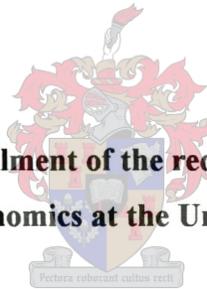


**AN ECONOMIC EVALUATION OF THE WINELANDS HEALTH  
WORKER PROGRAMME**

**Eben Eugène Rörich**

**Thesis presented in partial fulfilment of the requirements for the degree of  
Master of Agricultural Economics at the University of Stellenbosch.**



**Study Leader: Prof. N. Vink**

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## **DECLARATION**

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and that I have not previously in its entirety or in part submitted it at any University for a degree.

## SUMMARY

Historically health care in South Africa has been an area of great inequity. Health care was inequitable, inadequate and racially based. In order to redress the gap in the delivery of health care services, created by the previous dispensation of separate development, the National Department of Health has adopted a Primary Health Care (PHC) approach as the guiding principle for the reconstruction of the health system in South Africa. One of the pillars of this approach is the empowerment of communities to participate, thus moving from facility based- to community based health care.

The aim of the National Health System (NHS) is to promote health and health knowledge, to provide an equitable, accessible, and appropriate health service, and to empower people to take greater responsibility for their own health. It is constructed around the belief that health for all cannot be achieved simply by improving the formal health system, but that a holistic and multi-sectoral approach is required.

This thesis explores the community health worker (CHW) as a possible cost-effective and efficient supplementary service, to the current formal health system, to bridge the gap in the formal health system through the provision of PHC services in a rural setting. This was done through the economic evaluation of a CHW programme operating in the Winelands area of the Western Cape.

The aim of this study was to evaluate and analyse the nature, performance, and costs of the programme and place it in context by comparison to other similar programmes. This comparison focused on physical characteristics, goals, and cost structures. It also aims to measure the direct and indirect impact of this type of intervention on the agribusiness sector as well as the local health authorities. The evaluation proceeded from the premise that the CHW programme, if implemented correctly with proper and appropriate training, and adequate post training support, will be a cost-effective and efficient model for the provision of PHC services in this rural/farming area.

The economic evaluation of this CHW programme required it to be viewed from two perspectives. The first component viewed the implementation of the programme from the perspective of the agribusiness sector. This aspect of the study included both a

qualitative as well as a quantitative view of the costs, benefits (perceived or otherwise), and perceptions of the CHW intervention. The second component assessed the CHW programme within the context of a resource constrained public sector health budget. Since the implementation of this programme implies certain expenditures on the part of the local health authorities, these cost had to be identified and quantified to gauge the effectiveness of that expenditure.

## OPSOMMING

Geskikte en doeltreffende gesondheidsdienste in Suid-Afrika se onlangse geskiedenis was nog gereserveer vir 'n uitgesoekte groep mense. Die gesondheidstelsel was ontoereikend, onvoldoende en gebaseer op ras. Daar het 'n gaping ontstaan tussen die dienste wat gelewer is en die werklike behoeftes van die mense wat dit moes gebruik. Ten einde hierdie gaping aan te spreek het die Nasionale Departement van Gesondheid besluit om 'n Primêre Gesondheidsorg (PHC) benadering te volg wat klem plaas op die bemagtiging van plaaslike gemeenskappe deur deelname. Dit was 'n duidelike skuif vanaf fasiliteit- na gemeenskap gebaseerde gesondheidsdienste.

Die oorkoepelende doel van hierdie verskuiwing in fokus was om voorheen benadeelde gemeenskappe voldoende toegang te gee tot gesondheidsdienste en ook om hierdie dienste aan te pas by die behoeftes van sodanige gemeenskappe.

Hierdie tesis ondersoek die Wynland distriksraad se Gemeenskap Gesondheidswerker Program as 'n moontlike koste-effektiewe stelsel vir die lewering van toepaslike primêre gesondheidsdienste in landelike areas. Die doel van die studie was die sistematiese ontleding van die werking en omvang van, en die kostes verbonde aan die implementering en onderhoud van hierdie program. Die studie poog om die impak van hierdie program op die formele landbou sektor asook die plaaslike gesondheidsowerhede te identifiseer en, waar moontlik en prakties wenslik, te kwantifiseer.

Die ondersoek sluit in die stelselmatige ontleding van kostes en voordele vir die formele landbou sektor sowel as die plaaslike gesondheidsowerhede. Die kostes asook die kliniese uitkomst geassosieer met die implementasie van die Gesondheidswerker program sal dan in konteks geplaas word deur dit te vergelyk met ander soortgelyke programme wat in die verlede aangepak is. Die vergelyking sal fokus op die fisiese eienskappe, koste struktuur, bronne van ondersteuning en die primêre doel van die intervensie.

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## LIST OF ABBREVIATIONS

ANC	African National Congress
BDM	Boland District Municipality
CBHC	Community Based Health Care
CBHW	Community Based Health Worker
CBA	Cost-benefit Analysis
CBO	Community Based Organisation
CEA	Cost-effectiveness Analysis
CHC	Community Health Centre
CHW	Community Health Worker
CHWs	Community Health Workers
DOT	Directly Observed Treatment
DOTS	Directly Observed Treatment Short course
FAS	Foetal Alcohol syndrome
HCT	Health Care Trust
HIV/AIDS	Human Immunity-deficient Virus / Acquired Immune Deficiency Syndrome
MOU	Mid-wife obstetric unit
MRC	Medical Research Council
NGO	Non Governmental Organisations
NHS	National Health Service
NPPHCN	National Progressive Primary Health Care Network
PHC	Primary Health Care
SANCA	South African National Council on Alcoholism and Drug Dependence
SANRA	Suid-Afrikaanse Nasionale Raad insake Alkoholisme en Dwelm afhanklikheid
SANTA	South African National Tuberculosis Association
SCALA	South African Christian Leadership Assembly
TB	Tuberculosis
WDC	Winelands District Council
WHO	World Health Organisation

## **CHAPTER ONE**

### **INTRODUCTION**

Historically health care has been a site of great inequality in South Africa. During the Apartheid era health care was inequitable, inadequate, and racially based (Drummond-Hay, 2000). Adequate health care was reserved for the privileged, rather than the needy. This created a gap in the health services that the new Government of National Unity is trying to redress. In order to achieve this goal, South Africa's national health system is undergoing a radical process of transformation. The National Department of Health has adopted the Primary Health Care (PHC) approach as the guiding principle of the transformation of the health system in South Africa. One of the pillars of PHC is the empowerment of communities to participate. The Department of Health has adopted the district health system as the structural mechanism for transformation.

The aim of this new National Health System (NHS) is to promote health and health knowledge, to provide an equitable, accessible, and appropriate health service, and to empower people to take greater responsibility for their own health through community participation (Drummond-Hay, 2000; ANC, 1994:9). It is constructed around the belief that good health for all, especially in poor communities, cannot be achieved simply by improving formal health service delivery, but that a holistic and multi-sectoral approach is needed to address the root cause of poor health and empower communities in the process.<sup>1</sup>

#### **What is a community?**

It is important to clarify the concept of community. The word 'community' can be misleading. It suggests an isolated group living together in a place with definite boundaries, of which membership is exclusive (Drummond-Hay, 2000). Boonzaier and Sharp (1988) questioned the existence of communities, but concluded that they do

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<sup>1</sup> <http://www.hst.org.za/pphc/idasa.htm> (November 2001)

exist because people believe in them and act as if they do exist. They suggest that a community must be understood as “an image of coherence, a cultural notion which people use in order to give a reality and form to their social actions and thoughts.” A community is founded in the intense social interaction between people and it is this interaction that produces social boundaries. A community is thus not a homogeneous entity in which all the members live in the same way, with the same interests and aspirations (Tumwine, 1988). A community is a dynamic group where people can come and go. People can also belong to more than one community and have different identities within each of these communities (Boonzaier and Sharp, 1988, p.38). However, for the rest of this discussion the word ‘community’ will mostly be used in a geographical context.

### What is community participation?

*“The aim of community participation is to increase people’s involvement and contributions at the local level. This results in a process where the people play an active and direct role in the development of appropriate services to maintain the conditions, which promote better well-being and empowerment. The process is based on the view that development of the poor cannot occur unless the poor themselves control the process through the experience of participation.” – Friedman 1998.<sup>2</sup>*

Though there is general agreement on the importance of communities to participate in the delivery of health services, there is little consensus on what this actually means.

Community participation in health describes a process where people express their right to be actively involved in the development of health services tailored to the specific needs of that community. It is a partnership between individuals or groups, organisations and health care professionals where the root of health problems in the area is determined and a suitable approach to address the issues is discussed.

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<sup>2</sup> Irwin Friedman (NPPHCN), Community Participation, in *Department of Health’s Handbook for district managers*, July 1998. Quoted in Drummond-Hay, 2000.

Thus community participation is a broader concept that can include many different types of involvement, while community involvement refers to a particular type of partnership. It is therefore necessary to clarify the role of each participant in the delivery of such a joint health care approach in order for it to function in an effective and harmonious fashion. The problem with this, according to Tatimo and Fowkes (1989) is that genuine community participation cannot be built into a programme in a predictable way. Genuine community participation must respect the differences of opinion or perspective on the needs of the community, both within the community and between the community and health services (Frankel, 1992:10).

This thesis explores the Community Health Worker (CHW) as a possible cost-effective and efficient supplementary service to bridge the gap in the formal health system by the provision of PHC services in a rural setting. This is achieved through the economic evaluation of a CHW programme in a rural area of the Western Cape province and the comparison of these results with similar programmes undertaken in the past.

## 1.1 BACKGROUND

During 1993 a farmer in the Klein Drakenstein area of the Western Cape approached a professional nurse to discuss the problem of the large number of tuberculosis (TB) cases on his farm<sup>3</sup>. He was keen to work with an official health services department to bring the problem under control. The resourceful nurse responded by designing a proposal that was presented to the Drakenstein Farming Community during May of that year. The project consisted of a strategy to introduce community-based health care onto farms by training selected farm workers to work as community health workers. Although the main focus of the project was the early detection and treatment of TB, longer-term goals included a more general improvement of the health status of the community. The program was initiated during that same year, with twenty-one of the 121 farms participating (Dick *et al.* 1997). On each of the

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<sup>3</sup> For the purpose of this thesis, a farm is defined as a geographical area primarily used to commercially produce agricultural products. This area must also be managed as an independent agricultural business unit.

participating farms the community nurse arranged a meeting with the workers in order to explain the intent of the programme. Workers then designated one member of the community to act as the community health worker. These health workers were provided with basic health care training to enable them to carry out their duties, which included the identification of possible TB symptoms as well as the administration of TB medication. In this way workers that were suspected of being infected could be referred to the nearest PHC clinic for further testing.

TB is responsible for a large burden of disease in South Africa with approximately 80000 cases reported each year of which 28% emanates from the Western Cape (Dick *et al.* 1997). The control of the disease therefore requires a dynamic approach involving social and economic upliftment. The aim of this CHW program was therefore to reduce the rate of infection and recurrence caused by poverty and increase case finding and case holding efficiency.

The program required that the elected health workers from each participating farm attend an ongoing training programme provided by the Cape Metropolitan Council, which was the authority responsible for providing primary health care to the area. The training program covered areas such as the management of TB, HIV/AIDS infection, the principles of growth monitoring, oral rehydration, breast-feeding, immunisation, female education, family spacing, food supplementation and balanced nutrition. It also included psychosocial aspects, such as the role of women in the family and the development of positive self-esteem (Dick *et al.* 1997:1043).

At the end of 1995, the effectiveness and acceptability of the project was evaluated by a group of researchers linked to the National Tuberculosis Research Programme (Medical Research Council). A descriptive cohort study was used to compare treatment adherence rates between intervention farms and non-intervention, or control farms. The intervention farms were farms that had a trained CHW resident, while the non-intervention farms, although part of the programme, were serviced only by the official PHC services in the area. Both these groups were kept as sterile of other interventions as possible in order to be able to attribute any significant changes between these two groups to the CHW intervention. The project evaluation included a qualitative appraisal of the acceptability of the project within the community.

A series of semi-structured interviews with the various role players identified the following benefits:

- **Overall improved access to health care:** Researchers reported that a close bond had developed between the community health workers and the formal health sector, which improved the access of the farm communities to primary health care facilities.
- **Community empowerment:** Farm owners reported that in many cases the role of the community health worker exceeded the treatment of tuberculosis and health related tasks. Community health workers also began to assume a great deal of responsibility for the general well being of the farm community.
- **Improved cost-efficiency of health provision:** Farm owners generally regarded the project as a cost-effective way of dealing with the minor health complaints of their employees.

The results further suggested that the adherence rates for the intervention farms were significantly higher than that of the control farms.

Unfortunately the relatively small scale of the project, coupled with elective farm participation, was considered to have biased the results. The evaluation panel of the Klein Drakenstein programme therefore concluded that, while the results of the project were positive, they were suggestive rather than conclusive. Randomised clinical trials as well as an economic evaluation of the model were therefore necessary.

At the beginning of 1998 the Medical Research Council initiated the formation of a committee to steer the clinical trials of the Winelands CHW program. This committee was charged with evaluating the effectiveness of the intervention on TB case detection, case-holding and cure rates. Towards the end of 1998 the committee contacted the Department of Agricultural Economics of the University of Stellenbosch in search of an independent economist who could determine whether the CHW program was economically more feasible than the existing system for the

provision of primary healthcare. This intervention was not designed to replace the PHC system already in place, but rather to alleviate some of the pressure exerted on it through the backlog created by the segregation of health care under Apartheid. It is this request that gave rise to the research question of the present study.

The continued implementation of this programme will have financial implications for the agribusiness sector, the local health authority, and possibly the central health authority. The first and most important question to be examined is whether or not this programme could be implemented and sustained in a cost-effective way and which changes are to be made in order to improve the efficiency of the model in a rural context. The second question related to the first is how the agribusiness sector experiences the on-farm benefits versus the cost of the implementation and maintenance phases of the programme.

## **1.2 AIMS, OBJECTIVES AND ASSUMPTIONS UNDERLYING THE STUDY**

The aim of this study is to undertake an economic evaluation of a rural CHW programme operating in the Western Cape province. It seeks to evaluate and analyse the nature, performance, and costs of the programme and place it in context by comparison to other similar projects. This comparison will focus on physical characteristics, goals, and cost structures.

The assumption underlying this study is that the CHW programme, if implemented correctly with proper support and training, will be a cost-effective and efficient way of providing primary health care services in this area. This view is shared by Stephen Frankel (1992) in reviewing the contributions made by CHWs in countries around the world. He attributes the frequent disappointment with the outcome of CHW programmes to inadequacies in the CHW concept or even the CHWs themselves. He continues to say that there is no longer place for discussion on whether CHWs can be a key actor in achieving adequate health care for all, but rather how to achieve the concept's full potential. Closer to home, Mathews *et al.* (1994) conducted a qualitative evaluation of a CHW project in Khayelitsha and commented that such a

programme can play a pivotal role in improving coverage and access to formal health services.

### **1.3 METHODOLOGY**

The clinical study was conducted on 211 farms in the Winelands Health district of the Western Cape. The aim of the study is to: “Assess the effectiveness of a CHW programme, designed to focus on PHC, in improving the case detection, case-holding and cure rates of Tuberculosis in an agricultural setting” (Schoeman and Van Zyl, 2000: 2). The clinical study consisted of a two-group randomised controlled trial with before and after data on TB case detection and patient outcomes. The farms were randomly selected by area in order to ensure that all areas are included in both intervention and control groups. Accordingly, half of the selected farms received health worker intervention from May 2000, while the control group received health workers on conclusion of the clinical trials by May 2001, for ethical reasons.

#### **1.3.1 The methodology of conducting the economic evaluation**

The economic evaluation of the CHW programme required it to be viewed from two different perspectives. The first component of the study consisted of an on-farm investigation to view the programme from the perspective of the agribusiness sector. This aspect of the study included a qualitative as well as a quantitative view of the impact that such an intervention could have on farm level. Since the broader implementation of the CHW programme in rural areas would involve co-operation between this and the formal health sector, as well as the possible willingness of the agricultural sector to remunerate the health worker, research was needed to quantify the on-farm benefits of the model. This had to be done in such a way that the benefits identified in the study would be perceived to be benefits by the agribusiness sector. It is important to note that an issue can only be classified as being a benefit if it is perceived as such by the party or group in question.

Of the 211 farms participating in the clinical trials, forty were selected for this part of the evaluation. Twenty farms were randomly selected from each of the intervention and control groups to make up the total of forty.

The second component assessed the cost-effectiveness of the CHW programme within the context of a decentralised, resource-constrained public sector health budget. Since the CHW programme implied certain expenditure on the part of the local health authorities, these costs had to be identified and quantified to gauge the effectiveness of this expenditure. The analysis of a specific health care situation with a focus on the resource allocation and utilisation is defined as an “economic appraisal”<sup>4</sup> (Rossi, **et al.** 1979). This refers to the identification and quantification wherever possible of the costs and consequences of health interventions.

In this study the Winelands CHW programme will be analysed using an adapted form of the systematic approach<sup>5</sup>. This will be discussed in more detail later. Chapter Two provides a brief history of access to primary health care services with reference to the services provided, the availability, and the restructuring of the current health care system in the Winelands area.

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<sup>4</sup> The application of economic appraisal methodology on a particular health care problem is focused on examining the resources available for the provision of health services, recognising that resources are limited and scarce. The aim of such an analysis is to provide information to facilitate the decision-making concerning the use of these resources between alternative uses (Rossi **et al.** 1979).

<sup>5</sup> This evaluation methodology was adapted from the detailed methodologies as discussed in Rossi **et al.** (1979).

## CHAPTER TWO

### HISTORY OF ACCESS TO HEALTH SERVICES IN THE WINELANDS

#### DISTRICT OF THE WESTERN CAPE

##### 2.1 INTRODUCTION

The previous public health care system in South Africa was highly fragmented. Prior to 1993, three levels of administration managed the system. At **level one** there were four departments of health, one for each racial group, in the government. In addition to this, each of the ten former homelands had a semi-independent health department. Thus there were fourteen health departments in total. The **second level** of administration consisted of provincial administrators who were responsible for hospitals, ambulances and outpatient services, while the **third level** consisted of 800 local health authorities that provided environmental services, public health as well as promotive and preventative health care services (ANC 1994:30).

Under this administration the area on which this economic evaluation focuses, was part of the Cape Metropolitan Council. In 1996 there was one general hospital, providing 1.46 authorised hospital beds per 1000 population. In addition to this there were 0.5 primary healthcare static clinics and community centres per 10000 population. The formal health service included one public doctor, 23.9 nurses, 4.4 clinical nursing posts in primary health care, 0.5 patient transport vehicles, 95 in-patient admissions and 1559 out-patient attendance per 10000 population. During the same period there were 22980 attendance per 10000 population at primary health facilities (Winelands District Council 1996:49).

By 1997 the fourteen health departments from the previous government were merged into forty-eight health regions and 180 health districts nationally. Health districts are well-defined areas with an average population of 200 000 people (Naidoo, 1997). In 1997 an area known as the Winelands District became independent from the Cape Metropolitan Council during a process of restructuring of one of these health regions. The Winelands District Council (WDC) became responsible for the provision of

health services in the Western Cape Health District one and two (the Paarl-West Coast region depicted in Map 2). In 1997 the local health authorities subdivided this region into fourteen sub-regions. Areas five to fourteen constitute the area demarcated in this study (Map 1).

In the 1997/98 financial year the council experienced some financial difficulties and were forced to restructure their health services department. It is this restructuring that gave rise to the introduction of a new “core package” of services for the provision of Primary Health Care (PHC) between 1999 and 2001. During the 2000/01 financial year, the Winelands District Council’s region of administration changed once more, as did its name to the Boland District Municipality.

The aim of this chapter is to discuss the current provision of primary health services in the region. To this end, focus will first be placed on how PHC services are provided, which services are provided, and how accessible these services are to the local communities that they serve. Included in this discussion is the effect of the health care restructuring in terms of the ongoing implementation of the new “Core Package” of health services. This will shed light on what has been accomplished to date as well as the future of the provision of these PHC services in the area. This introduction to the provision of PHC services in the Winelands area creates context to the implementation of other health care initiatives such as this one, which is the main focus of the economic evaluation contained in this dissertation.

## **2.2 PROVISION OF PHC SERVICES BY THE LOCAL HEALTH AUTHORITY**

The central purpose of the district health system (DHS) is to transform historically fragmented selective PHC services into integrated, comprehensive PHC services of high quality and delivered by a single authority. The service platform chosen in this approach is (a) Community based and (b) Facility based.

### *Community based health delivery:*

PHC services delivered in a Community based structure:

1. Home/Residential

These are services rendered primarily within the homes of community members.

2. Institutions

Refers to non-health institutions such as schools, children's homes, old age homes and the workplace.

3. NGO / CBO

Non-governmental organisations or Community based organisations such as SANTA (South African National Tuberculosis Association), SANCA (South African National Council on Alcoholism and Drug Dependence) or Health Forums.

Community based health will be discussed in greater detail in Chapter Three.

### *Facility based health delivery:*

PHC services delivered in a Facility based structure

1. Mobile

A vehicle that travels to different service points.

## 2. Clinic and satellite

Fixed service point with nurse driven service. This is usually combined with a mobile unit.

## 3. Community health centres (CHC)

The main service centre for primary care. Responsible for the rendering and co-ordination of all primary care services considered appropriate for a community. The classification of a centre as a CHC is not dependent on its size, but rather the presence of a full time Medical Officer.

## 4. CHC / MOU (Mid-wife obstetric unit)

A CHC with a maternity service rendered primarily by mid-wives or a separate M.O.U. unit.

As mentioned earlier, the governance area of the local health authority was subdivided into fourteen sub-areas (Map 1). Each of these fourteen areas was serviced by a health care package consisting of a mixture of the services mentioned above. Before the restructuring of health services of recent years, PHC service provision focused on facility based structures. This system has however come under increasing pressure the last few years due to budgetary constraints and a change in health care policy. This initiated the restructuring process and the shift towards community based structures.

