THE KNOWLEDGE AND MANAGEMENT OF TUBERCULOSIS AMONG PATIENTS AND HEALTH WORKERS AT OTJIWARONGO HOSPITAL, OTJOZONDJUPA REGION, NAMIBIA

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BY

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DECLARATION

I hereby declare that this thesis is my original work and has not been submitted for a degree in any other University.

SIGNED _____ _____

SUOMA P. ANGALA DATE

DEDICATION

This work is dedicated to my dear husband Cephas, my lovely children Eden, Halleluja, Hallo, Hage and Harmony and my housekeepers Sara and Helena for their patience, support and love during my most demanding times.

Special gratitude goes to my dear parents who sacrificed to ensure my education.

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ABSTRACT

Tuberculosis is a serious infectious disease, and is on rise and is revisiting both developed and developing countries. Globally, it is the leading cause of death resulting from a single infectious disease.

Therefore, a study was conducted to determine how health workers managed patients diagnosed with tuberculosis, and how diagnosed patients understood the most important aspects of the disease tuberculosis.

A descriptive survey design, using questionnaires were used to gather the data from 53 patients and 15 health workers. For the purpose of this study the population was also the sample.

The study revealed that significant deficits in the knowledge of the disease and its management are apparent in patients and health workers involved in their care.

Recommendations based on this research report include improving of education and in-service training, and restructuring of existing structures to improve the management of tuberculosis as a whole.

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LIST OF ABBREVIATIONS

AIDS	-	ACQUIRE IMMUNO DEFICIENCY SYNDROME
AFB	-	ACID FAST BACILLI
BCG	-	BACILLE CALMETTE GUERIN
CHR	-	CENTRAL HEALTH REGION
CHW	-	COMMUNITY HEALTH WORKERS
CBHC	-	COMMUNITY BASE HEALTH CARE
DHCC	-	DISTRICT HEALTH CO-ORDINATING COMMITTEE
DM	-	DIRECT MICROSCOPY
DOTs	-	DIRECT OBSERVED TREATMENT, SHORTCOURSE
DTC	-	DISTRICT TB CO-ORDINATOR
E	-	ETHABUTOL
EPTB	-	EXTRA PULMONARY TUBERCULOSIS
EU	-	EUROPEAN COMMISSION
HIV	-	HUMAN IMMUNE VIRUS
IUALTD	-	INTERNATIONAL UNION AGAINST TB AND LUNG DISEASE
IEC	-	INFORMATION, EDUCATION AND COMMUNICATION
INH	-	ISONIAZID
MDR-TB	-	MULTI-DRUGS RESISTANCE TUBERCULOSIS
MOHSS	-	MINISTRY OF HEALTH AND SOCIAL SERVICES
NACOP	-	NATIONAL AIDS CO-ORDINATION PROGRAMME
NAMTA	-	NAMIBIAN TB ASSOCIATION
NTCP	-	NATIONAL TB CONTROL PROGRAMME
NTU	-	NATIONAL TB UNIT
PHC	-	PRIMARY HEALTH CARE
PI	-	PRINCIPAL INVESTIGATOR
PMO	-	PRINCIPAL MEDICAL OFFICER
PTB	-	PULMONARY TUBERCULOSIS
PPD	-	PROTEIN PURIFIED DERIVATE
PZA	-	PYRAZINAMIDE
RA	-	RESEARCH ASSISTANT
RHMT	-	REGIONAL HEALTH MANAGEMENT TEAM
RMO	-	REGIONAL MEDICAL OFFICER
RTC	-	REGIONAL TB COORDINATOR
SCC	-	SHORT COURSE CHEMOTHERAPY
TB	-	TUBERCULOSIS
TB/HIV	-	HIV/TB CO-INFECTION
TBA	-	TRADITIONAL BIRTH ATTENDANTS
TH	-	TRADITIONAL HEALER
UNAM	-	UNIVERSITY OF NAMIBIA
WHO	-	WORLD HEALTH ORGANISATION

CHAPTER ONE

INTRODUCTION

INTRODUCTION

Health is a topic of concern to all citizens of a country directly or indirectly, individually or collectively, consciously or unconsciously. Health, inextricably linked within all aspects of daily living, is a prerequisite for living a productive and satisfying life (Lancaster 1998: 2).

A major goal of the health care delivery system today is to preserve and maximize human capital by offering health preserving and social practices that result in the avoidance of disease, and by offering diagnosis, treatment and rehabilitation services for existing diseases. In spite of major changes and approaches to the health care delivery system, there are many diseases, which still exist and which causes problems for society. Health problems of the twentieth century are being attributed primarily to personal behaviour and circumental factors.

One such a disease is Tuberculosis, a very old disease, which is still prominent in some countries. Initially tuberculosis was viewed as a hereditary disease, which could only be treated by a change in climate. However, Koch's discovery in 1882 of the tubercle bacillus dramatically changed this view.

Tuberculosis is an infectious, chronic, acute or sub acute notifiable disease, characterised by lesion formation in tissues and organs in the body, by far the most frequently being the lungs, which type is the only source of communal spread (Nzimdande 1994: 153, Ministry of Health and Social Services (MOHSS), NTCP Policy Document: 1).

According to WHO (WHO programme on tuberculosis 1993: 19-21) tuberculosis sometimes a crippling and deadly disease, is on rise and is revisiting both developed and developing countries. Globally, it is the leading cause of death resulting from a single infectious disease. Currently it kills three million people a year. Multiple factors contribute to the global increase in tuberculosis. Infection with the human immune virus (HIV), which causes acquired immunodeficiency syndrome (AIDS) is the single greatest risk for progression of TB infection to the disease.

Another major reason for the failure to eradicate tuberculosis is due to ignorance lack of knowledge among tuberculosis patients, which results in failing to take sufficient and regular anti-tuberculosis medication to render their cure (World Health Organization (WHO) Programme on Tuberculosis 1993: 19-21).

Health workers sometimes play a major role in the patients' lack of understanding aspects of the disease, because they don't inform infected patients. A health worker who is knowledgeable and well-skilled regarding the management of tuberculosis, will contribute effectively to a high cure rate and low defaulter rate. However, other factors such as social-cultural/facility, community-based direct observed therapy (DOTs), quantity of health staff, distance from health facility also play significant roles in the management of the disease (Musomi & Indongo 1997: 42-51; Pisharoti 1995: 28).

Tuberculosis patients with active tuberculosis (exhibit tubercle bacilli in their sputum) are infective to their close contacts. If these patients remain in the community without treatment they will undoubtedly promote the transmission of tuberculosis. One individual can typically infect 10-15 individuals per year. If patients are diagnosed quickly and cured, the impact of transmission of

tuberculosis can be minimized (World Health Organization Tuberculosis Advocacy 1998: 3; Rieder 1993: 167).

According to Hubbley (1993: 10-23) there are many reasons why people behave the way they do. It is therefore important that lay people and health workers have all the necessary knowledge about tuberculosis.

Furthermore it is equal important that patients who are diagnosed with tuberculosis been managed appropriately. This includes treatment with effective antibiotics because this has become the cornerstone of the management. Single drug treatment often cause bacterial resistant to drugs. Therefore, all recommended therapy include multiple drugs given for at least 6 months, often for as long as 9-12 months.

PROBLEM STATEMENT

Tuberculosis (TB) is one of the most important public health problems in Namibia. It ranks fourth in the list of notifiable diseases. A first analysis of registered tuberculosis cases in 1992 indicated that a total of 5550 cases of newly detected tuberculosis were reported, given an overall incidence rate of 400/100 000. It was also seen that some 15% of cases occur among children under five years of age. 85% of all tuberculosis cases are pulmonary tuberculosis, and 50% out of these being sputum smear positive (Ministry of Health and Social Services (MOHSS), NTCP Policy Document 1995: 1; MOHSS, NTCP, Poster, "TB in Namibia" 1998).

From 1992 to 1996, proper control remain bleak and depicited a total of 9858 tuberculosis reported cases, including children and adults with suspected tuberculosis, giving an overall incidence of 525/100 000. From this total, 6863 cases could be entered for cohort analysis of which 42% were smear positive and 7% relapses, giving an incidence of 364/100 000 (Angala 1997: 8).

The case detection rate in Namibia is roughly estimated to be 60%. According to the analysis of the 1992 tuberculosis cases, the cure rate comes close to 80%. So these two indicators, regarded as most effective to assess a tuberculosis programme, are well below the envisaged targets as set by the World Health Organization of 70% and 85% respectively. The defaulter rate countrywide is around 22%, showing that a large proportion of patients drop out before completion of treatment, due to reasons such as lack of health education or wrongly administered treatment regimen and course (MOHSS, NTCP Policy Document 1995: 1).

As a result of the magnitude of the problem, the Ministry of Health and Social Services developed and introduced a national tuberculosis control programme a policy and guideline document, in 1995. Efforts have been made to train all district tuberculosis coordinators. Medical and paramedical staff were also exposed to policy and guidelines. The dissemination of tuberculosis information was conducted through activities associated with world tuberculosis days, national tuberculosis awareness weeks, radio talks and tuberculosis marching. Novels, posters and pamphlets were developed and displayed. However, nearly four years after these national endeavours, tuberculosis is still one of the top ten diseases affecting the lives of Namibians.

Following annual data analysis, the National Tuberculosis Control Programme identified several fundamental problems with tuberculosis health care delivery in the Central Health Directorate, Otjozondjupa Region, Otjiwarongo district specifically.

The reporting and recording system was up to date, and the diagnostic measures were done according to the tuberculosis guidelines and recorded properly. However, the treatment outcome for 1996 showed a low cure rate of 45% and high defaulter rate of 18% among smear positive cases. The

notification of 5 multi-drug resistant tuberculosis patients in this region was also a matter of concern (Angala, 1997: 8; Indongo & Rabbow 1998:7).

In analyzing the statistics of tuberculosis in Namibia it is not clear whether health workers are knowledgeable about the management of Tuberculosis and if the patients know and understand the disease and it's implications. Thus, this uncertainty has led to the following guiding questions for this research.

RESEARCH QUESTIONS:

- How knowledgeable are health workers with regard to the management of tuberculosis patients?
- How knowledgeable are patients diagnosed with tuberculosis on all aspects of the disease?

PURPOSE OF THE STUDY

Based on the research questions the purpose of the study was to:
explore and describe how health workers managed patients diagnosed with tuberculosis, and how tuberculosis patients understood the most important aspects of the disease tuberculosis

OBJECTIVES

- To describe the profile of patients diagnosed with pulmonary tuberculosis and health workers attending to them.

- To determine whether patients and health workers have the most relevant information about the disease tuberculosis.

- To describe existing management of patients diagnosed with pulmonary tuberculosis.

- To explore if health education is done by health workers and how patients perceive it.

It is commonly known that knowledge is the key to success, therefore patients and health workers need to be equipped with the relevant knowledge and skills in order to ensure the successful management of tuberculosis (WHO, Tuberculosis Advocacy 1998: 2; Thomson & Myrdal 1986: 264).

Therefore this descriptive study intends to identify the magnitude of the health education problem, as it relates to tuberculosis, to assess whether the health workers (who attend to the tuberculosis patients) are informed about the basic facts and skills for importing these in health education sessions, in the same vein the study intends to find out from tuberculosis patients how much they know about the disease process and its treatment.

STUDY SETTING

The study was conducted at Otjiwarongo State Hospital in the Otjozondjupa Region, Central part of Namibia. This hospital serves a population of 37787 (1997) plus the Osire refugee camp with around 13 000 refugees.

It has a 30-bed medical ward, 14-bed TB ward and an outpatient TB-clinic. The tuberculosis clinic reports between 10-25 new cases of diagnosed tuberculosis cases per month, of those cases 5-10 cases are confirmed to be smear positive.

During the 1996/7 National TB control program report, this hospital was identified among others to have a high defaulter rate and low cure rate (Rabbow and Indongo 1997: 8; MOHSS Integrated Health Care Delivery 1995: 27).

SIGNIFICANCE OF THE STUDY

The significance of the study is to provide data that will contribute to a more realistic approach to service provision and the progress management of tuberculosis patients. It was envisaged too, that the findings of this study could also significantly contribute to improving care by health workers at these health facilities. Thus, after implementation of the recommendations of the study, it is expected that an increased cure rate will be reached.

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DEFINITIONS

Knowledge: The state or fact of knowing; familiarity, awareness or understanding gained through experience or study (Universal Dictionary 1988: 852).

