

CHAPTER 21

Trends in reproductive epidemiology and women's health

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Introduction

The purpose of this chapter is to place in context the data on maternal deaths given earlier in this Report. Changes in the population at risk could change the number of deaths expected if rates remain at the same level. This chapter provides an overview of trends in reproductive epidemiology by discussing conceptions, terminations, embryonic deaths (miscarriages) and births. It discusses the fertility of women in different age groups and at different parities, and presents relevant information about problems around the time of delivery. The chapter also discusses other aspects of women's health highlighted in this Report, in particular obesity, smoking and use of alcohol in pregnancy.

Maternal deaths identified by the Registrars General

As described in the section of Aims and Methodology, the numbers of *Direct* and *Indirect* deaths identified by the Enquiry always exceeds those identified from an examination of the cause of death given on death certificates. The Office for National Statistics (ONS) death certificates are examined to select deaths where there is a mention anywhere on the certificate of a pregnancy-related condition, such as eclampsia. Women who die while pregnant but where no mention of the pregnancy is made on the certificate will not be identified in this way. In Scotland, however, there is a box on the certificate that can be ticked to identify that a woman was pregnant or had recently given birth at the time of her death.

In 2000–02, 148 deaths in the UK were identified from death registrations as having a pregnancy-related condition mentioned on their death certificates. This represented a rate of 4.0 per million women aged 15–44 years and contributed 0.7% of all deaths in the age group. The Enquiry identified 106 *Direct* maternal deaths and 155 *Indirect* maternal deaths, suggesting that only 57% of maternal deaths mention the pregnancy at death registration (Tables 21.1 and 21.2). Work is currently being undertaken to assess the feasibility of identifying further deaths by linking women's death certificates with recent birth registrations.

Overall trends in reproductive epidemiology

Maternities and estimated pregnancies

Maternities are pregnancies that result in a live birth at any gestation or a stillbirth occurring at 24 weeks of completed gestation or later. Statistics on these outcomes can

Table 21.1 *Direct and Indirect maternal deaths and mortality rates per 100,000 maternities as reported to the Registrars General (ONS) and to the Enquiry; United Kingdom 1985–2002*

Triennium	Maternal deaths known to Registrars General (ONS)		Direct deaths known to the Enquiry		Indirect deaths known to the Enquiry		Total Direct and Indirect deaths known to the Enquiry		Total maternities (n)
	(n)	Rate	(n)	Rate	(n)	Rate	(n)	Rate	
1985–1987	174	7.7	139	6.1	84	3.7	223	9.8	2,268,766
1988–1990	171	7.2	145	6.1	93	3.9	238	10.0	2,360,309
1991–1993	149	6.4*	128	5.5	100	4.3	228	9.8	2,315,204
1994–1996	175	8.0**	134	6.1	134	6.1	268	12.2	2,197,640
1997–1999	142	6.7**	106	5.0	136	6.4	242	11.4	2,123,614
2000–2002	148	7.4**	106	5.3	155	7.8	261	13.1	1,997,472

Source: Office for National Statistics; General Records Office, Scotland; General Records Office, Northern Ireland.
* Final ONS revised figures for 1991–93. The rate available at the time for the publication of the 1991–93 Report was 6.0.
** England and Wales figures for 1994 onwards now include underlying cause and mentions (ICD9 630–676); the rate for 1994–96 in the previous Report was 7.4.

be given with great confidence, since they are required by law to be registered. However, since not all pregnancies result in a registrable live or stillbirth it is impossible to know the exact number of pregnancies that occurred during this or any preceding triennium. Other outcomes of a pregnancy can be a legal termination (which is also registrable by law), an embryonic death (at less than 24 weeks) or an ectopic pregnancy.

Therefore, the number of pregnancies is estimated from a combination of the number of maternities, together with legal terminations, hospital admissions for embryonic death and ectopic pregnancies, and an adjustment to allow for the period of gestation and maternal ages at conception. The estimated number of pregnancies and the components of this estimate are shown in Table 21.3. Data in earlier Reports were given for England and Wales only and these are included for comparison. The resulting total is still an underestimate of the actual number of pregnancies, since these figures do not include other pregnancies that miscarry early, those where the woman is not admitted to hospital or, indeed, those where the woman herself does not know she is pregnant. Studies have estimated that up to 50% of all pregnancies may result in a spontaneous miscarriage (a miscarriage before 24 weeks of gestation) and the majority of these are lost prior to implantation or within the first 4 weeks of pregnancy. Therefore, estimates differ

Table 21.2 *Mortality rates per million female population aged 15–44 years, all causes and maternal deaths; United Kingdom 1979–2002*

Triennium	All causes	Maternal deaths	Deaths in age group due to maternal causes (%)
1979–81	697.2	6.6	1.0
1982–84	641.7	4.7	0.7
1985–87	622.5	4.2	0.7
1988–90	625.9	4.1	0.7
1991–93	608.1	4.0	0.7
1994–96	610.3	4.8	0.8
1997–99	599.2	3.9	0.6
2000–02	583.9	4.0	0.7

1994–2002 England and Wales includes underlying cause and mentions (ICD9 630–676, ICD10 O00–O99).
Sources: Office for National Statistics, General Records Office: Scotland, General Records Office: Northern Ireland.

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Table 21.3 Estimated pregnancies (in thousands); England and Wales 1976–93 and United Kingdom 1991–2002

Triennia	Maternities	Legal abortions	Spontaneous abortions	Ectopic pregnancies	Total estimated pregnancies
England and Wales					
1976–78	1781.3	324.6	158.3*	11.6	2275.8
1979–81	1910.9	380.5	134.3**	12.1	2437.8
1982–84	1905.8	393.1	113.6**	14.4	2426.9
1985–87	1987.9	451.1	N/A	N/A	2439.0
1988–90	2073.0	512.7	277.2**	24.0	2886.9
1991–93	2045.3	485.7	233.8**	27.0	2791.8
United Kingdom					
1991–93	2315.2	525.7	266.4**	30.2	3137.4
1994–96	2197.6	518.8	164.7**	33.5	2914.6
1997–99	2123.6	564.1	153.6**	31.9	2873.3
2000–02	1997.5	568.8	143.1***	30.1	2739.4
Percentage	72.9	20.8	5.2	1.1	100.0

N/A = not available.
 * ICD (8th revision) 640–645.
 ** ICD (9th revision) 634–638.
 *** ICD (9th revision) 634 and ICD (10th revision) O03.

