

Attitude Toward One's Circumcision Status Is More Important than Actual Circumcision Status for Men's Body Image and Sexual Functioning

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Abstract Research exploring the impact of circumcision on the sexual lives of men has failed to consider men's attitudes toward their circumcision status, which may, in part, help to explain inconsistent findings in the literature. The current study explored the potential relationship between attitudinal factors toward one's circumcision status, timing of one's circumcision, and sexual correlates. A total of 811 men (367 circumcised as neonates, 107 circumcised in childhood, 47 circumcised in adulthood, and 290 intact) aged 19–84 years ($M = 33.02$, $SD = 12.54$) completed an online survey. We assessed attitudes toward one's circumcision status, three domains of body image (Male Genital Image Scale, Body Exposure during Sexual Activities Questionnaire, Body Image Satisfaction Scale), and self-reported sexual functioning (International Index of Erectile Function). Men who were circumcised as adults or intact men reported higher satisfaction with their circumcision status than those who were circumcised neonatally or in childhood. Lower satisfaction with one's circumcision status—but not men's actual circumcision status—was associated with worse body image and sexual functioning. These findings identify the need to control for attitudes toward circumcision status in the study of sexual outcomes related to circumcision. Future research is required to estimate the number of men who are dissatisfied with their circumcision status, to explore the antecedents of distress in this subpopulation, and to understand the extent of negative sexual outcomes associated with these attitudes.

Keywords Male circumcision · Body image · Genital self-image · Sexual functioning · Attitudes · Foreskin

Introduction

The impact of circumcision (the surgical removal of the prepuce) on the sexual lives of men is not well understood (Bossio, Pukall, & Steele, 2014). One fundamental difference between circumcised and intact (i.e., not circumcised) men is the physical appearance of their genitals (i.e., the presence or absence of a foreskin). Worse body image or genital self-image predicts lower sexual functioning (Cash, Maikkula, & Yamamiya, 2004; Sanchez & Kiefer, 2007), and the writings of anti-circumcision activist groups suggest that circumcision is associated with lower body image in some men (e.g., Boyle, 2015); however, the role of circumcision status on genital self-image has never been empirically studied. The aim of the current study was to explore men's attitudes toward their circumcision status (e.g., intact or circumcised neonatally, in childhood, or as adults). In addition, this study explored the relationship among circumcision status attitudes, body image, and sexual functioning.

Research exploring the impact of circumcision on men's sexual functioning is inconclusive. Some studies report that circumcision decreases sexual functioning (e.g., Fink, Carson, & DeVellis, 2002; Kim & Pang, 2007; Shen, Chen, Zhu, Wan, & Chen, 2004), some report that it improves sexual functioning (e.g., Senel, Demirelli, Misirlioglu, & Sezgin, 2012), and some report that it does not adversely impact sexual functioning (e.g., Kigozi et al., 2008; Laumann, Masi, & Zuckerman, 1997; Payne, Thaler, Kukkonen, Carrier, & Binik, 2007). According to Barlow's (1986) model of sexual dysfunction, men with sexual dysfunction experience negative affect or perceived lack of control in response to sexual performance demands (internal or external),

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which in turn diverts attentional focus away from erotic stimuli to consequences of poor sexual “performance.” Thoughts of experiencing sexual dysfunction accompanied by increased autonomic nervous system arousal create a negative feedback loop, which is detrimental to a sexual response. Thus, harboring negative attitudes toward one’s body image (or, more specifically, one’s circumcision status), or expecting one’s circumcision status to negatively impact one’s sexual functioning may be sufficiently distracting as to inhibit sexual response in these men. Mixed findings in the circumcision literature may therefore be explained to some extent by the inclusion of men who are highly distressed by their circumcision status—especially in the case of men who did not explicitly consent to being circumcised, such as those who were circumcised neonatally or in childhood. Conversely, Barlow’s model may also explain studies that report improved sexual functioning in men who elect to undergo circumcision in adulthood (e.g., Senel et al., 2012; Zhang, Yu, Bai, & Wang, 2012). In these instances, anticipation of better sexual functioning post-circumcision could reduce negative expectations, lead to increased attentional focus on erotic cues, and in turn result in improved self-reported sexual and attitudinal outcomes after circumcision.

Of the studies suggesting that circumcision status is associated with sexual functioning, there is a reliance on self-report measures, such as the International Index of Erectile Function (IIEF; Masood et al., 2005) or intravaginal ejaculatory latency times (IELTs; Senol, Sen, Karademir, Sen, & Saraçoğlu, 2008). These studies frequently have a pre-/post-study design, which further introduces the possibility for participant bias (as improvements to self-reported measures would be expected in the case of men who elect to undergo circumcision). In contrast, studies that rely on objective measures of penile sensitivity, such as quantitative sensory testing (Bossio, Pukall, & Steele, 2016; Payne et al., 2007; Sorrells et al., 2007) and sexual psychophysiology (Payne et al., 2007), have failed to produce convincing evidence that circumcision decreases penile sensitivity. Thus, if decreased penile sensitivity does not appear to account for differences in sexual functioning across circumcision status (Cold & Taylor, 1999; Taylor, Lockwood, & Taylor, 1996), perhaps psychological variables may better explain this relationship. That is, if distracting, negative attitudes toward one’s circumcision status play a role in sexual functioning, then Barlow’s model of sexual dysfunction would support the notion that self-reported measures of sexual functioning may be particularly problematic for circumcision research, as they may be more susceptible to the influence of these cognitions.

