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A Cost Analysis of Community-Based Distribution Programmes and Clinic-Based Services for Contraceptives in Selected Areas in Khayelitsha

by

EDINA SINANOVIC

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ABSTRACT

Family planning services in South Africa are now provided by the provincial and local authorities through clinics, hospitals, day hospitals, and mobile clinics. Both service providers and recipients have identified a range of problems with the current family planning service delivery system. Community-based distribution of contraceptives (CBD) has become a generally accepted alternative to clinic-based programmes for the distribution of contraceptives in many developing countries. The piloting of community-based distribution of contraceptives project in Khayelitsha, Cape Town / South Africa, is being undertaken by The Planned Parenthood Association of South Africa (a non-governmental organization), in collaboration with two other NGOs who run preventive and promotive health projects, SACLA and Zibonele.

The objective of this study was to perform a cost analysis of alternative methods for providing effective contraceptive services. Clinic-based services for contraceptives, day hospital-based contraceptive services, and community-based distribution (CBD) of contraceptives programmes were evaluated. The following items were costed: salaries, contraceptives, buildings, equipment, vehicle, transport, repairs & maintenance, utilities, initial training, short-in-service training, and consultancy. The unit costs were obtained by dividing total costs by the number of consultations/home visits. The average cost per consultation for the clinics was R43 and the average cost per home visit for the CBD of contraceptives programmes was R40. The day hospital was also costed and revealed a much higher unit cost of R106. These results indicate very little, unless the "quality of care" is taken into account.

The CBD of contraceptives must be recognised as important method of primary health care provision, and as such should be incorporated into the national family planning programme. As a programme it is designed to complement and supplement traditional clinic-based services, and should be viewed as a integral component of the health system, not as a substitute.

CHAPTER ONE
PURPOSE AND SCOPE

1.1 Introduction

With a Gross National Product (GNP) per capita of US$ 2 980 and a Human Development Index of 0,649 in 1993, South Africa is classified as an upper-middle income country with a medium level of human development (Draft White Paper for a Population Policy, 1996). The economic growth rate has fluctuated between 4,2 per cent and -2,2 per cent over the past ten years. World bank estimates indicate that the average annual GDP growth rate declined from 3,2 percent for the period 1970-93 to 0,9 percent for the period 1980-93. With an average annual population growth rate of over 2,0 percent throughout these periods, a negative average annual growth rate of -0,2 percent in GNP per capita was estimated for the period 1980-93. These figures indicate declines in the standard of living. With existing inequities of access to resources, these declines are likely to have been more acutely felt among the disadvantaged sub-groups, which constitute the majority of the population. However, recent economic growth rates have increased to 2,7 percent in 1994 and 3,3 percent in 1995.

According to the 1996 census, the population size of South Africa is 37,859,000 (Central Statistical Service). Projections by the United Nations indicate that the population size may increase to 46,3 million by the year 2000 and to 56,4 million by the year 2010. The average growth rate is currently estimated at 2,17 percent per annum, having declined from about 2,26 in the 1990-95, and from 2,6 in the 1965-75 period. The population growth rate is projected to decline further to about 1,99 percent in the 2000-2010 period. At the current rate of growth, the country's population size will double in the next 32 years. About four out of ten South Africans (37,3 per cent) are under 15 years of age; 58,3 percent are between 15 and 65 years; while 4,4 per cent are 65 years and older. The population is relatively young, with a consequent built-in momentum for future increases in the overall size of population. The crude birth rate is estimated at 31,2 per 1000 in the 1985-90 period, down from 37,2 per 1000 in the 1970-75 period. The total fertility rate estimates range between 3,9 and 4,09. The fertility structure is characterized

structure is characterized by a high incidence of high risk childbearing. Teenagers and women over 35 years of age accounted for 15 and 16 percent of births respectively in 1993. There is a considerable gap between preferred and actual family sizes, indicating that many couples are not able to achieve their preferred family size (Draft White Paper for a Population Policy, 1996). The contraceptive prevalence rate is high, and was estimated to be 60 percent for married women in 1994. Like fertility, the mortality rate for South Africa has been declining over time, leading to an increase in the expectation of life at birth (an increase from 49 years for both sexes in 1960 to 64 years in 1994). The crude death rate was estimated to be 9,4 per 1000 persons in 1994, down from 14 per 1000 persons in 1970. The infant mortality rate, an important indicator of the quality of life and level of development of a population, was estimated to be 41 per 1000 live-births in 1994, less than half the rate of 89 per 1000 live-births in 1960. The maternal mortality rate, an important indicator of the reproductive health and socio-economic status of women, was estimated at a high of 230 per 100 000 deliveries in 1993 (Draft White Paper for a Population Policy, 1996).

A review of health expenditure and finance found that South Africa spent 8.5 percent of its Gross Domestic Product on health care in 1992/93 (McIntyre et al., 1995), and yet its population suffers largely from preventable illness and premature deaths, mainly due to the maldistribution of resources. In the year under study, sixty-one percent of funds available for health care were derived from private sources, while only 23 percent of the population had access to private care on regular basis. Within the public sector, hospitals consumed most of the recurrent budget, with academic and tertiary hospitals alone accounting for 44 percent. Lastly, public health care resources were concentrated in high income areas, where many people also have good access to private health care.

There are a number of characteristic features of the structure and pattern of mortality in the country, that are of relevance to this study. All aspects of South African health services came under critical review during the pre-election period and again after the elections. As part of this process, the concept of sexual and reproductive health was introduced for the first time. Some of the major national population concerns are a high incidence of teenage pregnancy, and high rates of infant and maternal mortality, linked to high-risk child bearing. Sexually transmitted diseases (STDs) are common in South Africa. Not only do STDs cause significant morbidity and

mortality but they are also a major co-factor in the spread of HIV. According to the World Bank (1994), the annual incidence of all STDs in South African adults is 11%. The incidence of premature death due to AIDS is currently low but is likely to increase substantially in the future.

1.2 The Study Objectives

The objectives of the study were to:

1. calculate the total costs of providing contraceptive services through pilot CBD programmes offered by Planned Parenthood Association of South Africa (PPASA), Zibonele, and South African Christian Leadership Association (SACLA);
2. calculate the total costs of providing contraceptive services within existing local authority clinics (Empilisweni clinic, Mayenzeke clinic, and Luvuyo clinic), and a day hospital (Michael Mapongwana Day Hospital) situated in the areas of Khayelitsha where PPASA, Zibonele and SACLA operate;
3. estimate the total cost of setting up a national CBD of contraceptives programme;
4. perform a sensitivity analysis (i.e. to assess the sensitivity of these results to changes in certain assumptions); and,
5. formulate policy recommendations based on the findings.

1.3 Justification and Significance of the Study

The issue surrounding the role, function, performance and cost effectiveness of Community Health Workers (CHWs) and their place within a transformed South African health care system has been the subject of ongoing debate in recent years. For many non-governmental organisations (NGOs) and progressive thinkers, CHWs are seen as a vital part of the Primary Health Care (PHC) approach, and as partners in health care delivery, especially in peri-urban and rural areas. In contrast, there are those who view CHWs as a non-priority personnel and question their role and impact on health and development.

The Planned Parenthood Association of South Africa is undertaking an overall initiative to investigate whether community-based distribution (CBD) of contraceptive services is a cost-effective way of delivery family planning services.

Underpinning this initiative is the assumption that such models must be integrated within existing primary health care services, that they must provide quality services, promote principles of equity and be cost-effective and sustainable. Such non-formal health providers need to contribute to the restructuring and evolution of the formal health delivery system.

