Prevalence of Prior Hysterectomy in the Seattle-Tacoma Area

THOMAS D. KOEPSELL, MD, MPH, NOEL S. WEISS, MD, DRPH, DONOVAN J. THOMPSON, PHD, AND DIANE P. MARTIN, PHD

Abstract: Hysterectomy is the most common major surgical procedure performed in the United States. The frequency of hysterectomy among women in the general population is of interest because it affects the population at risk for uterine diseases and because the procedure itself carries significant personal and socioeconomic consequences. We studied factors related to the occurrence of hysterectomy by interviewing a representative sample of women ages 35-74 (n=1087) in two urban Washington counties during 1976-1977.

One-third of the women studied had had a hysterectomy. Later birth cohorts were at higher risk. The age-adjusted prevalence of prior hysterectomy was negatively associated with education and age at first childbirth; it was positively associated with parity, history of irregular menses, and history of a variety of other health conditions. Contrary to expectation, income was negatively associated with hysterectomy rates in one county and showed no association in the other. Part of the income effect was due to confounding by age at first childbirth, which was a surprisingly strong predictive factor.

We conclude that: 1) despite economic predictions based on the discretionary nature of the procedure, hysterectomies are not necessarily more common among high-income women; 2) age at first childbirth may be a more important risk factor for uterine disease than previously thought; and 3) estimates of hysterectomy frequency based on clinic populations may be misleading. (*Am J Public Health* 70:40-47, 1980.)

Introduction

Surgical removal of the uterus has become the most common major operation performed in the United States[1]—a statement which is all the more remarkable because only one-half the population is ever at risk for undergoing the procedure. An estimated 725,000 hysterectomies were performed in 1975, compared with 685,000 tonsillectomies and 319,000 appendectomies.[1] Moreover, the number of hysterectomies performed per 100 women age 15 years and over rose steadily over the period 1968-75.[1-4]

High and rising hysterectomy rates are of interest for at least two reasons. First, the prevalence of prior hysterectomy affects the interpretation of incidence rates for uterine diseases. Published incidence data for uterine cancer, which do not usually take into account the proportion of women without a uterus, have been shown to be up to 30 per cent lower than corrected rates based on the true population at risk.[5] Second, the frequency of hysterectomy has attracted broader interest simply because of the significant social, economic, and personal consequences of the operation when performed on a large scale.[6, 7]

Unlike many other surgical procedures, such as appendectomies or cataract extractions, hysterectomies are performed for a variety of indications. Data from large case series suggest that about 8-12 per cent of hysterectomies are performed for gynecologic cancer. The large majority are performed for benign uterine diseases: uterine fibroids (27-33 per cent), pelvic relaxation (14-29 per cent), uterine bleeding (9-40 per cent), benign adnexal disease (3-9 per cent), and other indications (2-10 per cent).[8-10] Some of the hysterectomies performed for non-malignant indications are

Address reprint requests to Thomas D. Koepsell, MD, MPH, Department of Epidemiology (SC-36), University of Washington, Seattle, WA 98195. At the time of the study, Dr. Koepsell was with the Clinical Scholars Program which supported the work; Dr. Weiss is with the Department of Epidemiology, Dr. Thompson is with the Department of Biostatistics, and Dr. Martin is with the Department of Health Services, all at the University of Washington. This paper, submitted to the Journal June 25, 1979, was revised and accepted for publication September 4, 1979.

thought to be "prophylactic" hysterectomies for women without definite uterine pathology, but the proportion of procedures done for this reason is unknown.[11]

As advances in surgical technique and perioperative care have lessened the risks of hysterectomy, there has been a tendency toward liberalized indications for the procedure.[12] Medical opinion remains divided, however, on whether some newer indications for hysterectomy—such as a desire to prevent uterine cancer or to preclude further childbearing—are sufficient justification in themselves.[13, 14] The controversy over appropriate indications and the preponderance of benign uterine disease for which non-surgical treatment alternatives are often available have complicated both the physician's decision as to whether to recommend hysterectomy and the patient's decision as to whether to accept it. Thus, performance of a hysterectomy is often discretionary on medical grounds, and an opportunity is created for non-biological factors, such as the nature and extent of a woman's insurance coverage, to play a major role.[15]