Thoughts about one’s body, including thoughts specific to one’s own genitals, have been linked to men’s sexual functioning. Body image refers to a multidimensional construct consisting of perceptions, thoughts, and behaviors, stemming from one’s evaluation of their physical appearance (Cash et al., 2004; Gillen, Lefkowitz, & Shearer, 2006; Pruzinsky & Cash, 2002). Better body image predicts greater sexual functioning and satisfaction (Breuer, 2013), and—conversely—poor body image is associ-

ated with decreased sexual functioning, such as higher rates of premature ejaculation and erectile difficulties in men (Breuer, 2013; Cash et al., 2004; Laumann, Paik, & Rosen, 1999; Sanchez & Kiefer, 2007). The role of body image in men’s sexual lives also extends to their penis, specifically. For example, dissatisfaction with one’s penis correlates with lower sexual self-esteem and more sexual anxiety (Algars, Santtila, Jern, Johansson, & Westerlund, 2011; Morrison, Bearden, Ellis, & Harriman, 2005). Men who are happier with the appearance or size of their penis report more positive body image overall, better appraisal of their sexual abilities (Winter, 1989), better sexual functioning, and higher frequency of sexual behaviors (Algars et al., 2011; Reinholtz & Muehlenhard, 1995).

Genital body image research has typically focused on the appearance of the penis or penis length. Little research has empirically explored the potential role of circumcision status in a man’s appraisal of his body image, particularly as body image relates to sexual functioning. To date, there is only a single empirical study that documents men’s attitudes toward their circumcision status (Gaither et al., 2017). Additionally, the timing of circumcision may be important in how circumcision status impacts a man’s body image, such that men circumcised as neonates—as is typical in North America—may have a different perception of their circumcision status as compared to individuals who were circumcised in childhood or even in adulthood. It has been suggested that the element of choice is paramount in how men feel about their circumcision status (Earp, 2015), such that men who choose to undergo circumcision as an adult may be more satisfied, whereas being neonatally circumcised may be associated with feelings of resentment or upset (in some men) due, for example, to lack of choice or consent. In line with Barlow’s (1986) model, distress over one’s circumcision status may be sufficiently distracting as to interrupt a sexual response.

Presently, there is a need to explore men’s attitudes toward their circumcision status and how these attitudes might impact men’s body image and sexual functioning. Current research suggests that circumcision status may be related to sexual functioning, but the nature of this relationship is unclear. Specifically, more research is needed to conclusively determine whether circumcision status is an important variable in men’s sexual lives because of physiological differences between circumcised and intact penises (e.g., penile sensitivity), because these groups differ psychologically (e.g., distress sufficient to interfere with sexual response), or perhaps an interaction of the physiological and psychological variables. The current study aimed to investigate the relationships among men’s attitudes toward their circumcision status, when they were circumcised, and the impact of both factors on two aspects of men’s sexual lives: body image and sexual functioning. This study set out to explore the following novel empirical questions: (1) How do men who completed the current online study perceive their circumcision status? (2) Does perceived body image differ based on men’s circumcision status and/or satisfaction with their circumcision status? (3) Does self-

reported sexual functioning differ based on men's circumcision status and/or satisfaction with their circumcision status? All three questions were explored within the context of timing of circumcision (as a neonate, in childhood, in adulthood, or never [intact men]). Because of the exploratory nature of these analyses, no predictions were made.

Method

Participants

A total of 811 men completed the online survey (367 circumcised as neonates, 107 circumcised in childhood, 47 circumcised in adulthood, and 290 intact). Eligible participants met the following criteria: (1) over the age of 18 years; (2) able to read and write English fluently; and (3) cisgendered men (i.e., biologically born males who identify as male/men). Participants were recruited through print advertisements placed within the Queen's University campus and the surrounding community of Kingston, Ontario, Canada. Online advertisements were also posted on social media Web sites (e.g., Facebook, Twitter), as well as relevant online communities (e.g., Reddit, men's health websites, electronic classified sites). Advertisements invited men to participate in research about male sexuality by completing "an online questionnaire asking about circumcision status, male sexuality, body image, and relationship functioning." Informed consent was obtained from all individual participants included in the study.

The sample ranged in age from 19 to 84 years ($M = 33.02$, $SD = 12.54$). The largest proportion of participants was from the USA ($n = 360$, 44.4%), Canada ($n = 232$, 27.5%), or Europe ($n = 137$, 16.9%), but participants from other geographic locations were also represented (e.g., Australia, Africa, South Africa, Asia, Middle East). In terms of religious cultures that typically circumcise their male-born infants, only a small percentage of the current sample reported being brought up in a Jewish ($n = 23$, 2.8%) or Muslim ($n = 5$, 0.6%) household. See Table 1 for sociodemographic information.

Less than half of the sample reported that they were single and not dating ($n = 335$, 41.3%), while the rest reported that they were in a relationship (see Table 1). The Kinsey Sexual Fantasy Scale indicated that the sample was diverse with respect to sexual orientation, with 419 (51.7%) men reporting exclusive sexual attraction to women, 135 (16.6%) reporting exclusive sexual attraction to men, and many men (257; 31.6%) falling at different points within the continuum.

Measures

Study procedures were approved by Queen's University General Research Ethics Board (GREB). Interested participants vis-

ited the online survey page, which was hosted through the Checkbox website (Checkbox Survey Inc., Watertown, MA) and stored on a secure, private server located on the University campus. The survey took approximately 45–60 min to complete. After completion, participants were eligible to enter their email address in a monthly prize draw for \$75 CAD, which lasted over the duration of data collection (13 months).