### 2.2.1 Health policy in South Africa

The White Paper on Reconstruction and Development, published in 1994 (ANC, 1994), outlined the need for a national health system. The underlying strategy of this paper was to secure health for all South Africans through equitable, social and economic development (ANC 1994:9), particularly that of previously disadvantaged groups. The government would in future follow a Primary Health Care (PHC) approach in the provision of health care. In this approach PHC can be defined as follows: "Primary Health Care is essential health care based on practical, scientifically

sound and socially acceptable methods and technology made universally accessible to individuals and families in the community through their full participation and at a cost that the community and country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination” (ANC, 1994:20). Also central to this approach were community participation in the planning, provision and control of health services.

The goal of this approach was not to create an entity that would be prescribed and legislated into being, but rather developed at local level (ANC, 1994:21). However, in 1997 a White Paper was published for the ‘Transformation of the Health System in South Africa’. This step was necessary because the 1994 paper did not create a legislative framework for the implementation of the new health policy. The result was that provincial departments began their own restructuring process, which led to overlaps and duplication of services by provincial and local government. There was also a complicated referral process in place. This lack of concert caused services to be run in an inefficient manner (National Department of Health, 1997: p178).

The ideology behind this new approach was that communities would no longer only be passive recipients of health services that centred on health professionals. Other goals and objectives of the new National Health System (NHS) included:

- To unify the fragmented health service into an integrated NHS
- To promote equity in access and utilisation of health services
- To provide health care that was appropriate and accessible
- To develop health promotion activities
- To develop the human resources available to the health sector
- To cultivate community participation in the health sector
- To improve health sector planning and monitoring.

This however, represented transformation that posed tremendous challenges to health services, government and the society as a whole. It clearly indicated the shift from the former highly fragmented public health-care system, which had a health

department for each of the four racial groups at central level, to a more streamlined community based one. A Provincial Health Authority would be established in each of the nine provinces and be responsible for the co-ordinating of health provision at this level. Resource allocation would focus on the improvement of the status of previously disadvantaged communities and the prevention, control and cure of major diseases. The care of public health problems and community-based care would also be provided free of charge.

From these two documents the issue on why the shift from a fragmented system for the provision of health care to a community based one took place, is addressed. The driving force behind this change was to empower communities concerning the health aspect of their lives, thus changing their status from receivers to participants in health care provision.

In order to place these measures in perspective and look towards the future, it is necessary to acquaint oneself with the status of PHC provision in the study area, the transformation that is taking place and what is planned for the future. The following sections will describe the services rendered in the rural areas of the Winelands district by looking at the facilities available in each region, the services provided, and the availability of these services to the communities they aim to serve.

#### 2.2.2 Services provided by PHC clinics in the rural areas of the Winelands district

There are two elements that need clarification in the delivery of PHC services in this district. The first is the services provided in the rural areas and the second is the delivery system. The following section contains a description of the main categories of PHC services provided in the rural areas and the system used to take these services to the communities.

### 2.2.2.1 Description of the main categories of PHC services

There are five main categories of health services provided by the PHC clinics. This includes mother and child health care, sexually transmitted diseases, TB care, treatment of minor ailments, curative care, counselling programmes and geriatric care.

#### 2.2.2.1.1 *Maternal and child health care and counselling*

This service provided by the clinic personnel includes family planning and childcare. In the case of family planning information on different methods is dispensed and advice is also given on the handling of individual cases. Different kinds of contraceptives are also made available here. The women attending the clinic also have access to basic gynaecological services for example Pap smear tests. In the event that the illness or conditions demand it, the clinic personnel could refer the case to a facility geared to aid in its resolution. This service is also important in order to address certain social issues like pregnancy among teenagers, which has been on the increase.

The second service in this category is health care for children. This service includes immunisation and growth monitoring. The immunisation levels in the Western Cape are relatively high, compared to the rest of South Africa and other developing countries. According to a development report compiled by the WDC (1996), the main cause of death among children under the age of 15 was peri-natal conditions and unintentional/intentional injuries.

#### 2.2.2.1.2 *Sexually transmitted diseases*

The PHC mobile clinics are geared to identify, treat and provide information on sexually transmitted diseases to the communities they serve. Two of the more common of these is congenital syphilis and HIV/AIDS. Table 2-1 presents the notified cases of congenital syphilis in the Western Cape for each year from 1992 to 1999 as well as the corresponding number of deaths in that year. This table shows a steady decline in the number of notified cases from 1994 as well as a decline in the number of deaths resulting from them. HIV/AIDS, on the other hand is not a

notifiable disease. Ante natal clinics around the country conduct annual testing, every October, which provides epidemiological projections on HIV prevalence in South African society.

#### 2.2.2.1.3 *Tuberculosis (TB) treatment*

By far the most common notifiable disease in the Winelands area is TB (Winelands District Council 1996:49). Table 2.1 indicates the nine types of TB occurring in the area as well as the total number of deaths of each type from 1992 to 1999. From this table it is evident that the most common type of TB is Pulmonary TB. The PHC clinics serve to identify possible TB cases and refer them for testing. Individuals that have tested positive collect their medication from these clinics. There is however very little control over the adherence of these patients in completing their course of medication. Despite the high successful TB treatment completion rates the incidence and mortality rates remain high.<sup>1</sup> This fact has lead researchers to believe that there must be an infectious pool of people not previously registered in the TB data. This has given rise to the need for a more effective way of identifying and supporting the infected people to complete the prescribed medication.

#### 2.2.2.1.4 *Treatment of minor ailments and general curative care*

The clinics also treat ailments like the common cold, flu, worms and other similar conditions. The clinic personnel are able to diagnose, treat and in most cases prescribe medication. Patients can also have their blood pressure tested, but a doctor usually prescribes the medication in such cases.

#### 2.2.2.1.5 *Guidance and information services*

These services revolve around the addressing of social problems faced by the community. One such program that has its roots in the PHC clinic system is the so-called “Dop Stop” program.

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<sup>1</sup> Winelands Farm Health Worker Project – Baseline 1998 and Randomisation Report. Unpublished internal project report edited by Deanne Voster. March 2000.

Table 2-1 Number of notified cases and deaths January to December

	1992		1993		1994		1995		1996		1997		1998		1999	
	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases								
AFP Acute flaccid paralysis	0	0	0	0	0	17	0	11	0	23	0	14	0	97	2	99
022 Anthrax	0	0	0	0	0	0	0	3	0	2	0	3	0	0	0	0
023 Brucellosis	0	41	0	29	0	20	0	5	0	15	0	2	0	0	0	1
001 Cholera	0	14	2	94	0	5	0	0	0	0	0	0	0	32	0	3
<b>090 Congenital Syphilis</b>	<b>22</b>	<b>808</b>	<b>17</b>	<b>913</b>	<b>21</b>	<b>913</b>	<b>12</b>	<b>674</b>	<b>4</b>	<b>654</b>	<b>2</b>	<b>241</b>	<b>8</b>	<b>113</b>	<b>2</b>	<b>137</b>
0650 Crimean-Congo haemorrhagic fever	0	9	0	4	0	4	1	4	1	19	0	1	1	2	2	3
Other haemorrhagic fevers of Africa	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
032 Diphtheria	0	3	0	5	2	1	0	6	0	0	0	0	0	4	0	0
005 Food poisoning	0	81	0	329	4	207	3	87	0	188	0	17	3	110	5	435
HIB Haemophilus influenzae type B	0	0	0	0	3	43	2	37	1	65	1	14	5	28	0	21
984 Lead poisoning	0	2	0	0	0	4	0	0	1	0	0	1	0	2	0	4
040L Legionellosis	0	2	1	2	0	4	0	0	0	0	0	1	0	0	0	0
030 Leprosy	3	74	0	16	1	89	0	47	1	13	0	8	0	22	0	19
084 Malaria	14	2872	40	11295	12	10288	9	3832	166	29171	60	13417	136	19213	287	39777
055 Measles	53	22745	18	12395	13	3819	3	2810	24	10567	4	629	1	358	0	39
036 Meningococcal infection	85	533	57	451	29	362	30	251	22	448	11	104	10	132	28	186
0029 Paratyphoid fever	0	0	0	2	1	7	0	6	0	0	0	0	0	2	0	0
020 Plague	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
989 Poisoning Agricultural stock remedies	5	142	6	105	6	166	0	57	7	117	0	61	1	52	3	130
045 Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
071 Rabies	1	9	0	14	3	7	25	25	8	8	4	4	5	5	7	7
390 Rheumatic fever	0	32	3	32	1	30	0	18	0	48	0	11	0	31	2	13
037 Tetanus	20	68	10	39	8	33	6	23	4	31	2	4	1	6	0	11
7713 Tetanus neonatorum	3	13	6	17	3	15	1	2	4	7	4	3	0	2	0	0
076 Trachoma	0	459	0	216	0	62	0	38	0	26	0	6	0	55	0	0
010 Tuberculosis primary	7	5091	14	5741	23	722	15	4700	29	6131	7	2296	17	4427	35	6332
011 Tuberculosis pulmonary	2016	74275	2054	74204	2430	79532	1778	50109	2780	68761	796	25695	1860	41297	2195	45060
012 Tuberculosis of other respiratory organs	12	1032	7	1308	7	1935	12	1161	30	1680	4	469	22	985	14	1482
013 Tuberculosis of meninges	40	373	48	335	85	396	49	248	60	331	16	124	38	263	63	397
014 Tuberculosis of intestines, peritoneum	0	74	0	86	2	84	4	89	3	79	0	32	2	43	1	74
015 Tuberculosis of bones and joints	0	156	5	123	4	139	5	94	4	121	0	58	1	110	4	132
016 Tuberculosis of other genito-urinary systems	2	71	4	75	2	84	2	41	2	62	0	15	0	37	0	43
017 Tuberculosis of other organs	41	1251	11	899	12	767	10	517	37	659	8	298	38	613	39	697
018 Tuberculosis miliary	15	182	37	245	39	242	27	161	34	275	11	100	45	245	44	298
<b>010-8 Tuberculosis Total</b>	<b>2133</b>	<b>82505</b>	<b>2180</b>	<b>83016</b>	<b>2604</b>	<b>90401</b>	<b>1902</b>	<b>57120</b>	<b>2979</b>	<b>78099</b>	<b>842</b>	<b>29087</b>	<b>2023</b>	<b>48020</b>	<b>2395</b>	<b>54515</b>
0020 Typhoid fever	20	1325	15	1522	15	1118	14	590	11	643	7	206	8	336	3	93
080 Typhus fever (lice-borne)	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	1
081 Typhus fever (rat flea-borne)	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0
0701 Viral hepatitis Type A	0	1389	1	1065	2	888	13	518	2	1202	1	281	3	426	5	532
0703 Viral hepatitis Type B	21	638	19	470	15	481	20	358	17	476	9	121	10	332	5	192
0705 Viral hepatitis non-A non-B	4	35	3	97	2	59	4	19	3	16	2	3	0	7	0	5
0709 Viral hepatitis unspecified	21	348	14	232	17	232	2	105	8	159	1	40	4	95	3	69
<b>0701-9 Viral hepatitis Total</b>	<b>46</b>	<b>2410</b>	<b>37</b>	<b>1864</b>	<b>36</b>	<b>1660</b>	<b>39</b>	<b>1000</b>	<b>30</b>	<b>1853</b>	<b>13</b>	<b>445</b>	<b>17</b>	<b>860</b>	<b>13</b>	<b>798</b>
033 Whooping cough	0	0	0	0	1	64	0	34	1	26	0	4	0	19	0	40
060 Yellow fever	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Epidemiological comments (1992 - 1999).

Although paying farm workers with alcohol (as part of their conditions of service) is no longer legal in South Africa, alcohol abuse remains a major problem in the Western Cape. The 'Dop' system and alcohol abuse is associated with many medical and social problems. These include health problems such as malnutrition, foetal alcohol syndrome (FAS), and high rates of TB and poor compliance with treatment. In addition to this there are various social problems associated with alcohol abuse, such as child and spouse abuse, poor school attendance and family disruption (Dop Stop Association, 1999) (Urban Health and Development Bulletin, 1999:33-35). In response to these kinds of problems, the nursing staff of the local health care clinic initiated a project in 1995 aimed at extirpating the "Dop" system on farms as well as reducing the incidence of alcohol abuse among farm workers in rural areas. At this stage the project involved a loose network of interested service providers, non-governmental organisations (NGOs) and other interested individuals. During June 1997 the Dop Stop programme was officially founded.

This programme aims to implement a comprehensive plan in the Winelands area over the next three to five years that could serve as a model for other provinces in addressing similar problems with regards to alcohol abuse. The activities involved in this programme focus primarily on developing community-based interventions, thus working with the farming communities to achieve shared goals. Central to this approach is peer and management support, to be used as a catalyst for behavioural change in farming communities. The success of this programme in addressing this social problem serves as an example of the role the PHC clinics play in community development and general improvement in living conditions in rural areas.

#### 2.2.2.1.6 *Geriatric care*

The elderly, like other vulnerable groups have been neglected in the past, particularly in the rural areas. The guiding principle in this regard is that the elderly have the same right to optimal health as any other group in society. Thus the new NHS has the responsibility to provide the conditions to enable the elderly to maintain good health. The result was that all CHCs were required to develop or expand their services to make reasonable provision for the needs of the elderly. Educational programmes will

be developed for the elderly to encourage healthy living and promote safety (especially at home) (Winelands District Council, 1996; ANC, 1994).

#### 2.2.2.2 The Primary Health Care delivery system for Winelands rural areas<sup>2</sup>

At the beginning of this section the two main PHC service platforms were noted. These apply to both the rural as well as the urban areas in the Winelands district. The focus of this discussion centres on the rural areas. The two main delivery systems in these areas (excluding community-based services to be discussed in Chapter Three) are the clinic and satellite, and the Community Health Centre. What follows is a short discussion of these two systems in terms of the service to the community and its availability.

##### 2.2.2.2.1 *Clinics and satellites*

This service integrates the benefits of having a fixed-point clinic with the versatility and coverage of a mobile unit. Clinics provide a nurse-based service without a full-time medical officer in attendance. One or two days per week the nursing staff attend a fixed clinic<sup>3</sup>.

The mobile clinic units provide the following services:

- Promotive and preventative care
- School health services
- Ante-natal and post-natal care
- Curative services. This includes chronic disease follow-up, for example TB, and acute curative services.<sup>4</sup>

These mobile clinics should visit each site of care at least once every four weeks if chronic disease follow-up services are to be provided. This is also to accommodate immunisation schedules. The timetable for each of the mobile units is set out a year

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<sup>2</sup> The Provincial Administration of the Western Cape as well as the Boland District Municipality provided data on the new core package of PHC services in the D.H.S.

<sup>3</sup> A fixed clinic can be described as a building used to provide PHC services. This can be a dedicated structure or a temporary one used on a regular basis.

<sup>4</sup> Acute curative services are not the primary purpose of the mobile clinics.

in advance. During 1998, after restructuring of the service took place, there were 552 stops<sup>5</sup> per month servicing 880 farms in the region. By 1999 this number had decreased to 190 individual stops, 25 central stops<sup>6</sup> and 12 satellite clinic stops (WDC 2000). The reasons for this cutback were shift in policy and budgetary problems. By the beginning of 2000 there were 220 individual stops, 22 central stopping points and 12 satellite clinic stops per month. The change in the number of clinic stops is reflected in the frequency of stops rather than a change in the location of stops. Each area is still visited at least once a month. The problem with a central stopping point is that patients have to travel large distances for medical care.

The main benefit of this system is the ability to reach a large group of people on a regular basis. The disadvantage is however, that the service is available only once every four weeks at any given site of care.

The satellite clinics also provide a nurse-based service, without a full-time medical officer in attendance. A CHC usually supports them.

The range of services provided includes:

- The range of services provided by the mobile units (as listed above)
- A wider range of curative services (acute and chronic)
- Minor trauma and emergency services
- Nurse-provided rehabilitation services
- Other services provided by outreach professionals from CHC / district / regional level (depending on available resources)
- Community outreach services

The service times may vary from one per week (office hours) to extended hours, depending on the local needs and available resources. The personnel operating the mobile units, with one difference, usually treat this facility as an additional site of

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<sup>5</sup> A “stop” in this case refers to the visiting of a site of care by clinic personnel. This does not necessarily refer to different sites, but rather a measurement of frequency.

<sup>6</sup> This refers to a site of care that services a 5 km radius, as apposed to an individual stop that services only the immediate community. Generally more time is spent at a central stop than at individual stops.

care. This point is visited once or more times per week on a regular schedule, while the other points of care are only visited one every four weeks (on average).

This service costs between R190 000 and R220 000 per year with approximately 120 000 patients making use of it.

#### 2.2.2.2.2 *Community Health Centres (CHC)*

Community Health Centres have a full time medical officer and pharmacist. They are supported by the district hospital. The services they provide include all the services delivered by the clinics above as well as:

- A wider range of curative services (acute and chronic)
- Emergency services
- Minor surgery
- Rehabilitation services
- Dietician services
- Social worker services
- X-ray services
- Dental services
- MOU services (Mid-wife obstetric unit)
- Mental health services
- Other services provided by outreach professionals from district / regional level.

This service is available from 8:00 in the morning till 16:30 in the afternoon<sup>7</sup>. These times may be extended, depending on local needs and resources, to Saturday mornings, extended weekday hours, on-call arrangements for after-hours emergencies, or 24-hour service for trauma, emergencies, and obstetrics. The deciding factor in which services are provided by each of the CHC centres is

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<sup>7</sup> The clinics operate during office hours. The times noted may vary depending on the distance from the Paarl or Stellenbosch CBD.

accessibility, appropriateness of service and affordability. This service can be described as a “One stop health station”.

The long-term focus of the continuous process of health service transformation in the Winelands area shows a movement towards having only centralised clinics (CHC) servicing larger groups of people. The problem with this is that the people of the rural communities they aim to serve are poor and in most cases without their own transport. With continued restructuring and budgetary cutbacks, pressure on this system is increasing. The need for a support system that would be able to screen cases and refer serious cases to receive formal medical care is needed. One possible option would be to create a community based screening system that would relieve the pressure on the formal health system and serve to empower communities in the process.

Chapter Three describes the community health worker (CHW) model as a possible answer to the problem faced by the formal health sector in the rural areas of the Winelands.

## **CHAPTER THREE**

### **FUTURE PROVISION OF PHC SERVICES – WINELANDS CHW PROGRAM**

#### **3.1 INTRODUCTION**

The CHW model as a concept in developing countries is not a new one. But what is a CHW? CHWs are men and women chosen by the community and trained to deal with the health problems of individuals and the community and to work in close relationship with the health services (World Health Organisation, 1987). Community based health care workers have been employed in South Africa during the past ten years in an attempt to solve the problem of equal access to health services for all racial groups. This model especially targets groups that do not have fair access to health services due to the separation created by the apartheid era. Under the apartheid regime, human resource development was neglected in favour of technological and economic development (Drummond-Hay, 2000). Development was imposed on people and no structure for consultation existed. After the 1994 elections, emphasis shifted towards community driven development. Although the same principles apply, not all the programs based on the CHW model have the same focus and not all have met with equal success in achieving their goals.

This chapter investigates the CHW program as implemented in the Wellington region of the Winelands district. It describes the program in terms of the aims and objectives, the focus, the selection of health workers from the community, their training, and the advantages over the current system for the provision of PHC services. The structure of this model will then be compared to similar initiatives by investigating any criticisms raised against this type of intervention in the past. This framework will later be used in order to determine the cost of implementing and sustaining this programme. The cost data will then be compared to other similar CHW programmes in order to determine the cost –efficiency of implementation and maintenance.

## 3.2 THE ROLE AND FUNCTION OF CHWs

Over the years CHWs in many countries have achieved much, but frequent disappointment with the outcome is often attributed to shortcomings in the CHW concept or the CHWs themselves (Frankel, 1992). The success or failure of CHW interventions is largely determined by the clarity in defining the role of the health workers and realistic expectations of their performance (Walt, 1990). The question however, is no longer whether CHWs have a role to play in securing adequate health care for all, but how to have them achieve their full potential (Frankel, 1992). CHWs are in a unique position to act as a bridge between the communities, in which they are active, and formal health services. It is however important to note that this role as intermediary can also give rise to serious problems that should be taken into consideration. The CHWs are marginal to both the formal health sector and the community they serve (socially). This marginality can cause them not to be accepted by either of these groups. The question is: Should the CHWs represent the community or the formal health system (World Health Organisation, 1986)? The ideal would be to have both. In order to achieve this it is imperative to unambiguously define the role that the CHWs play in the community whilst acting as a representatives of the formal health system, so that they deliver an appropriate service while remaining accountable to the community.

### 3.2.1 Roles expected from CHW (international experience)

The World Health Organisation (WHO) conducted a survey in 1984 of different CHW programmes in various countries. This survey found that some of the tasks set for CHWs appear to be common to most programmes, while others are less so. The results of this survey are presented in Table 3.1.

Table 3.1 Tasks expected of CHWs in the WHO inter-regional study on CHWs

<b>Tasks designated in all 11 countries surveyed</b>	
* First aid, treat accidents and simple illness	* Immunisation motivation, assistance during clinic visits
* Pre- and post natal advice, motivation	* Environmental sanitation, personal hygiene
* Dispense drugs	* Refer difficult cases to health centre or hospital
* Child-care advice, motivation	* Maintain records, reports
* Nutrition motivation, demonstration	* Participate in community meetings
<b>Tasks designated in 10 out of 11 countries surveyed</b>	
* Family planning motivation	* Communicable disease follow-up, motivation of confirmed cases
* Communicable disease screening referral, prevention, motivation	* Visit homes on a regular basis
<b>Tasks designated in 8 out of 11 countries surveyed</b>	
* Nutrition action	* Perform tasks outside health sector
* Collect vital statistics	
<b>Tasks designated in fewer than 8 of countries surveyed</b>	
* Communicable disease action (7 countries)	* Immunisation – give shots (3 countries)
* Family planning – distribute supplies (6 countries)	* Perform school health activities regularly (3 countries)
* Assist in health centre clinic activities (5 countries)	* Deliver babies (2 countries)

Source: *World Health Organisation. Community Health Workers, Report of the Inter-regional Study and Workshop, July 1984.*

Frankel (1992) conducted a review of a number of Community Based Health Worker Programmes in different parts of the world. In this review he states that there is little disagreement about what would be desirable tasks for CHWs.

