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Hysterectomy rates and their influence upon nortality from carcinoma of the cervix

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UMMARY Cumulative hysterectomy rates for women in England and Wales have been estimated :om data in the Hospital In-Patient Enquiry, and the effect of hysterectomy operations on mortality :om cancer of the cervix has been calculated. About six to seven per cent of women born at about ıe turn of the century have had an hysterectomy by the age of 70, and this proportion could rise to bout 19% for women born in the 1940s if present operation rates continue. The time trends in ıortality from cancer of the cervix between generations of women are not at present distorted by ɔrrection for women without a cervix. Operation rates and their effect on cervical cancer mortality ıtes are much smaller in England and Wales than in the United States of America.

ime trends in mortality from cancer of the uterine ervix are interesting for two reasons. Firstly, can hanges in the incidence of the disease be identified, nd inferences made about changes in behaviour r risk factors? Secondly, can the campaign for ervical screening be shown to have any influence n the incidence and mortality of the disease? We ave aside the different aspect of the impact of ıodern treatment upon survival.

There are well-known difficulties in using national ata to review this problem. National incidence ata have not yet been collected for long enough to udy trends in cancer, and increased incidence can e distinguished only with difficulty from improved gistration. There are further constraints on the se and interpretation of mortality data (Alderson, 76), but one particular problem exists for cancer the cervix—the denominator used (the population risk) may not be correct. Consideration must be ven to the trends and absolute numbers of women ho have had an hysterectomy for a non-malignant ndition, because such women are not at risk of veloping cancer of the cervix. Appreciable change the frequency of hysterectomy could distort rvical cancer mortality statistics; for example, ı increasing frequency of operations could result an apparent decrease in the mortality rate, dependently of any effect of screening or treatment. ttention has recently been drawn to changes of shion in hysterectomy (British Medical Journal, 77) and to the reasons for change in clinical actice. This study presents some data on the tent of the change in this country.

Method

Data from the Hospital In-Patient Enquiry (HIPE) have been used, based on a 10% sample of discharges from acute hospitals in England and Wales. The data incorporated a diagnosis for each patient discharged, and indicated whether an operation was performed (more recently the nature of the operation has been specified).

For discharges in 1968 and 1973, special tabulations were obtained by age, diagnosis, and operation performed. Diagnoses considered relevant for this analysis were: benign neoplasms and other diseases of the uterus, ovary, and other female genital organs (*ICD* 218-221 and 614-629); abortion (*ICD* 640-641); and genito-urinary symptoms (*ICD* 786). The operations considered were all forms of hysterectomy except sub-total hysterectomy. For discharges in 1958 and 1963, tables were obtained by age and diagnosis, with the total number of operations performed for each diagnosis.

The proportions of discharged women within age groups for each of the above diagnoses who had an hysterectomy between 1968 and 1973 were extrapolated back (graphically) to 1958. The number of women having an hysterectomy in 1958 and 1963 were then estimated by applying these percentages to the numbers of discharges by age and diagnosis in those years. The percentage of all women by age and calendar period who had an hysterectomy between 1956 and 1975 was then calculated from these estimated numbers of operations and published population estimates.

Starting with the oldest cohort (central year of

birth 1896) the percentage of women aged 60 to 64 having an hysterectomy was multiplied by the ratio for the percentage operated on at the ages of 55 to 59 (60 to 64 in the next cohort). This provided an estimate of the percentage in the 1896 cohort operated on at the ages of 55 to 59. This process was followed back for all the earlier cells.

The cumulative percentage of women who had ever had an hysterectomy was obtained by summing the age-specific percentages for younger age groups in any cohort and adding half the percentage for the age group being calculated. (The cumulative figure is an estimate for those at the mid-age of this group; the age-specific percentage is for those being operated on throughout the age group). The mortality rates from cancer of the cervix by age and calendar period were then recalculated, with the denominator adjusted for the women without a cervix). The raw data and intermediate calculations can be obtained on request from M. R. Alderson).

Results

Table 1 shows the percentage of women thought to have had an hysterectomy in five-year age groups by birth cohort, and the estimated cumulative percentage of women who have ever had an hysterectomy. The table distinguishes between data obtained directly from the HIPE files and data extrapolated back in time. It is apparent that age-specific operation rates have increased between successive birth cohorts up to about the age of 60 and decreased at older ages; operations are increasingly performed at younger ages in more recent birth cohorts. Cumulative operation rates have increased at all ages. The highest operation rate is 4·6% at ages between 40 and 44 for the 1931 birth cohort. The highest cumulative rate to date is 10·1% at ages 50–54 for the 1921 cohort.

