



## Original Article

# Racial differences in percentage of Hysterectomy for Common Uterine Conditions among the Hospitalized Women in the US

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### Abstract

**Background:** Hysterectomy is the second most frequently performed operation in the United States, after cesarean section. Approximately 588,000 hysterectomies are performed annually.

**Objectives:** To find out the racial differences in percentage of Hysterectomy for Common Uterine Conditions among the Hospitalized Women in the US.

**Methods:** The 2001 National Inpatient Sample data was used to estimate the racial differences in the rate of the five most common uterine conditions among the hospitalized women; the same data was also used to estimate the racial differences in the percentage of those who received a hysterectomy. All hospitalized women who had a diagnosis of uterine fibroids, endometriosis, abnormal genital bleeding, genital prolapse and genital malignancy were included. The difference between rate and the percentage was calculated using Z test.

**Results:** Of the five, the most common diagnosis, for all hospitalized women regardless of race, was uterine fibroids. But the rate of uterine fibroid diagnosis for hospitalized blacks was nearly two and one-half times the rate for hospitalized whites ( $p < 0.05$ ). For all single uterine diagnoses except genital prolapse, higher percentage of hospitalized whites had hysterectomy than hospitalized blacks ( $p < 0.05$ ).

**Conclusion:** Racial differences exist in the hospitalization and management of different uterine conditions. Whites are more likely to receive hysterectomy for most of the common uterine diagnoses compared to that of blacks. Because blacks have higher rates of uterine fibroid diagnosis and of abnormal genital bleeding, however, the overall hysterectomy rate for hospitalized blacks is similar to that for hospitalized whites.

**Key words:** Hysterectomy, uterine fibroid, endometriosis, abnormal genital bleeding, genital prolapse, genital malignancy.

### Background

Hysterectomy is the second most frequently performed operation in the United States, after

cesarean section. Data from National Hospital Discharge Survey (NHDS) indicates that approximately 588,000 hysterectomies are performed annually<sup>1</sup>. Hysterectomy has been recommended for many clinical conditions like- uterine fibroids, endometriosis, uterine prolapse, abnormal genital bleeding, genital tract cancers.

Hysterectomy remains the definitive cure for many of these indications. In most cases it should be only employed after first trying conservative treatments. Despite the role of hysterectomy in the surgical management of many uterine conditions, this intervention is not without adverse outcomes. Although the associated mortality from hysterectomy is relatively low (1-2 in 1000)<sup>2</sup>, the risk of lesser

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complications is relatively high (24.5 and 42.8% for vaginal and abdominal hysterectomy respectively)<sup>3</sup>. The most frequent long-term problems reported after surgery include dyspareunia, decreased libido, hot flashes, poor appetite, constipation, weight gain, back pain and urinary problems<sup>4</sup>.

We conducted a descriptive analysis of the National Inpatient Sample database of Health Care Cost Utilization Projects (HCUP) to determine racial differences in the rate of most common uterine conditions, and percentage of women receiving hysterectomy with the respective diagnoses.

### Methods

This is a cross-sectional study of the 2001 Healthcare Cost and Utilization Project (HCUP) National Inpatient Sample (NIS) database. The NIS is a public database available in the United States containing 7.4 million hospital stays for the year 2001. The database was created from about 1000 hospitals sampled to approximate a 20 percent stratified sample of US hospitals.

All women who had a diagnosis of any of the five most common conditions (uterine fibroids, endometriosis, abnormal genital bleeding, genital

prolapse and genital malignancy) were included in our analysis. All available diagnostic codes and procedural codes were reviewed for each patient to identify hysterectomy and the indications of hysterectomy.

Race is categorized in this analysis as recorded in the data base as black, white, Hispanics and other (includes Asian, Pacific Islanders, Native Americans, and other race not already specified.). A separate category for missing race (27% of total sample) was also included.

