

# Characteristics of women recruited to a long-term study of the sequelae of induced abortion

REPORT FROM A JOINT RCGP/RCOG STUDY CO-ORDINATED BY  
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**SUMMARY.** One thousand, five hundred and nine general practitioners and 795 gynaecologists are co-operating in a large, long-term, controlled, prospective study of the sequelae of induced abortions. The 'case' (6,349 patients) and control (8,132 patients) groups are comparable, and the patients who had induced abortion are also comparable in age, marital status and parity with those in the national abortion statistics. The study should, therefore, give a sound basis for evaluating the long-term hazards of the operation.

### Introduction

**T**HE present joint study aims to compare the subsequent health of a group of women presenting to their general practitioners and having an induced abortion, with that of a control group of women presenting to the same doctors, again with an unplanned pregnancy, but not terminated by an induced abortion. Special attention is being given to psychiatric sequelae, subsequent fertility and the outcome of future pregnancies. All morbidity reported to the general practitioner is also being recorded prospectively and analysed.

Although there is a substantial literature about the sequelae of induced abortion, it is generally agreed that much research so far has been faulty in method and inadequate in scope (Daling and Emanuel, 1975; Tietze and Murstein, 1975; Hogue, 1977; Bracken, 1978; Cates, 1979; Craft *et al.*, 1979; WHO, 1979). The need for prospective controlled studies has been stressed, particularly of late sequelae, for almost all relevant

published work has been retrospective. The validity of these studies must be questioned, because women whose pregnancies end unfavourably are less likely to admit to previous induced abortions than women with a favourable outcome. Moreover, retrospective studies frequently have inadequate details of the abortion procedure and of previous medical history. Most have taken no account of material variables known to be related to the decision to seek abortion and to the outcome of future pregnancy (Daling and Emanuel, 1975).

The general practitioner has the important advantage of being able to observe, over a number of years, not only those patients who have had an induced abortion, but also a group of comparable control subjects. With the co-operation of the gynaecologists performing the operations, it has been possible to initiate a long-term, large-scale, prospective study about the sequelae of induced abortion.

### Methods

Three groups of patients were recruited:

1. Patients referred for induced abortion.
2. Patients presenting with an unplanned pregnancy and not referred for induced abortion.

The patients in group one were designated as 'cases'; those in group two formed the controls. These two groups are being compared and followed up for at least four years.

3. Planned pregnancies—women presenting with planned pregnancies were also recruited to discover how long they took to conceive. A pregnancy was defined as planned when the patient regarded it as such and was

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**Table 1.** Details of recruitment.

	Recruitment status	Number of women	Final status	Number of women
Cases	Referred for abortion	7,233	Operation carried out	6,349
Controls	Not referred for abortion	7,248	No induced abortion	8,132
Total	Cases + controls	14,481	Total	14,481
Planned pregnancies (no follow-up)		17,743		

able to state when she started to attempt to conceive. The length of time it took for women in this group to conceive will be used in a comparison with induced abortion cases who have a subsequent planned pregnancy during the course of the study.

### Confidentiality

Patients' names are never entered on the study documents. They are identified only by a unique study number, and the cross-reference between the number and name is known only to the general practitioner and to the gynaecologist to whom the patient was referred for induced abortion.

### Recruitment

General practitioners completed a recruitment form for all cases and controls with details of age, marital status, the present pregnancy, past obstetric history, previous medical history, ethnic origin and smoking habits. Classification of occupation is an unsatisfactory method for determining social status in young unmarried women. Pilot trials showed that the age at which full-time education is completed correlated well with occupational data. Thus, educational characteristics, which are applicable to all subjects, have been used in the main study as a measure of social status.

Only a limited amount of information was collected for the group of women recruited with planned pregnancies. This consisted of age, length of planning of the present pregnancy, previous contraception and number and outcome of previous pregnancies.

### Outcome of pregnancy

The gynaecologists recorded information about their consultation and, if they agreed to the termination, gave details of the operation. The general practitioners completed details of the outcome of control pregnancies on a special form sent to them 10 months after the last menstrual period.

### Follow-up

The general practitioner completes a follow-up form for each patient every six months from her date of recruitment. Information is recorded about all newly presenting episodes of illness reported over the previous six

months, changes of partner, death of the patient or the date when she left the practice (when a patient leaves the practice in which she was recruited, she is withdrawn from further observation). New pregnancies are also notified and, if referred for induced abortion, gynaecologists are asked for the same details as for the index pregnancy (the pregnancy during which the patient was recruited).

### Analysis

#### Prospective observations

When analysing the results of sequelae in the two groups, standardization for age, parity, smoking habits and social class will be carried out. Previous medical and obstetric history will also be taken into account.

#### Recruitment characteristics

In this preliminary analysis, all variables have been dealt with singularly. No multivariate analyses have been done. Tests of statistical significance were made using the standard error of difference between two proportions or between two means, as appropriate (Bradford Hill, 1966).

### Results

One thousand, five hundred and nine general practitioners volunteered to recruit patients to the study, and 795 gynaecologists to whom they referred patients for abortion contributed satisfactory relevant data.