Considerable evidence already exists to support the importance of non-biological influences on hysterectomy frequency. Regional variations in hysterectomy frequency,[16] including three-fold variation among small areas in a single state,[17] appear to be larger than could be explained on the basis of variations in the incidence of uterine diseases. Differences in hysterectomy rates among enrollees in different insurance plans have also been documented and related to the ways in which physicians are reimbursed.[18] Introduction of a method for peer review of indications for hysterectomy resulted in a marked drop of hysterectomy rates in one Canadian province.[19] And Bunker has suggested that particularly high hysterectomy rates among physicians' wives and wives of lawyers and businessmen reflect not only greater access to health care with high socioeconomic status but also the degree to which consumers are well-informed about the procedure.[20] Others have also reported a positive association between annual family income and frequency of surgical operations in general.[21]

The present study investigates hysterectomy frequency among adult women in the general population of two urban counties in Washington state. Using individual women as the units of analysis, hysterectomy frequency is related to demographic characteristics, socioeconomic status, reproductive history, coexisting health conditions, and other health practices of these women.

Methods

Sample

Area sampling methods were employed to identify representative samples of adult women for two surveys, one conducted in 1976 and the other in 1977. The 1976 sample covered King County (Seattle and environs) and neighboring Pierce County (Tacoma and environs). For this sample, the two counties were subdivided into 175 contiguous geographic areas (strata) with approximately equal numbers of households. Two small sampling units averaging approximately four households each were then randomly chosen within each stratum. All adult women ages 35-74 in the selected households were then asked to participate in a personal interview. Similar sampling methods were employed for the 1977 survey, except that it was confined to King County, employed 200 strata, and called for selection of sampling units averaging approximately two households each.

Of the 1,157 eligible women approached, 63 (5.4 per cent) refused participation, and seven (0.6 per cent) were not interviewed because of language problems or other administrative reasons. In all, 1,087 women (93.9 per cent) were successfully interviewed. The samples were initially assembled to serve as controls for case-control studies of endometrial cancer and other diseases of women, so the structured interviews went into some detail about women's reproductive histories and other known or suspected risk factors for gynecologic cancer.[22]

Analysis

Separate analyses of data from each county and from each survey year showed that the differences in hysterectomy frequency between subsamples were well within the bounds of what would be expected by chance in samples drawn from the same population. With one exception, variations in hysterectomy frequency according to the predictor variables were also very similar in the subsamples. Accordingly, results of analysis of the pooled data set are shown here for economy of presentation. The effect of annual family income on hysterectomy frequency appeared to differ in the two counties, however, and these results are presented separately for each county. Because there were too few nonwhites in the sample to analyze in any detail separately, all analyses except those comparing racial groups were restricted to white women.

Since the frequency of prior hysterectomy should not vary substantially within a one-year period, the data were treated as though they reflected the point prevalence of prior hysterectomy. This would be the relevant measure for determining the population at risk for uterine diseases. Except for comparisons among age groups, all rates in Tables 1 through 4 were age-adjusted by the direct method to the 1970 female population of the United States; all rates in Tables 5 and 6 were similarly adjusted using as the standard the pooled characteristics of white women in this study, whose age distribution did not differ importantly from the 1970 US female population.

For predictor variables taking on only two categories, tests of significance were based on the Mantel-Haenszel procedure for combination of 2X2 tables, where different levels of potential confounding variables (e.g., age) defined the strata.[23] For predictor variables taking on three or more ordered categories, the Mantel extension of the Mantel-Haenszel procedure was used, which tests for a consistent trend over multiple 2Xk tables.[24] Both of these procedures yield chi-square values with one degree of freedom. In both cases the data were treated as a simple random sample.

