

## Sex and Male Circumcision: Women's Preferences Across Different Cultures and Countries: A Systematic Review

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### ABSTRACT

**Introduction:** Women's choices for a sexual partner are influenced by numerous personal, cultural, social, political and religious factors, and may also include aspects of penile anatomy such as male circumcision (MC) status.

**Aim:** To perform a systematic review examining (i) whether MC status influences women's preference for sexual activity and the reasons for this, and (ii) whether women prefer MC for their sons.

**Methods:** PRISMA-compliant searches were conducted of PubMed, Google Scholar, Embase, and the Cochrane Database of Systematic Reviews. Articles that met the inclusion criteria were rated for quality using the SIGN system.

**Results:** Database searches identified 29 publications with original data for inclusion, including 22 for aim (i) and 4 of these and 7 others pertaining to aim (ii). In the overwhelming majority of studies, women expressed a preference for the circumcised penis. The main reasons given for this preference were better appearance, better hygiene, reduced risk of infection, and enhanced sexual activity, including vaginal intercourse, manual stimulation, and fellatio. In studies that assessed mothers' preference for MC of sons, health, disease prevention, and hygiene were cited as major reasons for this preference. Cultural differences in preference were evident among some of the studies examined. Nevertheless, a preference for a circumcised penis was seen in most populations regardless of the frequency of MC in the study setting.

**Conclusion:** Women's preferences generally favor the circumcised penis for sexual activity, hygiene, and lower risk of infection. The findings add to the already well-established health benefits favoring MC and provide important sociosexual information on an issue of widespread interest. **Morris BJ, Hankins CA, Lumbers ER, et al. Sex and Male Circumcision: Women's Preferences Across Different Cultures and Countries: A Systematic Review. Sex Med 2019;XX:XXX–XXX.**

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**Key Words:** Male Circumcision; Female Sexual Pleasure; Female Sexual Activity; Vaginal Intercourse; Fellatio; Hygiene; Disease Risk; Parental Decision

### INTRODUCTION

Precoital mate choices by females based on male genital traits occur in diverse species.<sup>1</sup> In early naked *Homo sapiens*,

upright body posture and protruding nonretractile male genitalia made for a particularly conspicuous penis, even when flaccid. This has led evolutionary biologists to suggest that preming

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sexual selection resulted in evolution of the comparatively large penis of humans relative to other primates. A study of heterosexual women of various races found an association of penis size with attractiveness.<sup>2</sup> Tallness and greater shoulder-to-hip ratio also are associated with male attractiveness. The authors concluded that female mate choice could have driven the evolution of larger penises in humans. However, modifications to penis size also could have been driven by changes in the female reproductive tract associated with bipedal locomotion and the large head size of the human infant.<sup>3</sup> Although in recent millennia the adoption of clothing covering the genitals has precluded women's perception of a potential partner's penile features at first encounter, those would likely become evident once intimacy occurs.

Another feature of the human penis is male circumcision (MC) status. MC is an ancient practice<sup>3,4</sup> that may have emerged in Africa and accompanied the radiation of *H sapiens* out of that continent<sup>3,5</sup> approximately 220,000 years ago.<sup>6</sup> For example, evidence from portable art and rock art suggests that MC was practiced in Europe during the Upper Paleolithic (38000–11000 BCE).<sup>4</sup>

Privation stemming from Ice Ages and other forces may explain why MC subsequently ceased in European, northern Asian, and some other cultures.<sup>3</sup> In the nineteenth century, the perception of health benefits, such as improved hygiene and protection against syphilis,<sup>7</sup> balanitis, and phimosis,<sup>8,9</sup> is the likely explanation for the reemergence of MC in some Anglophone countries, particularly the United States.<sup>3</sup> The US occupation of South Korea may explain why MC became popular there after World War II, whereas in the Philippines it was already an accepted practice before the US presence.<sup>10,11</sup> Globally, MC is common in diverse cultures, driven largely by religious and social customs, with an overall prevalence of 37%–39%.<sup>12</sup>

MC is just one of many factors that influence a woman's choice of a male partner, others being religion, race, social class, personality, overall attractiveness, ability to provide for the woman and her offspring, ability to satisfy the woman sexually, and basic hygiene. Nevertheless, the attitudes and sexual experience of women regarding MC is an important research question. This is especially true given the health benefits provided by MC for men and their sexual partners, as well as women's important influence in deciding whether their sons will be circumcised.

In the present study, we aimed to provide a systematic review of the scientific evidence examining women's attitudes and preferences for MC in their male partners and male children.

## RETRIEVAL OF REFERENCES

Sequential searches of PubMed, Google Scholar, Embase, and the Cochrane Database of Systematic Reviews were performed following PRISMA guidelines (Figure 1).<sup>13</sup> On August 13, 2018, we used the key words “circumcision and women” and “circumcision and female” to retrieve all publications that might be

suitable. Results already identified in previous searches were not included again. Titles and abstracts were examined, and the full texts of articles with the potential to meet the inclusion criteria were examined. Articles were assessed for quality, and those rated  $\geq 2$  by the Scottish Intercollegiate Guidelines Network (SIGN) grading criteria<sup>14</sup> were examined further. The most relevant and representative articles on the topic were then cited. Bibliographies were examined to retrieve further key references.

The PubMed searches yielded 1,163 hits for “circumcision women” and 2,994 hits for “circumcision female.” Google Scholar generated 1,000 hits (the maximum return for this search engine). Embase gave 3,201 hits for “circumcision women” and 740 hits for “circumcision female,” and the Cochrane database yielded 1 hit and 2 hits, respectively. Publications pertaining to female circumcision and other genital modifications (eg, female genital cutting or mutilation<sup>15</sup>) were excluded. In relation to aim (i), 18 articles with original data were retrieved from PubMed. The PubMed search also yielded a specific critique of 1 of those articles. An additional article with original data was retrieved from Google Scholar. No further articles were identified from the Embase and Cochrane searches. Internet searches identified 2 articles and 1 conference abstract with original data, as well as a critique of 1 of the studies retrieved. Further critiques of retrieved studies were found in the “Discussion” sections of the articles retrieved. Four of the studies relating to aim (i) also contained data relating to aim (ii), whereas 6 studies relating only to aim (ii) were identified from the PubMed search and 1 such study was retrieved from an Internet search.

