Socioeconomic variation in admission for diseases of female genital system and breast in a national cohort aged 15-43

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Abstract

Objective—To investigate socioeconomic variation among young women in the risk of hospital admission for diseases (including neoplasms) of the female genital system and breast and for the common surgical procedures of dilatation and curettage and hysterectomy.

Design—Large nationally representative cohort study with individual records of confirmed admissions to NHS and private hospitals since birth and data on occupational and educational experience.

Setting—England, Scotland, and Wales.

Patients—General population sample of 1628 women, 1549 of whom had a complete admissions record for the ages of 15-43 years.

Main outcome measures—The percentage of women admitted for neoplasms or other diseases of the female genital system and breast or who had dilatation and curettage or hysterectomy between the ages of 15 and 43 years.

Results—By the age of 43, 35% of women had been admitted, 17% had undergone dilatation and curettage at least once, and 10% had had a hysterectomy. There were significant inverse educational gradients, the risk of admission increasing more than twofold between the most and least educated women. The differential risk was most striking for disorders of menstruation, in which only 1% of those with the highest educational qualifications and 19% of those with minimal qualifications had been admitted to hospital. There was a significant educational gradient in the hysterectomy rate (from 1% to 15%) and a twofold difference in the risk of dilatation and curettage. There were also significant gradients in risk of admission and of hysterectomy according to partner's social class.

Conclusions—Socioeconomic variations in the risk of dilatation and curettage and of hysterectomy were large. Lessening the socioeconomic gradient in risks of admissions and surgery for diseases of the female genital system and breast, particularly for menstrual disorders, could have important resource implications.

Introduction

Diseases of the female genital organs and breast are a major source of illness in the early and middle years of adult life, and their impact on quality of life and health care resources is considerable.¹⁻⁴ Dilatation and curettage and hysterectomy are commonly performed, but the appropriate indications for both procedures, particularly in younger women, are controversial.⁵⁻⁷ In Britain since the 1970s rates of dilatation and curettage have remained fairly stable and hysterectomy rates have slightly increased; the use of these procedures varies nationally as well as internationally.^{5,8} To use health care resources most appropriately, effectively, and equitably we need to consider not only the supply of resources through, for example, the development of less invasive and lower cost surgical techniques^{9,10} but also how the demand for health care is affected by

social factors associated with disease incidence or the provision of health care.

We investigated one aspect of demand—namely, socioeconomic variation in admission for diseases (including neoplasms) of the female genital system and breast and for the common surgical procedures of hysterectomy and dilatation and curettage during adult life (up to 43 years). Data come from the women in a nationally representative British cohort that has been followed up throughout life.¹¹ Our study offers advantages over previous studies of socioeconomic variation in the risk of dilatation and curettage or hysterectomy, which have either depended solely on lifetime recall^{8,12} or have studied women who may not be representative of the general population.⁶

Subjects and methods

The Medical Research Council's national survey of health and development is a socially stratified sample of all the births in England, Scotland, and Wales in the first week of March 1946. There have been 19 follow up studies since birth. Of the original sample of 5362, 2548 were female. At the last home visit in 1989 (at the age of 43) 1628 women were interviewed, 86% of the interviews attempted, and the contacted sample remained for the most part nationally representative of the birth cohort.¹¹ Further details of the study have been previously published.^{13,14} The sample can be weighted to allow for the original social stratification.

We used the comprehensive record of hospital admissions to both NHS and private hospitals between the ages of 15 and 43 years, built up from information provided at the follow up studies at ages 20, 25, 31, 36, and 43 years. With the consent of the study members, this information was checked from hospital records and corrected if necessary. Information on dilatation and curettage carried out as day surgery has been collected since 1982, when the survey members were 36 years old, but it has not been confirmed with hospital records. Until 1989, when the women were aged 43, there were no records of transcervical resection of the endometrium, or of any other form of endometrial destruction.

Primary and secondary diagnoses were used to identify women who had been admitted for any type of malignant or benign neoplasms of the female genital system and breast or for any other diseases of the genital system and breast (see appendix). Numbers of women admitted for disorders of menstruation were sufficient to examine the socioeconomic variation in this subgroup.