### Results

In 2001, an estimated 569,844 ( $\pm 16,305$ ) women underwent a hysterectomy in a non-federal, short stay hospital. The average annual rate of hysterectomy was 5.03 ( $\pm 0.14$ ) per 1000 female civilian resident (aged  $\geq 15$  years). The hysterectomy rate for all uterine conditions was 5.65 ( $\pm 0.44$ ) for blacks, 4.81 ( $\pm 0.22$ ) for whites, 4.10 ( $\pm 0.41$ ) for Hispanics, and 6.42 ( $\pm 0.75$ ) for others per 1000 women in year 2001. Five most common uterine conditions (uterine fibroids, endometriosis, abnormal genital bleeding, genital prolapse and genital malignancy) accounted for 93% of hysterectomies. All tables are for women hospitalized in the United States in 2001.

**Table 1.** The estimated rates\* of uterine fibroids (single and multiple diagnoses) and percentages of hospitalized women who received hysterectomy by number of uterine diagnoses.

	Only 1 Diagnosis		2 Diagnoses		3 or more Diagnoses		Total	
	Diagnosis Rate	Hysterectomy (%)	Diagnosis Rate	Hysterectomy (%)	Diagnosis Rate	Hysterectomy (%)	Diagnosis Rate	Hysterectomy (%)
	SE	SE	SE	SE	SE	SE	SE	SE
White	1.02 ¶	60.00 ¶	1.49 ¶	82.23 ¶	0.60	84.14	3.12 ¶	75.30 ¶
	0.05	0.97	0.07	0.87	0.03	1.35	0.15	0.86
Black	3.53 §	44.47 §	3.23 §	71.93 §	0.69	87.50	7.44 §	60.35 §
	0.29	1.28	0.27	1.24	0.06	1.36	0.59	1.14
Hispanic	1.37 ¥	48.97 ¥	1.44	78.91 ¥	0.54	87.72	3.35	68.05 ¥
	0.11	1.79	0.13	1.31	0.06	1.94	0.29	1.42
Others	2.43	46.22	2.67	75.53	0.85	86.65	5.96	65.14
	0.27	1.89	0.33	1.38	0.12	1.43	0.70	1.45

Note: Unclassified race/ethnicity data are not shown. 2, 3 or more diagnoses consists of fibroid and any other studied uterine conditions

\* per 1,000 female aged  $\geq 15$  years old, civilian residents

¶ p significant at  $< 0.05$ , comparison between white v.s. black

§ p significant at  $< 0.05$ , comparison between black v.s. Hispanic

¥ p significant at  $< 0.05$ , comparison between white v.s. Hispanic

**Table 2.** The estimated rates\* of endometriosis (single and multiple diagnoses) and percentages of hospitalized women who received hysterectomy by number of uterine diagnoses.

	Only 1 Diagnosis		2 Diagnoses		3 or more Diagnoses		Total	
	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE
White	0.71 ¶¶ 0.03	51.71 ¶¶ 0.98	0.99 0.05	82.71 1.08	0.57 0.03	84.00 ¶¶ 1.43	2.28 0.11	73.32 0.94
Black	0.41 0.04	32.98 § 1.93	0.93 0.08	82.16 1.62	0.63 § 0.06	88.27 1.37	1.98 0.16	73.80 1.38
Hispanic	0.50 ¥ 0.04	43.52 ¥ 1.82	0.73 ¥ 0.07	82.76 1.80	0.46 0.05	86.78 2.08	1.69 ¥ 0.14	72.26 1.51
Others	0.88 0.10	41.88 2.88	1.50 0.19	78.49 1.72	0.79 0.11	86.43 1.46	3.17 0.38	70.31 1.83

Note: Unclassified race/ethnicity data are not shown. 2, 3 or more diagnoses consists of endometriosis and any other studied uterine conditions

\* per 1,000 female aged  $\geq 15$  years old, civilian residents

¶¶ p significant at  $<0.05$ , comparison between white v.s. black

§ p significant at  $<0.05$ , comparison between black v.s. Hispanic

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**Table 3.** The estimated rates\* of abnormal genital bleeding (single and multiple diagnoses) and percentages of hospitalized women who received hysterectomy by number of uterine diagnoses.