Results

Sociodemographic Characteristics

Overall, 32.9 per cent of women between the ages of 35

TABLE 1—Prevalence of Prior Hysterectomy among Women Age 35–74 by Sociodemographic Characteristics: King and Pierce Counties, Washington, 1976–1977

Variable	Category	N	Prevalence of Prior Hysterectomy		$\chi^2(1)$
			Crude	Age-Adjusted	
Age	35–39	149	18.1%	N/A	21.97***
	40–44	140	25.7		
	45–49	130	32.3		
	50–54	121	39.7		
	55–59	154	45.5		
	60–64	122	36.1		
	65–69	103	39.8		
	70–74	76	39.5		
Race	White	995	34.0	33.7%	.18
	Black	39	28.2	31.9	
Ever Married	No	19	10.5	10.4	3.24
	Yes	975	34.5	34.2	
Education	<12	169	40.2	39.8	3.92*
(Years of	12	386	35.2	36.1	
Schooling)	>12	432	30.8	30.2	
Income†					
King County	Lowest	163	48.1	46.9	21.37***
	Low	181	33.8	33.1	
	High	181	29.5	30.0	
	Highest	191	23.8	27.1	
Pierce	Lowest	39	35.9	35.0	.20
County	Low	38	34.2	36.3	
	High	35	28.6	25.1	
	Highest	38	42.1	45.1	

Note: Except for comparison by race, only white women are included.
†Median annual family income for census tract, separated into approximate quartiles as follows:
King County: $1–10,944 = Lowest; $10,945–11,843 = Low; $11,844–13,059 = High; $13,060 up = Highest.
Pierce County: $1–9,143 = Lowest; $9,144–9,993 = Low; $9,994–11,189 = High; $11,190 Up = Highest.
*.01 < p < .05
**.001 < p < .01
***p < .001

and 74 had undergone a hysterectomy. Table 1 shows the prevalence of prior hysterectomy among white women according to five-year age groups in this age range. Even among women age 35-39, 18 per cent had no uterus, and this percentage rose to 46 per cent among women age 55-59. After age 60, the prevalence of prior hysterectomy declined somewhat.

Figure 1 shows the reported experience of women in four birth cohorts, indicating the percentage of women in each cohort whose uterus had been removed at ages shown on the abscissa. Since the data were derived from a cross-sectional survey, less extensive longitudinal information is available on women in later birth cohorts. However, at the oldest age for which a comparison is possible between adjacent cohorts, a greater proportion of the later cohort had experienced a hysterectomy at that age than had their predecessors. Thus, these data show declining survival of intact uteri in succeeding birth cohorts. Analysis of Washington state life table data showed that these differences could not be accounted for solely by increased mortality among women with hysterectomies.

The age-adjusted prevalence of prior hysterectomy was similar among blacks and whites (Table 1). The few never-married women in the sample experienced sharply lower hysterectomy rates, although with this sample size the difference was not statistically significant at the .05 level.

Hysterectomy frequency was found to decline significantly with higher education. Although family income data were not gathered for each interviewee, median annual family income in 1970 for the census tract in which each woman resided was used as a proxy. In King County, women in low-income areas were significantly more likely to have undergone a hysterectomy. The findings related to education and income for King County women thus suggest a steadily decreasing prevalence of prior hysterectomy with increasing socioeconomic status. While the influence of education was similar in the Pierce County subsample, no consistent difference in hysterectomy frequency was found between high- and low-income areas of Pierce County.