Demographics

Participants provided information about their age, ethnicity, level of education achieved, occupational status (i.e., employed, unemployed, student), and annual income. Participants were also asked to identify their religious affiliation while growing up, as well as their current religious affiliation. We asked about Jewish and Muslim religious affiliation specifically, as circumcision is a common practice associated with these religions. Participants indicated their relationship status and the nature of the relationship, including length of current relationship (if applicable), and their current partner's gender. Sexual orientation was assessed using the Kinsey Sexual Fantasy Scale (Kinsey, Pomeroy, & Martin, 1948).

Circumcision Status

Participants indicated their circumcision status and the age at which they were circumcised (if applicable). Men were grouped in four categories: (1) those who had been circumcised as neonates (defined as up to 3 months after birth—as is typical in North American cultures; Blank et al., 2012); (2) those circumcised in childhood (3 months–17 years); (3) those circumcised in adulthood (18 years or older); and (4) those who had never been circumcised (intact men). Thirty-four participants were excluded who indicated that they did not know when they were circumcised.

Circumcision Status Attitudes

Five questions were developed for the purpose of this study to assess men's attitudes toward their circumcision status. The questions were designed for the purpose of gaining a better understanding of men's face-valid attitudes about their circumcision status. Participants answered questions indicating their satisfaction with their own circumcision status, including: "How happy are you with your circumcision status?" (*Happy*), "How much is it a positive issue in your everyday life?" (*Positive*), "How much is it a negative issue in your everyday life?" (*Negative*), "How much is your circumcision status a significant part of who you are?" (*Significant*), and "How often do you think about your circumcision status?" (*Often*). Questions were answered on an 11-point Likert-type scale, from 0 (*totally disagree/not at all*) to 10 (*totally agree/very much*). Reliability analysis for the current sample produced a Cronbach's alpha value of $\alpha = 0.82$.

Table 1 Participant demographic information

Characteristic	Neonatally circumcised (<i>n</i> = 367)	Circumcised as child (<i>n</i> = 107)	Circumcised as adult (<i>n</i> = 47)	Intact (<i>n</i> = 290)	Test statistic	<i>p</i> value
Age (in years) (<i>M</i> , <i>SD</i>)	32.9 (12.3) ^a	34.2 (13.7) ^a	44.6 (15.1) ^b	30.87 (10.9) ^a	$F(3, 807) = 17.35$	<.001*
Birthplace (<i>n</i> , %)					$\chi^2(9) = 236.61$	<.001*
Canada	83 (22.6) ^x	18 (16.8) ^x	1 (2.1) ^a	121 (41.7) ^b		
Europe	12 (3.3) ^a	37 (34.6) ^b	23 (48.9) ^c	65 (22.4) ^d		
United States	245 (66.8) ^a	31 (29.0) ^b	9 (19.1) ^c	75 (25.9) ^d		
Other	27 (7.4) ^x	21 (19.6) ^a	14 (29.8) ^x	29 (10.0) ^b		
Education (<i>n</i> , %)					$\chi^2(6) = 16.89$.01
High school/vocational training	81 (22.1) ^x	28 (26.2) ^x	8 (17.0) ^x	55 (19.0) ^x		
College/university	207 (56.4) ^x	53 (49.5) ^x	17 (36.2) ^x	163 (56.2) ^x		
Graduate/professional	79 (21.5) ^x	24 (22.4) ^x	22 (46.8) ^a	69 (23.8) ^x		
Occupation (<i>n</i> , %)					$\chi^2(6) = 22.41$.001*
Employed/retired	228 (62.1) ^x	64 (61.0) ^x	43 (91.5) ^a	160 (55.2) ^x		
Student	109 (29.7) ^x	33 (31.4) ^x	3 (6.4) ^a	102 (35.2) ^b		
Unemployed	27 (7.4) ^x	8 (7.6) ^x	1 (2.1) ^x	26 (9.0) ^x		
Income (<i>n</i> , %)					$\chi^2(15) = 44.92$	<.001*
\$0–19,999	135 (36.8) ^x	40 (37.4) ^x	5 (10.6) ^a	105 (36.2) ^x		
\$20,000–39,999	80 (21.8) ^x	19 (17.8) ^x	3 (6.4) ^x	64 (22.1) ^x		
\$40,000–59,999	51 (13.9) ^x	14 (13.1) ^x	8 (17.0) ^x	44 (15.2) ^x		
\$60,000–79,999	35 (9.5) ^x	10 (9.3) ^x	10 (21.3) ^x	21 (7.2) ^x		
\$80,000–99,999	20 (5.4) ^x	6 (5.6) ^x	6 (12.8) ^x	15 (5.2) ^x		
\$100,000+	22 (6.0) ^x	7 (6.5) ^x	11 (23.4) ^a	21 (7.2) ^x		
Religious affiliation (growing up)					$\chi^2(12) = 50.34$	<.001*
None/NA	66 (18.0) ^x	25 (23.4) ^x	8 (17.0) ^x	87 (30.0) ^a		
Catholic/Christian/Protestant	241 (65.7) ^x	69 (64.5) ^x	37 (78.7) ^x	169 (58.3) ^x		
Jewish	21 (5.7) ^a	1 (0.9) ^x	0 (0.0) ^x	1 (0.3) ^b		
Muslim	1 (0.3) ^a	3 (2.8) ^x	1 (2.1) ^x	0 (0.0) ^b		
Other	38 (10.4) ^x	9 (8.4) ^x	1 (2.1) ^x	33 (11.4) ^x		
Religious affiliation (current)					$\chi^2(12) = 29.38$.003
None/NA	198 (54.0) ^x	67 (62.6) ^x	25 (53.2) ^x	168 (57.9) ^x		
Catholic/Christian/Protestant	80 (21.8) ^x	15 (14.0) ^x	17 (36.2) ^x	48 (16.6) ^x		
Jewish	4 (1.1) ^x	1 (0.9) ^x	1 (2.1) ^x	2 (0.7) ^x		
Muslim	0 (0.0) ^x	1 (0.9) ^x	1 (2.1) ^x	0 (0.0) ^x		
Other	85 (23.2) ^x	23 (21.5) ^x	3 (6.4) ^x	72 (24.8) ^x		
Relationship status					$\chi^2(12) = 15.08$.24
Single, not dating	161 (43.9) ^x	44 (41.1) ^x	13 (27.7) ^x	117 (40.3) ^x		
Dating	97 (26.4) ^x	30 (28.0) ^x	16 (34.0) ^x	95 (32.8) ^x		
Married/common-law	96 (26.2) ^x	27 (25.2) ^x	17 (36.2) ^x	75 (25.9) ^x		
Divorced/separated	7 (1.9) ^x	3 (2.8) ^x	0 (0.0) ^x	2 (0.7) ^x		
Other	6 (1.6) ^x	3 (2.8) ^x	1 (2.1) ^x	1 (0.3) ^x		
Length of relationship (months) (<i>M</i> , <i>SD</i>)	81.6 (102.8) ^a	162.7 (177.9) ^b	163.6 (165.8) ^b	73.0 (86.4) ^a	$F(3, 254) = 8.16$	<.001*
Nature of relationship (<i>n</i> , %)					$\chi^2(3) = 4.47$.22
Partner is a woman	144 (39.2) ^x	42 (39.3) ^x	20 (42.5) ^x	131 (45.2) ^x		
Partner is a man	30 (8.2) ^x	10 (9.3) ^x	9 (19.1) ^x	23 (7.9) ^x		

