Body Image in Transmen: Multidimensional Measurement and the Effects of Mastectomy

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ABSTRACT

Introduction: Transmen are generally dissatisfied with their breasts and often opt for mastectomy. However, little is known about the specific effects of this procedure on this group’s body image.

Aim: To prospectively assess the effect of mastectomy on the body image of transmen, including cognitive, emotional, and behavioral aspects.

Methods: During a 10-month period, all transmen applying for mastectomy were invited to participate in this study. The 33 participants completed assessments preoperatively and at least 6 months postoperatively.

Main Outcome Measures: Participants were surveyed on body satisfaction (Body Image Scale for Transsexuals), body attitudes (Multidimensional Body-Self Relations Questionnaire), appearance schemas (Appearance Schemas Inventory), situational bodily feelings (Situational Inventory of Body Image Dysphoria), body image-related quality of life (Body Image Quality of Life Inventory), and self-esteem (Rosenberg Self-Esteem Scale). Control values were retrieved from the literature and a college sample.

Results: Before surgery, transmen reported less positive body attitudes and satisfaction, a lower self-esteem and body image-related quality of life compared with cisgender men and women. Mastectomy improved body satisfaction most strongly, although respondents reported improvements in all domains (eg, decreased dysphoria when looking in the mirror and improved feelings of self-worth). Most outcome measurements were strongly correlated.

Conclusion: Mastectomy improves body image beyond satisfaction with chest appearance alone. Body satisfaction and feelings of “passing” in social situations are associated with a higher quality of life and self-esteem.

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Key Words: Body Image; Self-Esteem; Gender Dysphoria; Transgender; Mastectomy; Chest Wall Masculinizing Surgery

INTRODUCTION

Individuals with gender dysphoria generally experience distress resulting from incongruence between assigned and experienced gender. Body dissatisfaction and the wish for a gender-congruent physique can be an important motive to pursue medical care. Treatment of transmen aims to align the physical characteristics with their experienced gender (eg, by testosterone substitution or surgically constructing a penis). Medical transition is preferably conducted in an interdisciplinary setting according to the Standards of Care of the World Professional Association for Transgender Health.1

Research by Beek et al2 showed that, despite the variance in treatment requests (the preferred combination of surgery and hormones), all transmen wanted a more masculine chest. The underlying motives for the different requests differed, but the results suggested that dissatisfaction with breasts was profound. This finding was confirmed in other studies: transwomen reported the greatest dissatisfaction with their genitals and transmen reported the greatest dissatisfaction with their breasts.3,4

Subcutaneous mastectomy, also called chest wall masculinizing surgery, aims to create a masculine chest region while following four principles: esthetic contouring of the chest wall by...
the removal of breast tissue and excessive skin, proper reduction and positioning of the nipple-areola complex, obliteration of the inframammary fold, and minimizing chest wall scars. Several effective surgical techniques are available, and algorithms have been published to assist in choosing a specific surgical approach.

Body image is a complex construct that pertains to physical and psychological characteristics related to appearance and societal norms. Psychological traits of one’s body image include cognitions (eg, body ideals, body satisfaction), feelings (eg, body sensitivity), and behaviors (eg, dieting). Having a positive body image has been associated with more satisfactory relationships and sexuality, improved well-being, and a better quality of life in non—gender-dysphoric populations.

Much of the current evidence regarding the body image of transmen reports on body (dis)satisfaction. Key findings include great dissatisfaction before medical transition, especially in relation to primary and secondary sex characteristics, and improvement of body satisfaction after medical interventions. The only study reporting body image measurements beyond body satisfaction was conducted by Kraemer et al: transmen before surgery reported significantly more body insecurity and concerns and lower experienced attractiveness and self-confidence compared with control cisgender men and women. The postoperative group did not differ significantly from controls in these domains. The study included only 15 transmen, it compared different pre- and postoperative groups, and the results have yet to be replicated. To our knowledge, three studies have prospectively followed a group of transmen (and transwomen) through their medical treatments using body satisfaction as the primary outcome (TC van de Grift et al, unpublished data, 2016). All studies measured the degree of body (dis)satisfaction at clinical entry and after surgery to quantify body image. The positive effect of treatment on body satisfaction was found by all. However, the effects of separate surgical interventions have not been specified. To improve the general understanding of the importance of mastectomy in this group and to improve preoperative information, prospective data collection on this subject is essential.

