

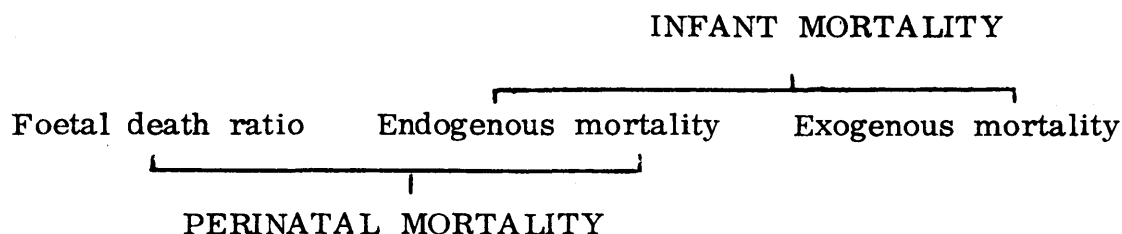
## PERINATAL MORTALITY IN HAWKSHEAD, LANCASHIRE, 1581-1710

The study of the mortality of very young children is bedevilled by a number of technical terms. "Infant mortality" is probably the best known of these; it refers to the mortality of live-born children in the first year of life. Infant mortality is sometimes divided into endogenous mortality and exogenous mortality. Endogenous mortality comprises those deaths which occur shortly after childbirth as the result of hereditary defects or injuries sustained during delivery, while exogenous mortality comprises deaths from infection and accident, and which therefore occur from the moment of birth right through the infant's first year of life. It is often valuable to be able to distinguish between endogenous and exogenous mortality, because this provides a clue as to the relative importance of factors such as infection, nutrition, the level of obstetrical skill, or genetics, in determining the level of infant mortality. A simple technique has been devised for separating out the endogenous and exogenous elements of infant mortality, but unfortunately this requires knowledge of the exact age in days for infant deaths, which in turn requires either family reconstitution of the parish register, or a burial register which gives ages at death to a fine degree of accuracy. (1)

When information is lacking to calculate endogenous or exogenous mortality, a neonatal mortality rate is sometimes calculated, using deaths during the first 28 days after birth. The neonatal mortality rate will therefore be higher than the endogenous mortality rate, because of course a number of children will have died in this period from disease and other exogenous causes.

Sometimes, however, interest centres on the mortality associated with childbirth, or perinatal mortality. This includes both the endogenous infant mortality of live-born children already mentioned, and also foetal mortality, which is recorded in the registers in terms of the burial of still-born or dead-born children. Foetal mortality is difficult to measure accurately today, for example there are problems in knowing whether very young foetal deaths (miscarriages) have been registered or not, and for past populations few parish registers record burials of still-born or dead-born children consistently. This is perhaps not surprising given the distinctly unsentimental attitude to still-born children shown by the midwife's licence printed in the Miscellany section.

The following diagram summarises the relationship between the different measures of mortality which have been discussed.



The burial registers of the parish of Hawkshead are unusual in that they record the deaths of newly and abortively born babies consistently over a period of 130 years (1581-1710). From 1581 to about 1620 the registers are kept almost entirely in Latin and the death of the newly born is recorded with stark simplicity as 'Puer' (filius) or 'Puella' (filia) of ... the father's name. The child is given no name and the presumption is that it died soon after birth and before it could be baptised. Similarly the death of the abortive baby is recorded as 'Puer abortivus' or 'Puella abortiva' of ... the father's name; it is often abbreviated to 'abortivus' of ... father's name.

From 1620 onwards English phrases begin to creep in ('a child of'), although 'filius', 'filia' is still the usual form of entry. In the 1650s deliberate use of the vernacular seems to have been made; and, after a brief reversion to the Latin immediately after the Restoration, English was used increasingly and expansively with only an occasional lapse into Latin towards the end of the period. The registers now confirm our assumption that the un-named child was newly born: 'An unchrisnd child of ... which was base-begotten and dyed at Oxenfell' (1670); 'A liveinge child of Myles Stricland (1670): 'A child unchrisned of W. Sawreys' (1671); '2 sons of John Atkinsons who died unch(risned)' (1685); '2 children of James Braithwaite who dyed as soon as they was borne' (1688); 'A base childe of Margarett Peppers who dyed unchrisned' (1689); 'Robert Scale had a son buried who was not baptised' (1696). The abortive children are occasionally referred to as 'ye dead borne child' (1679) or 'ye still borne child' (1710), but more usually as 'an abortive son, daughter or child of'... father's name.

The following table shows for each decade the number of baptisms and burials in Hawkshead, distinguishing separately the burials of un-named and abortive children.

DEATHS OF UNNAMED AND STILLBORN CHILDREN  
IN HAWKSHEAD, Lancs. 1581-1710

Dates	Baptisms	Total Burials	Burials of unnamed	Burials of abortives	Total 'live births' (1) + (3)	Foetal death rate (4)/(5) X1000	'Live births' less burials (5) - (2)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1581-90	334	394	39(7)	6(38)	373(341)	16(111)	- 21
1591-1600	404	481	44(8)	7(43)	448(412)	16(104)	- 33
1601-10	316	312	6	10	322	31	10
1611-20	444	383	8	18	452	40	69
1621-30	428	379	5	18	433	41	54
1631-40	481	412	2	30	483	62	71
1641-50	412	345	0	12	412	29	67
1651-60	315	386	1	14	316	44	- 70
1661-70	320	444	5	25	325	77	-119
1671-80	229	364	6	15	235	64	-129
1681-90	263	360	5	18	268	67	- 92
1691-1700	273	370	9	27	282	96	- 88
1701-1710	256	265	1	18	257	70	- 8
1581-1710	4,475	4,895	131	218	4,606	47	-289

