

Perinatal mortality in the Cape Province, 1989 - 1991

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Objective. To determine the number of deliveries, the low-birth-weight rate and the perinatal mortality rate at provincial and province-aided hospitals and clinics in each planning region of the Cape Province.

Design. A record of the number of deliveries, low-birth-weight infants, stillbirths and early neonatal deaths in provincial and province-aided hospitals and clinics in each planning region of the Cape Province between 1 January 1989 and 31 December 1991.

Setting. All provincial and province-aided hospitals and clinics in the Cape Province.

Participants. Hospital and clinic staff of all provincial and province-aided hospitals and clinics in the Cape Province.

Main outcomes measured. Number of deliveries, low-birth-weight infants, stillbirths and early neonatal deaths in each planning region of the Cape Province.

Results. A total of 373 768 births were recorded during the 3-year period with a low-birth-weight rate of 14,7%, a stillbirth rate of 17,9 per 1 000 and an early neonatal mortality rate of 9,1 per 1 000. All rates differed widely between regions. The regions with the highest perinatal mortality rates were in the northern and eastern Cape.

Conclusion. The perinatal demographics of most regions in the Cape Province are typical of a developing country. Regions which have been identified as having the highest low-birth-weight, stillbirth and early neonatal mortality rates are in greatest need of improved perinatal health care.

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Perinatal mortality rates (PMRs) and low-birth-weight (LBW) rates are sentinel markers of the overall health status of a geographical region and reflect both the standard of primary health care available and the socio-economic status of the community that lives in that region. The number of deliveries, the LBW rate and the PMR are uncertain in many regions of South Africa. Therefore, a comprehensive,

prospective survey of births in the Cape Province was conducted. This report gives the details of the 3-year period from 1989 to 1991.

Definitions

The following definitions were used in this study. The LBW rate is defined as the number of liveborn infants weighing less than 2 500 g and is expressed per 100 live births. The stillbirth rate is defined as the number of infants born dead per 1 000 total deliveries while the early neonatal death (ENND) rate is defined as the number of liveborn infants who died during the first 7 days after delivery and is expressed per 1 000 live births. The PMR is defined as the number of stillbirths plus ENNDs per 1 000 total deliveries. The above definitions all exclude infants weighing less than 1 000 g.

Method

In 1989 all provincial and province-aided hospitals and clinics in the Cape Province were instructed to report monthly on the number of live births, stillbirths and ENNDs as well as the number of LBW infants delivered in their service. These data were coded on a standardised form that made provision for birth mass categories of 500 g each. The data did not include home deliveries and deliveries in private institutions. Infants weighing less than 1 000 g were not included in this analysis as many stillborn infants weighing between 500 g and 999 g were regarded incorrectly as miscarriages, and therefore not recorded. Hospitals were visited in order to facilitate data collection and to ensure compliance.

The LBW rate, stillbirth rate, ENND rate and PMR were calculated for each of the 25 planning regions as well as for the whole Cape Province. The ratio of stillbirths to ENNDs and the ratio of ENNDs to LBW infants were also calculated for the whole Cape Province. A standardised ratio of ENNDs to LBW infants was also obtained for each region by adjusting the regional ratio to a LBW rate of 14,7 (the mean for all regions).

Results of the 25 planning regions are displayed in thematic maps of the planning regions that were drawn up by means of the Atlas Graphics programme. Walvis Bay in Namibia was included as it was administered as part of the Cape Province during the study period. Similar data which had been collected in a pilot study during 1988 were not included in this report as they were incomplete, especially during the first few months of data collection.

Results

Details of the perinatal data for each planning region are given in Table I. A total of 373 768 births were reported during the 3-year period from 1 January 1989 to 31 December 1991. The number of infants delivered per region ranges from 1 349 in the north-western Cape to 144 036 in Cape Town Metropolis. Most deliveries took place in the urban and peri-urban areas of Cape Town Metropolis and Port Elizabeth-Uitenhage where 39% and 15% of births were recorded respectively.

