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Characterization of Genital Dissatisfaction in a National Sample of U.S. Men

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Abstract Male genital satisfaction is an important aspect of psychosocial and sexual health. The Index of Male Genital Image (IMGI) is a new scale that measures perceptions of male genitalia. We aim to characterize genital satisfaction using the IMGI and correlate dissatisfaction with sexual activity. We conducted a nationally representative survey of non-institutionalized adults aged 18–65 years residing in the U.S. In total, 4198 men completed the survey and 3996 (95.2 %) completed the IMGI. Men reported highest satisfaction with the shape of their glans (64 %), lowest satisfaction with the length of their flaccid penis size (27 %), and neutrality with the scent of their genitals (44 %). No demographic characteristics (age, race, sexual orientation, education, location, and income) were significantly associated with genital dissatisfaction. Men who were dissatisfied with their genitals were less likely to report being sexually active (73.5 %) than those who were satisfied (86.3 %). Penetrative vaginal sex (85.2 vs. 89.5 %) and receptive oral intercourse (61.0 vs. 66.2 %) were reported less by dissatisfied men. Overall, most U.S. men were satisfied with their genitals; however, a subset (14 %) report low genital satisfaction, which included men of all ages, races, and socioeconomic groups. Low genital satisfaction is associated with a decrease in sexual activity. These results provide clinicians and health educators a baseline of genital satisfaction to provide education and reassurance.

Keywords Genital satisfaction · Sexual activity · Oral sex · Penis size · Index of Male Genital Image

Introduction

Male genital satisfaction is an important aspect of psychosocial and sexual health (Davis, Binik, Amsel, & Carrier, 2013). Psychosocial dysfunction and anxiety are extremely common in men with genital anomalies (Reiner, Gearhart, & Jeffs, 1999). Men who have sex with men and a self-perception of below-average penis size had poorer measures of psychosocial adjustment in life (Grov, Parsons, & Bimbi, 2010). Case reports have shown men undergo risky procedures, such as silicon injections, to lengthen their penis and increase penile girth (Silberstein, Downs, & Goldstein, 2008). Despite poor surgical outcomes, men with a normal size phallus desire to undergo penile enhancement surgery (Vardi, Har-Shai, Gil, & Gruenwald, 2008). One report of 67 men who presented for a penile lengthening procedure found that all of these men actually had a phallic length within several standard deviations of normal (Mondaini et al., 2002). Genital piercings, silicone injection, and subcutaneous implants are increasingly common and are associated with numerous complications (Dalke, Fein, Jenkins, Caso, & Salgado, 2013). Similarly, case reports have shown incarcerated men put themselves at risk of injury by attempting penile enhancement (Hudak, McGeady, Shindel, & Breyer, 2012). Whether or not motivations for these behaviors stem from genital dissatisfaction is unknown.

Physician views of male genital satisfaction may be skewed (Davis, Paterson, & Binik, 2012; Mureau, Slijper, Slob, Verhulst, & Nijman, 1996). Patient satisfaction of penile appearance following hypospadias repair is often less than surgeon satisfaction (Mureau et al., 1996). Various urologic disorders, such as micropenis, hypospadias, Peyronie's disease, and genital cancers, affect male genital image. Medical interventions associated with these

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disorders should take into account male genital image to best meet the psychosocial needs of patients (Davis et al., 2012). Overall, men care about their genital appearance; however, the precise aspects of which is unclear.