## WOMEN'S PREFERENCE FOR CIRCUMCISED MEN

### Demographic Information

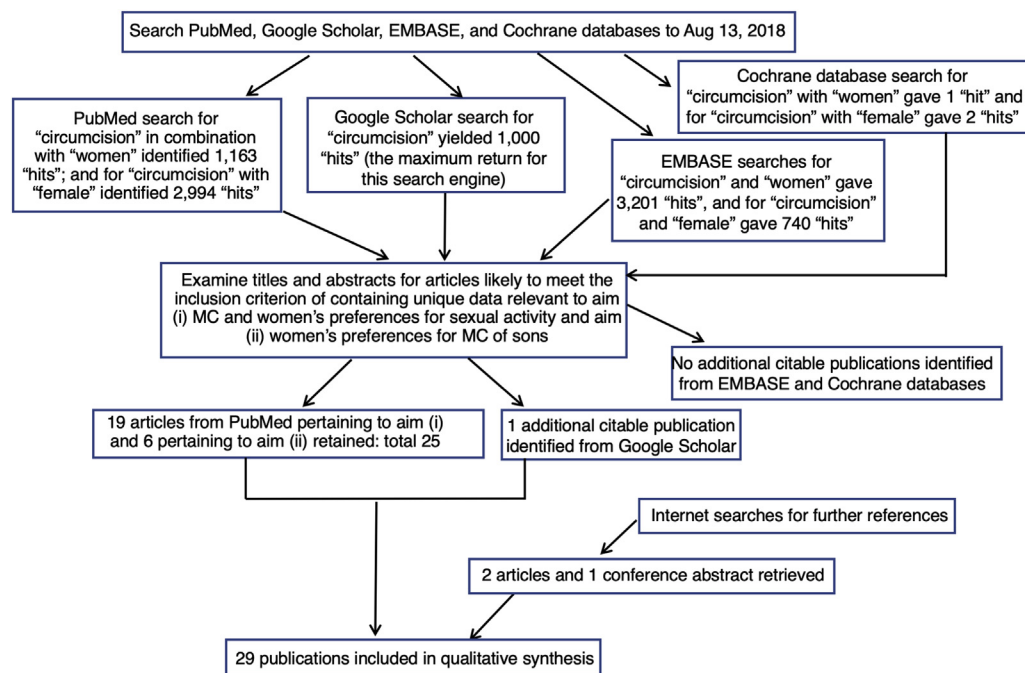
Table 1 presents demographic information for each study, along with women's overall preference for each penis type and the quality rating of each study. Table 2 summarizes the reasons (other than for sexual activity) related to their preferences as stated by the women in each study. Tables 3 and 4 presents women's sexual activity–related preferences in each study, with Table 3 showing findings for women before and after male partner MC in those studies that examined this, and Table 4 findings for women's preferences for vaginal intercourse, the feel of the penis, fellatio and dyspareunia by MC status.

What follows is a country-by-country summary of the findings from each study.

### United States

In a survey of undergraduate women at Georgia College, Milledgeville, Georgia, on viewing color magazine photographs of men with “well-formed body parts,” 89% preferred the circumcised penis and 11% preferred the uncircumcised penis.<sup>16</sup>

In a study of well-educated new mothers at a major Midwest medical center, 16.5% of whom had sexual contact with both



**Figure 1.** PRISMA flow chart showing the reference retrieval strategy and results.

circumcised and uncircumcised men, 92% believed the circumcised penis stays cleaner, 90% said it looked “sexier,” 85% said it felt nicer to touch, and 55% said that it “smells more pleasant.”<sup>17</sup> Preferences for vaginal intercourse were circumcised, 71%; uncircumcised, 6%; and either, 23%; for fellatio, 83%, 2%, and 15%, respectively; for manual stimulation, 75%, 5%, and 20%, respectively; and looking at nude to achieve sexual arousal, 76%, 4%, and 20%, respectively. Of the 5.5% of women who had only ever had uncircumcised partners, all preferred the look of the circumcised penis. The authors concluded that “almost any sexual exposure to a circumcised penis swayed women to sexually prefer circumcision, with only 1% of the entire sample consistently preferring uncircumcised partners for all sexual activities,” all of whom were from the group who had only ever had sexual experience with uncircumcised men. No woman thought that an uncircumcised penis looked sexier.

A “preliminary” survey of women, 64 “recruited through...an announcement in an anticircumcision newsletter” and 74 recruited from the personals section of the authors’ local newspaper, yielded the opposite findings.<sup>18</sup> Participants gave circumcised men an overall rating for sexual activity of 1.8/10 compared with 8.0/10 for uncircumcised men. The 20 women who preferred MC were more likely to have had  $\geq 10$  partners and to have experienced prolonged intercourse with circumcised men and premature ejaculation with uncircumcised men. Self-selection into the study of participants opposed to MC (recruitment bias) was acknowledged by the authors as a limitation of their study. Thus, the women surveyed were not likely representative of the general female population. Unfamiliar

“loaded” terminology (ie, “natural”) was used for the uncircumcised penis, with the implication being that the circumcised penis is unnatural. Acquiescence bias—a tendency for survey respondents to agree with statements regardless of their content<sup>41</sup>—was also evident. Some questions provided a binary choice—“circumcised” or “natural”—without offering “both” or “neither” as other reasonable options. The survey focused on vaginal sex, with no questions asked about oral sex, anal sex, or manual stimulation. Comments that participants provided at the end of the survey indicated that they may have been influenced by the survey itself. The authors themselves noted that “this study has some obvious methodological flaws,” “the respondents were not selected randomly,” “there may be an element of recall bias,” “not all questions were answered by all respondents,” “not all respondents understood the questions,” “another weakness of the survey was its preoccupation with vaginal intercourse,” and “it is important that these findings be confirmed by a prospective study of a randomly selected population of women with experience with both types of men.”

Researchers in Canada noted that bias arising from the flawed study design and poorly framed questions caused this particular study to lack credibility,<sup>20</sup> and an opponent of MC in Denmark cautioned that the findings should be viewed with skepticism.<sup>22</sup> A more detailed critique stated that the first author revealed that “she conducted the study, not to understand the effects of circumcision, but to advance a personal crusade to end circumcision,” doing so by “making this a women’s issue.”<sup>42</sup>

A 2014 online survey conducted by a company selling adult products involving at least 1,000 US adults age  $\geq 18$  years found that 54% of women preferred a circumcised penis, 33% had no

**Table 1.** Studies included, together with location, number of women, ages, preference for sexual activity, and study quality by the SIGN grading system

Study Country, location	n	Age, yr (years)	Sex with both types	Preference (% Quality)			
				MC	UC	Either rating	
United States							
Georgia (Wildman et al 1976 <sup>16</sup> )	55	Undergrad	–	89	11	0	2–
Iowa (Williamson and Williamson, 1988 <sup>17</sup> )	145	New mothers	16.5%	71	6	23	2+
Massachusetts (O'Hara and O'Hara 1999 <sup>18</sup> )	138	37.4 ± 9.2	100%	UC > MC			2–
Internet (Adam & Eve, 2014 <sup>19</sup> )	1,000	≥18	–	54	3	33	2–
Canada							
Ontario (Bossio et al, 2015 <sup>20</sup> )	168	27.5 ± 8.6		68	6	26	2+
Australia							
Sydney (Badger, 1989 <sup>21</sup> )	101	15–60	75%	23	9	7	2+
Denmark							
National (Frisch et al, 2011 <sup>22</sup> )	2,979	16–60+	–	UC > MC			2–
Mexico							
Nuevo Leon (Cortez et al, 2008 <sup>23</sup> )	19	–	100%	0	0	100	2+
Botswana							
9 locations (Kebaabetswe et al, 2003 <sup>24</sup> )	289	≥18	–	50	7	21	2+
South Africa							
Westonia (Lagarde et al, 2003 <sup>25</sup> )	302	14–25	–	25	9	36	2–
KwaZulu-Natal (Scott et al, 2005 <sup>26</sup> )	44	34 (range ≤20–≥45)	–	68	–	–	2–
Orange Farm, VMMC (Maraux et al, 2017 <sup>27</sup> )	2583	15–49	43%	74	26	0	1+
Kenya							
Nyanza (Bailey et al, 2002 <sup>28</sup> )	148	16–71	–	qualitative			2–
Nyanza (Mattson et al, 2005 <sup>29</sup> )	80	≥ 16	–	55	7	38	2–
Nyanza (Okeyo et al, 2011 <sup>30</sup> )	51	mean 20	100%	91	–	–	2–
Kisumu (Westercamp et al, 2010 <sup>31</sup> )	906	15–49	–	63	–	–	2–
Kisumu (Westercamp et al, 2012 <sup>32</sup> )	1,088	15–49	–	38	48	14	2+
Kisumu (Reiss et al, 2014 <sup>33</sup> )	46	20–33	57%	77	6	17	2+
Tanzania							
Northwest (Nnko et al, 2001 <sup>34</sup> )	–	–	–	MC > UC			2–
Iringa (Layer et al, 2013 <sup>35</sup> )	33	–	100%	MC > UC			2–
Malawi							
Rural (Shacham et al, 2014 <sup>36</sup> )	360	mean 28.1	–	MC 2x > UC			2–
Zambia							
Lusaka (Zulu et al, 2015 <sup>37</sup> )	159	26.1 ± 8.0	100%	63	13	16	1+
Uganda							
Rakai, RCT (Kigozi et al, 2009 <sup>38</sup> )	455	15–49	100%	47	3	57	1+

