

Prevalence of Pubic Hair Grooming–Related Injuries and Identification of High-Risk Individuals in the United States

Matthew D. Truesdale, MD; E. Charles Osterberg, MD; Thomas W. Gaither, BS; Mohannad A. Awad, MD; Molly A. Elmer-DeWitt, MD; Siobhan Sutcliffe, PhD; Isabel Allen, PhD; Benjamin N. Breyer, MD, MAS

 Supplemental content

IMPORTANCE Pubic hair grooming is a common practice that can lead to injury and morbidity.

OBJECTIVE To identify demographic and behavioral risk factors associated with pubic hair grooming–related injuries to characterize individuals with high risk of injury and develop recommendations for safe grooming practices.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional study conducted a national survey of noninstitutionalized US adults (aged 18–65 years). The web-based survey was conducted through a probability-based web panel designed to be representative of the US population. Data were collected in January 2014 and analyzed from August 1, 2016, through February 1, 2017.

MAIN OUTCOMES AND MEASURES Grooming-related injury history (yes or no), high-frequency injuries (>5 lifetime injuries), and injury requiring medical attention.

RESULTS Among the 7570 participants who completed the survey (4198 men [55.5%] and 3372 women [44.5%]; mean (SD) age, 41.9 [18.9] years), 5674 of 7456 (76.1%) reported a history of grooming (66.5% of men and 85.3% of women [weighted percentages]). Grooming-related injury was reported by 1430 groomers (weighted prevalence, 25.6%), with more women sustaining an injury than men (868 [27.1%] vs 562 [23.7%]; $P = .01$). Laceration was the most common injury sustained (818 [61.2%]), followed by burn (307 [23.0%]) and rashes (163 [12.2%]). Common areas for grooming-related injury for men were the scrotum (378 [67.2%]), penis (196 [34.8%]), and pubis (162 [28.9%]); for women, the pubis (445 [51.3%]), inner thigh (340 [44.9%]), vagina (369 [42.5%]), and perineum (115 [13.2%]). After adjustment for age, duration of grooming, hairiness, instrument used, and grooming frequency, men who removed all their pubic hair 11 times or more during their lifespan had an increased risk for grooming injury (adjusted odds ratio [AOR], 1.97; 95% CI, 1.28–3.01; $P = .002$) and were prone to repeated high-frequency injuries (AOR, 3.89; 95% CI, 2.01–7.52; $P < .001$) compared with groomers who did not remove all their pubic hair. Women who removed all their pubic hair 11 times or more had increased odds of injury (AOR, 2.21; 95% CI, 1.53–3.19; $P < .001$) and high-frequency injuries (AOR, 2.98; 95% CI, 1.78–5.01; $P < .001$) compared with groomers who do not remove all their pubic hair. In women, waxing decreased the odds of high-frequency injuries (AOR, 0.11; 95% CI, 0.03–0.43; $P = .001$) compared with nonelectric blades. In total, 79 injuries among 5674 groomers (1.4%) required medical attention.

CONCLUSIONS AND RELEVANCE Grooming frequency and degree of grooming (ie, removing all pubic hair) are independent risk factors for injury. The present data may help identify injury-prone groomers and lead to safer grooming practices.

JAMA Dermatol. doi:10.1001/jamadermatol.2017.2815
Published online August 16, 2017.

Author Affiliations: Department of Urology, University of California, San Francisco, General Hospital, San Francisco (Truesdale, Osterberg, Gaither, Awad, Elmer-DeWitt, Breyer); Department of Surgery, University of Texas Dell Medical School, Austin (Osterberg); Division of Public Health Sciences, Department of Surgery, Washington University School of Medicine, St Louis, Missouri (Sutcliffe); Department of Biostatistics and Epidemiology, University of California, San Francisco (Allen, Breyer).

Corresponding Author: Benjamin N. Breyer, MD, MAS, Department of Urology, University of California, San Francisco, General Hospital, 1001 Potrero Ave, Ste 3A20, San Francisco, CA 94117 (benjamin.breyer@ucsf.edu).

Pubic hair removal has become a common practice among men and women worldwide.¹ This trend has been driven in part by the media and in part by modern society's definition of attractiveness, cleanliness, feelings of femininity or masculinity, and perception of genital normalcy.²⁻⁴ Pubic hair removal has been associated with genital self-image and higher levels of sexual response.^{5,6} Although pubic hair grooming is widespread, the risks associated with hair removal, such as genitourinary injuries, remain largely uncharacterized.

Injuries during or after pubic hair grooming are minor (eg, razor or wax burns, folliculitis, and irritation)^{7,8} and major (eg, laceration, skin infection, and sepsis).^{9,10} In a previous study describing injuries sustained while grooming pubic hair, Glass et al¹¹ used emergency department data to estimate that 12 000 grooming-related injuries occurred from 2002 to 2010 in the United States, with a 5-fold increase in injuries during this 9-year period. This trend suggests an increase in grooming incidence or an increased rate of injuries sustained while grooming.¹¹ Although that study was the first to our knowledge to quantify genital injuries related to grooming, no information was available in the emergency department database to characterize risk factors. Furthermore, the study only captured injuries warranting evaluation in an emergency department and thus likely underestimated the prevalence of all injuries related to grooming.