Due to time and financial constraints, effectiveness data was not collected, and thus only cost analysis was performed. In providing explicit baseline information on the cost data of clinic-based services for contraceptives and CBD of contraceptive services programmes, the study will present various matters for consideration to national and provincial policy-makers, as well as district level health managers. These issues are considered vital for health planning and policy decisions and relate directly to the current position of CBD of contraceptive services programmes within the health system and the long term sustainabilty of programmes.

A characteristic feature of the research project is to transfer capacity and develop the research skills of staff of the CBD programmes by using a participatory approach (consulting on the research protocol, the objectives and associated methodology).

CHAPTER TWO
LITERATURE REVIEW

2.1 Overview of Contraceptive Services in Developing Countries

Modern contraceptive methods have played a key role in lowering fertility in developing countries. Among women of reproductive age, half now depend on such methods as female sterilisation (the most popular), male sterilisation, hormonal implants such as Norplant, injectable such as Depo-Provera, intrauterine devices (IUCDs), oral contraceptives, male and female condoms, and diaphragms. The first four methods are almost 100 percent effective in preventing conception. Next are IUCDs, followed by oral contraceptives and male condom. Diaphragms and spermicides are among the least effective contraceptive methods. Condoms - both the male and female type - are the only methods currently available that provide some protection against sexually transmitted diseases, and AIDS. In the coming decade, contraceptive practice is going to be more and more influenced by the presence of STDs and the further spread of AIDS. Finally, traditional methods of fertility regulation include rhythm method, coitus interruptus and prolonged breast-feeding.

It is essential that service providers are honest about the limitations as well as the advantages of specific methods. Acceptance and continuation rates are highest when users know what to expect (Prabhavathi and Sheshadri, 1988).

The growth in use of contraceptives and the decline in fertility in developing countries is closely tied to expanding educational opportunities for women. Increased literacy makes it easier for women to get reliable information on contraception, whereas the demands of education, particularly at the post secondary level, cause women to delay marriage and childbearing. Sub-Saharan Africa, the region with the highest fertility rates, has the lowest female education levels.

Some developing countries, such as China and Cuba are already below the replacement level of 2,1 children, in large part because of modern fertility regulation methods (Scientific American, 1996). Countries such as Brazil, Indonesia, Vietnam, South Africa, Turkey, Egypt and India

should reach this goal within the next decade or so. At the other extreme are nations such as Pakistan and Nigeria, which are unlikely to reach replacement rate for several decades to come. Few woman in these high-fertility countries use modern contraception.

The demand for family planning exists and the technology for fertility regulation can be made to work. The most immediate problem in most developing countries is to increase access to family planning services. Various studies suggest that the greater the variety of methods available and the greater the number of distribution outlets, the higher the contraceptive prevalence (Jain, 1989; Tusi and Ochoa, 1989; and Rodriguez, 1978). The major limitations in achieving smaller families in many developing countries include restrictive medical practices, poor management and government policy bottlenecks, and bureaucracy in donor organisations (Potts and Crane, 1993). A great many programmes are still hobbled by the conviction that family planning will be acceptable only if it is closely linked to medical, primary health care services. The observational data prove the opposite: whenever oral contraceptives are taken off prescription, or distribution is widened, their use rises (Rosenfield et al, 1982; Rosenfield, 1971). Experiences form Zimbabwe, Kenya, Tanzania, and Thailand have shown that community-based distribution (CBD) programmes that incorporate information, education, and the provision of contraceptive products, increases contraceptive prevalence (Phillips and Greene, 1993).

2.2 Providers of Contraceptive Services in South Africa

2.2.1 State Sector Provision

Family planning services in South Africa are now provided by the provincial and local authorities through clinics, hospitals, day hospitals, and mobile clinics, the latter mainly in rural areas and informal settlements. The Family Planning Sub-Directorate of the National Department of Health is responsible for overall policy and financing, and for research, training and education. There are currently about 65 000 family planning services points in the country. Official statistics show that these types of services access at best 50% of the population (Annual Family Planning Statistics, Department of National Health and Population Development, 1993).

Nurses, doctors and health advisors provide the state-run family planning services with the family planning trained registered nurse being the primary provider. Until 1992 the Provincial Authorities employed family planning advisors who provided community education and health promotion in family planning. In 1993 family planning advisors were moved from the provincial authorities to fall under the Department of National Health and Population Development. In most regions the role of these workers has been expanded and many of them now function as primary health care educators.

2.2.2 Private Sector Provision

Private gynaecologists, general practitioners and some specially trained pharmacists provide contraceptive services. Official government data on contraceptive provision does not include private statistics. Medical schemes which are linked to the formal employment sector cover six million people. These schemes do not pay for contraceptive products but there is growing pressure on them to review this policy.

2.2.3 Non-Governmental Organizations (NGOs)

Unlike in other African countries the provision of contraceptive services by NGOs in South Africa is limited. At present, three NGOs are working in the field of sexual and reproductive health, the Planned Parenthood Association of South Africa (PPASA), the Association for Voluntary Sterilisation, and Marie Stopes International.

PPASA is the oldest and largest NGO working exclusively in the field of sexual and reproductive health. It works from seven provincial offices and provides education, training and advocacy in the field of reproductive and sexual health. The services provided by the organisation focuses on aspects of reproductive health, presently not covered by state services: these are contraceptives and information services, a condom social marketing campaign, a CBD programme for condoms and oral contraceptives, a male involvement programme, and a life skills sexuality education at schools.

The Association for Voluntary Sterilisation is dedicated to promoting male and female sterilisation services. Marie Stopes International offers fertility regulation services, counselling and abortion services.

2.3 Quality of Care

A useful framework for assessing quality of care from the client's perspective consists of five parts: choice of methods; information given to clients; technical competence and interpersonal relations; follow-up and continuity of care; and, appropriate constellation of services (Bruce, 1990). Each of these elements of the "quality of care" is explained in more details, below.

Choice of methods is not only the first, but a fundamental element of providing quality in services. The "user prospective" in family planning emphasizes that providers must understand that clients may wish to switch from one method to another - perhaps even several times. This is an integral part of client satisfaction and control, and thus of continuity of contraceptive use.

An essential component of good quality care is the client's ability to maintain control over the decision-making process, based on full and accurate information about the risks and benefits of alternative choices. Often it is those most often in need - the uneducated, the unemployed, and adolescents - who have the least access to accurate source of information.

The service has to provide an acceptable level of interpersonal care and technical competence. Whilst it is relatively easy to recruit a family planning acceptor, what is important is whether an acceptor remains a user, which depends in large part on how satisfied she/he is. Concentrating on recruiting a small number of family planning acceptors per year and taking good care of them is a better strategy than trying to recruit a large number of dissatisfied acceptors (Jain, 1989). Contact between client and provider after the first encounter is usually irregular. In part, this is because inadequate attention has been given to establishing continuity or follow-up mechanisms. Where the health infrastructure is very weak, and services and workers scarce, follow-up visits for family planning might be integrated with those for other purposes.

Finally, an appropriate constellation of services, referring to services' convenient location, responsiveness to clients own health concepts, and ability to meet pre-existing health needs, are desirable.

2.4 Community-Based Distribution (CBD) of Contraceptives

Community-based distribution (CBD) has become a generally accepted alternative to clinic-based programmes for the distribution of contraceptives in many developing countries (Gallen and Rinehart, 1984). CBD is not a single strategy but various approaches to service delivery in which non-technical people, namely CBD agents or community-health workers, often chosen by and from the community are trained to provide reproductive health education and promotion, to demystify community misconceptions about family planning and sexually-transmitted diseases (STDs) as well as providing contraceptive supplies to community residents in variety of settings outside of clinics (e.g. door-to-door).