Recruitment began in September 1976 and ended in July 1979, during which time 7,233 patients were recruited as cases, 7,248 as controls and 17,743 as planned pregnancies (no follow-up) (Table 1).

Nine hundred and fifty-nine patients (13 per cent) originally recruited as cases did not have an induced abortion: in 251 (three per cent) the request was declined by the gynaecologist, 451 (six per cent) patients changed their minds before or after counselling and 257 (four per cent) patients had a spontaneous abortion before the operation. In addition, 238 patients who requested an abortion were declined by their general practitioner and were recruited as controls. Thus, seven per cent of the 7,471 patients originally requesting abortion were declined by the general practitioner or consultant.

Seventy-five patients (one per cent) originally recruited as controls finally had an induced abortion: 58 changed their minds and were referred by their general

**Table 2.** Age distribution.

Age	Percentage		
	OPCS figures 1977 (n = 101,020)	Cases (n = 6,349)	Controls (n = 8,132)
<16	3.6	2.2	0.7
16-19	24.3	25.4	20.1
20-34	56.9	54.0	69.3
35+	15.2	18.4	9.9
	100.0	100.0	100.0

**Table 3.** Marital status.

Status	Percentage		
	OPCS figures 1977 (n = 101,020)	Cases (n = 6,349)	Controls (n = 8,132)
Married	38.6	40.2	62.8
Single	50.4	47.4	32.3
Other	11.0	12.4	4.9
	100.0	100.0	100.0

practitioner, 12 obtained private treatment with no further general practitioner consultation and, in the remaining five, abortion was carried out because of a risk of congenital abnormality which became apparent at a later stage of pregnancy.

The final recruitment status was, therefore, 6,349 patients who had an induced abortion (cases) and 8,132 patients who did not have an induced abortion (controls). These two cohorts will form the basis of our follow-up studies.

Approximately 73 per cent of patients having induced abortion had the operation in NHS premises.

#### Age (Table 2)

Comparison between the age distributions of cases and controls showed, as expected, an excess of cases under 16 and over 35 years of age. Comparison of cases with the OPCS abortion figures (OPCS, 1980) shows an excess of older women in the present study and a deficit in under 16 year olds. It is possible that more young girls go to private agencies without consulting their general practitioner.

#### Marital status (Table 3)

The expected excess of married women in the control group is shown. Comparison of cases with OPCS figures shows an excess of married women in this study.

**Table 4.** Social status.

Age of finishing full-time education	Cases	Controls
17	68.4%	76.1%
17-18	14.0%	14.0%
19+	5.7%	6.7%
Unfinished	11.9%	3.2%
Total	100.0%	100.0%
N	6,315	8,088
Not known	34	44
Total number	6,349	8,132

**Table 5.** Change in smoking habits on discovering pregnancy.

Cigarette consumption	Cases	Controls
Decrease	10.0%	24.0%
Increase	6.5%	1.7%
No change	83.5%	74.3%
Total	100.0%	100.0%
N	6,274	8,075
Not known	75	57
Total number	6,349	8,132
Mean reduction in daily cigarette consumption	0.4	2.4

This is a reflection of the age distribution mentioned above.

#### Social status (Table 4)

When examining the age at which full-time education finished, the cases contained a higher percentage of women whose education was still unfinished, and the controls a significantly higher percentage ( $p < 0.001$ ) of women whose education had been completed under the age of 17. This reflects the expected higher demand for abortion from women undertaking higher education.

#### Cigarette consumption (Table 5)

Patients were asked about their smoking habits before they knew of the presenting pregnancy, and after they discovered they were pregnant. It was found that, in the control group, 24 per cent reduced their daily cigarette consumption and in 1.7 per cent it increased. Comparable figures for cases were 10 per cent and 6.5 per cent. The mean reduction of 2.4 cigarettes for controls is significantly greater ( $p < 0.001$ ) than the mean reduction of 0.4 cigarettes for cases.

#### Reliability of last menstrual period (Table 6)

Patients were asked if they were certain of their last menstrual period to within five days. Using this as a

**Table 6.** Reliability of last menstrual period.

	Percentage		
	Cases (n = 6,349)	Controls (n = 8,132)	Planned (n = 17,743)
Reliable	75.7	70.0	91.5
Unreliable	24.3	30.0	8.5
	100.0	100.0	100.0

**Table 7.** First consultation for index pregnancy.

Interval between last menstrual period and first consultation	Percentage	
	Cases	Controls
<10 weeks	76.8%	39.3%
10-15 weeks	21.1%	40.0%
16+ weeks	2.1%	20.7%
Total	100.0%	100.0%
N	5,983	8,108
Not known	366	24
Total number	6,349	8,132

criterion of reliability, women having an induced abortion appeared to have greater reliability than controls—76 per cent being certain of their dates compared with 70 per cent for the controls. Ninety-two per cent of patients recruited as planned pregnancies had reliable dates.

*First consultation for index pregnancy (Table 7)*

Using patients where the relevant information is known, 77 per cent of cases presented less than 10 weeks after their last menstrual period compared with only 39 per cent of patients recruited as controls. Twenty-one per cent of controls reported for the first time after 16 weeks compared with only two per cent of cases.