AIMS

Recognizing the importance of body image on well-being and because of the lack of comprehensive data on body image and self-esteem of transmen, the objectives of the present study were:

1. To study the body image of preoperative transmen using a multidimensional model, including satisfaction, behavior, self-esteem, and quality of life
2. To prospectively measure the effects of mastectomy specifically on the different measurements of body image

In line with previous research, we hypothesized a less favorable preoperative body image compared with controls. We assumed that having a masculine chest would contribute positively to feelings of self-worth and therefore expected that surgical correction would improve body satisfaction, indirectly improve bodily feelings and attitudes, and thus improve quality of life (eg, through affirmative experiences).

METHODS

Procedure and Participants

The present study is a prospective follow-up of a cohort of transmen undergoing mastectomy as part of their medical transition. The study was conducted at the Department of Plastic, Reconstructive and Hand Surgery and the Center of Expertise on Gender Dysphoria at VU University Medical Center (Amsterdam, The Netherlands). Eligible participants completed a diagnostic psychological trajectory according to the Standards of Care after which testosterone therapy was initiated by a specialized endocrinologist. After receiving a gender dysphoria diagnosis and a period of social transition, individuals could obtain additional surgical procedures, including mastectomy. During a 10-month period (September 2014 through June 2015), all transmen applying for mastectomy were recruited to participate in the present study (T0 measurement). One recruited transman was excluded because he could not complete the survey. Non-responders were reminded by mail and telephone. People who provided consent to participate received a second paper survey at least 6 months after mastectomy (T1 measurement). The study was approved by the local ethical committee as a supplement to the ongoing prospective cohort study in our clinic.

All study participants received standardized operative care by a specialized plastic surgeon according to the Standards of Care.

Main Outcome Measures

Data were collected on six dimensions of body image and self-esteem (T0 and T1), self-experienced effects of surgery (T1), and participants’ medical background (T1).

Appearance Schemas Inventory—Revised

This survey measures body awareness through the psychological importance of, and investments made in, physical appearance. Respondents rated the applicability of 20 statements (eg, “What I look like is an important part of who I am”) on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). Two subscales can be used: self-evaluative salience (reflections on appearance) and motivational salience (behavior related to appearance). A higher (mean) score implies a greater psychological investment in physical appearance.

Body Image Quality of Life Inventory

The Body Image Quality of Life Inventory (BIQLI) assesses the effect of body image on 19 areas of life, including sexuality and emotional well-being (eg, “My day-to-day emotions”). Respondents rated the effect of their body image on these domains on a scale from −3 (very negative effect) to +3 (very positive effect). The BIQLI yields one mean score in which a higher score implies a better body image-related quality of life.
Body Image Scale for Transsexuals

The Body Image Scale for Transsexuals (BIS) was developed for the evaluation of body satisfaction of individuals with gender dysphoria.14 Satisfaction with 30 body characteristics is rated on a five-point Likert scale, ranging from 1 (very satisfied) to 5 (very dissatisfied). Higher scores represent a higher degree of body dissatisfaction. Six subscales have been confirmed by previous factor analysis: social and hair, head and neck, muscularity and posture, hip region, breasts, and genitalia (all reported as means).21 The scale has shown good sensitivity in this population.22

Multidimensional Body-Self Relations Questionnaire

This questionnaire measures attitudinal aspects of body image (eg, “I take my physical health for granted”).23 Respondents valued their agreement with 60 statements on a five-point Likert scale ranging from 1 (definitely disagree) to 5 (definitely agree). The output is calculated through subscale mean values. The subscales used in this study included (the meaning of high scores is presented within parentheses):

- Appearance evaluation: feelings of physical attractiveness (positive evaluation)
- Appearance orientation: extent of investment in grooming (more investment)
- Fitness evaluation: feelings of physical fitness (more fit)
- Fitness orientation: investments in physical fitness (more investment)
- Health evaluation: feelings of physical health (feeling healthier)
- Health orientation: investment in physical health (healthier lifestyle)
- Illness orientation: reactivity toward becoming ill (more alert)
- Overweight preoccupation: dieting and anxiety of becoming fat (more preoccupied)
- Self-classified weight: perception and labeling of one’s weight (heavier weighted)

Rosenberg Self-Esteem Scale

This 10-item scale measures overall self-evaluation and feelings of self-worth.24 The respondents rated statements (eg, “I certainly feel useless at times”) from 1 (strongly disagree) to 4 (strongly agree). The Rosenberg Self-Esteem Scale output is reported as a sum score of all items, in which a higher score indicates a higher self-esteem.