Women who had had dilatation and curettage were identified from reports of treatment as an inpatient or day patient. Dilatation and curettage carried out during admissions for conditions related to pregnancy or sterilisations were excluded. When they were 43, survey members were asked if they had had a hysterectomy. Over 80% of reported procedures were confirmed from hospital records and could be linked to a diagnosis. In the other cases confirmation was requested but not obtained, usually because the

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hospital could not find the patient's notes or the notes had been destroyed.

Socioeconomic status was assessed by the highest educational and training qualifications achieved by the age of 26 and by each woman's social class and that of her partner on the basis of current or most recent occupation. Educational qualifications were classified by the Burnham scale¹⁵ as no qualifications, less than O level, O level or equivalent, A level or equivalent, or degree or equivalent. Education and training with minimal qualifications (less than O levels) generally refers to training given after leaving school—for example courses attended connected with occupation. In this cohort 37% of women left school with no qualifications and undertook no further education or training (see table II).

Parity is inversely related to socioeconomic status and positively related to risk of hysterectomy and measured menstrual blood loss.^{6,16} Parity was examined to see if it acted as a confounding variable in the observed relation between admission or risk of surgery and socioeconomic status.

STATISTICAL METHODS

Analyses investigating socioeconomic trends in the risk of hysterectomy included the 1628 women interviewed at the age of 43. Similarly analyses of the risks of dilatation and curettage and of admission included only the 1549 women with complete admission histories. The χ^2 test for trend was used to compare proportions of women who had been admitted or who had had dilatation and curettage or hysterectomy, according to education and social class. Logistic regression (using the statistical package for the social sciences) was used to adjust for parity.

Results

SOCIAL GRADIENTS IN RISK OF ADMISSION

Between the ages of 15 and 43, 35% of women had been admitted to hospital on one or more occasions for neoplasms or other diseases of the genital system and breast. Twelve per cent of women had been admitted twice or more. The small percentage of women with a university degree (5%) had the lowest risk of admission

(3% for neoplasms and 18% for other diseases) and those with minimal educational qualifications the highest risk (11% and 41% respectively) (table I). Those with no qualifications also had a high risk of admission, although it was less than the risk of women with minimal qualifications.

One in 10 women (11%) had been admitted for disorders of menstruation, most commonly with menorrhagia, and the differential risk was striking: only 1% of women with the highest education had been admitted for these disorders compared with 19% of women with a minimal education (table I).

For diseases (other than neoplasms) of the female genital system and breast and specifically for menstrual disorders there were also significant gradients in risk of admission according to partner's social class but not according to the survey member's social class (table I).

Parity was positively associated only with risk of admission for neoplasms of the genital system and breast, 19% (6/31) of women with five or more children having been admitted compared with only 5% (10/185) of nulliparous women (χ^2 for trend=3.7, $P=0.06$). Risk of admission was still significantly associated with educational qualifications after adjustment for parity in a logistic regression model.

The risk of all admissions unrelated to pregnancy between the ages of 15 and 43 was not related to educational experience or social class (table I).

SOCIAL GRADIENTS IN THE RISK OF DILATATION AND CURETTAGE AND HYSTERECTOMY

By the age of 43, one in six women (17%) had undergone dilatation and curettage at least once, either as an inpatient or as a day patient. Between 1982 and 1989 one in five (21%) operations was performed as day surgery. Menstrual problems were the main reason given for the procedures, accounting for over two fifths (44%) of these operations with an associated diagnosis. Non-inflammatory disorders of the cervix and uterus (most commonly cervical erosion) were also a common reason for dilatation and curettage (21%) followed by dysmenorrhoea (11%), infertility (7%), and inflammatory disease of the female pelvic organs (6%).

Hysterectomy was not recorded in any woman under 27, but by the age of 43 one in 10 women had had the operation. Menstrual problems (without mention of fibroids, cancer, endometriosis, or prolapse) were also the main reason for performing more than a third (37%) of hysterectomies with a known diagnosis. Fibroids (with or without mention of menstrual problems) were the second most common diagnosis (27%). Just over one in 10 (12%) hysterectomies were performed because of a malignant neoplasm of the cervix (two cases) or carcinoma in situ of the cervix or other parts of the uterus (13 cases). Other less common reasons were endometriosis (9%) and uterovaginal prolapse (6%).