Given the high prevalence of pubic hair grooming (50%-87%),^{2,3,5,12} a better understanding of how grooming may lead to injury is warranted. We evaluated grooming behavior by using a survey distributed to a nationally representative sample of US men and women. Our survey focused on personal grooming practices and self-reported grooming-related injuries. We hypothesized that the grooming instrument and grooming frequency would be associated with injury.

Methods

Study Population

We conducted a nationally representative survey of noninstitutionalized adults (aged 18-65 years) residing in the United States. We developed a questionnaire examining injuries and infections that occur as a result of personal grooming. The survey was conducted with GfK (formerly Knowledge Networks). Details regarding GfK study methods have been reported previously^{10,13,14} and are described below. The Committee on Human Research at the University of California San Francisco approved the study. GfK obtained electronic informed consent from all participants before administering the survey.

Panel members were randomly recruited using address-based sampling methods from the US Postal Service's Delivery Sequence File.¹⁵ After the panel members were recruited, they received notification via email to participate in a study sample. GfK provided a laptop or notebook computer and free internet service to all panel members with limited internet and/or computer access. For the present study, panel members received 1000 points for completing the survey (\$1 cash equivalent). The final survey was distributed in January of 2014.

Key Points

Question What are the prevalence and clinical correlates of injuries among US adults who groom pubic hair?

Findings In this nationally representative cross-sectional study of 5674 adults who reported pubic hair grooming, grooming-related injury was reported by 1430 (weighted prevalence, 25.6%). Degree of grooming was an independent risk factor for injury; waxing may prevent repetitive injuries.

Meaning The present data may help to identify injury-prone groomers and lead to safer grooming practices.

Assessment of Potential Risk Factors for Grooming-Related Injuries

The survey instrument can be found in the eAppendix in the Supplement. Potential risk factors ranged from demographic to grooming-related characteristics. Demographic characteristics included age and race (white, black, Hispanic, mixed, or other). Grooming characteristics included age when grooming of pubic hair started, duration of grooming (in years), self-perceived degree of hairiness (on a 7-point Likert scale, with higher scores indicating increased perception of hairiness), grooming frequency (daily, weekly, monthly, every 3-6 months, every year, or no regular grooming), the instrument used most often (nonelectric blade, electric razor, wax, scissors, laser hair removal and/or electrolysis, or other), who performs one's grooming (self, partner or friend, or professional), position of grooming (squatting, sitting or laying on back, or standing), how grooming was visualized (direct visualization, using a mirror, and/or without any visualization), and the number of times the participant removed all their pubic hair (0, 1, 2-5, 6-10, or ≥ 11 times).

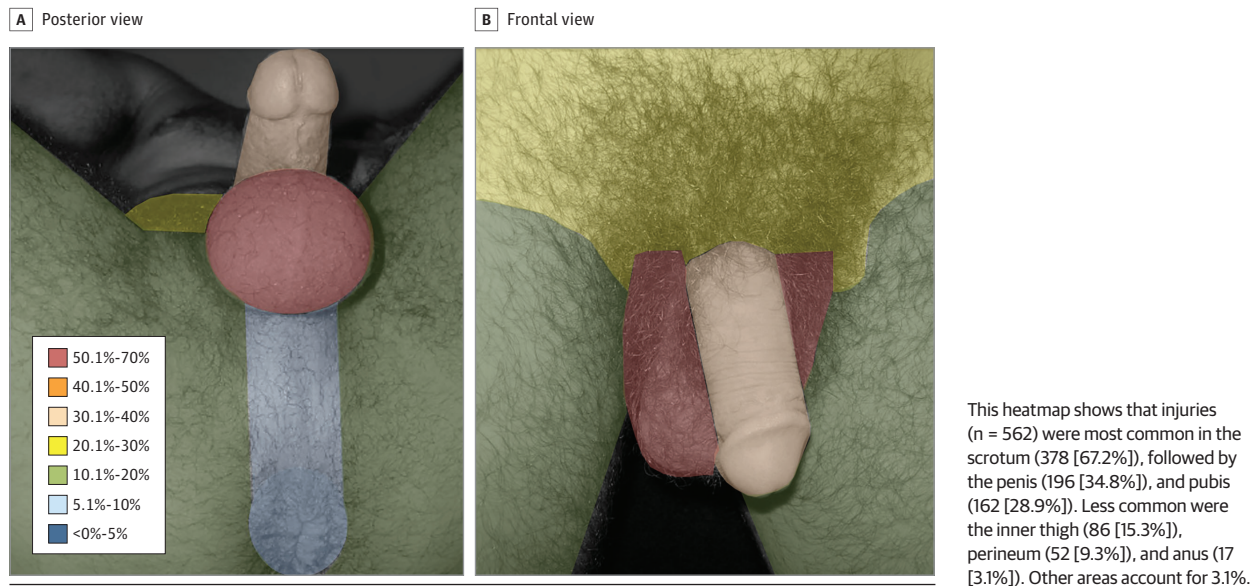
Assessment of Grooming-Related Injuries

To understand grooming-related injuries, we queried respondents on injury history, location, type, and severity. Injury location was defined by region; for men, this included the scrotum, penis, pubis, inner thigh, perineum, or anus; for women, the pubis, inner thigh, vagina, perineum, or anus. Injury types were classified as burn, rash, laceration, infection, and/or abscess, and a serious injury was defined as one that required medical attention. Injuries were classified into the following 3 different variables for analysis: (1) any history of grooming-related injury (yes or no), (2) history of high-frequency injuries (≥ 5 pubic hair grooming injuries over their lifetimes), and (3) a history of injury that required medical attention (eg, medical care, antibiotics, or surgery).

