



## Research paper

## Patient knowledge of hysterectomy and pap screening after minimally invasive hysterectomy



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## ARTICLE INFO

## Article history:

Received 5 September 2015

Received in revised form 17 August 2016

Accepted 18 August 2016

## Keywords:

Cervical cancer  
Screening  
Hysterectomy  
Pap  
Survey

## ABSTRACT

**Objective:** To determine whether women know their own cervical cancer screening recommendations after hysterectomy, and to evaluate patients' understanding of hysterectomy terminology and cervical cancer screening.

**Methods:** A 19-item questionnaire was developed and administered to 413 women who had undergone minimally invasive hysterectomy with benign pathology between January 2008 and January 2012.

**Results:** A total of 190 women (46%) participated in the survey. The majority of respondents were Caucasian (61%) and had a college education (66%). Fifty-nine percent of respondents knew that a Pap test screens for cervical cancer, and 40% knew that HPV is related to cervical cancer. Eight-four percent understood that Pap screening is recommended if a woman still has a cervix after hysterectomy. Only 67% correctly identified if their cervix had been removed during their own surgery and if they needed future cervical cancer screening per current guidelines. Caucasian race and higher income were significant predictors of hysterectomy and screening knowledge.

**Conclusion:** Knowledge regarding Pap tests, HPV, and implications of a supracervical hysterectomy is lacking, even among a post-hysterectomy population.

**Practical implications:** Patient educational information is needed to improve perioperative counseling regarding the type of hysterectomy performed and indications for future cervical cancer screening.

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## 1. Introduction

Hysterectomies are one of the most commonly performed surgical procedures for women nationwide, second only to Cesarean section. In the United States, over 600,000 hysterectomies are performed each year, and approximately 23.3% of women over the age of 18 have had a hysterectomy [1]. Recent literature has shown that retaining the cervix at the time of hysterectomy (supracervical hysterectomy) for benign indications may be a safe option for patients who will reliably continue to follow up with a physician, and have no prior history of cervical dysplasia [2,3]. This approach has been associated with less blood loss, less pain, and faster recovery [4,5], compared to total hysterectomy (removal of

uterus and cervix) and may therefore represent a more attractive alternative than a total hysterectomy for some patients.

The safety of supracervical hysterectomy, along with the rise of laparoscopic approaches for hysterectomy, has led to an increase in the prevalence of supracervical hysterectomy [6]. It is unclear, however, if patients who have undergone this procedure understand that their cervix has been retained, and the recommendation for continued cervical cancer screening after hysterectomy if the cervix is still present. Per the American Society for Colposcopy and Cervical Pathology, cervical cancer screening after hysterectomy should only be discontinued if the patient has had the cervix removed and has no history of CIN 2 or higher [7]. This is because of the continued risk of developing cervical cancer if the cervix remains in place despite undergoing a hysterectomy.

Other studies have shown that many patients have poor understanding of the Pap test, and perceive any gynecologic exam as a Pap [8,9]. Patient perception of cervical cancer screening has not been studied in patients who have undergone any type of hysterectomy. Furthermore, many colloquial terms (such as “partial” and “complete”), which are not described in gynecologic textbooks or scientific literature, are often used by patients to

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describe their hysterectomy procedure. These terms are undefined, and may have different meanings to individual patients.

Given the frequency with which hysterectomies are performed, identifying deficits in patients' knowledge about hysterectomy procedures and screening recommendations, as well as understanding patients' perceptions of frequently used colloquial terms, is necessary to inform patient counseling and ensure that patients receive appropriate gynecologic care and screening after hysterectomy.

Therefore, the primary objective of this study was to determine whether women are aware of their appropriate cervical cancer screening recommendations, among a population of women who have undergone supracervical or total hysterectomy. A secondary aim was to assess their overall knowledge of relevant anatomy and outcomes related to hysterectomy.

## 2. Materials and methods

We developed and utilized a questionnaire for a cross-sectional study of women who had previously undergone hysterectomy. The questionnaire contained 19 knowledge based questions, and 5 demographic questions. The question items were adapted from published items assessing women's knowledge of reproductive health and anatomy [10]. The internal consistency as measured by the standardized Cronbach coefficient alpha was 0.66. It was calculated using the 19 knowledge based questions only and excluded the demographic questions.

