EFFECTIVENESS OF TB DOT SUPPORT PROGRAMME AS PERCEIVED BY COMMUNITY HEALTH WORKERS AT INXUBA YETHEMBA AND TSOLWANA SUB DISTRICTS UNDER CHRIS HANI DISTRICT

LINDIWE GILI-STEMELE

DISSERTATION SUBMITTED IN PARTIAL FULFILMENT FOR THE DEGREE OF MASTERS IN NURSING SCIENCE (MAGISTER CURATIONIS) (COMMUNITY HEALTH NURSING)

University of Fort Hare

2013

Supervisor: Mrs FB Mayeye

Co-Supervisor: Professor C Rautenbach
DECLARATION

I, LindiweGili declare that this dissertation is my own work. It is being submitted for the degree of Masters of Public Health at the University of Fort Hare, South Africa. It has not been submitted before for any degree or any examination at this or any other University.

------------------
Candidate: LindiweGili         Date

The work presented in this dissertation was undertaken in the School of Science and Technology, Faculty of Science and Technology, University of Fort Hare
DEDICATION

Dedicated with love to:

My husband, Monde, Abu and Kungo Stemele
ABSTRACT

Background: The National Department of Health realised that its TB control efforts had been ineffective and joined its international counterparts by adopting Directly Observed Treatment short course [DOTs] strategy to fight the spread of TB. DOT is the only globally recognised strategy for effective TB control. This strategy ensures that infectious TB patients are identified and cured using standardised drug combinations. Treatment supporters observe patients as they swallow their drugs daily (SA Tuberculosis control Programme practical guide, 2000).

Objectives of the study are: to assess the relevancy and quality of training for DOT supporters at InxubaYethemba and Tsolwana sub – districts, to identify challenges faced by TB DOT supporters during the execution of their duties and to assess satisfaction of TB DOT supporters, with their remuneration packages and other conditions of employment.

Method: A quantitative descriptive convenient design was conducted for this study. A self-administered questionnaire was used. The researcher’s targeted sample was 42 participants although only 39 filled in the questionnaires. The questionnaires were personally distributed by the researcher to TB DOT supporters. Items in the questionnaire included the following: Demographic data, working hours per day, distance covered, meeting with managers, salary and remuneration issues and acceptance by community members.

Results: The research findings indicated that the TB DOT Supporters are generally not happy with the conditions they are working under. From the 100% (n=39) TB DOTS responses, 8% (n=11) received a three days training, which is not in line with the Department of Health’s guidelines, and resulted in rendering ineffective delivery of DOT programme. Of the 100%) 23.1% (n=9) walk 8kilometres, 51.3% (n=20) walk 7kilometers, 12.8% (n=5) walk 5kilometers, 10.3% (n=4) walk 4kilometres. This is against the required distance allowed to travel by foot which is five kilometres.
Conclusion: According to the results of this study, the effectiveness of TB DOT Supporters is being distracted by many factors, such as: Not having transport for doing home visits, Less number of hours worked per day, few number of community health workers working as TB DOT supporters, not having meetings with the management to discuss their challenges, and most of all not being given a clear explanation as far as their salaries are concern. The mentioned factors render DOT Support programme is rendered in effective at the Chris Hani District.

According to Tuberculosis, A training Manual proven for Health Workers (1998:13) the most effective means of controlling TB known to us is a strategy known as Directly Observed Treatment Short Course (DOTS). This strategy enables tuberculosis clients to complete their treatment and has four areas of strength when compared to previous TB control strategies in South Africa.

Recommendation: The results from this study proves that there is a definite need for improvement of working condition amongst TB Co-ordinators, TB Managers and the TB DOT Supporters. It is clear that increased number of MDR/XDR is due to the challenges that were mentioned above. There is a need for the additional number of TB DOT Supporters, as the area is big for only two TB DOT Supporters in each area. Hours worked by TB DOT needs to be extended considering their salaries as well. Therefore it is essential to empower TB DOT Supporters with more knowledge and skills so that they can be able to make an impact in TB service delivery system.
ACKNOWLEDGEMENTS

I thank God, Almighty for making it possible for me to successfully complete my study, if it wasn't for His guidance I wouldn't have done it.

My husband and my two lovely girls for their help, love and encouragement and the countless ways in which they have sacrificed to make it possible for me to complete this dissertation.

My father and family for the love support and words of encouragement you always giving me.

My inlaws, through your prayers I have made it.

My friends and colleagues, who were able to support me throughout this period.

My sincere appreciation to the following people and organisations that made this research possible:

- Mrs Mayeye for having been my supervisor in this study, for her encouragement, dedication, guidance and assistance
- Prof Rautenbach for his support and assistance
- The TB DOT Supporters for their willingness to participate in the study and sacrificing their time

The following institutions for their assistance during the study:

- University of Fort Hare
- Govan Mbeki Research and Development Centre
- Inxuba yethemba and Tsolwana sub-district
- Chris Hani District
List of Tables

Table 1 Regimen 1 (New cases) for adults and children > 8 years...........................14
Table 2 Regimen 2 (Re- treatment cases) for adults and children >8 years............15
Table 3 Age of participants ......................................................................................30
Table 4 Level of education........................................................................................30
Table 5 Knowledge and skills....................................................................................33

List of figures

Figure 1 Training of TB DOT Supporters..............................................................31
Figure 2 Distance travelled by DOT Supporters....................................................31
Figure 3 Responses related Salaries of DOT Supporters........................................32
Figure 4 Acceptance of TB DOT Supporters by the community.........................33
Figure 5 Time spent with the clients by DOT Supporters........................................34
CHAPTER 1

1.1 Introduction and background
The national Department of Health realised that its TB control efforts had been ineffective and joined its international counterparts by adopting Directly Observed Treatment short course [DOTs] strategy to fight the spread of TB. DOT is the only globally recognised strategy for effective TB control. This strategy ensures that infectious TB patients are identified and cured using standardised drug combinations. Treatment supporters observe patients as they swallow their drugs daily. (SA Tuberculosis control Programme practical guide, 2000)

According to the National Tuberculosis Management Guidelines (2009:48) DOTS is an important element in the WHO recommended policy package for TB control. DOTS strategy is recommended for all clients for the entire period of treatment. It is impossible to predict who will or will not adhere to treatment and appropriate support mechanism should be put in place for all clients. This helps ensure that a TB client takes the right drugs, in the right dose, at the right times. In practice it means providing a treatment supporter that is both acceptable to the client and able to ensure completion of the treatment regimen. DOT may occur in the clinic, at workplaces or in the community

1.1.1 Clinic DOT system
Clients who live close to a clinic should be encouraged to take treatment at the clinic if this is convenient for the client. During the first two months of the regimen 2, all clients require intra-muscular streptomycin and should therefore receive DOT at the clinic. The following measures are required to ensure effective clinic DOT system: daily medication collected through fast tracking that reduces waiting times, recording of daily doses taken on client held green cards, regular updating of blue clinic folders, putting systems in place to identify clients who did not present themselves for DOT on that day and to trace and recall them rapidly and putting a system to identify clients presenting for DOT who are also due for sputum collection. (SA Tuberculosis control Programme practical guide, 2000)
The reality is that for many clients clinic DOT is inaccessible, inconvenient, and costly and causes loss of income. Alternative methods of treatment supervision are necessary.

1.1.2 Workplace DOT system
Workplace DOT is beneficial to both employees and employers. TB clients usually require about two week’s sick leave at the start of treatment. After this period the client is non-infectious and most of the clients are able to return to work. For the employee, workplace DOT enables them to continue employment, and ensures continued income. The treatment supporter at the workplace could be an occupational health nurse, manager, supervisor, shop steward or other employee. Establishing workplace DOT requires: training of workplace treatment supporters, establishing systems that allow treatment to taken and monitored in privacy, confidentiality to be ensured, good communication with the clinic where the clinic is registered, allocating time for clinic visits so that medication can be collected, sputa provided for monitoring the response to the treatment and clinical evaluation undertaken (National Tuberculosis Management Guidelines 2009:48-49).

1.1.3 Community DOT
According to National Tuberculosis Management Guidelines (2009:48-49) Community DOT can contribute substantially to local TB Control Programme. It has the advantage of being more accessible and convenient to clients. A TB client who has far to travel for treatment is less likely to adhere to treatment, and community based DOT can be a viable alternative. The treatment supporter can be an existing community health worker or community member trained to provide DOT. Collaboration with other programmes allows the identification of health care workers that with suitable training and supervision can support TB clients. The approach in establishing community DOT should include: contacting the existing community groups and organisations, determining how they might be able to contribute to the community TB care, involving community representatives in the selection of community treatment supporters and ensuring an appropriate geographic spread of treatment supporters, providing adequate initial training to DOT supporters on TB transmission, signs and symptoms, diagnosis, treatment, side effects and monitoring of response to treatment, addressing ethics and confidentiality, establishing standard operating procedures and systems for administering daily medication and monitoring
adherence, including completion of the client owned green card when doses are taken and methods for identifying those interrupting treatment.

The DOT supporters should follow up and take a record of defaulters, communicate and give feed back to the clinic, reminding clients about the sputa that are due during the course of treatment, keeping records at the clinic indicating the location of treatment supporters and clients allocated to them [National Tuberculosis Management Guidelines 2009:48-49].

