

Sexual Outcomes and Satisfaction with Hysterectomy: Influence of Patient Education

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ABSTRACT

Introduction. Many women experience improved sexual function after hysterectomy. However, a sizeable minority of women report worsened sexual function after the surgery, and concerns about the effect of surgery on sexual function are common among women planning to undergo hysterectomy.

Aim. The present study examined the role of education about the potential sexual consequences of hysterectomy in predicting self-reported outcomes and satisfaction with the procedure.

Methods. We conducted a cross-sectional survey of 204 women who had undergone simple hysterectomy in the preceding 3–12 months. Participants volunteered in response to a Web-based advertisement.

Main Outcome Measures. Participants indicated their current sexual function using the Female Sexual Function Index (FSFI), and reported positive and negative sexual outcomes experienced after hysterectomy using a checklist. Participants also completed questionnaire items regarding satisfaction with hysterectomy and education from their physicians about sexual risks and benefits prior to surgery.

Results. Current sexual function scores were related to self-reports of positive and negative sexual outcomes following hysterectomy and overall satisfaction with hysterectomy. Education from a physician about possible adverse sexual outcomes was largely unrelated to self-reports of having experienced those outcomes. However, education about possible negative sexual outcomes predicted overall satisfaction with hysterectomy when controlling for self-reports of positive and negative sexual outcomes.

Conclusion. Education about potential negative sexual outcomes after surgery may enhance satisfaction with hysterectomy, independent of whether negative sexual outcomes were experienced. Including a discussion of potential sexual changes after surgery may enhance the benefits of presurgical counseling prior to hysterectomy.

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Key Words. Risk Factors/Comorbidities; Iatrogenic Sexual Dysfunction; Psychological Assessment of Sexual Dysfunction

Introduction

Although it is known that benign gynecological diseases may adversely affect sexual function, it is unclear how sexual function is valued or prioritized in relation to pain, menstrual dysfunction, and other aspects of health among women

who are candidates for treatment with simple hysterectomy. Thus, the extent to which sexual outcomes affect women's overall satisfaction with hysterectomy is not well understood. The results of recent prospective studies suggest that most women can expect unchanged or improved sexual function after hysterectomy [1–3]. However, a

substantive minority of women report adverse sexual function outcomes following hysterectomy (for review see [4–6]). Some degree of risk for changes in sexual function after surgery may be outweighed by the promise of symptom relief. Regardless, it is reasonable to hypothesize that being informed of possible sexual side-effects before surgery may enhance satisfaction with hysterectomy by preparing women for the possibility of unwanted outcomes and providing relevant information for a collaborative treatment decision [7]. To the extent that risk education might overwhelm patients or increase their expectancies for adverse outcomes, however, some clinicians may hesitate to discuss sexual side-effects during preoperative education.

Several previous studies have documented the positive influence of preoperative education on hysterectomy outcomes. Structured preoperative educational interventions for women undergoing hysterectomy have been found to promote better self-care behaviors [8], encourage postoperative ambulation [9], and reduce postoperative anxiety and pain [10]. Although educational interventions do not appear to affect the actual incidence of side-effects, they may prepare patients to more effectively cope with adverse outcomes [9]. Despite previous reports indicating that many women feel underinformed about sexual outcomes following hysterectomy [11,12], the extent to which preoperative education about sexual topics might improve subjective outcomes has been largely unexplored.

Aims

The present study examined the extent to which self-reported sexual changes after hysterectomy and preoperative education about sexual outcomes influenced satisfaction with hysterectomy. The descriptive aims of the study were to determine the self-reported incidence of nine possible sexual outcomes after hysterectomy, as well as the frequency of recalling education from a physician about those sexual outcomes. Based on previous work, we hypothesized that self-reported sexual changes after hysterectomy would be significantly associated with scores on a validated measure of sexual function and with satisfaction with hysterectomy care and outcomes. We also hypothesized that education about possible sexual outcomes would be associated with women's overall satisfaction with hysterectomy regardless of whether these outcomes were actually experienced.

