

PAPERS AND ORIGINALS

Analysis of ethnic differences in perinatal statistics

P B TERRY, R G CONDIE, R S SETTATREE

Summary and conclusions

The 3996 mothers delivered at Dudley Road Hospital, Birmingham, in 1979 were analysed for their ethnic origins. Social classes IV and V predominated in all groups. A high proportion of Indian mothers fell into the low-risk group based on age and parity but had the highest stillbirth and perinatal mortality rates (15.1 and 27.5/1000 respectively) and infants of low mean birth weight (2986 g). Elderly and multiparous mothers were characteristic of the Pakistani and Bangladeshi groups. Young, primiparous mothers were more common among the West Indians and Europeans, in whom the stillbirth and perinatal mortality rates were low; infants in the European group had a mean birth weight higher than in any other group (3231 g).

From these findings ethnic origin of the mother is apparently an important factor in perinatal mortality.

Introduction

The perinatal mortality rate in England has been declining steadily and in 1978 was 15.5/1000.¹ Factors accounting for this include better standards of housing and nutrition, and improved antenatal and intrapartum care. Some workers believe, however, that the perinatal mortality rate would have fallen without active antepartum² and intrapartum^{3,4} management, though most agree that the overall perinatal mortality rate is approaching the minimum possible and that greater effort should be put into obtaining "quality" babies.⁵ Much help in achieving these aims may be obtained from detailed analysis of perinatal statistics to determine "risk factors" along the lines advocated in *British Births 1970*.⁶

Our maternity department serves an inner-city, multiracial population. There is no general-practitioner unit attached, and

except for management of severe rhesus disease mothers are not transferred to other units. We set out to analyse the various ethnic groups in terms of social class, age, and parity and determine to what extent the groups were comparable. We also tried to find the perinatal mortality rates, congenital malformation rates, and mean birth weights in the different groups.

Patients and methods

Information on maternal ethnic origin, social class, age, and parity and birth weight, perinatal mortality, and congenital malformations was obtained from the labour ward register. These data were closely comparable to information obtained from the statistics department of the West Midlands Regional Health Authority but were used in preference, as returns to the statistics department were incomplete. All births in 1979, including unbooked deliveries and those occurring shortly before arrival in hospital, were analysed; in six cases, however, births weights were unobtainable. Of the 4026 deliveries during the year, 30 were multiple.

Differences in incidences of stillbirths, perinatal deaths, and infants with congenital malformations among the various ethnic groups were analysed by χ^2 test with Yates's correction, and differences in birth weights by Student's *t* test.

Results

Of the 3996 mothers in the series, 1687 (42%) were European, 1117 (28%) Indian, 571 (14%) Pakistani, and 415 (10%) West Indian; only 92 (2%) were from Bangladesh (table I). A high proportion of mothers were in social classes IV and V—namely, 80% or more of the Asians and West Indians and 70% of the Europeans.

Teenage mothers were characteristic of the West Indian and European groups. Most Indian mothers had their pregnancies at the optimal age of 20-30 years, while the elderly mother was a feature of the Pakistani and Bangladeshi groups. There was a high prevalence of primiparous mothers in the West Indian and European groups and of grand multiparous mothers in the Pakistani and Bangladeshi groups (table I).

Stillbirth and perinatal mortality rates were highest in the Indian group (table II), and perinatal mortality was high in the Pakistanis. Perinatal mortality was lowest in the Europeans (Europeans *v* Indians: $0.02 > p > 0.01$). Congenital malformation rates were highest in the Pakistani and Bangladeshi groups. Other comparisons of stillbirths, perinatal deaths, and congenital malformations yielded no significant differences ($p > 0.05$).

Dudley Road Hospital Maternity Department, Birmingham B18 7QH

P B TERRY, MB, CHB, registrar
R G CONDIE, MD, MRCOG, clinical senior lecturer
R S SETTATREE, MB, MRCOG, senior registrar

TABLE I—Ethnic distribution, social class, age, and parity of 3996 mothers (figures are percentages)

Ethnic group	No (%)	Social class*				Age group (years)					Parity		
		I & II	III	IV & V	0†	<20	20-24	25-29	30-34	≥35	0	1-4	≥5
Indian	1117 (28.0)	2.3	13.3	80.2	4.2	9.9	41.3	33.4	10.7	4.7	33.2	62.0	4.8
Pakistani	571 (14.3)	1.6	7.5	87.0	3.9	7.2	34.7	31.3	11.1	15.7	17.0	68.7	14.3
Bangladeshi	92 (2.3)	1.1	6.5	89.1	3.3	7.0	26.7	27.9	10.5	27.9	17.4	48.9	33.7
West Indian	415 (10.4)	3.6	7.7	86.0	2.7	24.5	41.6	15.1	7.6	11.2	41.0	52.6	6.4
European	1687 (42.2)	7.5	18.8	70.1	3.6	22.1	36.0	23.0	12.7	6.2	47.4	50.1	2.5
Other‡	114 (2.9)	13.2	36.8	48.3	1.7	16.8	39.0	25.2	12.1	6.9	43.8	53.6	2.6
Total	3996 (100)	4.8	14.7	76.9	3.6	16.2	37.6	26.4	11.5	8.3	37.8	56.3	5.9

* Based on husband's or partner's occupation if married or cohabiting, and woman's if single.