Results of post hoc tests across circumcision status are marked with superscripts; different superscripts indicate significant difference between the four groups (i.e., neonatally circumcised, circumcised in childhood, circumcised in adulthood, intact). In chi square analyses, a subscript of *x* indicates failure to reject the null hypothesis. Asterisks indicate significant omnibus tests. Bonferroni corrections were used for all omnibus and post hoc tests

Body Image

Three validated questionnaires were administered to assess three domains of body image, from specific to global: genital body image, body image during sexual activities, and body image overall.

Male Genital Image Scale (MGIS) A modified version of the MGIS (Winter, 1989) was administered. The MGIS is a 14-item scale measuring men's perceptions of various aspects of their genitals (e.g., length of non-erect and erect penis, appearance of one's scrotum, pubic hair, and overall genital appearance). Two additional questions were added to the MGIS for the purpose of the current study to assess men's level of satisfaction related to the appearance of their circumcision status when their penis was erect and when it was flaccid (i.e., "My circumcision status when my penis is erect" and "My circumcision status when my penis is not erect"). Participant responses were coded on a five-point Likert-type scale, where 0 indicated *very dissatisfied* and 5 indicated *very satisfied*. Higher total scores suggest greater satisfaction with the appearance of one's genitals. Cronbach's alpha values for the current study were $\alpha = 0.92$ with and without the two additional circumcision status questions.

The Body Exposure during Sexual Activities Questionnaire (BESAQ) The BESAQ (Cash, Fleming, Alindogan, Steadman, & Whitehead, 2002) was administered, which is a 28-item measure of body image within the context of sexual activity, specifically assessing self-conscious thoughts about body image and behaviors or desires to hide parts of the body during sex. Example questions include: "During sex, I worry that my partner will find aspects of my physique unappealing" or "I don't like my partner to see me completely naked during sexual activity." Participants indicated their response on a five-point frequency scale, where 0 indicated *never* and 4 indicated *almost always or always*. Higher overall scores indicate lower satisfaction with body image during sexual activity. Reliability analysis for the current sample produced a Cronbach's alpha value of $\alpha = 0.96$.

Body Image Satisfaction Scale (BISS) The BISS is a six-item measure to assess momentary evaluative/affective body image experiences (Cash et al., 2002). The six items assess dissatisfaction/satisfaction with one's: Overall physical appearance; body size and shape; weight; feelings of physical attractiveness; current feelings about one's look relative to how one usually feels; and evaluation of one's appearance relative to the average person. Items were rated on a 9-point, bipolar scale with "*completely positive attitudes towards body image*" and "*completely negative attitudes towards body image*" at each opposite anchor. Higher scores indicate more favorable body image. BISS scores have been shown to appropriately correlate with various trait measures of body image (Cash et al., 2002). Reliability analysis produced a Cronbach's alpha of $\alpha = 0.86$ for the current sample.

Sexual Functioning

Sexual functioning was assessed using the International Index of Erectile Function (IIEF; Rosen et al., 1997), a 15-item measure of sexual and erectile dysfunction over the previous 4 weeks. Items were scored on a five-point Likert-type scale, where 1 indicates *almost never/never* and 5 indicates *almost always/always*. Participants were able to indicate whether they did not attempt intercourse over the past 4 weeks; these men were considered non-responders, and their data were not included in analyses. Higher total scores indicate better sexual functioning. Reliability analyses for the current sample produced a Cronbach's alpha of $\alpha = 0.90$ for the IIEF total score.

Results

Demographics

Group differences across circumcision status were explored for all sociodemographic variables across circumcision status (see Table 1). Continuous variables were analyzed using analyses of variance (ANOVAs), while categorical variables were analyzed using crosstabs and chi-square tests, interpreted via adjusted residuals method with Bonferroni correction (Beasley & Schumacker, 1995).