Situational Inventory of Body-Image Dysphoria

In the Situational Inventory of Body-Image Dysphoria (SIBID), which consists of 42 questions, respondents reviewed the frequency of dysphoric feelings regarding their appearance during different situations, including mirror observation, social occasions, while eating, sporting, etc (eg, “When I am exercising”).25 In eight (semi)open questions, respondents can list additional situations. The SIBID yields one mean score. A higher score corresponds to more frequently experienced negative feelings (0 = never to 4 = [almost] always).

Perceived Effect of Surgery

A standardized questionnaire developed in our department for this study assessed the experienced effects of surgery on several aspects of life. On a scale ranging from −3 (very negative effect) to +3 (very positive effect), respondents rated effects on daily life, body image, self-esteem, relationships and sexuality, social occasions, and overall quality of life. Participants also were asked whether they planned to undergo surgical procedures in the future.

In addition, the following information was obtained from medical records: age, sexual orientation, educational level, duration of hormone therapy, body mass index (BMI), breast size, and surgical technique performed.

Statistical Analysis

Control values on most measurements were retrieved from the literature.12,20,23,25,26 The BIS assessment was administered to a control population of cisgender psychology students (42 men and 57 women). Male respondents were on average 23 years old (18–30) and almost exclusively heterosexual (85.7%); female respondents were 22 years old on average (19–35) and a smaller proportion identified as exclusively heterosexual (45.6%).

All instruments were analyzed according to the published manuals. Preoperative analyses included all participants, whereas postoperative analyses included T1 respondents only. Demographic characteristics were calculated as frequencies and means. Pre- and postoperative comparisons were made using repeated measures analysis of variance. To relate body image after mastectomy to a general population, postoperative values were tested against control values using one-sample and Student t-tests. Correlations between measurements of body image and self-esteem and demographic characteristics were calculated using Pearson correlation and linear regression tests. All statistical analyses were performed using SPSS 22.0 (SPSS, Inc, Chicago, IL, USA).

RESULTS

Thirty-three people consented to participate (61%), and 26 of them completed the T0 and T1 instruments. Reasons for non-participation are displayed in Figure 1. The participating group did not differ significantly from the non-participating group in age, education level, BMI, and performed surgical technique. The background characteristics of the study sample are presented in Table 1.

Body Satisfaction

Overall body satisfaction (BIS) before surgery was neutral (mean = 2.94, SD = 0.54). More positively evaluated subscales included social and hair growth, head and neck, and muscularity and posture, and more negatively evaluated subscales included hip region, breasts, and genitals (Table 2). Surgery significantly improved the level of satisfaction with breasts, overall body satisfaction, and satisfaction with social and hair growth items.
Postoperatively, transmen scored significantly less positively than control men on the muscularity and posture, hip region, and genitals domains. Compared with control women, transmen were significantly more dissatisfied on all subscales except social and hair growth and head and neck. The strongest difference in satisfaction between transmen and controls was seen on the genitals subscale.

**Self-Attitudinal Aspects of Body Image**

The Multidimensional Body-Self Relations Questionnaire scores indicated relatively negative feelings of physical attractiveness preoperatively and moderate grooming investments. Experienced physical fitness was neutral, whereas investments made in fitness were higher. Feelings of physical health, reactivity toward becoming ill, and investments made in a healthy lifestyle were relatively low. The reported overweight preoccupation was limited, and the self-classified weight was weighted from normal to slightly heavy (Table 2).

Most self-attitudinal aspects of body image did not change significantly after surgery; only appearance evaluation improved. Nonetheless, postoperative values were significantly less favorable than control male and female values from the literature.23 In relation to men, transmen reported unfavorable attitudes on health and illness and invested more in physical fitness. In relation to women, transmen were less preoccupied with their weight, invested less in grooming and health, and had lower illness-awareness, but invested more in physical fitness.

**Body Awareness**

Postoperative reflections on appearance (self-evaluative salience) of transmen were similar to those of control cisgender men. Postoperative behavior related to appearance (motivational salience20, Table 2) was similar to that of control cisgender men. On average, Appearance Schemas Inventory—Revised scores were not significantly influenced by mastectomy.

