

Delivering at the right price — the costs of primary maternity care at the Diepkloof Community Health Centre, Soweto

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Abstract This paper reports on a study of the costs of primary maternity care services at the Diepkloof Community Health Centre (DK) in Soweto. DK, the Soweto community health centre system as a whole and numerous other non-hospital settings provide a wide range of maternal health services to substantial numbers of women, and relieve hospitals of a major potential clinical burden. However, no research has been done in South Africa on the relative costs of the provision of these services in different settings and by different types of health worker. The cost structure of these services at DK is presented and the costs of antenatal care, deliveries in midwife-run labour wards, postnatal care (at the health centre and at home) and family planning services detailed. Some comparisons are made with existing data for another community health centre and with Baragwanath Hospital. These results are relevant to policy and planning of maternal health services. They are also shown to be of relevance to management and several areas of potential improvement of these services are noted.

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Maternal health services are a central feature of any primary health care (PHC) delivery system, and debate about the organisation and economics of these services should be central to the broader debate about the structure and functioning of PHC services in South Africa. One obvious concern is that of the relative costs of maternal health services provided in different settings and by different types of health care worker. This is especially relevant in the light of the wide range of settings (e.g. hospitals, community health centres (CHCs) and smaller clinics) and the range of providers (e.g. specialists, general practitioners, midwives and traditional birth attendants).

While relative cost is only one of a range of factors that should determine the appropriateness of different settings for the provision of maternal health services, it is clearly a vital one. It is therefore surprising that little attention has been paid to this issue in South Africa thus far. A review of the local literature over the last 15 years shows that only one recent article has analysed the costs of primary maternity care in some detail.¹

Our paper reports the results of a study of the costs of primary maternity care services at the Diepkloof Community Health Centre (DK) in Soweto. The study formed part of a larger study of the costs of urban PHC services, the rationale, aims, methods and other results of which are reported elsewhere in this journal.² It is

important to note that this study did not aim to compare the costs of maternity care at different settings, but rather to gain detailed insight into the cost structure of one particular PHC setting. While such cost analysis studies can provide the basis from which to conduct comparative costing studies, they are in themselves useful in the planning of maternal and other health services. During the year in which this study was conducted (the financial year ending March 1990), the Soweto CHC system delivered a full range of primary maternity care services from 7 CHCs. These services included antenatal care, deliveries in midwife-run labour wards, postnatal care (at the CHC and at home), and family planning services. Antenatal and postnatal care were also provided at a further 3 CHCs. The importance of this primary maternity care system is evident in the utilisation data for the same financial year, which show that this system was responsible for approximately 23 000 labour ward admissions, 12 500 completed deliveries, 144 000 antenatal visits, 35 000 postnatal visits, and 80 500 family planning consultations. DK itself accounted for 21% of all labour ward admissions, and for 10% of all antenatal and postnatal visits during this period.

Methods

Cost and utilisation data were determined for March 1990. The costing methodology used in this study has been described in detail elsewhere.²³ Utilisation data were obtained from an analysis of daily statistics kept in the CHC, except in the case of the labour ward; those daily statistics were incomplete, so only the monthly summary statistics were used.

Results

Labour ward

DK has a 24-hour labour ward, staffed by midwives who work under the supervision of an advanced midwife and the general practitioners employed at the CHC. The midwives provide all care in the labour ward and refer problem cases to the advanced midwife, who may herself refer to one of the doctors, or to Baragwanath Hospital if necessary.

Three hundred and ninety-four admissions and 225 deliveries were recorded in March 1990, giving an average of 12,71 admissions and 7,25 deliveries per day. The monthly average number of admissions was 388, while the highest number of admissions for any month of the year was 468. Analysis of the monthly figures for admissions and deliveries over the year indicates no secular trend in these areas. Fig. 1 shows the outcomes of patients admitted during March. One per cent of all admissions to the labour ward were referred to doctors during March, while the monthly average was 3%.

Cost analysis showed that the labour ward accounted for 25% of the total costs of DK.³ As with other clinical sections, capital costs were a minor factor, accounting for 2% of total costs.³ Details of the running costs of the labour ward are shown in Fig. 2, which indicates that

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FIG. 1.
Outcome of labour ward admissions.

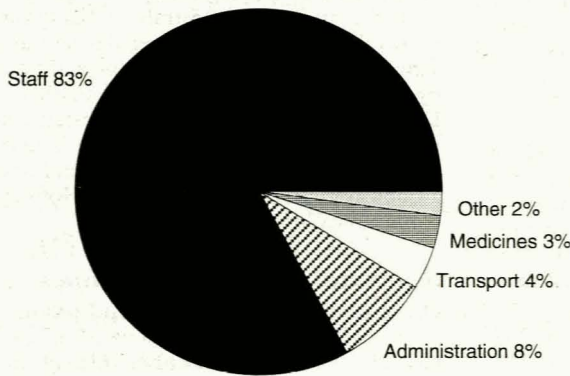


FIG. 2.
Labour ward running costs. 'Other' = lights, uniforms, dry dispensary disposables, laundry.

staff costs account for 83% of total costs. This is higher than for the CHC as a whole (where 59% of total costs comprised staff costs), and for all other clinical sections individually.³

Fig. 3 shows the average cost per admission to the labour ward in March, as well as the costs based on monthly average and on peak monthly admissions data. These figures include the cost of medicines, for which the average cost per admission was R5,87. It is difficult to calculate an accurate cost per delivery completed at DK, since the figure for admissions includes completed deliveries, infants born before arrival, transfers, and those 'not in labour'.

