

# Letters

## RESEARCH LETTER

### Association Between Gender-Affirming Hair Removal and Mental Health Outcomes

Gender-affirming medical care is essential for addressing the mental health burdens of transgender and gender-diverse (TGD) populations.<sup>1</sup> Gender-affirming hair removal (GAHR) procedures, including electrolysis and laser hair removal, are desired by nearly 90% of TGD people.<sup>2</sup> However, such services are covered by only 4.6% of insurance plans,<sup>3,4</sup> possibly owing in part to limited evidence of their mental health benefits. In this study, we investigated the association between GAHR and mental health outcomes.

**Methods** | We conducted secondary analysis of the 2015 US Transgender Survey (USTS), a cross-sectional, nonprobability survey of 27 715 US TGD adults disseminated by community outreach from August 19, 2015, to September 21, 2015.<sup>2</sup>

The protocol was reviewed by the Fenway Institute institutional review board and was deemed to not constitute human subjects research.

Respondents assigned male sex at birth were asked, “have you had or do you want any of the health care listed below for gender transition?” for various gender-affirming procedures, including “hair removal/electrolysis.” The exposure group included respondents who reported undergoing GAHR. The control group included respondents who reported a desire for but had not had GAHR.

Five binary mental health outcomes were examined: past-month severe psychological distress (K6 score  $\geq 13$ ),<sup>5</sup> past-month binge alcohol use ( $\geq 5$  drinks on 1 occasion), past-year tobacco smoking, past-year suicidal ideation, and past-year suicide attempt.

All analyses were conducted using Stata statistical software (version 16.1; StataCorp, LLC). Multivariable logistic regression models were generated with covariates including so-

Table 1. Sample Sociodemographics

| Characteristic                                | No. (%)                         |                                  | Difference, % (95% CI) <sup>c</sup> |
|---|---------------------------------|----------------------------------|-------------------------------------|
|   | Control (n = 5652) <sup>a</sup> | Exposure (n = 4927) <sup>b</sup> |                                     |
| Age, y  |                                 |                                  |                                     |
| 18-44   | 4273 (75.6)                     | 2777 (56.4)                      | 19.2 (17.5 to 21.0)                 |
| 45-64   | 1154 (20.4)                     | 1756 (35.6)                      | -15.2 (-16.9 to -13.5)              |
| $\geq 65$                                     | 225 (4.0)                       | 394 (8.0)                        | -4.0 (-4.9 to -3.1)                 |
| Education                                     |                                 |                                  |                                     |
| Less than high school                         | 192 (3.4)                       | 65 (1.3)                         | 2.1 (1.5 to 2.6)                    |
| High school graduate up to associate's degree | 3831 (67.8)                     | 2172 (44.1)                      | 23.7 (21.9 to 25.5)                 |
| Bachelor's degree or higher                   | 1629 (28.8)                     | 2690 (54.6)                      | -25.8 (-27.6 to -24.0)              |
| Employment                                    |                                 |                                  |                                     |
| Employed                                      | 3451 (61.1)                     | 3576 (72.6)                      | -11.5 (-13.3 to -9.7)               |
| Unemployed                                    | 868 (15.4)                      | 377 (7.7)                        | 7.7 (6.5 to 8.9)                    |
| Out of labor force                            | 1296 (22.9)                     | 958 (19.4)                       | 3.5 (1.9 to 5.0)                    |
| Family rejection                              |                                 |                                  |                                     |
| Yes   | 2636 (46.6)                     | 3211 (65.1)                      | -18.5 (-20.4 to -16.7)              |
| No  | 2401 (42.4)                     | 1589 (32.2)                      | 10.2 (8.4 to 12.1)                  |
| Gender identity                               |                                 |                                  |                                     |
| Crossdresser                                  | 431 (7.6)                       | 107 (2.2)                        | 5.5 (4.7 to 6.3)                    |
| Trans woman                                   | 4211 (74.5)                     | 4551 (92.4)                      | -17.9 (-19.2 to -16.5)              |
| Trans man                                     | 10 (0.2)                        | 6 (0.1)                          | 0.1 (-0.1 to 0.2)                   |
| Nonbinary                                     | 1000 (17.7)                     | 263 (5.3)                        | 12.4 (11.2 to 13.5)                 |
| Health insurance                              |                                 |                                  |                                     |
| Uninsured                                     | 950 (16.8)                      | 494 (10.0)                       | 6.8 (5.5 to 8.1)                    |
| Insured                                       | 4690 (83.0)                     | 4428 (89.9)                      | -6.9 (-8.1 to -5.6)                 |
| Household income, \$                          |                                 |                                  |                                     |
| <25 000                                       | 2093 (37.0)                     | 1016 (20.6)                      | 16.4 (14.7 to 18.1)                 |
| 25 000-99 999                                 | 2326 (41.2)                     | 2377 (48.2)                      | -7.1 (-9.0 to -5.2)                 |
| $\geq 100 000$                                | 768 (13.6)                      | 1264 (25.7)                      | -12.1 (-13.6 to -10.6)              |