Reproductive Factors

As indicated in Table 2, the age-adjusted prevalence of prior hysterectomy among nulliparous white women was somewhat higher than among white women who had borne a single child. But among parous women, hysterectomy frequency appeared to increase significantly with increasing parity, at least up to three children. A strong negative association was found between the age at which a woman bore her

TABLE 2—Prevalence of Prior Hysterectomy among White Women Age 35–74 by Reproductive Factors: King and Pierce Counties, Washington, 1976–1977

Variable	Category	N	Prevalence of Prior Hysterectomy		$\chi^2(1)$
			Crude	Age-Adjusted	
Parity	0 children	141	28.4%	30.0%	5.29*
	1	118	27.1	25.2	(Trend,
	2	271	33.9	33.6	1–4+)
	3	230	37.8	38.4	
	4 or more	235	37.0	37.6	
Age at First Childbirth	<20	195	49.2	50.8	41.73***
	20–22	249	35.7	37.2	
	23–26	225	30.2	27.8	
	>26	186	24.2	21.7	
Ever Had Miscarriage†	No	373	31.1	31.0	1.44
	Yes	158	38.6	37.8	
Ever Had Cesarean Section†	No	497	33.2	32.8	.01
	Yes	34	35.3	39.1	
Menses Always Regular	No	186	50.5	51.5	27.94***
	Yes	803	30.1	29.9	

†Asked during 1976 interview only
*.01 < p < .05
***p < .001

first child and her subsequent hysterectomy experience. This finding is explored in further detail below.

Although women who had experienced at least one spontaneous abortion (miscarriage) or at least one Cesarean section appeared to have slightly higher hysterectomy rates than other women, neither increase was large or statistically significant at the .05 level. Women with a history of irregular menses, however, had markedly higher rates of hysterectomy than did their counterparts with regular menses.

Other Health Conditions

A pattern of higher age-adjusted hysterectomy frequency appeared to hold for women with histories of any of several other health conditions (Table 3). Increases of 45 per cent to 60 per cent were observed among women who reported having been diagnosed as hypertensives or diabetics or who said they had undergone cholecystectomy. However, no difference in hysterectomy frequency was observed for women with a history of non-gynecologic cancer as compared with other women.

It should be noted that information about the timing of these other medical events was not gathered as part of the interview: hence a hysterectomy, if performed, could have preceded or followed detection or treatment of these diseases.

No significant variation in hysterectomy frequency was found among women with different values of an index of body mass, which reflects relative obesity.

Other Health Practices

A significantly increased age-adjusted prevalence of prior hysterectomy was found for women who had undergone mammography at some time prior to the interview (Table 4). Again, however, whether these women underwent mammography before or after undergoing hysterectomy is not determinable from the data at hand.

No significant difference was found between cigarette smokers and non-smokers with regard to hysterectomy frequency.

TABLE 3—Prevalence of Prior Hysterectomy among White Women Age 35–74 by Presence of Other Health Conditions: King and Pierce Counties, Washington, 1976–1977

Variable	Category	N	Prevalence of Prior Hysterectomy		$\chi^2(1)$
			Crude	Age-Adjusted	
History of Diagnosed Hypertension	No	734	30.1%	31.1%	7.92**
	Yes	259	44.4	45.5	
History of Diagnosed Diabetes Mellitus	No	949	33.2	33.0	3.73
	Yes	46	50.0	53.0	
History of Cholecystectomy	No	885	31.6	31.6	14.27***
	Yes	108	51.9	47.0	
History of Non-Gynecologic Cancer	No	926	33.5	33.6	.00
	Yes	66	39.4	33.8	
Body Mass Index (Weight/Height²)†	Thinnest	221	30.3	32.0	.75
	Thin	242	33.1	34.3	
	Fat	297	34.0	33.3	
	Fattest	232	37.9	36.3	

†Approximate quartiles
**.001 < p < .01
***p < .001

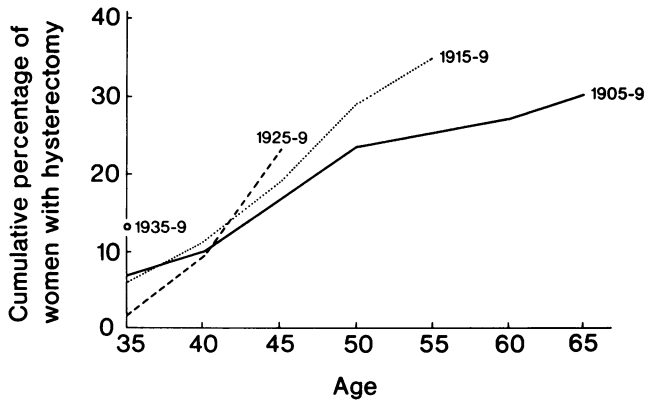

FIGURE 1—Cumulative Frequency of Hysterectomy among Women, by Age, for Four Birth Cohorts: King and Pierce Counties, Washington, 1976–77

