Annual statistical review

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It is the intention of the *Archives of Disease in Childhood* to produce an annual review of national statistics pertaining to children, and to comment on the major changes that have occurred during the year. There is a wide range of data that might be considered in this way, including those referring to demography, mortality, morbidity, behaviour and use of health and social services. This first review introduces some of these data, their source, and recent trends. We would welcome comments on areas of interest to readers.

Demography

Number of births. Following a peak of just over one million births in the United Kingdom in 1964, a nadir was reached in 1977. Since then there has been

a small increase and during the 1980s the annual birth rate has remained fairly stable (Fig. 1).

The number of births each year is determined by the size of the female population of childbearing age and their fertility (the general fertility rate). During the 1980s there has been a tendency to postpone pregnancy (Table 1), with a decline in fertility among women aged 20–24 and 25–29 and an increase among those aged 30 or over. These demographic shifts are relevant to such indices as perinatal and infant mortality and morbidity—for example, Down's syndrome—as these are affected by the maternal age distribution of births.

Teenage pregnancy. This poses problems both for the mother and the child. International comparisons of abortion, birth, and pregnancy rates (Table 2)

Fig. 1 United Kingdom: trends in annual births 1961–85.

Source: Office of Population Censuses and Surveys (OPCS). Population Trends.

Table 1 Age specific fertility rates (per 1000) in England and Wales 1980–85

Year	Age of mother					
	<20	20–24	25–29	30–34	35–39	40 and over
1980	30.4	112.7	133.6	70.5	22.3	4.8
1981	28.1	105.3	129.1	68.6	21.7	4.9
1982	27.4	106.6	126.4	69.1	22.8	4.7
1983	26.9	98.5	126.4	71.5	23.1	4.8
1984	27.6	95.5	126.2	73.6	23.6	4.9
1985	29.5	94.5	127.6	76.4	24.1	5.0

Source: OPCS Series FM1.

Table 2 Pregnancy, birth, and abortion rates per 1000 women aged 15–19 in 1981

	Pregnancy	Birth	Abortion
Netherlands	14.3	9.0	5.3
Sweden	34.6	14.3	20.1
France (1980)	43.0	24.8	18.1
England and Wales	45.4	28.6	16.8
USA	96.0	52.7	43.3

Source: Report to the Ford Foundation on the finding and policy implications of a comparative study of teenage pregnancy and fertility in developed countries. New York: The Alan Gutmacher Institute, 1985.

throw light on the use of family planning and abortion services by this age group. There is a wide variation in pregnancy rates from 96 per 1000 women aged 15–19 in the United States of America to 14 per 1000 in The Netherlands. Crucial to this variation is the amount of sexual activity among teenagers, for which there are no routine data. Limited evidence from special surveys, however, suggests that the proportion of teenagers indulging in sexual activity is similar throughout the Western world.¹ This being so, and assuming that spontaneous abortion rates are also similar, the differences observed in Table 2 must be attributable either to the use of contraceptives or to therapeutic abortions. American data suggest that there is a failure to practise contraception leading to high pregnancy and abortion rates. In contrast, the low pregnancy rate in the Netherlands is presumably due to widespread use of contraception. England and Wales, France, and Sweden have moderate pregnancy rates.

Table 3 shows conception rates per 1000 for those aged under 16 in England and Wales between 1974 and 1984. After an initial fall these rates started rising in 1981, although recently the number terminated by abortion has increased. Of concern is the pronounced increase in girls aged 14, whose conception rate rose from 4.3 per 1000 in 1980 to 5.5 in 1984.

One parent families. A question relevant to child health and care practices is the upward trend in one parent families. Whatever definition is used there has been a considerable increase in the number, which, in a recent report,² was estimated as 100 000 (12%) between 1979 and 1984.

