

# Psychosocial Differences Between Transgender Individuals With and Without History of Nonsurgical Facial Injectables

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## Abstract

**Background:** Considerable research has explored psychosocial characteristics of individuals who seek aesthetic procedures as well as psychological changes experienced after successful treatment. Little research, however, has explored the experiences of transgender individuals who have undergone nonsurgical injectable procedures (NSIPs).

**Objectives:** This study examined theoretically relevant psychosocial characteristics of transgender individuals who have and have not undergone NSIPs.

**Methods:** An online survey of demographic and psychosocial constructs was disseminated through transgender-specific support groups and Facebook groups from December 2019 to February 2020. Psychosocial measures included self-esteem (Rosenberg Self-Esteem Inventory), anticipated discrimination (Intersectional-Anticipated Discrimination), gender identity and physicality congruence (Transgender Congruence Scale), body image (Body Image Quality of Life Inventory), and overall satisfaction with facial appearance (FACE-Q Face Overall). The Mann–Whitney *U* test assessed differences by history of NSIPs, and the Kruskal–Wallis test assessed gender and racial differences. A *P*-value of <0.05 was considered significant.

**Results:** Participants (*N* = 101) were transfeminine (*n* = 58), transmasculine (*n* = 31), gender-diverse (*n* = 12), and mostly (71%) white. Almost two-thirds of respondents (62%) reported using NSIPs; 6 participants reported undergoing NSIPs from non-licensed providers. History of NSIPs was associated with greater self-esteem (*P* < 0.01), less anticipated discrimination (*P* < 0.01), greater physicality and gender identity congruence (*P* < 0.001), greater body image quality of life (*P* < 0.001), and greater satisfaction with overall facial appearance (*P* < 0.01).

**Conclusions:** Use of NSIPs was associated with more positive psychosocial symptoms. Experiences with NSIPs may play an important role in psychosocial functioning for transgender individuals.

## Level of Evidence: 3

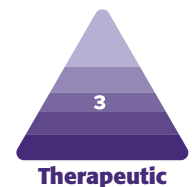
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There are believed to be approximately 1.4 million transgender (trans) individuals in the United States.<sup>1</sup> Trans individuals conceptualize and often physically embody a gender identity that differs from the gender assigned at birth.<sup>2</sup> Some, but not all, people who identify as trans experience gender dysphoria—which the American Psychiatric Association classifies as at least a 6-month period of dissonance between a person's assigned gender at birth and self-actualized gender resulting in hardship and discomfort largely stemming from discrimination and societal rejection of trans identity.<sup>3,4</sup> Even in the absence of gender dysphoria, trans individuals often seek gender-affirming medical care, including hormone replacement therapy as well as surgical and nonsurgical aesthetic procedures to enhance the appearance of their faces and bodies.

A sizable body of research has investigated the psychosocial characteristics of individuals who seek and undergo aesthetic medical treatments.<sup>5,6</sup> These studies have repeatedly demonstrated that people interested in aesthetic treatments report increased body image dissatisfaction before procedural engagement but otherwise few additional differences from those not interested in aesthetic surgery.<sup>5,6</sup> Other studies have shown that patients typically report improvement in appearance-related concerns postoperatively.<sup>5,7</sup> Preliminary studies of gender-affirming care have shown reductions in body image-related concerns and experiences of gender dysphoria among trans people.<sup>2,8,9</sup>

A potential complement to other gender-affirming procedures, nonsurgical injectable procedures (NSIPs) offer near-instantaneous outcomes by adding volume, contour, and smoothness to areas of the face.<sup>5,10</sup> Unlike other gender-affirming procedures, the degree to which NSIPs may help address appearance-related concerns among trans individuals is largely unknown. There remains a dearth of literature concerning the psychosocial characteristics of trans individuals who have used NSIPs. To address this gap, we undertook a survey study to explore demographic and psychosocial differences between trans individuals who have and have not undergone NSIPs.

## METHODS

An online survey of relevant demographic variables and theoretically relevant psychological constructs was posted to trans-specific Facebook groups and disseminated throughout trans support groups at a Pennsylvania lesbian, gay, bisexual, transgender, queer community center from December 2019 to February 2020.

## Participants

Eligible participants were 18 years of age or above, spoke and read English, and self-identified as trans

(male-to-female, female-to-male, or a gender expression different from their presumed gender at birth). Each participant provided informed consent before beginning the survey. Survey participants received a \$15.00 electronic honorarium at survey completion. This study was reviewed and approved by the Temple University Institutional Review Board.