TABLE 4:—Prevalence of Prior Hysterectomy among White Women Age 35–74 by Selected Health Practices: King and Pierce Counties, Washington, 1976–1977

Variable	Category	N	Prevalence of Prior Hysterectomy		$\chi^2(1)$
			Crude	Age-Adjusted	
Ever Had Mammography	No	779	31.7%	31.7%	4.32*
	Yes	186	41.3	39.2	
Ever Smoked Cigarettes	No	448	35.5	34.9	.34
	Yes	547	32.7	32.9	

*.01 < p < .05

Income Effect in Context of Other Factors

Bunker's finding of relatively high hysterectomy rates among wives of professionals[20] and Bombardier's analysis of surgery incidence according to family income[21] both suggested that a history of prior hysterectomy might be more common with increasing socioeconomic status. Although the effect of income appeared to be somewhat different in the two countries studied, in neither case was a clear positive association between income and hysterectomy frequency evident from the data. However, since differences in socioeconomic status are known to be correlated with differences in illness experience and childbearing patterns, the effect of income might have been confounded by such factors and warranted further study. Because the population of Pierce County is smaller and was sampled only in the 1976 survey, too few subjects were available to support a separate detailed analysis of the Pierce County subsample. Further analysis was conducted on the King County subsample, where the data suggested a strong negative association between income and hysterectomy frequency.

Table 5 shows changes in the effect of income on hysterectomy frequency which are brought about by controlling for other variables using direct standardization on the King County subsample. Although measured on the census tract rather than the individual level, income proved to be a stronger determinant of hysterectomy frequency than years of schooling. (In fact, adjustment for income essentially abolished the effect of education.) Similar decreases in hysterectomy frequency with increasing income were evident both in women with regular menses and in those with irregular menses, although the effect of income appeared to be stronger in the latter group.

For comparison purposes, Table 5 shows the effect of income among the subset of white King County women who had borne at least one child. This effect was evident regardless of the number of children a woman had borne, and ad-

TABLE 5—Effect of Census Tract Median Income on Prevalence of Prior Hysterectomy in King County Subsample, Before and After Adjustment for Potential Confounding Variables

Prevalence Rates Adjusted for	Income Quartile				χ^2 for Trend#
	Lowest	Low	High	Highest	
Age	46.9%	33.1%	30.0%	27.1%	21.37***
Age + Years Schooling	49.4	32.3	29.2	27.9	18.32***
Age, for Women with:					
Regular Menses	40.0	29.0	26.5	25.5	10.59**@
Irregular Menses	69.0	49.0	45.4	33.6	11.27***
Age (parous women only)	49.7	35.5	28.7	28.9	22.62***
Age + Parity	49.8	35.0	28.4	31.0	22.12***
Age + Age at First Childbirth	53.4	31.8	28.6	35.0	12.40***
Age + Presence of a Comorbid Condition†	44.5	31.5	30.0	28.1	17.53***

†Presence of one or more of: history of hypertension, history of diabetes mellitus, history of cholecystectomy

#Tests null hypothesis of no trend in hysterectomy prevalence with increasing income, controlling for variables named in first column

@χ^2 for trend after adjustment for regularity of menses was 20.08***

**.01 < p < .001

***p < .001

justment for parity failed to explain the income effect. However, high income women tended to have had their first child at relatively older ages. After controlling for age at first childbirth, there was no longer a steadily decreasing frequency of hysterectomy with increasing income. The χ^2 for trend thus declined after controlling for age at first childbirth, although the remaining negative effect of income was still unlikely to have arisen by chance alone.