Literature on male genital image is lacking. One study showed that approximately 20 % of men indicated some dissatisfaction with their genital size (Herbenick, Schick, Reece, Sanders, & Fortenberry, 2013). How this dissatisfaction affects sexual behavior is not completely known. One recent study showed that men with “small penis anxiety” had reduced intercourse satisfaction, but were similar to controls in other facets of sexual behavior, such as sexual desire and frequency of intercourse (Veale et al., 2015a, b). On the other hand, women’s genital satisfaction has been shown to correlate with frequency of masturbation and having used a vibrator in the past month (Herbenick et al., 2011), but few studies have examined male genital self-image and its relationship to outcomes such as sexual behavior. Herbenick et al.’s study used the Male Genital Self-Image Scale, which is a seven-item Likert scale instrument that assesses general genital satisfaction. The Index of Male Genital Image (IMGI) is a new scale that measures male genital image. This 14-item scale has been shown to be reliable, valid, internally consistent, and associated with health and psychosocial variables (Davis et al., 2013). This scale has one advantage in that each item represents a specific aspect of the male genitalia (i.e., size of testicles, erect penile length), which will enable researchers to investigate genital satisfaction more granularly. To date, no study has used the IMGI on a national level to characterize genital satisfaction among a sample of men. In doing so, we will understand satisfaction and dissatisfaction of men’s genitalia and the relationship to sexual behavior.

Aims

We aimed to characterize male genital satisfaction in a nationally representative sample of U.S. men. In particular, we sought to determine what men are most and least satisfied with their genitals. In addition, we aimed to characterize men who were dissatisfied with their genitals and how this was related to sexual activity, frequency, and other sexual behaviors. As sexual frequency declines with age (Karraker, DeLamater, & Schwartz, 2011), we hypothesized that poor genital satisfaction would be associated with age and less sexual activity.

Method

Participants and Procedure

We conducted a nationally representative survey of non-institutionalized adults aged 18–65 years residing in the U.S. We developed a questionnaire examining the prevalence of injuries

and infections that occur as a result of personal grooming and associated risk factors. The IMGI was included in this survey. The survey was conducted with the GfK Group (GfK, formerly Knowledge Networks). Details regarding GfK study methods have been reported previously (Gaither et al., 2015; Knowledge Panel Design Summary, 2013).

Panel members were randomly recruited using address-based sampling methods. GfK samples addresses from the U.S. Postal Service’s Delivery Sequence File. Address-based sampling estimates 97 % of households can be reached and contacted through household mail. Once the panel members are recruited, they receive notification via e-mail to participate in a study sample. Panel members may also check their personal online member page to participate in survey taking. The topic of the survey is given to participants. Participants do not see any questions from a particular survey until they accept the survey. The topic of the current study given to participants was “Personal Grooming Injuries.” GfK provides a laptop or netbook computer and free Internet service to all panel members without access to the Internet. For the current study, panel members received 1000 points for completing the survey, which was the cash equivalent of one U.S. dollar.

In addition to standard measures taken by GfK to enhance survey cooperation, e-mail reminders were sent to non-responders on Day 3 of the field period. A pretest survey was completed in December 2013 to ensure participants understood the questions. The final survey was conducted in January 2013 in which 7580 participants completed the survey out of 14,409 sampled via mail (completion rate of 52.5 %). GfK consented all participants prior to the beginning of the survey.

GfK uses statistical weighted adjustments to correct for known deviations in their sampling design. Additional survey errors, such as non-coverage and non-response, are also corrected for using panel demographic post-stratification weights. The Committee on Human Research at the University of California, San Francisco, approved the study.

Measures

Predictor Variables

Participants were queried in reference to their entire lifetime. Participants answered the 14-item Likert scale Index of Male Genital Image (IMGI) in Question 33a of our survey instrument (“Appendix”). Genital satisfaction was determined by a score of 4, 5, 6, or 7. Dissatisfaction was determined by a score of 1, 2, or 3. Genital neutrality was defined by a score of 4 for one analysis in order to determine which aspects of their genitalia men felt most neutral about. We used the Cronbach’s α as a measure of internal consistency (Bland & Altman, 1997).

Outcome Variables

We collected the following demographic data: age, race, relationship status, education, income, geographic region, and sexual partner preferences. We also collected sexual characteristics such as whether or not participants were sexually active, frequency of sexual intercourse, and types of sexual behaviors (penetrative vaginal sex, receptive anal sex, etc.).