In broad terms the ideal would be for CHWs to be effective in the prevention of and the promotion of aspects of development work that could improve conditions that set high levels of morbidity and mortality.

### 3.2.2 Key factors for the effective functioning of CHW programmes

Some key aspects identified by Lomax and Mametja (1995), Makan (1997), Walt (1988), Sanders and Carver (1985) include:

- Appropriate criteria for selecting CHWs
- Adequate and appropriate training of CHWs
- The development and maintenance of linkages with the community and the formal health sector
- Continued education and support
- Adequate funding
- Development of community accountability with CHWs
- Ongoing evaluation and feedback
- Effective supervision

### 3.2.3 Factors essential for sustainability of CHW programmes

The failure of many CHW programmes over the years has generated concerns about the ability of CBHW programmes to be sustained in the long term. Lomax and Mametja (1995) revealed that there are certain fundamental factors necessary for sustainability which, if not present, prejudice programmes to failure in the long term.

These factors include:

- Programmes should be adequately funded for effective implementation and maintenance.
- Programmes should be cost effective. Thus programmes should be functionally and financially sustainable.
- An analysis of the community should be performed and an awareness campaign launched to inform and mobilise them to become involved.
- There must be community involvement in the selection and training of CHWs.
- Mechanisms should be put in place to ensure CHWs remain accountable to the community they aim to serve.
- The expectations of programmes regarding the functioning of the CHWs should be specific, acceptable, and realistic.
- Strong links should be forged with the formal health sector. Bastien (1990) and Harroldson (1988) place the emphasis on firm teamwork.
- There is a need for political commitment towards community-based health. If there is to be an extra pair of hands, countries must be committed to structural change (Ramprasat, 1988).
- CHWs must be accountable to the community they serve as well as the local health authority.
- There should be adequate and effective supervision.
- Regular evaluation should be carried out and feedback given to CHWs.
- The state must become involved through training, funding, and legislation.
- Relevant training should be provided for CHWs, health worker facilitators, supervisors, community- and local government committees.

Implementing a CHW programme should not be seen as adding just another health worker to the existing health service staff. The CHW should be the main focal point for the promotion of PHC services at community level. It is the responsibility of the

health services to strengthen the factors essential for sustainability to enable the health worker to work effectively and fulfil his/her functions.

### **3.3 THE WINELANDS DISTRICT CHW PROGRAM**

In this section the details of the CHW program, as implemented in the Winelands district of the Western Cape, will be discussed. Included will be the programme setting, the study aim and the specific goals of this intervention. The details contained in this section will, along with the cost data, serve to compare this programme with other similar programmes in Chapter Five.

#### **3.3.1 Study Aims and Objectives**

Since 1994 South Africa has been in a process of social, political and economic reform. The systematic withdrawal of health care resources in this restructuring process has had a negative impact on the quality of service provided to farming communities. The number of farms that were previously visited every two weeks by PHC mobile clinics has been reduced so that workers will now have to walk up to five kilometers to receive the same care. The restructuring of health services was discussed in Chapter Two. The new intervention was designed to introduce a PHC point on the farm, in the form of a trained CHW, in order to counteract the effects of the reductions mentioned above and enhance the positive cycle of social development amongst these underprivileged communities.

The aim of the clinical evaluation was to assess the effectiveness of a CHW programme, designed to focus on PHC, in improving case detection, case-holding and cure-rates of Tuberculosis in an agricultural/rural setting.

The **main objectives** of the study were:

- To perform a systematic review of the evidence linking the effectiveness of CHWs in improving TB treatment outcomes.

- To design an unblended two group cluster randomised trial to test the relative effectiveness of CHWs in improving case detection, case-holding and cure rates of TB in the Wellington area of the Western Cape, South Africa.
- To make recommendations to the South African TB Control Programme and the Department of Agriculture regarding strategies to improve case detection, case-holding and cure rates of TB in an agricultural setting, based on the results.

The **specific objectives** of the study were:

- To conduct a situation analysis to describe the current practices in TB management and case detection, case-holding and cure rates of TB patients in the Wellington area of the Western Cape, South Africa.
- To collect baseline data required for the sampling process.
- To request permission from the community to conduct the study on the 211 farms in the greater Wellington – Paarl area.
- To empower 105 farm communities to select, appoint and manage peers as CHWs.
- To equip the staff members of the formal health sector with the skills required to develop, implement and maintain a CHW programme.
- To train selected CHWs in Tuberculosis and PHC skills.
- To facilitate and support the process of implementation of the strategy.
- To monitor the community health worker adherence to the detailed TB case detection and case holding strategies.
- To evaluate the effectiveness of the CHW strategy in case detection, case holding and cure rates.

### 3.3.2 Study setting and design

The study was conducted on 211 farms in the Western Cape Health District 2 (Paarl-West Coast region: Local Health areas 9-14, see Map 1). This is a predominantly

export-grape and wine producing agricultural area. The region has a population of approximately 63 000 people. Each farm in this region employs between 20 and 50 permanent farm workers with their families who mostly live on farms in closed micro-communities. As previously mentioned, the existence of true communities is questionable, thus the classification of these groups as communities is based on them living in the same geographical area and membership to these social groups is relatively static. Seasonal workers are recruited during the harvesting season. Very little is known of the movement of this large group of workers, which could be up to three times the size of the permanent workforce. Some of the major health problems in the region are TB, sexually transmitted diseases and substance abuse. The access of the farm workers to health services is limited due to their social and economic dependence on their employers.

The marketing of the project started in September 1999 and was concluded by February 2000. This phase included the introduction and promotion of the programme to the community. The control trial involved the dividing of the 211 participating farms into two groups. The first of these groups (intervention group) received the health worker intervention during the first phase of the study. The control group would only receive the health worker intervention at the conclusion of the evaluation. Both these groups were kept as sterile of external influence or interventions as possible in order not to 'contaminate' the sample. Each of the participating farms was visited by a community-health nurse where the extent of the TB problem was explained and the aims of the intervention presented to the group of farm workers. A volunteer was then selected by the community to be trained as a CHW.

### 3.3.3 Training Programme

Once the community chose their representative, the training of the first phase CHW could start. Participation in this program required the farm owner to enable the selected employee to receive training and also attend an ongoing training program. The training program covered technical areas such as management of TB, HIV/AIDS infection in the community, growth monitoring in children, oral rehydration, breast-feeding, immunisation, female education, family planning, and food supplementation.

Each CHW was provided with a handbook reinforcing the educational material. CHWs were also trained to recognise and treat common simple illnesses and health problems such as worms, burns, coughs and simple childhood illnesses. Each CHW had a stock of non-scheduled medicines and dressings to treat the ailments mentioned above.

The training schedule was divided into four modules:

- Module 1: Introduction to Primary Health / SANRA: Life-skills
- Module 2: Tuberculosis Control Programme / SANRA: Life-skills
- Module 3: AIDS / Family Health Care / SANRA: Life-skills
- Module 4: First aid (Level one)

Each of the four modules was presented to the aspiring CHWs in a five day-session. The training of phase one (intervention group) started on the 15<sup>th</sup> of May 2000 and was concluded on the 30<sup>th</sup> of September 2000. After the initial training, the health workers received ongoing training and support in the form of one or two day-sessions per month recapping modules already covered and also expanding on these topics.

### **3.4 BENEFITS AND CRITICISM OF COMMUNITY BASED HEALTH CARE**

Community based health care has been employed in South Africa during the past ten years in an attempt to solve the problem of equal access to health services for all racial groups. This model especially targets groups that do not have fair access to health services due to the separation created by the apartheid era in South Africa. Although the same principles apply, not all the programs based on this model have the same focus and not all have met with equal success in achieving their goals.

This section investigates some of the benefits of, and criticism raised against community based health interventions.

### 3.4.1 Benefits of Community Based Health Care (CBHC)<sup>1</sup>

This section identifies some of the more common benefits of community-based health, not only in South Africa, but around the world.

These benefits are:

- The service responds to the specific health needs of a community. In order to provide an adequate and appropriate health service, a clear understanding of local health problems is essential.
- Community based health generates a high level of awareness concerning health issues.
- This service is concerned with people's health and not just a disease.
- There are clear systems of referral that ensure that patients are cared for by appropriately trained personnel with health workers to support them and their families during treatment.
- It generates a good ongoing relationship between health care staff and the community (also note 'criticism and weaknesses' on this issue).
- It could potentially relieve some of the pressure on the already overburdened public health services.
- It provides a platform for ongoing evaluation of health conditions and the effectiveness of health interventions.
- Community empowerment: In many cases the role of the health worker exceeds health related tasks. CHWs also assume a great deal of responsibility for the general well being of the community they serve.
- It could also be a cost-effective way of dealing with minor ailments.

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<sup>1</sup> Drummond-Hay (2000) and Dick et al. (1997) identified the possible benefits noted in this section.

### 3.4.2 Criticism of community based health programmes

This section investigates some of the criticisms raised against community based health interventions in general. This will be done by asking certain questions concerning different aspects of the intervention followed by a short discussion of the issue.

Even the best of intentions can sometimes produce harmful results. Hammond and Buch (1984) refer to this process as a “perversion of a progressive concept”. The question is whether the CHW program can work effectively and have a positive impact on the community it intends to serve? A situation is entered with a theoretically ‘good’ idea and all the energy and determination to make it work; but much later when the outcome is examined, it is found that reality has perverted it into the opposite of what was intended. Newell (1975:194) states that there is no doubt that the CHW can work effectively and in an acceptable manner, but this does not deny the fact that at times these same health workers can work ineffectively and in an unacceptable manner. Werner (1981:46-54) addresses this contrast in outcomes by pointing out the difference between “community supportive “ and “community oppressive” workers. He describes a community supportive worker as follows: “If the village health worker is taught a respectable range of skills, if he is encouraged to think, to take initiative, and to keep learning on his own, if his judgment is respected, if his limits are determined by what he knows and can do, if his supervision is supportive and educational, the chances are that he will work with energy and dedication, will make a major contribution to his community and will win his people’s confidence and love. His example will serve as a role model to his neighbours, that they too can learn new skills and assume new responsibilities, that self improvement is possible.”

Reserving the danger that the CHW could start to associate with the formal health services rather than with the community, such a worker is clearly effective and acceptable in the community. Not only does he have a positive impact on the health of the community but also on the growth of the human potential locked within the community.

Unfortunately not all CHW programmes have this positive effect on the communities they attempt to serve. In some programmes a CHW is taught a limited range of skills, trained not to think but to follow instructions and to work within rigorous limitations. Such a Health Worker will have a limited impact on the health of the community and no impact on the growth of the community. The answer to the question posed earlier could be “Yes”, but it is important to note that the answer could also very easily turn into “No”.

In the past the problem of selecting suitable candidates to be trained as Health Workers has been expressed. During implementation of the program the community involved is asked to nominate a candidate to be trained as the community’s health worker. It is generally accepted that the community democratically selects the candidate and hence the person is trusted by the majority of that community to fill this position. The effective implementation of the CHW program in a community is dependent on the trust and confidence that the community has in their candidate. This is however not always the case. It is important to note the political conflict and instability often present in such communities. In some communities there are powerful and often unpopular authority figures sending a friend or family member to be trained, thus undermining the democratic process assumed at implementation. In many communities there is also no infrastructure to facilitate this democratic process. The success of this program is based on the assumption that there is a strong trust relationship between Health Worker and the community. Some programmes have also found that the position of Health Worker has been used as stepping stone for young adults as a way out of the village and into a better paying job elsewhere. The result of this inadequate election process is that the wrong person is sent for training and the subsequent chance of success of the CHW programme is very slim.

A third question could be whether the CHW has a positive impact on the provision of health care? The answer is largely dependent on the type of training received by the Health Worker. The Health Worker has both a curative role as well as a preventative role in health provision. If the CHW can build credibility through the curative role, he could use this trust to promote preventative concepts. If the Health Worker is, as in the case of Mhala (Hammond and Buch, 1984:12) only trained in the treatment of a specific ailment, problems with loss of credibility could lead to the collapse of the

entire program. This has led to the CHW keeping a small stock of non-scheduled medicine and bandages in order to treat minor health problems.

Another important issue is whether the CHW has a positive effect on community development in general? The CHW, through her training, should be able to identify the problems faced by the community and aid in the resolution of those problems. In this way the community would regain some control over their own lives. But what happens when the newly trained CHW, armed with a newfound confidence and predetermined ideas, starts solving what she sees as problems without consulting the community she is supposed to be serving? This is what happened in Mhala. The CHWs in this area did not focus on the process of working together, but rather imposing their own ideas on the community. In this way the community was not empowered to be in control of their own lives but merely oppressed by someone they once trusted. It is also important to note that the CHW is marginal to both the formal health care system and the community. This marginality between community and health can cause them not to be accepted by either.

A fifth issue that has raised concerns in the past is the difference between support and policing the community. The role of the CHW is one of supporting the community and through this support enabling them to grow. It is important that the training and support that the CHWs receive enable them to effectively handle the power and trust placed in them by both the trainers and the community they serve, otherwise the CHW programme becomes just another form of oppression.

## **CHAPTER FOUR**

### **METHODOLOGY**

This chapter deals with the methodology used in the evaluation of the Winelands CHW programme. The first section will serve to identify and discuss the main theoretical approach used in the evaluation. Included in this discussion will be the applicability of this approach, its limitations, and data needs. The following section will discuss the sampling process and gaining access to the farming community. This section points out an element of research often overlooked or discarded as less important – access to the sampled community. It contains experiences from the people making first contact, the different levels of access and the introduction of other researchers into the sample community. The last section deals with the specific data needs and the process of obtaining this data.

The aim of this chapter is to familiarise the reader with the theoretical framework used to evaluate this CHW programme, the gaining of access to the sample in order to maximise the accuracy of data, and the data collection process, the results of which will be discussed in Chapter Five.

#### **4.1 THEORETICAL APPROACH TO THE EVALUATION OF THE WINELANDS CHW PROGRAMME**

Rossi, *et al.* (1979) define the process of evaluating a specific health care situation with the focus on resource allocation and utilisation as an economic appraisal<sup>1</sup>. It implies the identification and quantification, where possible and applicable, the costs, consequences, and benefits of different health interventions (Makan, 1997).

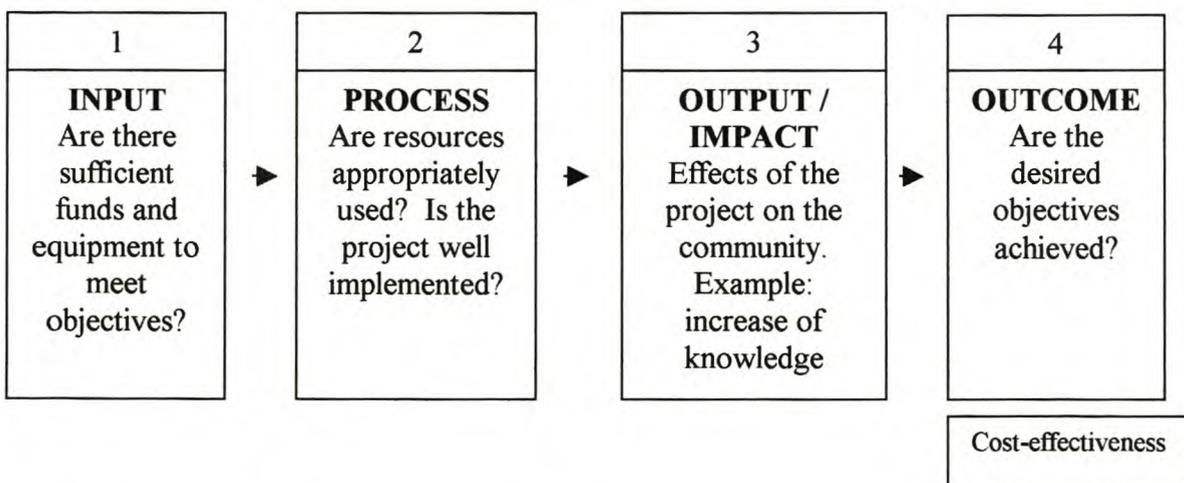
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<sup>1</sup> The application of economic appraisal methodology on a particular health care problem is focused on examining the resources available for the provision of health services, recognising that the resources are limited and scarce. The aim of such an analysis is to provide information to facilitate decision-making concerning the allocation of these resources between alternative uses (Rossi *et al.*, 1979).

This evaluation of the Winelands CHW programme was based on a systematic approach. This entails the systematic application of social research procedures in assessing the design, implementation, and utility of social intervention programmes (Rossi and Freeman, 1987), i.e. to judge and improve the planning, monitoring, effectiveness, and efficiency of health, education, welfare, and other human service programmes. Evaluation activities can be described as the collection of evidence based on experience with an already existing programme. After analysis of the evidence, the researcher describes in detail how they came to their conclusions so that the reader can judge the plausibility of each conclusion. The information contained in such a study can thus be scrutinised and interpreted independently. The reason for undertaking such an evaluation is to establish whether the cost of an intervention can be justified by the extent of the output.

Figure 4-1 illustrates the first four phases of the systematic approach as presented in Rossi, *et al.* (1979).

**Figure 4-1: A systematic framework for the evaluation of a CHW programme**



*Source: Adapted from Lomax and Mametja (1995)*

The most common techniques for answering economic efficiency questions are found in two related approaches, namely the cost-benefit and cost-effectiveness analysis. In many evaluations, however, formal and complete efficiency analysis is either impractical or unwise (Rossi, *et al.* 1987).

Elements contained in a standard cost-effectiveness analysis were employed in the evaluation. The use of cost-benefit analysis would open the controversy inherent to health care programmes, which is the gauging of improvements in health status and lives saved. Determining to what extent such improvements could be attributed to one specific intervention would be difficult enough, without attempting to assign a value to such improvements. The CEA only requires the assigning of monetary values to programme costs, and benefits are expressed in outcome units (Rossi and Freeman, 1987:330). The CEA thus tests the efficacy of a programme in achieving its goals in relation to the cost of the resources put into the programme.

The systematic approach as presented by Rossi and Freeman, (1987) focuses not only on the testing of the efficacy of the outcome, but also describes the process of investigation leading up to the final evaluation.

a)           Inputs:

This entails identifying and where possible the quantifying of all the inputs from all role-players. This includes financial inputs, equipment, transport, and any additional training needs (venue, etc.).

b)           Process:

This entails investigating the process of implementation of the programme. It focuses on the use of funds during the marketing, implementation, and maintenance phases of the programme. The investigation into the use of funds was conducted by drawing up a partial budget of the programme during the marketing, implementation and maintenance phases. This also included a more qualitative view of the process by investigating the gaining of access to the community for training purposes, the provision of adequate information to the farming community in order to gain their support for this intervention, and providing appropriate training to CHWs to fulfil the goals of the intervention.

c) Output / Impact

Output / impact measurement could include:

- The achievement of self reliance in health care
- Community empowerment
- A change in disease prevalence
- The number of visits by patients to CHWs

Thus, output or impact measurement concentrates upon more than what quantitative methods do.

d) Outcome:

The three phases of investigation were used to determine the outcome of the intervention, i.e. to what extent the goals of the programme were realised, with an emphasis on the cost involved. To place this in context, the results from this analysis will be compared to other similar programmes conducted in the Western Cape over the last couple of years. This comparison is based on a comparative analysis of cost and consequences of CHW programmes in the Western Cape region conducted by Makan (1997).

4.1.1 Limitations in the evaluation of CHW programmes

International studies recognise that the use of cost-effectiveness and other outcome frameworks are very difficult when looking at community-based health initiatives (Makan, 1997). The feasibility of conducting in-depth studies is questioned given a broad range of concerns.

These include:

- CHW programmes do not fulfil a single purpose, but rather encompass a number of activities. The CHW programme provides a range of interventions with different goals, target groups, and requirements. An in-depth assessment

of a CHW intervention would imply the separation of these activities and evaluate each of these roles the CHW plays. By adding these assessments together one can produce an overall assessment of the programme. This approach is too complicated and expensive to be feasible (Makan, 1997).

- The contamination of the sample areas through other activities and interventions makes the task of determining causality, or the direct influence of the CHW, very difficult.
- Gauging the effectiveness of a CHW intervention in terms of the improvement in health status is difficult, because the effects of such a programme are usually experienced over a long period of time and the allocation of monetary values to the outcome of preventative education programmes is problematic.

The main focus of this study is the determination of the effectiveness of the Winelands CHW intervention by relating the outcomes of the programme to the costs involved in attaining these outcomes. As noted in the preceding discussion, these outcomes are not necessarily quantitative in nature. The following sections deal with the sampling process, the determining of data needs, and the process of collection of data from different sources.

## **4.2 SAMPLING AND SAMPLE SELECTION**

### **4.2.1 Sampling**

The selection of a sample of farms for the economic evaluation became necessary in order to validate the power of the data collected from the interviews as well as the data collected through the year. The sample selection was based on the process used by the clinical evaluation team in selecting their sample. This consisted of a two-grouped randomised control trial, thus dividing their population/universe into two groups by random selection. The sample selection from the economic evaluation used this as its universe and selected a number of units from each of these groups.

There was, however still the question on how many units would be needed in order to be able to draw conclusions/inferences about the group as a whole. For this a statistician at the Medical research Council (MRC) was contacted. In order to determine the sample size it was necessary to gauge the importance of accurate sample selection. This would be determined by the end goal of the collected data.

The data collected from the interviews as well as the data collected over the following year served to describe the effects, costs and perceptions on the agricultural community of the CHW intervention. The assumption was that the perceptions and costs, which are the two determining factors, would vary little between individual farms of each group. Another assumption was that there would be a measurable intervention effect after one year, especially in terms of the perceptions of the intervention, be it positive or negative. A sample size of 16 farms per group was determined to be adequate in light of the goals of data collection and the relatively small variation expected in the determining factors (5 % significance level).

#### 4.2.2 Sample Selection

The only way to make correct statistical inferences from a sample to a population in an enumerative study is through the use of a probability sample.

