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Acne, sexual orientation, and mental health among young adults in the United States: A population-based, cross-sectional study

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To the Editor:

Acne causes physical disfigurement and is associated with an increased risk for depression and suicidal ideation.¹ Compared with heterosexuals, sexual minorities report higher rates of depression, suicidal ideation, and body image issues.^{2,3} Consequentially, sexual minorities with acne may be a group at high risk for development of mental health problems. This study assesses the impact of sexual orientation on the relationship between acne and mental health.

This cross-sectional study utilized publicly available data from Wave III of the National Longitudinal Study on Adolescent to Adult Health and included 4094 heterosexual and 564 sexual minority U.S. adults aged 18 to 28 years. Acne was defined as use of a prescription acne medication in the last year. Among all study participants (by acne status) and in analyses stratified by acne status (by sexual orientation), we calculated the unadjusted prevalence rates and unadjusted and multivariate-adjusted prevalence odds ratios for all primary outcomes, including any history of depression and recent clinical depression, suicidal ideation, antidepressant use, and psychological counseling. This study was exempt from institutional review board review. Statistical analyses were performed using Stata software (version 13.1, StataCorp, College Station, TX).

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Conflicts of interest: None declared. Dr Mansh had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Drs Gao and Mansh were responsible for drafting the manuscript, and Drs Wei and Mansh were responsible for statistical analysis. All the authors were responsible for the study concept and design; acquisition, analysis, and interpretation of data; critical revision of the manuscript for important intellectual content; and study supervision.

Participant characteristics by sexual orientation are presented in Table I. Among all participants, acne was associated with increased odds of reporting a history of depression and suicidal ideation. Both among those with and without acne, compared with heterosexuals, sexual minorities had increased odds of reporting all primary outcomes. The relative increased odds of suicidal ideation for sexual minorities compared with heterosexuals was higher (P interaction = .04) among those with acne (35.4% vs 7.8% [adjusted odds ratio = 8.05]) compared with those without (15.3% vs 5.3% [adjusted odds ratio = 2.97]) (Table II).

This study suggests that acne may be associated with depression and suicidal ideation among young adults. Sexual minorities with acne represent a group at particularly high risk, with more than one-third indicating a history of depression and suicidal ideation. Physical disfigurement likely contributes to depression and social impairment among patients with acne.¹ Elevated baseline rates of depression² and the emphasis on body image and appearance³ among sexual minorities may contribute to these differences.

Study strengths include the use of a nationally representative data set. Limitations include self-reported data, age of data, missing data on type of acne medications (including over-the-counter medications), and reduced statistical power owing to the small number of sexual minorities. Despite the increased odds of reporting a history of depression and recent suicidal ideation, there was no association between acne and current symptoms of clinical depression. This may be explained by increased utilization of psychological care by individuals with acne, particularly sexual minorities, which has been previously shown to improve mood symptoms but not reduce suicidal ideation.⁴ Furthermore, treatment of acne improves mood symptoms, but data on treatment length or current acne severity were not available.

Dermatologists should be aware of the increased risk for mental health issues among patients with acne, particularly sexual minorities with acne. Validated screening tools to assess sexual orientation⁵ and depression⁶ among patients with acne may identify at-risk individuals and expedite referral for psychological care. Prospective studies are needed to further explore the relationship between acne, sexual orientation, and mental health.

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REFERENCES

1. Halvorsen JA, Stern RS, Dalgard F, Thoresen M, Bjertness E, Lien L. Suicidal ideation, mental health problems, and social impairment are increased in adolescents with acne: a population-based study. *J Invest Dermatol*. 2011;131(2): 363–370. [PubMed: 20844551]
2. King M, Semlyen J, Tai SS, et al. A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry*. 2008;8: 70–87. [PubMed: 18706118]
3. Morrison MA, Morrison TG, Sager CL. Does body satisfaction differ between gay men and lesbian women and heterosexual men and women? A meta-analytic review. *Body Image*. 2004;1(2):127–138. [PubMed: 18089146]

4. Pompili M, Serafini G, Innamorati M, et al. Antidepressants and suicide risk: a comprehensive overview. *Pharmaceuticals (Basel)*. 2010;3(9):2861–2883. [PubMed: 27713380]
5. Bradford J, Cahill S, Grasso C, Makadon H. *How to Ask about Sexual Orientation and Gender Identity in Clinical Settings*. Boston, MA: The Fenway Institute; 2012
6. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: validity of a brief depression severity measure. *J Gen Intern Med*. 2001;16(9): 606–613. [PubMed: 11556941]

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Table I.

Participant characteristics by sexual orientation, young adult men and women aged 18-28 years, National Longitudinal Study on Adolescent to Adult Health (Wave III, 2000-2001)

Characteristic *	Heterosexual [†] n = 4094 [§]	Sexual minority [†] N = 564 [§]	P value [‡]
Age			
Mean (SE)	21.8 (0.12)	21.7 (0.15)	.40
Sex			
Female	53.1 (0.9)	31.4 (2.4)	
Male	46.9 (0.9)	68.6 (2.4)	<.001
Race			
White, non-Hispanic	69.4 (3.1)	72.3 (3.4)	
White, Hispanic	7.5 (1.3)	8.1 (1.6)	
African American	17.0 (2.5)	11.2 (1.7)	
Asian or Pacific Islander	3.5 (0.9)	4.6 (1.2)	
Native American	2.6 (0.6)	3.7 (1.1)	.02
Education level			
<High school	13.4 (1.1)	16.4 (2.1)	
High school	32.9 (1.4)	27.8 (2.9)	
Some college	38.6 (1.3)	40.7 (2.5)	
4-y college degree	15.1 (1.5)	15.1 (2.5)	.19
Insurance status			
Insured	76.7 (1.1)	72.1 (2.2)	.03
Acne ^{//}			
Yes	3.9 (0.4)	6.2 (1.1)	.03

SE, Standard error.

