

Chronic Gynecological Conditions Reported by US Women: Findings from the National Health Interview Survey, 1984 to 1992

ABSTRACT

Objectives. This study sought to describe prevalence rates of chronic gynecological conditions and correlates of these conditions in a representative sample of US women.

Methods. National Health Interview Survey data from 1984 through 1992 for women aged 18 to 50 were used.

Results. The estimated annual prevalence rate for the reported presence of one or more gynecological conditions was 97.1 per 1000 women. Menstrual disorders were most common, with an annual prevalence rate of 53.0 per 1000 women. Adnexal conditions and fibroids were the next most common conditions, with rates per 1000 women of 16.6 and 9.2, respectively. Prolapse, endometriosis, and fibroids were the conditions most likely to lead to hysterectomy within the year prior to the interview. More than three quarters (77.1%) of women with gynecological conditions had talked with a doctor in the previous year concerning their condition, and 28.8% reported spending 1 or more days in bed in the previous year because of their condition.

Conclusions. Nearly a tenth of American women aged 18 to 50 report having one or more chronic gynecological conditions annually, the most common being disorders of menstruation. (*Am J Public Health*. 1996;86:195-199)

Kristen H. Kjerulff, PhD, Beth A. Erickson, MS, and Patricia W. Langenberg, PhD

Introduction

Gynecological health is an important component of any woman's health status. Gynecological disorders can have a substantial impact on many aspects of quality of life, including reproductive ability, sexual functioning, mental health, and the ability to work and to perform routine physical activities.^{1,2} More than a third of women in the United States will, at some point in their lives, develop a gynecological problem that is severe or potentially problematic enough to lead to hysterectomy.³ Several studies have been conducted to examine gynecological conditions associated with hysterectomy.⁴⁻⁶ These studies have consistently found that the most common principal diagnosis among women having hysterectomy is uterine fibroids. Other common indications for hysterectomy are uterine prolapse, endometriosis, menstrual disorders, and cancer. However, little is currently known about the prevalence of these and other gynecological conditions in the general population, and about the impact of these conditions on health care system usage, lost work days, and other activity limitations.

The National Health Interview Survey (NHIS) is a continuous survey of the general population conducted in all 50 states. Every year since 1984, the NHIS has asked a subsample of women to report gynecological conditions and to answer specific questions about these conditions. This paper presents prevalence rates for categories of gynecological conditions for women aged 18 to 50, reported as part of the NHIS from 1984 to 1992. Additionally, it examines the relationship between the gynecological conditions and various other factors, including race, hysterectomy, doctor visits, bed days (defined as days in which more than half the day

was spent in bed), and work and activity limitations.

Methods

The NHIS, which is sponsored by the National Center for Health Statistics (NCHS) of the Centers for Disease Control and Prevention, is an in-home interview of the civilian noninstitutionalized population, conducted throughout the United States on a continuous basis. A stratified, multistage probability design is used to sample households. All members of sampled households aged 17 and over are asked to participate. In addition, questions are asked about younger members of the household and members who are not at home at the time of the interview. The information obtained from respondents concerning household members who are not at home at the time of the survey or who are, for other reasons, unable to answer questions is known as proxy data. Random subsamples of adults are asked to respond to supplemental questions, which vary from year to year. Most questions address events occurring only in the 12 months prior to the interview. The core questions in the NHIS cover demographic characteristics, disability days, physician visits, acute and chronic

The authors are with the Department of Epidemiology and Preventive Medicine, School of Medicine, University of Maryland, Baltimore.

Requests for reprints should be sent to Kristen H. Kjerulff, PhD, Department of Epidemiology and Preventive Medicine, School of Medicine, University of Maryland, Gray Laboratory, 520 W Lombard St, Baltimore, MD 21201.

This paper was accepted July 11, 1995.

Note. All analyses, interpretations, and conclusions are the responsibility of the authors and not of the National Center for Health Statistics.

conditions, and hospitalizations. There are six different sets of questions concerning acute and chronic conditions, each of which is asked of a randomly sampled sixth of the participants.