The introductory training of the selected TB DOT supporters varied according to the different sites and ranged from five days to five weeks. TB Manager is the one who is responsible for the training of TB DOT Supporters. Training covered the principles of becoming a TB DOT supporter, details about TB as an illness, HIV/AIDS and health aspects of hygiene and nutrition. There is also an emphasis on self-care, dealing with conflict and issues to do with communication. Training continues as the DOT supporter is supervised and supported in his/her role by the person coordinating the intervention. The contact is monthly and generally occurs when the DOT supporter obtains the supply of medication (Murrey and Botha, 2005).

Community Health Workers at the treatment centres are trained on the current issues on TB and its treatment, overview of the DOT strategy, community education, how to take sputum samples, how to observe treatment, and how to keep records. Training courses are about three to six days long at District level (Health link worldwide, 2001).

Curing TB is an important process which takes at least 6 months of drug treatment. Multiple drug resistant (MDR) TB can develop when patients do not finish their full course of treatment, sometimes they stop because they feel better after first few months. People who develop MDR TB can spread it to others easily as regular TB (TB in SA, the people’s plaque 2006). In South Africa it is estimated that there are 200 new MDR TB patients every year. The drugs to treat one MDR TB patients cost R25 000 as opposed to the R250 it costs for drugs to treat a new infectious TB patient. The treatment period of MDR TB is 18 to 24 months as opposed to the 6months for ordinary TB (Advocacy Publication, 1998-1999).
Directly Observed Treatment Short course has been promoted a global strategy since the mid 1990’s. It was launched in Pakistan in 1995 (Ali, 1998: 524). South Africa began the process of implementing the DOT country wide in November 1996.

1.2 Reasons for dots strategy
According to Tuberculosis, a Training manual for Health Workers, 1998, it is said that there is no other TB control strategy that has consistently demonstrated such a high cure rate as the Dots Strategy. The cure rates can be as high as 95% even in poor countries with fewer resources. Without DOTS the cure rates are very low at 40% and lower. Dots programme provides effective TB cure by ensuring regular taking of medication as prescribed. The uninterrupted treatment observed through DOT is the best way of preventing TB bacilli developed resistance. MDR TB is caused by taking anti TB drugs irregularly. Community based DOTS is cheaper than the cost of hospitalisation patients for all or some of their course of treatment.

1.2.1 Advantages of dots strategy
It is clear that MDR TB should be prevented at all costs, and the only way is through DOTS strategy. DOTS do not require expensive hospitalisation nor technology and a new health structure as TB control programme can be easily integrated in an existing primary health care system. Dots Strategy extends the lives of AIDS patients by making it easier for them to be cured. By treating and curing the TB in HIV-positive patients, many years can be added to their lives. According to the Tuberculosis Training manual for Health Workers, (1998) the presence of DOTS supporters in the workplace, means that TB patients can continue working. Nearly 80% of patients are in their most productive years of life, without the DOTS strategy to cure patients, the TB epidemic will continue to burden the workforce (Tuberculosis a Training manual for Health Workers, 1998). The DOTS strategy assists the economy of developing countries by allowing patient to continue working. Studies in India and Thailand have shown that a small investment in the DOTS strategy can save their economy, billions in US dollars. DOTS strategy was pioneered 10 years ago. It has been successfully implemented under various conditions in Tanzania, China, Bangladesh, New York City and Peru Nearly 70 countries worldwide have implemented DOTS with good
results. In 1996, approximately one million TB patients were treated with DOTS supporter (Tuberculosis a Training manual for Health Workers, 1998).

The above report represents reflection on South African supporters of DOTS, and the international recommended strategy for TB control. The DOT strategy has been implemented on national level in South Africa’s fight against TB, and DOT supporters are lay health workers who provide some of the service called for by the strategy.

1.3 Problem statement
The increase in TB defaulters and the resultant MDR infection is observed in Inxuba YethembaTsolwana sub-districts under Chris Hani Municipality, in the Eastern Cape. Even though the DOT Support system was instituted in November 1996, there has been little improvement in TB cure rates at the Inxuba Yethemba sub-district. The available Community Health Workers (DOT) Supporters are too few and not able to reach all TB sufferers to assist them to adhere to the TB treatment.

Although treatment of tuberculosis has been available free of charge in our local clinics, the disease is still among the leading causes of death, which in turn are caused by the delays in detection and treatment as well as patient adherence to treatment. The increase in TB prevalence rate is also due to the increasing HIV epidemic, the number of TB cases is also increasing because of failures in existing treatment strategies for TB (Health link worldwide, 2001). There is a need for strengthening the TB programmes by increasing the number of Community Health Workers visiting TB patients on TB treatment at home to assist TB suffers to adhere to their treatment.

1.4 Purpose of the study
The purpose of the study is to describe and explain the perceptions of TB DOT supporters at InxubaYethemba and Tsolwana sub-districts in Chris Hani District in the Eastern Cape

1.5 Objectives
To assess the relevancy and quality of training for DOT supporters at InxubaYethemba and Tsolwana sub-districts.

To identify challenges faced by TB DOT supporters during the execution of their duties.
To assess satisfaction of TB DOT supporters with their remuneration packages and other conditions of employment.

1.6 Research questions

Is the TB DOT support system effective in the improvement of adherence to TB treatment?

What are the challenges encountered by TB DOT supporters?

Is the increase in TB defaulters caused by fewer TB DOT supporters?

1.7 Significance of the study

The results and recommendations from this study will assist the TB programme planners in the improvement of TB delivery service within the Eastern Cape Province. The recommendations from this study will assist DOT supporters with knowledge and skills to render service that is of good quality to the TB patients on treatment.

1.8 Definition of terms

**DOT strategy**: is a patient centred approach which provides support for TB clients by observing them as they swallow their TB drugs and to ensure that they complete their treatment (Faces of TB, TB Advocacy Publications, and 1998-1999). In this study DOT strategy refers to the strategy used by DOT supporters at Chris Hani district.

**Directly Observed Treatment Short-course** (DOT): This strategy ensures that infectious TB patients are identified and cured using standardised drug combinations. Treatment supporters observe patients as they swallow their drugs daily (SA Tuberculosis control Programme practical guide, 2000).

**DOT Supporter** according to SA Tuberculosis control Programme practical guide, (2000) a DOT Supporter is a person who directly observed a patient while taking treatment. In this study DOT is referred to Community Health Workers who are functioning as TB DOT supporters.

**Effectiveness**: According to the Concise Oxford Dictionary, means having a definite or desired effect. In this study effectiveness refers to the effectiveness of the DOT service programme rendered by community health workers, working as TB DOT supporters.
1.9 Summary
In this chapter, the researcher has discussed the history and the background of TB, giving the reader a clear picture of how to manage TB using DOTs programme. The following has also been discussed, the advantages of DOT programmes, problem statement, purpose of the study, objectives, research questionnaire, significance of the study and the definition of terms.
CHAPTER 2

Literature review

2.1 Introduction
A literature study is the focused attempt to become familiar with what has been done in the area from documented information. The review of literature involves the systemic identification, location and analysis of document containing information related to the research problem. It is all the written sources relevant to the topic of interest (Brink 2009; 67).

In the previous chapter an overview of the dissertation was given on aspects pertaining the control of TB, such as research done on TB as a health problem and the DOTS strategy as a possible solution to the problem. In this chapter literature review will be discussed under the following headings: Tuberculosis as the health problem, Multi Drug Resistant/ Extreme Drug Resistant, Factors contributing to MDR TB, Client related, The primary Health Care role in MDR TB Management, Preventing MDR TB, Management of TB, New cases Re treatment cases, Integration of TB and HIV, Epidemiology of TB and HIV, Impact of TB on HIV and the conclusion.

2.2 Tuberculosis as a health problem
Tuberculosis remains the most important communicable disease in the world. In South Africa it accounts for over 80% of all notifiable disease. It arrived in this country with colonialists, settlers and missionaries, many of whom were already infected from the massive epidemic, which had swept Europe and North America during 17 century. Many sufferers came seeking a cure from the sun and fresh air. The previously unexposed non-immune indigenous population of South Africa rapidly developed TB (Edginton, 2000:10).

When the gold mines started on the Reef in the later 1800s, workers were exposed to silica dust, overcrowded hostel living, poor nutritional status and stress, all of which were major contributors to the development of TB. When they become sick
they return back home to their families in rural areas and spread the disease to them. By 1930 it was estimated that over 60% of black population was infected. In 1953 the rate of active disease was measured to be 780 per 100 000 of the population of the Northern and Eastern parts of the country (Edginton, 200:10).

In 1993, the World Health Organisation (WHO) declared tuberculosis as a global emergency. According to WHO, worldwide incidence of tuberculosis (TB) may have peaked in 2005. Tuberculosis infection is responsible for more deaths than any other infectious disease. Once called consumption, TB is a highly contagious, persistent disease characterised by the formation of hard greyish nodules or tubercles, because its signs and symptoms are easily confused with those of many other disease like respiratory tract infections, it can be difficult to diagnose (WHO 2005:1)

Tuberculosis (TB) is a common, and in many cases, a lethal infectious disease caused by various strains of mycobacterium, usually Mycobacterium Tuberculosis. Tuberculosis usually attacks the lungs but can also affect other parts of the body. It is spread through the air when people who have an active MTB infection cough, sneeze or otherwise transmit their saliva through the air (Smeltzer, Bare, Hinkle, & Cheever, 2010:567).