## Demographic Variables

Demographic variables included age, gender identity (transgender male/transmasculine, transgender female/transfeminine, genderqueer, intersex, female, male, and another gender identity), race, ethnicity, education level, and income over the past 30 days. Insurance status and barriers to healthcare access in the past year were also assessed. Participants were asked whether or not they were ever homeless or engaged in transactional sex work. Past history of and future desire for male-to-female and female-to-male gender-affirming procedures were also assessed.

## Descriptors of NSIPs Use

History of NSIPs was assessed as *have you ever had nonsurgical injectable work (also called pumping/filler/injections)*. Participants who responded *yes* were asked how many times they had NSIPs (*once/more than once*) and prompted to specify numerically. Additionally, participants who disclosed history of NSIPs were asked who performed the procedure(s) and the location of injections. Respondents were asked to report any complications. Those who reported complications were asked if they pursued additional treatment for the problem(s) they experienced.

## Psychosocial Constructs

A number of psychometrically sound patient-reported outcome measures were used to assess relevant psychosocial constructs.

### *Transgender Congruence Scale*

The 12-item Transgender Congruence Scale assessed comfortability with and consistency between appearance and gender identity using a 5-point Likert scale (1 = *strongly disagree*; 5 = *strongly agree*).<sup>11</sup> The measure was internally consistent when tested with our sample ( $\alpha = 0.81$ ). Mean scores were tabulated; higher scores indicated greater congruence between a person's gender identity and physical presentation.

### *Body Image Quality of Life Inventory*

The 19-item Body Image Quality of Life Inventory (BIQLI) assessed the effect of specified aspects of body image on

quality of life using a 7-point Likert scale ( $-3 = \textit{very negative effect}$ ;  $3 = \textit{very positive effect}$ ).<sup>12</sup> Cronbach's alpha was 0.95 in our sample, suggesting a high level of internal consistency. Modifications were made to 2 items to target the measure to our study population. "Sex" in the original item was replaced with "gender" in the modified item, and "adequacy as a man or women-feelings of masculinity or femininity" in another item was replaced with "adequacy about the gender I present as." Mean scores were tabulated; higher scores indicated greater body image quality of life.

### **FACE-Q Satisfaction with Facial Appearance**

The 10-item FACE-Q Facial Appearance Overall scale measured the overall level of satisfaction with several components of the face using a 4-point Likert scale ( $1 = \textit{very dissatisfied}$ ;  $4 = \textit{very satisfied}$ ).<sup>13</sup> Internal consistency was high ( $\alpha = 0.90$ ). Scores were composited and translated using a conversion table. Higher scores indicated greater satisfaction with facial appearance.

### **Rosenberg Self-Esteem Scale**

Self-esteem was measured using the 10-item Rosenberg Self-Esteem Inventory.<sup>14</sup> The scale maintained high internal consistency in previous work with trans populations and was fairly internally consistent in our sample ( $\alpha = 0.71$ ).<sup>15</sup> Items were assessed using a 4-point Likert scale ( $0 = \textit{strongly disagree}$ ;  $3 = \textit{strongly agree}$ ). Five items were reverse scored and higher composite scores indicated greater self-esteem.

### **Intersectional Anticipated Discrimination**

The 9-item Intersectional Anticipated Discrimination Scale (InDI-A) assessed agreement with the likelihood of experiencing hypothetical discrimination about different components of identity such as gender and race.<sup>16</sup> In the present sample, Cronbach's alpha was 0.88. Participants responded using a 5-point Likert scale ( $0 = \textit{strongly disagree}$ ;  $4 = \textit{strongly agree}$ ). Mean scores were tabulated; higher scores indicated greater anticipated discrimination.

### **Procedural Appraisal**

Participants with history of NSIPs completed 2 additional validated measures. The 6-item FACE-Q Satisfaction with Decision scale assessed participant agreement with positively framed statements about the decision to undergo their most recent NSIPs.<sup>17</sup> Additionally, the 6-item FACE-Q Satisfaction with Outcome scale assessed participant agreement with positively framed statements about the outcomes of their most recent NSIPs.<sup>17</sup> Both the FACE-Q Satisfaction with Decision and the FACE-Q Satisfaction with Outcome scales were internally consistent in our sample ( $\alpha = 0.92$  and  $\alpha = 0.94$ , respectively). Each measure utilized a 4-point Likert scale ( $1 = \textit{definitely disagree}$ ;

$4 = \textit{definitely agree}$ ). Scores were composited and translated using a conversion table. Higher scores indicated greater decisional satisfaction and outcome satisfaction with the most recent procedure.