For purposes of this study knowledge means that lay people and healthworkers must have a sound knowledge of

- meaning of the term tuberculosis
- causes of the disease
- transmission and infection
- pathogenesis
- diagnosis
- treatment
- prevention
- health education concerning the disease

Management: to act, or practice of managing, handling or controlling something (Universal Dictionary 1988: 934).

For the purposes of this study management is defined as a process which is used by a group of people (all health workers) to achieve the established goals and objectives within a specific context (tuberculosis management). A number of aspects make up the management process of tuberculosis namely the health care system, progression of the disease treatment control and prevention of tuberculosis.

Tuberculosis: An infectious, chronic or acute or subacute notifiable disease, charaterised by lesion formulation in tissues and organs in the body, by far the most frequent being the lungs, which type is the only source of communal spread (Nzimande 1994: 153).

Patient: For purposes of this study a patient is a person who is diagnosed and confirmed to have tuberculosis disease (own definition).

Smear positive tuberculosis patient: Tuberculosis patients whose sputum was examined under direct microscopy and where tubercle micro-organisms were found/seen (MHOSS, TB guidelines 1995: 4).

A tuberculosis defaulter: A patient who received at least one month of tuberculosis treatment and then absconded for at least one month (MOHSS, TB guidelines 1995: 6).

A cured patient: A patient, who was smear positive at the beginning of the treatment and became smear negative at the end of month 2 and 6 and has completed treatment successfully (MOHSS, TB guidelines 1995: 6).

A relapse patient: A patient who is smear positive, who before has completed treatment and/or was declared cured (MOHSS, NTCP, Tuberculosis guideline 1995:6).

Health workers: For purposes of this study health workers are registered nurses, enrolled nurses and auxiliary nurses attending to tuberculosis patients on daily basis.

SUMMARY

The introduction and background to the problem concerning tuberculosis were discussed, which lead to the formulation of the purpose, research question and objectives of the study. The significance of the investigation was discussed.

CHAPTER TWO
LITERATURE REVIEW

INTRODUCTION

In this chapter certain aspects of the disease tuberculosis will be discussed, as well as studies conducted on the management of tuberculosis. Treece and Treece (1992: 91) view the literature search as a puzzle, where the investigator may not readily find the information, but has to search and get the basic outline of the puzzle in order to have a better understanding of the project.

The purpose of this literature review was to:

- search for information about the conceptual base of the study (Treece & Treece 1992: 92)
- look for research approaches used by other researchers, which could be useful to this study
- locate pertinent data and useful ideas for this study
- search for comparative data which could be of value in interpreting the findings of this study
- ascertain if material could be included in this study, which might confirm or refute earlier findings, or if there was material which could be left out to avoid duplication

To give a comprehensive portrait of the disease, the study was conducted against the background of the knowledge of the health workers and patients and the health system in which the patient with tuberculosis is managed and treated. The literature is therefore presented under the following headings:

- The health care system and policies
  - National level
  - Regional health directorate level

- Regional and district level
- Peripheral health units

- Knowledge of tuberculosis
  - Epidemiology of tuberculosis
  - Pathogenesis of Pulmonary tuberculosis
  - The spread of tuberculosis
- The control of tuberculosis
  - The Namibian national tuberculosis control programme
  - Community participation
- Prevention of pulmonary tuberculosis
  - Primary prevention
  - Health promotion/education
  - Secondary prevention

THE HEALTH CARE SYSTEM AND POLICIES

Namibia gained independence in 1990. The newly elected government then adopted the primary health care approach to render health services in Namibia. As tuberculosis is one of the most pressing community health problem in Namibia, the Ministry of Health and Social Services (MOHSS), on behalf of the Government through the National Tuberculosis Program (NTCP), has taken up the challenge and commitment to make tuberculosis control one of it's priorities (MOHSS, NTCP, Policy Document 1995: 2).

The Namibian National Tuberculosis Programme (NTCP) was first established in 1991. The aims of the program are:

For individual patients:

- to cure their disease
- to quickly restore their capacity for activities of daily living, and

- to preserve their position in the family and community they belong to.

For the community:

- decrease the spread of tuberculosis infection and
- to enforce the disappearance of the disease from society (MOHSS, NTCP, Policy Document 1995: 1).

The National Tuberculosis Control Programme (NTCP) is structured at the various levels of health care:

■ *NATIONAL LEVEL*

At national level the NTCP is part of the Division Epidemiology and Public Health Services within the Directorate of Primary Health Care and Nursing Services. The national programme manager is to be assisted by a health programme administrator/national tuberculosis control officer. They constitute the National (Central) Tuberculosis Unit (NTU). Secretarial and logistical support (typist, clerk, driver) has to be provided by the Directorate of Primary Health Care (PHC) and Nursing Services.

The team is responsible for tuberculosis and leprosy control for the whole country. Its activities include: programme planning, budgeting, implementation, monitoring and evaluation, coordination of training and supervision of activities at all levels.

Planning and implementing of Community Based Health Care (CBHC) programmes for tuberculosis are not the sole responsibilities of the NTCP, but includes other programmes as well. According to the official Primary Health Care policy in Namibia, Communtiy Based Health Care is an integral part of respective modules designed by the Primary Health Care Development and Training Unit in cooperation with the information, education and communication

(IEC) unit and the National Tuberculosis Control Programme.
In addition, the NTCP is constituted at national level by:

- a reference laboratory and
- the national reference tuberculosis unit at the national referral hospital

The reference laboratory performs routine diagnostic and treatment follow-up activities for the regions. It is responsible for supervision, quality control and training of peripheral laboratory personnel.

The referral unit for tuberculosis falls under the responsibility of the Chief Medical Superintendent of the Windhoek Central Hospital (National TB Referral Hospital). Patients are admitted from the whole country, if the case management is too complicated to be managed at regional level.

The referral tuberculosis unit serves as:

- unit to train and educate health personnel working with tuberculosis patients including physicians as a training institute (MOHSS, Tuberculosis Guideline 1995: 47)

■ *REGIONAL HEALTH DIRECTORATE LEVEL*

Namibia is divided into four regional health directorates, headed by a director. Each directorate is responsible for various health districts.

At regional directorate's level the NTCP is placed under the authority of the PHC coordinator, who appoints the Regional Directorate Tuberculosis Coordinator (RTC) in consultation with the NTU. The RTC is a member of the directorate's health management team and coordinates activities on regional directorate's level, supervises and supports all staff working in the directorate

and assists with problem solving relating to medical, technical or managerial issues. He/she conducts regular field visits, especially to the poor performing areas, identifies training needs and provides on-the-job training. In addition, the RTC is responsible for all IEC activities in the directorate (MOHSS, National Tuberculosis Control Programme 1995: 48).

■ *REGIONAL AND DISTRICT LEVEL*

The four regional health directorates are divided into 13 regions, which are congruent with the 13 administrative regions in Namibia headed by a Regional Medical Officer. Each of the regions has a number of district hospitals, headed by a Principal Medical Officer (PMO), and a section Primary Health Care (PHC) services, headed by a supervisor with a subsection family and community health programmes.

This section is responsible for planning, coordinating of activities and evaluating of all PHC programmes in the region.

The **District Tuberculosis Coordinators** (DTCs) are responsible for implementing the NTCP in the catchment area of a district hospital within a region. They report through the regional PHC supervisor, who is a member of the district health coordinating committee (DHCC), to the Regional Medical Officer (RMO) who is the member of the regional health management team (RHMT), to the regional tuberculosis coordinator (RTC) on regional directorate's level. He/she may in certain cases have other responsibilities beyond tuberculosis control as the essential field of work. She/he has to maintain the tuberculosis register, patient treatment cards and to liaise with staff of all peripheral health units in tuberculosis control.

The district tuberculosis coordinators has to ensure constant supply of drugs

and reagents, supervise treatment courses throughout his/her area, participated in patient and community health education, defaulter prevention and rehabilitation and contact tracing. Support must be provided to the DTC by the PHC supervisor and the district health coordinating committee (MOHSS; Tuberculosis Guidelines 1995: 48).

- ***PERIPHERAL HEALTH UNITS***

All peripheral health units such as health centres, clinics and mobile services are involved in tuberculosis control. The staff at these facilities are responsible for case detection, the continuation phase of treatment, follow-up on irregular attendance and for assistance in contact tracing. He/she also has to ensure, that drugs and other supplies are available, e.g. for specimen collection, and is responsible for keeping the treatment cards and for educating patients and the community at large.

In the community, community health workers (CHWs) are actively involved in tuberculosis prevention and control. They assist the health services in health education and in creating awareness among the community members, of tuberculosis as a public health problem the way by which to address it. They are also responsible for community based treatment as part of the community based health care (CBHC) approach (MOHSS, TB Guidelines 1995: 48).

KNOWLEDGE OF TUBERCULOSIS

It is utmost important that each and every health care worker as well as patients who are diagnosed with tuberculosis should have a sound knowledge of the disease. Important aspects that people should have knowledge on are: epidemiology, etiology, pathogenesis, spread of tuberculosis, diagnosis, control of tuberculosis, management of tuberculosis, prevention of tuberculosis.

■ *EPIDEMIOLOGY OF TUBERCULOSIS*

Pulmonary tuberculosis is a disease that occurs worldwide and is the leading infectious killer disease among the youth and adults (Dick 1997: 8). Unfavourable economic factors and malnutrition make tuberculosis a serious disease. Poor housing conditions, overcrowding, lack of hygiene, stress and strain, overwork, loss of sleep, lowered resistance are some of the factors which induce the spread of the disease (Nzimande 1994: 154).

The World Health Organization declared tuberculosis a global public emergency in 1993. It was estimated then that the disease kill around 3 million people a year, with 7,3 million new cases annually. About 3 million cases a year occur in South East Asia, and nearly 2 million in Sub-Saharan Africa, with 340,000 in Europe (WHO, The World Health Report 1998: 54).

Furthermore, tuberculosis has re-emerged as a major disease in young people in developing countries. It tends to be more aggressive in this age group, leading from infection to early development of the disease if untreated it can be fatal. For example, the incidence of tuberculosis among 15-24 year olds in the United Republic of Tanzania is 14% of the total number of new cases, and 11% of tuberculosis-related deaths occur in this age group (WHO, The World Health Report 1998: 82; UNAIDS 1996: TB and AIDS Report).

Children aged 5-9 years living in urban slums in the Philippines showed more than twice the prevalence rate of infection for the general urban population, 39% of them were infected with the disease (WHO, The World Health Report 1998: 23). The incidence of tuberculosis is obtained from notification data.

In Namibia a first analysis of registered tuberculosis cases in 1992 indicated, that a total of some 5550 cases of newly detected tuberculosis was reported, giving an overall incidence rate of 400/100 000. It could be seen, that some

15% of cases occur among children under five years of age. 85% Of all tuberculosis cases are pulmonary tuberculosis, 50% out of these being sputum smear positive. Compared to African standard the annual rate of infection is high, especially in the south and east of the country (MOHSS, NTCP, Policy Document 1995: 1).

The tuberculosis notification data before 1990, indicated a decrease in the number of pulmonary tuberculosis (PTB) from 4591 in 1985 to 3595 in 1989 (MOHSS, NTCP, Policy Document 1995: 1). In 1992 to 1993 the number of notifications in the entire South Africa increased from 82 103 to 88 319. This represents more than 80% of all notifications of medical conditions (Vlok 1996: 518).

Tuberculosis was one of the chief causes of death in Northern Europe and the Americans until about 1900. Mortality rates gradually fell because of improved living conditions and the advent of effective chemotherapy, but the disease persisted in developing countries where it causes some 25% of preventable mortality among young people. It is also still a killer of young women (WHO, World Health Report 1999: 25; The Guardian, Newspaper: May 1998).

In the United States, between 1953 and 1983, the annual incidence of tuberculosis declined an average of eight percent per year. From 1985 to 1992, however the incidence of the tuberculosis increased in the United States by 20 percent. Similar increases in tuberculosis have been seen in other developed countries, as well. Factors associated with the resurgence of tuberculosis in this country include the human immuno deficiency virus epidemic, increases in immigration from endemic areas, increases in urban homelessness and drug abuse, and most important the deteriorations and dismantling of the public health infrastructures for the control of tuberculosis (http://hopkins- id.edu/diseases/tb/tb-epi.html).