Survey data from the years 1984 to 1992 were used for this study. Data were analyzed for all women aged 18 to 50 who were asked condition list 4, which included several questions about gynecological conditions. This study did not include women over age 50 because most of the gynecological conditions under investigation here are relatively uncommon in postmenopausal women. Interviewers asked if each female participant had had one or more of the following gynecological conditions in the 12 months prior to the day of the survey: any disease of the genital organs; trouble with menstruation; a hysterectomy (and if so, for what condition); a tumor, cyst, or growth of the uterus or ovaries; any other disease of the uterus or ovaries; and any other female trouble. For each condition elicited by these questions, a set of additional questions was asked, including "Did the doctor or assistant call the condition by a more technical or specific name?" "When did you last see or talk to a doctor or assistant about the condition?" and "About how many days since a year ago has this condition kept you in bed more than half of the day? (include days while an overnight patient in a hospital)." In addition, the NHIS measures whether the condition causes activity limitation, is the main cause of the activity limitation or a secondary cause, causes limitation in ability to work, and is the main cause of work limitation or a secondary cause. A condition was categorized as causing activity or work limitation if it was reported as either a main or a secondary cause. All elicited conditions were coded with the *International Classification of Diseases*, 9th version (ICD-9), modified for the NHIS.

No information was available on whether the women had had a hysterectomy more than 13 months prior to the interview, and no information was obtained concerning a history of prior gynecological conditions that had been cured more than 12 months prior to the interview. Yet some unknown percentage of women who did not report having had a gynecological condition would have had a hysterectomy at some point earlier than the 13 months preceding the interview date. The denominator used in the prevalence calculations includes all women aged 18 to 50. No attempt was made to

estimate the number of women in this age group who no longer had uteri because the intent was to calculate population prevalence rates for these gynecological conditions, not prevalence rates for only women with intact uteri.

Because prevalence rates for gynecological conditions were found to be lower in the proxy data, these data were not used in this study. Respondents for whom data were provided partially by self-report were included. Only chronic gynecological conditions were included in these analyses. The NCHS defines chronic conditions as those of at least 3 months' duration, or a type of condition that ordinarily has a duration of more than 3 months.^{7(p6)}

Gynecological conditions were categorized as menstrual disorders (e.g., an unspecified disorder of menstruation, painful menstruation, excessive or frequent menstruation, irregular menstruation, premenstrual tension syndrome) with ICD codes 625.3, 625.4, and 626 to 626.9; adnexal conditions (e.g., ovarian cyst, benign neoplasm of the ovary) with ICD codes 220, 221.0, and 620 to 620.9; uterine fibroids (e.g., uterine leiomyoma, other benign neoplasm of the uterus) with ICD codes 218 to 219.9; inflammatory disorders (e.g., vaginitis, unspecified inflammatory disease of the female pelvic organs, salpingitis/oophoritis, cervicitis, inflammatory disease of the uterus) with ICD codes 614 to 616.9; noninflammatory disorders (e.g., unspecified noninflammatory disorder of the uterus, dysplasia of the cervix, uterine polyp, noninflammatory disorder of the vagina) with ICD codes 619 to 619.9 and 621 to 624.9; endometriosis, using ICD codes 617 to 617.9; uterovaginal prolapse with ICD codes 618 to 618.9; menopausal symptoms (e.g., flushing, sleeplessness, headache) with ICD codes 627 to 627.9; and cancer (e.g., malignant neoplasm of the genitourinary organs, cervix, and ovary) with ICD codes 179 to 184.9, 198.6, 233.1 to 233.3, 236, 236.0, 236.2, and 236.3.

Because the NHIS is a complex, multistage probability sample of the United States, the sample data must be weighted to produce national estimates. Therefore, all prevalence rates and percentages reported in this paper were weighted to reflect the probability of selection as well as other survey design features. The weighting procedure used in these analyses is outlined in documentation provided with the survey data tapes⁸ and is described in further detail in the publication "Current Estimates from

the National Health Interview Survey, 1992."^{9(pp 134-135)}

Standard errors for the prevalence estimates were calculated based on approximation procedures recommended by the NCHS; these procedures incorporate selection effects at each step of the design, including the sampling of geographic segments or clusters, household nonresponse, and other factors inherent in a multistage sampling design.^{7(pp 136-139)} Estimates are considered to be statistically reliable if the relative standard error is 30% or less. All prevalence estimates presented in the text and tables meet the reliability criteria of 30% or less relative standard error.

Data from 9 survey years, 1984 to 1992, were combined for most analyses to enhance the stability of the estimates. Sample sizes were smaller in 1985 and 1986 because of decreased funding for the survey during those years.