Methods

Data Analysis

Data were scored and analyzed using the statistical software package SPSS Version 12.0 for Windows (SPSS, Inc., Chicago, IL, USA). Descriptive statistics were computed to assess the frequency of self-reported sexual changes after hysterectomy and the frequency with which participants endorsed prehysterectomy education about sexual side-effects. We used a combination of parametric (e.g., ANOVA) and non-parametric (e.g., chi-square) methods to test the major study hypotheses.

All perceived quality of care variables (e.g., overall outcome satisfaction) were rated on single seven-point Likert-type items and were therefore considered ordinal variables for the purposes of statistical analysis. Mann–Whitney *U*-tests were used to compare these ratings between women who did and did not experience negative sexual changes following hysterectomy. The Mann–Whitney *U*-test is a non-parametric alternative to the *t*-test appropriate for comparing two independent groups on variables that can be transformed to rank data.

Further analysis examined the unique proportion of variance in overall satisfaction ratings attributable to self-reported sexual changes and prehysterectomy education. Because a single seven-point item is more appropriately considered an ordinal than continuous outcome variable, the use of traditional ordinary least squares linear regression is inappropriate. To examine the effects of these predictors, we instead performed ordinal logistic regression analysis (SPSS's PLUM procedure with the complementary log-log link function) with the seven-point satisfaction score as the dependent variable. Ordinal logistic models, an extension of binary logistic regression, allow for the computation of odds associated with each of a set of ordered scores or categories. Using this type of model prevents the loss of data that would result from dichotomizing an ordinal outcome variable for use in binary logistic regression [13].

Participants were 204 women between the ages of 23 and 58 years (mean age = 41.2 years, SD = 7.3 years) who had undergone simple hysterectomy in the past 3–12 months. This time range was chosen to select participants who had undergone hysterectomy relatively recently but had sufficient time for recovery and resumption of sexual activity. Respondents were predominantly white (94.1%) and involved in heterosexual rela-

tionships at the time of the study (90.7%). Of those respondents who were currently in relationships, 161 (86.6%, excluding single women and one respondent with missing data) were involved in marriages or long-term partnerships of at least 5-year duration. Most respondents (75.9%) had at least one child. Education levels varied among women in the sample: 50.5% reported a high school level education or less, 34.3% reported a college degree, and 12.3% reported an advanced degree.

Among the participants who identified the conditions that they were experiencing prior to hysterectomy, the most commonly reported indication was uterine fibroids (57.4%), followed by pelvic pain (52.0%), persistent bleeding (46.6%), and endometriosis (32.8%). The majority of respondents reported having received a total (84.3%) vs. a subtotal (14.7%) hysterectomy. Approximately two-thirds of the respondents had retained one or both ovaries at hysterectomy (66.2%). Forty-one percent of the participants indicated that they were using some form of hormonal replacement at the time of the survey.

An institutional review board approved all procedures prior to commencement of the study. Prospective participants were directed to a website that contained an online consent statement explaining the study procedures. Navigation beyond this Web page (via a link to the Web-based survey) was considered a provision of informed consent. Participation in the survey was entirely voluntary; no compensation was offered.

The survey was advertised on a popular hysterectomy education and support website. To include a broad cross-section of women, the website chosen to host the advertisement was selected for its large readership and its neutral political stance on hysterectomy (i.e., not advocating a "pro" or "anti" hysterectomy agenda). Responses were anonymous, labeled only with the date and time at which they were provided, and were protected during transmission with secure socket layer 128-bit encryption (PsychData, LLC, State College, PA, USA).

Main Outcome Measures

Hysterectomy Experience

Respondents reported the date of their hysterectomies, the indication(s) for their hysterectomies, the type of hysterectomy (total vs. subtotal), ovarian status, whether hormone replacement therapy was initiated after hysterectomy, and physician gender. Respondents also were asked to indicate

whether they had experienced several possible positive or negative sexual function changes within 6 months of hysterectomy. Negative sexual side-effects were listed as follows: "loss of sexual interest or desire;" "vaginal dryness;" "loss of sexual pleasure or sensitivity;" "problems with orgasm;" and "pain associated with sexual activity." Positive sexual outcomes were listed as: "improved sexual desire or interest;" "increased sexual pleasure or sensitivity;" "improved orgasm;" and "reduction in pain associated with sexual activity."