	Only 1 Diagnosis		2 Diagnoses		3 or more Diagnoses		Total	
	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE
White	0.77 ¶¶ 0.03	46.45 ¶¶ 1.11	1.19 ¶¶ 0.06	78.75 ¶¶ 0.98	0.52 0.03	83.08 ¶¶ 1.43	2.48 ¶¶ 0.12	69.62 ¶¶ 0.94
Black	1.12 § 0.08	16.58 § 1.62	2.51 § 0.22	67.84 § 1.41	0.64 0.06	87.36 1.43	4.27 § 0.33	57.33 1.42
Hispanic	0.83 0.08	25.24 ¥ 2.20	1.15 0.13	75.55 2.05	0.48 0.06	87.15 2.28	2.46 0.25	60.81 ¥ 2.41
Others	0.84 0.09	32.47 3.15	1.76 0.25	73.13 1.75	0.75 0.11	85.90 1.56	3.35 0.42	65.86 1.96

Note: Unclassified race/ethnicity data are not shown. 2, 3 or more diagnoses consists of abnormal uterine bleeding and any other studied uterine conditions

\* per 1,000 female aged  $\geq 15$  years old, civilian residents

¶¶ p significant at  $<0.05$ , comparison between white v.s. black

§ p significant at  $<0.05$ , comparison between black v.s. Hispanic

¥ p significant at  $<0.05$ , comparison between white v.s. Hispanic

**Table 4.** The estimated rates\* of prolapse (single and multiple diagnoses) and percentages of hospitalized women who received hysterectomy by number of uterine diagnoses.

	Only 1 Diagnosis		2 Diagnoses		3 or more Diagnoses		Total	
	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE
White	1.49 ¶¶ 0.07	26.78 0.68	0.41 ¶¶ 0.02	80.31 1.41	0.23 ¶¶ 0.02	80.96 1.91	2.13 ¶¶ 0.10	42.92 ¶¶ 0.85
Black	0.37 § 0.05	29.60 § 1.97	0.16 § 0.02	81.39 2.32	0.10 § 0.01	87.11 2.86	0.63 § 0.07	51.91 1.68
Hispanic	1.07 ¥ 0.11	35.63 ¥ 2.21	0.40 0.06	85.65 2.39	0.24 0.04	87.39 2.99	1.71 0.21	54.57 ¥ 2.79
Others	1.11 0.13	37.63 1.87	0.45 0.06	87.53 1.97	0.25 0.04	84.50 2.92	1.80 0.22	56.48 1.87

Note: Missing race/ethnicity data are not shown. 2, 3 or more diagnoses consists of uterine prolapse and any other studied uterine conditions

\* per 1,000 female aged  $\geq 15$  years old, civilian residents

¶¶ p significant at  $<0.05$ , comparison between white v.s. black

§ p significant at  $<0.05$ , comparison between black v.s. Hispanic

¥ p significant at  $<0.05$ , comparison between white v.s. Hispanic

**Table 5.** The estimated rates\* of uterine malignancy (single and multiple diagnoses) and percentages of hospitalized women who received hysterectomy by number of uterine diagnoses.

	Only 1 Diagnosis		2 Diagnoses		3 or more Diagnoses		Total	
	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE	Diagnosis Rate SE	Hysterectomy (%) SE
White	2.06 ¶¶ 0.09	18.13 ¶¶ 0.59	0.20 0.01	81.70 ¶¶ 1.22	0.07 ¶¶ 0.00	90.21 1.46	2.33 ¶¶ 0.11	25.74 ¶¶ 0.69
Black	1.71 § 0.15	12.34 § 0.83	0.16 0.02	73.60 2.66	0.05 0.01	85.44 3.81	1.92 § 0.16	19.27 § 0.94
Hispanic	1.27 ¥ 0.13	16.74 1.01	0.12 ¥ 0.01	79.77 2.99	0.04 ¥ 0.01	92.20 3.51	1.44 ¥ 0.14	24.41 1.22
Others	1.96 0.20	21.69 1.84	0.23 0.03	80.58 3.14	0.08 0.01	86.42 4.12	2.28 0.23	30.05 2.15