The notified cases of tuberculosis in the Western Pacific Region in 1996 represented 25% of the global total, mainly because expansion of the WHO tuberculosis strategy, particularly in China. Improved case management brought many more cases under treatment. There were 2.16 million estimated new cases in 1997, and the average case mortality rate was 20% (WHO, World Health Report 1999: 23). One third of the incidence of tuberculosis in the last five years can be attributed to HIV, which weakens the immune system and makes a person infected with tubercle bacillus 30 times more likely to become ill with tuberculosis (WHO, World Health Report 1998: 54).

■ *PATHOGENESIS OF PULMONARY TUBERCULOSIS*

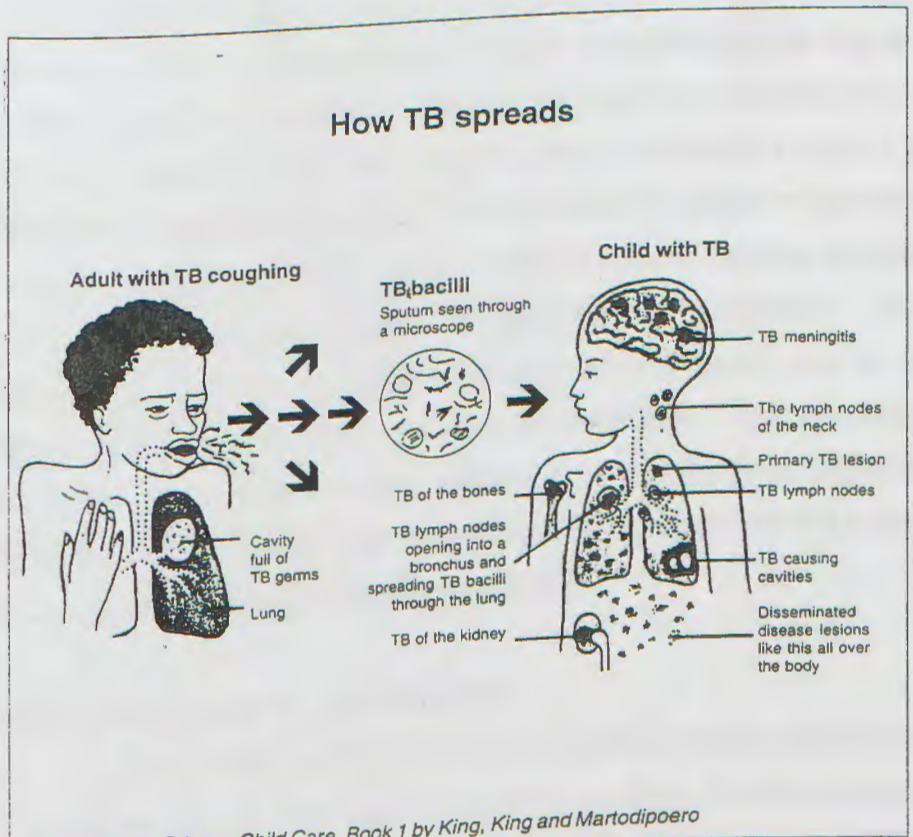
The pathological process, which may continue for years, is the following:

Tubercles (granulomata) form and coalesce. Central necrosis takes place with the formation of a cheese-like pus. This process is called caseation. Tissue destruction may be widespread and in some patients cavities develop in the lung (cavitation) when the lesion erupts into a bronchus. The rupture causes heavily infected nummular sputum to be coughed up. There may be haemoptysis (coughing up blood) from the erosion of small blood vessels. Brochogenic spread of *mycobacteria* to other parts of the lung takes place (Crofton 1992: 56 & Chaulet 1996: 3).

Healing takes place by fibrous tissue encapsulation, the capsule forming a defensive barrier which prevents progression of the disease. Caseation, cavitation and encapsulation continue side by side for many years, the extent of necrosis depending upon the rate of development of the enveloping capsule.

The spaces become filled with reticular and lymphoid tissue which harbor dormant *mycobacteria*. The viable mycobacteria in these TB scars may even, in this advanced stage of healing, be released into the bronchi and from there

to other parts of the lung under conditions of stress or because of premature cessation of therapy. This accounts for the relapses that are common in chronic tuberculosis (Nzimande 1994: 155; Vlok 1996; 522).



Source: (Child Health Dialogue, April - June 1996)

■ *THE SPREAD OF TUBERCULOSIS*

The spread of tuberculosis is influenced by two important factors.

The first of these is exposure to tuberculosis in the environment. *M tuberculosis* is transmitted between an infectious patient and susceptible contacts via droplet nuclei that are expelled by coughing, sneezing and other

forceful respiratory activities. Risk factors for acquiring tuberculosis infection, a prerequisite for the development of disease, are related to having contact with a source case. Important risk factors for tuberculosis infection are living in the household of a tuberculosis case, immigration from an endemic area, exposure to untreated tuberculosis cases in congregate living facilities, such as jails, shelters or health care facilities, older age, and residence in higher incidence locations, such as inner cities. The second factor that contributes to conditions that are associated with altered host cellular immunity increase the risk of developing active tuberculosis. These include HIV infection, extremes of age, immunosuppressive therapy, cancer, end stage renal disease, diabetes, severe malnutrition and some upper gastrointestinal surgeries. In addition, intravenous drug use is associated with an increased risk of developing tuberculosis for reasons that are not well described. Thus population groups with high rates of tuberculosis include both people with increased risk of exposure and people with increased risk of progression to the active disease (http://hopkins-id.edu/disease/tb/tb-epi.html).

THE CONTROL OF TUBERCULOSIS

Poor commitments towards tuberculosis control, in the last three decades, led to tuberculosis control programmes to be run down in many countries. The result has been a powerful resurgence of the disease, now estimated to kill around 3 million people a year, with 7,3 million new cases annually (The World Health Report 1998: 54).

According to (Westaway & Fourie 1989: 7) the goals of tuberculosis control programmes are: to reduce the incidence of infection, to reduce the prevalence of tuberculosis and to reduce mortality from tuberculosis. Ross (1989: 17) identified the following control measures used by the health services to reach the goals of tuberculosis control as: tuberculosis health education, supervised treatment, case findings, BCG immunisation, community development and

making tuberculosis a notifiable disease. Another method to control tuberculosis is with a national register for standardising the recording of information on diagnosis and treatment.

■ *THE NAMIBIA NATIONAL TUBERCULOSIS CONTROL PROGRAMME*

A sound evaluation of a national tuberculosis control programme has to be based on the reporting system tools used in the programme and on the objectives (MOHSS, NTCP, Policy Document, 1995: 8). Furthermore the following assessments can be done by means of epidemiological research, the cure, absconding and case fatality rate (DNHPD 1993: 20(1)).

According to Vlok (1996: 523) the control of tuberculosis has become largely a management problem to find infected cases in the community and to keep these cases in therapy long enough (6 months) to bring about cure. If the management of tuberculosis patients can be improved, the infections pool of cases, which causes an alarming annual incidence of tuberculosis cases will be reduced.

In Murray (1990: 16) an overview of cost effective treatment procedures in tuberculosis, mentioned the duration of treatment, the degree of supervision of treatment, appropriate individual and group education of patients during the initial intensive phase of chemotherapy, and the patients perception of cost effectiveness of treatment as important factors in patient compliance, which can be influenced by the services.

■ *COMMUNITY PARTICIPATION*

The community has a role in sharing information about the dangers of having untreated tuberculosis. Families and friends should encourage patients to go

for treatment. Parents and care givers should ensure that children are taken for immunization (Ministry of Health, Zimbabwe a tuberculosis leaflet 1994).

PREVENTION OF PULMONARY TUBERCULOSIS

■ *PRIMARY PREVENTION*

Although a majority of adults have been infected in childhood, the tubercle bacillus is destroyed by the body's defenses in 85% of infected cases and the body builds up resistance which prevents the development of the disease (Vlok 1996: 524; Johnson 1993: 23).

Tuberculosis in 5-15% of persons with a dormant infection becomes destructively active when resistance is lowered, primarily by poor socio-economic, living conditions and malnutrition (Nzimande 1993: 155, Vlok 1996: 524).

It means that prevention of tuberculosis depends mainly on health education and BCG vaccination (Vlok 1996: 524). This view was also expressed by Thompson & Myrdal (1986: 253) who stated that officially, health education is regarded as the single most important measure in the control of tuberculosis.

Tuberculosis is a disease that is spread from person to person through the air, it is particularly dangerous for people infected with HIV. Worldwide, tuberculosis is the leading cause of death among people infected with HIV.

The risk of developing tuberculosis is much greater for those infected with HIV and living with AIDS, because HIV infection severely weakens the immune system. This high level of risk underscores the critical need for targeted tuberculosis screening and preventive treatment programmes for HIV-infected people and those at greatest risk for HIV infection. All people with HIV should

be tested for tuberculosis, and, if infected, seek preventive therapy as soon as possible CDC update: (The Deadly Intersection between tuberculosis and HIV) (http://www.coknpin.org/connect/start/htm).

The aim of tuberculosis health education should be to motivate the community to assist with therapy, case findings and improvement of socio-economic factors. In a study of traditional attitudes towards tuberculosis in South Africa by Moloantoa in 1982 in modern, it was found that the people interviewed had not yet received the message of tuberculosis, there is still the traditional belief that tuberculosis is incurable.

In another study that was done in Zimbabwe during 1992, under utilization of the services revealed that lack of the patients' education on facts about tuberculosis, patients beliefs on causes of the disease, lack of knowledge and supportive health workers lead to patient default (Mtetwa 1996: 67).

According to Barhoon, (1992: 34) in India the same factors appeared responsible for reluctance of patients to come forward for treatment. The factors that were identified were, lack of knowledge of early symptoms, lack of awareness of the significance of symptoms, fear of stigma attached to the disease.

It is important that education on tuberculosis should start at home/school and should be a continuous process. Community nurses and health educators should intensity health programmes in schools to educate and give health education to children and communities on tuberculosis.

The tuberculin skin test can show if the person has ever been "infected" by tuberculosis. There are several kinds of tuberculin skin tests. The most reliable test called the Mantoux PPD.

The following people needs to take a skin test:

- people who have had close day-to-day contact with someone who has active tuberculosis
- people who has symptoms of tuberculosis
- people who have lowered immunity such as HIV infection or certain medical conditions

(http://www.cpmc.columbia.edu/resources/tbcpp/skintest.html)

BCG vaccination

The aim of the vaccination is to cover a negative PPD (tuberculin) reaction to a Bacille Calmette-Guerin (BCG) positive one.

Acquired immunity to tuberculosis gives, about 80% protection, even under ideal conditions, therefore, a person may succumb to a virulent infection even after BCG vaccination. BCG may, therefore not prevent tuberculosis (Vlok 1996: 497).

It is practice in many countries that people can receive BCG (Bacille Calmette-Guerin) vaccine against tuberculosis. According to the WHO vaccination is not a guarantee against becoming infected with tuberculosis and a positive tuberculosis test is probably not due to prior vaccination with BCG.

By implication it means that BCG vaccination is the best way to prevent serious forms of tuberculosis in childhood. It is clear that BCG reduces the risk of getting clinical tuberculosis by about 50%, but the efficacy drops rapidly with after infancy. Furthermore BCG vaccination gives a good protection against miliary tuberculosis, tuberculosis meningitis and against leprosy (MOHSS, TB guidelines 1995: 29).

Each country has developed specific schedules and programmes for immunization. BCG is included in the Namibian expanded programme in

immunization (EPI) and is given only once soon after birth (MOHSS, TB guidelines 1995: 29).

In South Africa BCG vaccination was compulsory before the age of 6 months since 1973, but since October 1987 it is no longer compulsory (Vlok 1996: 497).

According to the World Health Report (1998: 169; 186-187) in the Western Pacific during 1960, there was more of an understanding of the value of BCG vaccinations, because during 1970, BCG immunization had achieved remarkable results in both coverage and quality. The average BCG immunization coverage in the African region was 68%.

■ *HEALTH PROMOTION/EDUCATION*

According to Dennill et al (1995: 82) health promotion can be defined as the process of enabling people (individuals and communities) to increase control over the determinants of health, and thereby improve it. Health education is a control tool in this process. Health education assists people to facilitate changes to more helpful behaviours.