Because some women reported having had more than one gynecological condition, the "overall" categories, with the exception of average bed days, were not calculated by summing across conditions. Individuals were counted only once in the calculation of overall categories so that these categories would not be inflated. Therefore, the overall categories seen in Tables 2 and 3 represent the prevalence or percentage for women who reported having had one or more gynecological conditions in the previous year. For individuals who reported having had more than one gynecological condition in that time, there is no way of knowing the extent to which the bed days reported for one condition are the exact same days reported for their other condition(s). Therefore, the overall average of bed days was calculated by summing across conditions, based on the assumption that the bed days reported for each condition were different days for patients with multiple conditions. Chi-square was used to compare proxy with nonproxy participants. Tests of significant differences between rates are based on z with the calculated standard errors (SEs).

Results

Proxy participants accounted for 22.4% of the 40 721 women aged 18 to 50 who were asked about gynecological conditions from 1984 to 1992. Gynecological conditions were significantly less likely to be reported for proxy participants than for nonproxy participants (5.0% vs 9.7%, $P < .0001$). In addition, proxy partici-

pants tended to be younger than nonproxy participants; 59.8% were between the ages of 18 and 33 years, compared with 50.3% among nonproxy participants ($P < .0001$).

As seen in Table 1, the total number of nonproxy women aged 18 to 50 asked about gynecological conditions over the 9 study years was 31 617. Those reporting one or more gynecological conditions were similar in age, race, and education to those not reporting a gynecological condition.

The estimated prevalence rate for the presence of one or more gynecological conditions during this period was 97.1 per 1000 women (Table 2). This rate was 98.5 for White women and 97.4 for Black women. The prevalence rate for the presence of one or more gynecological conditions fluctuated somewhat across the 9 study years, ranging from a high of 108.6 per 1000 women in 1985 to a low of 87.5 per 1000 women in 1991.

The prevalence of specific gynecological conditions also fluctuated somewhat from year to year, but there was no consistent trend of increasing or decreasing prevalence for any of these conditions across the 9 study years. The average number of gynecological conditions reported among women who had had one or more gynecological conditions was 1.1. Most of these women reported one gynecological condition (90.2%); however, 9.0% reported two conditions, 0.7% reported three conditions, and one woman reported four conditions.

Condition-specific prevalence rates are presented in Table 2. The most prevalent group of conditions was menstrual disorders (53.0 per 1000), and the second most common group was adnexal conditions (16.6 per 1000). The two least common conditions were cancer (2.2 per 1000) and uterovaginal prolapse (2.1 per 1000). The estimated annual number of women between the ages of 18 and 50 having had one or more chronic gynecological conditions was 4.5 million.

Although there were too few non-White respondents to allow valid race comparisons for most conditions, the three most common conditions had enough White and Black women to allow comparisons. The prevalence rates for menstrual disorders were not significantly different for White women (53.1 per 1000, SE = 1.6) and Black women (54.1 per 1000, SE = 4.1), nor were those for adnexal conditions (White women: 17.3 per 1000, SE = 0.9; Black women: 15.0 per 1000, SE = 2.1). However, the preva-

TABLE 1—Characteristics of US Women with and without Gynecological Conditions: National Health Interview Survey, 1984 to 1992

	Women with Gynecological Conditions (n = 3061), %	Women without Gynecological Conditions (n = 28 556), %
Age, y		
18–33	49.0	50.4
34–50	51.0	49.6
Race		
White	82.0	81.3
Black	15.6	15.0
Other	2.4	3.7
Education		
≤ 12 years	55.3	57.0
Some college	35.8	34.9
Some postgraduate	8.5	7.4
Missing	0.4	0.7

TABLE 2—Prevalence Rates of Gynecological Conditions per 1000 US Women Aged 18 to 50: National Health Interview Survey, 1984 to 1992

Gynecological Condition	Rate per 1000 Women	Standard Error	Estimated Annual Number Affected
Menstrual disorders	53.0	1.4	2 475 684
Adnexal conditions	16.6	0.8	775 677
Fibroids	9.2	0.6	429 619
Inflammatory disorders	7.4	0.5	345 735
Endometriosis	6.9	0.5	323 058
Noninflammatory disorders	6.4	0.5	299 579
Menopausal symptoms	3.9	0.4	182 664
Cancer	2.2	0.3	103 706
Prolapse	2.1	0.3	97 034
Overall	97.1	1.9	4 546 480

lence rate for uterine fibroids was substantially and significantly higher for Black women (16.9 per 1000, SE = 2.2) than for White women (8.2 per 1000, SE = 0.6) ($P = .0001$).