(continued)

Table 1. Continued

Study Country, location	n	Age, yr (years)	Sex with both types	Preference (% Quality)		Either rating
				MC	UC	
Sub-Saharan countries						
9 locations (Westercamp and Bailey, 2007 <sup>39</sup> )	—	—	Low	MC > UC		1+
South Africa, Tanzania,						
Zimbabwe (Kaufman et al, 2018 <sup>40</sup> )	90	16–19	—	MC > UC		1–

Quality rating was based on an international grading system.<sup>14</sup> Rating was 1+ for secondary data from an RCT or from studies of before vs after VMMC. Rating was 2+++ for high quality case-control or cohort studies with a very low risk of confounding, bias, or chance and a high probability that the relationship is causal; 2+ for well conducted case-control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is causal; and 2– for case-control or cohort studies with a high risk of confounding, bias, or chance and a significant risk that the relationship is not causal.

MC = male circumcision; RCT = randomized controlled trial; UC = uncircumcised; VMMC = voluntary medical male circumcision.

preference, and only 3% preferred an uncircumcised penis, with 10% of women refusing to answer.<sup>19</sup> Other than stating that the survey was conducted by an “independent third-party survey company,” no details on recruitment or survey methodology were provided, and the study was published only online and was not peer-reviewed.

## Canada

A Canadian study of women aged 19–71 years, 74% of whom were born in Canada and 12% in the United States, and 61.2% of whom had attended college or university, found that most held more positive feelings and beliefs about circumcised penises.<sup>20</sup> Stated preferences were 68% for the circumcised penis, 6% for the uncircumcised penis, and 26% for either (Figure 2). The majority of women preferred the appearance of the circumcised flaccid penis ( $P = .03$ ), but the women stated an equal preference for erect circumcised and uncircumcised phalluses. The majority of women reported that circumcised penises are more hygienic ( $P < .001$ ), more socially normative ( $P < .001$ ), more common in their country ( $P < .001$ ), more common for their age group ( $P < .001$ ), more attractive ( $P < .001$ ), more pleasurable to touch ( $P = .003$ ), and more likely to lower risk of sexually transmitted infections (STIs) ( $P < .001$ ), and generally preferable ( $P < .001$ ) (Figure 2, left). Fellatio was not included in this part of the survey. The study found no difference in sexual functioning for female partners. Scores for different types of sexual activity (Figure 2, right) showed a preference for circumcised penises for sexual intercourse ( $P = .001$ ) and fellatio ( $P < .001$ ). No difference was expressed regarding sexual desire, vaginal lubrication, sexual arousal, ease of orgasm, sexual satisfaction, and pain with penetration. The authors stated that their findings support those of the aforementioned US Midwest study<sup>17</sup> but contradicted a claim by O'Hara and O'Hara<sup>18</sup> that vaginal sex with an uncircumcised penis is more enjoyable because of the mobility of the foreskin.

## Australia

A 1989 study published in Australian Forum magazine involved a questionnaire placed in this magazine and in clinics of the Family Planning Association in Sydney.<sup>21</sup> Of the female respondents, 51% were aged 20–30 years and 35% were aged 30–49 years. Based on survey results for men, the rate of MC was 70%. Three-quarters of the women had sexual experience with both circumcised and uncircumcised men. A strong preference for circumcised penises was expressed by 23% and for uncircumcised penises by 9%, with 9% strongly neutral. The opinion of the majority (60%) differed for different types of sexual activity. Preference for appearance was 63% for circumcised vs 21% for uncircumcised; for hygiene, 46% vs 38%; for vaginal intercourse, 19% vs 17% (with 53% stating no preference); and touch, 25% vs 13% (with 49% stating no preference). For women who had experienced both penis types, uncircumcised was preferred for manual stimulation to orgasm (44% vs 17%), with 26% stating no difference. For oral sex, the preference was reversed, with 36% favoring circumcised vs 11%

**Table 2.** Reasons other than sexual for women's general perceptions concerning the circumcised versus the uncircumcised penis

Study, location	Circumcised vs uncircumcised (%)		
	Appearance	Cleaner	STI reduction
USA			
Georgia (Wildman et al 1976 <sup>16</sup> )	89 vs 11	—	—
Iowa (Williamson and Williamson, 1988 <sup>17</sup> )	76 vs 4	92	—
Massachusetts (O'Hara and O'Hara 1999 <sup>18</sup> )	—	—	—
Internet (Adam & Eve, 2014 <sup>19</sup> )	—	—	—
Canada			
Ontario (Bossio et al, 2015 <sup>20</sup> )	68 vs 5	57 vs 3	—
Australia			
Sydney (Badger, 1989 <sup>21</sup> )	63 vs 21	46 vs 38	—
Denmark			
National (Frisch et al, 2011 <sup>22</sup> )	—	—	—
Mexico			
Not known (Cortez et al, 2008 <sup>23</sup> )	—	—	—
Botswana			
9 locations (Kebaabetswe et al, 2003 <sup>24</sup> )	—	—	—
South Africa			
Westonia (Lagarde et al, 2003 <sup>25</sup> )	—	—	—
KwaZulu-Natal (Scott et al, 2005 <sup>26</sup> )	—	Yes*	64
Orange Farm, VMMC (Maraux et al, 2017 <sup>27</sup> )	—	Yes	Yes
Kenya			
Nyanza (Bailey et al, 2002 <sup>28</sup> )	—	Yes	Yes
Nyanza (Mattson et al, 2005 <sup>29</sup> )	—	96	—
Nyanza (Okeyo et al, 2011 <sup>30</sup> )	—	—	84
Kisumu (Westercamp et al, 2010 <sup>31</sup> )	—	—	Yes
Kisumu (Westercamp et al, 2012 <sup>32</sup> )	—	—	Yes
Kisumu (Reiss et al, 2014 <sup>33</sup> )	—	Yes	Yes
Tanzania			
Northwest (Nnko et al, 2001 <sup>34</sup> )	—	Yes	Yes
Iringa (Layer et al, 2013 <sup>35</sup> )	—	—	Yes
Malawi			
Rural (Shacham et al, 2014 <sup>36</sup> )	—	—	—
Zambia			
Lusaka (Zulu et al, 2015 <sup>37</sup> )	61	70	—
Uganda			
Rakai, RCT (Kigozi et al, 2009 <sup>38</sup> )	—	29	—

MC = male circumcision; RCT = randomized controlled trial; STI = sexually transmitted infection; VMMC = voluntary medical male circumcision.

\*"Yes" indicates preference for MC.

uncircumcised, with 43% stating no difference and 2% declining to perform oral sex irrespective of MC status. Among the women who had experienced both penis types, 23% considered circumcised penises more sensitive, 26% considered uncircumcised penises more sensitive, and 51% noted no difference. There was no strong opinion on premature ejaculation: 8% thought that circumcised men were more prone, 4% considered uncircumcised men more prone, 49% reported no

difference, and 39% responded "don't know." For "ideal lover," the preference was 39% for circumcised vs 22% for uncircumcised. The ability to reach orgasm during vaginal intercourse was no different between circumcised and uncircumcised partners for 85% of women, with the remainder being evenly split by penis type. Perceived ability to achieve simultaneous orgasm was 26% with a circumcised partner vs 16% with an uncircumcised partner.



