

Incidence of cervical cancer by marital status

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SUMMARY The incidence of invasive cervical cancer by age and marital status was examined, using census statistics and 1968-71 cancer registry data for women who lived in the Manchester Regional Hospital Board area. The relative rarity of the disease in the unmarried and its higher incidence in formerly married than in currently married women was confirmed. This higher incidence was shown to be mainly in widows under 50 and divorced women, suggesting that it is related to the association of the disease with number of sexual partners.

The risks of developing invasive cancer of the uterine cervix, or carcinoma *in situ*, seem to be higher for married than for single women, and higher still for the formerly married. Although age-standardisation weakens this trend, it does not abolish it. The trend has been observed in national statistics of cervical cancer mortality (Registrar General, 1964); in studies of the distribution of abnormal smears among those screened for the disease (Sansom *et al.*, 1971; Cooper and Hillier, 1975); and in case-control studies of patients with cervical cancer (for example, Lombard and Potter, 1950; Terris and Oalmann, 1960; Boyd and Doll, 1964; Martin, 1967; and Pridan and Lilienfeld, 1971).

Given the association of cervical cancer with number of sexual partners (Terris and Oalmann, 1960; Martin, 1967; Rotkin, 1967; Pridan and Lilienfeld, 1971), we should not expect the high rate of the disease in the formerly married to apply equally to both widowed and divorced women. Few attempts, however, have been made to determine whether this is so. In Denmark, Grünfeld *et al.* (1975) showed that divorced women had higher death rates from cervical cancer than widows. In Aberdeenshire, Aitken-Swan and Baird (1966) found substantially more divorced women and only slightly more widows in a group with carcinoma *in situ* than in a matched control group. By contrast, among Jewish women in Israel with cervical cancer, Pridan and Lilienfeld (1971) found substantially more widows as well as more who had been divorced than in a control group.

In the last two studies figures were not available for the whole related population, and the study by Grünfeld *et al.* (1975) did not include non-fatal cases. In an attempt to remedy these deficiencies, the incidence of registered cases of invasive cervical cancer by marital status in a defined population has been examined.

Material

All hospital cases of invasive cervical cancer in residents of the former Manchester Regional Hospital Board area registered for the years 1968-71 under the National Cancer Registration Scheme were ascertained from the records of the Regional Cancer Registry. The records for 1968-71 were selected in preference to those for other years because they included adequate data on marital status as well as age. Population estimates by marital status and age for the end of 1969 (the midpoint of the period when the cases presented) were derived by linear interpolation from the 1961 and 1971 census data for all local authorities in the Manchester Regional Hospital Board area.

Methods

Overall and age-specific incidence rates of invasive cervical cancer were calculated for each marital status group. Age-specific rates for the whole population (excluding cases of unknown marital status) were also computed. An indirect age-standardisation was then carried out, firstly, by applying the latter rates to the observed age distribution of each group, so as to determine the

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Table 1 Frequency of invasive cervical cancer by marital status and age: Manchester Regional Hospital Board area, 1968-71

Age (years)	Single		Married		Widows		Divorced		Women of specified marital status			Women of unspecified marital status (No. of cases)
	Population	No. of cases	Population	No. of cases	Population	No. of cases	Population	No. of cases	Population	Cases registered		
										No.	Incidence*	
20-24	62.2	4	100.1	12	0.2	0	0.9	0	163.4	16	2.4	0
25-29	16.9	1	120.0	20	0.4	0	2.5	4	139.8	25	4.5	1
30-34	9.7	3	116.2	47	0.8	1	3.3	6	130.0	57	11.0	0
35-39	9.0	4	114.2	81	1.6	1	3.1	0	127.9	86	16.8	1
40-44	9.9	9	119.5	156	3.5	7	3.0	7	135.9	179	32.9	3
45-49	11.9	4	128.0	238	7.3	20	3.2	13	150.4	275	45.7	8
50-54	12.8	18	115.7	247	12.6	22	2.7	14	143.8	301	52.3	5
55-59	15.5	12	110.5	212	22.8	40	2.5	3	151.3	267	44.1	5
60-64	18.6	10	94.8	138	35.3	57	2.0	2	150.7	207	34.3	4
65-69	19.0	7	66.7	102	46.5	75	1.3	0	133.5	184	34.5	6
70-74	16.2	4	39.3	59	53.4	71	0.6	0	109.5	134	30.6	6
75-79	12.0	5	18.1	20	46.1	58	0.3	0	76.5	83	27.1	4
80-84	7.3	2	6.1	3	31.9	23	0.1	0	45.4	28	15.4	2
85-89	3.1	1	1.3	1	14.6	10	0.0	0	19.0	12	15.8	2
90 & over	1.0	1	0.2	1	4.7	5	0.0	0	5.9	7	29.7	0
All	225.1	85	1150.7	1337	281.7	390	25.5	49	1683.0	1861	27.6	47