Statistical Methods

Data were analyzed from August 1, 2016, through February 1, 2017. GfK uses statistical weighting adjustments to correct for known deviations. Additional survey errors such as noncoverage and nonresponse were also corrected for using panel demographic poststratification weights. Data analysis was conducted using the survey function within Stata/SE software (version 13.0; StataCorp) to account for the complex sampling design. We used 2-sided unpaired *t* tests and χ^2 tests for

Figure 1. Prevalence and Distribution of Male Grooming-Related Injuries



continuous and categorical variables, respectively. We used logistic regression stratified by sex to determine independent risk factors for injury (yes or no), high-frequency injury (≥ 5 vs < 5 injuries), and injury requiring medical attention. Risk factors were chosen to be in the multivariable model based on univariable significance and biopsychosocial plausibility to lead to grooming injuries. The false discovery rate was calculated to examine statistical significance for multiple comparison tests in all multivariable models.¹⁶ Otherwise, $P < .05$ was considered to be statistically significant. All missing or incomplete data were excluded from the analyses.

Results

Of the 14 409 US men and women who received our survey, 7570 (52.5% overall) completed the survey (4198 men [55.5%] and 3372 women [44.5%]). The mean age (SD) of respondents was 41.9 (18.9) years. Among the respondents, 5154 (68.1%) were white; 951 (12.6%), Hispanic; 928 (12.3%), black; and 273 (7.1%), other.¹⁷ Four thousand seven hundred eighty-one respondents (63.2%) were married or living with a partner; 1736 (22.9%), single; 897 (11.8%), divorced or separated; and 156 (2.1%), widowed.

Grooming Behavior

In total, 5674 of 7456 respondents (76.1%) reported ever having groomed their pubic hair, with significantly more women reporting a history of grooming (85.3% [weighted percentage]) than men (66.5% [weighted percentage]; $P < .001$). Groomers were significantly younger than nongroomers (mean [SD] age, 43.2 [13.0] vs 49.8 [13.0] years; $P < .001$).

Among the 5674 (76.1%) respondents who reported grooming, the mean (SD) age at grooming initiation was 23.4 (9.9) years, with men reporting grooming starting later in life (mean

[SD] age, 25.2 [11.5] vs 22.0 [8.4] years; $P < .001$) and a correspondingly shorter duration of grooming (15.0 [11.2] vs 18.8 [10.7] years; $P < .001$) than women. Most groomers (5345 [94.2%]) reported a history of personal hair removal, whereas 482 (8.5%) were groomed by a partner, 221 (3.9%) were groomed by a professional, and 28 (0.5%) were groomed by a friend. The most common position that groomers used to remove pubic hair was standing (4267 [75.2%]), followed by sitting (1265 [22.3%]), squatting (749 [13.2%]), and lying down (658 [11.6%]). Most respondents reported grooming under direct visualization (4369 [77.0%]), whereas 1226 (21.6%) used a mirror and 993 (17.5%) groomed without any visualization but by feel. The most common methods for removing pubic hair consisted of a nonelectric razor (2695 [47.5%]), followed by an electric razor (1526 [26.9%]), scissors (1044 [18.4%]), wax (148 [2.6%]), and electrolysis and/or laser hair reduction (34 [0.6%]).

Injury Types, Location, and Severity

An injury was reported by 1430 (weighted prevalence, 25.6%) of all groomers, with more women reporting a history of injury than men (868 of 3204 [27.1%] vs 562 of 2373 [23.7%]; $P = .03$). Most injured respondents reported having been injured more than once (51 [66.5%]), with 461 (32.2%) of respondents reporting 5 or more grooming-related injuries during their lifetime. Laceration was the most common injury reported (818 [61.2%]), followed by burn (307 [23.0%]) and rashes (163 [12.2%]). In addition, 133 injured groomers (9.3%) reported a history of infection resulting from their injury. Of self-reported injuries, respondents required antibiotics in 49 cases (3.4%), and 36 (2.5%) had severe injuries that required surgical intervention, such as incision and drainage of an abscess or suture closure of a laceration.

Figure 1 and Figure 2 depict heatmaps using injury prevalence to highlight the most commonly reported areas of injury for male and female groomers. Men reported most often

Figure 2. Prevalence and Distribution of Female Grooming-Related Injuries



injuring the scrotum (378 [67.2%]), followed by the penis (196 [34.8%]) and the pubis (162 [28.9%]). For women, the most commonly injured site was the pubis (445 [51.3%]), followed by the inner thigh (340 [44.9%]), the vagina (369 [42.5%]), perineum (115 [13.2%]), and the anus (48 [5.5%]).