Sources: Birth statistics Series FM1, Abortion statistics Series AB, Department of Health: Hospital Episodes Statistics, Welsh Office: Hospital Activity Analysis, Scottish Morbidity Records (SMR) 1 Inpatients and Daycases Acute, Scottish Morbidity Records (SMR) 2 Inpatients and Daycases Maternity, DHSS Northern Ireland.

between studies because fetal loss before 4 weeks in particular is very hard to estimate. It has been estimated that up to 35% of fertilised ova may be lost before the first missed period.¹

Using the available sources of data, ONS estimated that 73% of pregnancies in the UK between 2000 and 2002 led to a maternity resulting in one or more registrable live or stillbirths. A further 21% of pregnancies were legally terminated under the 1976 Abortion Act. The remaining 6% of known pregnancies were admitted to hospital following an embryonic death or an ectopic pregnancy. Embryonic deaths that resulted in a day stay or in women who were not admitted to hospital are not included in this data. The absolute numbers and the percentage distribution of the outcomes of the estimated pregnancies during 2000–02 are very similar to those in the previous triennia. The striking changes in the estimated number of embryonic deaths and ectopic pregnancies between 1982–84 and 1988–90 are most likely due to the different ways the data were collected during these triennia and the different sampling and grossing up procedures used. There appears to be no obvious change in clinical patterns over this period that could have contributed to this increase in number.

Trends in legal abortion

Some women die following legal (and in the past, illegal) abortion. Since the introduction of legal abortion in 1968, following the 1967 Abortion Act in England, Wales and Scotland, and up to the end of 2002 over five million legal terminations of pregnancy have been carried out for residents of Great Britain. The Abortion Act of 1967 does not apply to Northern Ireland, where only a small number of legal terminations are performed each year on medical grounds under the case law that applied in England and Wales before the Abortion Act 1967. However, some women from Northern Ireland have legal terminations in Great Britain (these abortions are not included in the following

Table 21.4 Legal abortions and abortion rate in Great Britain to women resident in Great Britain; 1988–2002

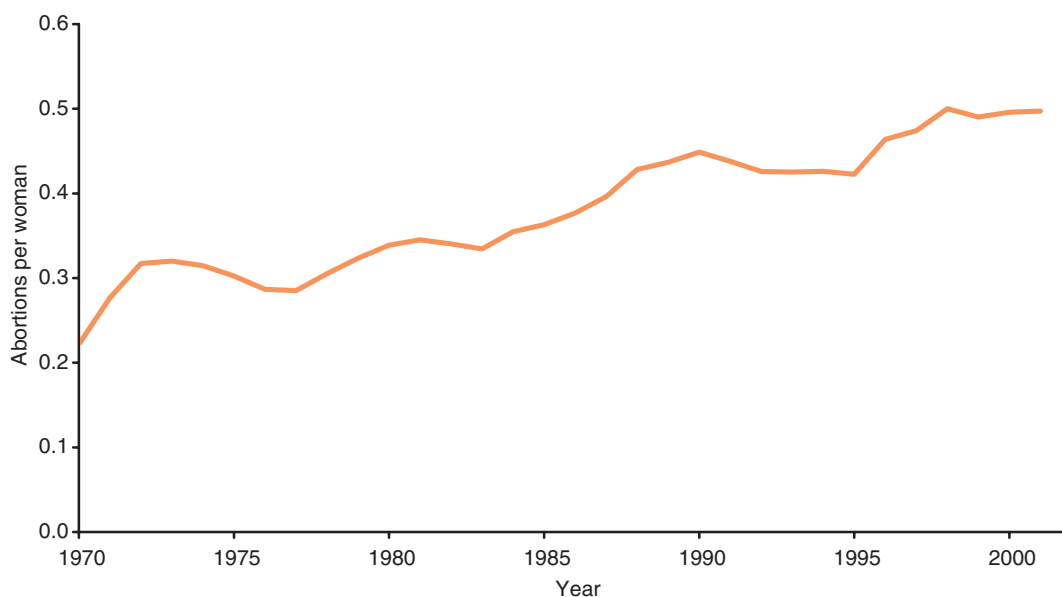
Triennia	Abortions (n)	Abortions per woman*
1988–90	543,217	0.44
1991–93	518,685	0.43
1994–96	513,283	0.44
1997–99	558,479	0.49
2000–02	563,371	0.50

* Calculated by summing age-specific abortion rates to standardise the population age distribution.

analysis). Between 2000 and 2002 4,491 women having an abortion in Great Britain gave their usual address as Northern Ireland.

Table 21.4 shows both the number of legal abortions in Great Britain and the age standardised abortion rate per woman (similar in calculation to a total fertility rate), for last five triennia. Figure 21.1 shows the legal abortion rate for each individual year over the period 1971–2002. The abortion rate shown here is the average number of abortions per woman, if women experienced the abortion rates of a particular year for their entire childbearing years. In 1971, just after the change in law regarding abortions, the abortion rate was 0.28 abortions per woman. Since 1971, the abortion rate has shown an overall upwards trend, although this rise has been interrupted by periods of no growth and sometimes slight decrease in the rate. The abortion rate reached 0.50 abortions per woman aged 15–44 years in 1998 and has subsequently remained at between 0.49 and 0.50.

Following the introduction of legal abortion the number of maternal deaths following illegal abortions fell sharply. In 1970–72 (the first full triennium during which legal abortion was available) there were 37 reported deaths from illegal abortion, falling to one in 1979–80. No maternal deaths from illegal abortion have been reported since, including for this triennium.