Statistical Analysis

Data analysis was performed using the survey function within Stata 13.1 (Stata, StataCorp, College Station, TX) to adjust and weight the observations for the complex sampling design. All *p* values less than .05 were considered statistically significant. All missing or incomplete data were excluded from the analyses. The false discovery rate was calculated to examine statistical significance for multiple comparison tests (Glickman, Rao, & Schultz, 2014).

Results

General Population

Of the 4198 (51.2 %) men who completed the survey, 3996 (95.2 %) completed the IMGI. Baseline demographics of our participant pool are shown in Table 1, which demonstrates the distribution of our participants. The Cronbach's α for the IMGI was high ($\alpha = 0.98$).

Overall Satisfaction

The average score on the total IMGI was 68.7 (median = 67), or an average of 4.9 per item, with a SD of 14.4 (Table 2). A total of 563 (14.1 %) reported an average score less than 4 per item on the IMGI and thus were classified as dissatisfied. A total of 3433 (85.9 %) reported an average greater than 4 per item on the IMGI and thus were classified as satisfied. Men reported highest satisfaction with the shape of their glans (64 %), followed by circumcision status (62 %), girth of erect penis (61 %), texture of skin (60 %), and size of testicles (59 %). Men reported dissatisfaction with the size of their flaccid penis (27 %), length of erect penis (19 %), girth of erect penis (15 %), amount of pubic hair (14 %), and amount of semen (12 %). Men reported neutrality with the scent of their genitals (44 %), genital veins (43 %), location of urethra (42 %), color of genitals (40 %), and amount of pubic hair (36 %). Of note, those who were extremely dissatisfied (score of 1 or 2) reported dissatisfaction with their flaccid penis (10.0 %), length of erect penis (5.7 %), and girth of erect penis (4.5 %).

Table 1 Summary of demographic characteristics (*n* = 4198)

	(%)
Age (in years)	
18–24	356 (8.5 %)
25–34	771 (18.4 %)
35–44	861 (20.5 %)
45–54	984 (23.4 %)
55–65	1226 (29.2 %)
Race	
White	2855 (68.0 %)
Black	507 (12.1 %)
Other, non-Hispanic	149 (3.6 %)
Hispanic	548 (13.1 %)
Mixed	139 (3.3 %)
Sexual orientation	
Heterosexual	3259 (77.6 %)
Homosexual	173 (4.1 %)
Bisexual	38 (0.9 %)
Not sexually active	728 (17.3 %)
Marital status	
Married	2421 (57.7 %)
Widowed	40 (1.0 %)
Divorced	335 (8.0 %)
Separated	57 (1.4 %)
Never married	1015 (24.2 %)
Living with partner	330 (7.9 %)
Education	
Less than high school	261 (6.2 %)
High school	1215 (28.9 %)
Some college	1146 (27.3 %)
Bachelor's degree or higher	1576 (37.5 %)
Location	
Northeast	719 (17.1 %)
Midwest	1075 (25.6 %)
South	1462 (34.8 %)
West	942 (22.4 %)
Income (in U.S. \$)	
<50,000	1574 (37.5 %)
50,000–74,999	859 (20.5 %)
75,000–99,999	677 (16.1 %)
>100,000	1088 (25.9 %)

202 subjects did not complete Question 33a (IMGI)

Demographic Analysis

No statistically significant differences were found comparing demographics of men who reported genital dissatisfaction versus genital satisfaction (Table 3). There were no significant differences in the mean age of men who were satisfied with their genitals versus those who were dissatisfied (45.3 ± 13.3 vs. 44.5 ± 13 , respectively, $p = .18$). Similarly, there were no significant

Table 2 Overall characteristics of male genital self-satisfaction ($n = 3996$)

IMGI characteristic	Satisfied (%)	Dissatisfied (%)	Neutral (%)
Length of erect penis	58	19	23
Girth of erect penis	61	15	24
Size of flaccid penis	39	27	34
Color of genitals	55	5	40
Shape of glans (head)	64	4	32
Location of urethra	54	4	42
Texture of skin	60	5	35
Curvature of penis	57	8	35
Circumcision status	62	7	31
Size of testicles	59	7	34
Genital veins	52	5	43
Amount of pubic hair	50	14	36
Amount of semen	52	12	36
Scent of genitals	47	9	44

differences between those satisfied versus dissatisfied based upon race, marital status, education, location, income, or sexual partners.