A small percentage (5.8%) of women with one or more gynecological conditions had had a hysterectomy during the 12 months prior to the interview; this was slightly but not significantly more likely among Black women than among White women (6.2% vs 5.8%). More than a fourth (27.0%) of women with prolapse had had a hysterectomy in the previous 12 months. Recent hysterectomy was also common among the women with endometriosis (21.3%), fibroids (19.6%), and cancer (16.6%). It was fairly rare, however, among women with menstrual disorders (1.8%) and menopausal symptoms (1.3%).

Based on information obtained for the previous 12 months, Table 3 reports the percentage of respondents having had doctor contacts, the percentage of respon-

dents having had bed days for each condition, the number of bed days caused by each condition, and the percentage of respondents for whom each condition caused any kind of limitation in her activities and/or her ability to work. Many of the women (94.1%) had talked with a doctor at some point in time about their gynecological conditions; approximately three quarters of those with one or more gynecological conditions (77.1% total; 81.7% of White women, 79.6% of Black women) had talked with a doctor within the previous 12 months. Women with inflammatory disorders were most likely to report having talked with a doctor in the previous year concerning that condition (95.6%), while women with menstrual disorders were least likely to have done so (67.0%).

More than a quarter of the women (28.8%) reported having had bed days caused by their gynecological condition(s). Among women with one or more gynecological conditions who had had bed

TABLE 3—US Women's Gynecological Conditions, by Doctor Contact, Bed Days, Activity Limitation, and Work Limitation in Previous 12 Months: National Health Interview Survey, 1984 to 1992

Gynecological Condition	Doctor Contact, %	Bed Days, %	No. Bed Days among Those with Bed Days, Mean (SD)	Activity Limitation, %	Work Limitation, %
Menstrual disorders (n = 1666)	67.0	31.0	9.6 (11.4)	0.8	0.5
Adnexal conditions (n = 519)	84.5	34.9	12.6 (16.1)	3.8	1.3
Fibroids (n = 306)	85.5	34.8	16.2 (15.8)	4.6	2.5
Inflammatory disorders (n = 221)	95.6	29.8	11.2 (15.1)	2.3	0.6
Endometriosis (n = 211)	82.9	49.6	17.8 (26.0)	8.1	4.6
Noninflammatory disorders (n = 195)	90.1	25.5	7.9 (10.9)	1.8	1.8
Menopausal symptoms (n = 133)	85.4	18.8	8.0 (5.2)	6.4	5.1
Cancer (n = 70)	87.1	41.6	15.5 (14.2)	15.1	10.6
Prolapse (n = 64)	78.0	40.7	11.3 (8.8)	10.7	7.1
Overall (n = 3061)	77.1	28.8	11.7 (15.1)	2.8	1.7

days, the number of days ranged from 1 to 200, with the average being 12. The percentage of those reporting bed days was highest among women with endometriosis (49.6%) and lowest among women with menopausal symptoms (18.8%).

Nearly 3% of women reported activity limitation caused by their gynecological condition(s). The percentage was highest among women with cancer (15.1%) and prolapse (10.7%) and lowest among women with menstrual disorders (0.8%).

Almost 2% of the women with one or more gynecological conditions reported a resultant work limitation. The percentage was highest among women with cancer (10.6%) and lowest among women with inflammatory disorders (0.6%) and menstrual disorders (0.5%).

Discussion

The results of this study indicate that chronic gynecological conditions are common among American women in their childbearing years. These conditions generate physician contact and bed days, and in some cases lead to hysterectomy. More than 4.5 million women aged 18 to 50 reported having had at least one chronic gynecological condition each year. If we conservatively assume that there is one doctor visit per year for the 77.1% of women who had seen or talked with a doctor concerning their condition in the previous year, these chronic gynecological conditions generate more than 3 million doctor visits per year. Because more than a fourth of the women with chronic

gynecological conditions reported bed days, with an average of 12 bed days per year among them, we can assume that more than 15 million bed days occur each year among women aged 18 to 50 who have these conditions.

Although the results of this study indicate that approximately 10% of American women aged 18 to 50 report having at least one chronic gynecological condition during a 12-month period, the data were not available to investigate the percentage of women who had had a chronic gynecological condition more than 12 months prior to the interview date and had in one way or another been cured. This type of information would be useful to calculate the lifetime probability of developing a chronic or otherwise serious gynecological condition. Previous research indicates that 40% of women aged 55 and older have, at some point in their lives, developed a gynecological condition serious enough to lead to hysterectomy.³ Since not all women with chronic gynecological conditions will have a hysterectomy, it is likely that substantially more than 40% of American women will, at some point, develop a chronic gynecological condition. Little is currently known about the natural history of menstrual disorders, uterine fibroids, prolapse, endometriosis, or other common gynecological conditions. Further, the impact of these conditions on the health and quality of life of women in the general population is unclear.