As noted above, diagnosed high blood pressure, diagnosed diabetes, and a history of cholecystectomy all were associated with higher hysterectomy frequencies. Since a likely possibility is that these three factors all served as indicators of medical care use in general, they were considered jointly by grouping together women who gave a positive history for at least one of these three items. However, the effect of income persisted after adjusting for this stratification, indicating that the effect of income is not explained by greater frequency of these three conditions among lower-income women.

Age at First Childbirth in Context of Other Factors

The age at which a woman bore her first child appeared to have an unexpectedly large effect on the subsequent fate of her uterus. It was suspected, however, that income and/or parity might be confounding factors, since both would be correlated with age at first childbirth and were also known to affect hysterectomy frequency. Table 6 shows, however, that age at first childbirth has a strong effect which is independent of income and parity. In fact, adjustment for age at first childbirth essentially abolished the effect of parity (not shown). Separate analysis of the King County subsample yielded the same conclusions.

A potential problem with analysis of age at first childbirth is that women bearing their first child at relatively younger ages are at risk for hysterectomy for a longer period of time than those bearing a first child at a later age, without changing their classification in the analysis. Any such bias can be removed by studying only hysterectomies occurring after age 38, the oldest age at which any woman in the sample bore her first child. The lower half of Table 6 shows that a strong effect of age at first childbirth is still evident and that it remains significant after controlling for income and for parity.

TABLE 6—Effect of Age at First Childbirth on Prevalence of Prior Hysterectomy Before and After Controlling for Potential Confounding Variables

Prevalence Rates Adjusted for	Age at First Childbirth				χ^2 for Trend#
	<20	20-22	23-26	>26	
Hysterectomy At Any Age					
Age	50.6%	38.0%	28.5%	21.8%	41.73***
Age + Income	51.8	37.3	34.1	21.9	33.25***
Age + Parity	53.2	37.2	29.8	22.8	31.24***
Hysterectomy After Age 38					
Age	34.5	27.9	25.2	18.7	11.80***
Age + Income	36.3	26.5	30.6	17.6	8.23**
Age + Parity	36.3	27.3	25.6	20.4	9.41**

#Tests null hypothesis of no trend in hysterectomy prevalence with increasing age at first childbirth, after adjusting for variable(s) named in first column

**$.001 < p < .01$

***$p < .001$

Discussion

This study represents an attempt to assess the frequency of prior hysterectomy among a population-based sample of adult women and to examine the factors associated with relatively high or low hysterectomy frequency among these women. One-third of women age 35–74 in the study area had a history of prior hysterectomy—a figure which agrees closely with Walker and Jick's corresponding estimates of 30.5 per cent for the United States as a whole and 31.3 per cent for the Western US.[16] Of course, despite its apparent representativeness in terms of overall hysterectomy frequency, the sample of women studied here came from a single limited geographic area, and there is no assurance that the pattern of variation in hysterectomy frequency observed would hold true for the nation or region as a whole.

By reconstructing the hysterectomy experience of study area women in succeeding birth cohorts, it appears that the proportion of women with hysterectomies at a given age is increasing over time. If present trends continue, over one-half of the women in later birth cohorts will undergo surgical removal of their uteri during their lifetimes. These findings underscore the need to take hysterectomy frequency into account in monitoring the incidence of uterine diseases over time or among population subgroups. They also hint at the substantial quantities of medical care resources now being used for uterine extirpation and stress the importance of further work to evaluate the appropriateness of existing indications for this procedure.*

In comparison with other surgeries, hysterectomy is considered a relatively discretionary procedure.[21] Hence one might expect that women of higher socioeconomic status would more frequently undergo the procedure because of more complete insurance coverage and less severe hardships imposed by any out-of-pocket payments. Despite other suggestive evidence in favor of this reasoning,[20, 21] data from the present study offer little support for it and suggest that the influence of socioeconomic status is much more complex. There was a negative correlation in both study areas between years of schooling and a woman's chances of having undergone a hysterectomy. This suggestion of a negative association between hysterectomy frequency and socioeconomic status received further support in King County, where a strong negative correlation with census tract annual family