**Figure 21.1** Abortion rate for women resident in Great Britain; 1971–2002

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Table 21.5 Total number of births (live and still) and total fertility rate; United Kingdom 1976–2002

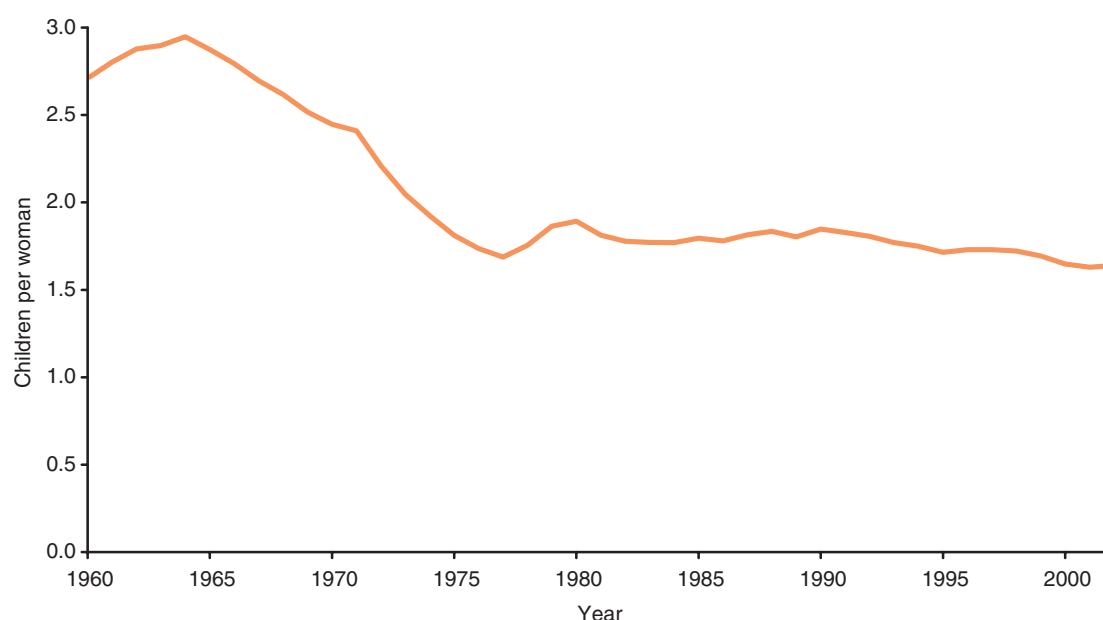
Triennium	Total births (1000s)	Total fertility rate (per woman)
1976–78	2038.3	1.73
1979–81	2235.2	1.86
1982–84	2182.5	1.77
1985–87	2292.9	1.80
1988–90	2374.0	1.83
1991–93	2343.8	1.80
1994–96	2227.5	1.73
1997–99	2155.3	1.72
2000–02	2027.9	1.64

Note: Total fertility rate is only based on live births and is calculated by summing age-specific fertility rates to standardise for the population age distribution.

Birth rates and fertility trends

Birth rates and fertility trends are important in the context of this Enquiry, as changes in patterns of childbearing may affect the number of maternal deaths. Since the England and Wales Enquiry started in 1952, joined by Scotland and Northern Ireland in 1985, 40.9 million births have been registered in the United Kingdom. The total number of births and the total fertility rate (TFR) for the UK in each triennium since 1976–78 are given in Table 21.5 and Figure 21.2 shows the TFR for the period 1960–2002. The TFR is the average number of children a woman would have if she experienced the fertility rates of a particular year for her entire childbearing years. The TFR standardises for the changing age structure of the population and therefore shows changes in fertility over time more accurately than other period measures of fertility.

Figure 21.2 shows the high fertility of the 1960s 'baby boom', where fertility increased from 1960 peaking in 1964 at 2.95 children per women. During the 1970s there were rapid declines in fertility and the TFR fell to a low of 1.69 in 1977. In the late 1970s,

**Figure 21.2** Total fertility rate; United Kingdom 1960–2002

the TFR increased briefly before decreasing in the early 1980s to around 1.8 children per woman, remaining around this level throughout the 1980s. Then, throughout the 1990s, the TFR slowly decreased and in 2002 the UK TFR was 1.64 children per woman. Fertility patterns in the four constituent countries of the UK follow the same pattern but the TFR is always higher in Northern Ireland than for the other countries. Data on birth order, from births within marriage,⁽ⁱ⁾ indicate that this is due, at least in part, to women in Northern Ireland having on average more children. In 2000–02, 32% of births within marriage in Northern Ireland were third or higher-order births, compared with 23% of births in England and Wales. In 2000–02 the Northern Irish TFR was 1.78 compared with 1.65 in England and Wales. Scottish fertility has undergone a noticeable decline in the last decade and in 2000–02 the Scottish TFR reached a low of 1.48.

These changes in the TFR since 1977 conceal wider medical and social changes affecting reproductive epidemiology. Reduced perinatal and infant mortality means more babies are surviving into childhood. An increasing proportion of births occur outside marriage and there are changing patterns in the age at which women have children.

Maternities by age

The patterns of fertility by mean age at childbearing and mean age at first birth have changed greatly over the last 50 years. However, some of the change has been due to the changing population distribution. Currently, there are larger numbers of women at older ages, reflecting previous birth generation sizes and this contributes to the trend of increasing mean age at childbearing. In 2002, the mean age at childbearing was 29.3 years. However, if the current age structure of the population is controlled for, then the mean age at childbearing in 2002 was 28.7 years. Figure 21.3 shows the change in the age standardised mean age at childbearing since 1966. The 1960s ‘baby boom’ was associated with women starting childbearing earlier and therefore mean age at childbearing fell during the late 1960s, reaching a low of 26.4 years in 1974. Since then standardised mean age at childbearing has steadily increased (although at a different rate to the unstandardised age). The rise in standardised mean age at childbearing is a result of fertility rates increasing among women in their thirties and forties and conversely declining for women in their twenties.

Table 21.6 shows the percentage distribution of all live births in England and Wales by age at childbirth and age at first birth for the last five triennia. The data shown in Table 21.6 is only available for England and Wales but the trends shown here are applicable to the UK as a whole. The move towards women having children later in their childbearing years is clearly shown in the table. The percentage of all births that were to women aged 35 years or over more than doubled between 1988–90 and 2000–02, while the percentage of women having a first birth at 35 years or over has nearly trebled since 1988–90. Over the same time, both the percentage of all births and first births occurring to women aged 20–24 years has declined by around ten percentage points. This trend is in part due to changes in the population age structure of women. However, it also reflects other life-course changes, such as increased time spent in education and increasing mean age at marriage.