Sexual Behavior Analysis

Men who were dissatisfied with their genitals were less likely to report being sexually active (73.5 %) than those who were satisfied (86.3 %, $p < .01$) (Table 4). Overall, dissatisfied men reported less daily and weekly sexual activity compared to satisfied men (1.8 vs. 4.2 and 38.5 vs. 49.9 %, respectively, $p < .01$). Penetrative vaginal sex and receptive oral sex were reported significantly less by men who were dissatisfied with their genitals (85.2 vs. 89.5 %, $p = .01$ and 61.0 vs. 66.2 %, $p = .03$). No statistical differences were observed between the number of satisfied and dissatisfied men reporting penetrative anal sex, performing oral genital sex, receiving anal sex, performing oral anal sex, or receiving oral anal sex.

Discussion

This study aimed to characterize genital satisfaction in a national sample of U.S. men as it relates to sexual behaviors. Men reported satisfaction with shape of their glans and dissatisfaction with the size of their flaccid penis. Demographic variables were not significantly associated with dissatisfaction with one's genitals. Broadly, men who reported more genital dissatisfaction were less sexually active, had sex less frequently, and were less likely to report penetrative vaginal sex and receiving oral genital sex in the last year.

Overall, men were mostly satisfied with their genitals with less than a quarter of men reporting dissatisfaction. This coincides with Herbenick et al. (2013), who reported a quarter of men were dissatisfied with their genital size. Our results confirm this find-

ing, as 15–27 % of men reported dissatisfaction with penis size. In particular, men were dissatisfied with the size of the flaccid penis, length of erect penis, and girth of erect penis (Table 2). The average flaccid penile length ranges from 6.8 to 10.4 cm (Wylie & Eardley, 2007); however, it is unclear which size thresholds predict genital satisfaction and whether dissatisfaction comes from peer-to-peer size comparisons, the so-called shower room appearance (Khan, Somani, Lam, & Donat, 2012). In contrast to our findings, Lever, Frederick, and Peplau (2006) found that 45 % of men reported that they wanted their penis to be larger. This larger estimate is probably due to some selection bias, as this was a volunteer Internet survey. Also, those men who might want their penis to be larger could also fall into the satisfied category on the IMGI. Interestingly, men reported being satisfied with the shape of their glans (64 %), which has little anatomic variability. Partner satisfaction of these same aspects of male genitalia was not captured in our study. Discrepancies or similarities between self-satisfaction and partner satisfaction require future research.

To our knowledge, no other study has used the IMGI to compare demographic characteristics between men with high and low genital satisfaction. Veale et al. (2014) did show that men who were older, homosexual, or bisexual had a higher likelihood of reporting concern or dissatisfaction with the size of their penis. It is possible that men who have sex with men have more opportunities to compare their size with other men (Grov et al., 2010). In our study, although there were more homosexual men who reported overall dissatisfaction, this result was not statistically significant. It is possible that this analysis was underpowered as only 5 % of men in our sample reported having sex with men or with men and women. No significant differences were observed between varying age cohorts among satisfied and dissatisfied men. Because male genital image may impact medical decisions regarding interventions involving the genitalia (Davis et al., 2012), it is important for clinicians and educators to be aware that genital dissatisfaction is prevalent in all age groups, races, and

Table 3 Demographic characteristics between men with genital dissatisfaction versus men with genital satisfaction