Risk Factors Associated With Grooming-Related Injuries

Male groomers who reported a grooming-related injury were younger (mean [SD] age, 36.9 [11.7] vs 41.2 [12.9] years; $P < .001$), had initiated grooming earlier in life (mean [SD] age, 22.7 [9.0] vs 26.1 [11.0] years; $P < .001$), and had groomed for a slightly shorter time (mean [SD] duration, 14.1 [8.6] vs 15.3 [10.9] years; $P = .04$) compared with noninjured groomers. Female groomers who reported a grooming-related injury were younger (mean [SD] age, 36.4 [11.8] vs 42.5 [13.4] years; $P < .001$), had initiated grooming earlier in life (mean [SD] age, 20.1 [7.7] vs 22.7 [9.4] years; $P < .001$), and had groomed for a shorter time (mean [SD] duration, 16.2 [9.8] vs 19.8 [12.0] years; $P < .001$) compared with noninjured groomers. With use of the Likert scale for self-perceived hairiness, male groomers with a history of injury perceived themselves to be hairier (mean [SD] score, 4.2 [1.3] vs 3.9 [1.4]; $P = .01$) than did noninjured male groomers. This comparison was not statistically significant in female groomers. Male groomers most often had an injury when they performed grooming in the standing position (487 [86.8%] vs 1470 [82.4%]; $P = .03$) compared with noninjured male groomers. Position of grooming was not significant for female groomers. Removal of all pubic hair was more common in male and female groomers who reported an injury compared with noninjured groomers (Table 1).

Multivariable Analysis

Five hundred sixty-two men (23.7%) reported a grooming-related injury. These men had an increased risk for an injury if they self-perceived to be hairier (adjusted odds ratio [AOR], 1.14; 95% CI, 1.04-1.26), groomed monthly (AOR, 1.71; 95% CI,

1.11-2.64), groomed every 3 to 6 months (AOR, 1.76; 95% CI, 1.16-2.65), or removed all their hair more than 11 times (AOR, 1.97; 95% CI, 1.28-3.01) compared with nongroomers. The type of instrument used was not associated with injury or high-frequency injuries. Daily, weekly, monthly, and every 3- to 6-month groomers had increased odds for high-frequency injuries (ie, >5 injuries in their lifetime); however, this did not translate into an injury requiring medical attention. No factors were associated with injuries requiring medical attention after adjusting for false-positive findings. Removal of all pubic hair 6 to 10 times was not significant (AOR, 5.11; 95% CI, 1.03-25.3) (Table 2).

Eight hundred sixty-eight women (27.1%) reported a grooming-related injury. After adjustment, risk for any injury increased in women who groomed weekly (AOR, 1.73; 95% CI, 1.10-2.73) and monthly (AOR, 1.92; 95% CI, 1.25-2.95) and who removed all pubic hair more than once (AOR, 1.78; 95% CI, 1.22-2.57). Hairiness was not associated with any injury, high-frequency injuries, or injury requiring medical attention. Daily, weekly, and monthly female groomers had increased odds for high-frequency injury (ie, >5 injuries in their lifetimes); however, this did not translate into an injury requiring medical attention. Grooming instruments were not associated with any injury; however, participants who most commonly waxed reported fewer high-frequency injuries (AOR, 0.11; 95% CI, 0.03-0.43). Similar to men, women who removed all of their pubic hair more than 2 to 5 times had increased odds of injury requiring medical attention compared with those who did not remove all their pubic hair (AOR, 5.71; 95% CI, 1.57-20.7; $P < .001$) (Table 3).

Injuries Requiring Medical Attention

Overall, 79 injuries in 5674 groomers (1.4%) required medical attention. No instrument carried a higher risk for this type of injury compared with any other. Among men, compared with injuries that did not require medical attention, perineal (6