Health workers play an important role in providing health education to patients diagnosed with tuberculosis and the broader public. Health education in a health education programme can happen on a personal level, such as in the relationship between a health worker (nurse) and patient/client, on a group level, or by means of reaching large audiences through mass media, exhibitions and health days.

Health education sessions should be planned properly and time allocated for health education at tuberculosis clinics is important. Because during health education sessions patients must get the opportunity to learn about their

disease (tuberculosis) and to undertake voluntary changes in their behaviour towards health.

According to Hayes and Forbes (1990: 208-211) health education programmes may include providing information, exploring attitudes and values, making health decisions and acquiring skills to enable behavioural changes to take place. Such programmes involve promoting self empowerment and self esteem so that people are enabled to take action about their health.

To create a conducive atmosphere for health education Greeff et al (1990: 10) suggested that the health worker (nurses) should also have effective communication skills to establish a therapeutic interpersonal relationship.

Apart from the knowledge of the disease, health workers should also have a knowledge of teaching and learning principles. Frazer et al (1990: 55-59) recommends the following to be included in the health education programme; motivation, individualization, evaluation, planning, socialization, commitment, active participation.

It also is important that the health worker has a sound knowledge of the culture of the patient. Part of the culture is the language which the patient can best understand and can communicate in. In a study that was done by Strydom, Greeff & Nel it was indicated that nurses realized that they had to go down to the level of the patient's understanding of the disease if they want to be successful. Leininger as cited in George (1995: 374) also emphasized the fact that people of each culture not only can know and define the ways in which they experience and perceive their health care world but also can relate these experiences and perceptions to their general health beliefs and practices.

■ *SECONDARY PREVENTION*

It is important that patients who indicated a positive sputum smear are traced and diagnosed. The diagnostic criteria that is proposed by the World Health Organization (DNHPD 1990) are the clinical features of pulmonary tuberculosis and tuberculin diagnostic tests, sputum investigation and x-rays of the lungs.

In order to confirm a diagnosis of pulmonary tuberculosis the mycobaceterium tuberculosis must be found in the sputum by direct smear or by culture. According to Vlok (1996: 526) active and passive case finding is essential for reducing the infections reservoir. To promote the secondary prevention of tuberculosis, it is necessary for the community to be educated and motivated to co-operate with helping authorities. Primary health care workers must be able to recognise the clinical picture of active tuberculosis after education by trained educators.

Delayed diagnosis or partial treatment often lead to long-standing lung disability and job loss, causing socio-economic hardship. Untreated or inadequately treated tuberculosis patients spread the infection to others especially in crowded and poor communities (World Health Report 1999: 23).

Another aspect of secondary prevention is the treatment of infected persons. Tuberculosis is treated with **drugs**, modern tuberculosis chemotherapy being given either at home or at any health services delivery institute. The standard TB regime is composed of Isoniazid (INH), Rifampicin (Rif), Pyrazinamide (PZA), Ethabutol (E)
(http://www.mckinley.uic.edu/health-info/dis-cond/tbl/tb.html).

However, the problem with the use of drugs is that of resistance. Resistance of disease causing organisms to antimicrobial drugs and other agents has become a great public concern worldwide. It has a deadly impact on the

control of diseases such as tuberculosis. Antimicrobial resistance is not a new, nor unusual problem, but it's prevalence has worsened in the last decade. In the case of tuberculosis poor prescribing practices or poor patient compliance with treatment have led to the development of strains of *Mycobacterium tuberculosis*, which are resistant to the available drugs (WHO, World Health Report 1999: 22, WHO, World Health Report 2000: 19; Crofton, 1997: 30).

According to the WHO Global tuberculosis program for 1997 the WHO has assembled hard evidence that the emergence of drug resistant tuberculosis can be held back by a properly controlled treatment programme. However, the problem still remain that this recommended treatment reaches only 1:5 patients with tuberculosis worldwide (http://www.studentbmj.com/back-issues/0500/news/97b.html).

In attempting to solve this problem, the WHO since 1989 has emasculated the current practice for tuberculosis case-finding and treatment into the directly observed treatment, short course (**DOTs**), and together with the World Bank and Harvard University, has shown it to be one of the most cost-effective health interventions available (World Health Report 1999: 25). This system means that the patients have to attend the hospital, clinic, health center daily, or if seriously sick, be admitted for a period of at least two months followed by a period of at least 4 months (Mtetwa 1996: 30; Smirnof 1998: 134; WHO, Tuberculosis Report 1998: 5).

Although many countries (over a hundred) now accept DOTS as a standard approach and over 1 million patients have been treated with it since 1990, the progress is slow. The main reason is because of lack of political will and commitment, within a number of high prevalence countries (WHO, World Health Report 1999: 25).

Another endeavor the *"stop TB"* initiative arose from discussions of these constraints between representatives of several of the high burden countries, who account for 80% of the global epidemic. The *"stop TB"* initiative will focus on the following products to accomplish its objectives:

- a global action plan to guide and accelerate coordinated responses to tuberculosis control,
- a global tuberculosis drug facility,
- a global research agenda, and
- a global charter for advocacy and commitment

WHO aims to expand significantly this global coalition and to increase investment in tuberculosis control in order to attain the **"stop TB"** goal of reducing the tuberculosis disease burden (WHO, World Health Report 1999: 25).

SUMMARY

The literature study described the health care system in Namibia, epidemiology of tuberculosis worldwide, pathogenesis and control of tuberculosis. The global views and efforts for fighting the tuberculosis epidemic through primary and secondary prevention were discussed. The prominent role of the World Health Organisation was highlighted.

CHAPTER THREE
RESEARCH METHODOLOGY

INTRODUCTION

information will be given in this chapter on the methods used to conduct the study at the Otjiwarongo district hospital in Otjozondjupa Region. The methodology used will be analysed, the method of collecting data, and the knowledge and practices of patients and health workers in the management of pulmonary tuberculosis patients will be fully explained.

RESEARCH METHOD

A non-experimental, descriptive survey was conducted to collect data from selected smear positive patients on treatment, and health workers attending to tuberculosis patients within Otjiwarongo district health facilities. The purpose of the study was to explore and describe the way in which health workers managed patients diagnosed with pulmonary tuberculosis, and how diagnosed patients understood the most important aspects of pulmonary tuberculosis. The approach was found to be appropriate because it was easy to explain how the questionnaire should be completed (De Vos 1998: 11).

POPULATION AND SAMPLING

A population is the entire aggregation of cases, which meet a designated set of criteria (Polit & Hungler 1995: 229).

The study targeted two types of populations:

The infectious pool of all diagnosed tuberculosis patients with sputum smear positive tuberculosis, who were on treatment at the time of the study at Otjiwarongo district hospital.

All health workers involved in the management of tuberculosis patients in the Otjiwarongo district hospital.

The sample and the population is the same in this study.

Table 1 An outline of the population and sample.

POPULATION	SAMPLE	SUBJECTS
All newly diagnosed TB patients with sputum smear positive on treatment during the study (July–September 1999)	Total population due to small population	53
All health workers involved in the care of tuberculosis patients at Otjiwarongo hospital	Total population due to small population	15

INCLUSION AND EXCLUSION CRITERIA

Population 1

Inclusion Criteria

For population 1, the following criteria were set:

- they had to be newly diagnosed tuberculosis patients with positive sputum smears at the Otjiwarongo hospital
- they must have been on treatment for the period July 1999 up to September 1999
- they must have given formal consent

Exclusion Criteria

The following groups of tuberculosis patients were not included in the study since the research focussed on the infectious pool.

Patients with:

- extra pulmonary tuberculosis
- sputum smear negative tuberculosis
- re-treatment cases
- children younger than 15 years of age

Population 2

The study included only health workers who are involved in the management of tuberculosis patients e .g. at outpatient department, medical wards and TB clinic. Health workers who were not involved in the care of tuberculosis patients e .g. in surgical wards, maternity wards were excluded from the study.

RESEARCH INSTRUMENTS

Burns and Grove (1993: 368) note that a questionnaire is a printed self-report designed to elicit information that can be obtained through the written response of the subjects. It is designed to determine facts about subjects or persons known by the subjects; beliefs, attitudes, opinions, levels of knowledge or intentions of the subjects.

Two questionnaires were used. One for each group of the participants (patients & health workers). Both questionnaires centered around the following aspects:

- demographic characteristics e.g. age, gender, marital status, preferred languages, ethnicity, schooling and occupation

- the awareness of the disease; signs and symptoms, transmission of infection, handling of sputum and treatment rationale
- management of the disease
- the knowledge on health education information and subjects suggestions
- the patients treatment record was checked (prior to the interview) to confirm the sputum smear positive diagnosis

Questions were developed by the researcher from the literature available, radio news, television programmes and from community remarks.
It is self-administered (this is dependent on the accepted protocol). According to Woods and Catanzaro (1988: 300), a questionnaire has the following uses:

- it identifies and explores events and meanings
- it explores and tests relationships
- it validates information

See Annexure C and D for the questionnaires.

A structured questionnaire was used to collect relevant data from the respondents in the Otjiwarongo district. Open-ended and closed-ended questions were used to collect data. Open-ended questions allow the subjects to respond in their own words whereas close-ended (or fixed alternative) questions offer respondents a number of possible replies from which the subjects have to choose the one that most closely matches (in his or her opinion) the appropriate answer. A total of 16 (Questionnaire A) and 7 (Questionnaire B) close ended questions were asked and a total of 10 (Questionnaire A) and 14 (Questionnaire B) open ended questions were asked.

The following types of close-ended questions were used in the study:

- dichotomous items which required the respondent to make a choice between two response alternatives.
- multiple choice questions which offered more than two possible responses (Polit & Hungler 1995: 277-279). Close-ended questions limit the scope of study to the respondents.

VALIDITY AND RELIABILITY OF THE RESEARCH INSTRUMENT

Validity

In the definition used by various authors validity is seen as the degree to which an instrument actually measures the abstract construct it purpose to measure the given environment in which it is applied (Leedy 1997: 39, Burns & Grove 1993: 342).

The following measures were taken into cognicance to ascertain the content and face validity of the instrument:

- conducting a literature search, making correct references and interpretation of the literature source.
- obtaining from experts information concerning the disease tuberculosis.
- testing the instrument.

Pretesting of the instrument

Polit & Hungler (1995: 259) maintains that "pretesting is the collection of data prior to the experimental intervention ... the trail administration of a newly developed instrument to identify flaws or assess time requirements."

The researcher pretested the instrument to ensure that information concerning all identified issues would be collected.

The preliminary questionnaires were submitted to five experienced professional nurses, one doctor, one statistician, two study leaders, four health workers and four patients who attended the clinics at Otavi and Kalkfeld (these clinics are in the same study area but not included in the study.

The pretesting of the instruments were done to

- assess the relevance, appropriateness, adequacy, comprehensiveness, suggestive and subjective undertones
- determine the usability of the instrument, ease of completion, distribution and collection of the completed instruments
- eliminate freedom from bias as far as possible
- assess the appropriateness of the format of the questionnaires

A few small problems were identified during the pretesting of the instruments with the patients only. Item 25 & 28 had to be rephrazed. The necessary amendments were made and the questionnaires were refined before the main study commenced.

Reliability

Reliability refers to the degree to which the instrument can be depended upon to yield consistent results if used repeatedly over a time on the same person, or if used by two different investigators (Brink 1996: 171).

The following criteria were incorporated into the questionnaire in an attempt to enhance reliability:

- getting the questions in a format as simple as possible to reduce ambiguities

- allowing ample time for completing questions and answers
- peer control was done to see if similar answers were obtained from the same patient during the testing of the instrument
- administering all questionnaires in a consistent manner to all respondents by the researcher

DATA COLLECTION

Data was collected by the researcher and two assistant researchers. The two research assistants were recruited from the local community, both were in position of a grade 12 school certificate, one a Damara and one a Herero speaking lady. They were trained for two days to ensure that they had a common perception and understanding of the questions. It also increased the probability that similar questions carry the same meaning to the participants.

The data collection took one month for patients, and two days for health workers. Health workers were allowed to fill in the questionnaires themselves. The researcher and two research assistants interviewed the patients who participated and used the structured questionnaire for patients to gather the data.