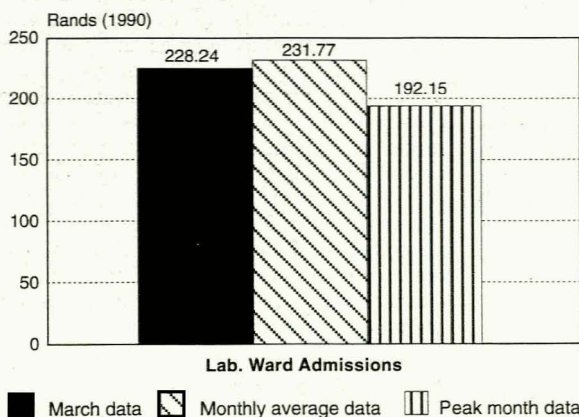


FIG. 3.
Costs of labour ward admissions.

Antenatal and postnatal services

DK provided 1 004 antenatal clinic (ANC) visits during March 1990. The monthly average was 948, and the highest number of visits in 1 month was 1 140. Ninety-four per cent of the visits were undertaken by midwives alone, with a 6% referral rate to doctors. Seven per cent of patients seen in March were referred to Baragwanath for continuation of their antenatal care.

Patients delivering at DK, or who are referred to Baragwanath Hospital from DK, are requested to come to the CHC for one postnatal clinic (PNC) visit 6 weeks after delivery. Analysis of the PNC data shows that there were 128 visits in March, of which 9% were referred to the doctors. The monthly average number of visits was 155, and the highest recorded number in 1 month 222. We estimate that 38,2% of women giving birth at DK during the study period (or being transferred from DK to Baragwanath while in labour) attended the PNC.

Since all visits to the ANC and the PNC clinics are performed by the same staff, it was not possible to disaggregate the costs of these two services. Fig. 4 shows the average cost of an ANC/PNC visit for March in the light of monthly average and peak month data. These costs include the costs of tests (R3,70 per visit), and medicines (R1,07 per visit). The average cost of a visit without tests and medicines in March was thus R25,20.

Postnatal home visits

The Soweto CHCs provide two home visits by trained midwives, in the days after a mother is discharged. Four hundred and seventy-seven postnatal home visits were made during March, with an average of 2,07 visits per birth at DK and at an average rate of 4,87 visits per nurse per day. Analysis of the figures for all months indicates a significant downward trend over the year, so that the figure for March is lower than the monthly average of 699 visits. The highest number of visits in one month was 836. The costs of postnatal home visits are also shown in Fig. 4.

These data show that a comprehensive package of maternal health services, including 6 ANC visits, a delivery completed in the CHC, 2 postnatal home visits and 1 PNC visit, would have cost R543,84 in March, R517,93 in terms of monthly average data and R426,14 in terms of peak month data (these calculations assume that the cost per delivery is the same as the cost per admission).

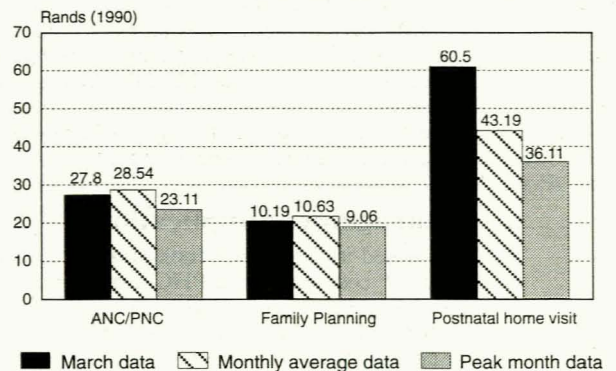


FIG. 4.
Costs of other maternal health services.

Family planning services

The family planning section provided 1 720 consultations during March 1990. There was a significant upward trend in the numbers of consultations over all

months of the year, with a monthly average of 1 650, and a peak of 1 936. The costs per consultation in this section are shown in Fig. 4.

Discussion

Policy implications

The data cited here have shown that DK and the Soweto CHC system as a whole provide a wide range of maternal health services to a substantial number of patients. In so doing they relieve Baragwanath Hospital of a large burden of ambulatory and inpatient care. This suggests that the question of whether these services could be more efficiently provided in a hospital setting or elsewhere is presently a theoretical one. In Soweto the currently available hospital services would not be able to cope with the load carried by the CHC system. However, from the point of view of planning of primary maternal health services in other parts of the country, the relative cost of these services in hospitals, CHCs and other settings is obviously crucial. While this study has not been a comparative one, it does provide the basis for some tentative comparisons.