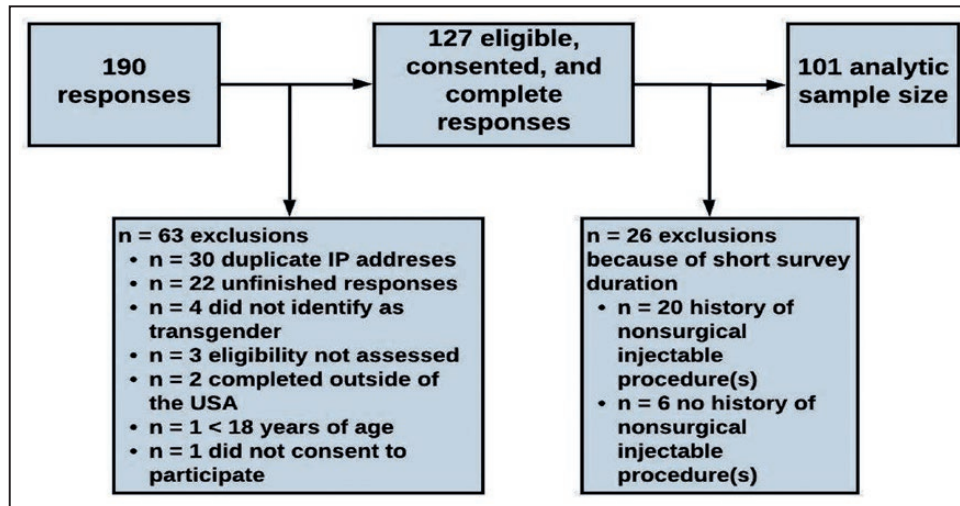
## **Statistical Analysis**

Descriptive statistics with means and standard deviations for continuous variables were calculated. Frequencies and proportions of past and future desire for gender-affirming procedures were calculated and presented for the total sample and by history of NSIPs; the small sample size of some subgroups left the study underpowered to perform tests of significance in some cases. Descriptors of NSIPs use are presented by the source of administration with frequencies and proportions calculated when possible. Further, frequencies and proportions for other categorical demographic variables were assessed by history of NSIPs, gender identity trichotomized as (1. transmasculine [transgender male/transmasculine & male], 2. transfeminine [transgender female/transfeminine & female], and 3. gender-diverse [genderqueer, intersex, & another gender identity]). Chi-square tests for associations were conducted between categorical demographic variables and history of NSIPs, gender, and race but not by NSIPs source due to lack of statistical power.

Psychosocial measures were nonparametrically distributed by each independent variable with visibly dissimilar distributions; thus, data are presented as mean ranks for the total sample, history of NSIPs, gender, race, and NSIPs source. Mean substitution was used to populate instances of missing data. Mann-Whitney  $U$  tests assessed differences in psychosocial outcomes by history of NSIPs, and Kruskal-Wallis  $H$  tests assessed psychosocial differences by gender and race. Post hoc pairwise comparisons between gender and between racial groups were performed with a Bonferroni correction for multiple comparisons. Statistical testing was not conducted for procedural appraisal measures by source of NSIPs due to insufficient sample size; instead, mean scores are presented. Asymptotic  $P$ -values are displayed and  $P$ -values  $< 0.05$  were considered significant. All statistics were computed with SPSS Statistics for Macintosh Version 25.0.<sup>18</sup>

## **RESULTS**

One hundred and ninety participants accessed the anonymous link for the study. One hundred and twenty-seven individuals were eligible and provided informed consent. To ensure the validity of the data, 26 cases were excluded, as the duration time to complete the survey fell below one standard deviation from the mean completion



**Figure 1.** Participant flow diagram.

time, suggesting a possible lack of careful attention to the questions; other web-based survey studies have followed a similar methodology to rid suspiciously short surveys.<sup>19</sup> The final analytic sample was 101 (see [Figure 1](#)). Participants reported spending most of their time in 90 unique ZIP codes across the United States representing diverse geographic areas (see [Figure 2](#)).

## Demographic Characteristics

Of the 101 participants, 58 (57%) identified as transfeminine, 31 (31%) as transmasculine, and 12 (12%) identified as gender-diverse. Most of the participants were white (71%) and non-Hispanic (76%). The average participant was 30 years old (standard deviation [SD] = 8.7) and ranged in age from 20 to 75 years old. Age did not significantly differ by the history of NSIPs. [Table 1](#) displays the demographic variables of the sample by gender. There were no statistically significant differences in demographic characteristics by racial identity.