With respect to age, men circumcised in adulthood were significantly older than the other groups, indicating a cohort effect in men who opted for circumcision as adults. Given that circumcision practices are largely geographically bound, with neonatal circumcision more commonly performed in North American cultures and less commonly done in European cultures (World Health Organization, 2007), it is unsurprising that we observed a significant group effect of birthplace for circumcision status. Consistent with WHO statistics, the largest proportion of Canadian and European men were intact, while the largest proportion of American men were circumcised neonatally. With respect to adult circumcision, a single Canadian man elected the procedure, while a significantly higher than predicted proportion of European men had done so. A lower proportion of American men had undergone circumcision in adulthood than would be predicted. Relatedly, religious affiliation while growing up was another important variable with respect to circumcision status. Again, this cultural aspect is not surprising, as Jewish and Muslim cultures perform neonatal circumcision as a religious rite. Although Jewish and Muslim men were underrepresented in the current sample, both groups were more likely to have been neonatally circumcised and less likely to be intact than predicted by the null hypothesis. Intact men were more likely to have been brought up in a non-religious household. However, these differences disappeared with respect to current religious affiliation.

Few other group differences were observed across demographic variables; men who were circumcised as adults were more likely to be highly educated, employed, and high earners, while intact men were more likely to be students. Although relationship status did not vary with circumcision status, length of relationship did (for men who reported being in a relationship for at least 1 month). Men who were circumcised in adulthood and in childhood reported longer relationship length compared to men who circumcised neonatally and men who were intact. This result may be due, at least in part, to the age difference between groups, as longer relationship length corresponded to older age (i.e., men circumcised in adulthood were significantly older). However, age does not explain the longer relationship length for men circumcised in childhood, who were not significantly older than men circumcised neonatally or intact men. Of note, there was considerable variation in relationship length for all groups. These findings point to some cohort differences across circumcision status groups.

Men's Perceptions of Their Circumcision Status

Men answered five questions indicating how they felt about their circumcision status. A multivariate analysis of variance (MANOVA) was performed with each of the circumcision status attitude questions as the dependent variables (*Happy*, *Positive*, *Negative*, *Significant*, *Often*) and circumcision status as the independent variables (neonatal, childhood, adulthood, never/intact). There was a significant main effect for all variables: *Happy* ($F[3, 762] = 150.16, p < .001, \eta_p^2 = .37$), *Positive* ($F[3, 762] = 108.15, p < .001, \eta_p^2 = .30$), *Negative* ($F[3, 762] = 57.65, p < .001, \eta_p^2 = .19$), *Significant* ($F[3, 762] = 4.21, p = .006, \eta_p^2 = .02$), and *Often* ($F[3, 762] = 14.45, p < .001, \eta_p^2 = .05$). Men who were circumcised as adults and intact men reported that they were happy with their circumcision status and that it was a positive issue for them in their daily life, followed by men circumcised in childhood; men circumcised neonatally reported the lowest levels on these two variables. Men circumcised neonatally and in childhood reported that their circumcision status was a more negative part of their daily life compared to men circumcised in adulthood or intact men. When asked whether they considered their circumcision status a significant part of who they are, men circumcised in adulthood reported significantly higher values (i.e., over the neutral point of 5/10) compared to the other three groups of men, whose responses were approximately neutral (5/10). Men circumcised in adulthood reported thinking about their circumcision status significantly more often than men circumcised as neonates or during childhood (which did not differ), whereas intact men reported thinking about their circumcision status the least. Please see Fig. 1.

An exploratory factor analysis was performed to identify and compute a composite score for factors underlying the circumcision status attitudes questions. Initial eigenvalues indicated that the first two factors explained 59 and 24% of the variance,

respectively. Remaining factors had eigenvalues under 1 and thus were not considered. The first factor included *Happy*, *Regrets*, *Positive*, and *Negative*, where *Negative* was reverse-coded; this factor was called "Attitudes." The second factor included *Significant* and *Often* and was called "Rumination." Due to the exploratory nature of the factor analysis, the two-factor solution was examined using varimax rotation with Kaiser normalization. All items had a primary factor loading of .80 or higher. Internal consistency for the two factors was examined using Cronbach's alpha, and both were acceptable at .83 and .79, respectively.

The following analyses for body image and sexual functioning were performed using the Attitudes factor, the Rumination factor, and the single item of the *Happy* question (i.e., "How happy are you with your circumcision status") separately as indices of satisfaction with one's circumcision status. All three satisfaction indices were dichotomized using the midpoint to create high and low groupings for each. All analyses revealed an identical pattern of results. Due to the simplicity and face validity of the *Happy* question, as well as the exploratory nature of the current study, the analyses reported below used the *Happy* variable only. Participants who indicated a score of 0–4 were scored as "unhappy" and participants who indicated a score of 5–10 were scored as neutral/happy (termed "happy"). A breakdown of "happy" and "unhappy" men by circumcision status is presented in Table 2.

Body Image

A MANOVA was conducted to determine the effect of circumcision status and happiness with circumcision status (happy, unhappy) on three dependent variables: the BISS, BESAQ, and MGIS scores. Analyses were conducted with 597 participants (229 neonatally circumcised, 72 circumcised in childhood, 38 circumcised in adulthood, and 218 intact) who had provided complete data on all three dependent variables.

The main effect of circumcision status was not significant, but a significant main effect of happiness with circumcision status was found, Wilks's $\Lambda = .84, F(3, 587) = 36.95, p < .001, \eta_p^2 = .16$. Figure 2 shows the means and SD of the dependent variables for all three groups. Follow-up ANOVAs were conducted on the three dependent variables as follow-up tests to the MANOVA; in all cases, men who reported feeling happy with their circumcision status reported more favorable body image on the genital image, sexual activity body image, and global body image measures. Analyses were repeated controlling for participant age, and the pattern of results did not differ.