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Table 1. The number of deliveries, stillbirths (SBs), ENNDs and LBW infants (rates in brackets), and the PMR in each planning region of the Cape Province

Region	Deliveries	SBs	ENNDs	LBW	PMR
Namaqualand	2 179	34 (15,6)	23 (10,7)	287 (13,4)	(26,16)
Central West Coast	3 888	60 (15,4)	33 (8,6)	802 (21,0)	(23,92)
West Coast	11 749	96 (8,2)	55 (4,7)	1 879 (16,1)	(12,85)
Breede River	15 787	255 (16,2)	170 (11,0)	3 490 (22,5)	(26,92)
Overberg	6 015	74 (12,3)	38 (6,4)	1 050 (17,7)	(18,62)
Southern Cape	15 987	269 (16,8)	126 (8,0)	2 852 (18,1)	(24,71)
Little Karoo	5 803	89 (15,3)	56 (9,8)	1 021 (17,9)	(24,99)
Langkloof	2 859	38 (13,3)	19 (6,7)	378 (13,4)	(19,94)
Eastern Karoo	4 386	53 (12,1)	38 (8,8)	880 (20,3)	(20,75)
South-Eastern Cape	9 256	196 (21,2)	104 (11,5)	1 247 (13,8)	(32,41)
Upper Orange	3 991	107 (26,8)	23 (5,9)	508 (13,1)	(32,57)
Eastern Cape Midlands	6 869	118 (17,2)	52 (7,7)	989 (14,7)	(24,75)
Central Karoo	3 872	69 (17,8)	43 (11,3)	888 (23,4)	(28,93)
North-Western Cape	1 349	27 (20,0)	10 (7,6)	328 (24,8)	(27,43)
Upper Karoo	4 525	106 (23,4)	60 (13,6)	820 (18,6)	(36,69)
North-Western Karoo	1 751	36 (20,6)	12 (7,0)	396 (23,1)	(27,41)
Lower Orange River	6 889	194 (28,2)	88 (13,1)	1 165 (17,4)	(40,93)
Griqualand West	3 185	70 (22,0)	35 (11,2)	459 (14,4)	(32,97)
Northern Cape	21 843	555 (25,4)	214 (10,1)	3 080 (14,5)	(35,21)
North-Eastern Cape	5 078	121 (23,8)	46 (9,3)	470 (9,5)	(32,89)
Border Area	32 079	712 (22,2)	355 (11,3)	3 582 (11,4)	(33,26)
Stellaland	3 997	109 (27,3)	28 (7,2)	434 (11,2)	(34,28)
Cape Metropolitan Area	144 036	1 966 (13,7)	796 (5,6)	19 681 (13,9)	(19,18)
Port Elizabeth-Uitenhage	54 772	1 298 (23,7)	911 (17,0)	7 059 (13,2)	(40,33)
Walvis Bay	1 623	24 (14,8)	7 (4,4)	138 (8,6)	(19,10)
Totals	373 768	6 676 (17,9)	3 342 (9,1)	53 883 (14,7)	(26,8)

The LBW rate for the whole Cape Province was 14,7% with a range from 8,6% in Walvis Bay to 24,8% in the North-Western Cape as shown in Fig. 1.

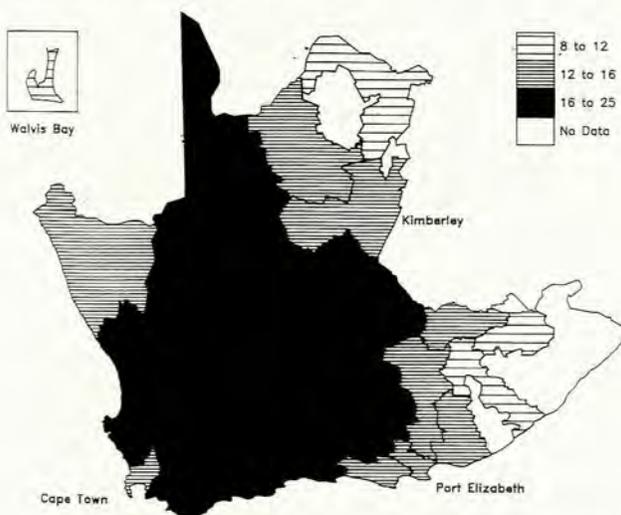


Fig. 1. The distribution of the LBW rate (No. of live births < 2 500 g/ 100 live births) in the planning regions of the Cape Province.