A majority (61%) of participants reported a history of NSIP use. Gender, race, income, and homelessness significantly differed by history of NSIPs. A significantly greater proportion of transfeminine participants (86%) reported a history of NSIPs than not ( $\chi^2$ , (1,  $n = 58$ ) = 35,  $P < 0.001$ ). Conversely, significantly fewer transmasculine participants (39%) reported history of NSIPs than those who did not ( $\chi^2$ , (1,  $n = 31$ ) = 9.7,  $P < 0.010$ ). No gender-diverse participants reported use of NSIPs. Just over a third (36%) of white participants reportedly used NSIPs ( $\chi^2$ , (1,  $n = 72$ ) = 14,  $P < 0.001$ ), whereas nearly all (92%) respondents who identified as black/African American reported history of NSIPs ( $\chi^2$ , (1,  $n = 13$ ) = 6,  $P < 0.05$ ). Similarly, most (88%) of the participants with a racial identity other than white or

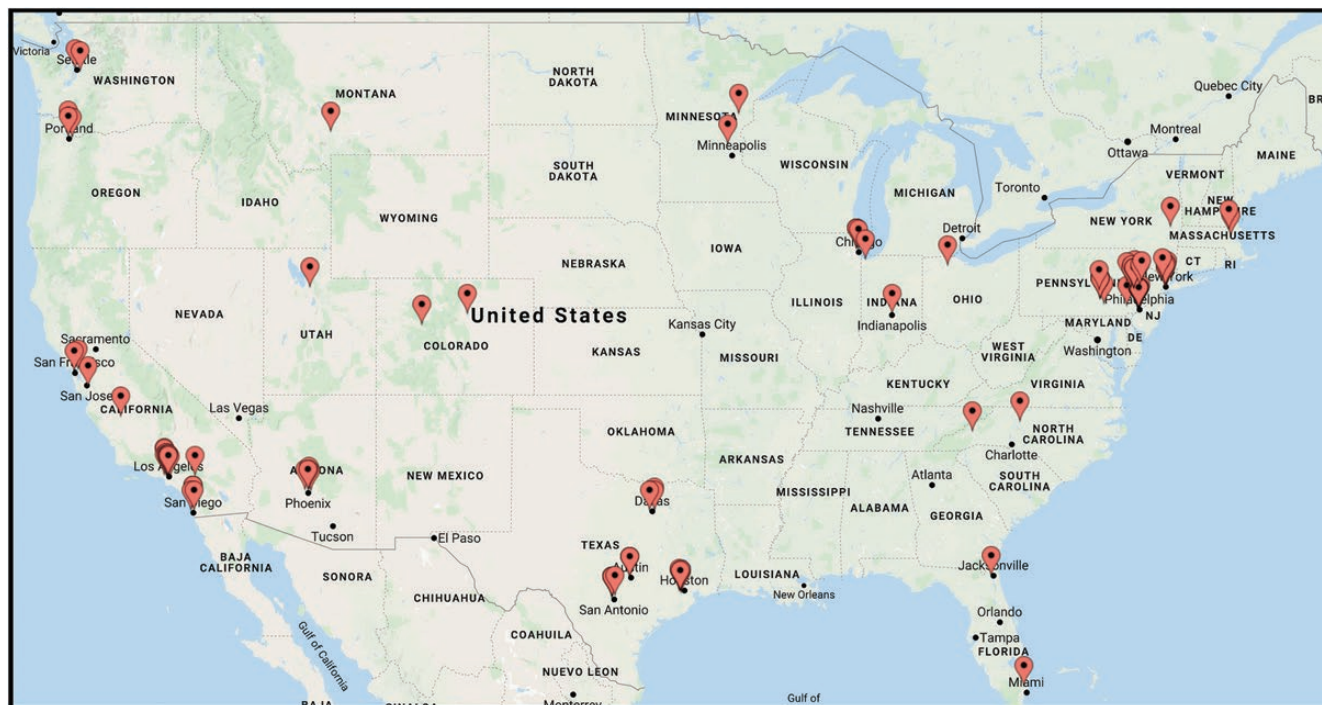
black/African American disclosed history of NSIPs ( $\chi^2$ , (1,  $n = 16$ ) = 5.5,  $P < 0.05$ ). Of the 24 Hispanic participants, 18 (75%) participants reported history of NSIPs.

There were also notable differences based on self-reported thirty-day income. Participants who reported earning less than \$1000 within the past 30 days were more likely to not have used NSIPs ( $\chi^2$ , (1,  $n = 13$ ) = 13,  $P < 0.001$ ). Conversely, more participants who reported earning \$3001–\$4000 within the past 30 days reported history of NSIPs than not ( $\chi^2$ , (1,  $n = 24$ ) = 4.2,  $P < 0.05$ ). Participants who ever experienced homelessness reported significantly less use of NSIPs ( $\chi^2$ , (1,  $n = 12$ ) = 4.5,  $P < 0.05$ ). Of the 18 individuals who disclosed a history of sex work, 13 (72%) reported a history of NSIPs, although this was not significantly different from those who disclosed sex work and had never used NSIPs.