Research recently completed at Alexandra Health Centre (AHC) showed costs for 1990 that are very similar to those reported here¹ in respect of maternity ward admissions (R218,15 at AHC), family planning consultations (R10,48), and PNC visits (R32,11). ANC visits (R18,65) were somewhat cheaper at AHC than at DK. The similarity of these costs is not surprising, given the similar staffing structure of the maternal health services at these two institutions, and the major role played by staff costs in the total cost structure of these services. While these comparisons shed no light on quality of care and outcome, and should be treated with some caution, they are nevertheless useful in providing some confirmation of the cost structures of maternal health services in an urban CHC setting, and therefore in strengthening the basis on which these settings can be compared to others.

In the case of comparisons with hospital settings such as Baragwanath, intuitive expectations suggest that the CHC setting should be significantly cheaper than the hospital for several reasons; these include the lower staff costs (CHCs rely almost entirely on midwives rather than on a large complement of doctors), lower overhead costs and shorter average lengths of stay.

Unfortunately, no estimates for the costs of maternal health services at Baragwanath or comparable hospitals are available at present. Rigorous comparisons of the costs of primary maternal health services in different settings are therefore necessary if informed policy decisions are to be made. Such comparisons should now be regarded as a research priority.

Management implications

As noted in the introduction and other papers from this study,²³ cost analysis in PHC settings is also useful from a management point of view. This cost analysis assesses whether/how the costs of the different components of maternal health services at DK could be reduced.

Labour ward

Because labour ward costs comprise mainly staffing costs, significant cost reductions can come only from a reduction of staff costs or from an increased turnover of patients. The relatively high staff costs in the labour ward are explained by the use of highly trained midwives and nurses, on whom the service is centred, and whose presence results in a low rate of referral to doctors.

Labour ward costs are also high because it is the only part of the CHC that operates for 24 hours a day. In our view, it is unlikely that the staff costs could be significantly reduced without substantial alteration of the method of operation of the labour ward.

The study does however suggest that there is some capacity for increased turnover of patients within the labour ward. As noted earlier, the peak number of admissions per month during the year was 19% higher than the March figure, and an increase in turnover of this magnitude would have reduced the average cost per admission by 16%. It is important to note, however, that turnover of patients was already rapid at the March admission rate, with discharge occurring within 6 hours of delivery if possible, and after a maximum of 12 hours. In addition, services such as a labour ward require a staff complement that can cope with increases in workload during peak periods of demand, so that if the average monthly turnover increased to more than 450, additional staff would probably be required.

If the number of referrals to Baragwanath could be reduced, the average cost per delivery at DK could be significantly reduced, as could the additional costs borne by the obstetrics unit at Baragwanath Hospital. While DK remains a midwife-centred obstetric service, a high rate of referral to a hospital centre is unavoidable. This referral is largely protocol-driven, and appears to be at an appropriate level at present (J. Hofmeyr — personal communication).

Antenatal and postnatal clinics

Our analysis of the antenatal and postnatal clinics suggests that significant reductions in the average cost per visit could be achieved either through increased numbers of visits per day, or by a reduction in the staff complement required to attend to the present number of visits. Most of the nurses' clinical work is completed in the morning, with the afternoon spent on administrative duties. This suggests that there is sufficient staff to deal with an increased patient load; this is confirmed by the significantly higher number of cases seen in the busiest months. In the absence of increased patient numbers, the present clinical load could therefore be carried by a smaller complement of nurses.

Postnatal home visits

The cost per postnatal home visit for March 1990 was 2,2 times the cost of an average ANC or PNC visit to the CHC. This is explained by the low rate of visits per nurse per day. The cost analysis of general medical services at DK noted a similar pattern for general home nursing visits.² The inefficiency of this service is partly the result of drivers waiting for nurses to complete each visit; a drop-off system would be more efficient, and each nurse should be allowed to move around independently. The monthly average and peak month data indicate that, despite the inefficient system currently in use, the capacity for carrying out additional visits within the present staff complement exists. This would have a dramatic impact on average costs per visit, as illustrated earlier. In the light of peak month data, for example, the cost of a home visit would be only 1,6 times greater than the cost of a CHC visit. The expense of these visits nevertheless suggests that improvements in efficiency are an urgent priority, and that if such improvements cannot be attained, consideration should be given to reducing the number of such visits.

Family planning

The lower cost of family planning visits relative to other clinic visits reflects relatively high visit rates, and relatively minimal staff requirements. It is also due to the

fact that medicines are supplied free of charge to the CHC. Even here, however, the peak monthly data suggest the existence of excess capacity.

This brief review of some of the management implications of our cost analysis indicates that there are several areas of potential improvement in efficiency in the maternal health services at DK and that in some cases, these improvements could be attained with relatively minor management interventions. These observations are also of direct policy relevance, because reductions in average costs of these services have implications for decisions on whether such services could or should be extended to other areas of the country.

Conclusion

This paper, together with others from this study,²³ has argued forcefully for the application of cost analysis techniques to PHC settings to help assess the appro-

priateness of different settings and services. This paper in particular has demonstrated the usefulness of this technique to organisational aspects of primary maternal health services in an urban PHC setting. Cost analysis, and perhaps more importantly, comparative costing studies should now be carried out in a wide range of public and private maternal health care settings.

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