The four types of probability samples are:

1. Simple random sample
2. Systematic sample
3. Stratified sample
4. Cluster sample

There are two basic methods for drawing a simple random sample:

1. With replacement: The chance of an item to be drawn does not change, because the drawn item gets replaced each time.

2. Without replacement: The drawn items are not replaced, thus disqualifying them from further draws. This in effect increases the chances of one item being drawn each time, because the universe drawn from shrinks each time.

A simple random sample<sup>2</sup> of 20 farms was drawn from each of the two groups, without replacement. This constitutes an over sample of 25%.

#### 4.2.3 Exclusion Criteria

Due to the nature of the sampling process, there were two sets of exclusions. The primary sifting of respondents was done at project level, thus only a few exclusions were necessary for the economic evaluation. The criteria used in the disqualification process will thus be discussed together, and specific exclusions for the economic evaluation will be discussed with the results of the study in chapter five.

The following criteria were used to exclude possible farms from the sample:

- Farmers who felt they were not ready and would like to join later<sup>3</sup>.
- Farms that were already part of a development programme.
- Farms that were rented (continuity problem).
- Farms that made use of contract workers only (problem with selection of CHW from the community).
- Farms with no farming activities (i.e.: They functioned as old age homes or guest farms).
- Smallholdings.
- Farms that were too small (two families or less living on the farm).
- The farms used in the 1993 pilot project (Klein Drakenstein).

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<sup>2</sup> Every individual or item has the same chance of selection and the selection of an element does not influence the chance of any other to be drawn (Levine *et al.*, 1997).

<sup>3</sup> In many of these cases this was due to structural changes on the farm, financial constraints, or labour problems.

#### 4.2.4 Ethical and other issues in survey research

Even when a survey employs random probability sampling methods, it is still subject to possible errors. There are four types of survey errors (Levine, 1997):

1. **Coverage error or selection error:** This results from the exclusion of certain groups of subjects from the population listing so they have no chance of being selected in the sample. This results in Selection Bias.
2. **Non-response error:** Not everyone will be willing to respond to a survey. This error thus results in the failure to collect data from all subjects in the sample. This results in a Non-response Bias.
3. **Sample error:** Three reasons for drawing a sample rather than taking a census is that it is more expedient, less costly and more efficient. If one, for example, uses a table of random numbers to select subjects in a Random Probability Sample, the place you start on the table influences the chances of inclusion of a certain subject. The sample error reflects this heterogeneity (Chance Differences) from sample to sample based on the probability of a subject being included in the particular samples. Drawing a larger sample can reduce the sampling error, but this increases the cost and time of conducting the survey.
4. **Measurement error:** In survey research, a questionnaire is designed with the intent to collect meaningful, valid, and accurate information. There is however a dilemma here; Consider the following proverb (Levine, 1997): *“A man with a watch always knows what the time is; A man with two watches always searches to identify the correct one; A man with ten watches is always reminded of the difficulty of measuring time.”* The process of obtaining a measurement is often governed by what is convenient, rather than what is needed. There are three main sources of measurement errors.
  1. A question should be unambiguous and objectively presented. Unclear or leading questions contaminate the answer.
  2. It occurs in personal and telephone interviews. It sometimes happens that the response to a question is aimed at pleasing the interviewer, rather than providing an honest answer. This can be

minimised by proper interviewer training. 3. Sometimes the measurements obtained are gross exaggerations, either wilful or due to a lack of recall on the part of the respondent. This hampers the utility of the survey (G-I-G-O)<sup>4</sup>. This type of error can be minimised by scrutinising the data carefully and revisiting respondents with unusual responses and by establishing a programme of random call-backs in order to determine the reliability of the responses.

Not all research is good, meaningful, or important and not all survey research is ethical. The researcher must critically evaluate what is read and heard by determining the objectives of the research and discard it if it is found to be lacking objectivity or credibility.

#### **4.3 ACCESS TO AGRICULTURAL COMMUNITIES FOR RESEARCH PURPOSES**

The issue of access to sampled communities, especially in an agricultural setting, has to a great extent been taken for granted or often disregarded in the planning phase. This fact becomes apparent in reviewing literature on the research process. Emphasis is placed on the sampling, design of questionnaires and other research methodologies, and the use of the collected data to base conclusions on. Very little is documented on the dynamics and pitfalls involved in gaining effective access, which is a critical factor in obtaining accurate data from respondents. Access to agricultural communities is a rare commodity with a complex hierarchical structure.

This section on access is a culmination of the experiences of the researchers involved in the evaluation of this CHW programme and aims to contribute information gleaned from, not only this project, but from years of national experience in this field.

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<sup>4</sup> G-I-G-O: Garbage-In-Garbage-Out. What you put in is what you get out.

#### 4.3.1 The process of access to agricultural communities

The question could be asked: Why is agricultural access important enough to dedicate so much time in describing its dynamics? Statistics South Africa (Census in Brief 1998: Table 2.3) indicates that 47.5% of the South African population live in non-urban areas, which is dependent on the agricultural sector, be it directly or indirectly, for their livelihood. The same table indicates that 11,1% of the population in the Western Cape Province live in non-urban areas.

The process of access is difficult as it entails building a trust relationship with individuals, which in turn is time consuming. This process has to take into account the unique nature of the target group, i.e. cultural and social structure, the decision-making process, and levels of education or knowledge. To address the health issues of the people living and working on a farm, be it permanent or seasonally, is unique. This stems from the fact that they reside on private property and cannot be accessed without consent of the owner or management.

#### 4.3.2 Levels of Access

The hierarchal structure on each farm must be understood and respected in order to gain effective access. Two main levels of access were identified:

- Management / Owner
- Employees

It is also important to identify the information needed by each of the levels. This makes it possible for the respondent to make an informed decision on whether or not to take part in the study / intervention.

##### 4.3.2.1 Level one: Management

The management of agriculture have come a long way from their traditional role as producers of agricultural goods. Farms today are managed as business ventures with many farmers having a tertiary education.

It is important to note that ownership and management are not necessarily the same on all farms. The owner can also be the manager, but the farm (or agribusiness unit) could be owned by a third party. Irrespective of ownership, the hierarchical system of decision-making is very real. In a more traditional setting of resident ownership and management, the final decision on access or any other issue rests with the owner. In a more corporate setting, the on-farm manager has to get approval from the corporate owners before allowing access or any intervention on the farm. The same applies for farms owned locally, but externally managed.

The employer has to approve of the person and the idea he is “selling” before allowing access to the next level. Effective access cannot be forced. Management needs to comprehend the problem, how it affects them, and how they can be assisted in solving it.

#### 4.3.2.2 Level two: Employees / Residents

The next level of access is the employee community. Once management gives the go-ahead on the intervention or study, access to the community living and working on the farm is in no way guaranteed. It is important to recognise that there are social and political structures in place within each community that dictate the access that will be allowed. Example: If the researcher were trying to gain access to the children living on the farm, he/she would have to first consult the community leadership for access to the village, then ask the permission of the children’s parents, and in some cases - where the children are old enough – even ask their permission.

The person wanting to gain access has to create a need within the community for the project to succeed. This is a time-consuming and in some cases expensive process, but is essential as the community experience that their contributions are taken cognisance of and valued. This is applicable at both levels of access.

#### 4.3.3 Perceptions of change

In order for management to make an informed decision, he/she has to be provided with timely, complete, accurate, and reliable information. The need for this is

amplified by the negative experiences many of the farmers have had with interventions from other research programmes in the past. The same is true for the community living on the farm.

In the agricultural sector, change is not easily adopted, but rather viewed with great caution and suspicion. This is partially due to the fact that change in agriculture implies long-term investment decisions, thus a hasty decision could have disastrous implications.

In some cases enlisting the help and support of the local agricultural or farmers association could accelerate access. This approach would only be effective if the head of the association agrees with the goals and research approach proposed. The other condition of the success of this approach is that the farming community must trust the judgement of the association. It seems logical that the farming community would trust their own 'democratically' elected representatives, but it is important to remember that any association is a political structure and as such could be prone to infighting and the formation of opposition groups to the current leadership.

#### 4.3.4 Issues Influencing Access

The following section contains some other issues influencing the gaining of access. Although these are not discussed in finer detail, they are not necessarily less important than the issues discussed thus far.

These are:

- Seasonal issues and the timing of the attempts to gain access.
- Political issues. This could influence access, especially if the project has a political flavour.
- The reason for wanting access must make sense to the decision-maker at the level the researcher wants to access.
- It is important to realise the social and cultural differences between the different levels of access.

- The decision maker must, to a certain extent, trust the process as well as the person wanting access. This however does not happen in one interview, but rather over a period of time.
- Often individuals wanting to gain access are treated with great suspicion. This is sometimes due to negative past experiences with research or interventions or due to a fear that fully complying would incur further financial obligations.
- Should access be denied at any level, no further access is possible lower down in the hierarchy.

#### 4.3.5 The person seeking access

There are some basic characteristics required of the person seeking to gain access to the agricultural sector for research or intervention purposes, namely:

The person has to:

- Accept and accommodate the unique cultural setting and beliefs of each of the individual farming units / agribusiness units, with empathy for their specific problems and needs;
- Make appointments long in advance and keep them irrespective of what happens. If it is impossible to be on time, apologies are in order and an explanation prudent;
- Build on relationships with openness, honesty and truthfulness;
- Be willing to learn and include peoples' ideas into the process;
- Create communication channels and keep them open and active both ways. The researcher must be focused and well prepared and use plain language to explain concepts wherever possible, and use everyday examples as a resource to illustrate the point he/she wants to make, taking care not to sound patronising;
- Be aware of his/her own view and prejudgements in order to remain objective at all times and in this way gaining respect and integrity;

- Be knowledgeable in his/her academic field. This enables him/her to point out problem areas and identify workable solutions;
- Believe his/her vision, but not try to impose it upon people. This boils down to effective marketing of the concept / intervention / research issue. The people have to discover the need that the project provides the answer for and thus desire to participate;
- Be careful of hidden agendas. If the full extent of the project cannot be revealed at the onset for fear of rejection, the chances of it being accepted later are very slim, especially if the person granting access feels that he/she was tricked into participation;
- Reflect tenacity, thus having a personality that would be willing to continue even if the time period becomes much longer than expected.
- Be able to 'sell' the idea / project / intervention;
- Always try to accommodate the interests of the individual or group being accessed. This could, for example, entail shuffling his/her own timetable to better suit the group being accessed.
- Adjust his/her appearance in such a way as not to present himself/herself as being superior to those he/she is to work with.
- Be able to be encouraged by small steps forward, be able to cope with disappointments, be able to remain focused, and always strive towards a goal.

Once access to a group has been granted, this does not imply a captive audience. The respondents could at any time decide that the person acted in bad faith or tried to trick them, in which case access could be limited or denied once again. Regaining access in such a situation would be close to impossible.

Access could also be transferred onto other parties, by means of introduction from the group or person granted access. This is however hazardous, because the actions of this external party directly influence the relationship between the person gaining access and the one granting the access. It is also important to inform the respondents that any person involved in the programme will be introduced to them by the person

they granted access to. This rules out the situation that independent agents are mistakenly granted access and linked to the project.

#### 4.4 THE DATA COLLECTION PROCESS

The economic evaluation of the Winelands CHW programme required it to be viewed from two different perspectives. The *first component* of the study consisted of an on-farm micro-economic cost analysis, thus investigating the programme from the perspective of the agribusiness sector. Since the broader implementation of the CHW programme in rural areas would involve co-operation between this and the formal health sector, as well as the possible willingness of the agricultural sector to remunerate the health worker, research was needed to quantify the on-farm benefits of the model. This had to be done in such a way that the benefits identified in the study would be perceived to be benefits by the agribusiness sector.

The *second component assessed* the cost-effectiveness of the CHW programme within the context of a decentralised, resource-constrained public sector health budget. Since the CHW programme implied certain expenditure on the part of the local health authorities, these costs had to be identified and quantified to gauge the effectiveness of this expenditure.

The data were collected from two main sources. The first entailed collecting data from a sample of farms (both intervention and control), the sampling of which was discussed earlier. The second set of data was collected from the clinical evaluations conducted on the programme.

The following section deals with reasons for collecting the specific data and the physical process of data collection. It also includes a description of the collection methodology.

#### 4.4.1 On-farm data collection

During the sample selection, forty farms were selected to participate in the economic evaluation (20 intervention and 20 control). The on-farms data needs consisted of a qualitative as well as a quantitative component. In this case a farm survey approach was followed. Data were collected by means of questionnaires, farmer interviews, or from farm records (Vink, 1981). The benefit of this approach was that both qualitative as well as quantitative data could be collected. This survey included both qualitative and quantitative components. It would also provide relevant and accurate data at an affordable cost. The qualitative component was aimed at establishing and gauging managements' perceptions of the need for this type of health intervention as well as their attitude towards the implementation of this specific programme. The quantitative component aimed at establishing possible on-farm benefits that could be attributed to the health worker intervention. This comprised the collection of data concerning employment trends and absenteeism over a period of one year.

##### 4.4.1.1 Qualitative on-farm data collection

Two semi-structured surveys served as primary research instruments. The first interview was conducted at the start of the data collection process and coincided with the start of training of the health workers in phase one (intervention group).

##### 4.4.1.1.1 Goals of the qualitative data collection

The main goals of these interviews were:

- To test the knowledge of management concerning the health status of the workers living on their farm. The reason was that if management did not experience problems with the current delivery of PHC services in the region there would be no driving force behind the implementation of add-on services like the CHW intervention, which could hold additional financial implications for them.

- To test if management were aware of the health status of the community living on the farm, and if they considered the CHW, as a concept, as a possible answer to this problem?
- To gauge their perception of the implementation of the Winelands CHW programme and whether they feel that this intervention could make a positive contribution to the health situation on the farm.
- To ascertain whether management foresaw any possible problems with either the implementation or the maintenance of the programme over the long term?

These questions were aimed to establish whether management anticipated any benefit from the implementation of this programme. The reason was that in the long term the support of management was essential for the success of the programme. The problem was however, that a benefit must be perceived as such for it to be a benefit. The first interview was more formal than the second. The first established a baseline and tested the effectiveness of the marketing of the programme up to that point. The second was much less formal and took the form of a discussion. The discussion focused on the same issues as the first interview, thus providing a before and after look at the issues discussed. The second interview was aimed more at the intervention group, which at that time had been working with the CHWs for approximately one year. The control group, except for the occasional update on the progress of the programme, had little or no contact with the health workers and thus their perceptions and knowledge should not have changed much.

#### 4.4.1.1.2

#### The design and testing of the questionnaires

##### *Design of the questionnaire:*

The questionnaire was designed in order to structure the interview, thus assuring that all the relevant aspects were discussed.

Some of the more important issues that had to be resolved during the phrasing of these questions were:

- The use of appropriate terminology. This included a wide range of issues from sexist phrasing<sup>5</sup> to the avoidance of jargon<sup>6</sup>.
- The choice of language. Although the interview would be conducted in either English or Afrikaans, the questionnaire was drafted in English.
- The type of questions to ask in order to focus the interviewee on the issues without leading them into answers.
- The duration of the interview. When making the appointments it was important to give an estimate of the duration of the interview.

The survey used open- and close-ended questions. The closed-ended questions gave the interviewee a choice of three to five options. Example: How would you describe the health status of the community living on the farm? The interviewee was given five options, namely Excellent, Good, Average, Poor, or Very Poor. This was a subjective scale, and in some cases it was necessary for some clarification of the answers in order to ensure consistency during the processing of the data. The open-ended questions gave the interviewee more or less free rein in his/her answer. Example: What concerns do you have regarding the implementation of the CHW model and its efficacy in the provision of PHC services on farms? In this case there was no rating scale and the interviewee was asked to formulate his/her own answer.

#### *Testing of the questionnaire:*

The questionnaires were tested on four selected farms (two intervention and two control). The aim of this testing phase was to identify shortcomings, determine the type of answers one could expect during the survey, determine the time needed for the interview, and experiment with different approaches to the collection of data.

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<sup>5</sup> Sexist phrasing included the use of the male form when referring to a person or group of people.

<sup>6</sup> The use of jargon, or formal terminology, could lead to the question being ambiguous and negatively influencing the accuracy of the answers.

Appointments were made two weeks in advance and confirmed the previous day. The same person that was originally granted access made the appointments. This was the first contact with the study group and a connection point was needed to present this study as part of the evaluation of the programme. The importance of this introduction was discussed earlier in the section dealing with agricultural access. The selected farms were not part of the original sample, although sampled in the same way, and were not included in the results discussed in Chapter Five.

Some of the issues and problems that were identified in the testing phase included:

- Some of the questions were open to interpretation, i.e. they were ambiguous, thus creating a large spectrum of answers to a closed-ended question. Rephrasing of the affected questions solved the problem.
- The language issue turned out to be more of a problem than originally anticipated. The manager of the one test case refused to answer any questions that were formulated in English, even if they were discussed in Afrikaans. Translating the questionnaires into Afrikaans solved this potential problem. The translation of such questionnaires had to be done with great care in order not to change the meaning of the question, which would create disparity between the information provided by English and Afrikaans respondents.
- Appropriate times to conduct interviews. It was found that before 9:00 in the morning (i.e. just after the start of work) and after 16:30 in the afternoon (i.e. just before the end of the working day) appeared to be inconvenient times. The same applied to Monday mornings and Friday afternoons (payday).
- The duration of the interviews was between 30 and 40 minutes, although some took more than an hour to complete. This was not a problem per se, but could cause schedule problems if not kept under control.
- The importance of making an appointment long in advance and confirming it the day before cannot be overemphasised.

#### 4.4.1.2 Quantitative on-farm data collection

The participating farms each received blank data sets, in order to provide weekly data on the number of workers employed that week, number of days lost due to illness and other reasons, and the wages / salaries paid during that week.

##### 4.4.1.2.1 *Goals of the quantitative data collection*

The data sets summarised weekly employment and absenteeism. This included the number of permanent and seasonal workers in the farms' employ for that week, absence from work due to alcohol related problems / illness / work related injuries / other unspecified reasons, the amount paid in salaries or wages for the corresponding week, and a subjective scale measuring the workload during that week. These weekly data were collected over a period of one year commencing the day of the first interview.

##### 4.4.1.2.2 *Design of the data tables*

The main advantage of this approach was that it did not rely on the memory or record system of the respondents. The data tables were designed to gather the desired data with as little effort as possible on the part of the respondent. The problem with making it complicated was that management wouldn't complete it on a weekly basis if it took up too much of their time, in which case the data-collector was back to relying on the record system or memory of the respondent. Each respondent received blank data tables (one for each week) for a period of three months at a time (Appendix 1). A cover sheet explaining some of the terminology used, accompanied the blank data tables (Appendix 2).

##### 4.4.1.2.3 *Methods of on-farm data collection*

Three methods of collecting the weekly data were identified. These were:

- Fax
- E-mail

- Personal collection

The collection of data by fax was the most cost-effective way of receiving the data, but it also presented some problems. The respondents from both groups preferred the use of faxes, because of the availability of the technology<sup>7</sup>. Every week after the table for that week had been completed, it was sent by fax to a central point for analysis. The problem was the loss of personal contact and after a few weeks the amount of data received started to decline.

The use of e-mail was another option. For this purpose the data tables were provided on disk to those respondents that preferred it. One of the problems with the use of e-mail was that not all respondents were comfortable with the use of this technology, even if it was available. The other problem was the compatibility of the programme the table was written in and the respondent's system. In the one case the table appeared without any labels. The problem was that the programme used to read the tables did not have the specific font used in the original document. In a few cases the use of e-mail was effective, but the same problem arose as in the use of the fax, i.e. the loss of personal contact with respondents.

The third method proved to be the most effective, but also the most expensive. This entailed the personal collection of the data tables. Ideally these tables would be collected every week, but it was impractical to visit each farm, spread out over approximately 1800 km<sup>2</sup>, and it would have been immensely expensive. The most practical method was to collect the tables every three months, thus not allowing respondents to fall too far behind and at the same time maintaining personal contact.

A lot of emphasis has been placed on the issue of personal contact with respondents. The need for this arose during the testing phase of the questionnaires (as discussed earlier) where it appeared that the willingness to commit to a long term monitoring process centred more on the respondents' approval of the data-collector than the reason for collecting it. It is also important to remember that the control group was

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<sup>7</sup> Approximately 90% of respondents were in possession or had access to a fax machine and knew how to operate it.

theoretically involved in the study, but practically nothing of interest to do with the CHW intervention was happening on the farm for a whole year. Collecting data from the intervention group, where there was observable progress in terms of the implementation of the intervention, was much easier and the respondents remained motivated to participate. This was not the case in the control group. The lack of visible progress caused them to lose interest in the project and also in the accurate completion of the data tables. This problem will be discussed again in the presentation of the results in Chapter Five.

#### 4.4.2 Financial and clinical data collection

In order to gauge the outcome of the intervention, the costs involved along with the physical output of the trained CHW were needed. The following section outlines the collection of the financial data as well as the clinical outcome data of the programme.

##### 4.4.2.1 Financial data collection

The MRC and later the Boland District Municipality (BDM) was the centre for all administrative actions involving the programme, including the financial records. The costs incurred by the programme were not kept separate from the other programmes administered by these institutions. Each cost item was supplied with a project code and could be extracted on request. The data requested for the economic evaluation included all available costs from the onset to the start of training of the phase 2 CHWs. The MRC could only supply financial data from September 1999 to January 2001, after which this responsibility resided in the BDM. These two institutions had two very different systems for the keeping of these records, which complicated the evaluation thereof.

The next step was to compile a consolidated expenditure statement with the data received from the two institutions mentioned above. The costs noted on this expenditure statement contained two elements. The first was costs associated with the research of the CHW intervention and the second was direct and indirect costs associated with the programme and its operation. The economic evaluation focused

only on the cost involved in the introduction and operation of the programme, so the research component was extracted and separated from the rest of the costs.

#### 4.4.2.2 Clinical data collection

The clinical data requested from the clinical evaluation team included:

- The number of trained CHWs
- The geographical area covered
- The population affected by these CHWs
- The number of patient visits to CHWs to date
- The number of patient referrals by CHWs to formal medical centres

Some delay occurred in the supply of this data due to the complexity of the data register and the unavailability of the one person that could access it.