**Table 3.** Sexual experience of women with the same male partner before and after his circumcision

Location	Sexual aspects
Mexico (Cortez et al, 2008 <sup>23</sup> )	No difference in general sexual satisfaction, desire, vaginal orgasm, pain during vaginal penetration or frequency of oral or anal sexual activity. Vaginal lubrication was adequate for 78% before MC and for 63% at 2 months after MC.
Nyanza, Kenya (Okeyo et al, 2011 <sup>30</sup> )	91% of women found sex was more enjoyable after MC, 97% were satisfied with partner's sexual performance after MC.
Iringa, Tanzania (Layer et al, 2013 <sup>35</sup> )	Increased sexual desirability, greater sexual pleasure, absence of pain during intercourse, noticed greater ease for men in having sexual intercourse.
Raiki, Uganda, VMMC RCT (Kigozi et al, 2009 <sup>38</sup> )	After VMMC, 40% of women reported improvement in sexual satisfaction, 3% a reduction and 57% no change. 11% reported achieving orgasms more frequently, 25% reported their partner had more frequent orgasms, 25% said their partner wanted sex more often, and 15% found their partner had less difficulty maintaining an erection. Findings did not differ statistically by age, religion, or education status.
Lusaka, Zambia (Zulu et al, 2015 <sup>37</sup> )	After VMMC, sexual satisfaction increased in 63% of women, decreased in 13%, and did not change in 16%.

MC = male circumcision; RCT = randomized controlled trial; VMMC = voluntary medical male circumcision.

## Denmark

A survey in Denmark (MC prevalence 5%) conducted as part of a national health survey of women and men found either no or only slight differences in women's sexual experiences by MC status.<sup>22</sup> Most of the circumcised men were ethnic Danes, and 85% of them had been circumcised postinfancy for medical reasons. The latter is a point of difference from other studies and may be relevant; in a study of men who have sex with men, medical circumcision was associated with long-lasting clinical or psychological impairment of sexual function.<sup>43</sup> Among 1,982 women in the Danish study, 415 reported frequent sexual function difficulties, including 22 of 70 women (31%) who had had sexual intercourse with a circumcised man and 384 of 1,745 (22%) who had had intercourse with an uncircumcised man (prevalence risk ratio = 1.4; 95% confidence interval [CI] = 1.1–4.0). Frequent difficulty achieving orgasm were reported by 262 of the 1,982 women. After elimination of 3 women who did not know their partner's MC status, this group included 13 of 68 women (19%) with a circumcised partner and 246 of 1,757 (14%) with an uncircumcised partner (prevalence risk ratio = 1.4; 95% CI = 1.04–3.5). The strongest association was with frequent dyspareunia, but this was reported by only 66 of the 1,982 women, including 8 of 68 (12%) with a circumcised partner and 56 of 1,683 (3%) with an uncircumcised partner (prevalence risk ratio = 1.4; 95% CI = 2.1–3.9).<sup>22</sup> These findings contrast with those of all other studies, in which women reported no difference or less pain on intercourse, including women who had intercourse with the same partner after he had been circumcised (see below). Dyspareunia can be related to psychological factors, which may be especially pertinent in the Danish study, in which only 5% of the men were circumcised.

The Danish survey has been criticized on multiple grounds.<sup>44</sup> A low participation rate of the women invited (40%) could have introduced self-selection bias. In particular, the large number of

predictors in the statistical model compared with the relatively small number of women with frequent dyspareunia ( $n = 8$ ) was considered problematic and might indicate overfitting and consequent instability in the model used. The study did not correct for multiple testing. For an outcome of interest that is common ( $>10\%$ ), instead of odds ratios, which lead to an exaggeration of any difference, the authors should have used prevalence risk ratios, as we have calculated and included above for the results of the study.<sup>44</sup> Consistent with the tone of the article, the first author declared his active involvement in opposition to MC. The authors of the aforementioned Canadian study<sup>20</sup> noted that their findings contrast with those reported in this Danish study.

## Mexico

A survey of 19 women who had experienced sexual intercourse with the same partner before and 2 months after MC found no difference in general sexual satisfaction (63% vs 68%) and most reported being quite satisfied with their sexual encounters both before and after MC ( $P = .06$ ). The women reported no difference in desire, vaginal orgasm, pain during vaginal penetration, oral or anal sexual activity, and frequency of sexual events before MC compared with 2 months after MC (all  $P = .12$ – $1.00$ ).<sup>23</sup> A slight decrease in vaginal lubrication was noted, with adequate lubrication reported by 78% of women before circumcision, compared with 63% at 2 months after circumcision ( $P = .004$ ).

## Botswana

A study in 9 locations in Botswana, where most males were uncircumcised, involving interviews of women of 29 ethnicities found that 50% preferred a circumcised partner, 7% preferred an uncircumcised partner, 21% had no preference, and 22% were

**Table 4.** Women's preferences for various types of sexual activity with circumcised vs uncircumcised men in general population studies\*

Study, location	Vaginal intercourse	Manual/touch	Fellatio	Dyspareunia
USA				
Georgia (Wildman et al 1976 <sup>16</sup> )	–	–	–	–
Iowa (Williamson and Williamson, 1988 <sup>17</sup> )	71 vs 6	75 vs 5	83 vs 2	–
Massachusetts (O'Hara and O'Hara 1999 <sup>18</sup> )	–	–	–	–
Internet (Adam & Eve, 2014 <sup>19</sup> )	–	–	–	–
Canada				
Ontario (Bossio et al, 2015 <sup>20</sup> )	20 vs 22	42 vs 39	MC > UC	Same score
Australia				
Sydney (Badger, 1989 <sup>21</sup> )	19 vs 17	25 vs 13	36 vs 11	–
Denmark				
National (Frisch et al, 2011 <sup>22</sup> )	–	–	–	12 vs 3
Botswana				
9 locations (Kebaabetswe et al, 2003 <sup>24</sup> )	–	–	–	–
South Africa				
Westonia (Lagarde et al, 2003 <sup>25</sup> )	25 vs 9 (for "sexual activity")	–	–	–
KwaZulu-Natal (Scott et al, 2005 <sup>26</sup> )	–	–	–	–
Orange Farm, VMMC (Maraux et al, 2017 <sup>27</sup> )	74 vs NS	–	–	–
Kenya				
Nyanza (Bailey et al, 2002 <sup>28</sup> )	MC status irrelevant to the women's own sexual pleasure			
Nyanza (Mattson et al, 2005 <sup>29</sup> )	55 vs 7 (for "enjoyment of sex")	–	–	–
Kisumu (Westercamp et al, 2010 <sup>31</sup> )	MC preferred, but reasons based on sexual activity not stated			
Kisumu (Westercamp et al, 2012 <sup>32</sup> )	38 vs 14 (for "sexual pleasure")	–	–	–
Kisumu (Reiss et al, 2014 <sup>33</sup> )	77 vs 6 (for "sexual pleasure")	–	–	–
Tanzania				
Northwest (Nnko et al, 2001 <sup>34</sup> )	MC preferred for "sexual pleasure," but no % given			
Malawi				
Rural (Shacham et al, 2014 <sup>36</sup> )	"2 times more likely to report greater sexual pleasure with a circumcised man"			

MC = male circumcision; NS = not stated; UC = uncircumcised; VMMC = voluntary medical male circumcision.

\*Not shown is % for "either"; but can generally be calculated from the data shown.

unsure.<sup>24</sup> After an information session, these percentages changed to 79%, 2%, 11%, and 8%, respectively.

