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**FACTORS CONTRIBUTING TO THE HIGH
DEFAULT RATE OF THE DOTS SYSTEM
IN THE YENDI DISTRICT**



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DECLARATION

I hereby declare that, this is an original work based on my own research and that it has not been submitted towards any other degree.

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DEDICATION

This work is dedicated to the memory of my late beloved father.

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Finally I thank the people of Yendi for their Hospitality and assistance given to me, which made it possible for me to collect my data.

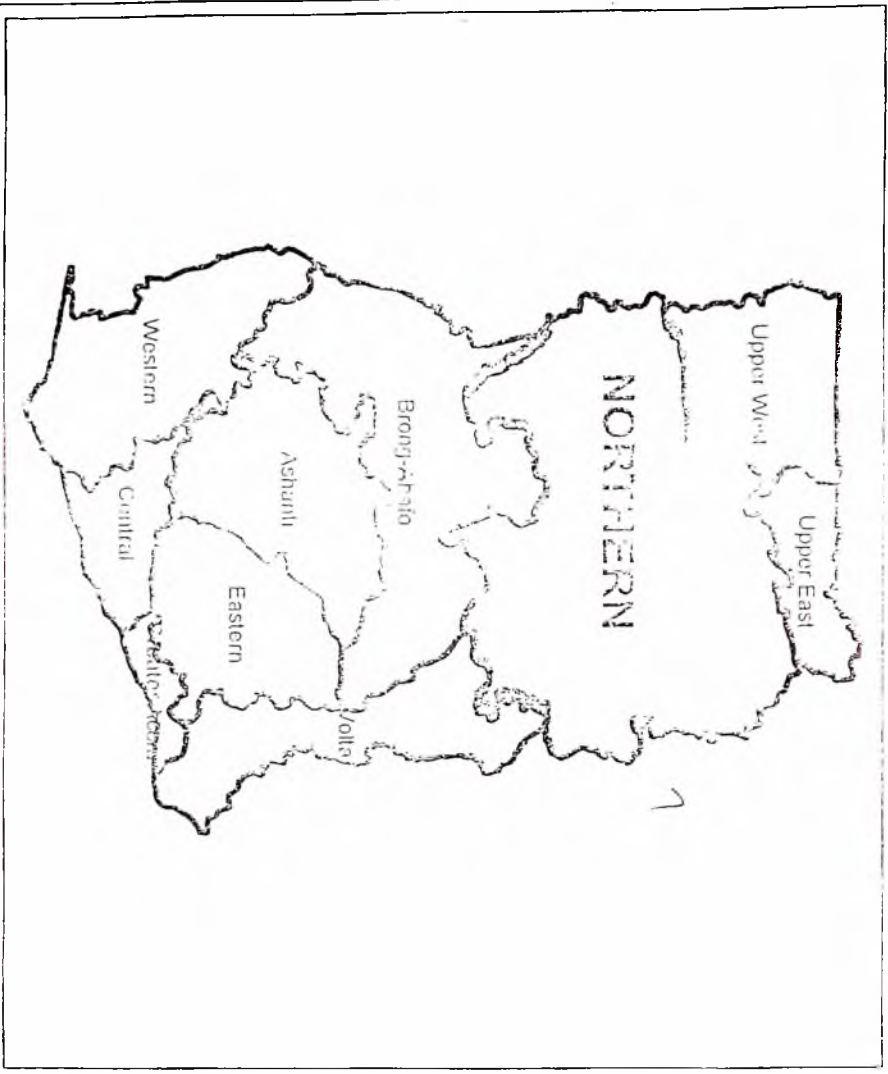
LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
C.I	Confidence Interval
DDHS	District Director of Health Services
DHMT	District Health Medical Team
DOTS	Directly Observed Treatment (Short Course)
FGD	Focus Group Discussions
HIV	Human Immunodeficiency Virus
IEC	Information, Education and Communication
MCH/FP	Maternal Child Health/Family Planning
NGO	Non-Governmental Organisation
NTP	National Tuberculosis Programme
OR	Odds Ratio
RDHS	Regional Director of Health Services
RHA	Regional Health Administration
SMO (PH)	Senior Medical Officer /Public Health
TB	Tuberculosis
WHO	World Health Organisation

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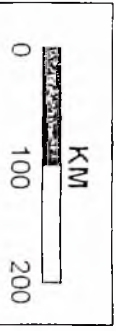
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**MAP1. LOCATION OF THE NORTHERN REG.
RELATIVE TO OTHER REGIONS IN GHANA**