Table 1. Univariable Associations of Any Injury Among Male and Female Groomers

Characteristic	Male Groomers ^a			Female Groomers ^a		
	Injured (n = 562)	Never Injured (n = 1811)	P Value ^b	Injured (n = 868)	Never Injured (n = 2336)	P Value ^b
Age, mean (SD), y	36.9 (11.7)	41.2 (12.9)	<.001	36.4 (11.8)	42.5 (13.4)	<.001
Age when started grooming, mean (SD), y	22.7 (9.0)	26.1 (11.0)	<.001	20.1 (7.7)	22.7 (9.4)	<.001
Duration of grooming, mean (SD), y	14.1 (8.6)	15.3 (10.9)	.04	16.2 (9.8)	19.8 (12.0)	<.001
Race, No. (%)						
White	361 (64.2)	1162 (64.2)	.41	581 (66.9)	1505 (64.4)	.19
Black	48 (8.5)	195 (10.8)		94 (10.8)	295 (12.6)	
Hispanic	30 (5.3)	118 (6.5)		35 (4)	158 (6.8)	
Mixed race	112 (19.9)	312 (17.2)		141 (16.2)	349 (14.9)	
Other	11 (2.0)	23 (1.3)		17 (2.0)	29 (1.2)	
Hairiness score, mean (SD) ^c	4.2 (1.3)	3.9 (1.4)	.01	3.1 (2.1)	3.0 (2.1)	.14
Grooming frequency, No. (%)						
Daily	9 (1.6)	32 (1.8)	<.001	66 (7.6)	130 (5.6)	<.001
Weekly	85 (15.1)	239 (13.2)		285 (32.8)	545 (23.5)	
Monthly	196 (34.9)	465 (25.7)		269 (31)	563 (24.3)	
Every 3-6 mo	187 (33.3)	541 (30.0)		157 (18.1)	523 (22.5)	
Every year	12 (2.1)	108 (6.0)		13 (1.5)	86 (3.7)	
No regular grooming	73 (13.0)	421 (23.3)		78 (9.0)	473 (20.4)	
Instrument used most often, No. (%)						
Nonelectric blade	194 (34.7)	645 (35.9)	<.001	576 (66.7)	1409 (60.8)	.11
Electric razor	286 (51.2)	715 (39.8)		115 (13.3)	288 (12.4)	
Wax	2 (0.4)	9 (0.5)		42 (4.9)	143 (6.2)	
Scissors	60 (10.7)	378 (21.1)		104 (12.0)	387 (16.7)	
Laser hair removal and/or electrolysis	1 (0.2)	7 (0.4)		4 (0.5)	26 (1.1)	
Other	16 (2.9)	41 (2.3)		23 (2.7)	64 (2.8)	
Who performs grooming, No. (%)						
Self	507 (91.5)	1600 (89.5)	.43	727 (84.0)	1955 (85.0)	.82
Partner or friend	41 (7.4)	170 (9.5)		68 (7.9)	177 (7.7)	
Professional	6 (1.1)	18 (1.0)		70 (8.1)	167 (7.3)	
Position for grooming, No. (%)						
Squatting	18 (3.2)	43 (2.4)	.03	55 (6.5)	128 (5.6)	.72
Sitting or lying on back	56 (10.0)	271 (15.2)		198 (23.3)	569 (24.9)	
Standing	487 (86.8)	1470 (82.4)		598 (70.3)	1591 (69.5)	
Removed all pubic hair, No. (%)						
Never	161 (28.6)	769 (42.6)	<.001	185 (21.4)	961 (41.4)	<.001
1 Time	120 (21.4)	344 (19.0)		131 (15.1)	354 (15.2)	
2-5 Times	122 (21.7)	372 (20.6)		185 (21.4)	423 (18.2)	
6-10 Times	59 (10.5)	124 (6.9)		89 (10.3)	126 (5.4)	
≥11 Times	100 (17.8)	198 (11)		275 (31.8)	459 (19.8)	

^a Data are weighted. Missing values are excluded.

^b Calculated using 2-sided unpaired t tests and χ^2 tests for continuous and categorical variables, respectively.

^c Calculated with a Likert scale of 1 to 7, with higher scores indicating greater perception of hairiness.

[15.8%] vs 54 [4.0%]) and inner thigh injuries (11 [28.9%] vs 84 [6.2%]) were more common in those who required medical attention ($P < .001$). The location of injury was not associated with an injury that required medical attention in women. Compared with the general grooming population, injuries that required medical attention occurred more often when others were grooming the participant’s pubic hair (54 [68.4%] vs 176 [13.0%]; $P < .001$) and when the groomers were laying on their backs (20 [25.3 %] vs 103 [7.6%]; $P < .001$).

Discussion

In our survey, more than 70% of respondents reported a history of grooming, with 66.5% of men and 85.3% of women reporting a history of ever removing their pubic hair; an injury was reported by 25.6% of all groomers. Thus, we found that grooming is common, and characteristics associated with injury varied between men and women. Grooming frequency and

Table 2. Multivariable Associations of Any Injury, High-Frequency Injuries, and Injury Requiring Medical Attention Among 2423 Male Groomers^a