PERMISSION TO CONDUCT THE RESEARCH

Permission for this study was obtained from:

- National level, approved by the Permanent Secretary of the Ministry of Health and Social Services and its research committee
- Directorate level, approved by the Regional Director of the Central Health Region
- Regional level, approved by the Regional Medical Officer of the Otjozondjupa Region
- District level, approved by the Medical Superintendent of the Otjiwarongo hospital

ETHICAL CONSIDERATIONS

Complying with the principles of respect of human dignity - especially the principle of self-determination, health workers and patients had the right to participate in the study or refuse to do so (Polit & Hungler 1995: 122). All the respondents who were approached were willing to participate in the research because they believed the findings would help them in the future. The right to full disclosure was explained to the participants.

A full explanation on the purpose of the research was given to the respondents. Informed verbal consent was obtained from the participants. In this study there was no invasive procedure to be involved with the participants, hence there was no harm.

The individual right to confidentiality was guaranteed to all respondents (Polit & Hungler 1995: 119-125). Names and addresses were not required, and this was an additional way to protect the anonymity of respondents.

DATA ANALYSIS

Data was first analyzed manually and by use of the computer. The epidemiological information analysis epi-info version 5.0 was applied. Open ended questions were coded, using themes, which emerged from the content of the data. Similar themes and content categories were given the same codes. Example item 21, Explain the reasons for missing to take tablets. The main themes that were indicated by the respondents centered around, under the influence of alcohol, finances, no money to travel to get tablets, forgot to take tablets, discontinue because feeling better, distances – to far from clinic.

Results of the data analysis will follow in chapter four. The results are presented in descriptive form, percentages, tables and charts.

SUMMARY

A well planned and structured methodology will guide the researcher throughout from the beginning to the end of the study. This chapter described how the research was approached. The methodology, population and sampling were identified. The structuring of the questionnaire was explained as well as the data collection.

CHAPTER FOUR

ANALYSING OF FINDINGS: QUESTIONNAIRE A

INTRODUCTION

The results from the study of questionnaire A (patients) are analyzed, organised and discussed in this chapter. Responses to the questionnaires are fully displayed.

FINDINGS ON TUBERCULOSIS PATIENTS:

A total of 53 (100%) respondents, (tuberculosis patients with positive sputum smear) were interviewed.

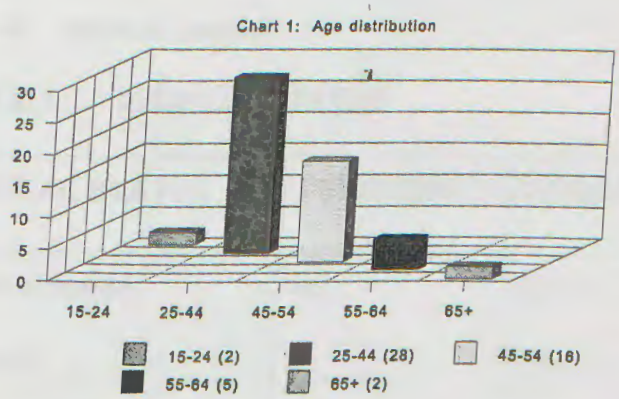
Item 1 Place of residence

Table 2 Place of residence (n=53)

RESIDENCE	FREQUENCY	PERCENT
Blikkies Dorp	21	39.6
Orwetoveni Location	16	30.2
Farm	6	11.3
Single Quarter	3	5.7
Osire Refugee Camp	3	5.7
Army Base	2	3.8
Okurusu Mine	1	1.9
Waterberg Plateau	1	1.9
TOTAL	53	100

According to table 2 a significant number of the respondents 21 (40%) lived in Blikkiesdorp and 16 (30.2%) lived in Orwetoveni location. Six (11,3%) indicated that they are from a farm, 3 (5,7%) were from Osire refugee camp, 2 (3,8%) from the Army base, 1 (1,9%) from Okorusu mine and the Waterberg Plateau.

Item 2 Age distribution: (N=53)



Most of the respondents namely 28 (53%) were between 25-44 years of age. This is the most reproductive sexually active age group similar to the HIV/AIDS pattern in Africa and Namibia in particular (MOHSS, Epidemiological Report 1999; Harries 1996: 10).

According to the findings there were no children surveyed, since they were among the exclusion criteria group. The prevalence of tuberculosis amongst children and young people is of great concern for the world especially in developing countries (WHO, The World Health Report 1998: 82).

Item 3: Gender

It was found that the majority of the respondents were males namely 35 (66%) and then females, only 18 (34%). Although the findings show significant differences in gender distribution, affecting more men than women, tuberculosis is still a killer disease of young people and women worldwide (WHO, World Health Report 1999: 25).

Item 4: Marital status

TABLE 3 MARITAL STATUS

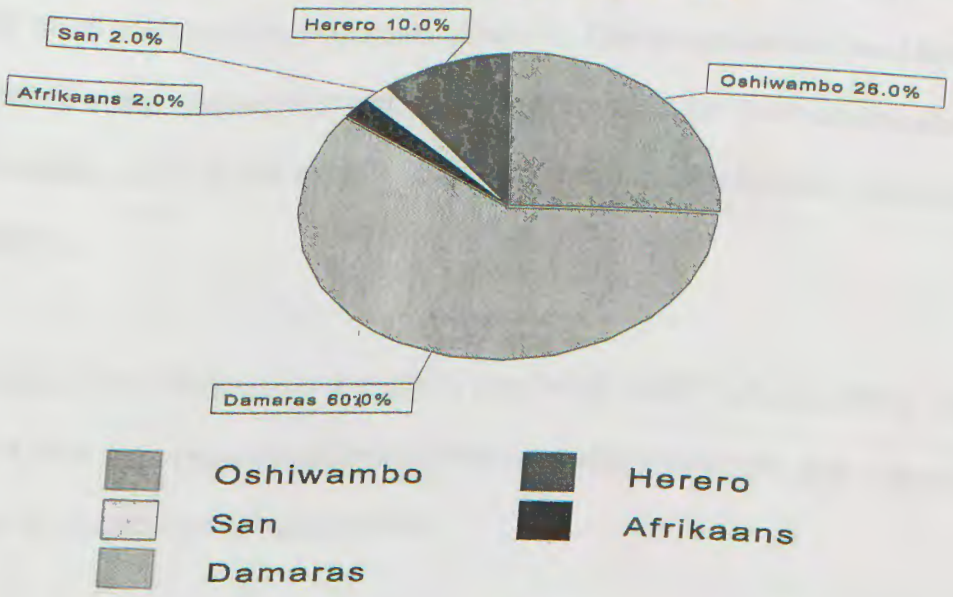
MARITAL STATUS	FREQUENCY	PERCENT %
Never married	46	86.8
Married	5	9.4
Widower	2	3.8
TOTAL	53	100

The majority of patients interviewed were never married, 46 (87%). Five (9.4%) were married and 2 (3.8%) were widows/widowers.

Item 5: Language

The study revealed that the main languages spoken by the respondents were Damara 32 (60%) and Oshiwambo 14 (26%). The remaining languages were spoken by few respondents. (See Chart 2)

Chart 2: Language Preferred



The findings as indicated in pie chart 2 may create particular difficulties for health education, especially if the health worker uses English or Afrikaans to explain the disease process and its treatment, for many patients speak their languages in the vernacular.

Item 6: Education status

TABLE 4: EDUCATIONAL STATUS (N=53)

EDUCATIONAL STATUS	FREQUENCY	PERCENT
Never to school	16	30.2
Adult education - grade 4	5	9.4
Grade 1 - Grade 3	16	30.2
Grade 4 - Grade 6	13	24.5
Grade 7 and above	3	5.7
TOTAL	53	100

The findings revealed that the majority of respondents 16 (30,2) had never been to school. 16 (30,2%), were educated between grade 1 -3, 13 (24,5%) between grade 4 – 6 and only 3(5,7%) above grade 7. The low education level may be related to other factors that create an environment for the transmission of tuberculosis, such as low socio – economic status, unemployment, poor living conditions.

This indeed was also found in a study by Westaway (1990) in South Africa. High rates of illiteracy, low occupational levels and unemployment, are common findings amongst tuberculosis patients.

Item 7: Source of income

TABLE 5 - SOURCE OF INCOME

EMPLOYMENT STATUS	FREQUENCY	PERCENT
Unemployed	23	43.4
Employed	19	35.8
Pension	2	3.8
Depend on spouses	5	9.4
Casual labour	2	3.8
Disable grant	2	3.8
TOTAL	53	100

The findings in table 6 indicated that 23 (43%) of the respondents were unemployed, while 19 (35%) were employed. About 5 (10%) depended on their spouses for income. It is important that a patient diagnosed with tuberculosis

have sufficient food to assist the body to recover. If patients are unemployed and their family cannot assist them by providing food, this obviously will effect their recovery.

Item 8: Knowledge of Tuberculosis

The findings indicated that 48 (91 %) of the respondents knew the meaning of tuberculosis disease, and defined it as a disease affecting the lungs. However 5 (9%)of the respondents did not know their diagnosis, and this is despite the fact that all the 53 respondents (patients) were on anti-tuberculosis treatment for more than 3 weeks. It would have been assumed that if patients is getting medication for one or other reason that they should at least know the reason for receiving medication, which means they should know what is wrong with them.

The majority of the patients 42 (79%) could not explain the meaning of their diagnosis, "sputum smear positive tuberculosis". Only 9 (17%) respondents explained that it meant the presence of bacteria in the lungs.

This study revealed a high percentages 42 (79%) of the respondents did not know the meaning of "sputum smear positive" (being infectious). The same finding was indicated in a study done in Malaysia, on hospitalized tuberculosis patients, where it was revealed that 70% did not know they were suffering from this infectious disease (Roy 1985:22).

Item 9: Signs and symptoms at diagnose

The majority of respondents 45 (85%) experienced all four main signs and symptoms of tuberculosis at diagnosis: cough for more than three weeks, night sweat, fever and weight loss. While 5 (9%) patients experienced three severe signs of tuberculosis: namely chest pain when coughing, coughing blood stained sputum and severe weight loss, 3 (6%) experienced early signs as cough ,loss of appetite and general weakness.

Item 10: Meaning of sputum positive smear

A minority of the respondents 2 (4%) indicated that "sputum smear positive" means the sputum is clean and the lungs are healthy. These findings indicated a lack of important knowledge of the respondents.

Item 11: Ways of contracting Tuberculosis

TABLE 6: HOW PATIENTS COULD CONTRACTED TUBERCULOSIS (N=53)

	FREQUENCY	PERCENTAGE
• Poor living conditions e.g. dusty, overcrowded	6	11.3
• Being in contact with a TB patient	23	43.4
• Using the same utencils	2	3.8
• Don't know	16	30.2
• Other:		
- being witched	3	5.7
- inherit from a relative	2	3.8
- from drinking Tombo and smoking the same pipe	1	1.9
TOTAL	53	100

According to Table 6, 23 (43.%) knew that they could contract tuberculosis disease probably through being in contact with other tuberculosis infected people. The other proportion 36 (58%) gave different methods of contraction, such as poor living conditions, being bewitched, inherited, sharing utencils or did not know as shown in the table 6.

Some modes of transmission as indicated, for example, being bewitched as mentioned by 6 (11%) respondents and through inheritance 3 (6%) needs to be

clarified during health education sessions. This finding was in accord with other research done in Kenya on Kenyan Communities perceptions of tuberculosis (Liefoogne et al 1997: 813).

Item 12: Information about the spread the of disease

The majority 33 (62%) of the respondents knew about the ways tuberculosis could spread. The remaining 20 (38%) did not know. This study revealed that 20 (38%) of the respondents were not informed about how the disease spread, which correlate with the finding of Item 13 where 27 (51%) of respondents were not aware on how to prevent the spread of the tuberculosis disease.

Item 13: Explanation on prevention of tuberculosis spread

The majority 27 (51%) of respondents were not aware on how to prevent the spread of the tuberculosis disease. Only 16 (30%) gave correct explanations on how to prevent the spread of tuberculosis disease.

Item 14: Weighed before medication were started

Most of the respondents namely 49 (92%) were weighed before they were started on medication, while only 4 (8%) respondents' weights were not recorded on their treatment cards. Weight plays a role in the treatment of tuberculosis patient's, as the doses of medication are calculated, based on the patient's weight. The weight of the patient also provides a good barometer of progress in the treatment of the disease, as the weight is expected to increase when treatment is consistent (MOHSS, TB Guideline 1995: 25-26).