**Body Image-Related Quality of Life**

The composite BIQLI score showed a neutral to slightly positive effect of body image on quality of life (Table 2). The five areas of quality of life mostly affected by body image (preoperatively) are listed in Table 3. No significant change was seen for the overall BIQLI score after surgery, although participants reported a significantly more positive contribution of body image on satisfaction with life and feelings of self-worth specifically (Table 3). Postoperative BIQLI was significantly lower than reference male and female values,12 indicating a lower body image-related quality of life.

**Situational Body Dysphoria**

Preoperatively, but after testosterone had been initiated, respondents reported they “moderately often” experienced
Table 2. Body image and self-esteem in transmen undergoing chest wall masculinization surgery

<table>
<thead>
<tr>
<th></th>
<th>Preoperative (n = 33)</th>
<th>Postoperative (n = 26)</th>
<th>Control men</th>
<th>Control women</th>
<th>Pre- vs postoperative</th>
<th>Postoperative vs Control men</th>
<th>Postoperative vs Control women</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSRQ</td>
<td>3.29 (0.42)</td>
<td>3.32 (0.39)</td>
<td>—</td>
<td>—</td>
<td>NS</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Appearance evaluation</td>
<td>2.62 (0.73)</td>
<td>3.10 (0.62)</td>
<td>3.49 (0.83)</td>
<td>3.36 (0.87)</td>
<td>F_1,25 = 14.79†</td>
<td>t_25 = −3.17†</td>
<td>t_25 = −2.11†</td>
</tr>
<tr>
<td>Appearance evaluation</td>
<td>3.29 (0.72)</td>
<td>3.28 (0.63)</td>
<td>3.60 (0.68)</td>
<td>3.91 (0.60)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Fitness evaluation</td>
<td>3.52 (0.99)</td>
<td>3.55 (0.93)</td>
<td>3.72 (0.91)</td>
<td>3.48 (0.97)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Fitness orientation</td>
<td>3.75 (0.74)</td>
<td>3.71 (0.74)</td>
<td>3.41 (0.89)</td>
<td>3.20 (0.85)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Health evaluation</td>
<td>3.72 (0.70)</td>
<td>3.67 (0.73)</td>
<td>3.95 (0.72)</td>
<td>3.86 (0.80)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Health orientation</td>
<td>3.36 (0.56)</td>
<td>3.43 (0.50)</td>
<td>3.61 (0.70)</td>
<td>3.75 (0.70)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Illness orientation</td>
<td>2.75 (0.53)</td>
<td>2.67 (0.60)</td>
<td>3.18 (0.83)</td>
<td>3.21 (0.84)</td>
<td>NS</td>
<td>t_24 = −4.24§</td>
<td>t_24 = −4.49§</td>
</tr>
<tr>
<td>Overweight preoccupation</td>
<td>2.59 (0.90)</td>
<td>2.49 (1.20)</td>
<td>2.47 (0.92)</td>
<td>3.03 (0.96)</td>
<td>NS</td>
<td>NS</td>
<td>t_25 = −2.29†</td>
</tr>
<tr>
<td>Self-classified weight</td>
<td>3.39 (0.62)</td>
<td>3.38 (0.83)</td>
<td>2.96 (0.62)</td>
<td>3.57 (0.73)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>BIS</td>
<td>2.94 (0.54)</td>
<td>2.75 (0.43)</td>
<td>2.15 (0.56)</td>
<td>2.38 (0.34)</td>
<td>F_1,25 = 17.33§</td>
<td>t_66 = −4.64§</td>
<td>t_61 = −4.19§</td>
</tr>
<tr>
<td>Social and hair growth</td>
<td>2.66 (0.71)</td>
<td>2.50 (0.57)</td>
<td>2.26 (0.58)</td>
<td>2.38 (0.49)</td>
<td>F_1,25 = 6.02†</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Head and neck</td>
<td>2.27 (0.62)</td>
<td>2.26 (0.53)</td>
<td>2.04 (0.61)</td>
<td>2.31 (0.44)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Muscularity and posture</td>
<td>2.61 (0.65)</td>
<td>2.58 (0.58)</td>
<td>2.16 (0.65)</td>
<td>2.35 (0.35)</td>
<td>NS</td>
<td>t_66 = −2.74†</td>
<td>t_81 = −2.29†</td>
</tr>
<tr>
<td>Hip region</td>
<td>3.19 (0.71)</td>
<td>3.10 (0.55)</td>
<td>2.17 (0.64)</td>
<td>2.55 (0.56)</td>
<td>F_1,25 = 5.05†</td>
<td>t_66 = −6.16§</td>
<td>t_81 = −4.21†</td>
</tr>
<tr>
<td>Breasts</td>
<td>3.74 (0.94)</td>
<td>2.66 (0.81)</td>
<td>2.31 (0.83)</td>
<td>2.28 (0.58)</td>
<td>F_1,24 = 21.31§</td>
<td>NS</td>
<td>t_80 = −2.40†</td>
</tr>
<tr>
<td>Genitalia</td>
<td>4.21 (0.93)</td>
<td>3.92 (0.80)</td>
<td>1.95 (0.70)</td>
<td>2.27 (0.47)</td>
<td>F_1,24 = 9.37§</td>
<td>t_65 = −10.57§</td>
<td>t_80 = −11.67§</td>
</tr>
<tr>
<td>ASI-R</td>
<td>3.11 (0.71)</td>
<td>3.27 (0.65)</td>
<td>3.20 (0.67)</td>
<td>3.47 (0.62)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Self-evaluative salience</td>
<td>3.05 (0.74)</td>
<td>3.19 (0.72)</td>
<td>2.96 (0.75)</td>
<td>3.30 (0.73)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>Motivational salience</td>
<td>3.21 (0.93)</td>
<td>3.39 (0.76)</td>
<td>3.57 (0.74)</td>
<td>3.71 (0.67)</td>
<td>NS</td>
<td>NS</td>
<td>NS</td>
</tr>
<tr>
<td>BIQLI</td>
<td>0.32 (1.33)</td>
<td>0.38 (0.78)</td>
<td>1.24 (0.99)</td>
<td>1.00 (1.09)</td>
<td>NS</td>
<td>t_24 = −5.52‡</td>
<td>t_24 = −3.99‡</td>
</tr>
<tr>
<td>SIBID</td>
<td>1.31 (0.69)</td>
<td>1.13 (0.67)</td>
<td>1.20 (0.64)</td>
<td>1.72 (0.79)</td>
<td>F_1,25 = 8.84‡</td>
<td>NS</td>
<td>t_25 = −4.51‡</td>
</tr>
<tr>
<td>RSES</td>
<td>27.90 (6.07)</td>
<td>27.48 (4.94)</td>
<td>32.43 (6.21)</td>
<td>32.79 (5.41)</td>
<td>NS</td>
<td>t_24 = −5.00‡</td>
<td>t_24 = −5.37‡</td>
</tr>
</tbody>
</table>