The stillbirth and ENND rates were 17,9 per 1 000 total deliveries and 9,1 per 1 000 liveborn deliveries respectively

for the whole Cape Province. The stillbirth rate ranged from 8,2 in West Coast to 28,2 per 1 000 in Lower Orange River while the early neonatal mortality rate ranged from 4,4 in Walvis Bay to 17,0 per 1 000 in Port Elizabeth-Uitenhage as shown in Figs 2 and 3.

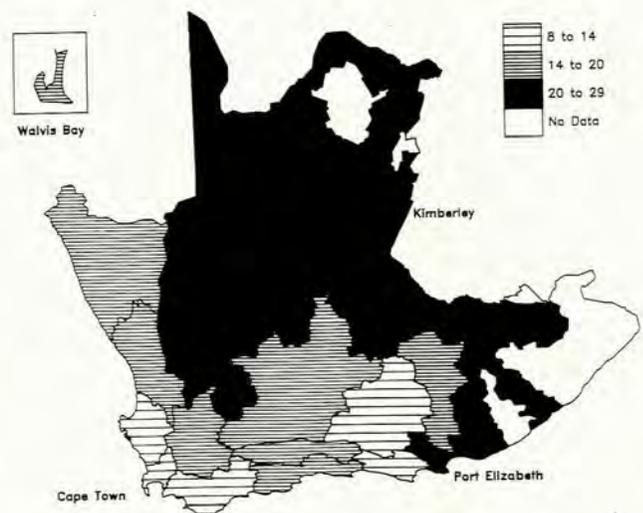


Fig. 2. The distribution of the stillbirth rate (/1 000 total births) in the planning regions of the Cape Province.

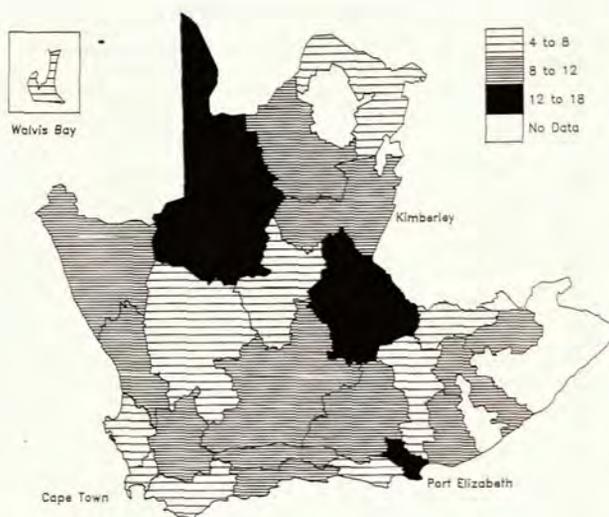


Fig. 3. The distribution of the ENND rate (/1 000 total births) in the planning regions of the Cape Province.

The PMR was 26,8 per 1 000 total births for the whole Cape Province and ranged from 12,9 in West Coast to 40,9 in Lower Orange River. The regional distribution of the PMR was very similar to that of the stillbirth rate.

The ratio of stillbirths to ENNDs for the whole Cape Province was 2,0 and ranged from 1,4 in Eastern Karoo to 4,7 in Upper Orange River. The ratio of ENNDs to LBW infants was 0,06 for the whole Cape Province and ranged from 0,03 in West Coast, Overberg, North-Western Cape and North-Western Karoo to 0,13 in Port Elizabeth-Uitenhage while the standardised ratio of ENNDs to LBW infants ranged from 0,04 in West Coast to 1,9 in Port Elizabeth-Uitenhage. Areas with a high standardised ratio were Border, North-Eastern Cape, and Port Elizabeth-Uitenhage. The latter had the highest ratio. In contrast the western Cape regions of Cape Town Metropolis, West Coast, Central West Coast and Overberg were among the regions with the lowest ratios.

Discussion

Demographic data on the number of infants delivered, the percentage of LBW infants and the PMR within a given geographical region are essential both in assessing the perinatal health status of infants and in planning future improvements in the provision of maternal and infant care. These data were not available previously for the Cape Province as a whole or for all regions within the Cape. The only published regional data were those from the Peninsula Maternal and Neonatal Service in the Cape Peninsula.¹

According to the 1991 census the population of the Cape Province was 6 369 898.² The 373 768 births recorded in the present study probably represent the vast majority of deliveries which took place over the 3-year period. Deliveries at home and in private hospitals were not included and their exact number is not known.