This chapter outlined the methodology used to evaluate the Winelands CHW programme. It included the selection of a sample of farms to participate in the on-farm analysis, gaining access to the sampled communities, and the process of data collection.

## **CHAPTER FIVE**

### **RESULTS OF THE QUALITATIVE AND QUANTITATIVE ANALYSIS**

This chapter outlines the results of both the qualitative as well as the quantitative analysis of the Winelands CHW programme. First the investigation into farm managements' perspective of this programme and the underlying health issues it aims to alleviate will be discussed. The qualitative results of the first round of semi-structured interviews, forming the perceptual basis of both the intervention as well as the control group of respondents are also presented in this section. Another component discussed in this section is the impact of health related problems on farms. This descriptive section, quantitatively points out the problem the CHWs are expected to help alleviate.

Section two takes a holistic view of the project and presents the cost implications of the marketing, implementation, and maintenance of the Winelands CHW intervention. There data will be discussed by means of comparison with similar programmes conducted in the Western Cape region.

#### **5.1 THE ON-FARM DATA ANALYSIS**

This section contains the results and discussion of the data collected from managers or owners of the sampled farms. As mentioned in the methodology of the study, this includes both a qualitative as well as a quantitative component. The qualitative component took the form of two semi-structured interviews, providing before and after perceptual views from both the intervention and control farms. The quantitative component aims to describe the health problems on farms that the CHWs are expected to help alleviate.

The aim of this section of the study is two-fold. First it will identify the perceived need for an improvement in the quality of PHC services provided on farms. If the

agricultural community were to support this type of intervention, they would have to experience the need for improvement in health services. If this need were not expressed, why would they support programmes attempting to alleviate the problem? The second aim of this section is to identify and attempt to quantify some of the impacts of health problems on the agribusiness sector.

#### 5.1.1 Disqualification of selected farms

As already discussed, forty farms were selected to participate in the economic evaluation. Not all of the original farms were present at the conclusion of the study. The following were some of the reasons for them being dropped from the evaluation:

- The farm changed its core business to non-agriculture.
- The farm stopped functioning as a commercial farming enterprise and dispensed with the permanent workforce.
- Change of management. The new management did not wish to take part in the project while restructuring the business.
- Inability to retrieve data from the farm for a period of more than four months. This could be due to management's reluctance to provide accurate data after initially granting consent, or an inability to supply the requested data. This occurs when data is lost<sup>1</sup>, destroyed<sup>2</sup>, or unavailable due to logistical problems<sup>3</sup>.

#### 5.1.2 Measurement difficulties

In addition to difficulties in the design, the gaining of access, evaluation, budgetary and time constraints also played a role in the accuracy of data. It is important for the future use of the data contained in this discussion that the reader takes note of some of the issues that could impact on the validity of the data for future use.

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<sup>1</sup> Example: Lost in the mail, or misplaced by respondent. This is one of the problems of quarterly collection of data sets.

<sup>2</sup> Example: Destroyed during fire, flood, or break-in. The destruction of data sets is usually not due to direct action of the respondent.

<sup>3</sup> Example: Data loss due to the loss of record systems. This occurs during a change in management or due to destruction of the offices where records are kept.

It is important to realise that data that relies on the memory of respondents or their own record systems, could be subject to error. The main area of contention in this investigation sprouts from the collection of the on-farm quantitative data collected over a period of one year. The following are some of the measurement problems encountered during the collection process that could detract from the absolute validity of the data.

These are:

- The lack of contact of the control group of farms caused them to lose interest and motivation in the accurate completion of the data sets each week. This resulted in the completion of some of these data sets some time later. In some cases this was done apparently from memory.
- In some cases the data sets were lost in the mail. In this case most of the data lost could be recovered, but again this had to be done from record systems that do not always keep records of the required detail.
- Some data sets were destroyed during break-ins, fires, or the crash of the farms' information systems. In some of these cases the data could not be recovered.

Because of the measurement problems mentioned above it is necessary to exercise caution in the translation of this data out of the given context. The data collected were done in a specific social, political, economic, and geographical context. In the adoption of this data it would be important to note the differences in these key areas.

### 5.1.3 The comparability of on-farm data collected

In order to determine to what extent the results of the qualitative as well as the quantitative analysis can be attributed to all the farms in the study group, three factors were included in the quantitative data sets that were compiled from weekly registers kept by the participating farms.

These three factors were:

- The average number of permanent and seasonal workers employed during that week
- The average number of days worked during that week
- The level of effort

The result of the investigation into these three factors will be presented in the following section along with a short discussion on how these results were obtained and translated. The discussion on comparability refers to all three these factors and hence will be discussed after the presentation of the results.

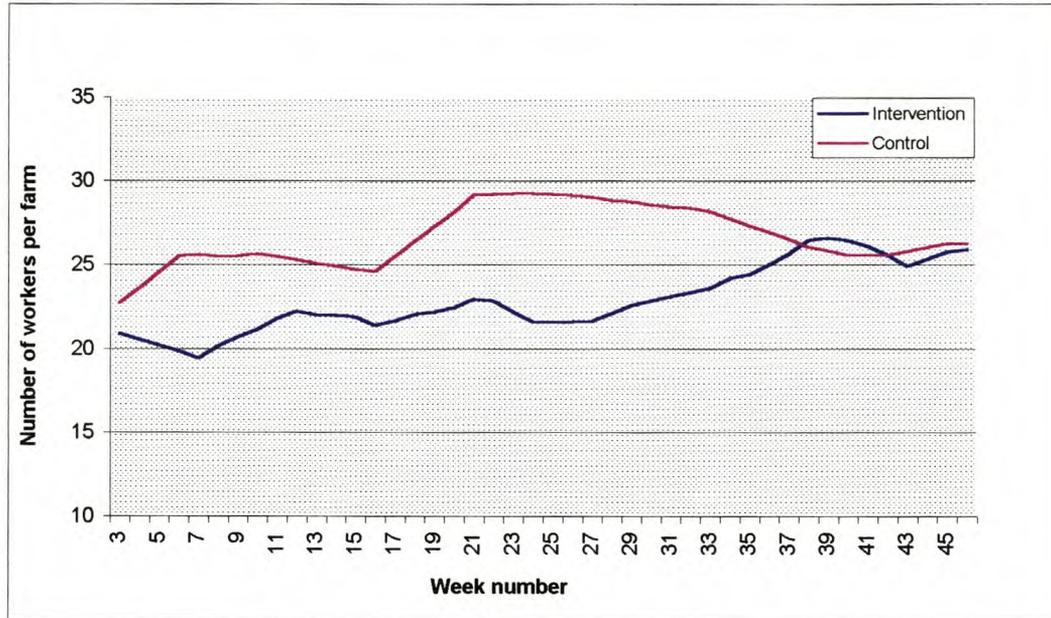
#### 5.1.3.1 The average number of permanent and seasonal workers

The results of the number of permanent workers employed were not much of a surprise. As mentioned during the discussion on the construction of the clinical study, the participating farms had to have more than 20 permanent workers in their employ. Figure 5-1 shows the results of the comparison between the intervention and control farms in terms of the size of their permanent workforce. Note that the week number does not start at the 1<sup>st</sup> of January, but on the 3<sup>rd</sup> of July (the start of the investigation).

As expected, the number of permanent workers does not vary much through the year. The one aspect that distorts these lines if not handled correctly is the holiday periods on each farm. Each of these farms has between two and four weeks holiday each year. In some cases the data sets reflected these periods as having no permanent workers and a workload of zero. This per se is not a problem, but in some cases management presented a workload of zero, but a constant number of permanent workers. Neither of these two approaches is wrong. The permanent workers are not dismissed during the holiday period, thus presenting them as still in your employ would not be wrong, but on the other hand, they are not working on the farm and thus

the farm has no workforce for that period. For the purpose of this presentation the first argument was adopted<sup>4</sup>.

**Figure 5-1: Average number of permanent workers per farm**

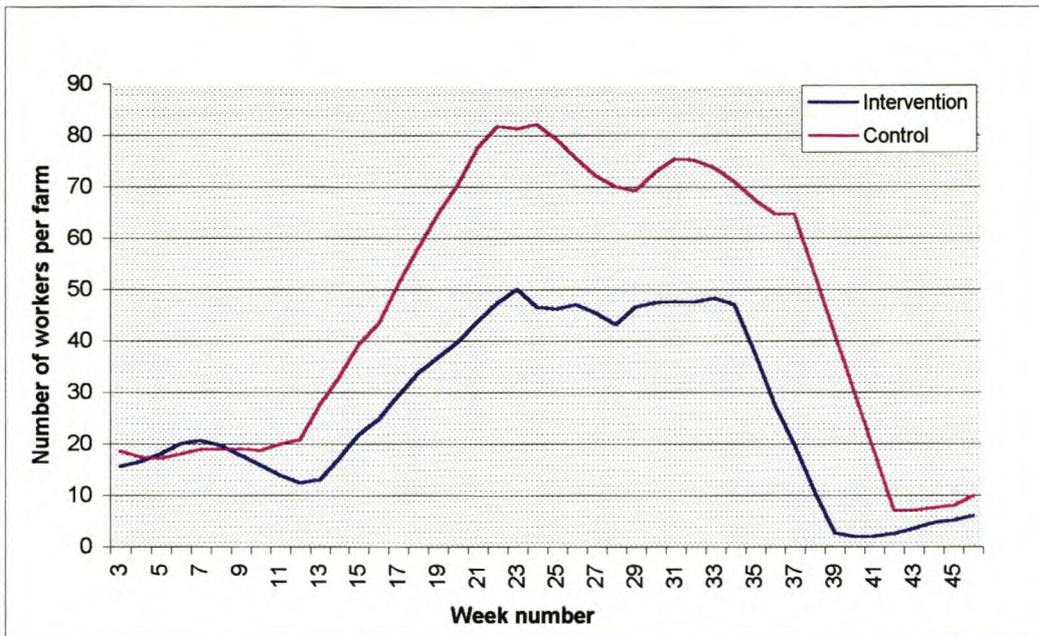


The trend lines in Figure 5-1 were calculated using the average number of permanent workers for that specific week<sup>5</sup> and calculating a five-week moving average.

The number of seasonal or contract workers was not as easy to predict. It was expected that the number of seasonal workers could be as much as three times the average number of permanent workers during certain times of the year. The results of the investigation into this aspect are presented in Figure 5-2.

<sup>4</sup> The first argument states the workers are still in the farm's employ and hence included in the total number of workers during the holiday period.

<sup>5</sup> This included all the farms in that group. This applied to both the intervention and the control groups.

**Figure 5-2: Average number of seasonal workers per farm**

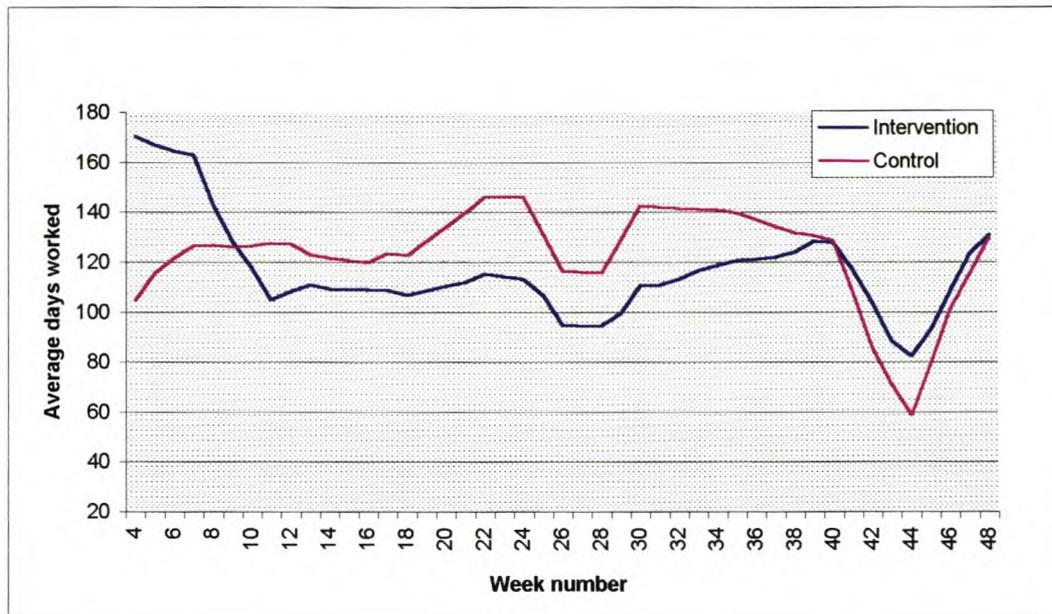
The calculation of these trend lines was done in much the same way as with the number of permanent workers. The main expected difference was that the number of seasonal workers would, at certain times of the year (out of season), be zero. This is not the case. The main reason for this is the diversified nature of the farming activities in this area. The peak season can be clearly identified between week 13 (25/09 to 01/10) and week 43 (23/04 to 29/04). Although the average number of seasonal workers in the intervention group is lower than that of the control group, the employment trend appears to be the same.

#### 5.1.3.2 The average number of days worked during each week

This measurement refers to the number of man-days<sup>6</sup> worked. It is calculated by multiplying the number of workers in the farm's employ during the specific week, by the number of days worked. This is calculated for each farm and the average of all the farms in each of the two groups are presented in Figure 5-3 and Figure 5-4.

<sup>6</sup> One "man-day" or "worker-day" is equal to the amount of work done by one adult full-time worker during one day.

**Figure 5-3: The average number of worker-days worked by permanent workers on farms per week**

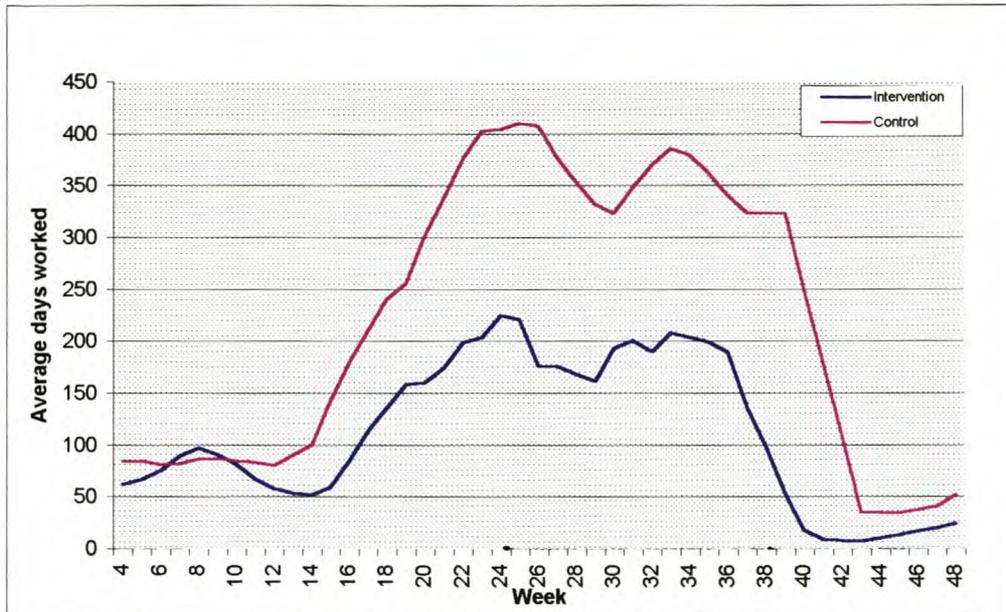


The relationship between the graphs presented in Figure 5-1 and 5-3, and Figure 5-2 and 5-4 is natural. These pairs of graphs depict the employment trends in two different ways. The differences in the two sets are due to the issue surrounding holiday periods. In the case of the average number of worker-days worked, the resolution of this issue is much more straightforward. During holiday periods the number of workers remains constant, but the number of days worked is zero. Thus during holidays the number of worker-days is also zero.

The correlation between the data collected from the intervention and control groups seem to vary between strong and moderately positive. The coefficient of correlation between the number of days worked by permanent workers and seasonal workers on the control and intervention farms were +0.3 and +0.787 respectively.

The number of days worked can be used during the investigation into comparability between intervention and control groups, but is also important during the discussion on the number of days lost due to illness and other causes later in this chapter.

**Figure 5-4: The average number of worker-days worked by seasonal workers on farms per week**



#### 5.1.3.3 Level of effort

The level of effort refers to the workload associated with each week. The respondent was asked to gauge how much work needed completion during each week on a scale of 1 to 5 (one being a very light workload and five being peak season time). This was a very subjective scale, but the only practical way of gathering the needed information from the farms. The problem with devising a more intricate system of representation was that the respondents, especially in the control group, were not willing to invest a large amount of time in the completion of data sets over such a long period of time. The result of making it too time consuming would have been relatively accurate data at the onset, declining towards the end. Such problems would have been difficult to identify due to the lack of multi-year data and the natural seasonal trends during each year.

The results from the data collected in this regard are presented in Figure 5-5. The average workload was calculated by equally dividing the sum of the workload index between the participating farms and calculating a five week moving average in order to better display the trends. This data indicates a moderate to strong positive

correlation between the workload of the intervention and control farms with  $r = +0.55$  (where  $r$  = the correlation coefficient).

**Figure 5-5: The average weekly workload per farm**

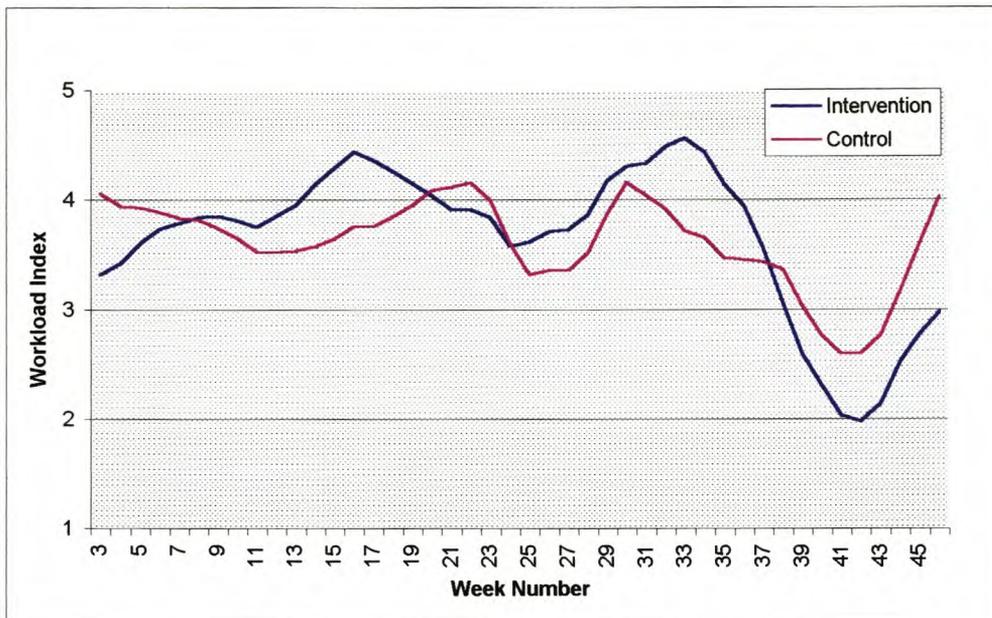


Figure 5-5 not only serves in the determination of the level of comparability, but will also be used in the explanation of some of the absenteeism trends later in the chapter.

Figures 5-1 to 5-5 draw a comparison between the intervention and control farms in terms of employment trends and peak periods of production. When looking at the first two figures (Figure 5-1 and Figure 5-2), the following similarities can be noted between the intervention and control groups:

- Both the intervention and the control farms employ on average between 20 and 30 permanent workers (Figure 5-1).
- A large fluctuation in employment of seasonal workers. The average number of seasonal workers never reaches zero, because of the diversification of farming activities for the optimal utilisation of the farm throughout the year.
- Both show a relatively stable employment trend.
- The ascending trend in the trend line of the intervention groups does not necessarily indicate an increase of the average permanent workforce (Figure 5-1). In order to determine such a trend it would be prudent to collect

similar data over multiple seasons to rule out incorrect notification<sup>7</sup> by respondents and possible seasonal influences. The use of caution in interpreting these figures cannot be overemphasised.

- Although the average employment numbers for the control farms are higher than those of the intervention farms (Figure 5-1 and 5-2), they present the same pattern over the year.
- The effect of the holiday periods has been removed from the data presented in Figure 5-1. The effects of holiday periods are not applicable when investigating trends connected to seasonal activities. The removal of the holiday effect<sup>8</sup> makes the trend lines much less erratic and easier to compare with each other.

The data presented in Figures 5-3 and 5-4 is closely related to the previous two figures in that they are both based on employment trends. One prominent feature of Figure 5-3 is the relatively erratic nature of the trend lines. The main reason is the inclusion of the holidays in their calculation. In comparing the two trend lines, the same correlation between the intervention and control farms is visible.

Figure 5-4 shows a much more stable pattern and closely resembles Figure 5-2. The reason is that the holiday periods have no bearing on seasonal workers, for they are only employed during peak periods.

Figure 5-5 compares the average workload of the intervention and control farms. This subjective measurement of how “busy” the farms are during the specific week clearly reflects the peak and off-peak periods. More important is the strong correlation between the intervention and control farms.

With the establishment of these strong correlations in employment trends and workload in mind, the following section presents the results of the qualitative investigation into the general perceptions of the farming community concerning the

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<sup>7</sup> This could occur when respondents log seasonal workers as permanents for a specified period of time.

<sup>8</sup> The holiday effect was discussed earlier in this section. It relates to the number of permanent workers reported during the holiday periods.

health problems faced and the ability of the CHW intervention to help alleviate the situation.

#### 5.1.4 The measurement of attitudes and perceptions concerning CHW programmes

This section reports on the data collected through the semi-structured interviews conducted on both intervention as well as control farms. These interviews focused on three main issues. The following section reviews farm managements' responses to these main issues and the implications of these responses. The second round of interviews was conducted in a more informal way during the last contact to collect the weekly data sets. It is important to note that at the time of the second interview the control group had not received additional information concerning the implementation process, training, or any other aspects of the intervention. The only information received was during the marketing of the project and short notices thanking them for their participation<sup>9</sup>. It was hence expected that the control groups' views and opinions would remain relatively constant, unless they received information from another source. The data presented in the following section deals primarily with the first round of interviews.