Table 2 shows the mortality rates for cancer of the cervix in England and Wales (Office of Population Censuses and Surveys, 1975), after adjustment for the cumulative hysterectomy rates; in principle, this is a conversion of the mortality rates from 'Deaths per million women' to 'Deaths per million women having a cervix'. The effect of the adjustment is seen to be small compared with the fluctuations that occur from one birth cohort to another. These fluctuations and possible reasons for them have been discussed by Hill and Adelstein (1967).

Discussion

The general reliability of HIPE data and the validity of information on diagnosis and operation have been discussed elsewhere (Alderson, 1974). The validity of the extrapolation described above would be doubtful if major oscillations in operation rates had occurred. There is, however, no obvious indication of this, or reason to expect it. Furthermore, the extrapolation involves ages and calendar periods when the operation rates were relatively low, so that moderate errors will not appreciably distort the picture.

Table 1 *Percentage of women having an hysterectomy (a) and cumulative percentage of women who have ever had an hysterectomy (b) by year of birth and age (England and Wales)*

Year of birth		*Age groups (years)* 25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79
1896	a	0·0	0·0	0·4	1·0	1·6	1·0	0·6	0·6	1·0	0·9	0·5
	b	0·0	0·0	0·2	0·9	2·2	3·5	4·4	5·0	5·8	6·6	7·1
1901	a	0·0	0·0	0·4	1·1	1·8	1·2	0·7	0·7	0·9	0·7	
	b	0·0	0·0	0·2	1·0	2·5	4·0	4·9	5·6	6·4	7·2	
1906	a	0·0	0·0	0·5	1·3	2·1	1·3	0·8	0·8	0·8		
	b	0·0	0·0	0·3	1·2	2·8	4·5	5·6	6·4	7·1		
1911	a	0·0	0·1	0·6	1·6	2·6	1·6	0·9	0·7			
	b	0·0	0·0	0·4	1·5	3·5	5·6	6·9	7·7			
1916	a	0·0	0·1	0·8	2·2	3·5	2·3	0·8				
	b	0·0	0·1	0·5	2·0	4·9	7·8	9·4				
1921	a	0·0	0·1	1·2	3·3	4·4	2·3					
	b	0·0	0·1	0·7	3·0	6·8	10·1					
1926	a	0·0	0·2	2·1	4·3	4·5						
	b	0·0	0·1	1·3	4·5	8·9						
1931	a	0·0	0·2	2·8	4·6							
	b	0·0	0·2	1·7	5·4							
1936	a	0·0	0·8	3·4								
	b	0·0	0·5	2·6								
1941	a	0·2	1·5									
	b	0·1	0·9									
1946	a	0·4										
	b	0·2										

Percentages above the stepped line were calculated by the process of extrapolation described above.

Table 2 *Published mortality rates per million population for cervical cancer in England and Wales by year of birth and age (a) and mortality rates adjusted for hysterectomy in the population (b)*

Year of birth		*Age groups (years)* 25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65–69	70–74	75–79
1896	a							254	246	252	247	247
	b							266	259	268	264	266
1901	a						203	197	222	217	206	
	b						211	207	235	232	222	
1906	a					136	181	178	193	193		
	b					140	190	189	206	208		
1911	a				93	154	187	201	199			
	b				94	160	198	216	216			
1916	a			58	119	180	204	199				
	b			58	121	189	221	220				
1921	a		30	74	134	176	190					
	b		30	75	138	189	211					
1926	a	0	37	67	106	130						
	b	0	37	68	111	143						
1931	a	9	18	44	67							
	b	9	18	45	71							
1936	a	5	15	38								
	b	5	15	39								
1941	a	7	22									
	b	7	22									
1946	a	10										
	b	10										

In this analysis about six to seven per cent of women born at about the turn of the century had had an hysterectomy by the age of 70. It was estimated by Fairbairn and Acheson (1969) from data in the Oxford Record Linkage Study for 1962-5 that 19% of women had had an hysterectomy by the age of 75. That figure was based on one particular locality in England, and involved cross-sectional data; no allowance was made for time trends in hysterectomy. According to the present study, if recent operation rates continue, about 19% of women in the 1946 birth cohort might be expected to have had an hysterectomy by the age of 70.

While the data for this study were being analysed, a paper on the same topic was published in the United States of America (Lyon and Gardner, 1977). This showed much higher operation rates than those in England and Wales. The authors estimated that about 37% of women born in about 1906 had had an hysterectomy before the age of 70; this figure included a small proportion of women who had had an hysterectomy for malignant disease. They suggested that correction of the population at risk increased mortality rates in parts of the United States of America by 20% to 45%.

The effect of hysterectomy on mortality from cancer of the cervix in England and Wales is at present relatively small, and there is little distortion of time trends, but the lack of adequate data indicates that the present study should be repeated when detailed data on hysterectomy rates for a further 10 years are available.

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Reprints from M. R. Alderson, Institute of Cancer Research, Clifton Avenue, Sutton, Surrey.

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