ASI-R = Appearance Schemas Inventory—Revised; BIQLI = Body Image Quality of Life Inventory; BIS = Body Image Scale; MBSRQ = Multidimensional Body-Self Relations Questionnaire; NS = not significant; RSES = Rosenberg Self-Esteem Scale; SIBID = Situational Inventory of Body Image Dysphoria.

*ASI-R norms from Cash et al; BIQLI norms from Cash and Fleming; BIS norms from control sample; MBSRQ norms from Brown et al, 1990; RSES norms from Sinclair et al; SIBID norms from Cash.

†P ≤ .05.
‡P ≤ .01.
§P ≤ .001.
Scores /C0 experienced situations (Table 4). At follow-up, transmen did not differ significantly lower than female and male scores retrieved from the literature.27

Self-Esteem

The postoperative Rosenberg Self-Esteem Scale level was not significantly different from the preoperative level (Table 2). Overall, self-esteem of transmen after mastectomy was significantly lower than female values retrieved from the literature.27

Correlation Between Measures and Demographics

The different measurements of body image and self-esteem were significantly correlated (Table 5). Higher quality of life corresponded with higher self-esteem, more positive body attitudes, less situational body dysphoria, and less body dissatisfaction. Less body dissatisfaction also was correlated with less situational body dysphoria and higher self-esteem. Higher self-esteem was associated with less situational body dysphoria and more positive body attitudes. None of the measurements were significantly correlated with age, education, and BMI.

A linear regression on the improvement of overall body satisfaction after mastectomy showed that age (β = 0.47, P = .04), BMI (β = −0.91, P = .01), and breast size (β = 0.74, P = .03) were significant predictors (R^2 = 0.40, F_{3,16} = 3.48, P = .04). This indicated that older age, lower BMI, and larger breast size predicted greater postoperative body satisfaction improvement.

DISCUSSION

The present study prospectively followed a group of transmen undergoing mastectomy by measuring different aspects of body image and the effect of mastectomy on these measurements. Mastectomy improved domains beyond satisfaction with the chest appearance only. However, overall, participants scored these domains less favorably than control men and women.