The second round of informal interviews had the following goals:

- Determine whether communication channels had been created between management and the CHWs and if not why it did not happen
- Gauge the effectiveness of the flow of information between the project and management. In this regard the information received by the control farms were also relevant because this would indicate contamination of the sample.
- Determine any change in sentiment towards the programme (especially negative sentiment).

Thus the second round of (informal) interviews served as a control mechanism in determining the efficacy of programme management in terms of its information

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<sup>9</sup> These notices were aimed at assuring the control farms that the project was on track and that their participation in the programme was essential. This had to be done in such a way as to not contaminate the control sample.

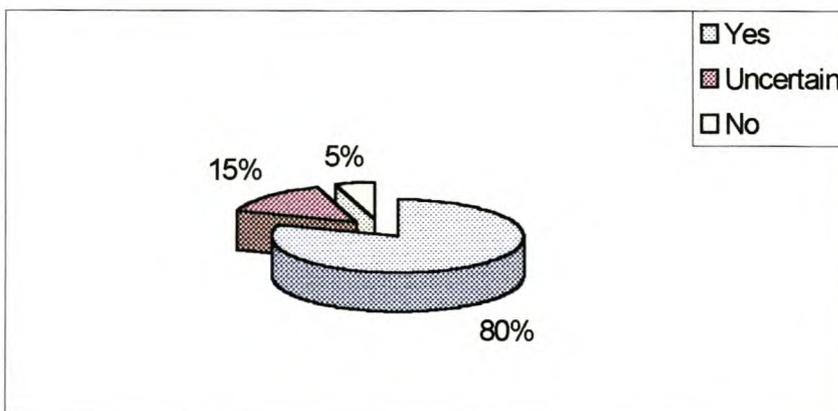
function and also determine whether sentiments had changed from the ones presented in the following section.

### *The health status of the community living and working on the farm*

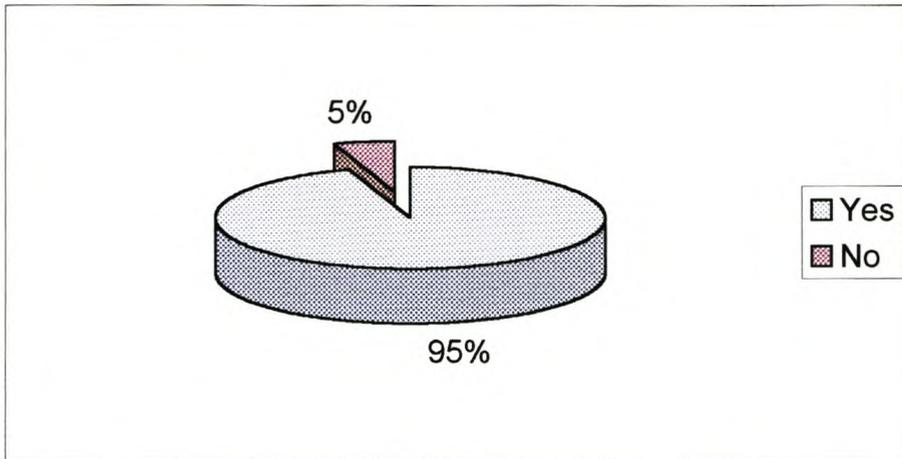
The first issue deals with the health status of the community living and working on the farm. The respondents were asked not only if they considered themselves aware of the status, but also how they would describe it.

In response to the question whether they considered themselves well informed on the health status of the workers, 80% of respondents in the intervention group and 95% of the control group replied affirmatively. Figure 5-6 and Figure 5-7 present the response of each of the intervention and control groups. Some of the intervention group respondents' answers to this question were negative, but none in the control group. This could possibly be due to the so-called Halo-effect. This occurs when the respondents' answer to a question is aimed to please the interviewer and is not a true reflection of the truth. This problem was identified during the testing phase of the questionnaire and at least partially solved by informing the respondents that the interviewer was not partial to a positive outcome to the study and valued their true opinion. This not only improved the results of the investigation, but could also serve to improve the effectiveness of the marketing and implementation of the CHW intervention in general.

**Figure 5-6: Intervention farms' response to being informed on health status of workers on farm**

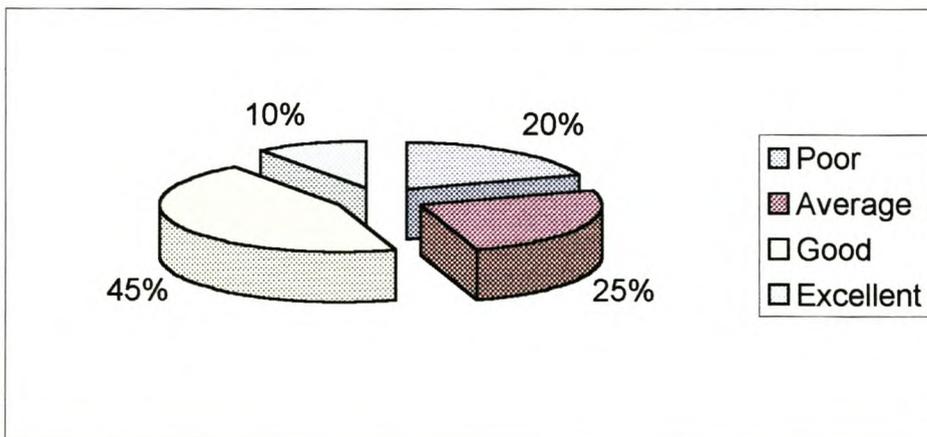


**Figure 5-7: Control farms' response to being informed on health status of workers on farm**

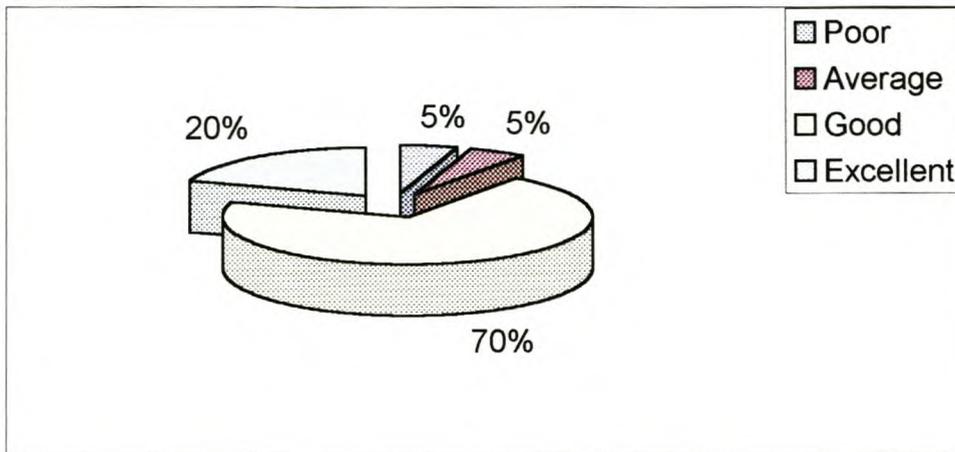


This view was very important, especially in the marketing of a health care programme on these farms. The determining factor however would be if these respondents were really aware of the health situation and how they perceived it. The second question aimed to clarify this issue by asking them how they would describe the health status of their workers. Figure 5-8 and Figure 5-9 summarises the answers to this question.

**Figure 5-8: Intervention farms' response to how they describe the health status of workers**



**Figure 5-9: Control farms' response to how they describe the health status of workers**

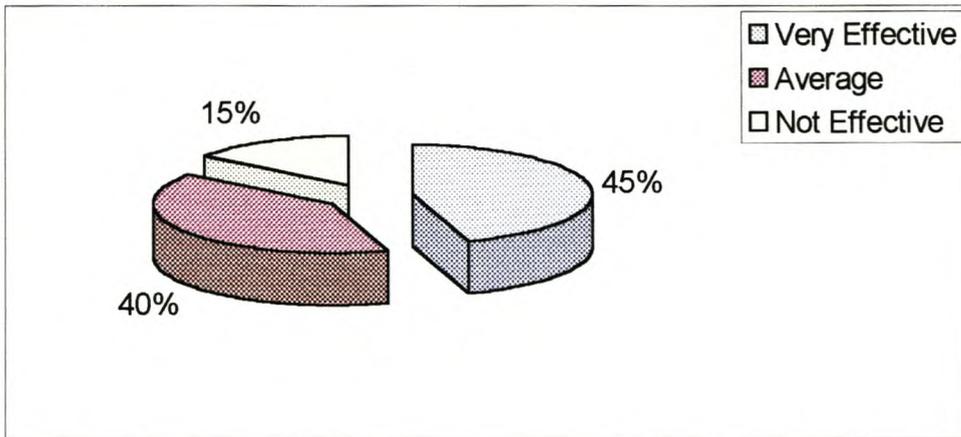


In the intervention group 55% and 90% in the control group of respondents reported the health status of their workers as good to excellent. The response in most of the cases excluded serious illness of individuals and focused more on general health issues. One of the aims of the health worker initiative is to clarify the health situation on farms. It is however important to determine the level of consciousness at managerial level concerning the delivery of PHC services and how the health workers will fit into the current structure. This will impact directly on the type of information the project coordinators need to provide during the marketing of the programme.

*How does management view the PHC service provided?*

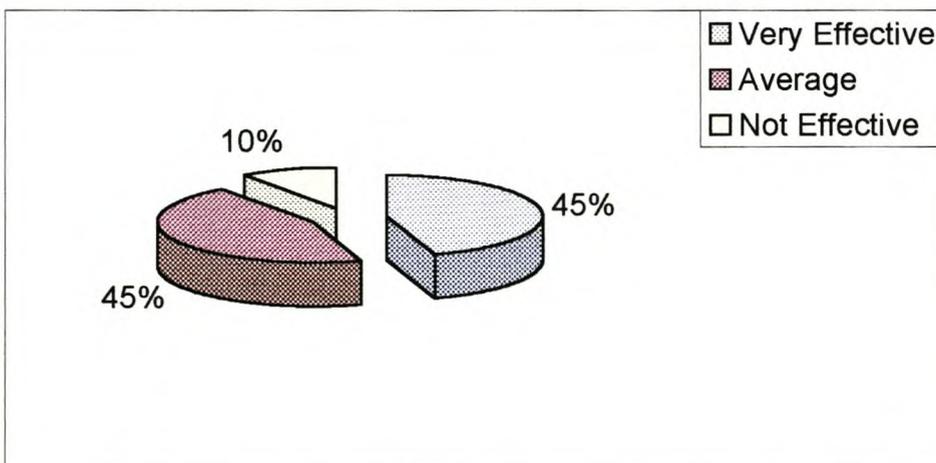
The second issue after the establishment of the perceptions surrounding the health status of workers on farms was whether or not management saw the need for a change in the services already provided. The respondents of both groups largely approved of the quality of PHC delivered by the clinic system (as discussed in Chapter Two), recognising the shortcomings but also that the service was hampered by lack of funding and personnel. Figure 5-10 and Figure 5-11 present the findings on the question on the perceived efficiency of the PHC service provided through the current clinic system.

**Figure 5-10: Intervention farms' response to the efficiency of the PHC service provided by the clinic system**



Between 85% and 90% of all farms surveyed saw the current clinic system as providing an average to very effective PHC service to the local community. This perception viewed in isolation could imply that management did not see the need for additional health care interventions. It would be very difficult to convince the management of a farm to financially and logistically support a programme if they do not see the need for it in the first place.

**Figure 5-11: Control farms' response to the efficiency of the PHC service provided by the clinic system**

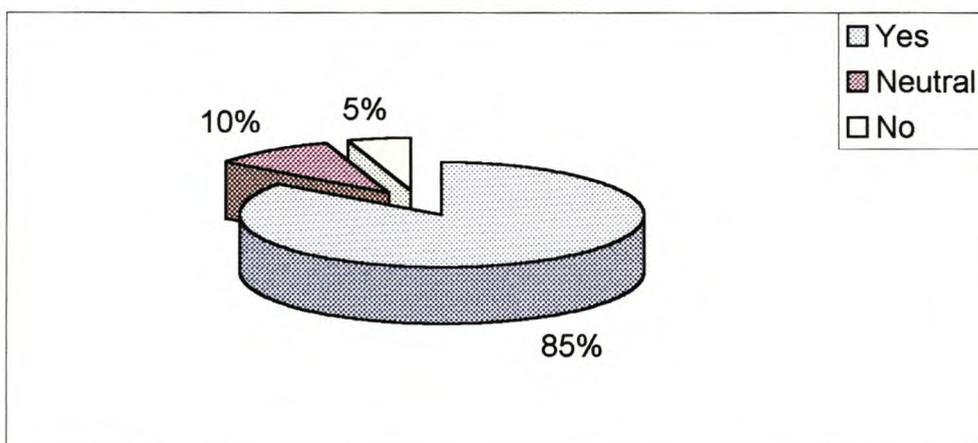


### Managements' perception of the CHW intervention

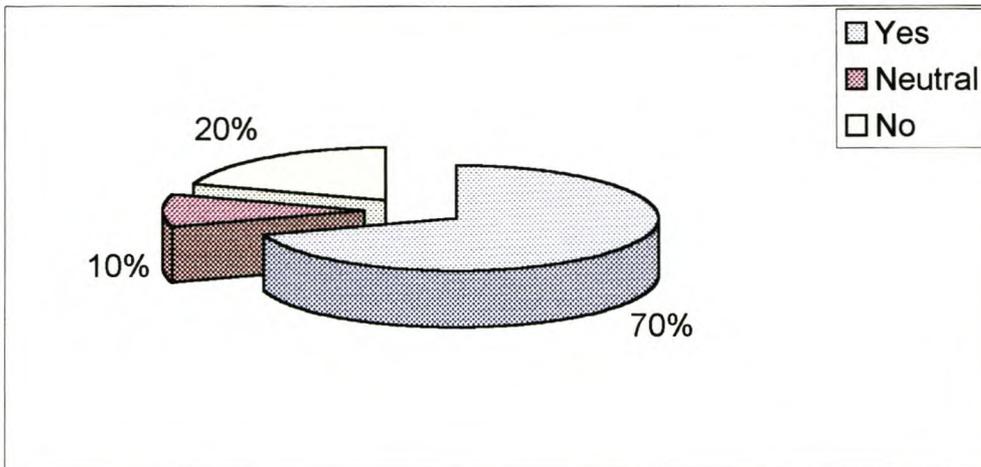
Up to this point during the interview, no mention had been made of the CHW intervention. Having established that management considered itself as well informed on the health status of their workforce and that they generally described it as being good to excellent, the third main issue needed clarification. This issue tested the perceived need for a community based health intervention (CBHI). The first question centred on the concept of community based health interventions and whether they considered such interventions as having a role to play in the delivery of PHC services in the future. Figure 5-12 and Figure 5-13 present the results obtained from this question.

The idea of empowering communities to assume some responsibility for their own health care met with great support. Between 70% (control) and 85% (intervention) of respondents supported such programmes in theory, but the issue was whether they supported the CHW programme as was being implemented on the intervention farms.

**Figure 5-12: Intervention farms' perception of CBHI in general and if they have a role to play in future provision of PHC services**

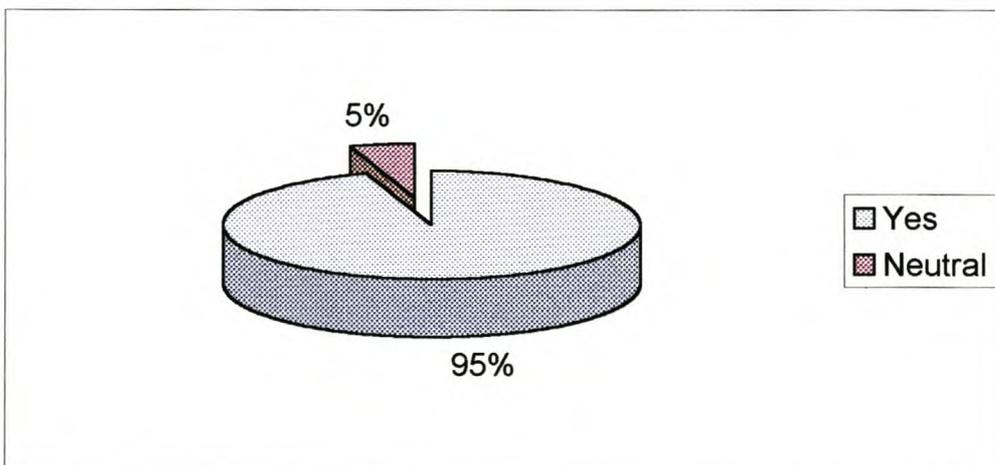


**Figure 5-13: Control farms' perception of CBHI in general and if they have a role to play in future provision of PHC services**

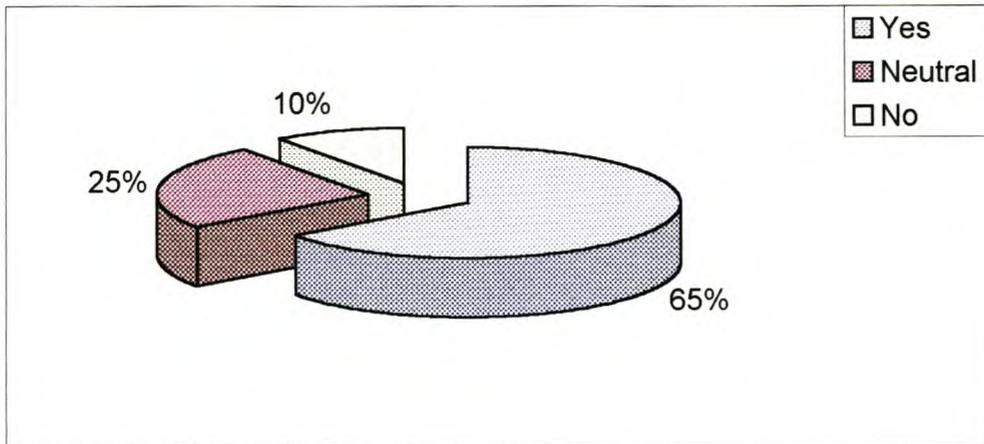


The aim of the next question was to determine the experiences management had had up to that point with the CHW programme and how they perceived it. The attitude of management towards this programme was crucial in gaining ongoing support for both the research of the CHW intervention as well as the replication of this programme in the area. Figure 5-14 and Figure 5-15 report the results of this question.

**Figure 5-14: Intervention farms' response to whether the CHW intervention can make a positive contribution to health status on farms**



**Figure 5-15: Control farms' response to whether the CHW intervention can make a positive contribution to health status on farms**



It is clear that the general consensus is that the CHW intervention as proposed to the farming community is perceived to have a significant role to play in the future provision of PHC services in this region. The graph depicting the response of the control group shows a 25% neutral and even a 10% negative opinion. This could be a result of the lack of information about the programme. As already noted, the control group received very little information about the programme except for the information during the marketing phase of the project. The opinions of this group are more likely to shift further towards the negative side during the following year than towards positive due to the lack of visible progress on these farms.

The results discussed thus far indicate an expressed need for an additional health care service to help alleviate the pressure on the formal health services. When looking at the perceptions concerning the formal health services and its effectiveness in the provision of PHC services in the area, it would seem a contradiction to express a need for an additional health care initiative. This is not the case. The formal health service is considered to be doing an excellent job with the limited resources at their disposal, but the need for an initiative to fill the gaps left by this approach is equally great, especially seen in the light of the current restructuring of the health services as discussed in Chapter Two.

There were however some concerns expressed by respondents with regard to the following:

- The effectiveness of the CHWs in addressing the alcohol and drug related problems on the farms.
- Literacy of selected CHWs. This could be a problem during training as well as record keeping of day-to-day operations.
- “Free for all health.” Some respondents felt that the provision of totally free PHC services could lead to the abuse of it. The suggestion was to implement a type of “pay what you can” system. Implementing such a system would be very complicated and logistically difficult.
- The amount of feedback to management. This feedback on what can be expected from the CHW would assist management in their support and prevent the health worker from being placed in a situation for which he/she was not trained.
- Some problems were anticipated with the community trusting the CHWs to keep their health problems confidential. Some of the community members may still prefer to visit the doctor rather than the CHW.
- The need to establish a spirit of cooperation between the CHWs, formal health services, and farm management.
- Concerns with regard to the support structures put in place before the project team disbands. What or who will be the driving force behind the CHW intervention?
- The continued training of the CHWs should take into account the peak periods of production for the different industries.
- The CHWs are most effective in the treatment of people living on the farm. The employment of permanent workers is declining due to legislation and labour problems. How could the CHW concept be expanded to include seasonal or non-resident workers?
- The elevation of one person in a community is expected to have an uplifting effect on the rest of the community, but what if the opposite happens and the

community rejects the CHW because they are presented to be better than the rest of the community? The community needs to be 'trained' along with the CHW.

- The problem of cross-subsidisation. What if the CHW moves to another farm? The one farm pays for the training in time and money, while another reaps the benefits.

These concerns were not only from the farms that indicated that they do not feel that the CHW has a role to play in the future provision of PHC services. These concerns reflect possible pitfalls identified by all farms for the purpose of avoiding them where possible or managing them where unavoidable.

#### 5.1.5 The impact of health problems at farm level – a quantitative investigation

The aim of the quantitative component of the study was to create awareness of the impact that health problems have on the agribusiness sector. The main problem was to quantify these issues, for example the morale of sick workers as well as their families and the impact of that on the production levels on the farm, and the measurement of productivity on the farms in such a way that the model could be used over a longer term to determine the intervention effect of the CHW programme. An attempt to calculate a productivity index failed, however due to a lack of accurate information on wages, productivity bonuses, inputs, and the corresponding output levels.