Item 15: Information about correct sputum collection

This study revealed that 15 (28%) of respondents were not informed about the correct method of sputum collection, which is of paramount importance to be known by all sputum smear positive patients. It is important to know and understand that the sputum for DM should consist of sputum out of the lung and not saliva.

Sputum smear conversion to negative is a good indicator of the success of the treatment. This may show the disease in its low infectious level and that the treatment (tablets taken) is working perfectly (WHO, World Health Report 1997: 33 - 34). Also, a negative sputum after two months on treatment will allow the patient to begin the discontinuation phase of treatment, which means that a lesser number of tablets need to be taken for the duration of therapy (MOHSS, TB guidelines 1995: 26).

This information needs to be included in all health education sessions of all tuberculosis patients, especially those with positive sputum smear.

Item 16: Change of treatment after 2 months

Only 28 (53 %) patients knew that after the intensive phase, the number of tablets would decrease. Twenty five (47%) reported that they were not aware about the change in number of tablets after 2 months on treatment. However, 34 (64%) of the respondents were between the 2nd and 6th month of their

tuberculosis treatment. From this stage of treatment, it is expected that most of the patients would have gained more knowledge of tuberculosis disease and its treatment.

Still, 9 (17%) of the respondents were not even aware of their particular stage of treatment and therefore not aware of the number of months they are required to take their treatment before its completion. This also means that they were unable to know when to stop the treatment and when to do repeat sputum examination.

Item 17: Knowledge on TB treatment duration

This study revealed that only 26% of the respondents did not know the duration of their treatment course (6 months), as compared to 80% of the respondents in the Malaysian study, among the tuberculosis patients hospitalized for two or three months. (Roy 1985:22).

According to Murray (1990:16) the long duration of the treatment is a very important factor for higher patient compliance of treatment. There is a need to educate patients about the duration while in their intensive phase of treatment, in order to motivate them complete treatment.

Item 18: Information on why a tuberculosis treatment course is long

The majority of the patients 35 (66%) were not informed as to the reason of the extended tuberculosis course treatment course. This suggests poor patient education that may affect treatment compliance and follow-up sputum tests, which are needed to determine whether the individual is cured, and for calculation of a cure rate for the programme.

Item 19: Stage of TB treatment

TABLE 7 STAGE OF TB TREATMENT (N=53)

STAGE OF TREATMENT	FREQUENCY	PERCENT
1 week - 4 weeks	15	28.3
1 month - 2months	4	7.6
2 months - 4 months	14	26.4
4 months - 6 months	13	24.5
Do not know	7	13.2
TOTAL	53	100

It was found that 34 (64%) of the respondents were between the 2nd and 6th month of their treatment. Only 15 (28%) patients were in their first month of treatment. From the onset treatment, it is expected that most of the patients would have gained more knowledge on the disease process and its treatment.

Item 20: Information on missing some tablets

Only 18 (34%) of the respondents admitted having missed some anti-tuberculosis tablets for different reasons as shown below :

TABLE 8 REASONS FOR MISSING TO TAKE TABLETS (N=53)

REASONS	FREQUENCY	PERCENT
Thought I was healthy	5	9.4
Lack of travelling money	3	5.7
Was out of town with work	2	3.8
Had no food	2	3.8
Farmer forget to collect my tablets	2	3.8
Nobody at clinic to serve	2	3.8
Was drunk and forget to take tablets	1	1.9
Was to sick to walk	1	1.9
Did not miss any tablets	35	66.0
TOTAL	53	100

Item 21: Knowledge on who can contract tuberculosis

At least 40 (75.5%) of the respondents were aware that their closest contacts were at risk of getting tuberculosis disease. According to this survey, 41 (77%) of respondents' contacts were not screened for tuberculosis. This finding indicates a serious omission in tuberculosis management in the district and could increase the future incidence of tuberculosis. There could be increased tuberculosis transmission, if the "contacts" of sputum smear positive tuberculosis patients are not screened and treated appropriately.

Item 22: TB drug side effects

A small number of respondents 6 (11%) experienced anti- tuberculosis drug side effects such as skin rash, nausea, vomiting, headache, and restless sleeping. Should they stop taking their medication because of this it could lead to drug and multi-drug resistance. The remaining respondents did not experience any drug side effects.

Item 23: Effect of non compliance

It was found that 38 (72%) of respondents were informed about the consequences of failure to take their tablets regularly. But 15 (28%) said that they were not aware of this important aspect of tuberculosis treatment. This finding correlates with Item 20. Adherence to tuberculosis treatment is the corner-stone in tuberculosis management. It allows those patients who adhere to treatment be cured or to complete their treatment successfully. Fifteen (28%) of the respondents said they were not informed about this important aspect of tuberculosis treatment.

Item 24: Knowledge on tuberculosis resistant bacilli

Most of the respondents 39 (74%) were not aware that treatment for persons infected with resistant tuberculosis bacilli would take a longer period, up to two years.

Item 25: About whether tuberculosis is curable

It was found that 38 (72%) of the subjects interviewed believed that tuberculosis is a curable disease through drug ingestion on a regular basis, with the correct combination and for a prescribed period. (This exclude some factors like smoking and taking alcohol while on treatment). Eleven (21%) of these patients were not sure that tuberculosis can be cured totally. The rest of the respondents 4 (8%) did not believe that the disease was curable, they thought that a tuberculosis patient will only feel better while on treatment, after discharge the disease will start again. This fact showed the little understanding/knowledge in of patients about the outcome of treatment. Therefore patients become discouraged and believe there is no hope treatment results or continuing treatment. These doubt about the curability of TB disease was found in other studies done in Kenya and Nepal, where some patients perceived tuberculosis as a fatal disease (Liefoogne et al 1997: 815, Thomson & Myrdral 1986: 263).

Item 26: Suggestions for better information to patients

The respondents made suggestions for improving information on tuberculosis disease to patients, as shown in the table below, 19 (36%) patients did not made any suggestion.

TABLE 9 SUGGESTIONS FOR BETTER INFORMATION TO PATIENT

SUGGESTIONS	FREQUENCY	PERCENT
* Introduce food scheme	16	30.2
* Open a TB ward, get a nurse and a doctor for TB patients only	5	9.4
* Do home visit and meetings with relatives of TB patients	2	3.8
* Develop a information leaflet for each patient to take home	5	9.4
* Reduce number of tablets	2	3.8
* Introduce injection as in olden days	1	1.9
* TB patients to participating during TB awareness weeks/days	1	1.9
* No suggestions	19	35.8
TOTAL	53	100

Table 9 provides various suggestions for better information to patients as expressed by 32(60%) respondents. The majority of respondents 30% suggested the introduction of a food scheme for tuberculosis patients (because of the many tablets) and that daily information on tuberculosis should be carried out. Five (9%) suggested the development of a tuberculosis leaflet for each patient to take home, and a special tuberculosis ward manned by a permanent nurse and doctor for tuberculosis management. Often the patients are shocked by the diagnosis and fail to remember what the doctor or the health workers have said (especially if language problem prevails). The health worker may not inform them on all the basic facts in their health education sessions, therefore a leaflet to be taken home can be utilized as a supplementary tool to the information given. A leaflet on tuberculosis develop by Maganu (1995) in the Ministry of Health, Gaborone, Botswana is highly recommend the same findings.

In her study Roy (1985:22) implemented her recommendation by developing a visual aid which catered for the needs of the TB patients. The results indicated that the group, which received education, increased their knowledge notably and the regular clinic attendance was increased to 100%, compared to the control group with an attendance level of only 61.5%. Only 2 (4%) of respondents suggested home visits and meetings with their relatives as helpful to them in the treatment and management of tuberculosis.

SUMMARY

In this chapter all the 26 Items of Questionnaire A – patients, findings were analysed. From the analysis of the data it was clear that the respondents (patients) were not well informed about what exactly is wrong with them or the manifestation of their illness.

The abovementioned finding was confounded by the relative high illiteracy rate. The implication is that they would be unable to obtain the relative health information on their own. Furthermore a significant percentage of them were unemployed. These two aspects could have a negative influence on their recovery progression. All the findings indicated that the socio-economic status is playing a determining role in possible recovery outcome.

CHAPTER FIVE

ANALYZING OF FINDINGS: QUESTIONNAIRE B

INTRODUCTION

The results from the study of questionnaire B (health workers) are analyzed, evaluated and discussed in this chapter. Responses to the questionnaires are fully displayed.

FINDINGS ON HEALTH WORKERS PART:

Item 1: Type of health facility

TABLE 10 TYPE OF HEALTH FACILITY (N=15)

HEALTH FACILITY	FREQUENCY	PERCENT
Health workers at the Hospital	10	66.7
Health workers at the Clinic	5	33.3
TOTAL	15	100

Item 2: Gender

The majority of health workers interviewed were females 14 (93%), one male respondent was present in this survey.

Item 3: Designation

There was a fair distribution of the different categories of nurses interviewed. In table II the distribution is indicated.

TABLE 11 DESIGNATION (N=15)

DESIGNATION	FREQUENCY	PERCENT
Registered nurses	6	40.0
Enrolled nurses	3	20.0
Nursing assistants	6	40.0
TOTAL	15	100

Item 4: Work experience at facility

Most 12 (80%) of the nurses worked in their current health facility for more than 12months.

Item 5: Training on Tuberculosis Management

TABLE 12 TYPE OF TRAINING ON TB MANAGEMENT (N=15)

TRAINING	FREQUENCY	PERCENT
Formal course of 1 week or more	5	33.3
In-service training	3	20.0
On job training	3	20.0
Never trained	4	26.7
TOTAL	15	100

The majority of the nurses claimed to have been trained on tuberculosis management at district level, but when assessing the type of tuberculosis

training, only 5 (33%) of nurses were trained formally, in a one week or more a course of a week or longer on managing tuberculosis at district level. Other nurses received either in-service training or "on-the-job" training. Four (27%) out of the 15 respondents initiated no training on tuberculosis management whatsoever.

Item 6: Information on Sputum follow-up

Out of the 15 (100%) respondents, 6 (40%) of the nurses could not correctly identify follow-up sputum requirements in the months of treatment, 9 (60%) correctly mentioned the follow-up sputum at 2nd month and 3rd month if sputum was still positive, and at the end of the treatment.

Item 7: Reading of tuberculosis guideline

Only 9 (60%) of nurses had read and referred to the tuberculosis guidelines when managing tuberculosis patients. Six (40%) of the respondent had never read the tuberculosis guidelines.

Item 8: Drug treatment for new tuberculosis Patients

According to this study 5 (33%) of the nurses could not mention the correct combination of anti - tuberculosis drugs for treatment of a newly diagnosed tuberculosis patient, while 10 (67%) mentioned all four types of anti-tuberculosis drugs e .g. Pyrazinamide (PZA), Rifampicin (R), Isoniazid (INH) and Ethambutol (E).

Item 9: Tuberculosis treatment duration for a new tuberculosis patient

It was found that 11 (73%) of nurses correctly knew the tuberculosis treatment duration as 6 months. Four (27%) stated that treatments stopped when sputum converted to negative for Acid Fast Bacili (AFB). This indicated that these nurses did not understand the two phases of treatment and the role of the continuation phase in sterilisation of the lungs.

Item 10: Problems in keeping patients on treatment

All respondents had experienced problems in keeping tuberculosis patients on treatment as shown in table 13.

TABLE 13 REASONS GIVEN BY HEALTH WORKER FOR PATIENTS MISSING TO TAKE THEIR TABLETS (N=15)

REASONS	FREQUENCY	PERCENT
* No food at home, lazy to work, ashamed to seen at the Clinic, afraid of stigma of HIV/AIDS	4	26.7
* Tablets are to many, drugs cause constipation, feeling better after some months on treatment, treatment course too long	4	26.7
* Sputum is always positive, belief in Witchery, TB is a family disease	3	20.0
* Movement of patients, depend on employer to collect tablets	2	13.3
* Other reasons	2	13.3
* Alcohol abuse, lack of co-operation, long distance/lack of money for traveling, too sick to walk		
TOTAL	15	100

Item 11: On health education

All the nurses reported that they provided health education to the TB patients, as they understood it. However, the content of the education or information given was not correct or adequate as shown from patients responses.

Facts necessary for TB patients to know / content of health education

As listed below, this clearly indicates that most of the nurses did not have adequate information on tuberculosis as some of the important facts listed scored low, or were not mentioned at all.