(continued)

Table 1. Sample Sociodemographics (continued)

| Characteristic  | No. (%)                         |                                  | Difference, % (95% CI) <sup>c</sup> |
|---|---------------------------------|----------------------------------|-------------------------------------|
|   | Control (n = 5652) <sup>a</sup> | Exposure (n = 4927) <sup>b</sup> |                                     |
| <b>Race</b>   |                                 |                                  |                                     |
| White   | 4714 (83.4)                     | 4269 (86.7)                      | -3.2 (-4.6 to -1.9)                 |
| Alaska Native/American Indian                         | 84 (1.5)                        | 49 (1.0)                         | 0.5 (0.1 to 0.9)                    |
| Asian/Native Hawaiian/Pacific Islander                | 147 (2.6)                       | 122 (2.5)                        | 0.1 (-0.5 to 0.7)                   |
| Black/African American                                | 175 (3.1)                       | 92 (1.9)                         | 1.2 (0.6 to 1.8)                    |
| Latinx/Hispanic                                       | 264 (4.7)                       | 218 (4.4)                        | 0.2 (-0.5 to 1.0)                   |
| Other/biracial/multiracial                            | 268 (4.7)                       | 177 (3.6)                        | 1.1 (0.4 to 1.9)                    |
| <b>Sexual orientation</b>                             |                                 |                                  |                                     |
| Asexual   | 399 (7.1)                       | 337 (6.8)                        | 0.2 (-0.8 to 1.2)                   |
| Lesbian, gay, bisexual                                | 4123 (72.9)                     | 3533 (71.7)                      | 1.2 (-0.5 to 3.0)                   |
| Heterosexual  | 766 (13.6)                      | 768 (15.6)                       | -2.0 (-3.4 to -0.7)                 |
| <b>History of other gender-affirming medical care</b> |                                 |                                  |                                     |
| Counseling/therapy                                    | 3135 (55.5)                     | 4295 (87.2)                      | -31.7 (-33.3 to -30.1)              |
| Pubertal suppression                                  | 109 (1.9)                       | 137 (2.7)                        | -0.9 (-1.4 to -0.3)                 |
| Hormone therapy                                       | 2423 (42.9)                     | 4348 (88.2)                      | -45.4 (-47.0 to -43.8)              |
| Surgery   | 237 (4.2)                       | 1855 (37.6)                      | -33.5 (-34.9 to -32.0)              |

<sup>a</sup> The control group consists of respondents who desired gender-affirming hair removal but had not received it.

<sup>b</sup> The exposure group consists of respondents who endorsed history of gender-affirming hair removal.

<sup>c</sup> Column percentages may not add up to 100% because missing data are not displayed.

Table 2. Mental Health Outcomes Based on History of Gender-Affirming Hair Removal

| Variable                                   | Respondents endorsing, No. (%)  |                                  |                           | P value |
|--|---------------------------------|----------------------------------|---------------------------|---------|
|  | Control (n = 5652) <sup>a</sup> | Exposure (n = 4927) <sup>b</sup> | aOR (95% CI) <sup>c</sup> |         |
| Severe psychological distress (past month) | 2301 (40.7)                     | 1066 (21.6)                      | 0.62 (0.53 to 0.73)       | <.001   |
| <b>Substance use</b>                       |                                 |                                  |                           |         |
| Binge alcohol use (past month)             | 1490 (26.3)                     | 1104 (22.4)                      | 0.91 (0.78 to 1.07)       | .26     |
| Smoking (past year)                        | 1814 (32.1)                     | 1125 (22.9)                      | 0.76 (0.65 to 0.89)       | <.001   |
| <b>Suicidality (past year)</b>             |                                 |                                  |                           |         |
| Ideation                                   | 2910 (51.5)                     | 1957 (39.7)                      | 0.72 (0.62 to 0.84)       | <.001   |
| Attempt                                    | 523 (9.3)                       | 261 (5.3)                        | 0.74 (0.56 to 0.98)       | .03     |

Abbreviation: aOR, adjusted odds ratio.