Prehysterectomy Education

Respondents were asked to indicate whether they had learned about or discussed the possibility of certain sexual outcomes with their physicians prior to having a hysterectomy. This list included both positive and negative changes in several aspects of sexual function (interest/desire, sexual pleasure/sensation, orgasm, sexual pain, and vaginal dryness) and was similar to the list of side-effects presented to the participants. For analytic purposes, responses were collapsed to two variables representing physician education prior to hysterectomy. These variables were defined as having discussed with a physician *any* of the possible positive sexual outcomes, and having discussed *any* of the possible negative sexual outcomes.

Satisfaction with Care and Outcomes

Using a seven-point Likert-type scale, participants rated the extent of their agreement or disagreement with the following statements: "Overall, I am satisfied with the outcomes of my hysterectomy," "I am satisfied with the amount of information I received from my doctor while planning my hysterectomy," "I believe that my input played an important role in decisions about my treatment," "I felt uncomfortable asking about some topics with my doctor," and "I believe I was well prepared for my experiences following my hysterectomy."

Sexual Function

We measured current sexual function using the Female Sexual Function Index (FSFI) [14,15]. The FSFI is a 19-item questionnaire that measures six domains of sexual function: desire, arousal, lubrication, orgasm, satisfaction, and pain. The FSFI also yields a total sexual function score, which was used in the analyses for the present study.

Results

Approximately one-fourth of respondents (24%) endorsed *both* positive and negative sexual changes

Table 1 Experience of sexual side-effects and preoperative education about sexual outcomes

	Respondents who reported experiencing this outcome within 6 months of hysterectomy N (%)	Respondents who reported education about this outcome from a physician prior to surgery N (%)	χ^2	ϕ	<i>P</i>
Sexual desire or interest					
Improvement*	49 (24.0)	39 (19.5)	9.545	0.218	0.002
Deterioration	75 (36.8)	22 (27.6)	0.022	-0.011	0.882
Sexual pleasure or sensitivity					
Improvement*	39 (19.1)	37 (18.8)	4.581	0.152	0.032
Deterioration	55 (27.0)	44 (22.2)	0.090	-0.021	0.764
Orgasm					
Improvement*	27 (13.2)	26 (13.3)	4.860	0.157	0.027
Deterioration	46 (22.5)	34 (17.0)	0.663	-0.058	0.416
Pain associated with sexual activity					
Improvement (reduced pain)*	65 (31.9)	58 (29.6)	36.325	0.430	<0.001
Deterioration (increased pain)	54 (26.5)	31 (15.8)	0.508	0.051	0.511
Vaginal dryness*	77 (33.7)	87 (43.9)	5.015	0.159	0.025

*Significant association between self-report of experiencing this outcome and self-report of education about this outcome.

within the 6 months following hysterectomy. Table 1 shows a breakdown of self-reported sexual outcomes by domain of sexual function. We used *t*-tests to compare FSFI domain scores between women who did and did not endorse specific negative sexual changes after hysterectomy (see Table 2). To adjust the total type I error rate across the five individual *t*-tests, we set the pairwise comparison error rate at $\alpha = 0.01$. Differences in the relevant FSFI domain scores were statistically significant between all comparison groups.

Based on self-reports of sexual outcomes, the sample was divided into four unique groups based on whether women endorsed positive changes, negative changes, both positive and negative changes, or no changes in sexual function after hysterectomy (see Table 3). A one-way ANOVA indicated that differences in FSFI Total scores between groups were statistically significant, $F(3,171) = 18.522$, $P < 0.001$. Tukey post hoc tests

revealed that FSFI Total scores for the negative outcome-only group were significantly lower than those of all of the other groups ($P \leq 0.001$); however, the other groups' scores did not significantly differ from each other.