Table 4. Most frequent negative feelings about appearance before mastectomy (Situational Inventory of Body Image Dysphoria)*

<table>
<thead>
<tr>
<th>Preoperative, mean (SD)</th>
<th>Postoperative, mean (SD)</th>
<th>Test statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>When I look at my naked self in the mirror</td>
<td>2.94 (1.34)</td>
<td>2.27 (1.08)</td>
</tr>
<tr>
<td>When my clothes don’t fit properly</td>
<td>2.48 (1.28)</td>
<td>2.08 (1.16)</td>
</tr>
<tr>
<td>When someone looks at body parts I’m not satisfied with</td>
<td>2.36 (1.34)</td>
<td>1.96 (1.15)</td>
</tr>
<tr>
<td>When my partner sees me without clothes</td>
<td>2.20 (1.58)</td>
<td>1.87 (1.57)</td>
</tr>
<tr>
<td>When my partner touches me at body parts I’m not satisfied with</td>
<td>2.16 (1.49)</td>
<td>2.17 (1.53)</td>
</tr>
<tr>
<td>When I look at myself in the mirror</td>
<td>2.09 (1.17)</td>
<td>1.42 (0.95)</td>
</tr>
<tr>
<td>When I think of what I would like to look like</td>
<td>2.03 (1.38)</td>
<td>2.08 (1.02)</td>
</tr>
<tr>
<td>When I’m fitting new clothes in the shop</td>
<td>2.00 (1.19)</td>
<td>1.32 (0.80)</td>
</tr>
</tbody>
</table>

NS = not significant.
*Scores 0 = never to 4 = (almost) always.
^P < .05.
^†P < .01.
^‡P < .001.

Preoperative body satisfaction was most positive on the social and hair growth, head and neck, and muscularity and posture domains, whereas satisfaction with hips, breasts, and genitals was lower. Testosterone treatment leads to improved body satisfaction through its masculinizing effect on secondary sex characteristics but has a limited effect on hips, breasts, and genitals. Mastectomy improved satisfaction with the chest and with the hips and genitals. The improved satisfaction with non-operated body characteristics was reported previously (TC van de Grift et al, unpublished data, 2016). The masculine chest could contribute positively to one’s overall body satisfaction or could lead to more positive experiences because one “passes” more easily (eg, more sports participation further improves body satisfaction). In relation to control men and women, postoperative transmen were less satisfied with their bodies. The difference was largest for satisfaction with the genitals, which is consistent with the fact that 84% of participants planned future genital surgery.

In relation to control male values, transmen showed less health and body awareness. This lower attention could be the result of the dysphoria with the (previously) female aspects of their body. Conversely, efforts made in physical fitness were found to be relatively high. Investments made in fitness might serve another purpose than only improving physical health, namely building muscle mass. By going to the gym, transmen can build a more masculine physique. Although, to our knowledge, no scientific literature has described transmen’s fitness motivations, the subject is mentioned frequently in the clinic and media. Moreover, self-attitudes regarding the body are known to be stable over time and therefore any changes after mastectomy might improve only over a longer period.

Body schemas of the study participants appeared to include masculine and feminine aspects that were not significantly influenced by mastectomy. Little is known of the formation and composition of transgender body schemas. The present data suggest that transmen show a relatively “female-like” pattern of self-evaluation and a more “male-like” pattern of behavior. The high self-evaluation score could be explained by the conscious internalization of masculine ideals during the transition from female to male. The “male-like” motivational salience could be explained by the current gender role and the striving for masculine ideals. However, no previous empirical research is available to support this hypothesis and body image is likely perceived differently by transgender than by non-transgender people (eg, people with eating disorders), for whom the used assessment was developed.

Data on situational body dysphoria indicated a high level of body image-related dysphoria, especially before mastectomy. Experienced dysphoria often results from social interactions with gendered body parts. Most severe dysphoria is reported in situations in which the body is exposed or in gendered situations (eg, while going out, participating in sports, during sex). Although no data on transgender individuals have been reported using this specific measurement, this finding is in line with other research stating the importance of social “passing” on body image (TC van de Grift et al, unpublished data, 2016). A masculine chest helps with being perceived as male and supports social participation and having positive experiences. Kraemer et al found a similar decrease in levels of body insecurity and concerns of postoperative transmen compared with the preoperative group. The present study found less social dysphoria in transmen compared with control women, possibly resulting from less body objectification.