According to a clinical manual by Harries, (1997:19) TB is a bacterial disease caused by Mycobacterium tuberculosis (and occasionally by Mycobacterium bovis and Mycobacterium africanum). These organisms are also known as tubercle bacilli, because they cause lesions called tubercles, or as acid fast bacilli [AFB] It is said that when examining sputum containing tubercle bacilli stained with certain dyes under the microscope, the bacilli looks red. This is because they are acid fast.

The natural history of tuberculosis was described in the early nineteenth century by the French physicians Gaspard Laurent Bayle and Rene Laennec, both of whom died from the disease. Bayle, by his detailed pathological studies, put the investigation of tuberculosis on a firm scientific basis, while the invention of the stethoscope by his close friend Laennec in 1816 facilitated detailed descriptions of the clinical signs of the disease in the human lung (Pratt and John 2005:2)
Schaaf and Zumla (2009:17) describe tuberculosis as a rare disease, whose prevalence is measured or estimated in cases per 100,000 population. They also say that it is a slow moving disease, the time scale of epidemics is decades rather than weeks or years.

Exposure to an individual with active pulmonary TB carries a substantial risk of acquiring infection. In household contacts of TB cases this risk is approximately 25%, although it can be higher if exposure is more prolonged in sustained closed quarters. Inhalation of micro droplets containing MTB may result in infection. Whereas large droplets are deposited in the upper airway [trachea and bronchi], and removed by mucociliary clearance mechanism, smaller droplets that contain three or fewer bacilli may reach the alveoli (Friedman, 2001:20).

2.3 Multidrug Resistant / Extreme drug Resistant TB
On the 5th of September 2006, in Geneva, the World Health Organisation [WHO] has expressed concern over the emergence of virulent drug resistant strains of tuberculosis, and is calling for measures to be strengthened and implement to prevent the global spread of the deadly TB, a newly identified TB threat which leaves patients virtually untreatable using currently available anti-TB drugs (Thomas and Weyer, 2006).

According to a Training Manual for Health Workers, (1998:59) Multidrug Resistant TB [MDRTB] describes strains of tuberculosis that are resistant to at least two main first line TB drugs that is isoniazid and rifampicin. MDR-TB develops during treatment of fully sensitive TB when the course of antibiotics is interrupted and the levels of drug in the body are insufficient to kill 100% of bacteria. This can happen for a number of reasons: patients may feel better and halt their antibiotic course, drug supplies may run out or become scarce, or patient may forget to take their medication from time to time

Extensive drug resistant TB [XDR-TB] also referred to as Extreme drug Resistant TB is MDR TB that is resistant to three or more of the six classes of second line drugs. Some contend that XDR TB strains have emerged from the mismanagement of multidrug resistant TB, and once created, can spread from one person to another. The exact nature of this mismanagement is not yet known, but the origin of XDR-TB may coincide with the institution of new policies to promote drug compliance, such as
According to the National TB Management Guidelines (2009: 87) XDR TB is extremely difficult and expensive to treat. It has very high mortality, with rates of over 90% recorded amongst HIV co-infected XDR clients in Tugela Ferry KwaZulu Natal.

Since the mid-eighties, cases of MDR-TB have been diagnosed in each of the nine provinces in South Africa. WHO estimates an MDR rate of 1.8% in new TB cases and 6.7% in previously treated cases in South Africa, with approximately 8000 new MDR-TB cases each year. MDR-TB is expensive to treat. The social and economic burden of this problem is already evident in South Africa where the cost of treating a case of MDR-TB is up to 25 times the cost of treating an uncomplicated, drug susceptible case. It is therefore of utmost importance that MDR-TB be prevented by rigorous adherence to the principles of the National Tuberculosis Control Program, and by building partnerships with clients, their families and communities to cure cases of tuberculosis at the first attempt (National Tuberculosis management Guidelines, 2009:82).

2.3.1 Factors contributing to MDR-TB

As with other forms of drug resistance, MDR tuberculosis is a man-made problem being largely the consequence of human error in any, or all of the following: frequent or prolonged shortages of first line Anti tuberculosis drugs due to poor stock management and/or procurement problems, use of tuberculosis drugs or drugs combinations of unproven bioavailability, the use of single first line drugs rather than fixed-dosed combination tablets.

Poor client management is due to health system failures that lead to poor management of clients on first line regimens, inadequate or inappropriate treatment and poor adherence, including poor relationships between clients and health care personnel due to the uncaring staff attitudes, all contribute to MDR-TB. Little empathy for clients, being paternalistic and failing to adopt a problem solving approach to help resolve issues all contribute to poor adherence. Inadequate counselling of clients, result in low knowledge levels, poor understanding of what is expected of them, and of the importance of completing treatment results in poor adherence. Poor monitoring of the response to treatment, ineffective systems, including lack of support for directly observed therapy and unsupervised clients also contributes in this regard. Poor record keeping, follow up of clients and referral,
staffing issues including frequent staff changes, poor staff morale, lack of regular support and supervision and low accountability of staff for programme outcomes also contributes to poor adherence to first line regimens (National Tuberculosis Management Guidelines, 2009:82-83).

Prescription errors including: the use of two or three drugs when four or five first line drugs should be used, adding one extra drug to a failing regimen, insufficient contact tracing and follow up of MDR cases also contribute to the spread of MDR-TB.

2.3.2 Client- related Factors
Client adherence is most often a problem when the client is homeless, has an alcohol or drug problem, and is unemployed and /or looking for a job, a family member has been unsuccessfully treated previously, and when access to health care is difficult (National Tuberculosis Management Guidelines, 2009:82-83).

2.3.3 The Primary Health Care role in MDR TB management
Although the specialist MDR units in each of the provinces have the key responsibility for MDR TB, primary health facilities have an essential role to play in preventing MDR TB by implementing effective TB control and reducing the likelihood of resistance developing, ensuring early diagnosis of potential MDR in clients who fail to respond to regimen one and two, assisting with MDR contact tracing, providing on going care post discharge from the MDR units and liaising with the MDR unit, providing counselling and support to MDR clients, families and contacts.

2.3.4 Preventing MDR TB
Preventing the development of drug resistance requires cooperation of all TB treatment providers, including the private health sectors, in implementation of TB programme policies, provision of the right drugs, in the right dosage for the correct period of time, ensuring good adherence to treatment, adequate counselling of clients and their families, accessibility of services , addressing barriers to adherence e.g. appropriate referral to social services, supervision and monitoring of adherence, use of fixed drug combination tablets, uninterrupted drug supply, an ensuring a four months stock at a facility level, early diagnosis of MDR, prompt initiation of effective treatment and contact tracing and screening.
2.4 Management of TB

The next major breakthrough in the therapy of tuberculosis came in the late 1960’s, with the discovery of rifampicin or rifampin, as it is known in the USA. This drug made it possible to develop orally administered regimens lasting the much shorter time of six months. Although a six months therapy is very long compared with courses of antibiotics for many acute infections, it is considerably shorter than the former 18-24 months, and is therefore called “short-course therapy” (Pratt et al., 2005:152).

Since 1970, therapy has been shortened from 18 months of isoniazid and ethambutol to 9 months of isoniazid and rifampicin, and then to the current 6 months regimen. This was due largely to the introduction of rifampin, and the addition of pyrazinamide (Friedman, 2001:116). According to the South African TB control programme, (1996:8), clients are supposed to take treatment five days a week, Monday to Friday. It is said that no treatment is needed on Saturday and Sunday. Three times per week regimens should be taken in the continuation phase. A new recommendation was made in 2009, that the TB treatment should be taken every day for seven days, including Saturday and Sundays.