To examine treatment-related factors that could be related to sexual outcomes, we compared reports of negative sexual outcomes between women who had retained both ovaries at hysterectomy and women who had undergone bilateral or unilateral oophorectomy. Ovarian status was associated with reporting negative sexual changes after hysterectomy, $\chi^2 = 16.022$, $P < 0.001$. There was also an overall effect of ovarian status on FSFI Total scores, $F(2,172) = 4.202$, $P = 0.017$. Tukey post hoc test indicated that FSFI Total scores among women who had not undergone oophorectomy (mean = 25.2, SD = 8.9) were similar to those of women who had undergone unilateral oophorectomy (mean = 24.3, SD = 8.0), but were

Table 2 Mean FSFI domain scores (with standard deviations) associated with the presence or absence of negative sexual outcomes

		FSFI domain score				
		Desire	Arousal	Lubrication	Orgasm	Pain
Loss of sexual desire/interest	Present (N = 74)	2.2 (1.3)				
	Absent (N = 124)	3.8 (1.1)**				
Loss of sexual pleasure or sensitivity	Present (N = 53)		2.6 (1.7)			
	Absent (N = 139)		4.2 (1.7)**			
Vaginal dryness	Present (N = 73)			2.9 (1.7)		
	Absent (N = 117)			4.4 (2.0)**		
Problems with orgasm	Present (N = 43)				2.3 (1.7)	
	Absent (N = 150)				4.3 (2.0)**	
Pain associated with sexual activity	Present (N = 49)					3.5 (1.8)
	Absent (N = 139)					4.6 (2.1)**

** $P < 0.001$. Some participants did not complete all domain items; therefore, sample size varies across FSFI domain scores.

Table 3 FSFI scores associated with self-reported sexual outcomes after hysterectomy

Self-reported sexual changes within 6 months after hysterectomy	N (%)	Mean FSFI Total score (SD)*	Significantly different from group(s)
1. ≥ 1 negative sexual outcome and no positive sexual outcomes	84 (41.2)	17.9 (9.1)	2, 3, 4
2. ≥ 1 positive sexual outcome and no negative sexual outcomes	39 (19.1)	29.5 (7.5)	1
3. ≥ 1 positive and ≥ 1 negative sexual outcomes	49 (24.0)	24.9 (7.1)	1
4. No positive or negative sexual changes	32 (15.7)	25.5 (8.2)	1

*Complete FSFI data that could be used to compute valid total scores were available for 175 participants (85.8%).

significantly higher than scores among women who had undergone bilateral oophorectomy (mean = 20.9, SD = 9.7). Within the bilateral oophorectomy group, there was a nonsignificant trend toward higher FSFI Total scores among current users of hormone replacement therapy (N = 76) compared with nonusers (N = 32), $t(88) = 1.802$, $P = 0.075$.

Overall, 35% of women recalled having discussed one or more possible beneficial sexual outcomes of hysterectomy with their physicians, whereas 47.9% of women recalled having discussed one or more potential negative sexual side-effects with physicians. Approximately half (54.8%) of respondents recalled having discussed any potential sexual outcome, positive or negative, with their physicians prior to hysterectomy. The results of the chi-square analyses suggested weak associations between reports of having learned about a specific positive sexual outcome and reports of actually experiencing that outcome. With the exception of vaginal dryness, no such associations were apparent for negative sexual outcomes (see Table 1). Physician gender was not associated with having discussed any positive ($\chi^2 = 0.074$, nonsignificant) or negative

($\chi^2 = 0.002$, nonsignificant) sexual outcome of hysterectomy.

Results from a series of Mann-Whitney *U*-tests indicated that experiencing any negative sexual outcome was associated with significantly poorer perceptions of care related to hysterectomy (see Table 4). To test whether education from the physician predicted overall satisfaction with hysterectomy outcome independent of self-reported sexual changes, we conducted an ordinal regression using the seven-point outcome satisfaction item as the dependent variable and the following binary predictor variables: experiencing any negative sexual side-effect, experiencing any positive sexual side-effect, learning from a physician about any negative sexual side-effects, and learning from a physician about any positive sexual side-effect (see Table 5). The overall model was statistically significant, $\chi^2 = 53.753$, $P < 0.001$, Cox and Snell pseudo- $R^2 = 0.248$. Experiencing any negative sexual change or any positive sexual change significantly influenced the overall outcome satisfaction rating. Having learned about any negative sexual outcome from a physician also predicted outcome satisfaction independently of these variables. Learning about any positive sexual outcome from