Characteristic	AOR (95% CI)		
	Any Injury (n = 562)	High-Frequency Injuries ≥5 (n = 142)	Injury Requiring Medical Attention (n = 33)
Age, y	0.97 (0.96-0.99) ^b	0.99 (0.96-1.01)	0.99 (0.94-1.04)
Duration of grooming, y	1.02 (1.00-1.03)	1.02 (0.99-1.05)	1.04 (1.00-1.10)
Hairiness	1.14 (1.04-1.26) ^b	1.06 (0.93-1.20)	1.33 (0.87-2.02)
Grooming frequency			
Daily	1.26 (0.42-3.79)	21.57 (3.56-130.79) ^b	2.67 (0.39-18.2)
Weekly	1.32 (0.79-2.21)	11.83 (2.76-50.53) ^b	2.19 (0.54-8.93)
Monthly	1.71 (1.11-2.64)	17.92 (4.31-74.48) ^b	0.58 (0.19-1.77)
Every 3-6 mo	1.76 (1.16-2.65) ^b	13.86 (3.28-58.45) ^b	0.15 (0.04-0.59)
Every year	0.65 (0.30-1.40)	5.30 (0.81-34.63)	0.19 (0.02-1.84)
No regular grooming	1 [Reference]	1 [Reference]	1 [Reference]
Instrument used most often			
Nonelectric blade	1 [Reference]	1 [Reference]	1 [Reference]
Electric razor	1.26 (0.93-1.69)	1.60 (1.00-2.58)	2.42 (0.85-6.90)
Wax	0.61 (0.05-8.09)	NA	NA
Scissors	0.68 (0.43-1.07)	0.36 (0.15-0.87)	0.28 (0.52-1.40)
Electrolysis and/or laser hair removal	0.41 (0.03-5.90)	NA	10.9 (0.31-230.00)
Other	1.60 (0.68-3.79)	1.71 (0.49-5.89)	2.16 (0.31-15.2)
Removed all pubic hair, No. of times			
None	1 [Reference]	1 [Reference]	1 [Reference]
1	1.66 (1.15-2.42) ^b	1.41 (0.68-2.93)	1.69 (0.38-7.59)
2-5	1.23 (0.86-1.76)	1.25 (0.66-2.36)	1.09 (0.19-6.15)
6-10	1.61 (0.98-2.63)	1.76 (0.78-4.00)	5.11 (1.03-25.3)
≥11	1.97 (1.28-3.01) ^b	3.89 (2.01-7.52) ^b	1.68 (0.24-11.7)

Abbreviations: AOR, adjusted odd ratio; NA, not applicable.

^a Data are weighted.

^b Indicates statistically significant after false-positive correction.

removing all pubic hair multiple times are risk factors for injury and high-frequency injuries in men and women. Hairier men have an increased risk for injury. Waxing is protective for high-frequency injuries in women. Injuries that require medical attention are rare (1.4% of all groomers), but these severe injuries are associated with groomers who lie on their back and who have others groom their pubic hair.

People groom their pubic hair for different reasons, including sexual appeal, oral sex, partner preference, or routine care and hygiene.^{18,19} In our survey, more than 70% of respondents reported a history of grooming. This result is consistent with previously published rates of pubic hair removal, ranging from 48% to 87% for women and 33% to 50% for men, depending on age and sexual orientation.^{2,3,5,12,14,20} Unlike prior studies that we are aware of examining trends in pubic hair removal,^{6,12,20} this survey included respondents from a wide range of ages, geographic locations, and sexual activity patterns that mirrored the current population of the United States.¹⁷ We found significantly greater prevalence of grooming among younger groups. This finding could signify a generational trend, indicating that this behavior may continue to become more universal as the population ages.

The prevalence of injury among our respondents was high, with 1 in 4 groomers reporting at least 1 injury. Furthermore, 32.2% of those injured reported experiencing 5 or more injuries during their lifetime. Although most injuries reported were

minor, this high rate of injury emphasizes the need for safer grooming practices. Although sequelae from grooming injuries are self-limited, some injuries require medical and even surgical treatment, highlighting morbidity associated with the behavior. In particular, lying on one's back while grooming and having someone else groom one's pubic hair were associated with injuries that required medical attention. Lying on one's back may make visualization more challenging and thus predispose the groomer to injury. Having a partner perform one's grooming eliminates a self-tactile sensation, which may predispose to injury. Alternatively, a grooming partner may encourage the injured to seek medical attention.

In men and women, grooming frequency and removing all pubic hair were associated with increased risk for injury and repeated high-frequency injuries in a dose-response fashion. Thus, increasing exposure to grooming, in particular the degree of hair removal, is associated with increased risk for injury. Reasons for removing all pubic hair in women have been linked to feelings of sexual attractiveness and self-enhancement.²¹ Reasons for removing all pubic hair in men have not been studied to our knowledge, but pubic hair grooming in general has been linked to increased sexual activity and improved self-perception of appearance.¹⁹ Recently, removal of all pubic hair has been correlated with increased risk for cutaneous sexually transmitted infections, such as human papillomavirus and molluscum contagiosum.^{10,22} Clinicians and health care professionals should be aware of this risk factor, which may present an op-

Table 3. Multivariable Associations of Any Injury, High-Frequency Injuries, and Injury Requiring Medical Attention Among 3204 Female Groomers^a