Community-based distribution originated in Asia in the 1960s with projects in Thailand, Taiwan, and Korea that led to a profileration of the strategy throughout Asia and Latin America in the 1970s and 1980s, but it did not begin in Africa until the 1980s (Gallen and Rinehart, 1984). The success of the strategies employed by early Asian programmes were instrumental in the development of national family planning programmes, not only in the East Asian region, but also in other countries and regions (Freedman, 1987). The introduction of CBD in Asia and later in Latin America demonstrated that contraception was in demand, and that non-clinical distribution was feasible and acceptable to local populations (Freedman, 1987; McGuire, 1984; Bertrand, 1991). When Asian pilot projects demonstrated that CBD was a viable service delivery option, family planning programs were developed with major CBD components.

To date, reports in the family planning literature indicate that community-based distribution programmes are operating in The Gambia, Ghana, Kenya, Lesotho, Mali, Nigeria, Rwanda, Sierra Leone, Sudan, Tanzania, Zaïre and Zimbabwe. These range from small demonstration projects in selected areas, to a widespread, systematically organised network of distributors covering a large geographical area (e.g. Zimbabwe). Nevertheless, community-based distribution

is an untapped resource that reaches only a tiny part of the African population (Birdsall and Sai, 1988).

Three key findings have been directly relevant to CBD initiatives in Africa:

1) CBD is feasible and effective;
2) CBD is safe; and,
3) Pilot schemes are important to national level success (Freedman, 1987).

2.5 Community Health Workers' Debate

The issue surrounding the role, function, performance and cost-effectiveness of community health workers (CHWs) and their place within a transformed South African health care system has been the subject of ongoing debate in recent years. For many NGOs and progressive thinkers, CHWs are seen as a vital part of the primary health care (PHC) approach, and as partners in health care delivery, especially in peri-urban and rural areas. In contrast, there is a view that sees CHWs as non-priority personnel and question their role and impact on health and development. The latter sentiment is linked to the limited evidence on the effectiveness of the provision of community-based interventions through CHWs to the indigent and marginalised sections of communities. Makan and McMurchy (1996) showed that CHWs are making an important contribution to the delivery of comprehensive PHC, particularly in marginalised and rural communities. An important finding of this study was that CHWs effectively use curative visits as a platform for providing health education. Thus, curative and preventive roles of CHWs are integrally linked.

CHAPTER THREE
THE STUDY AREA

3.1 The Study Area

Khayelitsha, with an estimated population of 350 000, is the largest and most rapidly growing peri-urban area in the Western Cape. Family planning services are conducted by the local and provincial authorities and provincial councils through clinics and day hospitals, and are integrated with other primary health care activities (child health, tuberculosis, etc.). Both service providers and recipients have identified a range of problems with the current family planning service delivery system. The main problems within service provision were seen as: insufficient staff, inadequate time with clients particularly for proper communication regarding methods and for counselling, lack of privacy in service provision and lack of opportunities to provide physical examinations for clients (Marks and Cooper, 1996)

The piloting of CBD of contraceptive services in Khayelitsha is being undertaken by Planned Parenthood Association Western Cape in collaboration with organisations which run preventive and promotive health projects, SACLA and Zibonele.

3.2 Alternative Ways of Providing Contraceptive Services in Selected Areas in Khayelitsha

3.2.1 Clinics

Empilisweni clinic, Luvuyo clinic and Mayenzeke clinic are all situated in the areas in which the CBD of contraceptives programme is being piloted. They all operate within the standard weekday working hours. They provide a comprehensive service including TB services, child care, family planning services and nutrition services. All the clinics had a variety of methods available. However, the overwhelming majority of clients use injectable contraceptives. The methods provided in all the clinics are fairly uniform. A few client use the oral contraceptive pill.

Providers believed that injectables were most commonly used because of the ease of use for both clients and providers, with the infrequency with which the method needed to be administered being a major factor. The following contraceptives are available in each of the three clinics: injectables (Depo Provera and Nur-Isterate), oral contraceptives (Triphasil, Nordette and Microval), and male condoms. Most young clients use injectables or the condom, while older clients use injectibles or the oral contraceptive pill. Table 3.1 provides a breakdown of categories of staff working in the clinics. The nurses oversee the operations of the clinics. Table 3.2 gives activity data for the clinics.

Table 3.1: Types of personnel working in the three clinics

PERSONNEL	EMPILISWENI CLINIC	LUVUYO CLINIC	MAYENZEKE CLINIC
Senior professional nurse	2	-	1
Professional nurse	4	3	1
Enrolled nursing-assistant	2	1	1
Clerk	2	1	1
General assistant	2	2	2
Community health worker	1	-	-
Family planning officer	1	-	-

Source: Cape Metropolitan Council - Department of Health

Table 3.2: Activity data for the clinics (1995/96)

CLINIC	TOTAL VISITS	FAMILY PLANNING VISITS (%)
Empilisweni	43 679	13 012 (30%)
Luvuyo	14 853	4 166 (28%)
Mayenzeke	19 106	4 655 (24%)

Source: Cape Metropolitan Council - Department of Health

3.2.2 Day Hospital

The recently established Michael Mapongwana day hospital, one of two day hospitals in Khayelitsha, is also situated in the area in which one of the CBD of contraceptives programmes operates. It provides curative, promotive, preventive, rehabilitative, reproductive, geriatric, psychology, obstetric, nutrition, school health and child health services. Table 3.3 provides a breakdown of categories of personnel working in the day hospital. Two professional nurses are in charge of family planning services full time. Consultations on contraceptives are also offered in the maternity section (after delivery).

Table 3.3: Personnel working in Michael Mapongwana Hospital

Nursing services manager 1	Social worker 1
Chief professional nurse 2	Physiotherapist 1
Professional nurse 47	Oral hygienist 1
Staff nurse 11	Radiographer 2
Nursing assistant 23	Dental therapist 1
Medical officers 8	Clerk 14
Porter 5	Housekeeper 1
Driver 1	Switchboard operator 3
Auxiliary service officer 4	Cleaners 10

Source: Provincial Administration of Western Cape - Department of Health

Total number of visits in 1996/97 was 61 908. Total number of visits for family planning was 3 892, or 6.3%. The same types of contraceptives found in the clinics are available in the day hospital.

3.2.3 CBD of Contraceptives Programmes

A programme for the distribution of contraceptive services through CBD agents/community health workers in Khayelitsha was initiated in March of 1996. Each NGO employs and supervises its own set of CBD agents/community health workers who provide the contraceptive services to a specified area within Khayelitsha, and each NGO uses a slightly different model of health worker functioning.

SACLA uses CHWs who have previously provided primary health care and who now have added more extensive contraceptive services to their existing services. Zibonele has Woman Wellness Workers who focus on delivering services that foster women's wellness and they too have added more extensive contraceptive services to their existing ones. Lastly, PPASA's agents were hired specifically for this CBD programme and are solely dedicated to providing the contraceptive services it offers All health workers delivering CBD underwent training which focused on communication and counselling skills and knowledge of contraceptive methods and their risks and side-effects (Marks and Cooper, 1996).

Table 3.4 gives a breakdown of personnel working for the three CBD of contraceptives programmes.

Table 3.4: Personnel working for the CBD of contraceptives programmes

PERSONNEL	PPASA	SACLA	ZIBONELE
CBD agent	4	-	-
Community health worker	-	13	3
Coordinator / project manager	1	1	1

Total numbers of home visits for the CBD programmes in 1996/97 were 5 761 (PPASA), 1 726 (SACLA), and 940 (Zibonele). The contraceptives provided include oral contraceptives (Nordette, Triphasil, and Microval), male and female condoms.