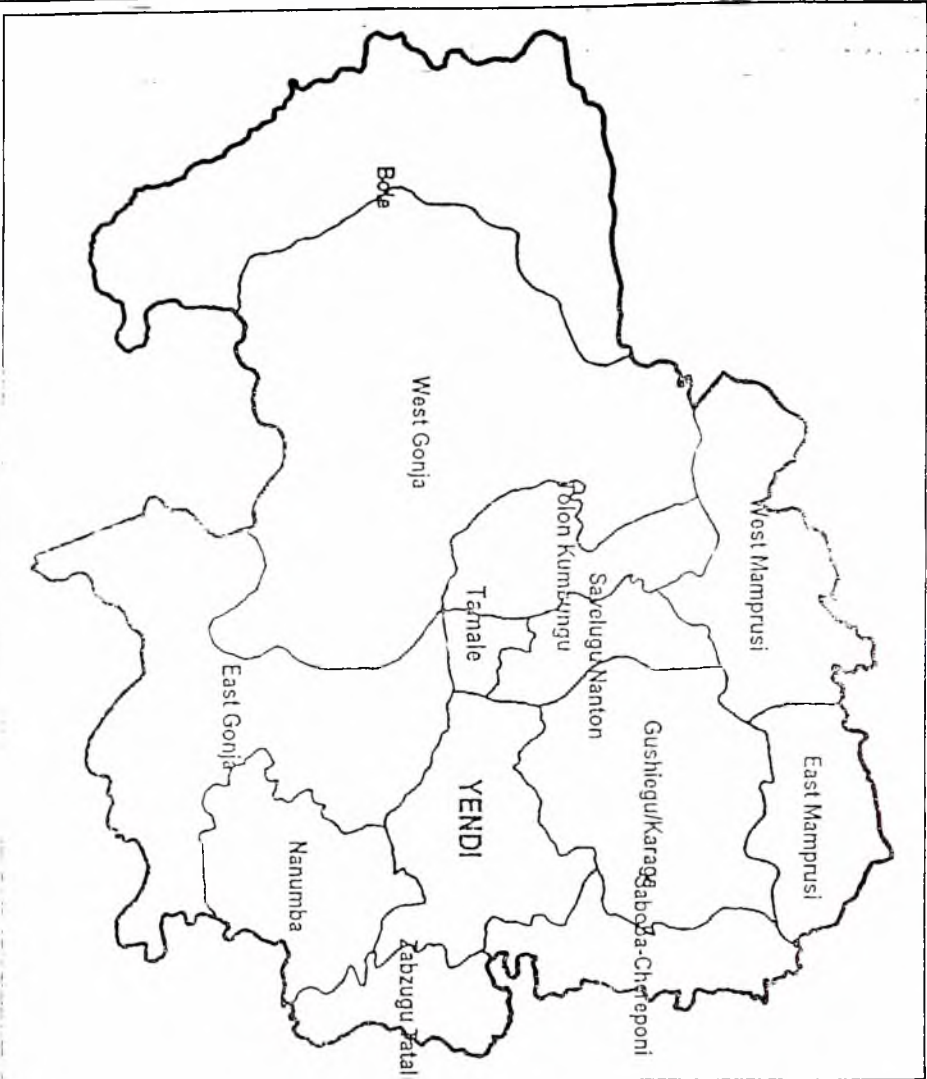


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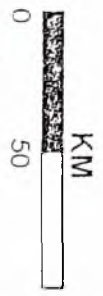
Regions