<sup>a</sup> The control group consists of respondents who desired gender-affirming hair removal but had not received it.

<sup>b</sup> The exposure group consists of respondents who endorsed history of gender-affirming hair removal.

<sup>c</sup> Adjusted odds ratios compare the odds of experiencing each mental health outcome in the exposure group compared with the control group. All models

were adjusted for: age, education, employment, family rejection, gender identity, health insurance, household income, race, sex assigned at birth, and sexual orientation. Additional covariates included exposure to gender-affirming counseling, pubertal suppression, hormone therapy, and surgery (including breast augmentation, orchiectomy, tracheal shave, facial feminization surgery, voice surgery).

ciodemographics and exposure to other gender-affirming care (Table 1). Models were survey weighted to correct sampling biases related to age and race or ethnicity. Variable interactions were not examined. Adjusted odds ratios (aORs), 95% confidence intervals (95% CIs), and 2-sided *P* values are reported.

To determine whether baseline mental health status could confound observed associations, we generated 4 multivariable logistic regression models adjusted for all covariates in Table 1, regressing exposure to GAHR against lifetime suicidal ideation, suicide attempts, alcohol use, and smoking.

Bonferroni correction was applied to adjust for 9 tests, with *P* < .005 considered statistically significant. Because the maximum percentage of respondents with missing data was low (11% across all variables), complete case analysis was performed.

**Results** | Of 27 715 USTS respondents, 11 857 (42.8%) reported being assigned male sex at birth. Of these respondents, 4927 (41.6%) had undergone hair removal, whereas 5652 (47.7%) desired hair removal but had not yet received it (Table 1).

After adjustment for sociodemographic factors and other gender-affirming care, GAHR was associated with lower odds of past-month severe psychological distress (aOR, 0.62; 95% CI, 0.53-0.73; *P* < .001); past-year smoking (aOR, 0.76; 95% CI, 0.65-0.89; *P* < .001); and past-year suicidal ideation (aOR, 0.72; 95% CI, 0.62-0.84; *P* < .001) (Table 2). There was no significant association between GAHR and past-month binge alcohol use or past-year suicide attempts. Exposure to GAHR was not significantly associated with lifetime suicidal ideation, suicide attempts, alcohol use, or smoking.

**Discussion** | This is the first large-scale controlled study demonstrating associations between GAHR and improved mental health outcomes, including decreased psychological distress, past-year smoking, and past-year suicidal ideation. These findings reinforce the only existing empirical investigation, to our knowledge, on this subject—a small-scale study demonstrating that GAHR is associated with improved mental health and quality of life.<sup>6</sup> Reverse causality is possible, as TGD people with better baseline mental health may be more likely to access GAHR. However, baseline mental health was not associated with exposure to GAHR in our models. Further studies are needed to clarify this relationship.

This study's strengths include its large, national sample size and comprehensive adjustment for confounders. Limitations include its cross-sectional design, convenience sample, potential response bias, and lack of validity and reliability data for USTS questions. Nonetheless, this study contributes novel evidence of the potential mental health benefits of GAHR for TGD people.

Michelle S. Lee, BA

Anthony N. Almazan, BA

Vinod E. Nambudiri, MD, MBA

Alex S. Keuroghlian, MD, MPH

**Author Affiliations:** Harvard Medical School, Boston, Massachusetts (Lee, Almazan, Nambudiri, Keuroghlian); Department of Dermatology, Brigham and Women's Hospital, Boston, Massachusetts (Lee, Nambudiri); Harvard T.H. Chan School of Public Health, Boston, Massachusetts (Almazan); The Fenway Institute, Fenway Health, Boston, Massachusetts (Keuroghlian); Department of Psychiatry, Massachusetts General Hospital, Boston, Massachusetts (Keuroghlian).

**Accepted for Publication:** May 28, 2021.

**Published Online:** July 21, 2021. doi:10.1001/jamadermatol.2021.2551

**Corresponding Author:** Michelle S. Lee, BA, Harvard Medical School, 107 Avenue Louis Pasteur, Mailbox 150, Boston, MA 02115 (michelle\_lee3@hms.harvard.edu).

**Author Contributions:** Mr Almazan and Ms Lee had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. Ms Lee and Mr Almazan contributed equally as co-first authors.