There were strong educational gradients in the risk of dilatation and curettage and of hysterectomy (table II). In both cases the highest risk was for women with minimal qualifications (24% for dilatation and curettage and 15% for hysterectomy) and the lowest risk was for the best educated women (10% and 1%). Trends in the risk of hysterectomy when partner's social class was used were similar but not as strong (table II).

The risk of hysterectomy was significantly related to parity. Only 5% of nulliparous women (9/198) had a hysterectomy; the risk for women with one to four children ($n=1382$) varied between 8% and 11%, and the risk for those with five or more children ($n=32$) was 31% (χ^2 for trend=9.6, $P=0.002$). After parity was adjusted for in a logistic regression model, the risk of hysterectomy was still significantly associated with

TABLE I—Numbers (percentages) of women admitted at least once to hospital between ages of 15 and 43 by educational qualifications and social class

	Neoplasm of genital system and breast	Other diseases of genital organs and breast	Disorders of menstruation	All hospital admissions (excluding those related to pregnancy)
Educational qualifications*:				
Degree and equivalent (n=79)	2 (3)	14 (18)	1 (1)	50 (63)
A level (n=331)	25 (8)	80 (24)	24 (7)	212 (64)
O level (n=377)	21 (6)	104 (28)	32 (9)	232 (62)
Less than O level (n=140)	15 (11)	57 (41)	27 (19)	103 (74)
None (n=565)	56 (10)	169 (30)	69 (12)	367 (65)
χ^2 For trend	6.6	7.9	14.3	0.7
P value	0.010	0.005	<0.001	0.407
Woman's social class†:				
I (n=23)	1 (4)	4 (17)	1 (4)	17 (74)
II (n=503)	41 (8)	140 (28)	47 (9)	340 (68)
IIINM (n=558)	49 (9)	162 (29)	52 (9)	344 (62)
IIIM (n=100)	4 (4)	33 (33)	14 (14)	68 (68)
IV (n=245)	19 (8)	71 (29)	34 (14)	160 (65)
V (n=78)	6 (8)	22 (28)	7 (9)	48 (62)
χ^2 For trend	0.1	0.4	3.1	0.8
P value	0.708	0.516	0.079	0.379
Partner's social class‡:				
I (n=149)	15 (10)	37 (25)	11 (7)	98 (66)
II (n=580)	41 (7)	154 (27)	47 (8)	378 (65)
IIINM (n=133)	6 (5)	36 (27)	13 (10)	85 (64)
IIIM (n=437)	39 (9)	149 (34)	55 (13)	284 (65)
IV (n=127)	12 (9)	40 (31)	18 (14)	86 (68)
V (n=24)	2 (8)	8 (33)	6 (25)	18 (75)
χ^2 For trend	0.3	7.1	12.4	0.2
P value	0.585	0.008	0.001	0.624

*Unknown in 57 women.

†Forty two women had no known current or part occupation.

‡Ninety nine women had never had a partner or partner's occupation was unknown.

TABLE II—Proportions (percentages) of women admitted for dilatation and curettage and hysterectomy (between the ages of 15 and 43) by educational qualifications and social class

	Dilatation and curettage	Hysterectomy
Educational qualifications*:		
Degree	8/79 (10)	1/79 (1)
A level	44/331 (13)	25/345 (7)
O level	62/377 (16)	31/391 (8)
Less than O level	33/140 (24)	21/144 (15)
None	103/565 (18)	71/572 (12)
χ^2 For trend	6.3	15.0
P value	0.012	<0.001
Woman's social class†:		
I	2/23 (9)	0/24
II	85/503 (17)	44/527 (8)
IIINM	91/558 (16)	58/587 (10)
IIIM	23/100 (23)	12/106 (11)
IV	38/245 (16)	32/252 (13)
V	17/78 (22)	7/81 (9)
χ^2 For trend	0.6	3.2
P value	0.431	0.074
Partner's social class‡:		
I	22/149 (15)	12/159 (8)
II	93/580 (16)	45/609 (7)
IIINM	20/133 (15)	16/137 (12)
IIIM	83/437 (19)	58/451 (13)
IV	7/24 (29)	15/134 (11)
V		3/24 (13)
χ^2 For trend	3.2	7.9
P value	0.072	0.005

*Unknown in 57 women admitted for dilatation and curettage and in 97 admitted for hysterectomy.