Before surgery, three aspects of life influenced body image-related quality of life most negatively: sex life, male role behavior, and overall self-worth. Improvement of quality of life is mostly related to situations in which the body (image) meets gendered expectations. Mastectomy positively influenced many aspects of quality of life, with sexuality as the exception (no effect was quantified). Participants of the present study might have been hesitant to engage in sexual activities before receiving their genital surgery. A lower quality of life of transmen was reported previously.

### Table 5. Correlation between body image measurements and sample characteristics before surgery

<table>
<thead>
<tr>
<th></th>
<th>MBSRQ</th>
<th>BIS</th>
<th>ASI-R</th>
<th>BIQLI</th>
<th>SIBID</th>
<th>RSES</th>
<th>Age</th>
<th>Education</th>
<th>BMI</th>
</tr>
</thead>
<tbody>
<tr>
<td>MBSRQ</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIS</td>
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<tr>
<td>ASI-R</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>BIQLI</td>
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<td>-0.396*</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIBID</td>
<td></td>
<td></td>
<td>0.649†</td>
<td></td>
<td>-0.628†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RSES</td>
<td>0.437*</td>
<td>-0.448†</td>
<td></td>
<td>0.716†</td>
<td></td>
<td>-0.647†</td>
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<tr>
<td>Age</td>
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<td></td>
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<td>0.434*</td>
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<td>Education</td>
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<td>0.448†</td>
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<td>0.647†</td>
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</tbody>
</table>

ASI-R = Appearance Schemas Inventory-Revised; BIQLI = Body Image Quality of Life Inventory; BIS = Body Image Scale; BMI = body mass index; MBSRQ = Multidimensional Body-Self Relations Questionnaire; NS = not significant; RSES = Rosenberg Self-Esteem Scale; SIBID = Situational Inventory of Body Image Dysphoria.

*P ≤ .05.
†P ≤ .01.
‡P ≤ .001.
Overall, self-esteem was not significantly influenced by surgery; postoperative self-esteem was significantly lower in transmen than in control men and women. This finding is contrary to previous research. However, the study sample in that research was older and one third had already received genital surgery. Our results suggest that mastectomy alone does not improve overall self-esteem within the chosen follow-up period. In contrast, on the newly constructed assessment, respondents reported a (very) positive effect of the mastectomy on their self-esteem and in all other fields of life.

Although a causal mechanism cannot be inferred from the associations between measurements, an explanatory model on the effect of surgery could be suggested. Mastectomy improves masculine “passing” and decreases body dissatisfaction and experienced dysphoria during social situations. This might improve self-esteem and quality of life. Body satisfaction and situational body dysphoria were strongly correlated. The correlation between self-esteem and quality of life was described in a previous study on protective factors for adults with gender dysphoria. Higher self-esteem can result in feelings of achievements, self-efficacy, and therefore better quality of life. Postoperative improvement of body satisfaction was predicted by an older age, lower BMI, and having larger breasts.

The present study was limited by several factors. The physical and psychological effects of surgery might not be fully representative at 6 to 16 months postoperatively. A reliable assessment of cosmetic appearance is not possible because transmen do not receive secondary corrections sooner than 6 months postoperatively. Because many participants stated they were planning to undergo such a correction, the average chest appearance is likely to improve, as is their body image. Moreover, it might take longer than the current follow-up period to integrate the positive effects of the surgery into one’s body image (eg, by having satisfactory sexual contacts). Future research might follow the same group to assess the effects of surgery in the longer term. Response biases include providing socially desirable answers (because many opt for future genital surgery) and the tendency to complete outcome questionnaires similarly, regardless of the subject. Also, owing to the absence of comprehensive trans-specific assessments, we used a relatively larger number of instruments and statistical tests in relation to the sample size, which can be considered a limitation of the present study.

CONCLUSIONS

The preoperative body image of transmen differs from those of control men and women across different domains. Mastectomy positively influences body image more broadly than satisfaction with the chest alone. Positive evaluation of the body and decreased dysphoria during social situations were associated with increased quality of life and self-esteem. Despite this positive effect, there appears to be some residual body image issues at this point of follow-up. Psychological counseling of people with persisting body image problems could focus on underlying assumptions of appearance, supporting a healthy lifestyle, and working on body acceptance and satisfactory sexuality.

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REFERENCES