Mortality

Demographic effects on mortality rates. An important innovation in the analysis of infant mortality statistics has been the routine linkage of infant death

Table 3 *Conceptions under 16 years of age in England and Wales, 1974–84*

Year of conception	Number of conceptions			Conception rates per 1000		
	Total No of conceptions	Conceptions leading to births	Total No of terminated	Total No of conceptions	Conceptions leading to births	Conceptions terminated
1974	9371	4843	4528	8.5	4.4	4.1
1975	9181	4394	4787	8.1	3.9	4.2
1976	9191	4298	4893	7.9	3.7	4.2
1977	8993	4216	4777	7.6	3.6	4.0
1978	9103	4412	4691	7.6	3.7	3.9
1979	9108	4079	5029	7.5	3.4	4.2
1980	8580	3935	4645	7.2	3.3	3.9
1981	8561	3694	4867	7.3	3.1	4.2
1982	8999	3875	5124	7.8	3.4	4.4
1983	9369	4046	5323	8.3	3.6	4.7
1984	9649	4278	5371	8.6	3.8	4.8

Source: OPCS Series FM1 No 12.

Table 4 *Perinatal, neonatal, and post-neonatal mortality by maternal age, parity, and social class for England and Wales in 1984*

	Age of mother (legitimate births only)					Parity (legitimate births only)				Social class (legitimate births only)						
	20	20–24	25–29	30–34	35+	0	1	2	3+	I	II	III NM	III M	IV	V	Others
*Perinatal mortality	13.6	10.0	9.1	9.0	13.3	10.4	7.8	9.3	13.5	7.1	7.9	8.2	9.8	11.6	14.1	9.8
†Neonatal mortality	7.8	5.5	5.1	4.8	6.4	5.6	4.7	5.1	6.8	4.1	4.5	4.5	5.6	6.3	7.2	5.6
‡Post-neonatal mortality	6.5	4.8	3.0	3.1	2.8	2.5	3.7	4.4	4.8	2.2	2.6	3.1	3.2	4.0	5.7	6.7

Source: OPCS Series DH3 No 17.

*Per 1000 total births; †per 1000 live births.

and birth registration documents for England and Wales. Throughout the 1980s linkage has been successfully achieved for over 98% of infant deaths, which permitted the analysis of perinatal and infant mortality rates by mother's age, parity, and social class (Table 4). These data have directed attention to the importance of social factors and patterns of child bearing on mortality risk. Unfortunately, up to date figures on childhood mortality risk by social class are not yet available, having been excluded from the most recent *Decennial Supplement on Occupational Mortality*.³ We know, however, from previous reports that the gradient of risk with social class is even sharper in childhood than in infancy, particularly for accidental deaths.

Perinatal mortality. In 1965 The World Health Organisation recommended that the perinatal period should include all deaths after the twentieth completed week of gestation and early neonatal deaths of seven days or less. This definition still stands, but largely as a result of neonatal intensive and special care, there have been suggestions that the period should be extended from after the twentieth completed week of gestation to the end of the neonatal period (28 days). Perinatal mortality in the United Kingdom in 1985, for the first time, was in single figures at 9.9 per 1000 total births.

Neonatal mortality. The division of infancy into neonatal and post-neonatal periods was suggested over a century ago by William Farr because the causes of death in the two periods were so different and influenced by such different factors. In developing countries post-neonatal deaths comprise the largest proportion of infant deaths; in developed countries the reverse applies, and it is more appropriate to examine neonatal and post-neonatal mortality separately.

Table 5 shows the trends in the causes of death in the neonatal period. The pattern is dominated by two groups according to the *International Classification of Diseases* (ICD)—congenital anomalies and certain conditions originating in the perinatal period. In the latter group, retardation of fetal growth and immaturity and hypoxia and birth asphyxia are the main causes of death.

The decline in neonatal mortality due to congenital anomalies is partly due to the striking fall in the prevalence of neural tube defects (Fig. 2). The downward trend began in about 1974 and was still evident in 1985 but can be attributed only in part to the programme of screening for neural tube defects. The cost effectiveness of this programme is decreasing as the birth prevalence declines.