The greatest concentration of deliveries was in the Cape Town Metropolis and Port Elizabeth-Uitenhage regions which together accounted for 54% of all recorded births. Rural regions far from large towns or cities had the lowest concentration of deliveries, especially the regions in the northern and central Cape.

The overall LBW rate of 14,7% in the Cape Province is high when compared with a rate of less than 10% expected in industrialised countries.³ The highest prevalence of LBW infants occurred in the northern, central and southern Cape regions while the lowest prevalence was in the north-eastern and south-eastern regions. Low maternal weight, inadequate diet, poor socio-economic status and pregnancy complications are associated with a decreased birth weight. Particular attention should, therefore, be paid to maternal health and living conditions in those regions where LBW infants are common.

The mean stillbirth rate of 17,9 per 1 000 and the stillbirth to ENND ratio of 2 are typical of a developing country and suggest a high rate of pregnancy complications. This contrasts with stillbirth rates of approximately 5 per 1 000 and a stillbirth to ENND ratio of approximately 1 in industrialised countries.^{4,5} Stillbirth rates were highest in the northern and eastern Cape regions. The common causes of stillbirth in these regions have not been determined but probably include placental abruption and syphilis. The western Cape and parts of the southern Cape had the lowest rates, which suggest better socio-economic conditions and maternal health care services.

The mean ENND rate of 9,1 per 1 000 is higher than those of industrialised countries, which usually have rates of approximately 5.⁵ The rate varied widely between regions, with parts of the northern and central Cape and the Port Elizabeth-Uitenhage region having the highest rates. A high ENND rate may be due either to a large proportion of small or ill infants at birth, or to inadequate infant care during the first week of life.

The mean PMR for the whole Cape Province was 26,8 per 1 000 which, like the stillbirth rate and ENND rate, is closer to that of a developing than a developed country. Most industrialised countries have a PMR of approximately 10 while the rate in developing countries usually exceeds 30.^{4,6} Due to twice the number of stillbirths than ENNDs in the Cape, the regional distribution of perinatal death rates was very similar to that for stillbirths.

The standardised ratio of ENNDs to LBW infants attempts to control for maternal health and socio-economic conditions which determine the health status of infants at birth. Therefore a high standardised ratio, such as that found in the North-Eastern Cape, Border and particularly Port Elizabeth-Uitenhage, suggests inadequate or inaccessible newborn care services.

The Western Cape had low stillbirth and ENND rates despite an intermediate LBW rate. In these regions health care facilities are available to most of the community while socio-economic circumstances are probably better than in many rural areas in the province. In contrast, the Port Elizabeth-Uitenhage region had a high stillbirth and ENND rate despite an intermediate LBW rate. In addition, Port Elizabeth-Uitenhage had the highest standardised ratio of ENNDs to LBW infants, which suggests that the availability of perinatal health services is particularly poor. Some regions

in the central Cape had high stillbirth, ENND and LBW rates, which suggest both poor living conditions and inadequate perinatal care. Of interest are the eastern Cape regions where the stillbirth rate is high in spite of relatively few LBW infants. The reasons for this are uncertain, but intrapartum deaths due to hypoxia in well-grown infants may be common.

The two regions with the highest PMRs were Lower Orange River and Port Elizabeth-Uitenhage. The Lower Orange River region is an area that stretches over a great distance with a low population density and only 6 889 deliveries. A probable explanation for the high PMR is the inaccessibility of health services in this region. In contrast Port Elizabeth-Uitenhage, which is a densely populated region, has a large, unemployed community and many migrants seeking care from limited services.

Having identified regions with many LBW infants and high PMRs, further studies are needed to document the causes and plan appropriate intervention policies. A shortcoming of the present study was that data were collected according to the place of birth and not the place of residence. The results could therefore be influenced by patterns of migration and referral. Coding data according to home addresses would be of greater value but more difficult to collect. All infants weighing between 500 and 1 000 g should also be included in future surveys. These additional data would increase the mortality rates, especially the stillbirth rate.

In conclusion, a survey of perinatal mortality within the planning regions of the Cape Province reveals wide geographical differences and a pattern expected in a developing country. In addition, the survey identifies regions where particular attention must be paid to living conditions and perinatal health services.

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