## South Africa

In a cross-sectional study in the Westonia district, 60 km from Johannesburg, 25% of the respondents preferred circumcised men for sexual activity, 9% preferred uncircumcised men, 36% reported no preference, and 30% were unsure.<sup>25</sup> In a cross-sectional study of rural Zulu women at the epicenter of the HIV epidemic in sub-Saharan Africa, male partners' MC status was 7% circumcised, 59% uncircumcised, and 34% not known. The study found 68% of the female respondents preferred circumcised men.<sup>26</sup> For 64% of the women, the key factor in this preference was a reduced risk of STIs.

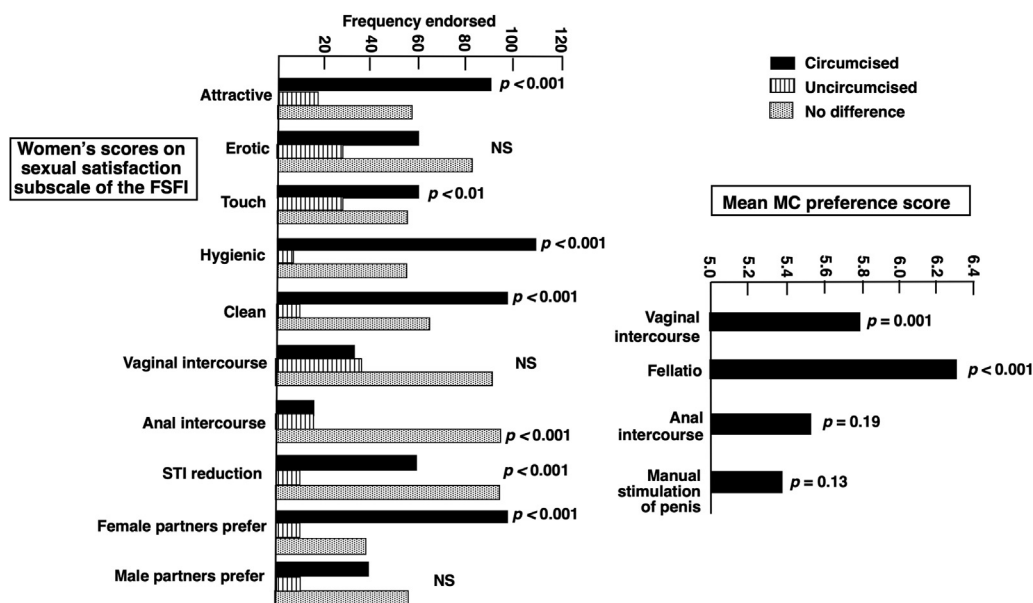
A study of women in the setting of a large-scale MC rollout in Orange Farm, where the rate of MC had increased from 17% in 2008 to 53% in 2010, found an increasingly favorable perception and knowledge of MC in surveys conducted before and after the rollout.<sup>27</sup> The number of female participants was 1,258 in 2008, 1,197 in 2010, and 2,583 in 2012. The preference for

having sexual activity with a circumcised man increased during this time, from 48.7% in 2008 to 65.8% in 2010 and 73.7% in 2012, as did the perception that most women prefer circumcised men (64.4%, 71.6%, and 73.7%, respectively) and that MC increases pleasure during sex (41.5%, 47.8%, and 59.6%, respectively). Acceptance among those with uncircumcised partners in having their partner undergo MC also increased (89.7%, 95.7%, and 93.3%, respectively). Most of the women knew that circumcised men still needed to wear condoms for HIV/STI protection.

## Kenya

Focus group discussions that included 41 single women aged 16–24 years, 41 sex workers and barmaids aged 19–40 years, and 66 married women aged 27–71 years, all belonging to the noncircumcising Luo culture in Nyanza Province, revealed that the women largely agreed that MC status was irrelevant to their own sexual pleasure.<sup>28</sup> However, these Luo women generally thought that MC was associated with better hygiene, decreased risk of infection or disease, and easier condom application. The women had conflicting opinions about friction during





**Figure 2.** Women's beliefs and sexual preferences regarding circumcised and uncircumcised men in a study in Ontario, Canada.<sup>20</sup> (Left) Women's scores on the Sexual Satisfaction subscale of the Female Sexual Function Index (FSFI) for desire, arousal, lubrication, orgasm frequency, and pain, with higher scores indicating greater sexual functioning. The *P* values shown were from 1-way analysis of variance (NS, not significant). (Right) General preferences for male circumcision (MC) status, in which women were asked to state the MC status of their ideal sexual partner on an 11-point scale for each of the 4 sexual activities shown, with 0 representing full preference for an uncircumcised penis, the midpoint indicating no preference, and 10 indicating full preference for a circumcised penis. The *P* values shown were from separate 1-sample *t* tests comparing MC status preference scores for each sexual activity type with the score of 5 (no preference). Only women who had experience with the particular sexual activity were included in each analysis.

intercourse, with the circumcised penis considered by some “to enter smoothly and directly, to have nerves closer to the surface, and not having a cover to mask sensation.” There was no consensus regarding sexual pleasure. No statistics on preferences and opinions were calculated.

A cross-sectional survey of mostly Luo women in Nyanza Province found that 69% of those with uncircumcised regular partners would prefer them to be circumcised.<sup>29</sup> Overall, 55% reported believing that women enjoy sex more with circumcised men, compared with only 7% who believed that women enjoy sex more with uncircumcised men, and 38% reported no difference. The survey found 80% of the women considered a circumcised penis to be more sensitive, and 96% thought it was easier to keep clean. Of 68 women with uncircumcised partners, 69% preferred circumcised partners, including circumcision for their current partner.

In a study of young women in Nyanza Province whose long-term partners were recently circumcised in 8 clinics, 92% of the respondents were satisfied with the appearance of their partner's penis after MC.<sup>30</sup> All were happy with their partner's performance after MC, and 91% reported that sex was more enjoyable after MC, with 84% feeling more protected against HIV. A 47% rate of condom use was reported by the women after MC, and 87% found condoms easier to use after MC.

In a study of mostly ethnic Luo women in Kisumu, where the MC prevalence was 11%, 63% reported a preference for

circumcised sexual partners; this preference was especially pronounced in women aged 20–39 years.<sup>31</sup> Luo women preferring circumcised partners were 6.6 times more likely than other Luo women to believe that circumcised men were at decreased risk for HIV infection. The women who preferred circumcised men also reported more lifetime sexual partners (median, 3 vs 2).

A community-based survey in Kisumu by the same researchers, in which the participants included 82% Luo and 37% single women, found that 76% preferred circumcised men.<sup>32</sup> Overall, 38% of the respondents felt that a woman's sexual pleasure is enhanced by MC, 14% believed it is diminished, and 48% reported it has no effect. In terms of penile sensitivity, 47% thought that MC had no effect, 25% thought that MC decreased sensitivity, and 28% thought that it increased sensitivity. Most of the women knew that they needed to maintain safe sexual practices, including the use of condoms.