Although uterine fibroids are the most common indication for hysterectomy

in the United States,⁶ this study found that the most common category of gynecological conditions in the general population is menstrual disorders. Results of this study indicate that the estimated annual number of women aged 18 to 50 reporting menstrual disorders is nearly 2.5 million. Yet fewer than 2% of the women who reported having had a menstrual disorder in the previous 12 months also reported having had a hysterectomy during that period. Thus, while menstrual disorders are quite common, they are relatively unlikely to lead to hysterectomy. Women with menstrual disorders were less likely to report having talked with a doctor about their condition in the previous year, less likely to report activity limitation, and less likely to report work limitation than women with other gynecological conditions.

This study, based on self-reported information by American women, shows, as most others do, that cancer is not the most common condition leading to hysterectomy. Furthermore, it is likely that some of the women who reported having had cervical cancer actually had cervical dysplasia, which is not automatically treated with hysterectomy. Because the NHIS only obtains self-reported condition information, the condition prevalence estimates generated by NHIS data must be taken as approximations at best. Unfortunately, there is no truly precise way to assess health status. Several studies have found that, compared with self-report, medical records tend to underreport some conditions, particularly those that can be diagnosed only by patient report, such as migraines, and to overreport other conditions, particularly those that may be embarrassing or stigmatizing to the respondent, such as obesity, mental illness, and menstrual disorders.⁹ It is quite possible that some respondents would consider gynecological disorders to be embarrassing or too personal to divulge to an interviewer and would tend to underreport them. Therefore, the derived prevalence estimates could be underestimates of the true prevalence of these conditions. In addition, it is quite possible that some respondents might misremember or be confused as to the correct name for their condition. This would lead to some unknown amount of systematic and random error in the condition prevalence estimates derived from NHIS data.

The findings of this study, based on a representative sample of American

women, point to the importance of current efforts to encourage research on conditions specific to women. For many of the gynecological conditions reported by the participants in this study, the etiology is unknown and effective treatment options are limited.

In summary, this study provides prevalence estimates for chronic gynecological conditions that are commonly reported by American women aged 18 to 50. The high prevalence rate of menstrual disorders, adnexal conditions, uterine fibroids, and other chronic and potentially debilitating gynecological conditions in the general population suggests the need for a more concerted research effort to investigate risk factors for these conditions and to identify palatable and effective treatments. □

Acknowledgments

This study was supported by grant HSO6865 from the Agency for Health Care Policy and Research.

The authors would like to thank Gerry E. Hendershot, PhD, and John Gary Collins, MBA, from the National Center for Health Statistics, for providing comments on an earlier version of this manuscript and statistical advice.

References

1. Carlson KJ, Miller BA, Fowler FJ Jr. The Maine women's health study: I. outcomes of hysterectomy. *Obstet Gynecol.* 1994;83:556-565.
2. Carlson KJ, Miller BA, Fowler FJ Jr. The Maine women's health study: II. outcomes of nonsurgical management of leiomyomas, abnormal bleeding, and chronic pelvic pain. *Obstet Gynecol.* 1994;83:566-572.
3. Kjerulff K, Langenberg P, Guzinski G. The socioeconomic correlates of hysterectomies in the United States. *Am J Public Health.* 1993;83:106-108.
4. Pokras R, Hufnagel VG. Hysterectomy in the United States, 1965-1984. *Am J Public Health.* 1988;78:852-853.
5. Kjerulff KH, Guzinski GM, Langenberg PW, et al. Hysterectomy: an examination of a common surgical procedure. *J Women's Health.* 1992;1:141-147.
6. Wilcox LS, Koonin LM, Pokras R, et al. Hysterectomy in the United States, 1988-1990. *Obstet Gynecol.* 1994;83:549-555.
7. Benson V, Marano MA. Current estimates from the National Health Interview Survey, 1992. *Vital Health Stat [10].* 1994;189.
8. *Public Use Data Tape Documentation: I. National Health Interview Survey, 1992.* (Machine readable data file and documentation.) Hyattsville, Md: National Center for Health Statistics; 1993.
9. Edwards WS, Winn DM, Kurlantzick V, et al. Evaluation of National Health Interview diagnostic reporting. *Vital Health Stat [2].* 1994;120.