**Concept and design:** Lee, Almazan, Keuroghlian.

**Acquisition, analysis, or interpretation of data:** All authors.

**Drafting of the manuscript:** Lee, Almazan.

**Critical revision of the manuscript for important intellectual content:** All authors.

**Statistical analysis:** Almazan.

**Administrative, technical, or material support:** Lee, Nambudiri, Keuroghlian.

**Supervision:** Keuroghlian.

**Conflict of Interest Disclosures:** Dr Keuroghlian reported future royalties from a forthcoming McGraw-Hill Education textbook on transgender and gender-diverse health. No other disclosures were reported.

**Additional Contributions:** We thank the National Center for Transgender Equality for granting us access to the data from the 2015 US Transgender Survey.

1. Reisner SL, Poteat T, Keatley J, et al. Global health burden and needs of transgender populations: a review. *Lancet*. 2016;388(10042):412-436. doi:10.1016/S0140-6736(16)00684-X

2. USTS Reports. 2015 U.S. Trans Survey. Accessed March 16, 2021. <https://www.ustranssurvey.org/reports>

3. Pelozo K, Kahn B, Stoff BKM, Yeung H. Insurance coverage for hair removal procedures in the treatment of gender dysphoria. *Dermatol Surg*. 2021;47(2):306-308. doi:10.1097/DSS.0000000000002234

4. Thoreson N, Marks DH, Peebles JK, King DS, Dommasch E. Health insurance coverage of permanent hair removal in transgender and gender-minority

patients. *JAMA Dermatol*. 2020;156(5):561-565. doi:10.1001/jamadermatol.2020.0480

5. Kessler RC, Barker PR, Colpe LJ, et al. Screening for serious mental illness in the general population. *Arch Gen Psychiatry*. 2003;60(2):184-189. doi:10.1001/archpsyc.60.2.184

6. Bradford NJ, Rider GN, Spencer KG. Hair removal and psychological well-being in transfeminine adults: associations with gender dysphoria and gender euphoria. *J Dermatol Treat*. Published online November 22, 2019. doi:10.1080/09546634.2019.1687823

## Clinical Settings and Demographic Characteristics of Patients With Sunburn

Sunburn is a preventable risk factor for skin cancer, which is increasing in incidence in the US.<sup>1</sup> Prior investigations of sunburn have been primarily survey based,<sup>2</sup> and those in health care settings have focused on emergency department visits.<sup>3,4</sup> We aimed to investigate sunburn in claims data, which to our knowledge has not previously been done, and characterize the clinical settings and demographic characteristics of patients who receive sunburn diagnoses.

**Methods** | We used Truven MarketScan, a deidentified database of commercially insured patients, to identify sunburn visits from January 2009 to December 2018 using diagnosis codes (*International Classification of Diseases, Ninth Revision [ICD-9]*) codes 692.71, 692.76, and 692.77; *ICD-10* codes L55, L55.0, L55.1, L55.2, and L55.9). We included medical encounters with a sunburn diagnosis code (encounters on the same day for the same patient were considered 1 encounter). The primary outcomes were patient demographic characteristics, clinical settings, clinician specialties, management provided, and geographic location, which were presented with descriptive statistics. The study was approved by the institutional review board at MD Anderson Cancer Center, which also waived informed consent, and followed Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines.<sup>5</sup> Statistical analysis was conducted using SAS, version 7.15 (SAS Institute).

**Results** | There were nearly 123 million eligible patients. We included 186 168 patients (0.15%) with 208 777 encounters with sunburn diagnoses. Most patients had a single encounter with sunburn diagnosis: 170 463 (91.6%) had 1 encounter; 12 131 (6.5%) had 2; and 3574 (1.9%) had 3 or more. Patients with a sunburn diagnosis were more likely to be female and to be younger than patients in MarketScan overall (Table 1). Approximately 20% of encounters were in the emergency or urgent care setting. Encounters with sunburn diagnoses were most commonly with dermatologists (26.0%), followed by family medicine clinicians (22.0%; Table 2). When we considered every ICD code entered (n = 235 015), 179 887 (76.5%) were nonspecific sunburn (692.71, L55.9), 14 594 (6.2%) were first degree (L55.0, no code in ICD-9), 39 838 (17.0%) were second degree (692.76, L55.1), and 696 (0.3%) were third degree (692.77, L55.2). Most patients (83.5%) did not receive medical treatment that was consistent with sunburn treatment. Treatment that may have been for sunburn was more likely in emergency/urgent care settings overall and for each category except topical steroids (Table 2).