TABLE 14 FACTS THAT A TB PATIENT MUST KNOW WHILE ON TREATMENT

FACTS	FREQUENCY	PERCENTAGE
• Side effects of drugs, duration of treatment, sputum follow-up and direct observe treatment	4	26.7
• Stop smoking and drinking, taking of tablets regularly	2	13.3
• Stop drinking, stop spreading the disease, cover your mouth when cough, screening of family and prophilaxes of babies	3	20.0
• To know the sign and symptoms, and how the disease is spread and its prevention, daily taking of treatment	3	20.0
• Follow-up sputum tests, treatment duration, how to prevent the disease	3	20.0
TOTAL	15	100

Item 12: What tuberculosis patients should know about treatment and tablets

The correct dosage and regularity of treatment was mentioned by 9 (60%) of nurses. The spread of tuberculosis disease and the drug side effect were mentioned by 6 (40%) of the respondents.

Item 13: What DOTs means

The majority 11 (73%) of nurses knew the correct meaning of the abbreviation DOTs, "directly observed short course therapy" and its importance. Possibly those who did not know the meaning of DOTs and its importance may be those 4 (27%) respondents who claimed not to be trained on tuberculosis management. According to (Jin 1992: 267 & Menzies 1992: 32) for this strategy to be effective, there is a need to motivate the health providers and the patients themselves to make use of this system.

The tuberculosis press release WHO/40 (1998: 2) stated the five elements which combines DOTs: political commitment, case detection through sputum smear microscopy, directly observed short-course treatment, regular drug supplies and monitoring system with evaluation of treatment outcome for each patients.

Item 14: Differences between signs and symptoms

A significant proportion of nurses 6 (40%) could not differentiate between signs and symptoms. Nine (60%) correctly explained that signs can be seen or observed, while symptoms are those complaints which a patient might tell the health provider.

Item 15: Possible reasons for treatment failure

Out of the 15 (100%), 11 (73%) of nurses mentioned possible reasons for treatment failure, such as wrong drug dosage, drug not taken regularly, drug resistance and the presence of HIV.

Item 16: Familiar with word Multi-drug resistant TB

Only 10 (67%) of nurses were familiar with the word multi-drug resistant tuberculosis and this group gave the correct meaning as resistant to more than one anti TB drugs, the other 5 (33%) did not know. The WHO/UATLD (1997: 13) report emphasised the fact that drug/multi-drug resistance is a man-made condition, which can be improved by rectifying the cause factors e.g. irregular taking of treatment, monotherapy, drugs with alcohol etc.

Item 17: Coping without drugs

Most of the nurses 9 (60%) would borrow TB drugs from other clinics or refer patients to other health facilities, if drugs are not available in stock. Other 4 (27%) of subjects said they would stop treatment and re-start the patients again

on TB treatment when drugs will be available, 2 (13%) said they would continue with drugs they have in stock. This situation is very confusing and need urgent attention.

Item 18: List of possible side effects

A number of possible side effects were listed by the nurses but scores were low on all as shown below.

TABLE 15 KNOWLEDGE ON DRUG SIDE EFFECTS (N-15)

SIDE EFFECTS	FREQUENCY	PERCENT
* Deafness, liver failure, skin rashes, nausea and vomit	4	26.7
* Headaches, dizziness, constipation, dyspepsia skin itches	2	13.3
* Nausea, deafness, death	1	6.7
* Nausea, vomiting, diarrhoea, blindness, deafness	2	13.3
* Nausea, discolouring of excess	1	6.7
* Skin rash, deafness, nausea and death	2	13.3
* Don't know	3	20.0
TOTAL	15	100

Item 19 (a): Procedure in transferring patients to another district

Twelve (80%) of nurses knew the correct procedures in transferring patients from one district to another district, for example correctly completing the referral letter, the health passport and forwarding the treatment card at a later stage to the respective district.

Item 19 (b): Procedures when patients are travelling for days

The majority 14 (93.3%) of nurses reported that they would supply enough tablets and complete the health passport if the patient is travelling for some days. They would ensure that the patient can take treatment at any nearest clinic/hospital provided if he show his health passport.

Item 20: Reason for neglecting tuberculosis patients

Various reasons were stated for neglecting a tuberculosis patient as shown in the table 16.

TABLE 16 STATED BY HEALTH WORKERS FOR NEGLECTING TUBERCULOSIS PATIENTS (N=15)

SIDE EFFECTS	FREQUENCY	PERCENT
* Poor knowledge about the disease	4	26.7
* The district co-ordinator is in charge of tuberculosis patients	5	33.3
* Regards tuberculosis disease the same as other diseases	3	20.0
* It is too much work	1	6.7
* Afraid to be infected	1	6.7
* Tuberculosis patients complains too much and prefer to be assisted by some nurses only	1	6.7
TOTAL	15	100

Item 21: Suggestions to improve information to patients

Many suggestions for improving tuberculosis information from health workers to patients were proposed as shown below.

TABLE 17 SUGGESTIONS TO IMPROVE INFORMATION TO TUBERCULOSIS PATIENTS

SUGGESTIONS	FREQUENCY	PERCENT
* Train all health workers on TB management	5	33.3
* Appoint and train a full time district TB co-ordinator	5	33.3
* Develop standard leaflet about all facts a TB patient should know for health	3	20.0
* Produce videos on Tuberculosis using different languages	1	6.7
* Conduct routine Tuberculosis talks on radio	1	6.7
TOTAL	15	100

SUMMARY

In this chapter the findings of all 21 Items of Questionnaire B (health workers) were analysed. The findings revealed the health workers dealing with patients diagnosed with tuberculosis are not knowledgeable on all the important aspects of the disease. The health workers demonstrated a lack of:

- Treatment protocols
- Health education

- Diagnosing skills
- Relevant pharmacology

What is significant is that sixty percent of the health care workers were sub-professional nurses.

CHAPTER SIX

CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS

INTRODUCTION

This chapter focuses on conclusions and recommendations of both questionnaires concerning the knowledge the management of tuberculosis and the perceptions of patients thereof. The conclusions will be stated according to the objectives and various recommendations will be made.

CONCLUSIONS

The formulated objectives were evaluated and achieved according to the data, findings and literature collected. The following conclusions are based on the objectives which were set by the researcher.

Objective 1

Describe the profile of patients diagnosed with pulmonary tuberculosis and health workers attending to them.

This objective identified the profile of the respondents concerning their residences, language, age, gender and educational background. These findings showed that the disease can occur in any age or gender group. It was indicated that the majority of the respondents face the problem of overcrowded living conditions and unhygienic accommodation that play a significant role in

the transmission of the disease. Educational background is important, in that it enables the patients to read and learn about the disease and to understand all aspects of the disease. It is important for health workers to acquire and communicate this information to their patients. Health education would be more beneficial and constructive if it is communicated in a language that the patient can understand. This information will contribute towards the empowerment of patients and the health workers themselves and lead to more effective cooperation. It is necessary for health workers to improve their knowledge and attitudes if they wish to provide patients with holistic care.

Objective 2

To determine whether patients and health workers have the relevant knowledge about the disease tuberculosis

The information obtained from the respondents showed that inadequate knowledge about the disease pattern is a reality for both patients and health workers. Nwangboso (1998: 15) found the same results in a study about the knowledge of health workers with regard to tuberculosis and its control in the Otjozondjupa region in Namibia. The question to be asked is how these health workers managed the patients who are diagnosed with tuberculosis.

The transmission patterns, disease manifestation and other related factors should be understood by health workers and explained to patients. If

tuberculosis patients do not have an understanding of these contributory factors and its effects it becomes easier for them to drop out/default from the programme upon the appearance of improved health.

Murray et al (1990: 100 indicated that the best way to reduce transmission of tuberculosis infection is to cure patients with a smear positive sputum. If smear positive patients are unaware of their status, the chances of spreading the bacilli (unknowingly) to their contacts are very high, and their motivation to adhere to treatment will be low.

Objective 3

To describe the management of patients diagnosed with pulmonary tuberculosis

Health workers in Namibia are trained on how to manage the patient diagnosed with tuberculosis. However the objective identified the following problems as constraints which hinder the management of patients with pulmonary tuberculosis.

- Duration of treatment course, it was not understood why the duration should be at least six months by health workers and patients
- Respondents (patients) were not aware of their particular stage of treatment

- Respondents (patients) did not know when to stop treatment and when to return to repeat sputum examination
- Respondents (patients) were unaware that they were suffering from an infectious disease
- Respondents (patients) did not know the importance of bringing in their contacts for screening and treatment
- Respondents (patients) and health workers did not know the consequences of defaulting (irregular taking of treatment)

Objective 4

To explore if health education is done by health workers and how patients perceive it

It was found that health education is done. However, the objective identified that health workers attending to tuberculosis patients fail to posses the relevant knowledge to be passed onto the tuberculosis patients (sputum smear positive), during the health education sessions. This resulted partly from the unavailability of a specific standard content of the health education document. According to Chaulet, P. (1996: 154-156) health workers should provide essential information about tuberculosis during the first contact. The information should include the manifestation of the disease treatment, necessity of directly observed treatment and how tuberculosis is spread. The end result was that the respondents (patients) in this study could not take the responsibility for their own treatment

because of ignorance (lack of relevant knowledge on the disease) which is against the principles of primary health care.

Patients do not receive information about the disease pattern e.g. screening contacts, treatment-duration meaning of sputum positive, drugs and their side effects and the use of alcohol.

RECOMMENDATIONS

In order to ensure a high level of performance from health workers involved in the care of tuberculosis patients, the weaknesses identified in this study should be addressed and rectified. light of the findings and problems identified in this study the following recommendations are proposed. Recommendations will be proposed under the following headings:

Education and knowledge

- **Health workers**

  This study recommends that: In-service training courses should be conducted for health workers attending to tuberculosis patients on a regular basis by the trained regional and/or district tuberculosis coordinators. This was also recommended by Strydom, et al (2000:820 that health workers attending to tuberculosis patients should have a sound knowledge of the disease tuberculosis. The following points should be covered during in-service education sessions;

- epidemiology
- etiology
- diagnosis and treatment
- case management
- prevention which will include immunization and health education
- counseling

In Kenya, A-luoch (1993: 360) found that training of staff better and more accessible of the community on all aspects of tuberculosis are prerequisites for effective case of finding.

- **Patients**

  It is recommended to unify and standardize the content of health education information, therefore, there is a need to develop a standard leaflet containing all basic facts which all tuberculosis patients should know. The information should be easy to read using pictures and diagrams and should be written in the relevant languages. This leaflet should be regarded as a supplement to the daily health education, and patients should be allowed to take it home. The TB patient, however, will still need to be regularly counselled on tuberculosis process and its implications. Five – twenty minutes should be allowed for individualised health education sessions per patient to avoid rash.

This correlates with a study that was done by Strydom, Greeff & Nel (2000: 37) where it was found that tuberculosis patients experienced a lack of complete education. It was indicated that nursing staff concentrated on the medication that should be taken but not on the disease tuberculosis as a whole. The study revealed nurses indicated to tuberculosis patients that tuberculosis is caused by the use of alcohol and smoking. Patients also indicated that they have a fear for the nurse. *Patients experienced a feeling that the nurses get angry if they asked questions (Greeff et al: 2000; 38).*

- **The public**

Thompson and Myrdal (1986: 253) stated clearly in their study that the aim of tuberculosis health education should be to motivate the community at large to assist with therapy, case findings and improvement of socio-economic factors that might contribute to the spread of tuberculosis disease. Therefore, it is recommended that planned information on tuberculosis and its management should be conducted on regular basis to the community aiming at prevention which is better then curve. This can be done through radio talks , television programme, group discussions, TB exhibitions, World TB Days, patient and relative meetings etc.

- **Management**

The management of all aspects of a tuberculosis programme is of the utmost importance. Therefore, a health worker (preferably a Registered or Enrolled Nurse) should be identified and appointed as a permanent district tuberculosis coordinator. His/her duty sheet will include interalia:

- the maintenance of the tuberculosis clinic and the district tuberculosis register for recording and reporting purposes
- engaging in counselling and providing health education to tuberculosis patients
- ordering and supplying anti-tuberculosis drugs to tuberculosis patients
- handling sputum for tuberculosis investigations
- assisting the environmental health assistant in defaulter and contact tracing
- supervising the management of tuberculosis patients in various clinics in her/his district
- providing monthly/quarterly and 6 monthly (treatment outcome) reports for the health information system
- planning, organizing and implementing tuberculosis activities in the community
- training a deputy to cover her essential work in her absence

(NTCP, Tuberculosis Guideline 1995: 46)

The working relationship between the health workers (health providers) and the tuberculosis patients (service receivers) should be improved, by empowering patients with the relevant knowledge to enable, and motivate them to understand this disease and take responsibility for their own treatment. This will strengthen the implementation of the DOTs strategy and ensure more user-friendliness. This was also found in a study that was done by Strydom,Greeff & Nel (2000: 38) on the experience of the patient and the health workers during health education sessions.