2.4.1 New TB cases

According to the National Tuberculosis Management Guidelines, (2009:37) a new TB client is a client who has never been treated for TB in the past or who has taken TB treatment for less than four weeks. The standard treatment regimens for new cases have an initial or intensive phase lasting for two months and a continuation phase lasting four months. Treatment with four drugs (isoniazid, rifampicin, pyrazinamide and ethambutol) in the intensive phase results in rapid killing of tubercle bacilli. Infectious clients become non-infectious within approximately two weeks. The majority of clients with sputum smear positive TB become smear negative within two months. In the continuation phase, two drugs (isoniazid, rifampicin) are used, but for a longer period of time. The effect of the drugs eliminates the remaining bacilli and prevents subsequent relapse (National Tuberculosis Management Guidelines, 2009:37).
2.4.2 Re-treatment cases

Re-treatment cases include all TB clients who were treated for four weeks or more in the past and who are now smear or culture positive, or who have clinically been diagnosed with TB (failure, relapse, return after default). These cases have a higher likelihood of resistance that may have been acquired through inadequate prior chemotherapy. The retreatment regimen has an intensive phase lasting three months. For the first two months, treatment includes five drugs: (isoniazid, rifampicin, pyrazinamide, ethambutol, and streptomycin). In the third months, treatment is with four drugs: [isoniazid, rifampicin, pyrazinamide and ethambutol.] The continuation phase with three drugs [isoniazid, rifampicin and ethambutol] lasting for five months. This regimen can cure clients excreting bacilli still fully sensitive to the drugs as well as those excreting bacilli resistant to the isoniazid and or streptomycin. Under proper case management conditions, MDR-TB cases are those most at risk of failure on the treatment regimen (National Tuberculosis Management Guidelines, 2009:37).
Table 2 Regimen 2 (Re treatment cases) for adults and children >8years

<table>
<thead>
<tr>
<th>Pre treatment body weight</th>
<th>Intensive Phase</th>
<th>3rd month</th>
<th>Continuation Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7 days a week for 2 months</td>
<td>7days a week</td>
<td>5months7days a week</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RZHE 150,75,400, 275</th>
<th>Streptomycin (g)*</th>
<th>RZHE 150,75,400,275</th>
<th>RH 150,75</th>
<th>E 400</th>
<th>RH 300,150</th>
<th>E 400</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-37kg 2tabs 0.5</td>
<td>2tabs</td>
<td>2tabs</td>
<td>2tabs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>38-54kg 3tabs 0.75</td>
<td>3tabs</td>
<td>3tabs</td>
<td>3tabs2tabs</td>
<td>2tabs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55-70kg 4tabs 1.0</td>
<td>4tabs</td>
<td>4tabs</td>
<td></td>
<td>2tabs</td>
<td></td>
<td>3tabs</td>
</tr>
<tr>
<td>&gt;71kg 5tabs 1.0</td>
<td>5tabs</td>
<td></td>
<td>2tabs</td>
<td></td>
<td></td>
<td>3tabs</td>
</tr>
</tbody>
</table>

(National Tuberculosis Management Guidelines, 2009:37)

2.5 challenges to TB control

We face several challenges to improving TB control:

- Inadequate financial and human resources for the TB control programme characterised by low level of awareness of TB, poor health seeking behaviour amongst symptomatic people resulting in late presentation to health facilities and inadequate community support for those on TB treatment;
- Inadequate health systems that result in low case detection, poor continuity of care and high levels of treatment interruption;
- Poorly trained or supervised health care personnel, low levels of accountability of health care personnel, non-adherence to protocols, poor record keeping and poor relationships with clients;
- Low levels of integration of TB and HIV services at patient management level.
- The numbers of MDR- TB and XDR-TB cases have been increasing.
The management of drug resistant TB at facility level is sub optimal, with inadequate early pick up of resistance and poor follow up of MDR TB clients discharged from in-patient facilities. (National Tuberculosis Management Guidelines, 2009:10)

2.6 Integration of TB and HIV

The many interactions between tuberculosis and human immunodeficiency virus infection influence the design and implementation of programmes to address the needs of patients living with or at risk for both diseases. Collaboration between national TB and HIV programmes and some degree of integration of services at a local level have been advocated by the WHO and other international bodies, and are recognised as essential in areas where the two diseases are prevalent. TB/ HIV service integration are instructive, illustrate common themes, and show that the strategy can be successful, but they also show that the programmatic, medical, staffing resources, and scale up challenges remain. In addition, they indicate that, although broad programme principle of TB/HIV service integration are essential, programme designs and components may vary by country and even within countries, as a result of differing TB and HIV diseases prevalence(Journal of Infectious Disease, 2007, vol196)

According to Pratt, et al.,(2005: 132) most people who overcome a primary infection by the tubercle bacillus have about a 5 percent risk of developing post primary Tuberculosis at some time during the risk of their lives, but in a person co-infected with HIV, the risk is around 8 percent each year. Thus the annual risk of a co-infected person developing tuberculosis is more than 20 times higher than that of someone infected by the tubercle bacilli alone. Historically, most cases of tuberculosis in adults are ascribed to re activation of endogenous infection, but the use of fingerprinting has shown that many cases of new and recurrent tuberculosis are due to recent infection. This is particularly the case in HIV infected individuals owing to their lowered ability to prevent infection progressing to active disease. On the other hand patients with HIV related tuberculosis is no more infectious than those who are not infected with HIV (Pratt, Grange et al., 2005:132).

HIV infection leads to progressive immunodeficiency and increased susceptibility to infections including TB. As HIV infection progresses, CD4 lymphocytes decline in
number and function. The immune system is less able to prevent the growth and local spread of Mycobacterium tuberculosis, leading to the progression of resent or latent TB infection to active TB disease. In the absence of HIV infection, only about 10% of people infected with Mycobacterium Tuberculosis get sick with TB during their life time. In people with HIV, about 50% will develop active TB disease at some stage. Currently 55% of TB clients are co infected with HIV in South Africa. The high levels of active TB in persons living with HIV/AIDS poses an increased risk of TB transmission to the general community (National Tuberculosis Guidelines, 2009:73).

HIV not only increases the number of TB cases but also alters the clinical course of TB disease. Although tuberculosis can occur at any point, in the course of progression of HIV infection, the clinical pattern of disease changes. As HIV related immune suppression increases, there are increasing number of smear negative pulmonary TB, extra pulmonary TB and cases of disseminated TB. TB is also more difficult to diagnose as immune suppression progresses. Co-infected clients have an increased mortality due both to late diagnosis and other opportunistic infections (National Tuberculosis Guidelines, 2009:73).

TB is the most common, serious and life threatening opportunistic infection in people with HIV and AIDS in Africa and in other developing countries. Since the beginning of the HIV/AIDS epidemic there has been a steady increase in the number of new TB cases. The TB epidemic has shown a parallel rise approximately 50-60% of people with HIV infection will develop active TB disease at some stage of their disease. This means that there is a 10 times increase risk of developing TB if a person is HIV positive. In many parts of South Africa and Africa, the prevalence of HIV among people with active TB is almost 50%. This means that, a patient with TB is also very likely to have HIV infection. Patients with HIV and TB are referred to as dual or co-infected (Evian, 2003:243).

TB is treated the same way in HIV infected and HIV uninfected individuals, care must be taken when treating HIV and TB concomitantly because of interaction between anti-TB and antiretroviral drugs. Treatment with antiretroviral drugs can lead to immune reconstitution inflammatory syndrome with those co-infected with TB and HIV (Karim and Karim, 2005:433).
2.7 Epidemiology of TB and HIV

Globally, around 12 percent of all cases of tuberculosis are now HIV related. At the present time the impact of the HIV epidemic on tuberculosis is most severe in sub Saharan Africa, where in the last decade of the twentieth century, almost a quarter of the estimated 15 million new cases of tuberculosis were HIV related. As a direct consequence, the prevalence of tuberculosis doubled, trebled or even quadrupled in some African countries over this time period.

In Zambia for example, the prevalence of tuberculosis was fairly constant between 1964 and 1984, around 7000 new reported cases annually. In 1995, however, 40 000 new cases were reported and three quarters of these were HIV related. Depending on the country, between 20 and more than 70 percent of cases of tuberculosis in sub Saharan Africa are HIV related. Tuberculosis is foremost among the causes of maternal death in Zambia, where one in four pregnant women are HIV infected. At present, the greatest impact of HIV on tuberculosis is seen in Africa, but the population size (around 750 million in 1998) is relatively small compared to that of the India subcontinent, China and south East Asia. Most of the world’s cases of tuberculosis occur in these more highly populated regions, where unless the present upsurge of HIV infection is controlled, there could be serious tuberculosis problems in the near future (Pratt et al, 2005:132).

In 1995, about one third of the 17 million HIV infected people worldwide were also co-infected with Tuberculosis. 70% of co-infected people lives in sub Saharan Africa, 20% in Asia and 8% in Latin America and the Caribbean (TB/HIV A clinical manual, 1996:29). South Africa has the highest number of HIV infected and the eightighest burden of incident TB of any country worldwide. About two million South Africans are MTB/HIV co-infected, and the estimated incidence of all forms of TB was 509 per 100 000 population for 2002. Of these 60% of adult cases are also HIV infected (Karim et al., 2005:434).

2.7.1 Impact of TB on HIV

The impact of TB on the progression of HIV infection has been recognised widely. However, to date, this effect is most notable in Africa, where 12 of the 15 million co-infected patients have originated. Since the response of HIV infected TB patients to
antituberculosis drugs is similar to HIV unaffected TB patients, the increased morbidity and mortality in co-infected patients is attributable to the worsening of HIV disease. For example, in Uganda the mortality of TB in HIV infected patients is 30%, this finding has been found to be due primarily to progressive HIV disease, and not to the tuberculosis disease (Friedman, 2001:36).

TB and HIV also have an interaction at the cellular level. TB disease leads to immune activation and increases viral replication, and it has been postulated that this could result in an accelerated progression of HIV disease, or a period of increased infectivity. The question of whether TB accelerates HIV progression has been studied extensively, but the clinical significance is still not clear. A number of observational studies have shown that HIV infected patients who develop TB have a worse prognosis than HIV infected patients who have been staged at a similar level of immune suppression but remain free of TB disease (Karim et al., 2005:438).