† Represents those never employed, students, and those whose social class was unknown.

‡ Patients mainly from Africa, Middle East, and Far East.

TABLE II—Ethnic distribution and perinatal statistics in 4026 babies

Ethnic group	No	Stillbirth rate/1000	Perinatal mortality rate/1000	Congenital malformation rate/1000	Mean birth weights ± SD (g)		
					Boys	Girls	Total
Indian	1126	15.1	27.5*	19.5	3051 ± 543	2914 ± 596	2986*** ± 573
Pakistani	574	7.0	19.2	29.6	3091 ± 539	3027 ± 525	3059*** ± 533
Bangladeshi	92		21.7	32.6	2991 ± 568	2936 ± 513	2963** ± 538
West Indian	422	4.7	16.6	14.2	3071 ± 584	3034 ± 632	3051** ± 609
European	1698	8.2	13.5	21.2	3302 ± 554	3163 ± 555	3231 ± 559
Other‡	114	8.8	17.5	26.3	3105 ± 682	3089 ± 437	3096* ± 559
Total	4026	9.4	18.9	21.6			

Difference from European group: * $p < 0.02$; ** $p < 0.001$. †Difference between Indian and Pakistani groups: $p < 0.02$.

‡ Patients mainly from Africa, Middle East, and Far East.

Mean birth weights showed the expected sex difference in the Indian and European groups. Indian ($p < 0.001$), Pakistani, Bangladeshi, West Indian ($p < 0.001$), and "other" infants ($0.02 > p > 0.01$) weighed less than European infants. Indian infants weighed less than Pakistani ($0.02 > p > 0.01$). Other comparisons yielded no significant differences ($p > 0.05$).

Discussion

The underprivileged status of the population attending this hospital is shown by the predominance of social classes IV and V in all the ethnic groups. The differences were largely accounted for by differences in social class III, few patients in any of the ethnic groups being in social classes I and II. This distribution probably reflects a tendency for some class I, II, and III patients in the catchment area to book early for delivery elsewhere.

Patients from the three main countries in the Indian sub-continent—India, Pakistan, and Bangladesh—differed appreciably in maternal age and parity. A large proportion of Indian mothers were in the low-risk group so far as age and parity were concerned yet had the highest stillbirth and perinatal mortality rates but a low congenital malformation rate. The high perinatal mortality and congenital malformation rates in the Pakistani and Bangladeshi groups may have been partly related to the increased prevalence of grand multiparous and elderly mothers; these factors are probably due to cultural and religious influences.

The comparatively low mean birth weight of the West Indian babies combined with a low perinatal mortality rate was in keeping with the observation of low birth-weight-specific perinatal mortality rates in American blacks as compared with whites.⁷

The reasons for differences in outcome between ethnic groups, particularly the perinatal mortality rate, are not clear and apparently not related to maternal age, parity, or social class. The relation between birth weight and perinatal mortality warrants further investigation in the major ethnic groups studied. Environmental factors such as dietary deficiencies, cultural differences—for example, application of surma⁸—and maternal diseases such as osteomalacia and anaemia in Asians may be contributory.

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ONE HUNDRED YEARS AGO We learn that the skulls of five Zulus have been received at the museum of the Royal College of Surgeons of England, the first arrival in this country after the late war of the osteological remains of that interesting race. Four of the skulls were picked up off the north-east part of the battle-field of Islandula, and the fifth is that of an old woman who died in one of the caves in the same district, from exposure and starvation. One of the skulls has been completely perforated by a bullet, which has entered the cranium through the upper and anterior part of the left parietal bone, and passed out through the lower and positive part of the opposite bone. There is also a simple fracture, extending on each side of the entrance-wound for some distance. The skulls possess all the characteristics which are typical of the negro races. It is to be hoped that additions will be made to those Zulu skulls now received, and that also some of the officials connected with the British Army in Afghanistan will follow the good example, and send home some skulls and skeletons of the inhabitants of that country. (*British Medical Journal*, 1880.)