Table 4 Perceived quality of care among women who did and did not report negative sexual outcomes after hysterectomy

	% "Completely" or "Somewhat" disagree	% "Completely" or "Somewhat" agree	Mean rank (out of all responses)	Mann-Whitney <i>U</i>	<i>z</i>	<i>P</i>
"Overall, I am satisfied with the outcomes of my hysterectomy."						
≥ 1 negative sexual outcome	22.7	57.5	85.73	2538.0	-5.539	<0.001
No negative sexual outcome	7.2	85.7	131.24			
"I am satisfied with the amount of information I received from my doctor while planning my hysterectomy."						
≥ 1 negative sexual outcome	33.9	45.9	92.44	3383.5	-3.280	0.001
No negative sexual outcome	21.5	67.1	120.16			
"I believe that my input played an important role in decisions about my treatment."						
≥ 1 negative sexual outcome	15.1	60.9	91.76	3293.0	-3.509	<0.001
No negative sexual outcome	5.8	85.5	120.28			
"I felt uncomfortable asking about some topics with my doctor."						
≥ 1 negative sexual outcome	46.2	25.7	108.73	3533.5	-2.717	0.007
No negative sexual outcome	68.1	17.4	86.21			
"I believe I was well prepared for my experiences following my hysterectomy."						
≥ 1 negative sexual outcome	34.1	39.4	83.48	2241.5	-5.699	<0.001
No negative sexual outcome	10.6	80.3	131.54			

All items were scored on a scale from 1 (Completely disagree) to 7 (Completely agree).

Table 5 Ordinal logistic regression model

	N (%)	Proportional odds ratio estimate	SE	Wald	d.f.	P	95% confidence interval	
							Upper	Lower
Threshold								
"Overall, I am satisfied with the outcomes of my hysterectomy."								
1 = Completely disagree	19 (9.4)	-3.021	0.341	78.409	1	<0.001	-3.689	-2.352
2 = Somewhat disagree	16 (7.4)	-2.345	0.301	60.562	1	<0.001	-2.935	-1.754
3 = Disagree a little	11 (5.4)	-2.005	0.288	48.445	1	<0.001	-2.569	-1.440
4 = Neither agree nor disagree	6 (3.0)	-1.846	0.283	42.573	1	<0.001	-2.401	-1.292
5 = Agree a little	14 (6.9)	-1.559	0.275	32.107	1	<0.001	-2.098	-1.020
6 = Somewhat agree	49 (24.3)	-0.682	0.258	7.002	1	0.008	-1.187	-0.177
7 = Completely agree	87 (43.1)	*	—	—	—	—	—	—
Predictors								
Self-report of any negative sexual outcome [†]	133 (65.2)	-1.473	0.271	29.611	1	<0.001	-2.004	-0.943
Self-report of any positive sexual outcome [†]	88 (43.1)	0.539	0.232	5.392	1	0.020	0.084	0.995
Discussed any negative sexual outcome with doctor [†]	92 (47.9)	0.655	0.238	7.602	1	0.006	0.189	1.120
Discussed any positive sexual outcome with doctor	68 (35.1)	-0.097	0.268	0.131	1	0.717	-0.623	0.429

*Threshold parameter estimates refer to the overall likelihood of a response at or below the corresponding category; the estimate for the highest category is not necessary because all cases fall into this or a lower category.

[†]Significantly enhanced the prediction of overall hysterectomy satisfaction rating, $P < 0.05$.

a physician, however, did not help further predict satisfaction ratings.

Discussion

Our data indicated that reports of negative sexual changes following hysterectomy were associated with substantially lower scores on a validated measure of sexual function and lower ratings of satisfaction with hysterectomy. However, consistent with our hypothesis, the results suggested that education about possible sexual outcomes prior to hysterectomy may mitigate some of the negative influence of sexual side-effects on overall satisfaction with hysterectomy outcomes.