Characteristic	AOR (95% CI)		
	Any Injury (n = 868)	High Frequency Injuries ≥5 (n = 319)	Injury Requiring Medical Attention (n = 45)
Age, y	0.97 (0.95-0.98) ^b	0.96 (0.94-0.99) ^b	1.00 (0.93-1.06)
Duration of grooming, y	1.01 (0.99-1.02)	1.02 (0.99-1.05)	1.03 (0.94-1.12)
Hairiness	1.04 (0.96-1.13)	1.11 (0.99-1.25)	0.97 (0.82-1.14)
Grooming frequency			
Daily	1.58 (0.83-3.00)	4.61 (1.67-12.7) ^b	4.20 (0.28-63.5)
Weekly	1.73 (1.10-2.73) ^b	5.72 (2.30-14.25) ^b	3.62 (0.94-14.0)
Monthly	1.92 (1.25-2.95) ^b	4.75 (1.93-11.66) ^b	1.55 (0.34-6.99)
Every 3-6 mo	1.50 (0.97-2.31)	2.30 (0.89-5.92)	2.54 (0.67-9.62)
Every year	0.69 (0.28-1.71)	1.92 (0.36-10.28)	NA
No regular grooming	1 [Reference]	1 [Reference]	1 [Reference]
Instrument used most often			
Nonelectric blade	1 [Reference]	1 [Reference]	1 [Reference]
Electric razor	0.97 (0.67-1.39)	1.01 (0.58-1.74)	3.30 (1.21-8.99)
Wax	0.61 (0.33-1.11)	0.11 (0.03-0.43) ^b	1.41 (0.28-7.18)
Scissors	1.16 (0.81-1.65)	1.21 (0.63-2.32)	1.90 (0.59-6.08)
Electrolysis and/or laser hair removal	0.52 (0.14-1.92)	0.82 (0.12-5.60)	NA
Other	1.14 (0.61-2.13)	2.04 (0.94-4.45)	0.18 (0.02-1.40)
Removed all pubic hair, No. of times			
None	1 [Reference]	1 [Reference]	1 [Reference]
1	1.78 (1.22-2.57) ^b	1.26 (0.66-2.40)	3.43 (0.70-16.8)
2-5	1.94 (1.37-2.75) ^b	0.99 (0.53-1.85)	4.76 (1.73-13.10) ^b
6-10	2.59 (1.63-4.12) ^b	0.98 (0.44-2.18)	4.58 (1.15-28.3)
≥11	2.21 (1.53-3.19) ^b	2.98 (1.78-5.01) ^b	5.71 (1.57-20.7)

Abbreviations: NA, not applicable; OR, odd ratio.

^a Data are weighted.

^b Indicates statistically significant after false-positive correction.

portunity to discuss not only safe-sex practices but also grooming-related injury-prevention strategies.

Some grooming methods may be safer than others, although more research is necessary. In this analysis, no grooming instruments were associated with injury in men; however, waxing was protective against high-frequency injuries in women. The discrepancy between instruments and injury between men and women may be explained by differences in the type of grooming or body depilation between men and women. It is common practice for women to perform body depilation via waxing, which is less common among men.²³ Because waxing involves the removal of the entire hair follicle, hair regrowth after waxing is prolonged.²⁴ This may lead to fewer grooming exposures and thus decreased risk for injury. Severe injuries and infections have been reported from pubic hair waxing, and we believe more research is necessary before claiming that waxing is the safest mode of hair depilation.⁹

Limitations

Our study had several limitations. A variety of factors, including age, participation in grooming activities, and cultural context, may have dissuaded recipients from responding to the survey. Pubic hair grooming is a sensitive topic, and some individuals might have refused to answer our survey truthfully owing to embarrassment or fear of breach in anonymity. Similarly, respondents are subject to have recall bias. Those with more serious injuries or with negative grooming experiences

may be more likely to remember or report injury, and minor injuries may have been underreported. Finally, we relied on patient self-reporting and were unable to corroborate accuracy of the information that the participants provided. Future studies should evaluate whether behavioral changes in grooming practices prospectively prevent grooming-related injuries. If at-risk patients are identified at clinical visits and are educated about safer grooming practices, subsequent analysis could assess for change in rates of injury after screening and intervention.

Conclusions

Pubic hair grooming is a widespread practice, and grooming-related injuries occur in approximately 25% of individuals who groom. Laceration is the most common form of injury. Grooming frequency and degree of grooming (ie, removing all pubic hair) are independent risk factors for injury and high-frequency injuries. Waxing in women may protect against high-frequency injuries, although more research is necessary to confirm this finding. Serious injuries are rare; however, 1.4% of groomers required medical attention. Thus, injury-prevention efforts are necessary. Clinicians may use this data to identify patients at high risk for injury. This study may contribute to the development of clinical guidelines or recommendations for safe pubic hair removal.

ARTICLE INFORMATION

Accepted for Publication: June 14, 2017.

Published Online: August 16, 2017.
doi:10.1001/jamadermatol.2017.2815

Author Contributions: Dr Truesdale and Mr Gaither had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Study concept and design: Truesdale, Osterberg, Gaither, Breyer.

Acquisition, analysis, or interpretation of data: Truesdale, Gaither, Awad, Elmer-DeWitt, Sutcliffe, Allen, Breyer.

Drafting of the manuscript: Truesdale, Osterberg, Gaither, Elmer-DeWitt, Allen, Breyer.

Critical revision of the manuscript for important intellectual content: Truesdale, Awad, Sutcliffe, Breyer.

Statistical analysis: Truesdale, Gaither, Awad, Sutcliffe, Allen, Breyer.

Obtained funding: Truesdale, Breyer.

Administrative, technical, or material support: Truesdale, Breyer.

Study supervision: Truesdale, Osterberg, Breyer.

Conflict of Interest Disclosures: None reported.

Funding/Support: This study was supported by the Alafi Foundation, the Hellman Foundation, and a K12 Award from the National Institute of Diabetes and Digestive and Kidney Diseases.