1581-1710 Out of a total of 349 unnamed and abortives 12 were bastards and 14 twins (7 pairs)  
3 mothers were recorded as having died in child birth

The burials of un-named children are somewhat problematical. Since baptism probably occurred shortly after birth at this period one might be tempted to use the deaths of un-named infants as a rough guide to neonatal, or even endogenous mortality, but this is a temptation which should be resisted, because we have no direct evidence as to how long the interval between baptism and burial was in Hawkshead during the 17th century. (2)

The number of burials of un-named children is rather large during the last two decades of the 16th century, and it may well be that they include some undisclosed abortive children. This may also be true for the remaining decades in the table, but here the uncertainty is less damaging, because the number of un-named children is considerably smaller. Apart from the first two decades, therefore, it will be assumed that the burials of un-named children refer to live-born children.

Still-births or foetal deaths, are conventionally expressed as a ratio: the foetal death ratio being the number of foetal deaths, or stillbirths or abortive births, per 1,000 live births. In Hawkshead, or any other parish where stillbirths are meticulously recorded, this ratio can easily be calculated as follows. First, assuming that the un-named children being buried were live-born rather than still-born, the number of 'live births' in each decade is estimated by adding the numbers of burials of un-named children (column 3) to the number of baptisms (column 1). The foetal death ratio is then estimated for each decade as the number of recorded abortive births (column 4) per 1,000 estimated 'live births' (column 5). The foetal death ratios are given in column 6 of the table. They vary from 16 per 1,000 'live births' in the late 16th century to 96 per 1,000 'live births' in the 1690s. The number of 'live births' in each decade and the relative rarity of foetal deaths taken together mean that some of the differences between the decadal ratios may be accounted for entirely by chance, but there would appear nonetheless to be three distinct periods each with a rather different level of foetal mortality. The first period comprises the last two decades of the 16th century when the foetal death ratio (16) is almost as low as it is in England and Wales today.<sup>(3)</sup> This figure however has been based only on the declared abortive children, and as has already been mentioned there may be more of these hidden amongst the burials of the un-named children. If we look at the next two decades, 1601-10 and 1611-20, we find that the number of burials of un-named children as a proportion of baptisms is just under 2%. If we now somewhat

arbitrarily assume that the same proportion also obtained during the last two decades of the 16th century, we would expect only 7 and 8 un-named burials respectively leaving 38 and 43, "surplus" un-named burials as presumptive undisclosed abortive births. Inflating the number of abortive births and recalculating the estimated total 'live-births', as given by the figures in brackets in the table, we find very much higher foetal death ratios for these decades of 111 and 104 respectively. The first period therefore exchanges very low foetal death ratios for very high ones. Ratios of this magnitude are higher than are recorded for any part of the world today, which may cast doubt on the usefulness of our arbitrary reallocation of the burials of un-named children.<sup>(4)</sup> On the other hand, the general level of record keeping in Hawkshead in the later 16th century was probably superior to that obtaining today in parts of the world where high foetal death rates occur, so we should perhaps not altogether doubt the genuineness of historical rates so high as these. The second period runs from 1601-1660, and here the foetal death ratios are much lower, ranging between 29 and 44, with the ratio for the decade 1631-40 being rather higher at 62. Yet the level of the ratios in this period is considerably higher than that found in Europe today (10-20), and is nearer the level obtaining in some parts of Africa and the Caribbean. The third period runs from 1661 to 1710, with foetal death ratios considerably higher, ranging between 64 and 77. The 1690s were an outstandingly bad decade, more or less up to the arbitrarily corrected level of the last two decades of the 16th century. Again these late seventeenth ratios are above those usually recorded for the developing world today. The question of the causes of these high ratios in Hawkshead in the seventeenth century, and the problem of how far the recorded still births may include the victims of induced abortion or even infanticide cannot at present be answered. The later seventeenth century seems generally to have been a period of high mortality, and Hawkshead was probably no exception as the consistent surplus of burials over "live births" from 1651 testifies. If Hawkshead is any guide, foetal mortality may be associated with general mortality, for with two exceptions the decades with burial surpluses were also those with high foetal death ratios.

The problems of disentangling the elements of perinatal and infant mortality in Hawkshead are challenging, and we hope to reconstitute the parish registers for the period so that we can analyse it in somewhat more meaningful detail. Nonetheless foetal death ratios themselves are of intrinsic interest, and are not difficult to calculate providing a parish register can be found which apparently records the death of still-born or abortive children carefully. The registers

of Hawkshead are the best that we have found to date in this respect, but we should be interested to hear of any other registers which appear to be suitable for this kind of study, or of any other comparable rates which have already been calculated for other parishes.

R. S. Schofield

#### NOTES

1. See R. Pressat, L'Analyse Demographique (Presses Universitaires de France, Paris 1969), pp. 134-9.
2. An article on the very variable intervals between birth and baptism in a number of parishes in the 16th, 17th and 18th centuries will shortly be published by B.M. Berry and R.S. Schofield.
3. In 1967 the foetal death ratio in England and Wales was 15.1 per 1,000 live births. United Nations Demographic Yearbook (1968), Table 15.
4. An alternative assumption might be that the proportion of baptisms comprised by un-named children in the later sixteenth century was 3.3%, as obtained in the decade 1691-1700 when the foetal death ratio was also very high. This assumption would yield somewhat lower ratios of 102 and 67 for the decades of 1581-90 and 1591-1600.