*Previous pregnancies (Table 8)*

There was the expected excess of cases who had three or more previous pregnancies (24 per cent) compared with controls (18 per cent). Similarly, 45 per cent of cases were primigravidae compared with 41 per cent of the controls.

*Patients whose last pregnancy ended in abortion (Table 9)*

The information in this table is retrospective and so may be subject to misreporting. However, it shows that a higher proportion of cases than controls had an induced abortion in their previous pregnancy. On the other hand, the previous pregnancy ended in spontaneous abortion in a higher proportion of controls than cases.

**Table 8.** Previous pregnancies.

Previous pregnancies	Percentage	
	Cases (n = 6,349)	Controls (n = 8,132)
0	44.5	40.6
1-2	31.3	41.2
3+	24.2	18.2
	100.0	100.0

**Table 9.** Abortion in last pregnancy.

	Percentage	
	Cases (n = 3,522)	Controls (n = 4,832)
Spontaneous abortion	3.9	6.4
Induced abortion	11.9	8.4
Other outcome	84.2	85.2
	100.0	100.0

*Previous medical history (Tables 10 and 11)*

Cases had significantly more previous illness than controls ( $p < 0.001$ ). This was true of gynaecological ( $p < 0.05$ ) and any mental illness ( $p < 0.001$ ), and also of other significant illnesses ( $p < 0.01$ ). The difference was greatest in any previous mental illness (Table 10). The great majority of these were of anxiety and/or depression, although detailed analysis of this is not yet available. When mental illness was categorized according to whether or not a psychiatrist was consulted (Table 11), the prevalence of both categories was higher in cases than controls, but the larger discrepancy was in the group not consulting a psychiatrist, that is presumably the less severe mental illnesses.

**Discussion**

The present study is the only large-scale, prospective, controlled study so far reported. It is not intended to provide any information about the incidence of induced abortion, as patients were recruited by volunteer general practitioners and not by a random sample. Furthermore, patients who went directly to private agencies without consulting their general practitioners were excluded. Thus, approximately 73 per cent of women having an induced abortion in this study had the operation under the National Health Service, compared with about 46 per cent in the country as a whole (Craft *et al.*, 1979). A further but less plausible reason for this difference could be that volunteer general practitioners taking part were probably highly motivated and may

**Table 10.** Previous medical history. Percentages of cases and controls with appropriate medical history.

	Cases (n = 6,349)	Controls (n = 8,132)
Gynaecological disorders	22.4	20.9
Mental illness	25.9	17.5
Other illness	20.8	18.9
Any of above	49.1	44.0

**Table 11.** Mental illness according to severity.

	Percentage	
	Cases (n = 6,349)	Controls (n = 8,132)
Psychiatrist consulted	8.5	6.2
Psychiatrist not consulted	17.4	11.3
No previous mental illness	74.1	82.5
	100.0	100.0

have made more than average effort to obtain induced abortions under the National Health Service where they felt the operation to be justified.

The study population of cases, however, compares well with the OPCS figures for age, parity and marital status (OPCS, 1980). No comparable figures for social class, smoking habits and previous medical history are available. The choice of a suitable control group was difficult. The perfect control study, that of random allocation of women requesting induced abortion into two groups, cases and controls, is ethically unacceptable. The use of a group of patients presenting to the same general practitioners with an unplanned pregnancy, but not having an induced abortion, seems the nearest comparison to the cases. Differences in personal characteristics between the two groups have been recorded and will be taken into account in analysing the data.

Thus, although there is a difference in distribution between cases and controls in respect of age, marital status, parity and smoking habits, there is sufficient overlap between the two groups to permit comparisons to be made specific for these variables and for standardization procedures to be carried out. When looking at other patient characteristics, such as previous illness, it may be necessary to exclude certain groups from analyses: for example, in comparing subsequent mental disease between the two groups, allowance will have to be made for known previous mental illness.

In this study, seven per cent of women requesting an abortion were refused the operation, about three per cent by the general practitioner and the remainder by the gynaecologist after referral.

Age distribution and marital status showed the expected differences between cases and controls.

There were interesting differences in previous medical histories between cases and controls. In all categories cases had a higher incidence of previous significant illness. This disparity was greatest in mental illness. If the degree of severity of mental illness was judged by whether the patient had seen a psychiatrist, the less severe mental conditions showed the greatest difference.

As expected, cases tended to consult earlier with their pregnancy and had a higher percentage with nil or over two previous pregnancies.

There appeared to be a difference in social class between the two groups, the cases having higher educational status. This was perhaps reflected in the fact that patients who had an abortion were more certain of their last menstrual period than the controls.

Smoking was reduced on discovery of the pregnancy in both cases and controls, but significantly more so in controls. This reflects an encouraging awareness of the adverse effect of smoking on the fetus in those women who wished to continue their pregnancy.

In view of the recognized importance of initiating routine antenatal care early in pregnancy, it is disturbing to find that over one fifth of women in the control group presented with their pregnancy to their general practitioner later than 16 weeks after their last menstrual period.

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