After IRB approval was obtained, a list of all patients who had undergone a laparoscopic or vaginal hysterectomy from January 2008 to January 2012 at Indiana University Hospital and Wishard Memorial Hospital in Indianapolis, IN, was collected. Data regarding the patient's hysterectomy, including operative note and final pathology, as well as contact information was obtained from the electronic medical records. Patients who had undergone hysterectomy for cervical dysplasia, endometrial hyperplasia, or any malignant indication were excluded from the study. The questionnaire was administered to English speaking female patients at least 18 years of age who had undergone elective hysterectomy for benign indications at the two different facilities during the designated study period.

The questionnaire was initially mailed to women along with a self-addressed, stamped return envelope. A follow up phone call was made to all participants within 3 months of the mailed survey. If the participant did not complete the mailed survey, they were asked to complete the survey over the phone. If the patient could not be reached on the first phone call, she was called two additional times.

The survey questions were developed using previously published items and validated question stems, and divided into 5 categories: general questions about hysterectomy, hysterectomy terminology, Pap test and human papillomavirus (HPV), the patient's specific type of hysterectomy, and demographic information. The type of hysterectomy included the following options: abdominal, laparoscopic, vaginal, and combined laparoscopic with vaginal. The demographic information included participant's age, race/ethnicity, education, income, and health insurance status. All of the questions were multiple-choice, and there was only one correct answer for all non-demographic questions.

Descriptive statistics were used to summarize the data for each section. Each survey was scored by total number correct. The Spearman's rank correlation coefficient was used to test for the relationship between knowledge and demographic items such as race, education, insurance status, and income. For those participants whose responses could be matched with their surgical data, their answers regarding type of hysterectomy and cervix removal

were reported as either accurate (the same as the surgical data) or inaccurate.

## 3. Results

Of 633 surveys distributed, 190 were returned and analyzed. The response rate was 46%, since 220 women could not be reached due to invalid contact information.

Table 1 shows the demographic characteristics of the study participants. The majority of the participants were 41–60 years old (87%) and either Caucasian (60%) or African American (30%). Educational background of the participants varied from high school or less (33.7%) to vocational training or some college (36.1%) to college degree or higher (27.9%). As for annual income, approximately 53% earned <\$50,000, and 36% earned >\$50,000 (9 study participants declined to answer this question.) The majority of participants were either on government insurance such as Medicaid, Medicare, or the insurance sponsored by the county hospital (41%) or private insurance (43%).

Table 2 shows the percent correct for the fourteen knowledge based questions that fall into the three categories of general information regarding hysterectomy, hysterectomy terminology, and Pap smears. For these questions, the mean number correct was 7.7 with a range of 3–4. The mean number correct for general hysterectomy knowledge is 4.3 out of 5; 0.9 out of 5 for hysterectomy terminology; and 2.6 out of 4 for Pap smear and HPV knowledge. The majority of women (57%) did not know that a hysterectomy does not cause menopause.

The participants were also confused about the definitions for the terminology regarding hysterectomy. Table 3 summarizes the correct answers as to which organs are removed in each type of hysterectomy. Less than 20% of women were able to correctly identify the organs removed for total and supracervical

**Table 1**  
Demographic Survey Data.

Variable	n (%)
Age:	
18–30	2 (1.1)
31–40	16 (8.5)
41–50	107 (56.9)
51–60	57 (30.3)
61–70	4 (2.1)
>70	2 (1.1)
Race/Ethnicity:	
White	115 (61.2)
Black	59 (31.4)
Other	14 (7.5)
Education:	
Less than high school	22 (11.7)
High school diploma	41 (21.8)
Vocational training/some college	69 (36.7)
College degree or higher	56 (29.8)
Annual Income:	
<\$20,000	54 (31.0)
\$ 20,000–\$49,999	50 (28.7)
\$ 50,000–\$99,999	45 (25.9)
>\$100,000	25 (14.4)
Health Insurance:	
Uninsured	14 (7.5)
Government	64 (34.0)
Private	87 (46.3)
Other	23 (12.2)

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