However, staging HIV is not very precise and it is difficult to reconcile this hypothesis with the lack of impact on survival reported by most TB preventive trials. Prospective studies measuring viral load before and after an episode of TB support the review that intercurrent TB indicates profoundly impaired immunity rather than being the cause of it (Karim and Karim, 2005:438).

2.8 Directly observed treatment short course (DOTS)

DOTS is the name for a comprehensive strategy which primary health services around the world are using to detect and cure TB patients. It means that someone supports the patient by actually observing that the pills are taken on a daily basis. DOTS is best way to help patients take all their treatment. It depends on four elements. D- DIRECTLY- The first priority of the NTCP must be to direct resources towards detecting sick, infectious TB cases, so they can be cured (Tuberculosis, A Training Manual for health workers, 1998:63)

In the 1980's, at the time of the closure of the British medical Research Council's Tuberculosis and chest diseases Unit, ominous trends including the impact of HIV infection, were inducing many expects to challenge the prevalent complaiicemnet assumptions of complaiicency. Accordingly, by the early 1990's, the WHO was re
establishing very serious interest in Tuberculosis. This renewal of interest led, in 1993, to the unprecedented declaration by the WHO that Tuberculosis was a global emergency. This was no empty slogan, as it heralded a period of intense advocacy and activity (Pratt, et al., 2005:170).

As a direct consequence, in 1998, the global plan to stop Tuberculosis was launched in Bangkok and rapidly grew into an extensive network of numerous governmental, nongovernmental and academic organisations with a secretariat based at the WHO headquarters in Geneva. The basis of the Global Plan to Stop TB programme is the WHO DOTS strategy. DOTS is an acronym of Directly Observed Treatment Short course, and is the brand name of a five point control strategy formally introduced in 1994 (Pratt et al., 2005:170).

The technical strategy for DOTS was pioneered by DR Karen Styblo, a greatly respected epidemiologist and physician who for many years worked for the International Union against Tuberculosis and Lung Disease, in the 1980s, primarily in Tanzania. In 1989, the World Health Organisation and the World Bank began investigating the potential expansion of this strategy. In July 1990, the World Bank, under Richard Bumgarner’s direction, invited Dr Styblo and WHO to design a TB control project for China. By the end of 1991, this pilot project was achieving phenomenal results; more than doubling cure (Tuberculosis Management Guidelines 2009:48)

According to Schaaf and Zumla (2009:23) in Peru DOTs was launched in 1991, and high rates of case detection cure pushed down the incidence rate of pulmonary TB by six% per year. Indirect assessments of the effect of DOTs suggest that 70% of the TB deaths expected in the absence of DOTs were averted in Peru between 1991 and 2000.

The political implications of the use of the brand name for promoting the DOTS strategy for global tuberculosis control have been critically analysed by Ogden and her colleagues. The strategic objectives of the Global Plan to Stop TB are: To expand the DOTS programme so that eventually all those with TB will be effectively diagnosed and treated, adapt the programme to face the challenges of HIV related tuberculosis and multidrug resistance, improve the control of the disease by developing new diagnostic tests, drugs and vaccines and to strengthen the
partnership so that the control strategies are effectively applied (Pratt, et al., 2005:170).

According to the National Tuberculosis Management Guidelines, (2009:48) Directly Observed Treatment is an important element in the WHO recommended policy package for TB control. It means that an observer (treatment supporter) watches the client swallowing the tablets, in a way that is sensitive and supportive to the client’s needs. Close supervision and monitoring of clients allows good monitoring of adherence and early pick up of non-adherence and adverse drug effects.

According to the National Tuberculosis Management Guidelines, (2009:48) DOT is recommended for all clients for the entire period of treatment. It is impossible to predict who will or will not adhere to treatment and appropriate support mechanisms should be put in place for all clients. This helps ensure that a TB client takes the right drugs, in the right doses, at the right time. In practice, it means providing a treatment supporter that is both acceptable to the client and able to ensure the completion of the treatment regimen. DOT may occur in the clinic, at work place or in the community. The treatment supporter may be a health worker or a trained workplace or a community member.

2.8.1 Key elements of DOTS strategy
The key elements of DOTS strategy are:

   Government commitment to sustain TB control activities; Sputum smear microscopy to detect the infectious cases among those people attending health care facilities with symptoms of TB, most importantly cough of three weeks duration or more standardised short course anti TB treatment for at least all confirmed sputum smear positive pulmonary TB cases, with direct observation of treatment for at least the initial two months; A regular, uninterrupted supply for all essential anti TB drugs; A standardised recording and reporting system which allows assessment of treatment results and overall programme performance (South African TB control Programme, 2000:38).

The benefits of DOTS strategy are thus well established, and the huge challenge facing the global community is to ensure that all patients with Tuberculosis have access to diagnosis and treatment within this strategy. In March 2000, in the so
called Amsterdam Declaration to stop TB, the targets of diagnosing 70 percent of sputum smear positive patients and curing 85 percent of those diagnosed by the year 2005 were set. An additional target is to reduce the global burden of tuberculosis, in terms of prevalence and death rates, to half of its year in 2000 level by 2005 (Pratt, et al., 2005:171).

According to Davies (1998:480-481) DOTS has clearly been shown to have the potential to significantly improve tuberculosis control in different parts of the world. However, it remains untested in some of the environments in which control is most urgently needed, namely, where infrastructures are fragile or situations are unstable as exemplified by the extreme conditions experienced by displaced populations.

Davies (1998:4881) further says, there appears to be potential for DOTS implemented at the community level to improve care generally, but whether it will have a significant impact on equity remains to been seen. We have discussed how community based DOT has been assessed to cost effective both from the perceptive of the health system and the patient. Cost to the community, which maybe providing an increasing number of DOT Supporters at no avert financial charges have yet to be taken into account. DOT in the community may well hold the key to successful tuberculosis control globally, but there is an urgent need for social assessments of its place in those parts of the world where it is most urgently needed (Davies, 1998:481).

2.9Summary

From the literature review conducted, it is evident that TB is not a South African Problem, but it is a global health issue that needs to be dealt with aggressively. The use of DOT strategy is seen as the possible solution to fight TB worldwide.
CHAPTER THREE—METHODOLOGY

3.1 Introduction
This chapter describes the steps taken to achieve the study objectives. These steps include the type of study design chosen, study setting, selection of respondents, sampling, and research questions used in the questionnaires, validation of questionnaires, the ethical consideration and data analysis.

3.2 Research questions
The research questions of this study were based on the study aim and objectives as outlined in chapter one. The research questions are as follows:

Is the TB DOT support system effective in the management of TB infection among the sufferers?

What are the challenges encountered by TB DOT supporters?

Is the increase in TB defaulters caused by fewer TB DOT supporters?

3.3 Study design and approach
The researcher used a nonprobability quantitative approach and a descriptive design for this study. A research design is a structure or framework within which data is collected. The function of a research design is to ensure that the evidence obtained enables us to answer the initial questions as unambiguously as possible (Becker and Brayman, 2009:186). This design was deemed appropriate for this study since the researcher was interested in understanding the effectiveness of TB DOT supporters as perceived by them.

3.4 Study setting
This study is based on the population of Home Based Carers, who are working as TB DOT supporters. These TB DOT supporters are working in different clinics, at
InxubaYethemba and Tsolwana Sub-Districts in the Chris Hani Municipality, in the Eastern Cape. In each clinic, in InxubaYethemba, Tsolwana Sub-Districts, within the two mentioned sub-districts there are 21 fixed clinics. In each clinic there are two community health workers working as DOT supporters. Each DOT supporter is serving a vast area of the catchment population. InxubaYethemba sub-district has an average of 336 TB patients. In one clinic there are 97 clients on TB treatment and there are 40 TB patients who are supervised by DOT supporters. All the clinics are serving patients suffering from TB and on TB treatment. Some of the patients are given their TB treatment by the nurse at the clinic. There is no transport provided for TB DOT supporters, and they walk all the distance visiting patients at their homes for the purpose of ensuring that the treatment is taken appropriately.

3.5 Study population
A population is the entire group of persons or objects that is of interest to the researcher, that meets the criteria which the researcher is interested in studying. The population that the researcher does have access to, and actually studies is known as study population (Brink, 2006: 123).

The study population for this study was composed of all the 42 Community Health Workers, working at Chris Hani District as TB DOT supporters, which is composed of two sub-District, namely Tsolwana and InxubaYethemba in the Eastern cape.

3.6 Sample and sampling procedure
A sample is a part or fraction of a whole, selected by the researcher to participate in the research study. A sample thus consists of a selected group of the elements of analysis from a defined population (Brink, 2006: 124). A convenient sample of all the 42 TB DOT supporters working in various clinics under Tsolwana and InxubaYethemba Sub-Districts was used for this study.

3.7 The research instrument
The research instrument used in this study was designed by the researcher. Questionnaires were administered to the community health workers, working as TB DOT supporters at Chris Hani Municipality. The use of this tool provided the researcher with quantifiable data on TB DOT supporters’ perceptions of the effectiveness of TB DOT support programme offered at the clinic.
The instrument used was divided into the following sections: section 1. Demographic data, which dealt with their age, level of education and their marital status. Section two, was about the training they received and its duration, their understanding of the content and the salary they are receiving. Section three dealt with challenges in delivering of DOT Support programme. Section four was enquires about their interaction with clients during their execution of their duties.