The CBD programmes provide a package of essential family planning services, namely:

1. health education aimed at:
   a) increasing knowledge and use of family planning and promoting effective use of methods chosen;
   b) increasing awareness of the consequences of unsafe abortion; and,
   c) increasing awareness of the risks of STDs/AIDS and adolescent fertility.
2. family planning counselling services;
3. regular supply of contraceptives (oral contraceptives and condoms);
4. referrals of clients with complications; and,
5. follow-up of users and defaulters.

CHAPTER FOUR
CONCEPTUAL FRAMEWORK

4.1 Conceptual Framework

The conceptual framework for the analysis is shown in Table 4.1. As mentioned before, due to lack of time and money, effectiveness data was not collected and only the cost analysis was performed.

Table 4.1: Framework for cost-effectiveness (adapted form Drummond, 1987)

COSTS

I Costs to the government/programmes of the intervention:

1) Recurrent costs

a) Salaries: CBD agents, supervisors, managers, clinic personnel

b) Supplies: contraceptives (male condoms, female condoms, pills and injections)

c) Transportation: travel allowances, fuel costs, fares

d) Maintenance costs, viz. building, vehicles, equipment

e) Short in-service training

f) Social mobilisation: health education

g) Utilities (e.g. telephone, electricity, water)

2) Capital costs

a) Vehicles: bicycles, motorcycles, four-wheel-drive vehicles, trucks, cars

b) Equipment: computer, fax-machine, refrigerators

c) Buildings, space: health centres, training schools, administrative offices, storage facilities

d) Training, nonrecurrent: training activities for health personnel that occur only once or rarely

e) Social mobilisation, nonrecurrent social mobilisation activities, e.g. promotion, publicity campaigns, that occurs only once or rarely

II Social costs - costs borne by patients, households and community members

a) time lost form work

b) travel time

c) waiting time

d) bus fares

CONSEQUENCES

I Increase in contraceptive use

II Health knowledge

III Sexually-transmitted diseases prevented and pregnancies prevented (abortions avoided)

IV Savings in resources use:

- accruing to the government
- accruing to individuals, households, communities

Economic evaluation can be defined as the comparative analysis of alternative courses of action, in terms of both their costs and their consequences. In the economic sense, costs are the resources used up by the programme. Costs are usually broken down into recurrent and capital costs. Recurrent costs refer to those resources used during the course of the year and that are purchased regularly (e.g. salaries, supplies, and maintenance). Capital costs relate to those resources that last longer than a year (e.g. building, vehicles, and initial training).

Economists use the term opportunity cost to describe their approach to costs. This concept recognizes that even if resources are not paid for by the health service, there are a number of different ways in which they can be used.

The term "shadow pricing" is used to refer to prices that have been adjusted for various reasons to yield opportunity or economic costs (Creese and Parker, 1990). Shadow pricing is appropriate in situations where a resource used in a programme has been subsidized so that it appears to be worth less than it really is (e.g. contraceptives subsidized by the government). In this study, opportunity costs were calculated and shadow prices estimated. The calculations of costs included the estimated value of the contraceptives donated to the clinics, the CBD programmes, and the day hospital.

Information on the composition, activities, inputs, processes and outputs of the NGOs programmes, clinics and a day hospital was obtained through a series of staff interviews, as well as in-depth reviews of reports, programme activities, records, and others outputs.

Total costs of PPASA, SACLA and Zibonele were calculated from information contained in their financial records and by interviewing financial managers as well as the project coordinators and managers. Information on total costs of the clinics/day hospital was obtained by reviewing financial records kept by the Cape Metropolitan Council's Health Department and the Provincial Administration of Western Cape's Health Department, and by interviewing financial managers.

Since the most recent data for the clinics were for financial year 1995/96, and the day hospital and the CBD programmes started operating only in 1996, the only way of comparing the cost data for the same time period was by using a consumer price index. In this study a consumer price index of 7.4% was used. This adjustment has made it possible to compare the costs in the same year, 1996.

4.1 Allocation of Costs

4.1.1 Recurrent Costs

Criteria for distributing costs to contraceptive services/CBD of contraceptives is explained in Tables 4.2-4.4. Salary costs were calculated as gross (i.e. pre-tax) salary, and contributions to pension and medical funds plus other benefits were taken into account. Time spent by the

individual staff members on CBD/family planning was estimated as a percentage of total time. Salary costs of supervisory staff, administrative support and programme management were also apportioned to a particular programme.

Table 4.2: Criteria for distributing costs to family planning services in the clinics (Empilisweni, Luvuyo, and Mayenzeke)

COST CENTRE	DISTRIBUTION CRITERIA
Departmental Overheads	Share of number of visits for family planning (FP): Luvuyo (28%), Mayenzeke (24%), Empilisweni (30%)
Personnel Time	Share of personnel time for FP
Utilities	Share of number of visits for FP
Transport	Share of number of visits for FP
Contraceptives	100% to family planning
Repairs & Maintenance	Share of number of visits for FP
Capital Improvements	Share of number of visits for FP

Table 4.3: Criteria for distributing cost centres costs to family planning services in Michael Mapongwana Day Hospital

COST CENTRE	DISTRIBUTION CRITERIA
Provincial Administration of Western Cape (PAWC), Department of Health	Provincial Administration of Western Cape personnel time and overheads
Hospital Personnel Time	Share of personnel time involved in family planning services
Domestic, Transport & Maintenance	Share of number of visits for family planning (FP)
Contraceptives	100% to family planning
Stationary	Share of number of visits for FP
Special services (security, laundry, refuse removal)	Share of number of visits for FP
Miscellaneous	Share of number of visits for FP

Table 4.4: Criteria for distributing costs to CBD of contraceptives for PPASA, SACLA and Zibonele

COST CENTRE	DISTRIBUTION CRITERIA
Head Office Administration	Head Office personnel time and overheads
CBD of contraceptives administration	Share of personnel cost: Zibonele (50%), SACLA (10%) and PPASA (100%)
Contraceptives	100% to CBD
Transport	Share of CBD among different programmes (SACLA and Zibonele), 100% (PPASA)
Repairs & Maintenance	Share of CBD among different programmes
Training	Share of CBD (SACLA and Zibonele), 100% PPASA
Utilities	Share of CBD among programmes
Others	Share of CBD among programmes

Costs of contraceptives were estimated by multiplying the quantity used by the relevant price for each type of pill, injectable, and condom. Transport costs were divided in two categories: staff travel costs, and vehicle operating and maintenance costs. Staff travel costs were actual transport costs incurred by staff. The vehicle operating and maintenance costs consisted of total petrol, oil and service charges. These costs were apportioned on the basis of the estimated staff time devoted to family planning / CBD of contraceptives. Maintenance costs (building, vehicle, equipment) and utilities (telephone, electricity, water) were apportioned on the basis of the number of visits for family planning. Short in service training costs were allocated on the basis of time spent on family planning / CBD of contraceptives.

4.1.2 Capital costs

An annualised cost for capital goods was calculated using the method described by Creese and Parker (1990). A discount rate of 10% was used to allow for both depreciation and the

opportunity cost of capital purchases. Replacement values for buildings, vehicles, equipment, consultation and initial training were obtained by consulting the appropriate experts. The equivalent annual costs were calculated assuming a useful lifespan of 20 years for buildings (the only exception is the day hospital, where a 30 year - lifespan was used), 10 years for equipment and vehicles, and 20 years for training and consultation.

Various total cost estimates were divided by the relevant activity/output, number of consultations for family planning services, number of home visits, number of contraceptives distributed, etc. Cost calculations were accomplished by use of the "Excel" spreadsheet.