LIMITATIONS OF THE STUDY

Limitations applicable to this study are participated effect, population and data collection and analysis.

- **Participant effect**

Although the assumption was accepted that informants would answer honestly and with integrity to reasonable questions posed during the interview and completion of the questionnaire, informants may have answered questions in a manner which they perceived as being more polite and not as they believe or perceived them. This participant effect, where the informants may have given the answers they thought the researcher expected, as commonly referred to as the Hawthorne effect (Mouton & Marais 1990: 86; Polit & Hungler 1987: 129-130, 196; Wilson 1993: 10).

- **Population**

The population is small, being limited by the participants or respondents of only one district. Although this raises the question as to what effect the inclusion of more districts would have had on the results obtained in this study, it must be remembered that this is a Master's degree and would thus have made the scope of contextual study too large.

- **Data collection and analysis**

The use of many open-ended questions and semi-structured interviews made data collection and analysis difficult and time consuming (Keilhofner (1982(b): 153; Polit & Hungler 1995: 232; Wilson 1993: 225).

FINAL CONCLUSION

The research showed that tuberculosis still poses a serious and increasing problem in most developing countries, and affects the health and social welfare of large segments of the society. The study has provided useful information about attitudes to the issue of management of patients diagnosed with pulmonary tuberculosis. Constraints which hindered effective management were identified and methods of improvement were discussed. It is hoped that the insights obtained will also have a sobering affect on patients and health workers dealing with the disease tuberculosis.

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ANNEXURE A

PERMISSION TO CONDUCT THE STUDY *IN THE HEALTH* FACILITIES

9 - 0 / 0001

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198	Ministerial Building	Tel: (061) 2032824
Windhoek	Harvey Street	Fax: (061) 227607
Namibia	Windhoek	E-mail: namrcu@iwwn.com.na
Enquiries: T. Hoffmann		Date: 27 May 1999

OFFICE OF THE PERMANENT SECRETARY

Mrs. P. Angala
P.O.Box 1474
Otjiwarongo

Dear Mrs. Angala

A SURVEY TO ASSESS THE MANAGEMENT OF TUBERCULOSIS PATIENTS BY HEALTH WORKERS AT OTJIWARONGO HOSPITAL AND THE CLINIC IN THE CENTRAL REGION OF NAMIBIA

1. The above proposal was reviewed by Research Management Committee and found to have merit. Kindly, consider the attached recommendation for the finalisation of the protocol.

2. The Ministry is pleased to inform you that the application fior the execution of the research project is approved under the following conditions:

2.1. The revised research proposal together with the data collection tools should be submitted to the Ministry.
2.2. Progress reports on the study to be submitted to the Ministry
2.3. Preliminary findings to be presented to the Ministry
2.4. The final report submitted to the Ministry upon completion of the study
2.5. Written approval be sought from the Permanent Secretary for publications

3. *Wishing you all succes.*

Yours sincerely

DR. K. SHANGULA
PERMANENT SECRETARY

ANNEXURE A

PERMISSION TO CONDUCT THIS STUDY WAS OBTAINED FROM:

- **National level,** approved by the Permanent Secretary of Ministry of Health and Social Services and its research committee

- **Directorate level,** approved by the Regional Director of Central Health Region

E Lottering 12/4/99

MRS E. LOTTERING **DATE**

- **Regional level,** approved by the Regional Medical Officer of Otjozondjupa Region

M Makame 15/4/99

DR M. MAKAME **DATE**

- ***District level,*** *approved by the Medical Superintendent of Otjiwarongo hospital.*

15/4/99.

DR G. NGWABOSO **DATE**

ANNEXURE B

THE STUDY TIMETABLE

ANNEXURE B

TIMETABLE FOR THE STUDY ON TUBERCULOSIS

SEPTEMBER 1998 - NOVEMBER 2000

	TASK TO BE PERFORMED	RESPONSIBLE PERSON	WHEN
1	Finalise Research Proposal	Principal Investigator (PI)	Sept 98 - Dec 98
2	Get approval from authorities	(PI)	Feb 99 - Apr 99
3	Student registration at UNAM 1st year	(PI)	May 99
4	Training of research assistants (RA) Pretesting of instrument and amendment	(PI) & (RA)	June 99
5	Collection of data: do interviews with patients and health workers	(PI) & (RA)	July 99 - Sept 99
6	Analysing of data by a statistician	Statistician	Nov 99-Jan 2000
7	Student registration at UNAM 2nd year	(PI)	Feb 2000
8	Analysing of finding and prepare of 1st draft	(PI)	March 00 - August 00
9	Submit final report for examination	(PI)	Sept 00 - Nov 00

ANNEXURE B

TIMETABLE FOR THE STUDY ON TUBERCULOSIS

SEPTEMBER 1998 - NOVEMBER 2000

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7	Student registration at UNAM 2nd year	(PI)	Feb 2000
8	Analysing of finding and prepare of 1st draft	(PI)	March 00 - August 00
9	Submit final report for examination	(PI)	Sept 00 - Nov 00

ANNEXURE C

QUESTIONNAIRE FOR TUBERCULOSIS PATIENTS

QUESTIONNAIRE FOR TB PATIENTS (A)

1. Place of residence

   1. Name of the location _____
   2. Name of the farm _____
   3. Name of the plot _____
   4. Other _____

2. Age

   1. 15-24 ☐
   2. 25-44 ☐
   3. 45-54 ☐
   4. 55-64 ☐
   5. 65+ ☐

3. Gender

   1. Male ☐
   2. Female ☐

4. Marital status

   1. Never married ☐
   2. Married ☐
   3. Separated ☐
   4. Divorced ☐
   5. Widow ☐
   6. Other _____

5. Which of the following language are you able to understand and speak to best.

   1. English ☐
   2. Afrikaans ☐
   3. Damara ☐
   4. Oshivambo ☐
   5. Herero ☐
   6. Other _____

6. Educational status

   1. Never been to school ☐
   2. Adult education ☐
   3. Grade 1-3 ☐
   4. Grade 4-7 ☐
   5. Grade 6 ☐
   6. Other _____

7. What are your sources of income (employment)?

1. Unemployment ☐
2. Employed / self employed ☐
3. Pension ☐
4. Parents/husband/wife/family/girlfriend/boyfriend ☐
5. Casual labour ☐
6. Grant ☐
7. Other _____

WE WOULD NOW LIKE TO ASK YOU A FEW QUESTIONS ABOUT YOUR OPINION OF TB

8. Do you know what tuberculosis is

1. Yes ☐
2. No ☐

If yes explain _____

9. The day you sought for medical assistance were your complains among the following signs and symptoms?

1. Cough for more than 3 weeks ☐
2. Loss of weight ☐
3. Loss of appetite ☐
4. Night sweat ☐
5. Chest pain when coughing ☐
6. Difficult with breathing ☐
7. Coughing blood stained sputum ☐
8. Other _____

10. Do you know the meaning of your sputum results being tuberculosis "smear positive"

1. Yes ☐
2. No ☐

If yes explain _____

11. How do you think you got tuberculosis

1. Poor living conditions ☐
2. Being in contact with a TB patient ☐
3. Being witched ☐
4. Don't know ☐
5. Other _____

12. Were you informed how TB is spread

1. Yes ☐
2. No ☐

If yes explain _____

13. Were you informed how to prevent the spread of TB

1. Yes ☐
2. No ☐

If yes explain _____

14. Was your weight taken before you started taking TB treatment

1. Yes ☐
2. No ☐

15. Were you informed the importance of giving the correct sputum?

1. Yes ☐
2. No ☐

16. Were you informed that at the end of your 2nd month on treatment your tablets will change in number?

1. Yes ☐
2. No ☐

17. Do you know how long is your TB Treatment Course?

1. Yes ☐
2. No ☐

If yes, how long (in months) _____

18. Were you informed why your treatment course is long?

1. Yes
2. No

If yes, explain _____

19. How long are you now on TB treatment?

1. 1 week – 4 weeks ☐
2. 1 month – 2 month ☐
3. 2 months – 4 months ☐
4. 4 months – 6 months ☐
5. Do not know ☐

20. Did you ever miss to take your tablets since you started your treatment?

1. Yes ☐
2. No ☐

If yes, explain the reason _____

21. Do you know whom your close contacts are? (To whom can spread the disease)

1. Yes ☐
2. No ☐

If yes, mention them _____

22. Did you ever experience the following treatment side effects?

1. Skin problem ☐
2. Vision problem ☐
3. Hepatitis ☐
4. Dizziness ☐
5. Vomiting after taking the tablets ☐
6. Other _____

23. Were you informed that failure to take your treatment daily could lead to:

1. Failure to get cure
2. Drug resistant that the normal treatment will not work
3. *Complications -infect other, disability, death*

1. *Yes* ☐
2. No ☐

24. *Do you believe that TB is a curable disease*

1. *Yes* ☐
2. *No* ☐

If no, explain _____

24. Do you have any suggestion on how it could be made easier for TB patients to obtain and receive the information about TB?

_____

_____

THANK YOU FOR YOUR TIME ENJOY YOUR DAY

ANNEXURE D

QUESTIONNAIRE FOR HEALTH WORKERS

QUESTIONNAIRE FOR HEALTH WORKERS TREATING TB PATIENTS (B)

1

1. Type of Health facility

   1. Hospital ☐
   2. Clinic ☐
   3. Other _____

2. Gender

   1. Male ☐
   2. Female ☐

3. Designation

   1. Registered Nurse ☐
   2. Enrolled Nurse ☐
   3. Nursing Assistant ☐
   4. PHC-Supervisor ☐
   5. Other (specify) _____

4. Since when have you been working in this health facility/clinic?

   Weeks _____
   Months _____
   Years _____

5. Are you trained in managing TB at District Level?

   Yes ☐
   No ☐

   If yes, which type of training did you received.

   1. Formal course 1 week or more ☐
   2. In-service training ☐
   3. On job training during supervision ☐
   4. Others, explain _____

6. At which months do you take a follow up sputum of a TB patient under treatment?

   .....
   .....

7. Do you use/refer to the National tuberculosis guideline in your day to day activity of TB management

1. Yes ☐
2. No ☐

8. With which drugs do you treat a new smear positive patient with TB?

_____

9. How long should a TB patient (smear positive case) be on treatment? Give reason for the duration.

_____

_____

10. Do you experience any problems in keeping TB patients regularly on treatment.

1. Yes ☐
2. No ☐

If yes, what are the main reasons (you think) patients do not take treatment ?

_____

_____

11. Did you ever give health education to patients?

1. Yes ☐
2. No ☐

If yes, what points about the disease must the TB patient know?

_____

_____

12. How would you explain to the patient what "DOT" means and its importance in TB control ?

DOT means _____

Importance of DOT is _____

_____

13. How would you explain the differences between signs and symptoms of TB?

14. Can you list possible reasons for a treatment failure?

15. Are you familiar with the word Multi-drug resistant TB?

Yes ☐
No ☐
If yes, explain _____

16. Can you list (as much as you can) possible side effects which TB treatment can cause to a TB patient?

17. What procedures do you follow when transferring a patient to another facility

a) to another District/Region _____

b) when a patient travels for some days _____

18. What are the main reasons (you think) that some Nurses are not interested in are neglecting the TB patients?

1. poor knowledge about the disease ☐
2. not aware that defaulting can cause MDR TB ☐

3. it is too much work ☐
4. the DTC is in charge of the TB patients ☐
5. other explain

19. Do you have any further suggestions to improve the way TB information is conveyed to TB patient?

_____

_____

THANK YOU FOR YOUR TIME

ANNEXURE E

MAP OF NAMIBIA SHOWING OTJOZONDJUPA REGION AND OTJIWARONGO REGION

ANNEXURE E

MAP OF NAMIBIA SHOWING OTJOZONDJUPA REGION AND OTJIWARONGO DISTRICT