.63%	1.50 (0.82, 2.74)
Substance use disorder	F19	3.43%	3.36%	1.02 (0.42, 2.49)
Adjustment disorder	F43	4.97%	7.61%	0.63 (0.32, 1.27)
Bipolar disorder	F31	0%	3.37%	n/a
Suicidal ideation	R45.85	3.37%	3.40%	0.99 (0.41, 2.41)
Eating disorder	F50	0%	0%	n/a
Personality disorder	F60	0%	3.36%	n/a
Schizophrenia	F20	3.38%	0%	n/a

*n/a denotes categories without enough patients.

0.27; 95% CI: 0.13-0.54) (Table 1). Native American vs. white vitiligo patients had no significant odds of developing psychiatric comorbidities (Table 1).

We found that Black vs. white vitiligo patients had higher odds of developing several psychiatric comorbidities. Similarly, a case-control study of 327 Black pediatric vitiligo patients and 981 controls found that case vs. control patients were more likely to have substance use disorder (OR: 2.67; 95% CI: 1.26-5.67) and suicidal ideation (OR: 2.88; 95% CI: 1.38-6.03) [3]. A retrospective cohort study of 7224 vitiligo patients, including 170 Black vitiligo patients, found that Black vs. white vitiligo patients were more likely to develop new-onset depression (OR: 1.56; 95% CI: 1.03-2.37) [4], differing from our findings, which may have been due to our >75-fold larger cohort of Black patients.

We found that Asian vs. white vitiligo patients had lower odds of developing several psychiatric conditions. A cohort study of 1432 Taiwanese vitiligo patients found that vitiligo vs. control patients were more likely to develop psychiatric disorders (OR: 2.93; 95% CI: 2.65-3.24) [5]. This study compared Taiwanese vitiligo patients to healthy controls, whereas ours examined differences between Asian and white

vitiligo patients. An emphasis on family interdependence and ethnic identity within Asian communities may promote mental health, which may have contributed to our findings [6]. Additionally, members of holistic cultures, including Buddhism, Confucianism, Hinduism, and Taoism, may have more moderate expectations of ideal visions of happiness compared to non-holistic cultures [6]. However, Asian individuals with vitiligo may experience greater psychiatric comorbidity than the general population.

Limitations include potential miscoding and inability to assess disease severity. TriNetX's statistical analysis can only perform propensity-score matching.

Conclusion

Black vs. white vitiligo patients had increased odds of having several psychiatric comorbidities, whereas Asian vs. white vitiligo patients had lower odds. Prospective studies are needed to reproduce these results. We recommend that dermatologists screen for psychiatric comorbidities in all vitiligo patients, with appropriate referrals to psychiatry.

Ethical Considerations: This retrospective study is exempt from informed consent. The data reviewed are a secondary analysis of existing data; the study did not involve intervention or interaction with human subjects, and data were de-identified per the de-identification standard defined in Section §164.514(a) of the HIPAA Privacy Rule. The process by which the data are de-identified is attested to through a formal determination by a qualified expert as defined in Section §164.514(b)(1) of the HIPAA Privacy Rule. This formal determination by a qualified expert was updated on December 2020.

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