Most (96%) of the participants were insured. The proportion of participants who reported problems accessing healthcare in the past year was comparable between participants with and without history of NSIPs (34% vs 36%, respectively). Most of the participants reported undergoing at least 1 gender-affirming procedure (see [Table 2](#)). They also reported interest in many future gender-affirming procedures (see [Table 3](#)).

## Psychosocial Constructs

Participants with history of NSIPs had significantly greater transgender congruence scores (mean rank = 61.41) than participants without history of NSIPs (mean rank = 34.45) ( $U = 1854.5$ ,  $z = 4.51$ ,  $P < 0.001$ ). These scores also significantly differed by gender ( $\chi^2$  (2) = 16.31,  $P < 0.001$ ). Gender-diverse participants (mean rank = 20.62) had significantly lower mean rank congruence scores than transfeminine



**Figure 2.** Diagram of participant ZIP codes on US Map.

(mean rank = 57.98) ( $P < 0.001$ ) and transmasculine participants (mean rank = 49.69) ( $P = 0.010$ ).

Body Image Quality of Life scores were significantly greater in those with history of NSIPs (mean rank = 65.31) than those without (mean rank = 28.26) ( $U = 2096$ ,  $z = 6.189$ ,  $P < 0.001$ ). BIQLI scores also significantly differed by gender identity ( $X^2(2) = 32.982$ ,  $P < 0.001$ ). Transfeminine participants (mean rank = 64.51) had significantly greater mean rank scores than gender-diverse (mean rank = 18.42) ( $P < 0.001$ ) and transmasculine participants (mean rank = 38.34) ( $P < 0.001$ ).

Participants who reported history of NSIPs had significantly higher overall facial appearance satisfaction scores (mean rank = 57.95) than those without history of NSIPs (mean rank = 39.95) ( $U = 1640$ ,  $z = 3.015$ ,  $P = 0.003$ ). Overall facial appearance satisfaction mean rank scores also significantly differed by racial identity ( $X^2(2) = 9.212$ ,  $P = 0.010$ ). White participants (mean rank = 46.02) had significantly lower facial appearance satisfaction scores than the “another” racial identity group (mean rank = 70.16) ( $P = 0.008$ ).

Those reporting a history of NSIPs had significantly higher self-esteem scores (mean rank = 56.81) than participants without history of NSIPs (mean rank = 41.77) ( $U = 1569$ ,  $z = 2.52$ ,  $P = 0.012$ ). Self-esteem mean ranks also significantly differed between gender groups ( $x^2(2) = 10.968$ ,  $P = 0.004$ ). Gender-diverse participant scores (mean rank = 28.83) significantly differed from transfeminine participant scores (mean rank = 57.89) ( $P = 0.005$ ). Further, those with

history of NSIPs had significantly lower intersectional anticipated discrimination scores (mean rank = 44.54) than those without history of NSIPs (mean rank = 61.27) ( $U = 808.5$ ,  $z = -2.799$ ,  $P = 0.005$ ).

Table 4 details the use of NSIPs by licensed and non-licensed medical professionals. Of those who reported a history of NSIPs, most (90%) of them reported treatment by an aesthetic surgeon. Six participants ( $n = 6$ ) reported other non-licensed paraprofessionals including “a friend of mine” and “a visiting injector” and were considered to have had work from non-licensed providers. Injection frequency ranged from 1 to 4 procedures. The chest and facial areas were the most commonly reported injection sites. An average of 1.8 (SD = 0.98) procedural complications were reported among the 24 participants who reported complications. These included general irritation ( $n = 17$ ) and allergic reaction ( $n = 14$ ). Nearly half (42%) of the participants who experienced procedural complications indicated that their health insurance did not cover additional treatment.