The finding that a little over half of the women in the sample recalled discussing any possible sexual outcome with their physicians is consistent with research that suggests prevalent barriers to communication about sexual topics between physician and patient when preparing for hysterectomy [11]. Although recall bias is likely to have influenced our findings to some extent, this is not entirely inconsistent with the possibility that sexual topics are often underemphasized in education about hysterectomy outcomes. We found an association, although a weak one, between reports of experiencing positive sexual outcomes and reports of having learned about those outcomes.

Our results suggest that, in contrast to concerns that discussion of sexual side-effects may "plant" expectancies for negative sexual outcomes, women who recalled receiving information about sexual side-effects from their physicians were generally no more likely than

others to report experiencing negative side-effects. Moreover, these women tended to report greater satisfaction with the outcomes of their hysterectomies. This finding suggests that information about sexual side-effects is highly desirable to many women undergoing hysterectomy. Although the question of how much information to provide is a valid one, concern about "information overload" in patient education is likely to be exaggerated. Past research suggests that most patients want comprehensive information about potential, even rare, side-effects associated with treatment, and desire information about medical treatment to a greater extent than their physicians estimate [16–19]. There is no reason to assume that this would apply differently to sexuality-related issues than to less sensitive topics.

Although we can only speculate about reasons for a link between sexual risk education and satisfaction after hysterectomy, several possibilities are worthy of future study. Patients who were informed of the risk of sexual side-effects after hysterectomy may have enjoyed greater rapport and trust in their relationships with their physicians, facilitating satisfactory care. This would be consistent with research suggesting that communication, information, and patient involvement in decision making are associated with patients' trust in their physicians [20,21]. It is also possible that being informed of the possibility of a negative sexual outcome prompted reflection about sexuality among some women, promoting a more active role in the treatment decision and better psychological preparation for the possibility of adverse effects.

A worthy area for future study is patients' preparation for and experiences of oophorectomy. It is reasonable to assume that the sudden loss of estrogen and androgen production with oophorectomy could have a substantial effect on sexual response above and beyond that resulting from hysterectomy alone [22,23]. However, the influence of ovarian status on hysterectomy outcomes has been an issue of some debate in the literature [4–6]. Consistent with other retrospective studies, we found that bilateral oophorectomy was associated with more frequent reports of negative sexual side-effects after hysterectomy and lower total scores on the FSFI. Current use of hormonal therapy was associated with only marginally higher FSFI scores among women who had undergone oophorectomy. What we were unable to ascertain from these data is how women were educated about oophorectomy and the use of hormonal therapies, the nature of their specific treatments, and their expectancies for treatment outcomes. It is possible that hormonal therapy could be more beneficial when therapy is individualized and collaboration between patient and health provider is facilitated and encouraged [23]. However, it seems unlikely that conventional hormone replacement can entirely make up for what is lost with removal of the ovaries; we point to the results of recent population-based studies indicating that bilateral oophorectomy is a risk factor for hypoactive sexual desire [24,25]. As in the present study, the majority of surgically menopausal women in these surveys were already using some form of hormonal treatment.

Several important limitations of the methodology are worth noting. Because the study was retrospective in nature, estimates of negative sexual side-effects attributable to hysterectomy were likely to have been inflated relative to what might be expected in a prospective study [4]. It is possible that women reporting poorer sexual function after hysterectomy also experienced poorer sexual function before their surgeries; some respondents may have misattributed their sexual problems to hysterectomy. Indeed, this would be consistent with previous reports suggesting that preoperative sexual function is highly influential in predicting sexual outcomes [26,27]. However, previous reports classifying women simply as "improved" or "deteriorated" in sexual function may have obscured the complicated picture of posthysterectomy sexual adjustment. Unique to this study, we found that nearly one-fourth of the participants endorsed both positive and negative sexual changes in the 6 months following hysterectomy.