* Reporting mean or percentage (+/- standard error) values from the weighted sample.

[†] Heterosexuals were defined as those indicating opposite-sex attraction and "100% heterosexual" sexual orientation. Sexual minorities were defined as those indicating same-sex attraction or sexual orientation other than "100% heterosexual."

[‡] Statistical significance determined with likelihood ratio tests (categorical variables) or adjusted Wald tests (continuous variables).

[§] Unweighted sample sizes for reference.

^{//} Acne was defined as reporting having taken a prescription acne medication in the last 12 months.

Table 2.

Unadjusted Prevalence and Multivariate Adjusted Prevalence Odds Ratio of Primary Outcomes by Acne Status and by Sexual Orientation Stratified by Acne Status, Young Adult Men and Women Aged 18-28 Years, National Longitudinal Study on Adolescent to Adult Health (Wave III, 2000-2001).

	All Participants N=4,658*				Stratified Analysis			
	Acne (-) N=4,456*		Acne (+) N=202*		Acne (-) N=529*		Acne (+) N=564*	
		p-value			Heterosexual N=3,927*	Sexual Minority N=529*	Heterosexual N=167*	Sexual Minority N=35*
History of Depression, Ever								
Prevalence	11.3 (10.1-12.7)	16.8 (11.9-23.2)			9.4 (8.3-10.8)	25.2 (20.7-30.3)	12.5 (7.4-20.3)	37.5 (24.0-53.3)
Odds Ratio	1.0 (Reference)	1.59 (1.07-2.38)	0.02		1.0 (Reference)	3.22 (2.44-4.25)	1.0 (Reference)	4.21 (1.71-10.36)
Adjusted Odds Ratio [†]	1.0 (Reference)	1.61 (1.07-2.41)	0.02		1.0 (Reference)	2.72 (2.05-3.61)	1.0 (Reference)	4.25 (1.63-11.10)
Clinical Depression [§]								
Prevalence	9.8 (8.7-11.0)	7.8 (4.7-12.9)			8.8 (7.7-10.1)	17.2 (14.3-20.6)	5.9 (3.0-11.3)	16.9 (7.5-33.7)
Odds Ratio	1.0 (Reference)	0.78 (0.45-1.37)	0.39		1.0 (Reference)	2.15 (1.66-2.79)	1.0 (Reference)	3.22 (1.04-9.99)
Adjusted Odds Ratio [†]	1.0 (Reference)	1.03 (0.57-1.86)	0.92		1.0 (Reference)	1.95 (1.45-2.62)	1.0 (Reference)	4.10 (1.07-15.82)
Suicidal Ideation, Last 12 Months								
Prevalence	6.4 (5.6-7.4)	12.6 (8.6-18.3)			5.3 (4.5-6.2)	15.3 (12.2-18.9)	7.8 (4.0-14.7)	35.4 (22.7-50.5)
Odds Ratio	1.0 (Reference)	2.10 (1.37-3.21)	0.001		1.0 (Reference)	3.22 (2.37-4.38)	1.0 (Reference)	6.45 (2.44-17.01)
Adjusted Odds Ratio [†]	1.0 (Reference)	1.97 (1.23-3.16)	0.005		1.0 (Reference)	2.97 (2.17-4.06)	1.0 (Reference)	8.05 (2.56-25.27)
Antidepressant Use, Last 12 Months								
Prevalence	5.5 (4.7-6.4)	9.7 (5.8-15.9)			4.5 (3.8-5.4)	13.1 (9.9-17.1)	6.1 (2.5-14.3)	26.9 (14.9-43.6)
Odds Ratio	1.0 (Reference)	1.85 (1.09-3.17)	0.02		1.0 (Reference)	3.19 (2.23-4.57)	1.0 (Reference)	5.64 (1.60-19.87)
Adjusted Odds Ratio [†]	1.0 (Reference)	1.61 (0.95-2.73)	0.08		1.0 (Reference)	2.64 (1.81-3.85)	1.0 (Reference)	8.21 (2.00-33.79)
Psychological Counseling, Last 12 Months								
Prevalence	7.2 (6.3-8.3)	12.1 (7.9-18.1)			6.2 (5.3-7.3)	14.9 (11.5-19.0)	8.3 (4.7-13.9)	30.4 (17.7-47.0)
Odds Ratio	1.0 (Reference)	1.77 (1.12-2.78)	0.01		1.0 (Reference)	2.64 (1.89-3.69)	1.0 (Reference)	4.87 (2.06-11.47)
Adjusted Odds Ratio [†]	1.0 (Reference)	1.53 (0.97-2.43)	0.07		1.0 (Reference)	2.37 (1.68-3.35)	1.0 (Reference)	4.96 (2.19-11.24)

* Unweighted sample sizes for reference.

[†] Adjusted for age, sex, race, education level, and health insurance status.

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*p-value for interaction term between sexual minority status and current acne history in a combined multivariate model controlling for age, sex, race, sexual orientation, acne history, education level, and health insurance status.

§Clinical depression was based on participant responses to a 9-item Center for Epidemiological Studies depression (CES-D) scale with possible scores ranging from 0-27. Clinical depression was defined as a score 10 for male participants and 11 for female participants.