Several reasons were offered as to why some participants never used NSIPs including cost and a lack of understanding the benefits and potential associated risks. Others offered knowledge of untoward outcomes as reasons for their disinterest in NSIPs, with respondents citing “knowledge of what has happened to other trans friends, who have been homeless or otherwise vulnerable and were desperate to feel better;” another reported “[they] have

**Table 1.** Participant Characteristics of Total Sample ( $N = 101$ ) and by Gender Identity

Sociodemographic Characteristic	Total ( $N = 101$ ) $n$ (%), $m$ (sd)	Transmasculine ( $n = 31$ ) $n$ (%), $m$ (sd)	Transfeminine ( $n = 58$ ) $n$ (%), $m$ (sd)	Gender-Diverse ( $n = 12$ ) $n$ (%), $m$ (sd)	$\chi^2$
Age* ( $n = 97$ ) <sup>a</sup>	30 (8.7)	29 (6)	32 (10)	23 (2.3)	5.1
Race					
White	72 (71)	25 (81)	27 (64)	10 (83)	3.8
Black/African American	13 (13)	3 (9.7)	9 (16)	1 (8.3)	.86
Another racial identity	16 (16)	3 (9.7)	12 (21)	1 (8.3)	2.4
Hispanic	24 (24)	6 (19)	16 (28)	2 (17)	1.1
Education					
High school and below	5 (5)	1 (3)	3 (5)	1 (8.3)	.49
Some college	40 (40)	10 (32)	25 (43)	5 (42)	1
Associates degree	19 (19)	9 (29)	10 (17)	—	5.0
Bachelor and above	37 (37)	11 (36)	20 (35)	6 (50)	1.2
Income, last 30 days					
<\$1,000***	13 (13)	7 (23)	1 (2)	5 (42)	18
\$1,001-\$2,000	25 (25)	9 (29)	13 (22)	3 (25)	.48
\$2,001-\$3,000	26 (26)	7 (23)	18 (31)	1 (8.3)	2.9
\$3,001-\$4,000	34 (24)	5 (16)	16 (28)	3 (25)	1.5
>\$4,001	13 (13)	3 (9.7)	10 (17)	—	3
Homelessness ever, yes	12 (12)	5 (16)	5 (9)	2 (17)	1.4
Sex work ever, yes <sup>b</sup>	18 (18)	4 (13)	12 (22)	1 (9.1)	1.9
Insured	97 (96)	31 (100)	54 (93)	12 (100)	3.1
Life satisfaction	3.3 (.96)	3.6 (.84)	3.3 (.91)	2.8 (1.2)	3.8
Problem accessing healthcare, past year	35 (35)	10 (32)	19 (33)	6 (50)	1.4

<sup>a</sup>Four participants did not disclose age. <sup>b</sup>One participant did not disclose. \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ .

heard nightmare stories about it going wrong and leaving people permanently scarred or paralyzed.”

Procedural appraisal measure scores also trended differently by injectable source. Participants with history of NSIPs from licensed medical providers had a mean decisional satisfaction score of 64.03 (SD = 17.48) compared with the lower mean score of 59.17 (SD = 21.63) for participants who had NSIPs from non-licensed providers. The mean outcome satisfaction score for participants who had NSIPs from licensed medical providers was 58.67 (SD = 18.58) compared with the lower mean score of 50.14 (SD

= 19.47) for participants who had NSIPs from non-licensed providers.

## DISCUSSION

Our investigation is the first, to our knowledge, to explore the use of NSIPs by trans individuals and assessing theoretically relevant psychosocial constructs with validated psychosocial measures. This cross-sectional investigation found that a majority of trans participants reported having received NSIPs. Trans individuals who used

**Table 2.** History of Gender-Affirming Procedures by History of NSIPs

Gender-Affirming Procedure	Total (N = 101) n (%)	History of Nonsurgical Injectable Procedure(s) (n = 62) n (%)	No History of Nonsurgical Injectable Procedure(s) (n = 39) n (%)
Hormone replacement therapy	91 (91)	60 (97)	31 (80)
Male-to-female procedures			
Orchiectomy	12 (12)	10 (16)	2 (5)
Breast augmentation	41 (41)	39 (63)	2 (5)
Vaginoplasty	8 (8)	7 (11)	1 (3)
Feminizing facial procedures	31 (31)	30 (48)	1 (3)
Voice therapy	12 (12)	12 (19)	—
Female-to-male procedures			
Hysterectomy and oophorectomy	9 (9)	7 (11)	2 (5)
Mastectomy	21 (21)	9 (15)	12 (31)
Phalloplasty or metoidioplasty	8 (8)	7 (11)	1 (3)
Masculinizing facial procedures	11 (11)	6 (10)	5 (13)
Voice therapy	5 (5)	3 (5)	2 (5)