⁽ⁱ⁾ Birth order data for the different countries of the UK is only available for births within marriage, because the number of previous live births is only recorded at registration for births occurring within marriage. England and Wales produces estimates of birth order for all births, but this data is not published for Northern Ireland or Scotland.

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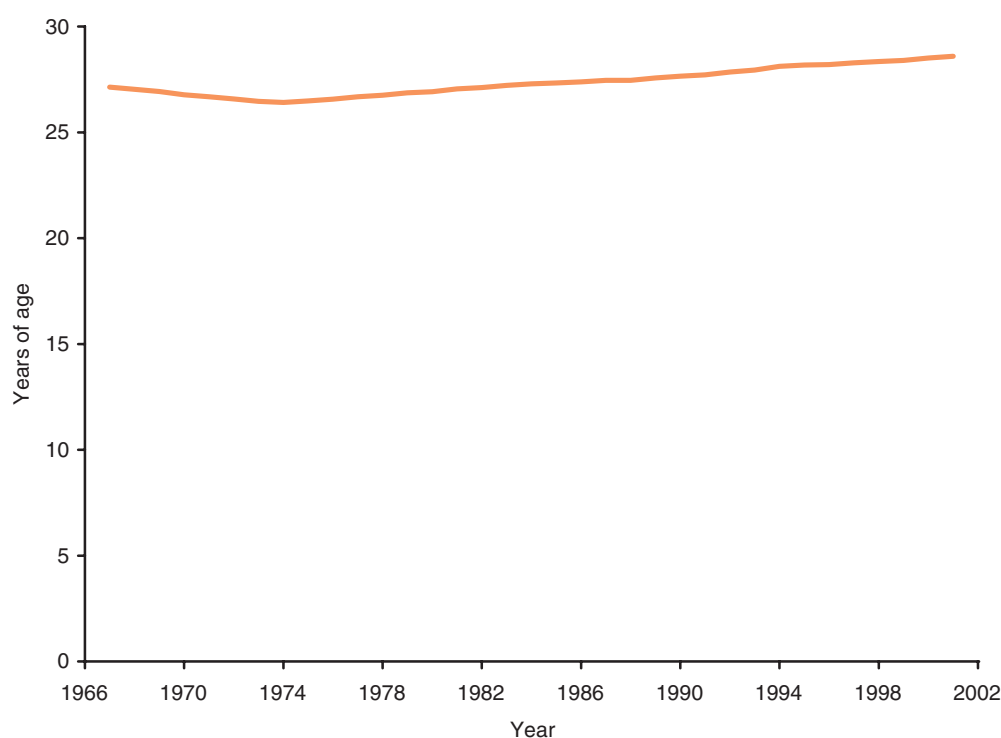


Figure 21.3 Standardised mean age at childbearing; United Kingdom 1966–2002

These changes in timing of childbirth can make an important contribution to maternal mortality because the risk of maternal mortality becomes higher with increasing age at childbirth. Studies have concluded that women aged 35 years or over have a higher frequency of various adverse reproductive events: infertility, spontaneous miscarriage, pregnancy complications (such as caesarean section, high blood pressure, pre-eclampsia), congenital abnormalities, maternal mortality and perinatal mortality, than do younger women.²

Table 21.6 Percentage distribution of all live births by age and age at first birth; England & Wales 1988–2002

	1988–90	1991–93	1994–96	1997–99	2000–02
Age (years)					
<20	8	7	7	8	7
20–24	27	24	20	18	18
25–29	35	35	34	30	27
30–34	21	24	28	30	30
35–39	7	8	10	12	15
40+	1	1	2	2	3
Total	100	100	100	100	100
Age (years) at first birth:					
<20	16	14	14	16	15
20–24	33	30	25	23	23
25–29	33	34	34	31	27
30–34	14	17	21	23	24
35+	4	5	6	8	10
Total	100	100	100	100	100

Source: Office for National Statistics.

Table 21.7 Percentage distribution of all live births by parity; England and Wales 1988–2002

Parity	1988–90	1991–93	1994–96	1997–99	2000–02
0	42	41	41	41	42
1	34	34	35	35	35
2	15	15	15	15	15
3	5	6	6	6	5
4	3	3	3	3	3
Total	100	100	100	100	100

Source: Office for National Statistics.

Maternities by parity

Parity is the number of live births a woman has had; that is, a woman who has had one live birth has a parity of one. Patterns of fertility in terms of parity have remained essentially constant over the last five triennia. Table 21.7 shows the distribution of births by mother's parity for the last five triennia. The data shown in Table 21.7 are only available for England and Wales, but the trends shown here are applicable to the UK as a whole. None of the percentages have differed by more than one percentage point over the last five triennia. In 2000–02, the majority of births were to women who had never had a birth before (parity zero) while only 23% of births were to women of a parity of two or higher.

Maternities by marital status

Over the last 50 years there have been large changes in the patterns of maternities by marital status. The number and percentage of all births occurring outside of marriage has greatly increased. This increase has occurred across all four countries of the UK but the patterns of increase and current percentage of births outside marriage differs between the countries, as shown in Figure 21.4. For the past ten years, Wales has had the fastest rate of increase and currently half of all births in Wales occur outside of marriage. Northern Ireland has shown a similar rate of increase, but for the last three decades it has always had the lowest proportion of births occurring outside of marriage of the four countries of the UK (34% in 2002). England and Scotland had a similar rate of increase up until about 1996 but, since then, the percentage of births taking place outside marriage has been increasing faster in Scotland than in England. In 2002, 40% of births occurred outside marriage in England, while this figure was 44% in Scotland.

The increase in births outside marriage has mostly been concentrated in births that are jointly registered, in particular among those where the parents give the same address. In 2002, 59% of births in the UK occurred inside marriage. Of the remaining births that occurred outside marriage, 33% were jointly registered and 7% were registered by the mother alone. The proportion of births occurring outside marriage and registered by one parent has remained at between 6–8% for the last two decades.