Role of the Funder/Sponsor: The sponsors had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

REFERENCES

- Herbenick D, Hensel D, Smith NK, et al. Pubic hair removal and sexual behavior: findings from a prospective daily diary study of sexually active women in the United States. *J Sex Med.* 2013;10(3):678-685.
- Bercaw-Pratt JL, Santos XM, Sanchez J, Ayensu-Coker L, Nebgen DR, Dietrich JE. The incidence, attitudes and practices of the removal of pubic hair as a body modification. *J Pediatr Adolesc Gynecol.* 2012;25(1):12-14.
- Butler SM, Smith NK, Collazo E, Caltabiano L, Herbenick D. Pubic hair preferences, reasons for removal, and associated genital symptoms: comparisons between men and women. *J Sex Med.* 2015;12(1):48-58.
- Herbenick D, Reece M, Schick V, Sanders SA, Dodge B, Fortenberry JD. Sexual behavior in the United States: results from a national probability sample of men and women ages 14-94. *J Sex Med.* 2010;7(suppl 5):255-265.
- Herbenick D, Schick V, Reece M, Sanders S, Fortenberry JD. Pubic hair removal among women in the United States: prevalence, methods, and characteristics. *J Sex Med.* 2010;7(10):3322-3330.
- DeMaria AL, Sundstrom B, McInnis SM, Rogers E. Perceptions and correlates of pubic hair removal and grooming among college-aged women: a mixed methods approach. *Sex Health.* 2016;13(3):248-256.
- DeMaria AL, Flores M, Hirth JM, Berenson AB. Complications related to pubic hair removal. *Am J Obstet Gynecol.* 2014;210(6):528.e1-528.e5.
- Trager JD. What's your diagnosis? acute vulvar erythema, edema, and pruritus in a young woman. *J Pediatr Adolesc Gynecol.* 2005;18(4):275-280.
- Dendle C, Mulvey S, Pylris F, Grayson ML, Johnson PD. Severe complications of a "Brazilian" bikini wax. *Clin Infect Dis.* 2007;45(3):e29-e31.
- Osterberg EC, Gaither TW, Awad MA, et al. Correlation between pubic hair grooming and STIs: results from a nationally representative probability sample. *Sex Transm Infect.* 2017;93(3):162-166. doi:10.1136/sextrans-2016-052687
- Glass AS, Bagga HS, Tasian GE, et al. Pubic hair grooming injuries presenting to U.S. emergency departments. *Urology.* 2012;80(6):1187-1191.
- DeMaria AL, Berenson AB. Prevalence and correlates of pubic hair grooming among low-income Hispanic, black, and white women. *Body Image.* 2013;10(2):226-231.
- GfK. KnowledgePanel design summary. [http://www.knowledgenetworks.com/knpanel/docs/knowledgePanel\(R\)-design-summary-description.pdf](http://www.knowledgenetworks.com/knpanel/docs/knowledgePanel(R)-design-summary-description.pdf). Published 2013. Accessed March 23, 2017.
- Gaither TW, Truesdale M, Harris CR, et al. The influence of sexual orientation and sexual role on male grooming-related injuries and infections. *J Sex Med.* 2015;12(3):631-640.
- Chang L, Krosnick JA. National surveys via RDD telephone interviewing vs the Internet: comparing sample representativeness and response quality. *Public Opin Q.* 2008;73(4):641-678.
- Glickman ME, Rao SR, Schultz MR. False discovery rate control is a recommended alternative to Bonferroni-type adjustments in health studies. *J Clin Epidemiol.* 2014;67(8):850-857.
- Humes KR, Jones NA, Ramirez RR. Overview of race and Hispanic origin: 2010. 2010 Census Briefs. <https://www.census.gov/prod/cen2010/briefs/c2010br-02.pdf>. Issued March 2011. Accessed July 10, 2017.
- Rowen TS, Gaither TW, Awad MA, Osterberg EC, Shindel AW, Breyer BN. Pubic hair grooming prevalence and motivation among women in the United States. *JAMA Dermatol.* 2016;152(10):1106-1113.
- Gaither TW, Awad MA, Osterberg EC, Rowen TS, Shindel AW, Breyer BN. Prevalence and motivation: pubic hair grooming among men in the United States. *Am J Mens Health.* 2017;11(3):620-640.
- Martins Y, Tiggemann M, Churchett L. Hair today, gone tomorrow: a comparison of body hair removal practices in gay and heterosexual men. *Body Image.* 2008;5(3):312-316.
- Tiggemann M, Hodgson S. The hairlessness norm extended: reasons for and predictors of women's body hair removal at different body sites. *Sex Roles.* 2008;59(11-12):889-897.
- Desruelles F, Cunningham SA, Dubois D. Pubic hair removal: a risk factor for "minor" STI such as molluscum contagiosum? *Sex Transm Infect BMJ.* 2013;89(3):216.
- Labre MP. The Brazilian wax: new hairlessness norm for women? *J Commun Inq.* 2002;26(2):113-132.
- Ramos-e-Silva M, de Castro MCR, Carneiro LV Jr. Hair removal. *Clin Dermatol.* 2001;19(4):437-444.