*Unpublished data from a sample of hospital discharges included in the Hospital Records Survey, conducted by the Commission on Professional and Hospital Activities (CPHA), suggest a possible recent reversal of the upward trend in hysterectomy rates, however. According to CPHA's projections, the number of hysterectomies performed nationwide in nonfederal short stay general hospitals declined 17 per cent over the period 1975–1978 (personal communication).

income was found. Additional analyses showed that this negative association was present to a similar extent for hysterectomies performed during 1956-65 and 1966-75, the decades before and after enactment of Medicare and Medicaid. Hence the pattern is not a recent development accounted for by greater access to care among the low-income population. It does fit, however, with the known pattern of relatively high use of both inpatient and ambulatory care in general among lower-income groups,[25] which is assumed to represent, at least in part, greater medical need. Although no information about the medical indication for hysterectomy in each case was available in this study, some of the less frequent indications for hysterectomy—notably cervical cancer and pelvic infections—are known to be more common among women of low socioeconomic status.[26, 27]

Although much of the evidence in this study suggests a decreasing prevalence of prior hysterectomy with increasing socioeconomic status, the pattern is not altogether consistent. In Pierce County, no trend in hysterectomy frequency was seen with increasing income, although this subsample was too small to examine in detail for possible confounding. For the King County subsample, part of the association between income and hysterectomy appeared to be due to the fact that lower income women tended to initiate childbearing at younger ages, which appears to confer greatly increased risk of subsequent hysterectomy. After controlling for such differences, the data suggest that women on both ends of the income continuum have an increased prevalence of prior hysterectomy compared with their middle-income counterparts.

The association between age at first childbirth and hysterectomy frequency in this study was strong: the magnitude of the effect exceeded that of income and parity—in fact, controlling for age at first childbirth attenuated the income effect and essentially abolished the effect of parity. It was also persistent with advancing age: even considering only hysterectomies occurring after age 38, women having their first child as teenagers were 94 per cent more likely to report having had a hysterectomy than comparably aged women who initiated childbearing after age 27. This finding, too, persisted after adjustment for parity and income.

Several factors may play a role in linking age at first childbirth with hysterectomy risk. Women who initiate childbearing early may also have initiated sexual activity at an early age and be at increased risk for cervical cancer or for complications of sexually transmitted diseases. Women initiating childbearing at a young age may also complete their families at a relatively younger age. These women (and their doctors) might look more favorably on hysterectomy as a means of birth control, with or without other indications being present. Another possibility, particularly in view of the effect of age at first childbirth on hysterectomy at relatively later ages, is that age at first childbirth may be a more important risk factor for common gynecologic conditions than has previously been recognized. Comments on the relative strengths of these mechanisms must await further study.

The positive associations between hysterectomy frequency and the presence of hypertension, presence of diabetes, history of cholecystectomy, and use of mammography may have a common explanation—namely, that users of one type of medical service are also more likely to use another. Hypertension, diabetes, and gallbladder disease are all chronic conditions whose management would involve establishment of an ongoing relationship with medical care providers. The existence of such a relationship might enhance the likelihood of a woman's reporting troubling symptoms to the physician, or it might facilitate detection of asymptomatic uterine disease on a routine check-up. Use of mammography is evidence of a degree of health concern which may be translated into greater willingness to go to doctors when symptoms develop, or it may correlate with greater willingness to accept a recommendation for removal of a potentially cancer-bearing organ.

High hysterectomy frequency among women with a variety of other health conditions does have implications for epidemiologic research. Sometimes the incidence rate of a uterine disease such as endometrial cancer is to be measured in a defined population, given knowledge of the number of cases which have occurred.[28] The prevalence of prior hysterectomy in that population must be estimated to calculate the population at risk. The foregoing findings suggest that use of clinic populations to estimate hysterectomy frequency may yield an overestimate of the frequency in the population as a whole.

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