Maternities by ethnic origin

Since 1994, ethnic origin has been collected on the Enquiry notification forms. Therefore, to place this data in context, it would be ideal to compare it with the proportion of maternities by the mother's ethnic origin. Unfortunately, however, ethnic origin is not

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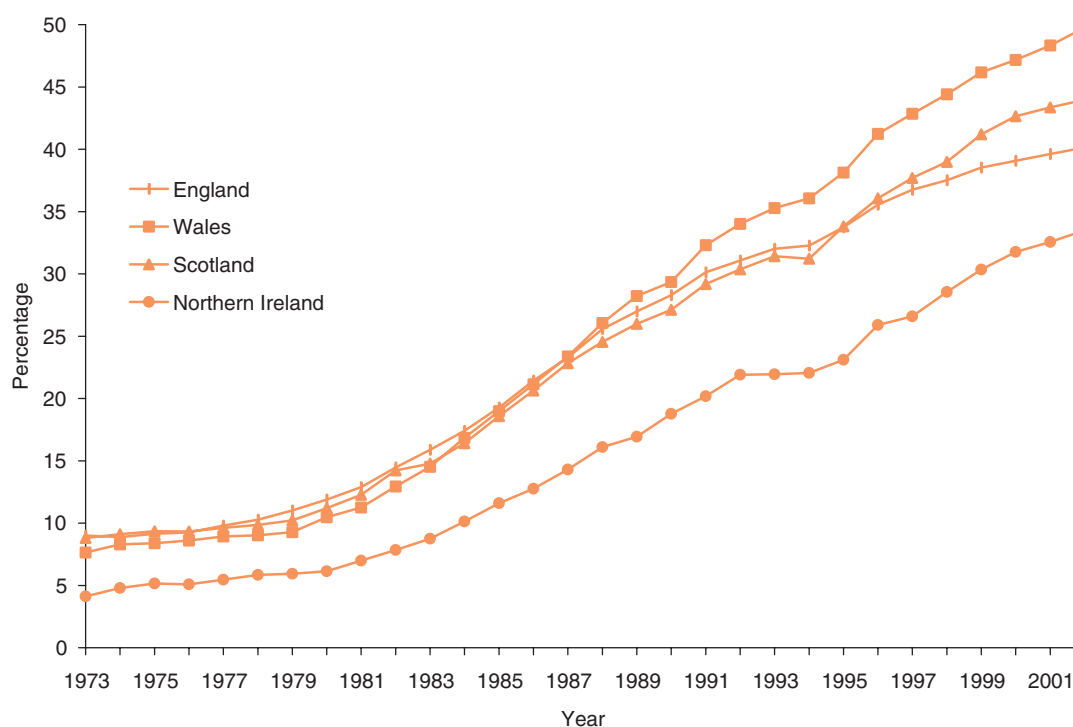


Figure 21.4 Percentage of births outside marriage, countries of the United Kingdom 1973–2002

collected at birth registration. Instead, the parent's countries of birth are recorded. The 2001 Census shows mother's country of birth to be a good indicator of ethnicity. However, increasing proportions of women from different ethnic groups were born in the United Kingdom. Therefore, analysing ethnicity solely using country of birth would miss half of the UK minority ethnic population, as the Census showed 50% of the minority ethnic population were born inside the UK.³ Ethnic origin is collected by the Hospital Episodes Statistics (HES) but this information is incomplete in many areas, so is not of sufficient quality for analysis. Therefore, to provide a context for with the data recorded by this Enquiry, the population of all women aged 15–44 years in the UK, in 2001 were analysed by their age and ethnic group, as shown in Table 21.8.

In 2001, in total 10.1% of the UK female population aged 15–44 years considered themselves to belong to an ethnic minority. Within these ages, between 8–12% of the population considered themselves to belong to an ethnic minority. Table 21.8 shows that, within the minority ethnic population, there are differing age structures between groups. Black ethnic groups have an older age structure, demonstrated by them making up a larger percentage of the ethnic minority population in older age groups compared with younger age groups. Among 15–19-year-olds only 21% considered themselves to be of Black ethnic origin compared with 32% of 40–44-year-olds. In comparison, Pakistani and Bangladeshi groups have younger age structures.

Maternities by National Statistics socio-economic group

Social and economic deprivation is associated with a higher risk of maternal mortality. The Report for the previous triennium found that women from the most deprived circumstances appeared to have a 20 times greater risk of dying of *Direct or Indirect* causes than women from social classes 1 and 2. Therefore, to place the data in this Report in context, ideally an analysis of maternities by maternal social class would be performed.

Table 21.8 Female population of United Kingdom by ethnic group and age; 2001

	Total 15–44 years		15–19	20–24	25–29	30–34	35–39	40–44
	(1000s)	(%)	years (%)	years (%)	years (%)	years (%)	years (%)	years (%)
Black or Black British								
Caribbean	160	13	9	8	9	14	20	18
African	149	12	10	10	12	15	14	12
Other Black	29	2	2	2	2	2	3	2
Asian or Asian British								
Indian	278	22	21	23	23	22	21	25
Pakistani	190	15	19	19	17	14	10	12
Bangladeshi	71	6	7	8	7	5	3	3
Other Asian	58	5	4	4	5	5	5	5
Chinese	75	6	6	7	6	5	6	7
Any mixed background	150	12	17	13	12	11	10	9
Other Ethnic Group	79	6	4	6	8	7	7	7
All ethnic minority groups	1,237	10	11	12	11	10	9	8
White	11,028	90	89	88	89	90	91	92
Total Females (n)	12,266	12,266	1,940	1,697	1,967	2,245	2,321	2,095

Note: the percentages for the individual minority ethnic groups represent the proportional breakdown of 'all ethnic minority groups' total.
Source: Census 2001.