**Table 3.** Interest in Future Gender-Affirming Procedures by History of NSIPs

Gender-Affirming Procedure	Total (N = 101) n (%)	History of Nonsurgical Injectable Procedure(s) (n = 62) n (%)	No History of Nonsurgical Injectable Procedure(s) (n = 39) n (%)
Male-to-female procedures			
Orchiectomy	23 (23)	17 (27)	6 (15)
Breast Augmentation	10 (10)	4 (7)	6 (15)
Vaginoplasty	28 (28)	21 (34)	7 (18)
Feminizing facial procedures	20 (20)	14 (23)	6 (15)
Voice therapy	13 (13)	10 (16)	3 (8)
Female-to-male procedures			
Hysterectomy and oophorectomy	10 (10)	5 (8)	5 (13)
Mastectomy	9 (9)	3 (5)	6 (15)
Phalloplasty or metoidioplasty	7 (7)	5 (8)	2 (5)
Masculinizing facial procedures	2 (2)	2 (3)	—
Voice therapy	3 (3)	—	3 (8)

NSIPs, compared with those who have not used NSIPs, reported greater self-esteem, more positive body image, and greater satisfaction with their facial appearance.

They also reported greater gender identity and physical congruence and less anticipated discrimination from others. Consonant with investigations that detail positive

**Table 4.** Characteristics of NSIPs Use From Licensed and Non-licensed Providers<sup>a</sup>

Factors of Nonsurgical Injectable Use	Participants Reporting Nonsurgical Injectable Procedure(s) From Licensed Providers (n = 56) n (%)	Participants Reporting Nonsurgical Injectable Procedure(s) From Non-licensed Providers (n = 6) n (%)
Injection source		
A certified plastic surgeon	56 (100)	3 (50)
A friend of mine	—	4 (67)
A visiting injector	—	3 (50)
Injection frequency		
Once	36 (64)	2 (33)
More than once, yes	20 (36)	4 (67)
Frequency, m(sd)	2.7 (.67)	2.7 (.58)
Site of injection		
Chest	40 (71)	4 (67)
Cheeks	8 (14)	3 (50)
Chin	8 (14)	3 (50)
Butt	7 (13)	3 (50)
Hips	7 (13)	1 (17)
Genital region	6 (11)	2 (33)
Arm muscle	6 (11)	—
Adverse outcomes m, (sd)	1.6 (.84)	2.6 (1.1)
General irritation (pain, redness, swelling)	13 (23)	4 (67)
Allergic reaction	11 (20)	3 (50)
Discoloration or textured appearance	2 (3.6)	3 (50)
Silicone granulomas	2 (3.6)	2 (33)
Circulation problems	1 (1.2)	1 (17)
Injected material migrated	1 (1.2)	—
Pursuit of medical care		
Yes	11 (20)	1 (17)
Yes, but my insurance did not cover the care I needed	7 (13)	3 (50)

<sup>a</sup>Columns may not sum to a total.

psychosocial outcomes of other gender-affirming procedures,<sup>8,20-22</sup> our findings suggest that NSIPs appear to be associated with psychosocial benefits for trans individuals.

For many trans people, modifying physical appearance to align with their gender identity is paramount. Most of the

participants (90%) reported the use of hormone replacement therapy, and 76% reported history of undergoing another type of gender-affirming procedure aside from NSIPs. Many also shared their desire for future gender-affirming procedures. As those who used NSIPs reported greater appearance



and identity congruence, these minimally invasive aesthetic procedures could help trans individuals achieve their desired physical appearance and beget psychological benefits.

Despite the clear tie between aesthetic engagement and psychosocial benefits,<sup>5</sup> research regarding improvement in the quality of life and body image among trans individuals is scarce.<sup>23</sup> In our sample, those who used NSIPs reported greater satisfaction with their facial appearance. This positive appraisal of physicality likely translates to other psychosocial domains. Indeed, body image quality of life was significantly greater in participants with history of NSIPs. Therefore, NSIPs may have far-reaching positive psychosocial benefits for trans individuals that warrant investigation in larger studies.

Participants who used NSIPs had significantly greater self-esteem than those who did not. When examined for the total sample and history of NSIPs, gender, and race, self-esteem scores are within normal ranges of the Rosenberg Self-Esteem Scale; the gender-diverse mean self-esteem score of 14 is just below normal. Compared with other investigations that have utilized the Rosenberg Self-Esteem Scale in samples of trans participants, our sample had lower scores, but the difference is unlikely to be clinically meaningful.<sup>15,24,25</sup> Nevertheless, it is promising that this historically vulnerable population reported normal self-esteem scores.