Population in thousands
*Per 100 000 woman years

Table 2 Incidence of invasive cervical cancer by marital status, Manchester Regional Hospital Board area, 1968-71

Marital status	No. observed	Crude annual rate per million women aged 20 or over	No. expected	Standardised incidence ratio
Single	85	94	200.6	0.42
Married	1337	290	1282.3	1.04
Widows	390	346	348.5	1.12
Divorced	49	480	29.6	1.66

number of cases that would have been expected in that group if marital status were unrelated to frequency; and, secondly by calculating the ratio of the observed to the expected number of cases for each marital group.

Results

The basic data for each group are set out in Table 1. The corresponding crude incidence rates and standardised incidence ratios (Table 2) are not very different for the married and widowed but much higher for the divorced. However, an analysis of incidence by age (Figure) shows that widows are at considerably higher risk than married women under the age of 50—a difference to which the standardisation procedure gave little weight because the proportion of widows below that age was very small. The incidence was highest at the ages of 40 to 49 for widows and at 50 to 59 for the other marital groups, although the rate for divorced women was almost as high in the former age group as it was in the latter.

Discussion

The obvious limitations of these data are the incompleteness of cancer registration and the probability that some divorced women misrepresented their marital status. Both factors are likely to have affected mainly the figures for older women. Nevertheless, it seems clear that the increased incidence of cervical cancer among women with broken marriages is mainly found in the divorced and young widows. The difference between their

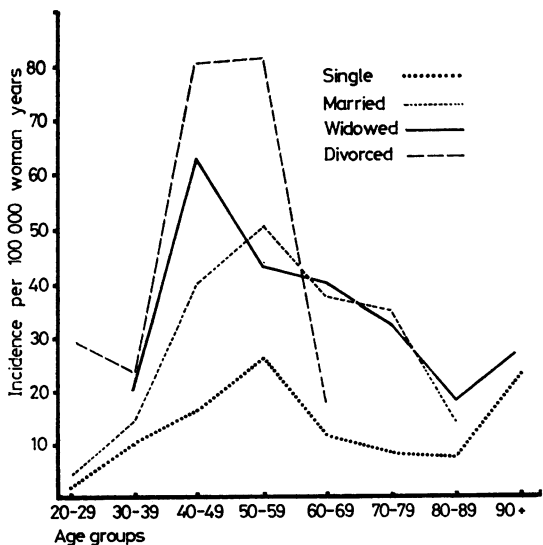


Figure Age specific incidence rates of invasive cervical cancer by marital status.

incidence rates and those for the currently married women might have been even more marked if it had been possible to exclude from the latter group the remarried women and those separated from their husbands.

We conclude that the high rates of the disease in formerly married women are probably related to its association with number of sexual partners (Terris and Oalmann, 1960; Martin, 1967; Rotkin, 1967; Pridan and Lilienfeld, 1971), rather than to the psychosomatic effects of bereavement from loss of husband through death or divorce as suggested by Le Shan and Worthington (1956), Schmale and Iker (1966), and Rees and Lutkins (1967).

Addendum. Since this paper was written, incidence rates for registered cases of cervical cancer in Israeli Jews have been published (Sharon *et al.*, 1977). These rates were higher for divorced women and lower for widows than for the currently married, both under and over the age of 50; but the number of cases analysed was relatively small.

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