	Genital dissatisfaction (total average score <4), <i>n</i> = 563	Genital satisfaction (total average score ≥4), <i>n</i> = 3433	<i>p</i> value	Test statistic, <i>t</i> (<i>df</i>), χ^2
Age ^{a,b}	45.3 ± 13.3	44.5 ± 13.0	ns	−1.36 (3994) ^c
Race ^b (<i>n</i> , % of total)			ns	6.28 (4)
White	378 (67.1)	2347 (68.4)		
Black	59 (10.5)	420 (12.2)		
Other, non-Hispanic	26 (4.6)	113 (3.3)		
Hispanic	75 (13.3)	445 (13.0)		
Mixed	25 (4.4)	108 (3.1)		
Sexual partner ^b (<i>n</i> , % of total)				
Women	400 (92.0)	2773 (94.1)	ns	4.46 (2)
Men	31 (7.1)	141 (4.8)		
Both	4 (0.9)	34 (1.2)		
Marital status ^b (<i>n</i> , % of total)			ns	5.84 (5)
Married	308 (54.7)	1985 (57.8)		
Widowed	5 (1.0)	33 (1.0)		
Divorce	49 (8.7)	281 (8.2)		
Separated	6 (1.1)	49 (1.4)		
Never married	156 (27.7)	807 (23.5)		
Living with partner	39 (6.9)	278 (8.1)		
Education ^b (<i>n</i> , % of total)			ns	3.78 (3)
Less than high school	41 (7.3)	201 (5.9)		
High school	157 (27.9)	988 (28.8)		
Some college	167 (29.7)	938 (27.3)		
Bachelor's degree or higher	198 (35.2)	1306 (38.0)		
Location ^b (<i>n</i> , % of total)			ns	3.17 (3)
Northeast	110 (19.5)	576 (16.8)		
Midwest	146 (25.9)	879 (25.6)		
Southwest	190 (33.7)	1197 (34.9)		
West	117 (20.8)	781 (22.7)		
Income ^b (<i>n</i> , % of total)			ns	4.62 (3)
<50,000	231 (41.0)	1252 (36.5)		
50,000–74,999	109 (19.4)	720 (21.0)		
75,000–99,999	89 (15.8)	554 (16.1)		
>100,000	134 (23.8)	907 (26.4)		

^a Age is a continuous variable^b Missing data excluded from the analysis^c Student's *t* test

socioeconomic groups. As the IMGI might be helpful to identify men with poor genital satisfaction, how the IMGI relates to other measures of body image, such as the Cosmetic Procedure Screening Scale for penile dysmorphic disorder, has not been studied (Veale et al., 2015a, b).

We found that genital dissatisfaction was associated with less sexual activity, less frequent sexual activity, less penetrative vaginal sex, and less receptive oral sex. Such data are clinically meaningful as penile–vaginal intercourse has been associated with quality of life and positive mental health (Brody & Costa, 2009). Positive female genital self-image correlates with increased

vibrator use, frequency of masturbation, having had gynecological examinations in the past year, and having performed genital self-examination in the past month (Herbenick et al., 2011). How male genital self-image affects sexual behavior and clinical decision making is less clear. No studies have associated the IMGI with sexual frequency or behavior. Among young military personnel, greater genital satisfaction was associated with lower sexual anxiety and lower episodes of erectile dysfunction (Wilcox, Redmond, & Davis, 2015). Poor sexual function, such as anxiety or erectile dysfunction, may be a confounder in the relationship between genital dissatisfaction and sexual activity. Poorer

Table 4 Comparing sexual behaviors between men with genital dissatisfaction versus men with genital satisfaction

	Genital dissatisfaction (total average score <4), <i>n</i> = 563	Genital satisfaction (total average score ≥4), <i>n</i> = 3433	<i>p</i> value	Test statistic, <i>t</i> (<i>df</i>), χ^2
Sexually active ^a (<i>n</i> , % of total)				
Yes	435 (73.5)	2948 (86.3)	<.01	27.3 (1)
Frequency of sex ± (<i>n</i> , % of total)				
Refused	13 (3.0)	57 (1.9)	<.01	34.8 (3)
Daily	8 (1.8)	126 (4.2)		
1–3/week	169 (38.5)	1480 (49.9)		
Monthly	144 (32.8)	840 (28.3)		
Every 3 mo or less	105 (23.9)	462 (15.6)		
Sexual behaviors in the last year ^a (<i>n</i> , % of total)				
Penetrative vaginal sex	374 (85.2)	2653 (89.5)	.01	7.12 (1)
Penetrative anal sex	73 (16.6)	485 (16.4)	ns	0.02 (1)
Performed oral genital sex	240 (54.7)	1743 (58.8)	ns	2.66 (1)
Received oral genital sex ^b	268 (61.0)	1964 (66.2)	.03	4.57 (1)
Received anal sex	22 (5.1)	131 (4.4)	ns	0.31 (1)
Performed oral anal sex	53 (12.1)	333 (11.2)	ns	0.27 (1)
Received oral anal sex	24 (5.5)	201 (6.8)	ns	1.07 (1)