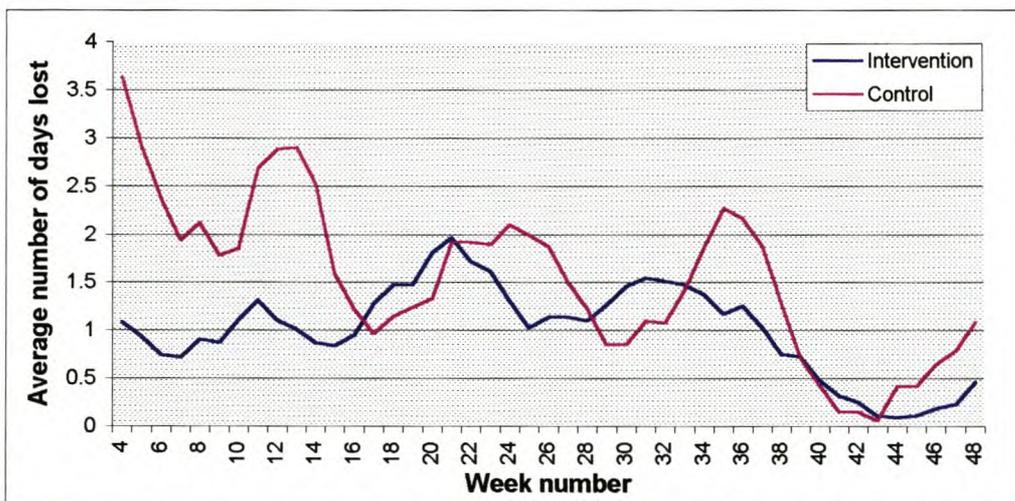
The impact of health issues could however be presented in another way. This section investigates this impact in terms of production days lost due to alcohol related problems, illness, work related injuries, any other reasons (not mentioned), and the distances travelled by management for medical purposes. These reasons account for an average of 381 production days lost in the case of the intervention farms and 223 days in the case of the control farms. Each of these aspects will be discussed in brief and, where applicable, some conclusions drawn from the investigation.

### 5.1.5.1 Alcohol related problems

Alcohol abuse poses great social and health problems both in the community and at their place of work. Problems closely associated with this are child abuse, foetal alcohol syndrome, domestic violence, and malnutrition. Besides the social impact, the economic impact is also significant if the worker arrives at work under the influence of alcohol. These workers are sent home because they pose a danger to themselves and the rest of the workforce. This results in a day's wage lost by the worker and a day lost in the production process for the farm.

Figure 5-16 presents the registered cases of alcohol related problems in the workplace.

**Figure 5-16: Notified incidences of alcohol related problems in the workplace**

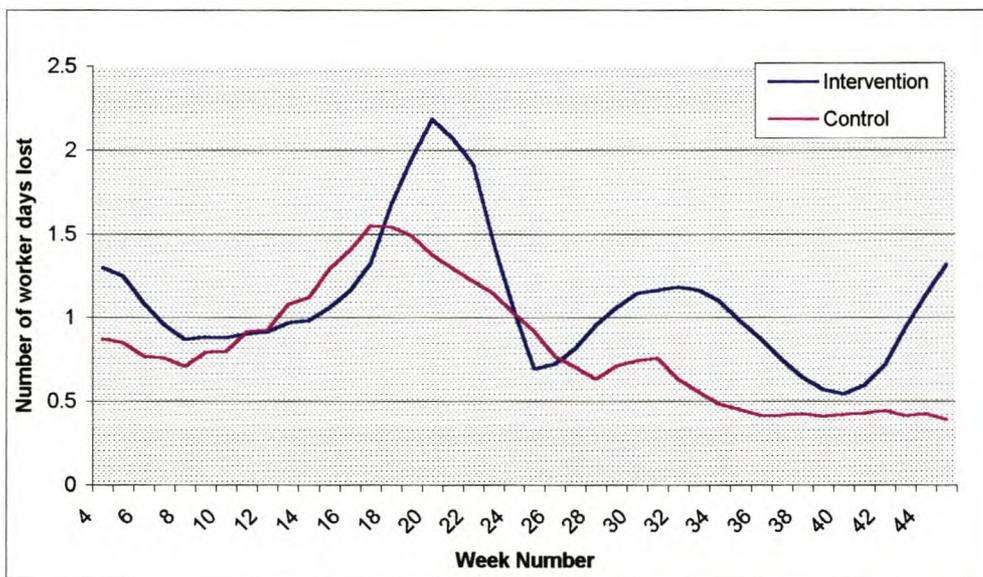


On average an intervention farm with a permanent workforce of between 20 and 30 (approximately 5702 worker days per year) loses 35 worker-days per year due to this problem and the average control farm, 47 worker-days. This accounts for between 40% and 44% of total absenteeism. The registering of these cases relates, in most cases, to only the permanent workforce. The trends are a bit erratic, but a slight cyclical pattern is visible in both the intervention and the control lines. This possible cycle will be discussed later.

### 5.1.5.2 Absence due to illness

The general health of the community plays a large role in the productivity of the farm. Poor health leads to low morale and motivational problems in the workplace. Aside from the noted cases of serious disease, like HIV and TB, the general health of the communities are considered, by management, to be good. Figure 5-17 presents the noted cases of absence due to illness for both the intervention and the control farms. As in the case of the alcohol related problems, a cyclical pattern emerges in the trend lines of both the intervention and control groups. The average intervention farm loses about 61 worker-days per year due to illness and control farms 24 worker-days.

**Figure 5-17: Average number of worker-days lost due to illness**



### 5.1.5.3 Absence due to other reasons

This number reflects the worker-days lost that were not specified, like alcohol and illness. The reasons for absence includes:

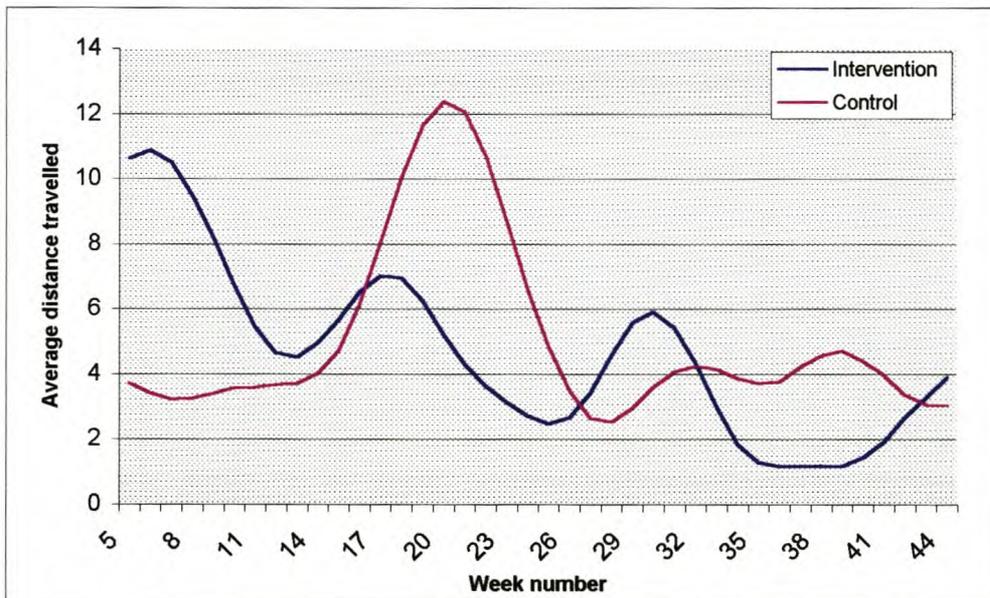
- Frail care
- Absence without leave
- Family problems
- Legal problems
- Unspecified problems

The average intervention farm loses approximately 285, and the average control farm 152 worker–days per year due to the reasons specified above.

#### 5.1.5.4 Distance travelled for medical reasons

This cost item is often overlooked when it comes to the cost of medical problems on the farm. During the initial interviews, none of the surveyed farms could give an estimate of the distances or cost to the farm involved in this action. Most considered it the farms' duty to transport the workers and thus no record was kept of the expenditure. The data sets the survey farms had to complete on a weekly basis for one year included the distances travelled for medical reasons, the results of which are summarised in Figure 5-18. On average each farm transported sick workers between 350 and 800 km per year (about 12km per week). This figure is difficult to determine due to the reasons mentioned earlier. Caution is advised in the translation of this estimate out of the context of this investigation.

**Figure 5-18: Average distance travelled for medical reasons**



In the discussion of Figures 5-16 and 5-17, mention was made of the presence of a cyclical pattern. This same pattern is visible in the distances travelled for medical reasons (Figure 5-18). There is a strong positive correlation between these cycles and the average workload index presented in Figure 5-5 ( $r = +0.57$ ). This trend describes

both the intervention and control farm situation. One could argue that the periods of increased weekly workload could be due to a larger workforce on the farm. The average number of permanent and seasonal workers employed during the corresponding periods (presented in Figure 5-1 and Figure 5-2), does not share the same cycle. This poses an interesting question on the relationship between increased workload and absence from work. This aspect could merit further investigation.

## 5.2 A COMPARATIVE ANALYSIS OF COST AND CONSEQUENCES OF THE WINELANDS CHW PROGRAMME

This section takes a holistic view of the project and presents the cost implications of the marketing, implementation, and maintenance of the Winelands CHW intervention. These data will be discussed by means of comparison with other similar programmes implemented in the Western Cape region in the past. This comparison is based on a study conducted by Makan (1997). His study describes five CHW programmes and one CHW training centre operating in the Western Cape region. At the time of the study these programmes accounted for approximately 49% of the CHW programme expenditure of the province. His research methodology included household surveys in the areas served by these programmes as well as a detailed cost analysis of each of the programmes. The data needed to introduce the Winelands CHW programme into this equation were discussed in Chapter Four. The following section reports on both the financial and clinical data collected and compares it with the results of the Makan study.

### 5.2.1 Winelands CHW cost structure

The MRC and later the BDM was the centre for all administrative actions including the financial records. The costs incurred by the programme were not kept separate from the other programmes administered by these institutions. Each cost item was, however, supplied with a project code and could be extracted on request. The data requested for this evaluation included all costs from the start of the marketing process up to the start of training of Phase 2 (the Control group).

The data received from these two organisations consisted of three elements. These were:

- Income from donor funding, both local and abroad
- Research related costs
- Programme related costs

The only relevant element in this investigation is the costs directly attributed to the marketing, training, and maintenance of the intervention.

#### 5.2.1.1 Capital costs

The capital costs of the programme were relatively low due to the fact that most of the infrastructure needed for the operation of the programme, like buildings and vehicles, were either rented or sponsored by a facilitator. The only capital item purchased by the project was computer equipment to the value of R11 517.88.

#### 5.2.1.2 Recurrent costs

Recurrent costs included administrative expenses, advertising, telephone, stationery, travel and sustenance, catering at training venues, photocopies, photographic expenses, postage, salaries, and consultation expenses.

#### 5.2.1.3 Supervision costs

This included all costs incurred by personnel charged with supervising the implementation and maintenance of the programme, for example, salary of supervisor and any additional in-job training that may have been required.

### 5.2.2 CHW programme costs

The total programme costs will be discussed in terms of the three main phases of implementation. These are the marketing of the programme to the community, the

training of the selected CHWs, and the maintenance of the programme through continued training of health workers.

#### 5.2.2.1 Marketing of the CHW programme

The marketing process started during September 1999 and continued till April 2000. The three major cost items during this phase were telephone/fax and the cost of the supervisor and travel expenditure. The bulk of the marketing and the gaining of access only occurred from January 2000 to the end of April 2000. The average monthly expenditure during this period was R12 882.81. On average supervision costs accounted for some 64,61%, travel – 32,26%, and telephone & faxes – 2,64% of the monthly expenditure during this four-month period.

#### 5.2.2.2 Training of selected CHWs

The training of the Phase one (intervention Farms) CHW started at the beginning of May 2000 and ended by 30 September 2000. The initial training was done in four modules, each of which took about five days to complete. The training programme was discussed in more detail in Chapter Four. Besides the project training personnel, two other agencies were involved, namely SANRA and the First Aid League.

The average monthly cost during this five-month period was calculated as follows:

Total monthly expenditure	R 166 995.60
+ SANRA (15 sessions x R2855)	R 42 825.00
+ First aid (105 CHWs)	<u>R 31 500.00</u>
Total training cost	<u>R 241 320.60</u>

Supervision cost accounted for about 17,24% of the total training costs. Total salaries of both supervisor and training personnel accounted for 35,10% of total training costs. Although most of the training of the CHWs was done internally, some aspects of the training were subcontracted to specialised agencies like the First Aid League and SANRA. Module 4 (September 2000) of the training programme (Level one First Aid) cost the programme about R300 per health worker (R31500 in total for Phase 1). The other large cost component in the training was the section presented by SANRA.

They presented the 'Life skills' section of the training, which took one day during each of the first three modules. Thus the total number of sessions they presented was 3 modules multiplied by five groups. Each session cost on average R2 855<sup>10</sup>, thus the total expenditure on this aspect of the initial training was R42 825. Travel expenses accounted for 10,98%, the renting of a venue – 19,68% and telephone & faxes – 0,62%.

The venues for the training of the phase 1 CHWs were provided by local churches and schools at a reduced rate. These rates were so low that it could be considered charity (R500 for 5 days). The normal rates for the renting of the same venues were R500 per day. The proxy cost of a venue was used in the evaluation to determine the true cost of the programme without the influence of charity.

### 5.2.2.3 Continued training and maintenance

The maintenance phase of the programme commenced at the beginning of October 2000. This phase included the continued training of the CHW on a monthly basis. The training schedule called for one or two days' training in various subjects each month. The average monthly expenditure during the maintenance period can be calculated as follows:

Average monthly expenditure	R 25 168.21
+ SANRA (1 session per month x 5 groups)	<u>R 14 275.00</u>
	<u>R 39 443.21</u> per month
Average yearly expenditure on trained CHWs	R 473 318.52 per year

The supervision costs account for 36,6% of the total cost, while travel and subsistence account for 22,14%. The venue cost per month was averaged at R1000 (2 days x R500 per day; 3,97% of average cost). The cost of the training of personnel was about R8 600 per month, both for initial training and continued training. One day per

<sup>10</sup>Quotation received on daily rates from Me. M. Bezuidenhout (SANRA) – December 2001.

month was allocated to the continuation of the CHWs' 'Life Skills' training. As mentioned before, this aspect of the training was subcontracted to SANRA, which charged R2 855 per session for each of the five groups (R14 275 per month). The monthly cost of maintenance was calculated only till the end of April 2001. The reason for this is that the second phase of training (control farms) started at the beginning of May 2001. The monthly cost would then reflect both Phase 2 training cost and Phase 1 maintenance cost. The separation of these cost components would be impractical.

Thus, two assumptions are made:

- That the monthly maintenance cost for Phase 1 (intervention farms) would remain constant
- That the training cost of Phase 2 would be similar to the costs incurred during Phase 1.

### 5.2.3 Measurement of outcome indicators and cost-effectiveness

This section investigates measurable outcomes of the Winelands CHW intervention as well as the cost involved in attaining these outcomes. This will be done by comparing the programme with other similar programmes in the same region. As already mentioned, the comparison is based on a comparative study of five different CHW intervention programmes, implemented in the Western Cape region, conducted by Makan (1997). In order to place the Winelands CHW programme in the framework provided by Makan, the descriptive profiles of all six CHW programmes will be presented. These profiles point out any differences and similarities between these programmes and will also aid in the discussion that follows.

#### 5.2.3.1 Descriptive profiles

The description of the six CHW programmes is based on their area of operation, the PHC services available in the area, the relative size of the programme, and the year of commencement. The results of this comparison are summarised in Table 5-1. The programme closest to the Winelands programme in terms of the number of CHWs, the

number of areas served, and the PHC services, is the programme introduced by the Rural Foundation during 1986.

#### 5.2.3.2 CHW coverage ratios

The coverage ratio refers to the ratio between the number of CHWs and the population they serve. The Winelands CHW programme has a ratio of one CHW for every 69.9 members of the community. The only other programme that has more or less the same ratio is the Rural Developments' CHW programme of one CHW for every 83 members of the community. Table 5-2 presents a summary of the coverage ratios of the different CHW programmes.

#### 5.2.3.3 Total programme costs and outcome ratios

The cost of all six programmes was compared in terms of the 2000/01 financial year. The five programmes presented in the Makan (1997) report were presented for the 1994/95 financial year. All the costs involved with these programmes were inflated by 5,8%<sup>11</sup> per year for seven years. Table 5-3 reports the adapted annual expenditure, salaries, average cost per CHW, the average cost per visit to a CHW, and the average cost per TB patient visit. It is important to note that the Rural Foundation and the Winelands CHW programmes are the only two making use of part-time CHWs. Also note that the Winelands CHW programme is the only one not paying the health worker a salary or incentive bonus of any kind.

This makes the programme much cheaper, but paying a salary could also have negative consequences as it could compromise the integrity of the health worker, or attract the wrong kind of worker (adverse selection). On the other hand, in a certain context it may be unfair to expect these CHWs to work for free. The lack of remuneration does not imply the absence of cost. In this case the cost is borne by the CHWs and their families. In some documented cases the lack of remuneration was substituted by a search for self-empowerment or professional recognition. This and

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<sup>11</sup> The inflation rate was calculated through the use of the CPI index, as reported by Statistics South Africa (2000).

other aspirations made the CHW become dissatisfied and stop working, as was the case with the “Barefoot Doctors” in China (Chen & Tua, 1983).

Table 5-4 presents the preliminary data accumulated during the period November 2000 to October 2001. The data was collected from 26 intervention farms during the process of future database testing and the design of the structure for future analysis. This implies that the final evaluation structure of the data may change in the future, but the data contained in this report is sufficiently accurate for interim analysis. The percentages presented in the section on main complaints refer to the prevalence of each of the more common ailments in terms of the total number of visits to the CHWs. The referrals mentioned in Table 5-4 are expressed in terms of a percentage of the total number of visits to CHWs.

One of the main stated objectives of the Winelands CHW intervention was the improvement of TB case finding and case holding. Table 5-5 presents some preliminary results of an internal survey conducted in order to gauge the efficiency of the CHW in this role. One of the problems inherent to most development programmes is the long-term nature of the realisation of benefits. The data contained in Tables 5-4 and Table 5-5 reflects preliminary data, collected as part of the development of a comprehensive information database. At this stage of the programme the calculation on long-term trends in this regard is impractical.

Table 5-1: CHW programmes: Descriptive profiles

CHW Programme	Area of Operation	Health care providers in the areas served by the CHW programme: Health service availability	CHW Programme Size	Year of Commencement
SACLA Health Programme	Peri-urban & Rural: 6 areas served in total	Varied- SACLA clinic, Local Authority Clinics and Community Health Centres	Medium Scale (90) 79 CHWs 11 CRWs	1980
HCT CHW programme	Peri-urban: 2 areas served	Limited – Part time local authority clinic	Small scale: 15 CHWs	1992
Mamre CHW Programme	Peri-urban & Rural: 1 area served	Limited – Only local authority clinic	Small scale: 4 CHWs	1992
Rural Foundation CHW Programme	Rural: 14 areas served	Limited and varied: some areas covered by WCRSC mobile clinics, and connection to district surgeons	Medium scale: 189 FHW & CHWs	1986
Zibonele CHW Programme	Peri-urban: 1 area served	Limited – Clinic and Day hospital	Small scale: 15 CHWs	1992
Winelands CHW Programme	Rural: 10 areas served	Varied – Local authority clinics, day hospitals, and mobile clinics	Medium scale: 209 CHWs	1999

\* Source: CHW project records as well as Makan,B. (1997 )

Table 5-2: CHW programme coverage ratios

CHW Programme	Estimated Population Served (Areas served)	Number of CHW's	Ratio – Average population per CHW
SACLA Health Programme - Peri-urban division	190 000 (6)	52	3.654 : 1
SACLA Health Programme - Rural division	17 500 (4)	8	2.188 : 1
HCT CHW Programme	10 000 (1)	15	667 : 1
Rural Foundation CHW Programme	8 685 (9)	105*	83 : 1
<b>Winelands CHW Programme</b>	<b>6224</b>	<b>89</b>	<b>69.9: 1</b>

Source: Makan, B. (1997); Winelands CHW project records.

\*Number of CHW in the 9 areas surveyed.

Table 5-3: CHW Programmes Total costs and Number of Patient contacts 2000/2001

	SACLA Rural	HCT	Rural Foundation	Zibonein	Mamre (1994)	Winelands
Total Annual Expenditure (R)	468,538	749,438	1,591,010	651,067	383,830	<b>473319</b>
Number of CHWs	8	13	189	15	4	<b>89</b>
Ave. monthly salary (R)	2,374	1,632	399	1,929	1,929	<b>0</b>
Average cost per health worker per year (R)	58,567	57,649	8,418	43,404	95,958	<b>5318</b>
Number of visits to CHWs (curative)	4,992	5,925	32,034	N/A	5,977	8270*

\* The extrapolated average annual visits by community members to the 89 CHWs.

\*\* Figures for the SACLA, HCT, Rural Foundation, Zibonein, and Mamre CHW Programmes were inflated by 5.8% for 7 years (from 1994/95 to 2000/01).

\*\*\* Rural Foundation and the Winelands programmes were the only programmes that used part-time workers, which accounts for the low average cost per health worker.

Table 5-4 Interim Clinical outcome data of the Winelands CHW Intervention programme

Number of farms	26
Number of visits to CHWs	2416
Main complaints	
Colds and Flue	9% (214)
Headache	11% (265)
General Pain	7% (169)
Chest Problems	10% (235)
Weight	
Weighings	9581
Persons weighed	2238
Referrals	
Doctor	12 %
Hospital	1 %
Dentist	1 %
Unknown	1 %
Clinic	4 %

Source: Preliminary data collected for the design of a comprehensive information database (Captured April 2002).

Table 5-5 Preliminary TB related data on the functioning of CHWs in terms of programme objectives of case finding and case holding

Date	November 2000 to October 2001
Number of farms	57
Number of farms that did not appoint a CHW for training	13
Total number of TB cases identified during this period	156
Number of cases positively identified by CHWs	50 / 156
D.O.T. by CHWs (of cases identified by CHWs)	38 / 50
Number of TB cases positively identified by PHC clinics	93 / 156
D.O.T. by CHWs (of cases identified by PHC clinics)	6 / 93
TB cases receiving general support from CHWs (not in D.O.T. capacity)	99

Source: Preliminary data collected for the design of a comprehensive information database (Captured April 2002).