Sexual Functioning

An ANOVA was conducted to determine the effect of circumcision status and happiness with circumcision status (happy, unhappy) on IIEF total score. Analyses were conducted with 552 participants (251 neonatally circumcised, 66 circumcised

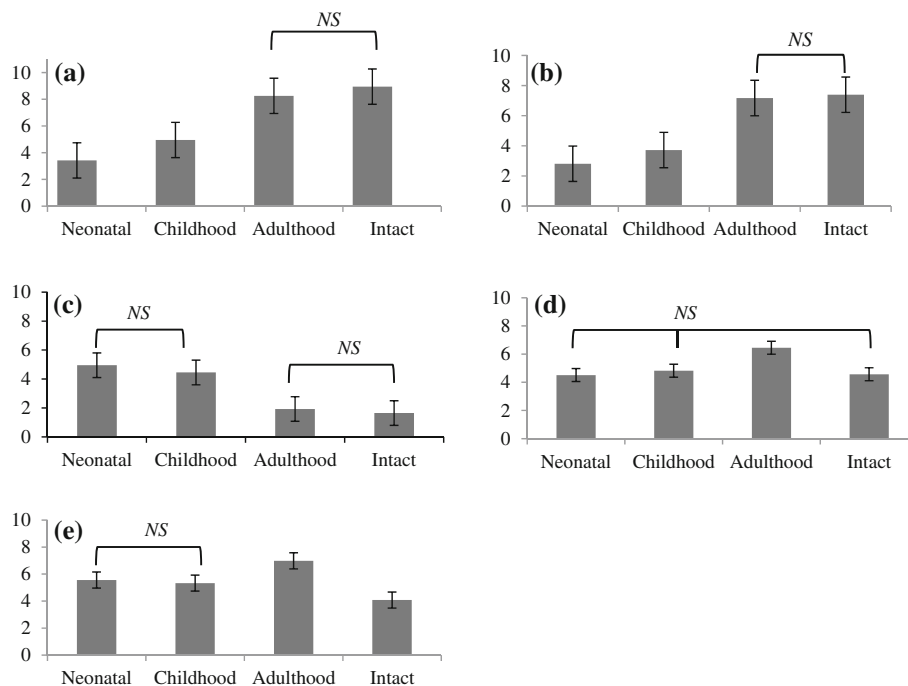


Fig. 1 Mean responses to questions assessing men's satisfaction with their own circumcision status. *Note.* Group means are significantly different unless otherwise specified with *NS* (nonsignificant). *Error bars* represent standard error. Y-axis represents participant response from 0 reduce the excessive spacing between words *happy/positive/negative/important/often*, where 5 represents *neutral*. X-axis represents circumcision status group. **a** How happy

are you with your circumcision status? (*Happy*). **b** How much is your circumcision status a positive issue for you in everyday life? (*Positive*). **c** How much is your circumcision status a negative issue for you in everyday life? (*Negative*). **d** How much do you think about your circumcision status as a significant part of who you are? (*Significant*). **e** How often do you think about your circumcision status? (*Often*)

in childhood, 38 circumcised in adulthood, 197 intact) who had provided complete data on all five dependent variables. The main effect of circumcision status was not significant, but a main effect of happiness with circumcision status was found, $F(1, 544) = 23.81, p < .001, \eta_p^2 = .04$ (see Fig. 3). Men who indicated that they were happy with their circumcision status reported experiencing better sexual functioning. Analyses were repeated controlling for participant age, and the pattern of results did not differ.

Discussion

Men's Attitudes Toward Their Circumcision Status

Exploration of the descriptive statistics revealed that—for a substantial proportion of men in this sample—circumcision status was not a negative or important issue. In fact, men in this sample who underwent circumcision as adults or intact men reported high levels of satisfaction with their circumcision status. However, there was a subgroup of men for whom their circumcision status was highly distressing, and these men were more likely to have been neonatally circumcised. One possible explanation for the high levels of distress among some circumcised men, and the relative importance of one's self-reported happiness with their circumcision status, is the role of choice in their circumcision status. The

issue of choice in neonatal circumcision has been the center of a heated debate (Earp, 2015; McMath, 2015; Svoboda, Van Howe, & Dwyer, 2000). Perhaps this finding is, in part, reflective of the fact that men who were not neonatally circumcised were able to rectify dissatisfaction with their circumcision status by undergoing circumcision. On the other hand, circumcised men have far fewer options to reverse their circumcision status, and the options that are available to them (e.g., foreskin “restoration”; Hammond, 1999) are timely, labor-intensive, and never truly “restorative” (because the nerve fibers lost to circumcision cannot be re-grown)

Future research is needed to obtain an accurate base rate estimation with respect to the frequency that men fall into the category of “distressed” over their circumcision status, as this reaction to one's circumcision status—among others—should be addressed in future public policy statements about circumcision. In a recent study exploring genital dissatisfaction in a national sample of U.S. men aged 18–65 (Gaither et al., 2017), 7% of the 3996 participants who answered the genital satisfaction questions reported dissatisfaction with their circumcision status, 62% reported satisfaction, and 31% reported neutral satisfaction. Dissatisfaction was determined by a score of 1, 2, or 3 on a seven-point scale, satisfaction was 5, 6, or 7, and a score of 4 was considered neutral. It should be noted, though, that actual circumcision status was not assessed in Gaither et al.'s national survey.

Similarly, it appears that the number of men who reported feeling unhappy with their circumcision status was a minority in the current study, regardless of timing of circumcision status.