Post-neonatal mortality. While perinatal and neonatal mortalities have shown a progressive and in recent years accelerated reduction, post-neonatal mortality has only marginally improved (Fig. 3). Table 6 shows comparisons of international post-neonatal mortality. In most Western countries the rate has not changed much over the past decade, though different countries are stabilising at different levels. Because the numbers of post-neonatal deaths in some countries are now so few, random variation accounts for much of the annual fluctuation.

The causes of death in the post-neonatal period differ from those in the neonatal period (Tables 5

Table 5 Neonatal deaths by cause for England and Wales in 1984 (rates per 1000 live births)

	1980	1981	1982	1983	1984
Diseases of the respiratory system (ICD 460-519)	0.18	0.17	0.14	0.15	0.10
Congenital anomalies (ICD 740-759)	2.36	2.12	2.05	1.84	1.76
Certain conditions originating in the perinatal period (ICD 760-779)	4.59	3.98	3.73	3.58	3.35
All causes	7.60	6.66	6.27	5.85	5.57

Source: OPCS Series DH3.

Fig. 2 Neural tube defect notification rates.

Source: OPCS Monitor MB3 86/2.

Fig. 3 Infant mortality (United Kingdom).

Table 6 International comparisons of post-neonatal mortality (rates per 1000 live births)

	1980	1981	1982	1983	1984	1985
Denmark	2.9	2.9	3.4	3.1	NA	NA
England and Wales	4.3	4.4	4.5	4.2	3.9	4.0
Germany	4.8	NA	NA	4.6	4.4	NA
Netherlands	2.9	2.9	3.2	3.1	NA	NA
Scotland	4.3	4.4	4.4	4.3	4.1	3.9
United States	4.1	3.9	3.8	3.9	3.8	NA

Source: WHO annual statistics; OPCS Population trends.
NA=not available.

Table 7 Post-neonatal deaths by cause (rates per 1000 live births)

	1980	1981	1982	1983	1984
Infectious and parasitic diseases (ICD 000-134)	0.16	0.17	0.13	0.14	0.12
Diseases of the respiratory system (ICD 460-519)	1.03	0.88	0.88	0.71	0.55
Congenital anomalies (ICD 740-759)	0.77	0.90	0.93	0.86	0.82
Sudden death, cause unknown (ICD 798)	1.42	1.55	1.73	1.65	1.60
All causes	4.46	4.41	4.55	4.29	3.91

Source: OPCS Series DH3.

and 7). As a specific category 'sudden death, cause unknown' first began to be registered in large numbers about 1970 after which it rapidly peaked in 1982; it now accounts for about 40% of post-neonatal deaths. During this period there has been little change in the rate for the combined categories, 'diseases of the respiratory system' and 'sudden death, cause unknown', which is probably due to the changing pattern of certification; most deaths now recognised as sudden infant deaths would formerly have been registered as respiratory conditions.

Childhood mortality. Fig. 4 shows recent trends in early and childhood mortality. Although overall trends for all ages are fairly consistently downward, certain features cause concern; the flattening out of mortality in the 10-14 year age group; and the number of deaths due to accidents.

Mortality directly related to birth weight. National data on birth weight arising from the birth notification system have been available since 1953 for live births and 1955 for stillbirths. Until 1975 data on birth weight were only for births of 2500 g or less and this has proved a serious deficiency. For infants of normal birth weight (over 2500 g) it is necessary to subtract the low birthweight notifications from total birth registrations. As these data sets arise from different sources discrepancies occur; it is also impossible to divide the bigger infants into birthweight subgroups. A further problem lies in the class intervals used. The birthweight groups tabulated are ≤ 1000 g, 1001-1500 g, 1501-2000 g, 2001-2250 g, and 2251-2500 g, which differ from the WHO groups of up to 999 g, 1000-1499 g, 1500-1999 g etc. Because of the tendency to record birth weight to the nearest 10 g, important differences may arise between the two systems, particularly among the very low birthweight infants.