Our sample reported anticipating more discrimination compared with other investigations.<sup>16</sup> Although, because this measure asks respondents to think prospectively, the tool is sensitive to the influence of the sociopolitical climate at the time of assessment. This could explain the comparatively elevated levels of anticipated discrimination reported by our sample. However, participants with a history of NSIPs reported anticipating less discrimination. These popular aesthetic procedures could have protective effects against perceptions that one is likely to be discriminated against which is of particular value to a population likely to experience discrimination.<sup>26</sup>

We were surprised and heartened to see that the large majority of individuals who received NSIPs did so from licensed medical providers. Unfortunately, 10% of participants who used NSIPs disclosed sourcing from non-licensed medical providers. Some trans individuals view NSIPs from non-licensed providers as an affordable way of physically validating their gender.<sup>27,28</sup> The urgency to affirm one's gender identity, bolster economic potential through sex work, and safeguard against transphobia may make NSIPs from non-licensed paraprofessionals enticing to some.<sup>27,28</sup> Moreover, unregulated aesthetic work may be perceived as an alternative to traditional medical care, which is aversive to some trans individuals largely stemming from experiences of discrimination.<sup>3</sup>

Procedures from non-licensed providers are often performed with substances not approved for use by the US Food and Drug Administration. Substances, such as silicone, pose a myriad of health risks when injected into human tissue that range from local irritation, increased risk of HIV infection, and death.<sup>27-38</sup> Undesirable outcomes of NSIPs from non-licensed providers are exceptionally difficult to correct or are otherwise untreatable leaving patients highly dissatisfied with their appearance while casting a stigma on the aesthetic community.<sup>31,39</sup> Nearly half of our sample who reported complications were unable to receive additional treatment because they were underinsured. These realities were echoed by participants who avoid NSIPs—even those performed by medically licensed providers. Additional research is needed to more fully understand the motivations for and outcomes of these unregulated treatments, as they represent a threat to the health and well-being of the patients as well as the responsible use of FDA-approved treatments administered by licensed medical professionals.

The diverse sample offered additional insights about who does and does not engage with these minimally invasive procedures. Nearly all participants of color reported the use of NSIPs. This is a markedly elevated difference from the most current demographic compositional data regarding procedural engagement that shows only a third of persons who underwent aesthetic treatment in 2019 were people of color.<sup>10</sup> In fact, in our sample, just over a third of white participants used NSIPs.

The study is not without limitations. First, we were unable to determine the size of the population of individuals who saw the advertisement for the study but elected not to participate. Thus, it is impossible to confidently comment on the representativeness of the sample or the potential biases that these individuals may have brought to the study. Second, the data were correlational in nature and preclude statements of causality. Third, while the selected measures have strong psychometric properties, only 2 were specifically validated for use with trans samples. Fourth, it was impossible to conclude whether these treatments offer benefits that are unique to trans individuals. Participants who reported a history of NSIPs were not asked details about the products they received. Although it is possible that participants could inaccurately or otherwise be unable to recall this information, inquiring about specific treatments administered and the experience and licensure of the providers would have provided additional, novel information. Future investigations should work to address these limitations and are encouraged to include a comparison group of cisgender individuals as well. Nevertheless, formative work of this nature establishes the foundation for larger, more comprehensive studies of these relationships

to establish footing for future investigations and expand equitable access to NSIPs for a marginalized population.

NSIPs from licensed medical providers offer clear psychosocial benefits to trans patients. In light of these findings, health professionals should develop strategies for expanding the accessibility and affordability of NSIPs by licensed medical professionals for trans-identified patients. This is especially pertinent given the demonstrable harms associated with NSIPs from non-licensed providers whose negative outcomes taint the reputation of the plastic surgery field and catastrophize trans lives.<sup>29-37</sup> Larger, longitudinal case-control studies that utilize pre and post measurements should be undertaken to replicate our findings and provide more information on the specific procedures and the credentials of the providers. The World Professional Association for Transgender Health's most recent version of the *Standards of Care for the Health of Transsexual, Transgender, and Gender-nonconforming People* does not presently include NSIPs as an element of care.<sup>2</sup> Revision of the guidelines to include NSIPs as an evidence-based gender-affirming procedure that some trans-identified patients may find beneficial would result in an expansion of engagement with NSIPs through medically licensed professionals.

## CONCLUSIONS

The results of the study provide novel insights into the use of NSIPs by trans individuals. NSIPs from medically licensed providers have potentially great psychosocial benefits to trans patients who are in the process of transitioning. The results also reconfirmed that some trans individuals do seek NSIPs from underground sources including non-licensed providers and that these individuals are less satisfied with the results of procedures by non-licensed paraprofessionals. This work enriches our understanding of engagement with aesthetic care from an often-overlooked patient population and provides foundations for future investigations that bolster equitable access to gender-affirming care.

## Disclosures

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