Interestingly, observed effect sizes for group differences ranged from large (e.g., *Happy, Positive*) to medium (*Negative, Significant, Often*) suggesting that, at least within the current sample, attitudes toward one's circumcision status vary greatly across circumcision status. However, even small group differences would be theoretically relevant in this case, as this study is the first to

document that the life stage at which one undergoes circumcision is associated with the level of dissatisfaction toward one's circumcision status in a subsample of men. Understanding the antecedents of this dissatisfaction is needed to elucidate what separates the distressed group from the neutral or satisfied men (e.g., reason for circumcision, mental health correlates such as depression, anxiety, body dysmorphia, social comparison) with the intent of decreasing distress related to circumcision status.

Body Image

Analyses revealed that body image ratings did not differ significantly between men who were circumcised neonatally, in childhood, in adulthood, or never (intact men); however, men who were happier with their circumcision status reported higher satisfaction with their genital image, their body image during sexual activities, and their overall body image (medium effect size). This finding underlines the relative importance of men's attitudes toward their circumcision status over and above the presence or absence of a natural foreskin. Few studies have explored men's body image within the context of their circumcision

Table 2 Participants who reported feeling “unhappy” or “neutral/happy” toward their circumcision status, broken down by timing of circumcision

	Unhappy <i>n</i> (%)	Neutral/happy <i>n</i> (%)
Neonatally circumcised	235 (64.2)	131 (35.80)
Circumcised as child	45 (42.5)	61 (57.5)
Circumcised as adult	6 (12.8)	41 (87.2)
Intact	16 (5.5)	270 (94.4)

Data were missing for 5 individuals

Fig. 2 Group means for the body image variables by circumcision status and by happiness with circumcision status. *Note.* Error bars represent standard error. Y-axis represents mean scores on respective body image questionnaire; higher BISS and MGIS scores indicate better body image and lower BESAQ scores indicate better body image. X-axis represents happiness with circumcision status grouping. *BISS* body image satisfaction scale, *BESAQ* the body exposure during sexual activities questionnaire, *MGIS* male genital image scale. **a** Mean BISS scores. **b** Mean BESAQ scores. **c** Mean MGIS scores

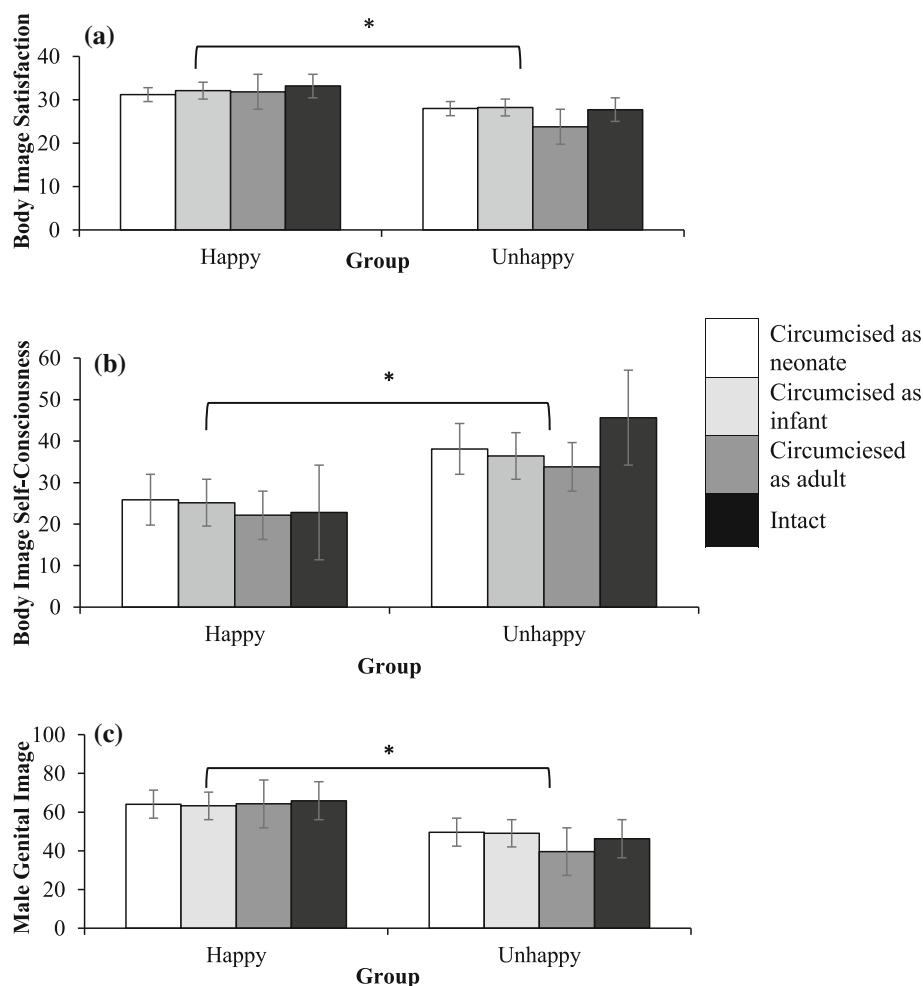
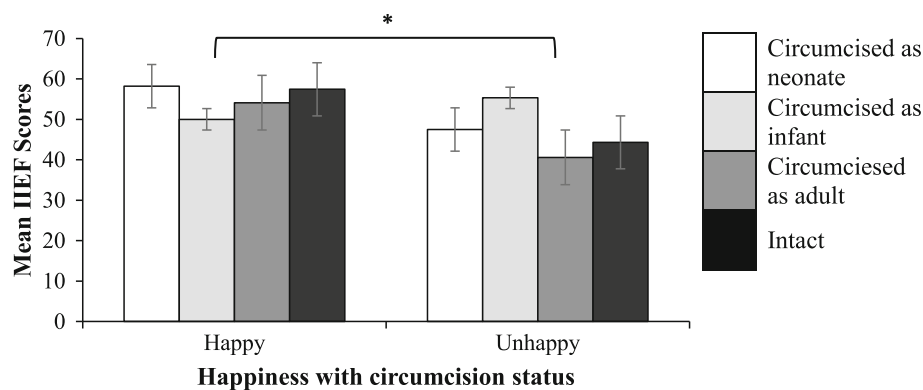