CHAPTER FIVE

RESULTS

5.1 Total Costs

A summary of the total costs of the clinics offering contraceptive services for 1996, broken down by category of resource input is presented in Tables 5.1-5.3.

Table 5.1: Cost of contraceptive services by input - Empilisweni clinic in rand (FY 1996)

INPUT CATEGORY	COST	%RECURRENT COST	% TOTAL COST
RECURRENT COST Salaries	236 382	60.00	56.99
Contraceptives	36 576	9.28	8.81
Transport	11 752	2.98	2.83
Utilities	16 837	4.27	4.06
Departmental overheads*	78 463	19.91	18.91
Repairs & maintenance	11 606	2.95	2.79
Capital improvements**	2 299	0.58	0.55
TOTAL RECURRENT COSTS	393 915	100.00	95.00
CAPITAL COSTS Building	11 693	-	2.80
Equipment	2 028	-	0.45
Vehicle	6 905	-	1.65
Initial training	227	-	0.05
TOTAL CAPITAL COSTS	20 853	-	5.00
GRAND TOTAL COSTS	414 768	-	100.00

Key:
* Head office supervision, nursing supervision, production unit, accounting overheads, training
** Capital improvements to the building and furniture

Table 5.2: Cost of contraceptive services by input - Luvuyo clinic in rand (FY 1996)

INPUT CATEGORY	COST	% RECURRENT COST	% TOTAL COST
RECURRENT COST Salaries	176 411	66.81	65.46
Contraceptives	12 604	4.77	4.63
Transport	6 005	2.27	2.20
Utilities	2 586	0.98	0.95
Departmental overheads*	64 451	24.41	23.68
Repairs & maintenance	137	0.05	0.04
Capital improvements**	1 830	0.69	0.67
TOTAL RECURRENT COSTS	264 024	100.00	97.00
CAPITAL COSTS Building	5 286	-	1.94
Equipment	945	-	0.35
Vehicle	1 807	-	0.67
Initial training	114	-	0.04
TOTAL CAPITAL COSTS	8 152	-	3.00
GRAND TOTAL COSTS	272 176	-	100.00

Key:
* Head office supervision, nursing supervision, production unit, accounting overheads, training
** Capital improvements to the building, furniture

Table 5.3: Cost of contraceptive services by input - Mayenzeke clinic in rand (FY 1996)

INPUT CATEGORY	COST	%RECURRENT COST	% TOTAL COST
RECURRENT COST Salaries	164 072	66.69	64.40
Contraceptives	17 681	7.19	6.94
Transport	4 337	1.76	1.70
Utilities	6 372	2.59	2.50
Departmental overheads*	50 292	20.44	19.74
Repairs & maintenance	1 324	0.53	0.51
Capital improvements**	1 931	0.78	0.75
TOTAL RECURRENT COSTS	246 009	100.00	97.00
CAPITAL COST Building	6 062	-	2.36
Equipment	965	-	0.38
Vehicle	1 614	-	0.63
Initial training	114	-	0.04
TOTAL CAPITAL COSTS	8 755	-	3.00
GRAND TOTAL COSTS	254 764	-	100.00

Key:
* Head office supervision, nursing supervision, production unit, accounting overheads, training
** Capital improvements to the building and furniture

The grand total cost of Empilisweni clinic, Luvuyo clinic, and Mayenzeke clinic was R 414 768, R 272 176 and R 254 764 respectively. Total cost profiles show a 95/5%, 97/3% and 97/3% division between recurrent and capital costs. That reveals a greater relative weight for recurrent inputs, usually found in studies of primary health care. In all cases, the most costly item was salaries (accounting to more than a half of the total cost), followed by departmental overheads, contraceptives costs, utilities, transportation costs, and buildings. The cost of repairs & maintenance, capital improvements, equipment, vehicles, and initial training were each less than 1% of total costs.

Table 5.4 shows the total costs of offering contraceptive services in the M.M. Day Hospital. Costs were broken down by inputs for 1996. The grand total cost was R 413 311. The ratio between recurrent and capital costs was 59/41%. The largest single item was salary, followed by building, equipment, special services, contraceptives, stationery, and domestic, transport and maintenance. The cost items like vehicle, initial training, and miscellaneous were each less that 1% of total costs.

Table 5.4: Cost of contraceptive services by input - M.M. Day Hospital in rand (FY 1996)

INPUT CATEGORY	COST	% RECURRENT COST	% TOTAL COST
RECURRENT COST Salaries	183 202	75.00	44.32
Contraceptives	15 812	6.5	3.82
Domestic, transport and maintenance	6 511	2.67	1.57
Stationery	14 491	5.97	3.05
Special services*	19 397	7.99	4.69
Miscellaneous**	3 816	1.57	0.92
TOTAL RECURRENT COST	243 229	100.00	59.00
CAPITAL COST Building	127 293	-	30.78
Equipment	40 683	-	9.84
Vehicle	1 472	-	0.35
Training	634	-	0.15
TOTAL CAPITAL COSTS	170 082	-	41.00
GRAND TOTAL COSTS	413 311	-	100.00

Key:
* Security services, laundry and refuse removal
** Stabilisation fund contribution

The total costs of operating CBD of contraceptives programmes in Khayelitsha, for the 1996 financial year are reflected in Tables 5.5-5.7.

Table 5.5: Cost of CBD of contraceptives by input - PPASA in rand (FY 1996)

INPUT CATEGORY	COST	% RECURRENT COST	% TOTAL COST
RECURRENT COST Salaries	165 519	76.90	67.49
Contraceptives	3 397	1.57	1.38
Transport	12 775	5.93	5.20
Repairs & maintenance	7 553	3.50	3.08
Workshop costs	8 234	3.82	3.36
Training	826	0.38	0.33
Utilities	14 210	6.60	5.80
Others	2 720	1.26	1.11
TOTAL RECURRENT COST	215 234	100.00	88.00
CAPITAL COST Building	15 876	-	6.47
Equipment	388	-	3.55
Vehicle	8 706	-	0.16
Initial training	446	-	0.18
Consultancy	4 603	-	1.87
TOTAL CAPITAL COSTS	30 019	-	12.00
GRAND TOTAL COSTS	245 253	-	100.00

Table 5.6: Cost of CBD of contraceptives by input - SACLA in rand (FY 1996)

INPUT CATEGORY	COST	% RECURRENT COST	% TOTAL COST
RECURRENT COST Salaries	26 763	81.95	76.58
Contraceptives	1 314	4.02	3.76
Transport	325	0.99	0.93
Repairs & maintenance	464	1.42	1.32
Training	3 266	9.99	9.34
Utilities	218	0.67	0.62
Others	312	0.96	0.89
TOTAL RECURRENT COST	32 662	100.00	93.00
CAPITAL COST Building	20	-	0.05
Equipment	22	-	0.06
Vehicle	316	-	0.90
Initial training	1 726	-	4.93
Consultancy	200	-	0.57
TOTAL CAPITAL COSTS	2 284	-	7.00
GRAND TOTAL COSTS	34 946	-	100.00

The grand total cost for PPASA, SACLA, and Zibonele was R 245 253, R 34 946 and R 61 060, with the recurrent/capital cost ratio of 88/12%, 93/7% and 90/10% respectively. Salary costs were substantial, accounting for 67,49% of total costs and 76,90% of recurrent costs for PPASA, 76,58% of the total and 81,95% of recurrent costs for SACLA, and 82,07% of total and 92,08% of recurrent costs for Zibonele.