Qualitative interviews of sexually active women were conducted in Kisumu, where a randomized controlled trial (RCT) of MC had been conducted and MC prevalence had increased to 45%.<sup>33</sup> The cohort included 87% Luo women, 84% of whom were unmarried or not living with a sex partner; 64% had at least a secondary school education, and 57% had experienced sex with both circumcised and uncircumcised men. The study found 77% of the women expressed a preference for circumcised men. These women considered circumcised men to be more hygienic, to take longer to ejaculate (thus providing a woman with greater

**Table 5.** Studies of women's preferences for MC of sons, showing study location, number of women, ages, reasons, and study quality by the SIGN grading system

Study Country, location	n	Age (years)	Why MC preferred (%)			
			Appearance	Hygiene	STIs/Health	Quality rating
USA						
Iowa (Williamson and Williamson, 1988 <sup>17</sup> )	145	New mothers	Their ideal male partner			2+
Australia						
Melbourne (Xu and Goldman, 2008 <sup>52</sup> )	136	20 to >40	25	96	75	2+
Canada						
National (Public Health Agency of Canada, 2009 <sup>46</sup> )	—	15 to >40	36	44	44	2+
Botswana						
9 locations (Kebaabetswe et al, 2003 <sup>24</sup> )	494	—	—	12	84	2–
South Africa						
3 ethnic groups; Westonia (Lagarde et al, 2003 <sup>25</sup> )	302	19 (IQR 17–23)	—	—	17	2–
KwaZulu-Natal (Scott et al, 2005 <sup>26</sup> )	44	< 20 to 76	—	—	Most	2–
Orange Farm, VMMC (Maraux et al, 2017 <sup>27</sup> )	2,583	15–49	—	—	—	2–
Kenya						
Nyanza (Mattson et al, 2005 <sup>29</sup> )	80	15–40	—	High	High	2–
India						
Mysore (Madhivanan et al, 2008 <sup>47</sup> )	795	—	—	—	87%	2+
South Korea						
(Oh et al, 2004 <sup>48</sup> )	3,592	—	0.2	82.4	53.4	2+
China						
(Pan et al, 2012 <sup>49</sup> )	558	—	—	—	91.0	2+
Japan						
(Castro-Vázquez 2013 <sup>50</sup> )	20	20–37	—	Yes	—	2–
Pacific Islanders						
(Afsari et al, 2002 <sup>51</sup> )	123	—	—	25	Yes	2+

Quality rating was based on an international grading system.<sup>14</sup> Rating was 1+ for secondary data from an RCT or from studies of before vs after VMMC. Rating was 2++ for high quality case-control or cohort studies with a very low risk of confounding, bias, or chance and a high probability that the relationship is causal; 2+ for well conducted case-control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is causal; and 2– for case-control or cohort studies with a high risk of confounding, bias, or chance and a significant risk that the relationship is not causal. IQR = interquartile range; MC = male circumcision; RCT = randomized controlled trial; STI = sexually transmitted infection; VMMC = voluntary medical male circumcision.

pleasure), and less likely to be infected with HIV and other STIs.<sup>33</sup> Only 6% of the women preferred uncircumcised men, and 17% expressed no preference. Only 23% reported ever having had sex with uncircumcised men, which suggests that partner selection based on MC status was already occurring.

### Tanzania

Focus group discussions in the traditionally non-circumcising Sukuma ethnic group of northwest Tanzania found women's preference for circumcised men was explained largely by decreased risk of STIs, improved hygiene, and greater sexual pleasure for both partners.<sup>34</sup> The study focused mainly on men and lacked data on the number of female participants.

A nonquantitative discussion group study of 18 HIV-negative and 15 HIV-positive married women in the Iringa region of Tanzania whose husbands had been circumcised in the previous year found a strong preference for MC because of

increased sexual desirability, greater sexual pleasure, absence of pain during intercourse, social norms, and lower risk of infection by HIV and other STIs.<sup>35</sup> Many unmarried women said that they would refuse to have sex with an uncircumcised man. Several married women reported threatening to leave their uncircumcised husbands if they did not undergo circumcision. They also mentioned the improved ease of sexual intercourse after MC.

### Malawi

A survey involving rural married couples in which the husband was circumcised in 50% and uncircumcised in 50% found that women were 2 times more likely than men to report greater sexual pleasure with a circumcised man.<sup>36</sup> Women were 3.9 times more likely than men to believe that being circumcised was better for men's health and 9.1 times more likely to report that circumcised men were more likely to please women sexually.

## Zambia

A study conducted after voluntary medical MC (VMMC) in Lusaka found that sexual satisfaction of the female partners increased in 63%, decreased in 13%, and did not change in 16%.<sup>37</sup> Appearance of the penis was better for 61% of the women, worse for 15%, and no different for 15%. Penile cleanliness after MC was reported as better by 70% of the women, not different by 14%, and worse by 11%. 149 of the 159 female partners (94%) said that they would recommend MC based on their and their partner's experience with the procedure.

## Uganda

An early study in Uganda noted that women from tribes that do not practice circumcision reported deriving greater sexual pleasure from circumcised men.<sup>45</sup> In a later study of female partners of male participants in the RCT of MC in Rakai, 40% of the women reported increased sexual satisfaction after MC, 3% reported decreased satisfaction, and 57% reported no change.<sup>38</sup> Reasons for increased sexual satisfaction reported by the women were better penile hygiene (29%), more frequent female orgasm (11%), more frequent male orgasm (25%), increased desire for sex by the male partner (25%), and improved erections (15%). The authors concluded that MC has no deleterious effect on female sexual satisfaction, and that it actually might have social benefits in addition to the established health benefits. The authors stated that their findings should help dispel concerns about potential adverse effects of MC on female sexual function and satisfaction.

## Multiple Sub-Saharan African Countries

A review of 13 studies addressing the acceptability of MC in 9 sub-Saharan countries with populations that do not traditionally circumcise found a mean acceptability of 69% among women for MC of their male partners.<sup>39</sup> In focus group discussions in South Africa, Tanzania, and Zimbabwe, 90 female adolescents aged 16–19 expressed an overall preference for circumcised sexual partners.<sup>40</sup> They viewed VMMC as beneficial for the sexual health of both partners, and considered males with a circumcised penis more attractive. The adolescent females reported using their romantic relationships with males or the potential for a sexual relationship as leverage to promote circumcision, and demonstrated supportive attitudes concerning the post-MC wound healing process. Most female participants in Tanzania and Zimbabwe disclosed they would not initiate a relationship or would readily discontinue it if their partner refused VMMC. Many believed that regardless of the benefits to herself, if a female truly cares for her partner, it is her duty to convince him to seek VMMC.

## WOMEN'S PREFERENCES FOR CIRCUMCISION OF SONS

The 13 studies pertaining to women's preferences for MC in their sons, including 4 that were cited earlier,<sup>17,24,26,27</sup> are listed

in Table 5. The table provides a summary of the demographic data and findings; details of the studies follow.

## United States

A survey of women (98% Caucasian) who had given birth in the previous month identified hygiene and appearance as the 2 major reasons for choosing to have their newborn sons circumcised.<sup>17</sup> The authors noted a strong correlation between MC status of the son and the woman's ideal male partner's MC status for intercourse. This factor correlated most strongly with whether a newborn son was circumcised. It was suggested that although mothers might not consciously view their sons as sexual beings, based on how they themselves felt, many may opt for MC based on the belief that their circumcised son "will be more sexually attractive to his future sexual partners." The authors suggested that future research could address this issue within a different cultural setting in which most males are uncircumcised.

## Australia

In a 2007 survey of parents at an MC clinic in Melbourne, perceived benefits expressed were superior hygiene (97%), protection against infection (75%), reduced risk of urinary tract infection (65%), absence of physical foreskin problems (60%), reduced risk of STI (50%), reduced risk of penile cancer (38%), better esthetics (25%), and better sexual performance/enjoyment as adults (14%).<sup>52</sup> Nonmedical reasons cited included family tradition (57%), religious beliefs (18%), and cultural norms (3%). The most common concern was pain (79%), apparently reflecting a lack of awareness of effective local anesthetic techniques in Australia.<sup>53,54</sup> Many parents (41%) thought more information should be made available to parents before the birth to aid decision making. Parents who had previous sons circumcised were more likely to have subsequent sons circumcised ( $P = .02$ ).