In 1975 the Office of Population Censuses and Surveys (OPCS) in association with local health authorities and the birth notification system first started recording birth weight as part of the registration procedure. Initially the birth weight was registered in only 50-60% of infants but by 1984 this had improved to almost 100% of live births and in over 98% of stillbirths. Table 8 shows birthweight specific stillbirths and infant mortality for 1984. It is noticeable that these rates are high in those infants whose birth weight was not registered. This group is probably biased by the inclusion of an excess of low birthweight infants who die soon after birth but before they have been weighed. Some of these infants were not weighed because they were considered to be too ill; it is increasingly being recognised, however, that proper clinical manage-

Fig. 4 Childhood mortality for females in England and Wales.

Childhood mortality for males in England and Wales.

Source: OPCS Series DH1.

ment of these babies cannot be adequate if their weight is not known so that in future this category of 'not weighed' should decrease.

International comparisons of birthweight specific mortality are difficult for several reasons. In spite of birth weight having a major influence on mortality, few of even the developed nations provide birthweight specific data. When data are available, the birthweight class intervals may not coincide and mortality may not refer to the same periods in infancy. Table 9 shows perinatal and neonatal birthweight specific rates for England and Wales and Denmark (1983) and for Sweden (perinatal only) (1981). These figures should not, however, be taken at face value; there may be differences in the registration of infants of very low birth weight and gestational age less than 28 weeks, and also in the proportion of births for which birth weight was not

stated. As the latter are predominantly infants of low birth weight, there will be a corresponding bias in mortality.

Notifiable diseases. The OPCS annually produces data on the number of cases of notifiable diseases. Fig. 5 shows examples of the trends in notification of whooping cough and measles.

Data on vaccination rates are published in the Department of Health and Social Security (DHSS) annual report, the *State of the Public Health*. Table 10 shows trends in the vaccination rates since 1974. The pronounced lowering of the vaccination rates for whooping cough following the adverse publicity given to the vaccine in 1976 is clearly evident. There were smaller effects on vaccination rates for diphtheria, tetanus, and poliomyelitis. The rate of vaccination for pertussis is slowly increasing again,

Table 8 Birthweight specific mortality for England and Wales in 1984

Mortality	Birth weight							Not stated
	<1500 g	1500-1999 g	2000-2499 g	2500-2999 g	3000-3499 g	3500-3999 g	4000 and over	
*Stillbirth	165.4	61.3	20.7	4.8	1.7	1.3	1.9	77.3
*Perinatal	365.9	94.7	30.4	7.3	2.8	2.1	2.8	242.0
†Neonatal	278.9	44.3	12.0	3.6	1.7	1.1	1.2	204.8
‡Post-neonatal	36.6	16.6	8.7	4.7	3.0	2.4	1.7	16.0
‡Infant	315.4	60.9	20.0	8.3	4.7	3.6	3.0	220.4

Source: OPCS Monitor DH3 86/1.

*Per 1000 total births; ‡per 1000 live births.

Table 9 *International comparisons of birthweight specific mortality*

Birth weight (g)	Perinatal mortality (rates per 1000 total births)			Neonatal mortality (rates per 1000 livebirths)	
	England and Wales*	Denmark*	Sweden†	England and Wales*	Denmark*
—1499	387.6	330.5	339.1	295.5	266.2
1500–1999	103.3	117.4	90.1	46.6	43.1
2000–2499	30.2	27.6	34.1	13.3	8.1
2500–2999	7.5	8.3	9.4	3.7	3.5
3000–3499	2.8	2.9	2.4	1.7	1.3
3500–3999	2.2	2.3	1.9	1.4	1.0
4000 and over	2.8	2.6	1.6	1.5	1.6
Not stated	227.7	130.4	245.8	205.8	130.4

*1983; †1981; Source: OPCS Monitor DH3 85/1; Medicinsk fodelseregistrering 1983 (Denmark); Medicinsk fodelseregistrering 1981 (Sweden).

as is that for measles, which has been a more recent addition to the vaccination programme.