†Forty two women admitted for dilatation and curettage and 51 admitted for hysterectomy had no known current or past occupation.

‡Ninety nine women admitted for dilatation and curettage and 114 admitted for hysterectomy had never had a partner or partner's occupation was unknown.

educational qualifications. The risk of dilatation and curettage did not vary significantly with parity.

Discussion

In a cohort of women whose hospital care had been recorded between the ages of 15 and 43 years there were significant socioeconomic gradients in risk of admission to hospital for diseases of the female genital system and breast (particularly for disorders of menstruation) and in the risk of dilatation and curettage and of hysterectomy. The gradients were stronger according to educational experience than partner's social class. The women's social class was not significantly related to admission or surgical risks; it is recognised as a poor indicator of socioeconomic status for married women.^{17 18} Our findings show a more striking gradient in risk of dilatation and curettage and of hysterectomy compared with other British studies^{6 8 12} and are more consistent with American studies, which show that less educated women have twice the risk of hysterectomy.^{19 20}

VALIDITY

Rates of surgery and hospital admission in this study are similar to rates for the appropriate age groups and calendar years derived from routinely collected official hospital statistics or found in other epidemiological studies.^{5 6 21-25} Although reports of dilatation and curettage carried out as day surgery have been collected in this study only since 1982 (cohort then aged 36), this covers the age when women are at increased risk of dilatation and curettage⁶ and the period of rapid growth in day surgery, so it is unlikely that the number of procedures is significantly underestimated.

Of those interviewed at 43, 3% of women with known educational qualifications and 5% of those with a known social class had missing admissions data. The best qualified women with university degrees and those with no qualifications were least likely to have missing data on admissions (0 and 1% respectively) whereas women with minimal qualifications, O levels, or A levels were more likely to have missing data (3%, 4%, and 4% respectively) ($\chi^2=11.1$, $df=4$, $P<0.05$). The

small percentage of women with missing data at the top and bottom of the educational scale is unlikely to have affected the gradients in risk of admission and of dilatation and curettage. There were no significant differences in the percentage of women with missing data on admissions according to their own or their partner's social class.

POSSIBLE REASONS FOR THE SOCIOECONOMIC GRADIENT

The various techniques of endometrial ablation that have been developed as an alternative to hysterectomy in the treatment of menorrhagia^{9 10} may be more commonly offered to or chosen by educated women, who may be better informed of the options available than their less educated peers. But their growth is too recent to account for the social gradients observed over 28 years in this study.

Those in the lower social groups in our study might have had a hysterectomy earlier, and the differential with social class may become less obvious as the cohort ages. Early hysterectomy associated with social class would be a matter of concern as hysterectomy may hasten ovarian failure, which increases the risk of osteoporosis and myocardial infarction.^{26 27}

This study cannot elucidate whether the increased risks of admission and surgery among less educated and lower social class women reflects increased disease prevalence or a different pattern of primary and secondary care. Evidence suggests that both contribute to the socioeconomic gradient. The socioeconomic gradient in the risk of cervical cancer is well documented.^{28 29} Reported menstrual problems and consultation rates with family doctors for these problems are higher among women from lower social class households.^{2 30} A study of women consulting their doctors for heavy bleeding found that those who were less educated were more likely to prefer surgery and that doctors were more likely to refer patients who preferred surgery to a gynaecologist.³¹ More generally, studies of consultations in general practice show that patients from higher socioeconomic groups have longer consultations^{32 33} and receive more explanations voluntarily from the doctor compared with patients from lower socioeconomic classes.³⁴ Thus better educated women from higher social groups may get more discussion and reassurance about their menstrual symptoms, which makes them less inclined to opt for surgical treatment.