^a Missing data excluded from the analysis

^b When adjusted for the false discovery rate, this comparison was no longer statistically significant. All other *p* values remained significant

satisfaction might cause sexual anxiety and thus lead to less sexual activity. How poorer satisfaction affects sexual function without partners, such as masturbation, was not assessed in this study.

Receptive oral sex was reported less by men who were dissatisfied with their genitals. Although this finding was only borderline significant due to the false discovery rate calculation, this finding merits consideration. About three-fourths of men in the U.S. report receiving oral sex in their lifetime (Herbenick et al., 2010; Leichter, Chandra, Liddon, Fenton, & Aral, 2007). In heterosexual men, receptive oral sex is associated with white race and having a non-monogamous sex partner (Leichter et al., 2007). Chambers (2007) reported that men and women perceive the act of oral sex as less intimate than intercourse. Two interesting findings of this study include that college women perceived oral sex as less intimate than college men, and college men endorsed power as the most typical reason for receiving oral sex. It is possible that these two findings might explain why men who are less satisfied with their genitals report less receptive oral sex. If men are dissatisfied with their genitals, they might also perceive themselves as having less power and not want to engage in an intimate act. To our knowledge, no studies have examined the connection between genital dissatisfaction and sexual behavior. However, from our study, it is clear that lower sexual activity and genital dissatisfaction are strongly associated.

This is the first study to use the IMGI in a nationally representative sample of U.S. men. Its strengths include a large, nationally representative sample from a well-validated source. The IMGI showed high internal consistency. Participants completed the survey via the Internet, which facilitates privacy and ease of access as

the survey was of a sensitive nature. Internet access was provided to all those without access.

Our study had limitations. All individuals contacted must have had a home address in the U.S. and be non-institutionalized. Thus, these results may not be generalizable. Test–retest has not been completed on the IMGI. The IMGI has only been validated in one study (Davis et al., 2013), and our survey as a whole has not been validated. Given the sensitive nature of our survey, some participants may not have felt comfortable answering questions about sexual behavior or genital satisfaction. Numerical correlation between genital satisfaction and penile length or testicular size was not possible with our survey instrument. Furthermore, the impact of psychological or medical conditions, such as erectile dysfunction, upon genital satisfaction is unknown. The valence of certain aspects on the IMGI (e.g., genital veins, scent) was not measured in our survey and thus should be an area of future investigation. Despite these limitations, our findings aid the understanding of genital satisfaction as it relates to sexual activity among U.S. men.

Compliance with Ethical Standards

Conflict of interest No competing financial interests exist.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Ethical Approval All procedures were in accordance with the ethical standards of the institutional review board at the University of California, San Francisco.

Appendix

Q33a. How satisfied are you on a scale from 1 to 7 with your...

Extremely dissatisfied	Very dissatisfied	Somewhat dissatisfied	No feeling one way or the other	Somewhat satisfied	Very satisfied	Extremely satisfied
1	2	3	4	5	6	7

a—Length of erect penis, b—Girth of erect penis, c—Size of flaccid penis, d—Color of genitals, e—Shape of glans (head), f—Location of urethra, g—Texture of skin, h—Curvature of penis, i—Circumcision status, j—Size of testicles, k—Genital veins, l—Amount of pubic hair, m—Amount of semen, n—Scent of genitals

Note: The entire survey sent to participants is available from the corresponding author upon request

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