Mother and father's occupations are collected at birth registration and a 10% sample is coded. This information is then used, together with information collected on employment, to derive socio-economic group. However, a large proportion of women at registration state that they are housewives or unemployed. Thus, their socio-economic category may not be representative of their household situation. Therefore, maternities are routinely analysed by the father's socio-economic group rather than the mother's. However, using father's socio-economic group is deficient because it excludes births

Table 21.9 Female population of United Kingdom by NS-SEC and age; 2001

NS-SEC group	16–44 years		16–19	20–24	25–29	30–34	35–39	40–44
	(1000s)	(%)	years	years	years	years	years	years
1. Higher managerial and professional occupations	730	6	0	3	9	8	7	6
2. Lower managerial and professional occupations	2595	22	3	16	28	26	25	25
3. Intermediate occupations	1903	16	7	18	18	17	16	16
4. Small employers and own account workers	388	3	0	1	2	4	5	5
5. Lower supervisory and technical occupations	529	4	2	5	5	5	5	5
6. Semi-routine occupations	1927	16	12	17	15	16	17	18
7. Routine occupations	941	8	6	9	8	8	8	8
8. Never worked and long-term unemployed	664							
L14.1 Never worked	543	5	5	6	5	5	4	4
L14.2 Long-term unemployed	121	1	0	1	1	1	1	1
Not Classified	2237							
L15 Full-time students	1532	13	65	23	4	2	2	1
L17 Not classifiable for other reasons	705	6	0	1	4	7	9	10
Total females	11,915	100	1426	1781	1972	2294	2348	2095

Source: 2001 Census.

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that were solely registered by the mother and also in the case of births that were jointly registered by parent's living at separate addresses paternal socio-economic group may not reflect the socio-economic status of the mother and child.

Therefore, to provide a context for the data shown in Chapter 1 of this Report, the UK population of women aged 15–44 years in 2001 was analysed by age and NS-SeC classification, shown in Table 21.9. NS-SeC is the National Statistics Socio-Economic Classification, based on occupation and employment status, introduced by ONS for publication of routine statistics in 2001.⁴ Table 21.9 shows from age 25–59 years onwards that socio-economic group distribution is very similar across age groups. The socio-economic group with the largest percentage (25–28%) of the population for 25–29-year-olds and over is the lower managerial and professional group, while for 16–19-year-olds and 20–24-year-olds the largest group is full-time students, who are not classifiable. From age 20–24 years and over, 16–13% of women are classified as belonging to one of the two lowest socio-economic groups.

Maternities by multiplicity

One of the major changes in birth rates in the past two decades has been the increase in multiple births, especially triplet and higher-order births. In the United Kingdom, the number of maternities resulting in twins increased from 7,109 in 1982 to 9,740 in 2002. Triplet and higher-order maternities also increased from 85 in 1982 to 199 in 2002. Multiple births currently make up 1.5% of all live births. Multiple births as a percentage of all live births are now at an all time high. This increase is in part the result of increasing use of *in vitro* fertilisation (IVF) and other assisted conception techniques. IVF births in the UK account for 1% of all births. In the period 1 April 2000 to 31 March 2001, there were 1,579 twin births confirmed following IVF. However, some of this increase in multiple births is associated with increasing age at childbirth, which is, in turn, associated with a higher risk of a multiple birth. Changes in maternities by multiplicity are important due to medical risks associated with multiple births; these include an increased risk of early and late miscarriage, pre-eclampsia, higher rate of caesarean section and an increased chance of hospitalisation before the birth. Also, some parents find it very difficult to cope with twins and especially triplets and this can cause a serious risk of depression following the birth.⁵

Mode of delivery

The proportion of deliveries by caesarean section, whether elective or emergency, has been increasing steadily in England since the 1950s. During the 1950s, around 3% of babies were delivered by caesarean section but this had risen to around 15% by the mid-1990s.⁶ The Health Survey for England reported that caesarean sections accounted for 23% of all deliveries in 2002; 9% by planned caesarean and 14% by emergency caesarean. This trend is important in the context of this Enquiry, since complications of a caesarean section may lead to maternal death.

The mode of delivery is highly related to both parity and age (Table 21.10). In 2000–01 5% of deliveries to women aged under 25 years were elective caesareans, a figure that had not changed from 1994–95. The proportion of women opting for a caesarean increases with age. Women aged 35 years and over were three times more likely than women aged less than 25 years to deliver by elective caesarean. Within all age groups,

Table 21.10 Percentage of singleton deliveries by caesarean section by parity and age; England 1994–95, 2000–01

Age (years)	Parity	Method of onset Elective caesareans as percentage of all deliveries (%)		Method of delivery Emergency caesareans as a percentage of all deliveries (except elective caesareans) (%)	
		1994–95	2000–01	1994–95	2000–01
All ages	Total	7	9	9	13
	0	5	6	12	18
	1+	9	11	6	10
Under 25	Total	5	5	7	11
	0	4	4	9	13
	1+	6	7	5	8
25–34	Total	8	9	9	14
	0	5	7	14	21
	1+	9	10	5	10
35 and over	Total	13	15	12	17
	0	11	12	21	29
	1+	13	16	8	13

however, primiparous women were less likely than other women to have an elective caesarean.

The same pattern of increase by age was also seen in the proportion of women whose delivery was by an emergency caesarean. In contrast, however, the proportion of deliveries by emergency caesarean was higher for primiparous women at all ages and in 2000–01 almost one-third of women aged 35 years and over (29%) had their first child delivered by emergency caesarean.

Complications during delivery

Hypertensive disorders and oedema during pregnancy were recorded in about 6% of deliveries in 2002–03. Labour was induced in over half of cases where hypertension was recorded as having complicated pregnancy, compared with one-fifth of all pregnancies.⁷

Twelve percent of deliveries with mention of a complication were recorded as having a long labour; 3% had a prolonged first stage, 8% had a prolonged second stage and the remainder had a delayed delivery due to a multiple birth. Just under two-thirds of women with a prolonged first stage of labour had an emergency caesarean, accounting for 13% of all emergency caesareans. A prolonged second stage of labour most commonly led to an instrumental delivery and these accounted for 40% of instrumental deliveries.

In 2002–03, about 21% of women had an epidural before or during delivery, 2% had a general anaesthetic and 11% a spinal anaesthetic.

There have been some significant changes in anaesthetic use for women having caesareans over the last 15 years. In 1989–90, over 50% of women having a caesarean had a general anaesthetic; by 1997–98 this proportion had fallen to under 20% and fell further to 8% in 2002–03.