Key messages

- Socioeconomic variations in hospital care for diseases of the female genital system and breast were examined in a large national prospective cohort
- Between the ages of 15 and 43 years 35% of women had been admitted to hospital for these diseases, 17% had had dilatation and curettage, and 10% had had a hysterectomy
- The most highly educated women had significantly lower risk of hospital admissions and of dilatation and curettage, and considerably lower risk of admissions for menstrual disorders and hysterectomy
- Evidence suggests that these differential risks are due to socioeconomic variations in morbidity and in the type of treatment offered to or chosen by women
- Lessening the socioeconomic gradient may be an important way of reducing hospital use and making better use of health care resources

CONCLUSIONS

Reducing the risk of these diseases among the less educated and lower social class women requires research on the epidemiology of common disorders such as menorrhagia, and on the social and educational factors that influence primary consultations and referral to hospital specialists. Now intervention studies are also needed to experiment with new ways of providing information about the risks and benefits of alternative treatments so that women can make informed choices.³⁵ Our findings suggest that lessening the socioeconomic gradient may be an important way of reducing hospital admission and making better use of health care resources.

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Appendix

Numbers and weighted and unweighted percentages of women admitted to hospital for diseases and neoplasms of the genital organs and breast. Codes of the "International Classification of Diseases, Ninth Revision" refer to main diagnosis

	Woman aged 15-43*		
	No	Unweighted sample (%)	Weighted sample (%)
All hospital admissions (except those related to pregnancy)	1002	64.7	64.6
Diseases of female genital system and breast (610-629)	440	28.4	29.8
Disorders of breast (610-611)	57	3.7	3.8
Inflammatory disease of female pelvic organs (614-616)	60	3.9	4.2
Endometriosis (617)	24	1.5	1.8
Genital prolapse (618)	18	1.2	1.4
Non-inflammatory disorders of ovary, fallopian tube, and broad ligament (620)	39	2.5	2.8
Disorders of the uterus n.e.c. (621)	23	1.5	1.5
Non-inflammatory disorders of the cervix (622)	66	4.3	4.4
Non-inflammatory disorders of the vagina (623)	13	0.8	0.5
Pain associated with female genital organs (625)	57	3.7	3.8
Disorders of menstruation (626)	157	10.1	10.6
Female infertility (628)	53	3.4	3.8
Other disorders or unspecified genitourinary disorders	86	5.6	5.9
Neoplasms of female genital system and breast	123	7.9	8.1
Malignant neoplasms/carcinoma in situ:			
Breast (174; 233.0)	6	0.4	0.5
Genital organs (179-184; 233.1-3)	31†	2.0	2.1
Benign/unspecified neoplasms:			
Breast (217; 239.3)	27	1.7	2.0
Fibroids (218)	49	3.2	3.0
Genital organs (219-221; 239.5)	19	1.2	1.2

*With complete hospital records; unweighted sample is 1549 women.

†Two women had malignant neoplasms of cervix, 28 women had carcinoma in situ of cervix, and one woman had carcinoma in situ of endometrium.

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ONE HUNDRED YEARS AGO

OVER-SUPPLY AND DIMINISHED DEMAND.

A double suicide which, says the *New York World*, shocked Paris the other day, brought to the attention of the public the financial straits in which, it is said, a majority of the physicians of that city live. Dr. Arnaud de Langlard, an old physician who had been decorated by the Government for brave conduct during the cholera epidemic many years ago, committed suicide with his wife because his practice had dwindled to the vanishing point, and starvation was staring them in the face. In commenting upon the tragedy several newspapers asserted that in Paris not more than one doctor out of five is able to make more than the barest living. Among the causes of this poverty among physicians is the destitution

of most of their patients. Medical science has made such great strides, too, that maladies of all sorts are more quickly cured, and such precautions are taken to prevent the spread of contagious diseases that epidemics are becoming practically unknown. The number of doctors, on the other hand, has rapidly increased. Another reason why there is not practice enough to go around is that in many of the hospitals people can be treated for nothing or at a very nominal figure. Many of these hospitals have training schools which are free, in which are taught the rudiments of medicine and surgery. These schools are largely attended, and many sick people are taken in hand at their own homes by some member of the family who has profited by this instruction. (*BMJ* 1895;ii:1630.)