Table 5.7: Cost of CBD contraceptives by input - Zibonele in rand (FY 1996)

INPUT CATEGORY	COST	% RECURRENT COST	% TOTAL COST
RECURRENT COST Salaries	50 115	92.08	82.07
Contraceptives	906	1.66	1.48
Transport	1 257	2.31	2.06
Repairs & maintenance	1 199	2.29	1.96
Training	100	0.18	0.16
Utilities	293	0.53	0.48
Others	550	1.01	0.90
TOTAL RECURRENT COST	54 421	100.00	89.60
CAPITAL COST Building	3 524	-	5.77
Equipment	917	-	1.05
Vehicle	998	-	1.63
Initial training	377	-	0.61
Consultancy	822	-	1.34
TOTAL CAPITAL COSTS	6 639	-	10.40
GRAND TOTAL COSTS	61 060	-	100.00

5.2 Average Costs

Unit costs were obtained by dividing total costs by quantity of output - the number of consultations/home visits. The results are given in Tables 5.8 and 5.9.

Table 5.8: Average total costs in the clinics and the day hospital in rand (FY 1996)

ITEMS	EMPILISWENI CLINIC	LUVUYO CLINIC	MAYENZEKE CLINIC	M.M. DAY HOSPITAL
Total cost	414 768	272 176	254 764	413 311
No. of consultations for contraceptive services	13 012	4 166	4 655	3 892
Cost per consultation	32	65	55	106
Number of contraceptives distributed	12 030	4 155	5 920	5 284
Number of contraceptives per consultation	0.92	0.99	1.27	1.31

Table 5.9: Average total costs of CBD of contraceptives programmes in rand (FY 1996)

ITEMS	PPASA	SACLA	ZIBONELE
Total cost	245 253	34 946	61 060
No. of home visits for CBD of contraceptives	5 761	1 726	940
Cost per home visit	42	20	65
Number of contraceptives distributed	11 089	2 301	6 337
Number of contraceptives per home visit	1.92	1.33	6.74

5.3 Sensitivity Analysis

The major controversy in the study was the allocation of staff time to contraceptive services / CBD of contraceptives. For example, all the nurses in the clinics were offering fertility regulation services, among other services like TB, child health, etc. When asked how much time they spend on the contraceptive services the answer was more than 50% of their time. Thus, the use of the number of visits for contraceptives as a proportion of total visits to allocate the staff time would not reflect the real situation.

The sensitivity analysis for the clinics was done with the following assumptions:

- staff spend 70% of their time on family planning (FP)
- staff spend 50 % of their time on FP
- staff spend 30%/28%/24% of their time on FP.

The assumptions for the day hospital were:

- staff spend 13% of their time on FP
- staff spend 10% of their time on FP
- staff spend 6,3% of their time on FP.

Since PPASA CBD agents devoted 100% of their time for CBD of contraceptives, no sensitivity analysis regarding allocation of PPASA staff time was performed.

The sensitivity analysis for SACLA / Zibonele CBD programmes, was done with the following assumptions:

- community health workers (CHW) spend 50% / 70% of their time on CBD of contraceptives
- CHW spend 10% / 50% of their time on CBD of contraceptives
- CHW spend 5% / 30% of their time on CBD of contraceptives.

Findings of the sensitivity analysis are given in Table 5.10. For the clinics and the day hospital, the cost per contraceptive was relatively insensitive. Regarding SACLA and Zibonele, the cost per contraceptive was sensitive to the changes in time spent on CBD of contraceptives.

Table 5.10: Sensitivity analysis of the costs of contraceptive services / CBD of contraceptives

Variable	Best estimate	Lower limit	% of change	Upper limit	% of change
Empilisweni clinic					
Time for contraceptive services	50%	30%	-40	70%	+40
Total costs	414 768	248 861		580 675	
Cost per contraceptive	34	21	-38	48	+41
Luvuyo clinic					
Time for contraceptive services	50%	28%	-44	70%	+40
Total costs	272 176	152 418		381 046	
Cost per contraceptive	65	37	-43	92	+41
Mayenzeke clinic					
Time for contraceptive services	50%	24%	-52	70%	+40
Total costs	254 764	122 287		356 670	
Cost per contraceptive	43	21	-51	60	+39
M. M. Day Hospital					
Time for contraceptive services	10%	6,3%	-37	13%	+30
Total costs	413 311	260 386		537 304	
Cost per contraceptive	78	49	-37	102	+31
PPASA					
Time for CBD of contraceptives	100%	-	-	-	-
Total costs	245 253				
Cost per contraceptive	22				
SACLA					
Time for CBD of contraceptives	10%	5%	-50	15%	+50
Total costs	34 946	14 951		44 853	
Cost per contraceptive	15	6	-60	19	+27
Zibonele					
Time for CBD of contraceptives	50%	30%	-40	70%	+40
Total costs	61 060	41 008		81 112	
Cost per contraceptive	10	6	-40	13	+30

5.4 Estimates of Setting-Up a National CBD of Contraceptives Programme

The estimates of the total cost of setting up CBD of contraceptives programme, broken down by provinces, are reflected in Tables 5.11a -5.11d (see Appendix). The Development Bank of South Africa population estimates for 1994 were used. Estimated coverage rates, among the sexually active population were 100%, 75%, 50% and 25%, and for each of the coverage rates the estimated cost is detailed. As we can see from the Table 18a, if "PPASA model" is to be applied, the estimated total cost at the national level, with a coverage rate of 50% would be R267 613 291. With a coverage rate of 75% the cost would be R401 149 936, and so on.

Using the "SACLA model" (Table 18b), the estimates are R 182 463 607 for the 50% coverage rate, and R 273 695 411 for the 75% coverage rate. "Zibonele model" (Table 18c) gives the estimates of R121 642 405 (50% coverage rate), and R182 463 608 (75% coverage rate).

Finally, the average cost of all the programmes (PPASA, SACLA and Zibonele) was used to estimate the average total cost of setting up a national CBD of contraceptive services programme (Table 18d). The average cost per contraceptive in this case was R 17. The results show that, if coverage rate is 50%, the cost would be R 206 792 088. Alternatively, with a coverage rate of 75% or 100%, the estimate of the total cost would be R 310 188 133 or R 413 584 177. The lowest coverage rate of 25% that was used in this study gives an estimate of R 103 396 044.

CHAPTER SIX
DISCUSSION, CONCLUSIONS AND SUGGESTIONS FOR FUTURE RESEARCH

6.1 Discussion

The results of the cost analysis are summarised in Table 6.1. The most costly state-sector contraceptive service provider is the day hospital. On average, clinics have higher costs per contraceptive than the CBD of contraceptives programmes. After the day hospital, Zibonele has the highest cost per consultation/home visit, followed by Luvuyo clinic, and Mayenzeke clinic, PPASA, Emplisweni clinic, and finally, SACLA. This is probably due to the differences in the contraceptives per consultation/home visit ratios among the alternatives. While this ratio varies from 1.33 to 6.74 contraceptives per home visit for the CBD programmes, it is relatively low for the clinics and the day hospital (from 0.92 to 1.31 contraceptives per consultation). This comparison has been made with the notion that there is a difference between the certain types of contraceptives. While one injectable gives 2-3 months of coverage, 1 packet of pills lasts for 1 cycle. A condom is seen as a method of prevention of HIV and STDs, as well as a method of contraception.

The study was conducted from the Department of Health and NGOs' perspective and it considered only organizing and operating costs within health services/NGOs (e.g. personnel time, contraceptives, utilities, equipment, building, vehicles, etc.). The costs borne by clients and their relatives and friends, such as, transport costs, time lost from work, and other out-of pocket expenses were excluded. Thus, by considering only the costs borne by the Department of Health and NGOs, the total costs have been underestimated as societal costs were not taken into account.