3.8 Validity and reliability of the instrument

3.8.1 Validity
Kumar (2005:153) defines the term validity as the ability of an instrument to measure what it is designed to measure. Content validity concerns “the degree to which an instrument has an appropriate sample of items for the construct being measured” (Polit and Beck 2012:236). Content validity for this study was ensured through the examination of the instrument by the researcher’s supervisors as well as a professional statistician from the University of Fort Hare. A pilot study was conducted to check if the questionnaire would give valid answers. Pre-testing of the instrument was done on respondents working at Philani Clinic. These respondents were not included in the study sample. The questionnaire provided an adequate representative sample of all content or elements of the phenomenon being measured. All items used in the questionnaire went through some form of validation, by checking the questionnaire for correct interpretation of the English language by an English expert.

3.8.2 Reliability
Kumar (2005:156) defines the concept of reliability as the consistency, stability, predictability and accuracy of the research instrument. The questionnaire used repeatedly must give consistent similar results. To ensure reliability, a pilot study was conducted to ensure that the instrument is giving the same results as with other questionnaires used in similar studies.

3.9 Pilot study
The questionnaire was pre tested with a small sample of respondents before use. The pilot check people’s understanding and ability to answer the questions highlight areas of confusion and look for any routing errors, as well as providing an estimate.
of the average time each question will take to complete. Any amendments to the questionnaire were effected accordingly.

3.10 Data collection method
A self-administered questionnaire was used for this study. A questionnaire is a painted self-report form designed to elicit what can be obtained through the written responses of the subjects (Burns and Groves, 2011:426). The respondents were assembled in one central point in each of the sub-districts where the purpose and the objectives for conducting the study were given. Respondents were allowed to read the permission letter before they could sign the consent form. The questionnaires were personally distributed by the researcher to TB DOT supporters. The questionnaires were all written in English as the participants understood the language. The researcher’s targeted sample was 42 participants although only 39 filled in the questionnaires because three were on leave.

3.11 Ethical consideration
The study was conducted following the approval and issuing of the certificate by the University of Fort Hare Ethics Committee. Permission to conduct the study was obtained from the Eastern Cape Department of Health Research Ethics committee and from the Health management of Chris Hani District. The purpose of the study was explained to the participants in simple language. Participants were not pressurised into taking part in the research, and were informed that the participation is voluntary and that they were informed that they can withdraw from the study at any point. Issues of confidentiality and anonymity and respect were maintained throughout the study and no names appeared on the questionnaires.

An informed consent was obtained from the participants after the nature, aim and the significance of the study had been clearly explained to them. Analysed data and other documents will be kept in a locked place.

3.12 Data analysis
The initial data analysis will be conducted by the author of this research study. Data will be entered on a spreadsheet according to variables. Data was analysed using Microsoft excel 2007 and was presented in the form of tables and graphs.
3.13 Summary
This chapter clearly describes the method and approach used in this study. A clear picture of the study setting where the research took place is explained.

The questionnaire, issues of reliability, reliability, ethical considerations and data analysis are described.
CHAPTER FOUR RESULTS

4.1 Introduction
In this chapter the data has been analysed, and through analysis of the data the researcher tried to answer the following questions: Is the TB DOT support system effective in the improvement of adherence to TB treatment? What are the challenges encountered by TB DOT supporters? Is the increase in TB defaulters caused by fewer TB DOT supporters?

This chapter presents analysis in the following sub-sections:

- Demographic data of the clients
- Training they received as TB DOT supporters
- Challenges encountered by TB DOT supporters that includes, distances they are walking when visiting clients, their salaries and Hours they are working.
- Interaction with clients, including time they spend with clients, their acceptance by community members and the family and the support from the community.
- Their knowledge and skills as far as TB is concerned.

4.2 Clinic location and type
A total of 21 clinics were visited during the study. Of the 21 clinics one was nullified because TB DOT supporters were on leave during the specific time of data collection. All the 21 clinics are situated at InxubaYethemba and Tsolwana Sub districts under Chris Hani District in the Eastern Cape

4.3 Age of participant
The results presented in the table below, are from a sample of 39 adults, working as TB DOT supporters. Out of 100% participants (n=39) 5.1% (n=2) ranges between 20-29 years of age, 35.9% (n=14) ranges between 30-39 years of age, 48.7% (n=19) ranges between 40-49 years of age, 10, 4% (n=4) ranges between 50-59 years of age.

Table 4.3 Age of participants
<table>
<thead>
<tr>
<th>AGE RANGE</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>2</td>
<td>5.1%</td>
</tr>
<tr>
<td>30-39</td>
<td>14</td>
<td>35.9%</td>
</tr>
<tr>
<td>40-49</td>
<td>19</td>
<td>48.7%</td>
</tr>
<tr>
<td>50-59</td>
<td>4</td>
<td>10.3%</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>100%</td>
</tr>
</tbody>
</table>

4.4 Level of education

Table 4.4 below shows TB DOT supporters' level of education, of the 100% participants (n=39) 30.8% (n=12) are on grade 12, 43.6% (n=17) are on grade 11, 12.8% (n=5) are on grade 10, 2, 6% (n=1) is on grade 6, 2.6% (n=1) has N6, 7.6% (n=3) have N4.

<table>
<thead>
<tr>
<th>Grade</th>
<th>N0</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 12</td>
<td>12</td>
<td>30.8%</td>
</tr>
<tr>
<td>Grade 11</td>
<td>17</td>
<td>43.6%</td>
</tr>
<tr>
<td>Grade 10</td>
<td>5</td>
<td>12.8%</td>
</tr>
<tr>
<td>Grade 6</td>
<td>1</td>
<td>2.6%</td>
</tr>
<tr>
<td>N6</td>
<td>1</td>
<td>2.6%</td>
</tr>
<tr>
<td>N4</td>
<td>3</td>
<td>7.6%</td>
</tr>
<tr>
<td>Totals</td>
<td>39</td>
<td>100%</td>
</tr>
</tbody>
</table>
4.5 Training of TB DOT Supporters

![Bar chart showing the distribution of training days.](chart)

**Figure 4.1 Training of TB DOT Supporters**

TB DOT Supporters had undergone different trainings. Out of 100% (n=39), 59% (n=23) received a five days training, 12, 8% (n=5) received a three weeks training and 28, 2% (n=11) received a three days training.

4.6 Challenges faced by TB DOT supporters

4.6.1 Distance

![Bar chart showing the distance challenges.](chart)
Figure 4.2 Distance travelled by DOT Supporters

Figure 4.2 above shows the distances walked by TB DOT supporters when visiting clients. Of the 100% (n=39), 51.3% (n=20) walked 7 kilometers, 23% (n=9) walked 8 kilometers, 12.8% (n=5) walked 5 kilometers and 10.2% (n=4) walked 4 kilometers.

4.6.2 Responses related salaries

Figure 4.3 responses related to salaries of TB DOT Supporters

Figure 4.3 above shows the responses given to TB DOT Supporters by the managers regarding their salaries. From the 100% (n=39) DOT Supporters interviewed, 64.1% (n=39) said they received no response from the government, 20.5% (n=8) said they were told that they are volunteers, 10.3% (n=4) said they were told that the Department doesn’t have money and 5.1% (n=2) said they were told that managers know nothing about them.
4.7 Acceptance of TB DOT supporters by the community

The figure 4.4 above demonstrates the TB DOT Supporters were accepted by the community members. Of the 100% (n=39) TB DOT supporters interviewed, 82.1% (n=32) said that they were accepted by the community because they were known there, 5.1% (n=2) said that they were not accepted by the community because of the stigma attached with being visited by health workers, 5.1% (n=2) indicated that they were not accepted because they were coming too early to their houses, 2.6% (n=1) said that the clients were too ignorant regarding the DOT support programme.

4.8 Knowledge and Skills

Table 4.5

<table>
<thead>
<tr>
<th>Knowledge and skills</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge and skill on how to give TB treatment</td>
<td>100% (n=39)</td>
</tr>
<tr>
<td>Able to list TB treatment</td>
<td>82.1% (n=32)</td>
</tr>
<tr>
<td>Awareness of side effects of TB treatment</td>
<td>82.1% (n=32)</td>
</tr>
<tr>
<td>Use of protective masks</td>
<td>0%</td>
</tr>
</tbody>
</table>
4.9 Time spent with clients by TB DOT Supporters

The figure 4.5 above shows the time spent with the client by the TB DOT Supporters. Of the 100% (n=39) 59% (n=23) spent 30 minutes, 23.1% (n=9) spent one hour, 15.4%

4.10 Summary
The analysed results above endeavoured to answer the following questions: Is the TB DOT Support system effective in the improvement of adherence to TB treatment? What are the challenges encountered by TB DOT supporters? Is the increase in the TB defaulters caused by fewer TB DOT Supporters? These results attempted to identify the relevancy and quality of training for DOT supporters at InxubaYethemba and Tsolwana sub-districts, identification of challenges faced by TB DOT supporters during the execution of their duties, and assessment of satisfaction by TB DOT supporters with their remuneration packages and other conditions of employment.
CHAPTR 5- DISCUSSION

5.1 Introduction
The purpose of this study was to assess the effectiveness of TB DOT Support programme in InxubaYethemba and Tsolwana sub-Districts. The challenges that are experienced by TB DOT Supporters are discussed as per results found in chapter four.