## Canada

In a study in 13 Canadian provinces in which the early infant MC rate averaged 31.9%, reasons cited by mothers for circumcising their infant boys included health/hygiene concerns (44.4%); conformance with father, siblings, or peers (35.6%); religious customs (17.3%), and other reasons (2.7%).<sup>46</sup> An analysis of data obtained in this survey indicated a strongly significant ( $P = .013$ ) positive correlation between mothers' sense of receiving sufficient information about MC and the prevalence of MC.

## Sub-Saharan Africa

A study in 9 locations of Botswana found that 62% of women would definitely or probably have a male child circumcised if the procedure was provided in a safe hospital setting free of charge.<sup>24</sup> After an information session, this percentage increased to 90%. 19% of the women would definitely not and 9% would probably not have their son circumcised. Among all participants (male and female) who preferred MC, reasons cited for their preference included protection from STIs, including HIV, in 70%; cultural/

traditional practices in 9%, and improved hygiene in 12%. After an information session, the proportion citing health reasons increased to 84%. There were no data on women's preferences only. In a study of mothers of newborn boys in Botswana, 92% would have their boys circumcised if the procedure were made available in a clinical setting.<sup>55</sup> The main reason cited was to reduce future HIV infection risk. Eighty five percent of the mothers said that the boy's father must participate in the decision.

A study in 3 locations in South Africa involving 3 ethnic groups found that 68.9% of women would have a son circumcised if it protected him from HIV and STIs.<sup>25</sup> A rural study of Zulu women (64% single) in which most men were uncircumcised found that 73% preferred MC for their sons.<sup>26</sup>

The preferred age for a son's circumcision ranged from newborn to 34 years, with a mean of 15 years.<sup>26</sup> The most frequently expressed reason was to reduce the risk of STIs. In the setting of a large-scale rollout of MC in Orange Farm, the preference for MC in offspring increased from 80.4% in 2008 to 93.1% in 2010, and then further to 95.8% in 2012.<sup>27</sup>

A study in Kenya found that 89% of women would have a son circumcised if little pain was involved, and 86% would do so if it cost 200 shillings (US\$2).<sup>29</sup> By far the most frequent reasons cited were improved cleanliness and a reduction in STIs.

## India

In a survey in Mysore of a group composed of 78% Hindu (who traditionally do not embrace MC), 18% Muslim (MC virtually universal), and 4% Christian women, after being informed about the risks and benefits of MC, a majority of the 81% who had uncircumcised boys said they would definitely, and 7% said they would probably, have their boys circumcised if the procedure were offered in a safe hospital setting free of charge, with only 1% responding that they would not have their boys circumcised.<sup>47</sup> The respondents came to understand that MC might prevent serious health problems, including HIV infection (87%), to understand the actual healing time post-MC (4.9%), that a doctor would perform MC (3.8%), and that MC would be done with minimal pain (9.4%). Asked who would make the final decision, 58% of women said the father alone, 13% said the mother alone, 13% said both parents jointly, 11% said other family members, 4.5% said the husband with family members, and 1.2% said both parents jointly with family members. None felt that a doctor or care provider would be involved in the final decision. Thus, despite religion and culture, MC was highly acceptable among this broad range of mothers in India. Both non-Muslim (76.0%) and Muslim (82.8%) women believed that the hospital setting is the best place to perform MC.

## South Korea

In a survey conducted by 11 members of the Korean Society of Pediatric Urology via questionnaires for parents distributed to

elementary school teachers in 5 major geographical regions, 91% of respondents believed MC to be necessary, whereas only 2.1% deemed it unnecessary.<sup>48</sup> Before age 8 years, only 20% of boys had been circumcised, but by age 12 years this proportion had risen to 80%. The most common age for MC was 11 years, in accordance with parents' view of MC as a "rite of passage." Reasons given for supporting MC included to promote better penile hygiene (82.4%), to enhance future sexual function (7.5%), to conform with peers (1.1%), to conform with religious beliefs (0.3%), to have a better appearance (0.2%), and other (8.5%). Benefits cited included prevention of bladder or kidney infection (53.4%), penile cancer (45.7%), as well as cervical cancer (64.7%) and genital tract infection (80.6%) of future spouse; improvement of sexual potency (62.7%); prevention of premature ejaculation (60.2%); enhanced growth of phallus (54.0%); and better urinary stream (37.2%).

Mothers were more likely to advocate for circumcision and to feel more positively about circumcision than fathers ( $P < .05$ ), as were better-educated parents and parents of higher socioeconomic status ( $P = .001$ ). The latter stressed penile hygiene rather than sexual function ( $P < .05$ ), although mothers were 2.6 times more likely than fathers to cite improved sexual potency as a major reason for MC.

## China

A study of parents (43.8% of whom were mothers) of newborn sons born at the Nanjing Maternity and Child Health Hospital in China found that 34.4% agreed to have their son circumcised, with a mean level of agreement of  $3.25 \pm 1.17$  on a scale of 1–5.<sup>49</sup> The major reason cited was health benefits (54.7%), followed by doctor's advice (31.8%). Multiple choice responses showed parents thought that MC was beneficial to health (91.0%), enhanced sexual function (58.4%), was necessary (34.1%), painful (43.4%), and "dangerous" (22.9%). The study found 66.7% of the women thought that the final decision should be made by the father.

## Japan

In Tokyo semistructured, in-depth 60 minute recorded interviews of mothers of boys aged 4–15 years found a willingness, counteracted by cultural norms, embarrassment, and a desire to avoid their son being discriminated against in the Japanese noncircumcising society, to have their sons circumcised, hygiene being a major reason.<sup>50</sup> No quantitative data were obtained in the study.

## Pacific Islands

In a study of parents of Pacific Islander boys aged 8–18 years, 89% of the mothers surveyed felt that MC should be performed. Reasons given included hygiene (25%) and cultural (94%) considerations.<sup>51</sup> Perceived benefits were improved hygiene (77%), less disease (29%), conformity with others (44%), and



improved sexual performance (6%). The age at which most Pacific Islander males are circumcised is between 6 and 10 years.

### Pediatric Policies

These policies relate to medical reasons for performing MC, not women's preferences. The only major medical bodies that have produced evidence-based policies for a developed country are the American Academy of Pediatrics (AAP)<sup>56</sup> and the US Centers for Disease Control and Prevention (CDC).<sup>57</sup> Each concluded that benefits exceed risks, with the CDC stating a 100-to-1 margin. The AAP suggested that parents should be provided with accurate evidence of the benefits and risks early in a pregnancy and should be free to either consent to having their son circumcised or to decline circumcision.<sup>58</sup>

## DISCUSSION

The idea that women have a preference for circumcised male partners has a long history. A century ago the prevailing wisdom was that circumcised men could last longer during intercourse and thereby provide greater satisfaction to their partner.<sup>59,60</sup> The penis was thought to be desensitized by the loss of the prepuce. However, "lasting longer" was mentioned in only 1 of the studies in the present review.<sup>33</sup> Avoiding premature ejaculation was also cited as a reason for circumcising a son in 1 study.<sup>48</sup> Curiously, both of the studies from the 1920s cited above<sup>59,60</sup> regarded circumcision as a racial or religious practice, even though by the 1920s, MC was common in both the United States and United Kingdom. The sensitivity factor is still widely discussed, but in surveys including a question about it there was a pretty even split as to whether circumcised or uncircumcised penises are more sensitive, with a significant proportion of respondents citing no difference.