Other morbidity indicators. Every year the results of a sample survey of households (*General Household Survey*) is published showing tables on long standing and limited illness, hospital outpatient attendance in a three month period, general practitioner consultations in the 14 days before the interview, and average number of consultations each year. Data from these surveys show an apparent rise in self-reporting of longstanding illness, and in use of general prac-

titioner services, over the 10 years from 1974–83. The reporting of illness in members of any household is to some extent related to expectation and views of health, and it is likely that the observed rise reflects these aspects rather than changes in incidence of disease. Data on trends in hospital discharges for children can be obtained from the Hospital In-Patient Enquiry (Table 11). There has been a slight increase recently in all three age groups shown, but the pattern is not consistent. Regular surveys are also carried out on dental health⁴ and smoking habits in childhood,⁵ and these form an important part of our knowledge of child health. These statistics are difficult to interpret because of the frequent changes of age grouping; we hope this will be corrected in future. There is also a striking lack of national data on trends in childhood growth.⁶

Personal Social Services Statistics. Another aspect of trends in child health can be seen in data on the use

Fig. 5 *Measles and whooping cough notifications.*

Source: OPCS Series MB2. Registrar General's Statistical Review of England and Wales Part 1.

Table 10 *Trends in vaccination rates: percentage of children vaccinated before 3 years of age (England)*

	Diphtheria	Whooping cough	Tetanus	Polio-myelitis	Measles
1974	83	80	83	82	56
1975	81	78	82	81	55
1976	77	61	77	77	50
1977	78	39	78	77	51
1978	80	41	80	80	52
1979	81	31	81	81	51
1980	82	35	82	82	54
1981	83	42	83	83	55
1982	85	47	85	84	57
1983	86	55	86	86	61
1984	86	60	86	85	63

Source: DHSS On the State of the Public Health (Annual Reports).

of personal social services. Table 12 shows the numbers of children who are in the care of local authorities; data on nursery services and registered child minders are also available. Benefits related to childbearing are difficult to obtain from a single source; some indication, however, of the effect of children on the financial status of the family is shown in Fig. 6. A married couple with four dependent children, despite an increase in earnings from £60 to £135, would have an unchanged net spending power of about £110 because of the increase in income tax and withdrawal of means tested benefits.

Summary

We have given an indication of the range of national data which are available on child health. Paediatricians

Fig. 6 Net weekly spending power by level of gross earnings and type of family (April 1985).

Source: Central Statistical Office. Social Trends 1986.

Table 11 Trends in hospital discharge rates per 10 000 population in England: 1979–84

Age group (years)	1979	1980	1981	1982	1983	1984
0–4	1309	1334	1378	1406	1403	1427
5–9	650	685	702	682	717	716
10–14	467	491	501	501	523	535

Source: OPCS Monitor MB4 86/1.

Table 12 No (000's) of children in care of local authorities in England

Age (years)	1973	1979	1980	1981	1982	1983
<5	12.0	9.9	10.1	9.6	9.6	8.7
5–15	56.6	61.7	62.1	59.9	56.5	51.8
16 and over	20.3	23.6	23.0	22.7	22.6	21.7
All children	88.8	95.2	95.3	92.3	88.7	82.2

Source: DHSS, Health and Personal Social Services Statistics for England 1985.

are familiar with simple demographic, mortality, and morbidity statistics, and it is intended that trends in these should be updated annually. There is, however, a wealth of data on the use of medical social, and financial services which will be reported in future. Professional interest may help to improve the collection and presentation of national data, and we hope that this series will do this as well as providing a source of data for those who do not otherwise have access to it.

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