Fig. 3 Group means for IIEF scores by circumcision status and by happiness with circumcision status. *Note.* Error bars represent standard error. Higher mean IIEF scores indicate better sexual functioning



status. Similar to the current study, Schlossberger, Turner, and Irwin (1991) found that global body image (assessed via the Peterson Body Image Scale) did not significantly differ between a sample of circumcised and intact teenage boys aged 11–14 years, but they did find that circumcised boys reported higher satisfaction with their circumcision status. Unfortunately, Schlossberger et al. did not control for circumcision status satisfaction in their analysis of body image.

The role of men's appraisal of their circumcision status—as opposed to circumcision status itself—in how men rate their body image was an interesting finding. First, it suggests that a man's attitude toward the amount of foreskin he has extends beyond his genital perception, and is related to his general body image both during sex and globally. Higher satisfaction with perceived penis size is related to men's general assessment of their physical attractiveness (Lever, Frederick, & Peplau, 2006), and Morrison et al. (2005) suggest that the locus of male genital dissatisfaction was penis size. However, both of these studies failed to consider circumcision status, which—according to the current study—represents another possible locus of genital dissatisfaction, at least among some men. We cannot determine whether dissatisfaction with one's circumcision status is the result of low overall body image or perhaps dissatisfaction with one's circumcision status has negative implications for overall body image; future research should explore the directionality of this relationship. Additionally, these findings highlight the importance of a man's appraisal of his circumcision status with respect to body image, as opposed to the actual appearance of his genitals (i.e., whether he has a foreskin or not). The relative importance of genital perception over genital appearance has been documented, typically with respect to penis size (Davis, Patterson, & Binik, 2011; Lever et al., 2006; Son, Song, Kim, & Paick, 2010). Worse appraisals of penis size are associated with negative sexual outcomes in heterosexual and gay men (Algars et al., 2011; Morrison et al., 2005; Peplau et al., 2009). Thus, negative attitudes toward circumcision status may be another important body image variable with potential consequences on men's sexuality, and one that should be controlled for in future research.

Sexual Functioning

The novel finding that men's negative attitudes toward their circumcision status was associated with lower sexual functioning—as opposed to their actual circumcision status or age at circumcision—builds on body image research demonstrating that lower body image in men is associated with impaired sexual functioning (Breuer, 2013; Cash et al., 2004; Laumann et al., 1999; Sanchez & Kiefer, 2007). It appears that, in the current sample of men, perception of a single aspect of their genitals (i.e., amount of foreskin present) was sufficient to account for group differences with respect to self-reported sexual functioning. Although the size of this effect was small, we believe that it is still practically important; it is possible that mixed results in the circumcision status/sexual functioning research are—at least in part—due to the result of a failure to control for men's attitudes toward their circumcision status. This finding is supported by Barlow's (1986) model of male sexual dysfunction; perhaps men who are highly distressed by their circumcision status experience anxiety or cognitive distraction sufficient to divert attention away from erotic stimuli and prevent consistent/enjoyable sexual arousal. Future research is needed to further explore the potential deleterious effect of distress over circumcision status in sexual functioning. Furthermore, the findings from this study point toward possible clinical interventions for men with orgasm or erectile difficulties; that is, clinicians should assess whether men hold strongly negative attitudes toward their genitals, as psychological interventions targeting these cognitions may prove helpful in treating difficulties in sexual function, as opposed to altering one's circumcision status surgically or through body modification.

Limitations and Future Directions

Although the findings of this study provide a novel contribution to the circumcision literature, they were not without their limitations. The main limitation was that the sample is likely not representative of the general population. It is likely that the cur-

rent sample may overrepresent people with polarized attitudes toward circumcision, as they may have been more motivated to complete the entire lengthy online survey than men with more neutral or less negative attitudes. Indeed, demographic analyses do suggest that some groups of participants, especially the smaller group of men who elected to undergo circumcision as adults, are different in substantial ways from the remainder of the sample (e.g., with respect to age, self-reported education, occupation status, income, and length of relationship). Nonetheless, this study was among the first to empirically document a sample of men who experience distress over their circumcision status. Furthermore, these findings demonstrate the possible deleterious consequences to men's sexuality (e.g., body image, sexual functioning) that may arise from negative attitudes toward their own circumcision status. Future research is needed to better understand this subpopulation of men who are dissatisfied with their circumcision status, including the antecedents of this dissatisfaction, and base rates of this subpopulation.

We demonstrated that satisfaction with one's circumcision status is related to body image, as well as sexual functioning; however, because of the survey design of this study, the directionality of these relationships cannot be assumed. For example, we cannot presume whether dissatisfaction with one's circumcision status is a consequence of preexisting body image or sexual complaints, whether dissatisfaction with one's circumcision status can cause negative consequences to other aspects of one's life, or, perhaps, whether the relationship is bidirectional or mediated by untested variables.

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Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethics Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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

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