Eight percent of women having elective caesareans in 2002–03 had an epidural, a significant drop from 31% in 1989–90. However, to balance these reductions, the use

of spinal anaesthetic has risen from 11% in 1989–90 to 64% in 2002–03. Eight percent of women had both a spinal anaesthetic and an epidural.

Other aspects of maternal health:

Obesity

The body mass index (BMI) is the most commonly used measure of obesity. It looks at weight in relation to height, and is defined as weight in kilograms divided by height in square metres. Adults with a BMI of between 25 and 30, inclusive, are deemed to be overweight and those with a BMI over 30 are seen as obese. BMI recordings of between 20 and 25 are seen to represent healthy (or normal) weight.

In 2002, over one-third (34%) of all women were overweight. Almost one-quarter (23%) of all women were classed as being obese, a dramatic rise from the 16% reported in 1993. However, the number has dropped since 2001, when it was at an all time high of 24%. Between 1993 and 2002, the proportion of women classed as obese has risen the most in women aged 25–34 years; a rise of 10% (Figure 21.5).

The percentage of women classed as obese increases with age and reached 43% of women aged 75 years and over in 2002.

Obesity is important to this Enquiry, as women who are very overweight have an increased risk of thromboembolism, hypertension and cardiac problems.

Blood pressure

High blood pressure is a risk factor for both coronary heart disease and stroke. In addition, it is of particular danger to pregnant women and their babies, as it can lead

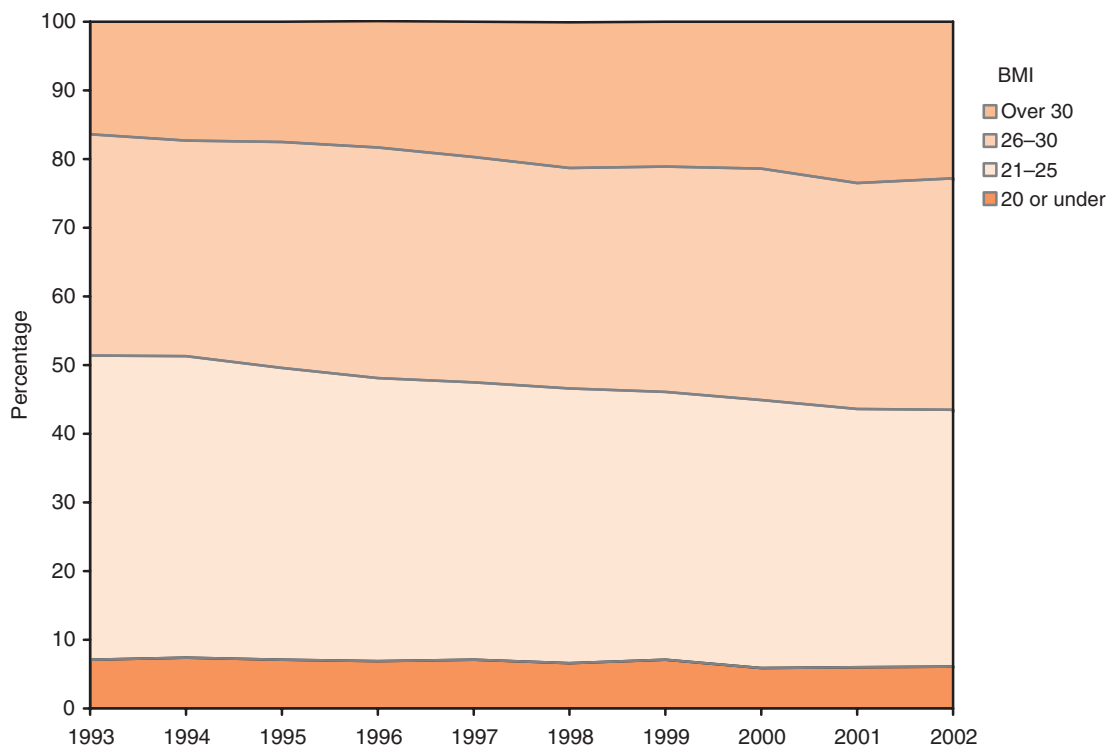


Figure 21.5 Women's body mass index (BMI); England 1993–2002

to eclampsia, a dangerous condition that kills three to five women each year. Blood pressure is considered as hypertensive if the systolic blood pressure is higher than 140 mm/Hg or if the diastolic blood pressure is 90 mm/Hg or over.

In 2002, over one-third (34%) of all women had high blood pressure, a proportion which remained largely unchanged since 1998 (33%). The proportion of women with high blood pressure increased with age, from 4% of 16–24-year-olds to 79% of women aged 75 years and over. From 1998 to 2002, between 58% and 66% of the women classed as having high blood pressure were not taking medication, although the overall proportion of untreated women has decreased slightly since 1998 (from 22% to 20%).

Contraceptive pill usage

In 2002, nearly three-quarters of women aged 16–49 years (72%) used at least one method of contraception. There has been a slight increase in the proportion of women using the contraceptive pill as their primary method of contraception, from 23% in 1986 to around one-quarter (26%) in 2002. This method is particularly common in women between the ages of 18 years and 29 years (53%).⁷

The ONS Omnibus Survey, which carries an annual module on contraception and sexual health, showed that 35% of single women were using a contraceptive pill, compared with 22% of those who were married or cohabiting and 16% of those who were widowed, divorced or separated.

In 2002, 1% of women described their current method of contraception as emergency contraception which includes the morning after pill and emergency intrauterine device. This proportion has remained consistent since the question was first asked in 2000.

Smoking

In 2002, over one-quarter of women (26%) described themselves as current smokers. The proportion of women who smoke has fluctuated between 25% and 27% since 1993. The proportion of current smokers is made up of 8% who described themselves as light smokers (under ten cigarettes a day), 11% describing themselves as medium smokers (10–19 cigarettes a day) and 6% describing themselves as heavy smokers (20 or more per day). The proportion of women who are heavy smokers is the lowest it has been since 1993.⁸

However, evidence suggests that women do reduce their smoking during pregnancy. The Infant Feeding Survey 2000 reported that 35% of women smoked to some degree before pregnancy but this dropped to just 19% throughout pregnancy. This figure has dropped from the 23% reported to have continued smoking during pregnancy in the 1995 Infant Feeding Survey report (Figure 21.6).