These figures do not include an estimate for the cost of the clinic professional nurse's initial training, but only include the cost for family planning training. The costing of the initial training is still in the process and the data will be available soon.

Table 6.1: Summary of total cost, consultations/visits, average costs of the various alternatives of offering contraceptive services in rand

Alternative	Total no. of contra-ceptives	Total no. of consultation/ visit	Number of contraceptives per consult/visit	Total cost (in rand)	Time per consult./ home visit (in min.)	Average cost per consult./ visit
Empilisweni clinic	12 030	13012	0.92	414 768	4.03	32
Luvuyo clinic	4 155	4166	0.99	272 176	12.06	65
Mayenzeke clinic	5 920	4655	1.27	254 764	11.27	55
M.M. day hospital	5 284	3 892	1.31	413 311	2.69	106
PPASA	11 089	5 761	1.92	245 253	18.22	42
SACLA	2 301	1726	1.33	34 946	6.08	20
Zibonele	6 337	940	6.74	61 060	55.85	65

The clinics, on average, have higher cost per consultation/home visit than the CBD of contraceptives programmes. But, these results indicate very little, unless they are seen from the "quality of care" perspective. The quality of care was not evaluated, and certain things were just assumed. The only crude indicator of quality of care that was possible to get form the collected data is time per consultation/home visit. The results show that it varies from 4.03 minutes to 55.85 minutes.

The characteristics of the current clinic-based quality of care contraceptive services are as follows (adopted from Marks and Cooper, 1996):

1. the prevalence of oral contraceptive use is very low; extremely high use of injectables (95%);
2. the services are inaccessible to many people because they are available only during office hours;

3. long waiting times;
4. the overloaded nurses have limited time and energy for delivery of quality health education, promotion, and counselling sessions;
5. the tendency of teenagers to use injectables;
6. the prevalence of oral contraceptives is very low (2-3%), and it is doubtful whether this option has been seriously considered by clients; and,
7. condoms not actively promoted (in light of prevalence of STDs/AIDS);
8. services not user friendly;
9. few men use services.

As an alternative, CBD of contraceptives programmes' quality of care tends to be characterised by (adopted from Marks and Cooper, 1996):

1. providing door-to-door contraceptive information, counselling, education, and health promotion;
2. promotion of male and female condoms as a method of contraception and prevention of HIV and STDs;
3. reaching people not reached by existing services;
4. convenient times, clients seen after work if necessary;
5. providing help, support, and information on safer sex and a responsible attitude to parenthood, especially to adolescents;
6. regular supply of contraceptives (oral contraceptives and condoms);
7. by providing help, support, and information to adolescents, safer sex and a responsible attitude to parenthood is encouraged; and,
8. men using service.

One of the main objectives of the study was to explore whether a large-scale version of CBD of contraceptives could be expected to be sustainable and whether a CBD activity should be integrated in to the national family planning programme. This cost study findings indicate that CBD of contraceptives programmes could be less costly than clinics. The effectiveness of the service providers was not taken into account. That part of the analysis seems to be necessary in order to have a comprehensive economic evaluation of contraceptive services.

6.2 Conclusions and Suggestions for Future Research

The average cost per home visit for the CBD of contraceptives programmes was R40 and the average cost per consultation for the clinics was R43. The day hospital for the relevant area of Khayelitsha revealed a much higher average cost of R106. The average cost per home visit for the CBD of contraceptives programmes was lower than was anticipated by the researcher. The average costs for the clinics are very similar to the estimates in the Health Expenditure Review (1995), where the average cost of a clinic visit is R30 and a community hospital visit is R55 (McIntyre et al., 1995). The reason why the average cost for the day hospital is so high could be due to the existence of the maternity section within the day hospital, where contraceptive services consultations are offered (after deliveries) but no contraceptives given and no output data on these consultations was available.

More comprehensive economic evaluations need to be conducted in future to shed light on the following questions:

1. How much monetary cost is borne by the clients and their families?
2. How should the non-monetary costs borne by clients and their families be quantified and valued?
3. What is the magnitude of the health benefits (in terms of couple-years of protection) expected from the alternative options?
5. What are the results of the detailed evaluation of quality of care?
4. How can we capture the crucial synergy between community-level options (such as PPASA, SACLA and Zibonele) and the facility level options (e.g., clinics, day hospitals)?
5. How can we model the relationship between contraceptive use and population growth?

REFERENCES

Bertrand, J.T., 1991"Recent Lessons from Operations Research on Service Delivery Mechanisms", in Seidman, M. and M.C. Horn (eds.), *Operations Research: Helping Family Planning Programs Work Better*, New York, Wiley-Liss.

Bertrand, J.T. et al, 1993. "Community-Based Distribution of Contraceptives in Zaïre". *International Family Planning Perspectives*, Vol. 19, No. 3 (September), pp. 84 - 91.

Briggs, A., Sculpher, M. and M. Buxton, 1994. "Uncertainty in the Economic Evaluation of Health Care Technologies: The Role of Sensitivity Analysis", *Health Economics*, Vol. 3, pp. 95-104.

Bruce, J., 1990. "Fundamental Aspects of the Quality of Care: A Simple Framework," *Studies in Family Planning*, Vol.21, No.2, pp. 61-91.

Creese, A. and D. Parker, 1990. *Cost Analysis in Primary Health Care*, World Health Organization, Geneva.

Draft White Paper for a Population Policy, 1996. South Africa, *Government Gazette*, Vol. 376, No. 17529 (September).

Drummond, M.F., Stodart, G. and G.W. Torrance, 1987. *Methods for the Economic Evaluation of Health Care Programmes*, Oxford University Press, Chapter 4, pp. 39-73.

Freedman R., 1987. "The Contribution of Social Science to Population Policy and Family Program Effectiveness," *Studies in Family Planning*, Vol. 18, No. 2, pp.57-82.

Gallen, M.E. and W. Rinehart, 1984. "Operations Research: Lessons for Policy and Programs," *Population Reports*, Series J, No. 31 (Sept-Oct).

Jain, A., 1989. "Fertility Education and the Quality of Family Planning Services," *Studies in Family Planning*, Vol. 20, No. 1, pp.1-16.

Makan, B. and D. McMurchy, 1996. *An Economic Evaluation of Community Health Worker Programmes: Western Cape Province, Case Studies*, University of Cape Town, Department of Community Health: Health Economics Unit, South Africa.

Mamdani, M. et al., 1993. "Fertility and Contraceptive Use in Poor Urban Areas of Developing Countries", *Health Policy and Planning*, Vol. 8, No. 1, pp. 1-18.

Marks, A. and D. Cooper, 1996. "An Assessment of Contraceptive Services in Khayelitsha." Research Conducted for PPASA (October).

McGuire, E.S., 1984. "Family Planning Operations Research: A Decade of Experience," paper prepared for the *NCIH 11th Annual International Health Conference*, Washington, D.C. (June).

McIntyre, D. et al, 1995. *Health Expenditure and Finance in South Africa*, South Africa, Durban: The Health System Trust and The World Bank.

Phillips, J.F. and W.L. Greene, 1993. *Community-Based Distribution of Family planning in Africa: Lessons from Operations Research*, New York: The Population Council.

Potts, D.M. and Crane, S.F., 1993. "Contraceptive Delivery in the Developing World," *British Medical Bulletin*, Vol. 49, No 1, pp 27-39.

Prabhavathi, K. and P. Sheshadri, 1988. "A Pattern of IUD use: a follow-up of acceptors in Mysore,"*Journal of Family Welfare*, Vol. 35, pp. 14-20.