In this chapter the analysed data is discussed under the following headings: Limitation of the study, demographic data including age, level of education and satisfaction with salary, Challenges in delivering of TB DOT support programme, knowledge and skills and the interaction with clients.

5.2 Limitation of the study
In considering findings in this study, it is important to bear in mind the following limitations: The results from this study cannot be generalised to the Eastern Cape, since only a convenient sample was used.

There was so much delay in collecting data, the problem was with Chris Hani District management, who took more than three weeks to give permission for data collection.

5.3 Demographic data and representativeness
In this section the demographic data will be discussed under the following topics:

5.3.1 Clinic location and type
A total of 21 clinics were visited in this study. Of the 21 clinics, one clinic was cancelled due to the fact that the TB DOT supporters in that particular clinic were on leave.

In this particular clinic Community Health workerS are being used as TB DOT Supporters but not being trained as such.

5.3.2 Gender Issues
Of the 100% (n=39) interviewed, only 10.3% (n=4) were males. In one of the clinics a male DOT supporter is using his own bicycle for delivering of TB treatment to clients
and females cannot use bicycles according to their culture. So the fact that he is a male worked to his advantage as he is using his bicycle as the mode of transport.

5.3.3 Age group
The age group of the TB DOT Supporters was between 20 and 59. The majority DOTs were between 40 and 49, 48.7 (n=17). This shows the level of knowledge and maturity on psycho-social issues regarding challenges experienced by the TB clients within the communities.

5.3.4 Level of education
Of the 100% (n=39) 44% (n=17) are on grade 11, which is the majority of the participants (TB DOT Supporters). This means that they are able to understand the concepts of TB as all the training is in English, and that they are also able to understand the concepts used in TB medication prevention and support programme.

5.4 Training
The training that the TB DOT Supporters received varied between three days and five weeks. Of the 100% (n=39) TB DOT Supporters 59% (n=23) received a 5 five days training, 12.8% (n=5) received five weeks training which are both in line with the Department of Health training manual guidelines 2007. Twenty eight point eight percentage (n=11) received a three days training. According to Dick and Murrey (2005:39) the training of TB DOT Supporters is supposed to be five days to five weeks, so the 11 TB DOT Supporters are being disadvantaged as far as the training of TB DOT is concerned.

5.5 Challenges
This section is divided into six sections, which are as follows: distance, availability of transport, hours worked by TB DOT Supporters, meetings held with the management, monthly salary and the fringe benefits

5.5.1 Distance
There is no public transport for home visits. TB DOT Supporters walk all the distances. The longest distance that they walk is 8km and the shortest is 4km, the norm is only 5km. Of the 100% 23.1% (n=9) walk 8km, 51.3% (n=20) walk 7km, 12.8% (n=5) walk 5km, 10.3% (n=4) walk 4km.
Considering hours they are working per week and distances they are travelling it is impossible for them to do quality home visits. According to SA Tuberculosis control Programme Practical guide, (2000: 33), Treatment Supporters observe patients as they swallow their drugs daily, with these distances it becomes impossible to do that, because at times when they arrive at these homes the clients have not eaten yet, so they have to wait to observe the client swallowing the tablets.

In other areas in InxubaYethemba and Tsolwana, there is a car that is used to give streptomycin to those clients who can not walk to the clinic due to illnesses, at times the car can not be available due to other commitments the district is dealing with and the clients do not get the streptomycin. When that happens, clients do not get the injection and that alone poses a danger not only to the clients but to the TB DOT Supporters as well, as the clients can develop MDR or XDR TB.

5.5.2 Hours worked by TB DOT Supporters
TB DOT Supporters work for four hours per day; this is according to their contract. The areas they are working in are so scattered from one another, with them walking long distances with up to eight clients per TB DOT Supporter it becomes impossible for them to reach all the clients each day or if they do reach all clients they do not deliver quality services.

As the researcher, I would like to suggest for the department of Health to increase the number of hours worked by TB DOT Supporters, and add more trained community health workers working as TB DOT Supporters.

5.5.3 Meeting held with the Management
According to the interview done on the 21 clinics, all the 100% (n=39) TB DOT Supporters reported that no meetings were held in all the facilities with the managers. According to Dick and Murey (2005: 39) contact with the TB DOT Supporters and managers is supposed to be monthly. According to the responses from the TB DOT Supporters, it becomes difficult for the DOT Supporters to work without discussing their challenges with the management and that discourages them from doing their work properly.
5.5.4 Salaries
All the TB DOT Supporters in the 21 clinics at InxubaYethemba and Tsolwana sub-district are not happy with the salary they are receiving. Of the 100% (n=39), 64.1% (n=25) said that they got no response from the government regarding their salaries, 20.5% (n=8), said that they were told that they are volunteers, they cannot make any demands, 10.3% (n=4) said that they were told that the Department of Health does not have money, 5.3% (n=2) reported that managers said they know nothing about their contract. In all the books and journals that I came across, there is nothing said by the Department of Health regarding their salaries.

5.5.5 Fringe Benefits
The 39 TB DOT Supporters that I interviewed at InxubaYethemba and Tsolwana sub-districts do not have fringe benefits. The majority of them (80%), in the cases of Medical Aid, they were told that they cannot be taken as members of the Medical Aid, as they are contract workers. When they enquired about the Unemployment Insurance Fund, no satisfactory answer was given.

5.6 Acceptance of TB DOT Supporters by the community
Results from TB DOTS Supporters regarding acceptance by members of the community indicated that they were accepted by the community members. Of the 100% (n=39) TB DOT supporters who participated in the study, 82.1% (n=32) indicated that they were accepted by the community as they were known by the community, while 5.1% (n=2) said that they were not accepted by the community because of the stigma attached to them being visited by health workers in their homes. Five point one percent (n=2) said that they were not accepted by the community because they were coming too early to their homes, while 2.6% (n=1) said that the clients were too ignorant regarding DOT. Some of the TB DOT supporters were not accepted because of the lack of a proper introduction to the community members by their team leaders. According to Tuberculosis, A Training Manual for Health workers (1998: 72) a meeting should be set up with all stakeholders including representatives of different community based organizations, governmental organizations, health forums, political structures, chiefs, indunas and other key people in the area to introduce the TB DOT Supporters. The main aim of the meeting is to gain entrance into the community.
5.7 Knowledge and skills
All the participants seem to have been taught of the basics of TB, the causes of TB, how to prevent TB, MDR/ XDR TB. They were also aware of the TB treatment. Of the 100% (n=39) 82.1 %( n= 32) were able to list all the names of TB drugs. They know the kind of education to give to the clients. As far as their safety is concerned, they are given mask to wear when dealing with TB clients, but they are all not using those. They claim that clients feel stigmatised with them wearing masks and they also feel so uncomfortable with the masks,

5.8 Time spent with the client
It is difficult for TB DOT Supporters to spend a quality time with the clients, as the time allocated for them is very short. They are expected to work four hours, and the areas they are working in are so scatted. At times they do not visit all the houses, or if they do, proper education on certain issues is compromised, as they are rushing for other clients.

Of the 100% (n=39) TB DOT Supporters interviewed, 59% (n=23) spent twenty minutes with the clients, while 23.1% (n=9) spent one hour with the clients, 15.4% (n=6) spent 15minutes with the clients and 2.6% (n=1) spent 10minutes with the clients

5.9 Summary
According to the results and discussions of this study, the effectiveness of TB DOT Supporters is being challenged by many factors, such as: not having transport for doing home visits, less number of hours worked per day, few number of community health workers working as TB DOT supporters, not having meetings with the management to discuss their challenges, and, most of all, not being given a clear explanation as far as their salaries are concerned.

According to Tuberculosis, A training Manual proven for Health Workers (1998:13) the most effective means of controlling TB known to us is a strategy known as Directly Observed Treatment Short Course (DOTS). This strategy enables tuberculosis clients to complete their treatment.
With this information in mind, it is very important to empower TB DOT Supporters with more knowledge and skills so that they can be able to make an impact on the community.