Alcohol

The recommended maximum number of alcohol units for women is 14 units per week. However, in 2003, the Department of Health revised their guidelines in an effort to counter the increase in binge drinking and rather than laying down guidelines in terms of a weekly limit, women are now advised not to exceed 2–3 units per day.

The proportion of young women, aged 16–24 years who drink more than the recommended 14 units per week has gone up by half in the last five years to a figure of 32%. However, it is not just young women whose alcohol intake has increased; almost

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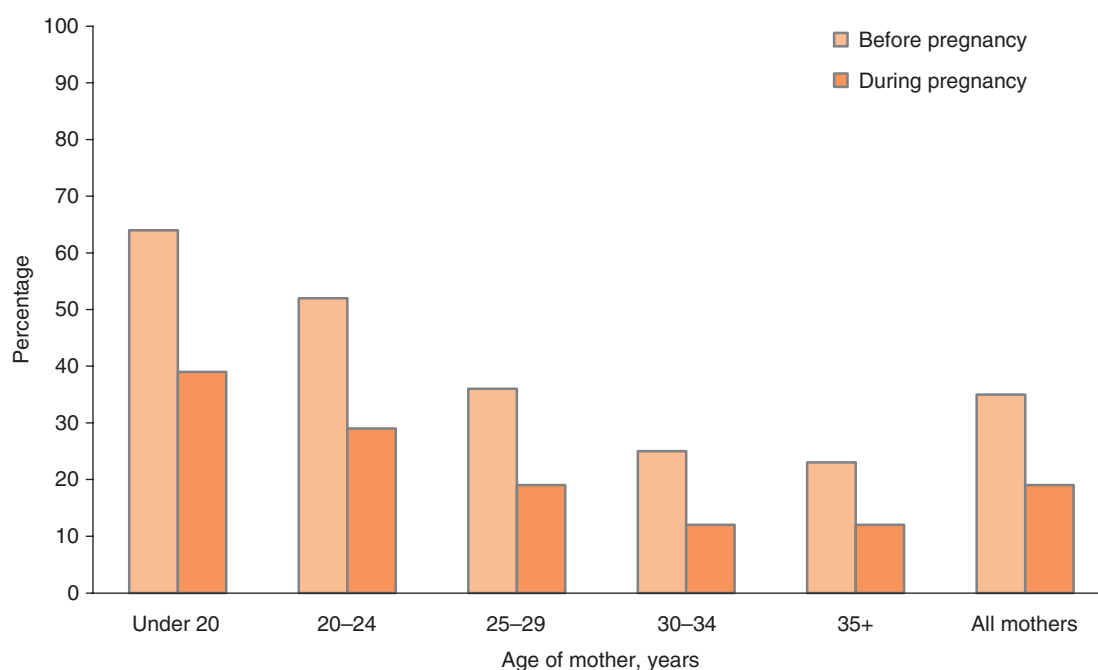


Figure 21.6 Prevalence of smoking before and during pregnancy; England 2000
 Source: Infant Feeding Survey 2000

one-third, 31%, of women aged 25–44 years drink more than the recommended amount of units.⁷

For mothers who drank alcohol before pregnancy, 17% consumed less than 1 unit per week, 47% consumed between 1 and 7 units per week, 12% drank 7–14 units per week, and 5% exceeded the recommended safe limit of 14 units per week.

However, 82% of mothers reported reducing their alcohol consumption during pregnancy, over two-thirds of these (67%) within the first month; 97% of mothers consumed no more than 2 units of alcohol per week during their pregnancy and less than 1% consumed more than 7 units.⁹

Postnatal depression and other psychological illness

During the period after childbirth, new mothers experience dramatic physical, social and emotional changes. During this period, mothers are recovering from the physical demands of giving birth as well as adjusting to the new demands of their infant.² Information about mothers' health and emotional wellbeing is important to this Enquiry because of the mothers that die due to suicide, either during or after their pregnancy, consequent of postnatal depression and other psychiatric disorders.

The Health Survey for England 2002 looked at women's scores according to the Edinburgh Postnatal Depression Scale (EPNDS).⁹ A score of ten or more was seen as a strong indicator of a possible depressive state. The survey found that 24% of all women showed signs of postnatal depression. This proportion varied by family structure with 41% of lone parents having a score of ten or more, compared with 21% of women in two-parent families.

The survey also looked at women's scores according to the General Health Questionnaire (GHQ12) which asks 12 questions with the aim of identifying individuals' psychological wellbeing. A GHQ12 score of four or more is seen as being high, indicating

Table 21.11 Ethnic group by method of onset of delivery and method of delivery; England 2002–03

Method of onset	Method of delivery	Ethnic group			
		Asian	Black	Chinese & other	White
Spontaneous	Spontaneous	60	58	59	53
	Instrumental	7	4	8	8
	Caesarean	7	9	8	7
Induced	Spontaneous	13	12	11	14
	Instrumental	2	1	2	3
	Caesarean	4	5	4	4
Caesarean	Caesarean	8	10	8	10

Source: Hospital Episode Statistics 2002–03.

probable psychiatric illness. Twenty percent of all women had a GHQ12 score of four or more. Women aged 35 years and over were less likely to have a high GHQ12 score; 14% compared with 22% of 16–34-year-olds.

Health of ethnic populations

Information about ethnic group of mother has been collected as a part of Hospital Episode Statistics since 1995 and for 2002–03 this information has been collected for 70% of delivery records. Ethnic group is categorised here as White; Black (aggregate of Black African, Black Caribbean and Black other); Asian (Indian, Pakistani, Bangladeshi); and Chinese and Other (Chinese and Other including mixed ethnic origin).

There were differences between ethnic groups in both onset of labour and type of delivery. White women were less likely than women in the other ethnic groups to have a spontaneous birth without intervention; 53% of White women compared with 58–60% in the other ethnic groups. White women were also less likely than women in any other ethnic group to be induced; 21% compared with 17–19%. Ten percent of White and Black women had planned caesareans compared with 8% of Asian and Chinese and Other women (Table 21.11).

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