Rodriguez, G., 1978. "Family Planning Availability and Contraceptive Prevalence," *International Family Planning Perspectives*, Vol. 4, pp. 100-115.

Rosenfield, A.G., 1971. "Family Planning: An Expanded Role for Paramedical Personnel," *American Journal of Obstetrics and Gynaecology*, Vol. 110, pp.1030-1039.

Rosenfiled, A.G. et al, 1982. "Thailand's Family Planning Programme: an Asian Success Story," *International Family Planning Perspectives*, Vol. 8, pp. 43-50.

Scientific American, February, 1996. Roger Doyle, *World Birth-Control Use*.

Tusi, A.O. and L.H. Ochoa, 1989. *Service Proximity as an Outcome of Contraceptive Behaviour: Evidence for Cross-Cultural Studies of Survey Data*. IUSSP Seminar on Role of Family Planning Programmes as a Fertility Determinant, Tunis.

World Bank, 1994. *Better Health in Africa*, Washington: The World Bank.

Table 5.11a: Total cost of setting up a national CBD programme (estimated using the PPASA unit cost)

				PPASA	PPASA	PPASA	PPASA
Province	Sexually active (urban) pop.	Sexually active (non-urban) pop.	Sexually active (Total) pop.	Coverage Rate 100%	Coverage Rate 75%	Coverage Rate 50%	Coverage Rate 25%
Eastern Cape	1 595 797	2 053 932	3 649 729	80 294 038	60 220 529	40 147 019	20 073 510
Orange Free State	1 129 650	821 464	1 951 114	42 924 508	32 193 381	21 462 254	10 731 127
Gauteng	4 425 882	173 455	4 599 337	101 185 414	75 889 061	50 592 707	25 296 354
Kwa-Zulu Natal	2 363 690	2 558 767	4 922 457	108 294 054	81 220 541	54 147 027	27 073 514
Mpumalanga	692 644	1 089 665	1 782 309	39 210 798	29 408 099	19 605 399	9 802 700
Northern Cape	361 450	113 077	474 527	10 439 594	7 829 696	5 219 797	2 609 899
Northern Province	509 868	2 101 197	2 611 065	57 443 430	43 082 573	28 721 715	14 360 858
North-West	849 923	1 126 220	1 976 143	43 475 146	32 606 360	21 737 573	10 868 787
Western Cape	2 080 812	280 988	2 361 800	51 959 600	38 969 700	25 979 800	12 989 900
TOTAL	14 009 716	10 318 765	24 328 481	535 226 582	401 419 937	267 613 291	133 806 646
* Note that the total cost figures in this table were estimated assuming cost per contraceptive of R 22.00							

Table 5.11b: Total cost of setting up a national CBD programme (estimated using the SACLA unit cost)

				SACLA	SACLA	SACLA	SACLA
Province	Sexually active (urban) pop.	Sexually active (non-urban) pop	Sexually active (Total) pop.	Coverage Rate 100%	Coverage Rate 75%	Coverage Rate 50%	Coverage Rate 25%
Eastern Cape	1 595 797	2 053 932	3 649 729	54 745 935	41 059 451	27 372 968	13 686 484
Orange Free State	1 129 650	821 464	1 951 114	29 266 710	21 950 033	14 633 355	7 316 678
Gauteng	4 425 882	173 455	4 599 337	68 990 055	51 742 541	34 495 028	17 247 514
Kwa-Zulu Natal	2 363 690	2 558 767	4 922 457	73 836 855	55 377 641	36 918 428	18 459 214
Mpumalanga	692 644	1 089 665	1 782 309	26 734 635	20 050 976	13 367 318	6 683 659
Northern Cape	361 450	113 077	474 527	7 117 905	5 338 429	3 558 953	1 779 476
Northern Province	509 868	2 101 197	2 611 065	39 165 975	29 374 481	19 582 988	9 791 494
North-West	849 923	1 126 220	1 976 143	29 642 145	22 231 609	14 821 073	7 410 536
Western Cape	2 080 812	280 988	2 361 800	35 427 000	26 570 250	17 713 500	8 856 750
TOTAL	14 009 716	10 318 765	24 328 481	364 927 215	273 695 411	182 463 608	91 231 804
* Note that the total cost figures in this table were estimated assuming cost per contraceptive of R 15.00							

Table 5.11c: Total cost of setting up a national CBD programme (estimated using the Zibonele unit cost)

				ZIBONELE	ZIBONELE	ZIBONELE	ZIBONELE
Province	Sexually active (urban) pop.	Sexually active (non-urban) pop.	Sexually active (Total) pop.	Coverage Rate 100%	Coverage Rate 75%	Coverage Rate 50%	Coverage Rate 25%
Eastern Cape	1 595 797	2 053 932	3 649 729	36 497 290	27 372 968	18 248 645	9 124 323
Orange Free State	1 129 650	821 464	1 951 114	19 511 140	14 633 355	9 755 570	4 877 785
Gauteng	4 425 882	173 455	4 599 337	45 993 370	34 495 028	22 996 685	11 498 343
Kwa-Zulu Natal	2 363 690	2 558 767	4 922 457	49 224 570	36 918 428	24 612 285	12 306 143
Mpumalanga	692 644	1 089 665	1 782 309	17 823 090	13 367 318	8 911 545	4 455 773
Northern Cape	361 450	113 077	474 527	4 745 270	3 558 953	2 372 635	1 186 318
Northern Province	509 868	2 101 197	2 611 065	26 110 650	19 582 988	13 055 325	6 527 663
North-West	849 923	1 126 220	1 976 143	19 761 430	14 821 073	9 880 715	4 940 358
Western Cape	2 080 812	280 988	2 361 800	23 618 000	17 713 500	11 809 000	5 904 500
TOTAL	14 009 716	10 318 765	24 328 481	243 284 810	182 463 608	121 642 405	60 821 203
* Note that the total cost figures in this table were estimated assuming cost per contraceptive of R 10.00							

5.11d: Total cost of setting up a national CBD programme (estimated using the average cost per contraceptive of all the programmes, PPASA, SACLA and Zibonele)

				Average cost	Average cost	Average cost	Average cost
Province	Sexually active (urban) pop.	Sexually active (non-urban) pop.	Sexually active (Total) pop.	Coverage Rate 100%	Coverage Rate 75%	Coverage Rate 50%	Coverage Rate 25%
Eastern Cape	1 595 797	2 053 932	3 649 729	62 045 393	46 534 045	31 022 697	15 511 348
Orange Free State	1 129 650	821 464	1 951 114	33 168 938	24 876 704	16 584 469	8 292 235
Gauteng	4 425 882	173 455	4 599 337	78 188 729	58 641 547	39 094 365	19 547 182
Kwa-Zulu Natal	2 363 690	2 558 767	4 922 457	83 681 769	62 761 327	41 840 885	20 920 442
Mpumalanga	692 644	1 089 665	1 782 309	30 299 253	22 724 440	15 149 627	7 574 813
Northern Cape	361 450	113 077	474 527	8 066 959	6 050 219	4 033 480	2 016 740
Northern Province	509 868	2 101 197	2 611 065	44 388 105	33 291 079	22 194 053	11 097 026
North-West	849 923	1 126 220	1 976 143	33 594 431	25 195 823	16 797 216	8 398 608
Western Cape	2 080 812	280 988	2 361 800	40 150 600	30 112 950	20 075 300	10 037 650
TOTAL	14 009 716	10 318 765	24 328 481	413 584 177	310 188 133	206 792 089	103 396 044
* Note that the total cost figures in this table were estimated assuming cost per contraceptive of R 17.00							