5.10 Recommendations
The results from this research proves that there is a definite need for improvement of working conditions among TB Co-ordinators, TB Managers and the TB DOT Supporters. It is clear that increased number of MDR/XDR is due to the challenges that I have mentioned above. The Department of Health, District Managers should ensure that additional numbers of TB DOT Supporters are provided, as the area is big for only two TB DOT Supporters in each area. Hours worked by TB DOT supporters and their salaries need some serious consideration. Monthly meetings with the managements are also recommended so as to discuss the challenges DOT supporters have and also just to motivate and encourage them. The Department of Health must provide the districts with the cars to do home visits and to give streptomycin to bedridden clients so as to prevent MDR/XDR TB

REFERENCES


Dick, Murrey& Botha2005: The effectiveness of TB DOTS supporters in South Africa Published by the US Agency for Institution Development (USAID)


Burns, N and Grooves, SK 2008: *The practice of nursing research*, fourth edition, United States, Philadelphia; WB Sounders Company

Brink, H 2008: *fundamentals of Research Methodology for health care professionals*, Cape Town, Juta and Company


Schaaf, H S; Zumla A 2009: Tuberculosis A Comprehensive Clinical Reference, Sounders Elsevier. United Kingdom

Smeltzer, SC; Bare, BG; Hinkle, JL; &Cheever,KH 2010: Brunner&Suddart’s Textbook of Medical-Surgical Nursing (12th edition) Philadelphia: Lippincott USA


Thomas, G; Weyer, K 2006: Stop TB Partnership: Global Laboratory Initiative Lippincott


ETHICAL CLEARANCE CERTIFICATE

Certificate Reference Number: MAY01 15GIL01

Project title: Effectiveness of TB support programme as perceived by community health workers at Inxuba Yethemba and Tsetwana sub-districts under Chris Hani Municipality

Nature of Project: M Cur

Principal Researcher: Lindlwe Gill

Supervisor: Mrs B Mayeys

Co-Supervisor:

On behalf of the University of Fort Hare’s Research Ethics Committee (UREC) I hereby give ethical approval in respect of the undertakings contained in the above-mentioned project and research instrument(s). Should any other instruments be used, those require separate authorization. The Researcher may therefore commence with the research as from the date of this certificate, using the reference number indicated above.

Please note that the UREC must be informed immediately of:

- Any material change in the conditions or undertakings mentioned in this document
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

The UREC retains the right to:

- Withdraw or amend this Ethical Clearance Certificate if
  - Any unethical principles or practices are revealed or suspected
  - Relevant information has been withheld or misrepresented
Regulatory changes of whatsoever nature so require
- The conditions contained in this Certificate have not been adhered to

Request access to any information or data at any time during the course or after completion of the project.

Ethica Committee wishes you well in your research.

Sincerely,

[Signature]

Prof. John de Wat
Acting Deputy Vice-Chancellor: Academic Affairs and Chair

June 2012
Effectiveness of TB support programme as perceived by Community Health Workers at Inxuba Yethemba Tsakhuma sub-district under Chris Hani District Municipality

Department of Health would like to inform you that your application for conducting a research on the mentioned topic has been approved based on the following conditions:

1. During your study, you will follow the submitted protocol with ethical approval and can only deviate from it after having a written approval from the Department of Health in writing.
2. You are advised to ensure, observe and respect the rights and culture of your research participants and maintain confidentiality of their identities and shall remove or not collect any information which can be used to link the participants.
3. The Department of Health expects you to provide a progress on your study every 3 months (from date you received this letter) in writing.
4. At the end of your study, you will be expected to send a full written report with your findings and implementable recommendations to the Epidemiological Research & Surveillance Management. You may be invited to the department to come and present your research findings with your implementable recommendations.
5. Your results on the Eastern Cape will not be presented anywhere unless you have shared them with the Department of Health as indicated above.

Yours faithfully,

[Signature]

City Director: Epidemiological Research & Surveillance Management

[Stamp]
I hereby agree to the tape recording of my participation in the study.

[Signature]

Date: [Date]

Ethics Research Confidentiality and Consent Form

This form is to be completed by the researcher(s) as well as by the interviewee before the commencement of the research. Copies of the signed form must be filed and kept on record.

The University of Fort Hare is conducting research regarding the effectiveness of TB DOT Support programmes as perceived by community health workers in the Ukhahlamba and Talfare Sub-Districts under the KwaHlathi District. We are eager to find out more about the knowledge and skills on TB DOT Support programmes as well as challenges facing DOT Support workers. We are carrying out this research to help improve service delivery in TB DOT Support Programmes.

We understand that if you decide not to participate or not to answer the questions during the interview, your responses will not affect your employment or educational opportunities. Confidentiality will be observed and your name will NOT be recorded on any of the study documentation. The confidentiality of your responses will be maintained and no identifying information will be linked to your responses in any way. Confidentiality will be observed professionally.

Signature

46
information will remain confidential and there will be no "come-backs" from the answers you

interview will last around (=45min) minutes. I will be asking you a questions and ask that
are as open and honest as possible in answering these questions. Some questions may be
personal and/or sensitive nature, I will be asking some questions, but you may not have
been able to control the outcome of the situation that you are answering. It is not possible
that you cannot absolutely certain about the answers to these questions but we ask that you try
ask about these questions. When we ask questions about the future we are not interested in what you think
least thing would be to do, but what you think would actually happen. (adapt for individual
instances)

visibly, our organisation would like to come back to this area once we have completed our
ly to inform you and your community of what the results are and discuss our findings and
jokes around the research and what this means for people in this area.

RSENT

\[ Interview will last around (=45min) minutes. I will be asking you questions and ask that \\
are as open and honest as possible in answering these questions. Some questions may be 
personal and/or sensitive nature, I will be asking some questions, but you may not have 
been able to control the outcome of the situation that you are answering. It is not possible 
that you cannot absolutely certain about the answers to these questions but we ask that you try 
ask about these questions. When we ask questions about the future we are not interested in what you think 
least thing would be to do, but what you think would actually happen. (adapt for individual 
instances) 

visibly, our organisation would like to come back to this area once we have completed our 
ly to inform you and your community of what the results are and discuss our findings and 
jokes around the research and what this means for people in this area. 

AGENT

\[ I hereby agree to participate in research regarding \[ I understand that I 
participating freely and without being forced in any way to do so. I also understand that I can 
\[ I understand that this is a research project whose purpose is not necessarily to benefit me 
\[ I understand that this consent form will not be linked to the questionnaire, and that my answers 
\[ I remain confidential. 

understand that if at all possible, feedback will be given to my community on the results of the 
completed research.

\[ Date: \[ Participant

\[ Consent approved by UER: 11 August 2011, V01]
UNIVERSITY OF THE NORTH WEST

Proof

OPHTHALMIC CENTRE

ENDICIO

University of Fort Hare
Together in Excellence

in agree to the tape recording of my participation in the study.

nature of participant

Date:

Ethics Research Confidentiality and Consent Form

see note:

The form is to be completed by the researcher(s) as well as by the interviewee before the commencement of the research. Copies of the signed form must be filed and kept on record.

I hereby agree to the tape recording of my participation in the study.

University of Fort Hare / Department is asking people from your community / sample / group to answer some questions, which we hope will benefit your community and possibly other communities in the future.

University of Fort Hare / Department/ organisation is conducting research regarding effectiveness of TB DOT Support programme as perceived by community health workers in the Sehama and Tshwane Sub-Districts under Chris Hani District. We are eager in finding out more about the knowledge and skills on TB DOT Support programme as well as challenges facing DOT Support workers. We are carrying out this research to help improve quality service delivery in DOT Support Programme.

I understand that you are not being forced to take part in this study and the choice either to participate or not is yours alone. However, we would really appreciate it if you do share your thoughts with us. If you choose not to take part in answering these questions, you will not be affected in any way. If you agree to participate, you may stop me at any time and tell me so.

The information that you provide will be kept confidential. No one will be able to link you to the answers you give. Only the researchers will have access to the unlinked information.

Manuscript approved by UHWC: 11 August 2011, V01

48
If NO explain why:  

- Were you given practical demonstration?  
  If Yes how long did it take?  
  YES  NO

- Were training Manuals given during training?  
  YES  NO

  Challenges:
  - The distance between each client is not more than 5km.  
    YES  NO
  - Is public transport always available for home visit?
APPENDIX D

QUESTIONNAIRE

SECTION 1

DEMOGRAPHIC DATA

Answer the following questions by filling in the spaces below:

Age.................................................................

Level of education...........................................

Marital status..................................................

SECTION 2

Training:

• State how many days you received your training, by ticking the relevant response
  • 3days
  • 5days
  • 5weeks
  • 1month

  Place a tick on the YES box when you agree with the sentence and a tick on the NO box when you disagree

• Were you able to understand the content of training?
  If yes explain why
  ________________________________________________________________
  ________________________________________________________________
  ________________________________________________________________
If not what is the mode of transport does the public use?

• You have 4 hours allocated for your work, is it adequate?
  YES  NO

If No what suggestions can you give in relation to time allocation for each client?

• Are meetings with the management regular and informative on challenges.
  YES  NO

If NO how often do you suggest meetings should take place?

9. Advice from Professional nurse is available when needed
  YES  NO

Are you happy with your monthly salary?
  YES  NO

If NO have you complained? What was the response?
1. Do you have fringe benefits, e.g. medical aid, UIF etc. 

"NO have you ever complained about this?"

interaction with clients

rate how many days you received your training, by ticking the relevant response

2. Time you spend with a client
   • 10min
   • 15
   • 30min
   • 1hour

3. Acceptance by community members and family is satisfactory

"NO what might be the reason?"

4. Support from community is available

"NO what might be the reason?"

5. KNOWLEDGE AND SKILLS

yes list those below:

YES  NO
IF NO explain why

- Were you given practical demonstration?
  If Yes how long did it take?

- Were training Manuals given during training?
  If NO what might be the reason?

Challenges:
- The distance between each client is not more than 5km
- Is public transport always available for home visit?