One factor influencing female preference is the relatively recent discovery that MC offers some protection against HIV infection. All of our cited African studies were predicated on this knowledge. A reduced risk of HIV infection is naturally quite a powerful factor influencing female choice; however, what was striking was the other benefits of MC cited by African women, even those in traditionally noncircumcising settings.

There was a strong vote for the circumcised penis as looking more attractive, even in populations in which MC is not the norm. One reviewer commented that the flaccid penis is not sexually arousing to a woman, a frequently expressed opinion. Yet when shown photographs of men with circumcised and uncircumcised flaccid penises, 89% of US women rated the circumcised penises as more attractive.<sup>16</sup> One explanation offered for this finding is that the glans of the circumcised penis is exposed, as in the erect uncircumcised organ, which adds some sexual attraction to even the flaccid penis.<sup>17</sup>

### Study Limitations

Women's opinions regarding such factors as penile appearance, hygiene, and disease risk do not require the women to have

experienced sexual activity with both circumcised and uncircumcised men. Although such opinions may influence these women's choice of sexual partners, it should be noted that only women who have had sexual experience with both circumcised and uncircumcised men can provide valid data on outcomes from such activities. Moreover, population data for men of each penis type can be subject to confounding owing to, for example, ethnic factors that may influence sexual behavior. Only from objective studies, including RCT or longitudinal follow-up studies in which the same women provide data on sexual pleasure and experience with the same male partner before and an adequate time after his circumcision, can reliable data be obtained. Three such studies in our review received the highest quality rating of 1+.<sup>27,37,38</sup> Each found a strong preference by women for MC based on sexual and hygiene considerations, as did those that documented women's preferences based on appearance<sup>37,38</sup> and STI reduction.<sup>27,37,38</sup> Those data were generally consistent with most of the studies involving women's experiences in general population settings.

In a sociosexual sense, stigma against type of penis by MC status, often based on self-reports of preference in the setting of a particular culture, can influence women's preferences, as can the arguments used by organizations opposed to MC. Women in countries with a higher socioeconomic status may make choices for different reasons. The influence of anti-MC lobby groups and outmoded medical policies not based on current scientific evidence of net health benefits have made MC difficult to access in hospitals except for medical need. This has adversely affected the teaching of MC to medical students, resulting in loss of MC skills and diminished post-MC management by medical practitioners. Changes in MC rates, attitudes, and policies over time, both upward and downward in different geographical locations, may limit the generalizability of earlier studies to the current era. Increased migration and ease of travel have likely increased women's exposure to both types of penises, which also may have influenced attitudes.

The data obtained from those studies involving focus group discussions were qualitative. Although this presents certain limitations, such studies are of considerable value because they are able to explore issues in greater depth. Internet surveys were rated 2-, because they are prone to attract participants with extremist views, making the data unreliable.

### Future Research

Available studies in the United States and Australia are outdated, highlighting the need for new, well-designed studies. For other countries, the current data are of mixed quality or lacking, and high-quality studies would be informative in those countries as well. New research should strive to ensure well-matched cohorts of women differing only by partner MC status. Ideally, the population studied should have similar proportions of circumcised and uncircumcised men. Although the large RCTs in sub-Saharan Africa of MC and risk of heterosexual HIV infection have provided high-quality data, given the



significant benefits found, further RCTs of MC would now likely be deemed ethically unacceptable. Nonetheless, longitudinal studies conducted as part of the large-scale rollout of MC for HIV reduction would be acceptable and useful.

Outside of HIV epidemic settings, many adult men undergo circumcision for medical reasons. In a study of men who have sex with men, medical circumcision was associated with long-lasting clinical or psychological impairment of sexual function.<sup>43</sup> However, in cases of medically required MC in heterosexual men, there are no data on the sexual sequelae for women that could be resolved post-MC. Healthy uncircumcised men participating in RCTs on MC for HIV protection and longitudinal studies in Kenya,<sup>61</sup> Uganda,<sup>62</sup> Zambia,<sup>37</sup> and the Dominican Republic<sup>63</sup> have reported unchanged or improved sexual satisfaction after MC. In studies surveying the men's female sexual partners, the women reported improvement in their own sexual experiences after their partners recovered from circumcision.<sup>37,38</sup> Similar studies should be conducted to evaluate sexual sequelae for women whose male partners have undergone circumcision for medical reasons.

The health needs as well as sociological and religious needs of different populations and different religious and cultural groups within populations and countries call for tailoring future studies to address the specific needs of each group. Large high-quality studies of specific populations of women may provide better insight into the reasons for preferring circumcision or noncircumcision. In addition, research is needed to determine the changes, if any, in perceptions that occur when a woman from a culture where MC is common moves to a location where MC is uncommon and vice versa.

Although women's preferences for a circumcised penis for reasons of appearance, hygiene, safety, smell, and taste is clear, research is needed on the outcome of this preference for actual sexual partner choice, for casual or more committed sexual activity, for frequency of engaging in sexual activity with a specific partner, and for participation in specific sexual acts once engaged in sexual activity. Also needed is research on whether women have a different sexual response and outcome of sexual activity beyond the aphrodisiac effect of what the woman finds desirable, this being influenced by culture, the woman's global feelings about her partner, and the sexual script.

Although it is clear that most women prefer a circumcised penis, research is needed to understand the reason for this preference. Williamson and Williamson asked "what is sexier about a circumcised penis?"<sup>17</sup> They suggested that "visualizing the glans, the urinary meatus, and the corona without these being hidden under a foreskin is arousing," and noted that exposure of these structures is the case for an erect penis. In support of this idea, Bossio et al<sup>20</sup> found that although women preferred the appearance of the circumcised penis when flaccid, their preference for the erect penis was similar whether circumcised or uncircumcised. According to Williamson and Williamson, "while the foreskin of an uncircumcised penis can be retracted, the circumcised penis exists in exposed beauty whether flaccid or erect."<sup>17</sup> They further noted that "in some uncircumcised men, the foreskin can actually detract from the visual

appeal of the penis."<sup>17</sup> They pointed out that for nude photography and erotic films, when using uncircumcised models or actors, the producers are careful to, "select penises with foreskins that are smooth and free from extra wrinkled skin."<sup>17</sup> Future studies should help provide answers to these questions.

Better, more relevant, quantitative research is needed on whether a preference for circumcised or uncircumcised penises actually influences life partner or casual sexual partner choice, affects sexual scripts, and can cause a woman to pressure her partner (potential or actual) to undergo circumcision. Studies are also needed to examine whether a mother's preference for circumcision of a son is related to personal satisfaction with a partner who is circumcised.

## CONCLUSION

The present systematic review has identified a wide range of opinions regarding women's preference for circumcised penises in an extensive range of geographical and cultural settings. Overall, most women expressed a preference for the circumcised penis. Such a preference was seen in most populations regardless of MC prevalence in that population. Reasons expressed for this preference included better appearance, improved hygiene, reduced risk of infection, and more pleasurable sexual activity. Apart from their own preferences for sexual activity, women can have considerable power in influencing the decision to perform circumcision for a son soon after birth or later,<sup>64</sup> as well as for brothers, other male family members, and friends.<sup>65</sup> Circumcision should always be performed by a trained medical professional after consent has been given by the male or, in the case of minors, by the parent(s) or guardian(s). Women can choose to have a sexual partner who is a circumcised or encourage an uncircumcised partner to undergo the procedure. Importantly, a woman's preference for a circumcised male partner is more than simply a sociocultural preference, as might apply to pierced ears, given the reduced risk of STIs and disease for women with circumcised male partners.<sup>66</sup>

After completion of our study we noted some overlap with a systematic review by another another group.<sup>67</sup>

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