The aim of this chapter was to present the results of both the qualitative as well as the quantitative analysis of the Winelands CHW programme. This chapter presented the qualitative results of the first round of semi-structured interviews, which describes the perceptual basis of both the intervention and the control group of respondents. It also quantitatively described some of the impacts of health related problems on the agribusiness sector, which the CHWs are expected to help alleviate. The final section of this chapter provided the quantitative basis for the comparison of the costs and consequences of the Winelands CHW intervention with other similar programmes in the Western Cape region.

The aim of the final chapter in this thesis (Chapter Six) is to discuss the data presented in this chapter and to draw conclusions, where applicable. The final chapter will also present some recommendations that could improve the effectiveness of the programme in general, improve the usefulness of the CHW as a source of health care data, and improve the quality of the data collected from the CHWs.

## **CHAPTER SIX**

### **CONCLUSIONS AND RECOMMENDATIONS**

The aim of this study was to undertake an economic evaluation of a rural CHW programme operating in the Western Cape province. It sought to evaluate and analyse the nature, performance, and costs of the programme and place it in context by comparison to other similar programmes conducted in the region in the past. This comparison focused on the goals, physical characteristics, and the cost structures of the programme. The assumption underlying this study was that the CHW programme, if implemented correctly with the proper support and training, would be a cost-effective and efficient way of providing PHC services in this area.

This final chapter aims to draw conclusions, based on the discussions and data collected, on the effectiveness of this intervention as implemented in the Winelands region of the Western Cape province. The evaluation contained two components. The first component investigated the programme from the point of view of the agribusiness sector, while the second component investigated the cost structure of the programme during the marketing, implementation, and the maintenance phases. The following discussion focuses on each of these components and discusses the implications of the findings. In conclusion some recommendations on further research, as well as recommendations to improve the functioning and utilisation of this programme in the long term, will be made.

#### **6.1 ON-FARM ANALYSIS**

This investigation was based on a qualitative and quantitative comparison between the intervention and control farms that participated in the clinical evaluations of this programme. The forty selected farms (20 intervention and 20 control) were evaluated in terms of their perceptions of the programme as well as the direct impact of health problems on the day-to-day operation of these farms. In order to be able to compare these two groups over time, it was first necessary to determine to what extent these two were comparable to begin with. This was done by comparing the physical characteristics of the farms with the general perceptions associated with each of them.

In the comparison of the number of permanent and seasonal workers, the average number of days worked, and the level of effort during the year, it was determined that there is a strong similarity between these farms.

The results of this comparison can be summarised as follows:

- Both the intervention and the control farms employ on average between 20 and 30 permanent workers.
- There is a large fluctuation in employment of seasonal workers. The average number of seasonal workers never reaches zero, because of the diversification of farming activities for the optimal utilisation of the farm throughout the year.
- Both show a relatively stable employment trend.
- The ascending trend in the employment of permanent workers on the intervention farms does not necessarily indicate an increase in the average permanent workforce. In order to determine such a trend it would be prudent to collect similar data over multiple seasons to rule out incorrect notification by respondents and possible seasonal influences.
- Although the average employment numbers for the control farms is higher than that of the intervention farms, they present the same pattern over the year.

Having established that the intervention and control farms are physically comparable, the perceptions and attitudes of each of the two groups were assessed.

#### *The attitudes and perceptions concerning the CHW intervention*

The question this section sought to answer was twofold. The first question was whether the perceptions of the intervention and control groups could be considered similar at the beginning of the intervention, and the second was what were these opinions.

The results as presented in Chapter Five indicate that both these groups considered themselves to be well informed on the health status of the workers living on the farms and described this status as being relatively good. When asked about the perceived effectiveness of the clinic system in the provision of PHC services in the area, only a

small percentage of the respondents expressed their dissatisfaction. The significance of these answers is that if management does not perceive the current system to be lacking, they would be less willing to support a programme aimed at improving it.

However when respondents were asked about the role of community-based health in the delivery of PHC services, the response was overwhelmingly positive. These two opinions seemed to be contradictory, yet the positive view of the current health system was expressed in the light of acknowledged pressure on the system and the budgetary constraints under which it operated. The need for improvement was also clearly expressed.

This need for improvement is significant in that the implementation of this programme is perceived to make a positive contribution to the health status of the farming community. This intervention is thus perceived to contain benefits, not only to the community living on the farm, but also to management which would be expected to play a supporting role after the completion of the CHWs' training.

#### *The impact of health problems at farm level*

This section pointed out the quantitative impact that health problems have on the farming sector. The investigation focused on social issues such as alcohol abuse as well as other issues such as absence due to illness and other reasons. This section aimed at illuminating the cost implications of workers being absent from work during different times of the year. One interesting aspect noted during this process is the correlation between the number of workers absent from work and the associated workload. This correlation can be identified in reviewing the data presented in Chapter Five, but the exact cause of this occurrence cannot be identified from this investigation.

#### *Conclusions based on the on-farm analysis*

The general perception of the CHW intervention and its ability to facilitate a change towards an improved system of delivery of PHC services in this area is beyond

dispute. This view is supported by subsequent, informal discussions with the intervention farms after one year of experiencing the effect of the presence of the health worker on the farm. They seemed very enthusiastic and stated that there was visible interaction between the CHW and the community and also positive communication between management and the CHW. Some farms reported improvements regarding unexplained absence as well as absence due to alcohol related problems. These observations are purely based on the judgement of these respondents and cannot be statistically verified in such a short space of time. It does however point to the fact that management perceived benefits for the farm in having a CHW present on the farm.

Control farms on the other hand received very little information during the preceding year, except for the natural flow of information through any community. These farms, in contrast, became more reluctant to participate in the evaluation over time. The general feeling was that they were part of a project that presented no results or benefits to them. The managers, who in the beginning seemed marginally optimistic concerning the legitimacy of this intervention, became more and more pessimistic concerning its usefulness. This presented problems with data collection on these farms.

Due care should be taken in the translation of the data out of the given context. The data presented in this thesis were collected in a specific social, political, economic, and geographical setting and if used in comparison to other settings, attention should be paid to the impact of such differences. It is also important to note the difficulties in the collection of data as discussed earlier, and the effect on the accuracy of the data collected. The quantitative data collected supports no long-term conclusions on the impact of this intervention on the farms involved, but presents a baseline for further investigation.

Despite the apparent positive outcome to this section of the evaluation, it is also necessary to note the possible problems identified by the respondents as discussed in Chapter Five. The focus of the communication between the CHWs, management, and the support structure of the CHWs must be on addressing these issues if continued support from the side of management is to be expected.

## 6.2 QUANTITATIVE PROGRAMME COMPARISON

The discussion on this issue focused on a comparison between previous CHW interventions and the Winelands programme. After the investigation into the logistical as well as the cost structures of the Winelands CHW intervention, these characteristics were compared to the descriptions of the five other programmes. Table 5-2 contains a summary of these descriptive profiles.

### *Descriptive profiles*

In evaluating these profiles, the one project that compared best with the Winelands project in terms of size, area of operation, health service structures, and the use of part-time CHWs, was the programme conducted by the Rural Foundation in 1986. The main difference between this programme and any of the others, used in the comparison, was that the Winelands programme did not remunerate the CHWs for their services. It is important to take this into account when comparing the cost data of the different programmes. Four of the five programmes used in the comparison had non-rural facets to them. In most of these cases it was possible to distinguish the rural aspect from the peri-urban and use this in the comparison.

### *Total programme cost comparison*

The cost comparison was done in 2000/01 financial terms. This implied inflating the cost of the other five programmes used in the comparison from 1994/95 to 2000/01. The average inflation rate based on the CPI was calculated at 5.8% per year. The comparison of programme costs was summarised in Table 5-3. The average cost of the Winelands programme was R 5318 per CHW per year, opposed to R 8418 per CHW per year of the Rural Foundation. As mentioned in the descriptive profiles, this figure included the monthly salary of the CHWs. If this factor is removed from the Rural Foundation figure, the average cost per CHW per year drops to R 3630. The difference in cost could relate to either implementation procedures or more likely economies of scale. This view is supported by the percentage of the total cost that is independent of the number of CHWs in training or fully trained CHWs active under the supervision of the programme.

Some of these cost elements are:

- **Supervision costs:** This aspect accounts for 33,3% of the average monthly cost during the marketing phase, 17,16% during initial training, and 32% of annual expenditure during the maintenance phase of the programme. The supervision costs are fixed and should remain constant unless the number of CHWs exceeds the capacity of the supervision structure in which case the expansion of this structure would have additional cost implications.
- **Training costs:** The programme employs two full time trainers. The salaries of these trainers are fixed irrespective of the number of CHWs trained.
- **Other training costs:** Not all of the training that the CHWs received was conducted internally. The training module handling first aid and also the section on life skills was subcontracted to specialised agencies. These training facilitators often give group discounts, which would lower the average cost of the programme and also the average cost per CHW per year.

#### *Clinical outcome measurements*

The measurement of clinical outcomes, in terms of the goals set for the programme at the beginning, is rather difficult over the short term. The problem with most development programmes is that benefits realise over a long period of time and in most cases have a long lead-time before benefits become evident. The data used in this report represents preliminary data, collected over a period of one year (November 2000 to October 2001) from 26 intervention farms and used in the design of an information database. In its current format it is difficult to extract information quickly and accurately. It is important to realise that the data was collected relatively soon after the CHWs completed the training programme.

During the above-mentioned period the 26 CHWs had 2416<sup>1</sup> visits by community members for treatment of a wide range of ailments (Table 5-4).

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<sup>1</sup> Note that this refers to the number of visits to CHWs and not the number of community members that had formal contact with the CHWs.

Four of the most common ailments were:

- Colds and flu (9%)<sup>2</sup>
- Headache (11%)
- General pain (7%)
- Chest problems (10%)

The CHW intervention was not designed to replace the existing system of PHC service delivery, but rather take some of the pressure off an already over-burdened system. It is therefore important that there be a good working relationship between the formal health services and the CHWs. One measure of such a relationship is the seriousness in the treatment of referrals. Of the total number of ailments, 12% were referred to a doctor, 1% to hospital, 1% to a dentist, 4% to a PHC clinic, and 1% to an unknown centre for further care. The 1-% “unknown” points out the need to motivate the CHWs to complete the visitation sheet provided in full. This will increase the accuracy of the data, but would also indicate to the CHW the importance of the work they are doing, both in terms of their curative role and as source of health information. The CHW programme’s main goals at the onset were to improve the case detection of TB in the area. Some of the early tell-tail signs of TB infection are constant coughing and the rapid loss of weight. To this end the CHWs regularly weigh the community members as a type of maintained screening process. During 2000/ 2001 the 26 CHWs weighed 2238 people (9581 weighings).

The data presented in Table 5-4 and discussed in the previous section points to the basic functioning of the CHW in reality (out of a training environment). It shows that the communities are making use of their services and in this way achieving one of the initial programme goals (Relieve the pressure on the formal health services.). The weighing of community members is part of the screening method for the early detection of TB and other serious ailments, but in itself do not improve case detection. This goal is only achieved if the CHWs can interpret what they observe and have the confidence in their own judgement to refer such a person to a formal health centre for testing. In order to gauge the effectiveness of the CHWs in case detection, records were kept on the source of each referral. Table 5-5 presents some of the data collected during 2000/ 2001.

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<sup>2</sup> Each percentage represents the treatment of the specific ailment as a percentage of the total number of visits to the CHWs.

In the area of observation there were 57 farms with active CHWs and 13 farms that should have been part of phase one training (intervention farms), but for various reasons, did not appoint a CHW to receive training<sup>3</sup>. In the area of observation during the specified year, 156 new cases of TB were identified (according to the official TB register). Of these 156 cases, 50 were identified by CHWs and sent for testing and 93 were identified by the PHC clinics. Of the 50 cases identified by the CHWs, they D.O.T 38. This figure gives a good indication of the potential of the CHW to detect TB through mass screenings. Of the 93 new TB cases detected by the PHC clinics, CHW D.O.T 6 and give general support (not in a D.O.T capacity) to 99 other cases. The data contained in Table 5-4 and Table 5-5 indicated not only the practical effectiveness of the CHW, but also directly reflects on the quality of training (substance) and effectiveness of the training programme (presentation). There is however one other issue that has been raised, but not addressed in this section and that is what is the cost associated with the achieving of these goals.

The calculation of the average cost of each of the CHWs individual activities is based on the average cost per health worker per year, the amount of time spent during the year on each of the activities, and the frequency of each activity.

The Winelands CHWs had three main activities, namely the weighing of community members, D.O.T, and the treatment of minor ailments. No time-utilisation study had been conducted thus far on the Winelands CHWs and thus time-utilisation estimates had to be used in the assigning of average costs per activity. The following relation between the three main activities were suggested by CHWs. Illness related visitation: Weighing (TB screening) : D.O.T and support = 3 : 1 : 1.

The average cost per visit to a CHW was calculated as follows:

$$\text{Cost per visit to CHW} = \frac{(\text{Average cost per CHW per year})(\text{time utilisation \%})}{\text{Number of visits (Illness related)}}$$

The average cost per visit for Rural Foundation CHW programme was R29.89 with the assumption that 60% of the health workers time is spend in a curative capacity

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<sup>3</sup> Most of these farms opted to have the CHW trained in phase two (control farms),

(similar to the Winelands programme), while the average cost in the Winelands programme was R34.31. The HCT programme's average cost per visit was R20.23, but only about 16% of the health workers time was spent in this capacity. About 75% of the HCT programmes health workers time was spent on community education, home based TB care, CHW workshops and meetings. The average cost in the SACLA (rural) programme was R46.93 with 50% of their time spent in a curative capacity.

The other main function of the CHW is the screening for new TB cases (case finding). The CHWs within the Winelands CHW programme estimated that they spend 20% of their time in this capacity. The main activity in this function is the regular weighing of the community members. As presented in Table 5-4, 2238 people were weighed during 2000/2001. This constitutes 9581 weighings during the year. This translates into an average cost per person weighed of R12.37 per year or R2.89 per weighing. However, this process is of very little value if the CHW were unable to identify possible new TB cases. As already mentioned, 50 new TB cases were detected by CHW during 2000/2001. The efficiency of the CHW in achieving the initial programme goals should improve as they gain more experience.

### *Conclusion*

In conclusion, the Winelands CHW intervention can be described as a well designed and implemented programme, which is in a very positive position to facilitate and drive the process of change in the formal health system from a facility based to a community based system. The CHWs themselves are a valuable source of information concerning disease prevalence and other health issues in the region. This information source should be explored to its fullest potential, without exploiting the CHWs or the communities themselves. One of the major challenges in the integration of this programme into the national and regional health care system (Example: The new IDP<sup>4</sup> programme).

The final section of this thesis deals with recommendations for further research as well as some key factors identified that could improve the effective use of the

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<sup>4</sup> IDP: Integrated development programme

programme as well as better control over the costs involved in the running of the programme in the future.

## 6.3 RECOMMENDATIONS

### 6.3.1 Recommendations to CHW programmes

#### *The need for a comprehensive information database*

CHWs are capable of gathering useful information on disease prevalence and other health surveillance activities, even those who have limited formal education. There is a need for the development of a comprehensive information management framework that is supported by an adequate system for the analysis of the collected data.

Such an information and reporting system has three main functions:

- Continuous record of care.
- It supplies decision makers with information on disease patterns and the performance of health workers on a regular basis. This surveillance system can lead to priority being given to issues that reflect the true needs of the community, rather than the predilections of the providers of health care. Any data-gathering system should be supported by an adequate system for its analysis, which will derive timely and useful findings. This system should also contain a structure for providing feedback to relevant stakeholders. These stakeholders include formal health services, the CHWs, and farm management.
- To influence the working practices of those completing the records. Feedback to the CHWs on the data collected confirms the value of submitting accurate information and might avoid a situation where data recording is regarded as being boring, time consuming, and troublesome.

The design and support of a comprehensive information system is one of the key tasks in sustaining an effective CHW programme.

*The implementation of an improved accounting system*

The financial records of the Winelands CHW programme were not kept internally from 1999 to 2002, but rather by one of two facilitators. The main problem with this system was the absence of a uniform set of financial statements describing the financial history of the programme as well as a budget for the following financial term. The differences in the grouping of cost items and the diversity of terms use to describe certain cost items caused problems in determining the cost structure associated with the marketing, implementation, and the maintenance of the programme. It also complicated the separation of the research component from the direct implementation costs of the programme. The absence of a single set of financial statements that conform to accepted accounting standards makes it almost impossible to keep track of the income and expenditure of the project, which negatively impacts on the effectiveness of the entire programme.

Advantages of implementing such a comprehensive financial record system include the following:

- More positive control over expenses.
- It projects a positive image of the financial position and activities of the CHW programme. The ability to control unnecessary expenses could aid in the securing of funding for either further research or ongoing implementation of the programme.
- This record system would assist in future comparative studies concerning the cost of sustaining such an intervention over the medium to long term. This will serve as an invaluable guideline to other similar programmes in order to keep track of the costs of implementation, thus contributing a great deal to the limited body of knowledge currently available.

Together these two structures would enable easy access to:

- A measure of cost-effectiveness of the programme;
- What extent the goals and cost estimation targets have been met;

- Enable administrators to steer the development of the CHWs and their training more effectively in order to maximise the impact of the programme in supporting the formal PHC system;
- Direct the formal health care system in identifying the needs of the local communities and together improve the delivery of PHC services.

*Structural framework to provide feedback to relevant stakeholders*

This framework should deal with the complex nature of the interaction between the formal health services, the CHWs, and the management of the included farms.

This structure should provide:

- Feedback to CHWs on their performance as well as what is expected of them.
- Feedback to management of farms included in the programme on the progress of the CHWs with respect to their training, duties, and other relevant issues.
- Feedback to formal health care professionals working in the area. This will promote understanding between these two groups on the different roles each of them play in the provision of health services and avoid the animosity that is frequently reported to exist between them.

Aside from avoiding misconceptions concerning the duties of the CHWs, this system of providing continuous feedback serves as a tool to motivate both the CHWs as well as management in a supporting capacity.

### 6.3.2 Recommendations for further research

*The effectiveness of the communication and interaction between relevant stakeholders*

The CHWs play a key communicatory role. They act as intermediaries between the community, formal health services, and farm management. Little is known about how effective the CHWs are in doing this and whether their training adequately equips

them to effectively fulfil this role. There is a need for a framework that would enable CHW programmes to gauge the effectiveness of the communication between these parties and take corrective measures if needs be.

*The correlation between absence from work and workload*

During the investigation into the on-farm impact of health issues, a strong positive correlation was identified between the levels of effort<sup>5</sup> and the absence of workers for different reasons. The possible reasons cannot be identified from this study, and further research is needed to clarify this occurrence.

Finally, given the key recommendations of this report, it can be concluded that although the Winelands CHW programme is a well designed and managed health care intervention, which succeeds in achieving most of its short-term goals, there are some areas that merit closer examination. Care must be taken not to view the CHWs and their potential as anything other than a development instrument. The goals set out at the beginning of the implementation of such a programme aids in the establishment of measurable points in order to gauge the effectiveness of implementation and not to limit the functions of the CHWs in their development capacity.

This study provides important information, from an economic perspective, for ongoing and improved management of CHW projects in general. It provides information on the design, training, management, maintenance, and evaluation of a rural CHW intervention. It aims to add information and experiences to the limited body of knowledge available on this issue and encourages further research into this field.

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<sup>5</sup> A measurement on a scale of one to five that indicates the workload associated with that specific week.

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**APPENDIX 1: BLANK DATA TABLE FOR THE COLLECTION OF WEEKLY ON-FARM DATA**

Date:	28/05 -- 03/06		
"Interviewer name"	Telephone	E-mail	Fax
	*****		*****
Farm name:			
Contact person:			

**WORKERS**

	PERMANENT	SEASONAL / CONTRACT
Number of workers		
Days worked		
Total number of workers absent due to alcohol related problems (worker-days lost)		
Total number of workers absent due to illness(worker-days lost)		
Total number of workers absent due to work-related injuries (Worker-days lost)		
Workers absent for any other reason (worker-days lost)		
Distances travelled for medical reasons (km)		
Level of effort		
Total wage bill for the week		
Total salaries paid during week		

<b>APPENDIX 2:            EXAMPLE OF THE COVER SHEET THAT                                  ACCOMPANIED THE BLANK DATA TABLES</b>
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**WEEKLY REPORT**

The table that accompanies this document must be completed on a weekly basis. At the end of each month these tables will be collected and the data processed. All data collected in this way will be treated with the utmost confidentiality and will only be used for the purpose of evaluating the Community Health Worker programme. The aim of this document is to clarify the working of the tables attached to it.

**Terms:**

1.     **Permanent workers:**            Workers that are in your permanent employ.
2.     **Seasonal or Contract workers:**     Seasonal or contract workers include all workers that render services in the production process, but that are not part of the permanent workforce.
3.     **Days worked:**                    This is the total number of days worked by the workers for that week. (Example: Monday - Friday = 5 days)
4.     **Number of workers:** This is the number of workers in each of the two categories that were in your employ for the given week.
5.     **Number of worker-days lost:**        A “worker-day” is work done by one worker in one day. This number is calculated by adding the number of days absent by each worker for all the workers in your employ. Example: Two workers absent on one day = Two worker-days lost in the production process.
6.     **Level of effort:**                This scale reflects, on a scale from 1 to 5, the workload of the week. (Example: During peak season time, with a high workload, a rating of 5 would be appropriate.)
7.     **Distance travelled for medical reasons:**    The distance travelled during that week in handling medical conditions. Example: Taking sick or injured persons to a medical facility for treatment. (Km. = kilometers)

**Contact details:**

\*\*\* (Name) \*\*\*

Department of Agricultural Economics  
University of Stellenbosch

E-mail:            \*\*\*\*\*  
Tel.     :            \*\*\*\*\*  
Fax     :            \*\*\*\*\*