Perhaps a more serious limitation of the retrospective design is that recall of preoperative education may have been biased, given that the study took place at least 3–12 months after women had been exposed to preoperative information. However, the lack of association between most negative side-effects and education about those side-effects suggests that women did not simply recall learning about (or *not* learning about) the adverse changes that they actually experienced. However, more subtle aspects of the perceived quality of their care may have influenced the degree to which respondents endorsed receiving preoperative education from their physicians. Because recall for preoperative instructions is imperfect [28], prospective research is needed to more clearly understand the influence of preoperative education on satisfaction with hysterectomy.

The use of the Internet facilitates collection of sensitive information at the participant's convenience. Empirical studies suggest that the psychometric properties of Internet-based vs. paper-and-pencil surveys are comparable [29,30]. However, sampling from a hysterectomy education and support website limited the sample of respondents to women who sought health information on the Internet. More importantly, this recruitment strategy likely biased the sample to over-represent women who experienced adverse outcomes. Including a larger representation of women who experienced adverse sexual outcomes, however, may yield insights into how subjective outcomes can be improved among women at risk for poor sexual adjustment after hysterectomy.

The process of thorough education and informed consent is vital to patient autonomy, self-efficacy, and satisfaction with care. Our data are consistent with past work suggesting that women undergoing hysterectomy value discussions of sexuality in their care. However, future study is needed to determine methods of delivering sexuality-related information in a way that is efficient and aligned with patients' needs. Future research on patient education before hysterectomy should use prospective and preferably experimental designs to examine the effect of sexual counseling and education on hysterectomy outcomes, accounting for sexual adjustment risk factors and patient preferences for sexual function.

Conclusion

The results of this preliminary study indicate that preoperative sexual counseling may positively

influence satisfaction with the outcomes of hysterectomy, independent of whether negative sexual outcomes are reported. The findings suggest that preparation for potential adverse sexual side-effects may mitigate their impact after surgery.