Note: Unclassified race/ethnicity data are not shown. 2, 3 or more diagnoses consists of uterine malignancy and any other studied uterine conditions

\* per 1,000 female aged  $\geq 15$  years old, civilian residents

¶¶ p significant at  $<0.05$ , comparison between white v.s. black

§ p significant at  $<0.05$ , comparison between black v.s. Hispanic

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## Discussion

Percentage of women receiving hysterectomy differs for each condition among the hospitalized women: for the diagnosis of uterine fibroid, hysterectomy percentage ranges between 60 to 75%; for the diagnoses of endometriosis, it ranges between 70 to 74%; for the diagnoses of abnormal genital bleeding, it ranges between 57 to 70%; for the diagnoses of genital prolapse, it ranges between 43 to 56%; for the diagnoses of uterine malignancy, it ranges between 19 to 30%. One study also reported similar hysterectomy percentage for hospitalized women with a diagnosis of uterine fibroid, endometriosis and abnormal genital bleeding<sup>5</sup>.

Women hospitalized with only one uterine condition are less likely to receive hysterectomies than women with multiple uterine diagnoses. If only one uterine condition is present, hysterectomy is far less common compared to multiple diagnoses and ranges between 17%-60%, depending on the particular condition. Except for genital prolapse, for any single diagnosis whites are more likely to receive hysterectomies than blacks and Hispanics. Whites with a single diagnosis of uterine fibroid, received hysterectomies 35% more often than blacks. The Duke University Evidence-Based Practice Center reported that black women were less likely than other women to be treated for uterine fibroids with hysterectomy<sup>6</sup>.

In the current study, the overall rate of hospitalization with a diagnosis of uterine fibroid was 20 per 1,000 female civilian residents (aged 15 years old). The corresponding rates for endometriosis, abnormal genital bleeding, uterine prolapse and uterine malignancy were 9, 13, 6 and 8 respectively. White women are found to have slightly higher relative risk of developing endometriosis compared to blacks. In contrary blacks are found to have approximately 2-3 times higher relative risk of developing uterine fibroids and 70% higher relative risk of developing abnormal genital bleeding than whites. Previous study using National Hospital Discharge Survey also reported similar findings<sup>5,7</sup>.

One might expect the hysterectomy rates to be similar once a woman has been diagnosed with a uterine malignancy. Several reasons may exist for the reported difference between blacks and whites. In all cases except uterine prolapse, where the proportion was the same, whites received a greater proportion of hysterectomies than blacks.

Patient preferences and health care beliefs are one of the powerful influences reported as having possible effect on uterine health and decision making relative to hysterectomy. One study found that black women advocated the delay or avoidance of surgery, or the use of alternative methods of treatment in lieu of hysterectomy for non-cancerous conditions<sup>8</sup>. If a greater proportion of blacks are from lower socio-economic strata, they may be less likely than whites to receive care and, for any uterine condition, have less exposure to diagnosis and treatment.

A number of other factors have been examined in effort to explain the variation in surgical rates for other conditions that do not involve the uterus and have not been evaluated relative to racial difference in percentage of hysterectomy. These factors include the availability of health care resources, such as availability of hospital beds, the supply of physicians, and payment mechanisms and insurance coverage. One study reported that women with less education and lower incomes were more likely to have had a hysterectomy<sup>9</sup>. In addition to above characteristics, others have suggested that professional uncertainty about the appropriate use of hysterectomy is the primary cause of the variation in rates of surgery. This uncertainty is thought to stem from difficulties in diagnosis, lack of information on the probable outcomes of hysterectomy and alternative treatments, and difference between physicians' judgment and patients' preferences for treatment<sup>10</sup>.

## Conclusion

Racial differences are present in the overall rates of hospitalization of the most common uterine diagnoses. However blacks, once hospitalized, have a lower percentage of hysterectomies than whites for most conditions (fibroid, endometriosis, abnormal genital bleeding and malignancies) except uterine prolapse. The markedly higher rate of uterine fibroids in blacks most likely results in the similar overall hysterectomy rates between blacks and whites. Further investigation is recommended to help evaluate the racial differences of percentage of hysterectomy presented in this study.

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