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References

- 1 Flory N, Bissonnette F, Arnsel RT, Binik YM. The psychosocial outcomes of total and subtotal hysterectomy: A randomized controlled trial. *J Sex Med* 2006;3:483–91.
- 2 Kuppermann M, Summitt RL, Varner RE, McNeely SG, Goodman-Gruen D, Learman LA, Ireland CC, Vittinghoff E, Lin F, Richter HE, Showstack J, Hulley SB, Washington AE. Sexual functioning after total compared with supracervical hysterectomy: A randomized trial. *Obstet Gynecol* 2005; 105:1309–18.
- 3 Thakar R, Ayers S, Clarkson P, Stanton S, Manyonda I. Outcomes after total versus subtotal abdominal hysterectomy. *N Engl J Med* 2002;347:1318–25.
- 4 Flory N, Bissonnette F, Binik YM. Psychosocial effects of hysterectomy—Literature review. *J Psychosom Res* 2005;59:117–29.
- 5 Maas CP, Weijenborg PT, Ter Kuile MM. The effect of hysterectomy on sexual functioning. *Annu Rev Sex Res* 2003;14:83–113.
- 6 Bradford A, Meston CM. Hysterectomy and alternative therapies. In: Goldstein I, Meston CM, Davis SR, Traish AM, eds. *Women's sexual function and dysfunction: Study, diagnosis and treatment*. London: Taylor & Francis; 2006:658–65.
- 7 DeGelder R, Richters A, Peters L. The integration of a woman's perspective in hysterectomy decisions. *J Psychosom Obstet Gynaecol* 2005;26: 53–62.
- 8 Williams PD, Valderamma DM, Gloria MD, Pasoguain LG, Saavedra LD, De la Rama DT, Fetty TC, Abaguin CM, Zaldivar SB. Effects of preparation for mastectomy/hysterectomy on women's post-operative self-care behaviors. *Int J Nurs Stud* 1988;25:191–206.
- 9 Oetker-Black SL, Jones S, Estok P, Ryan M, Gale N, Parker C. Preoperative teaching and hysterectomy outcomes. *AORN J* 2003;77:1215–8, 1221–31.
- 10 Cheung LH, Callaghan P, Chang AM. A controlled trial of psycho-educational interventions in preparing Chinese women for elective hysterectomy. *Int J Nurs Stud* 2003;40:207–16.
- 11 Wade J, Pletsch PK, Morgan SW, Menting SA. Hysterectomy: What do women need and want to know? *J Obstet Gynecol Neonatal Nurs* 2000; 29:33–42.
- 12 Williams RD, Clark AJ. A qualitative study of women's hysterectomy experience. *J Womens Health Gen Based Med* 2000;9(suppl 2):S15–25.
- 13 Scott SC, Goldberg MS, Mayo NE. Statistical assessment of ordinal outcomes in comparative studies. *J Clin Epidemiol* 1997;50:45–55.
- 14 Rosen R, Brown C, Heiman J, Leiblum S, Meston CM, Shabsigh R, Ferguson D, D'Agostino R Jr. The Female Sexual Function Index (FSFI): A multidimensional self-report instrument for the assessment of female sexual function. *J Sex Marital Ther* 2000;26:191–208.
- 15 Meston CM. Validation of the Female Sexual Function Index (FSFI) in women with female orgasmic disorder and in women with hypoactive sexual desire disorder. *J Sex Marital Ther* 2003;29:39–46.
- 16 Fraenkel L, Bogardus D, Concato J, Felson D. Preference for disclosure of information among patients with rheumatoid arthritis. *Arthritis Care Res* 2001; 45:136–9.
- 17 Ong LML, de Haes JCJM, Hoos AM, Lammes FB. Doctor–patient communication: A review of the literature. *Soc Sci Med* 1995;40:903–18.
- 18 Waitzkin H. Doctor–patient communication. Clinical implications of social scientific research. *JAMA* 1984;252:2441–6.
- 19 Ziegler DK, Mosier MC, Buenaver M, Okuyemi K. How much information about adverse effects of medication do patients want from physicians? *Arch Intern Med* 2001;161:706–13.
- 20 Keating NL, Green DC, Kao AC, Gazmararian JA, Wu VY, Cleary PD. How are patients' specific ambulatory care experiences related to trust, satisfaction, and considering changing physicians? *J Gen Intern Med* 2002;17:29–39.
- 21 Parascandola M, Hawkins J, Danis M. Patient autonomy and the challenge of clinical uncertainty. *Kennedy Inst Ethics J* 2002;12:245–64.
- 22 Basson R, Brotto LA, Laan E, Redmond G, Utian WH. Assessment and management of women's sexual dysfunction: Problematic desire and arousal. *J Sex Med* 2005;2:291–300.

- 23 Davis SR, Guay AT, Shifren JL, Mazer NA. Endocrine aspects of female sexual dysfunction. *J Sex Med* 2004;1:82–6.
- 24 Leiblum SR, Koochaki PE, Rodenberg CA, Barton IP, Rosen RC. Hypoactive sexual desire disorder in postmenopausal women: US results from the Women's International Study of Health and Sexuality (WISHeS). *Menopause* 2006;13:46–56.
- 25 Dennerstein L, Koochaki P, Barton I, Graziottin A. Hypoactive sexual desire disorder in menopausal women: A survey of Western European women. *J Sex Med* 2006;3:212–22.
- 26 Helström L, Lundberg PO, Sörbom D, Backström T. Sexuality after hysterectomy: A factor analysis of women's sexual lives before and after subtotal hysterectomy. *Obstet Gynecol* 1993;81:357–62.
- 27 Rhodes JC, Kjerulff KH, Langenberg PW, Guzinski GM. Hysterectomy and sexual functioning. *JAMA* 1999;282:1934–41.
- 28 Madan AK, Tichansky DS. Patients postoperatively forget aspects of preoperative patient education. *Obes Surg* 2005;15:1066–9.
- 29 Im EO, Chee W, Bender M, Cheng CY, Tsai HM, Mi Kang N, Lee H. The psychometric properties of pen-and-pencil and internet versions of the midlife women's symptom index (MSI). *Int J Nurs Stud* 2005;42:167–77.
- 30 Ritter P, Lorig K, Laurent D, Matthews K. Internet versus mailed questionnaires: A randomized comparison. *J Med Internet Res* 2004;6:19–25.