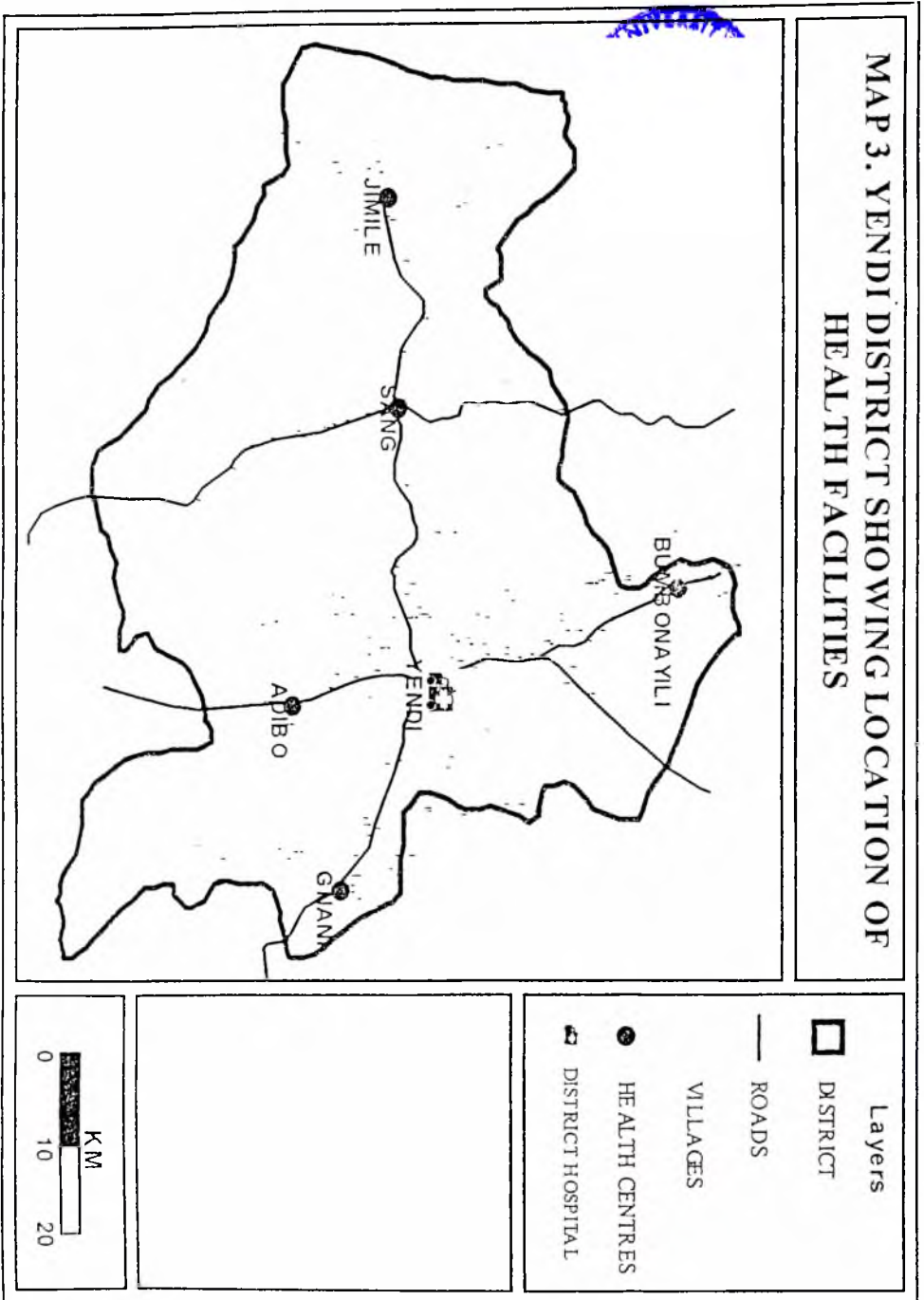
MAP 2. MAP OF NORTHERN REGION OF GHANA SHOWING YENDI DISTRICT RELATIVE TO OTHER DISTRICTS.



- Layers**
- Region
 - Districts



x



ABSTRACT

This study was designed to elicit the factors that contributed to the high default rate of the DOTs system in the Yendi district. Questionnaires were administered to all patients who registered for DOTs in 1998, 1999 and 2000. Focus group discussions were also conducted to explore the underlying factors for the health seeking behaviors of the people. In-depth interviews were conducted with service providers so as to elicit the service related factors of default alongside the patient related factors of default.

Case control study done for these patients showed vividly that lack of knowledge, long distances between home and clinic, poor family support, adverse effects of anti-TB drugs, long duration of treatment, Geographical inaccessibility and poor attitude of service providers were the contributing factors to default.

In – depth interviews done elicited poor managerial control of drugs distribution and poor attitude of service providers as contributing factors of default. Focus group discussions done showed that lack of knowledge was the main factor contributing to default in the communities. Results of the study call for a more holistic and better managerial approach towards the DOTs system.

There is the need for the DHMT to undertake major IEC campaign to create awareness and reduce the myths and misconceptions that people have about TB in the general population. Schools, Churches, Mosques and open durbars may be good places to start educational campaigns in the district.

The local dagbani name for Tuberculosis is itself a misconception to the true meaning of Tuberculosis and educational campaigns must also be geared towards this direction.

1.0 INTRODUCTION

1.1 Background Information

Tuberculosis is a contagious bacterial disease caused by Mycobacterium tuberculosis. Tuberculosis is spread through the air. The main source of infection is a person with TB of the lungs who coughs, sneezes, or spits and spreads droplets containing the bacteria into the air. Robert Koch discovered the TB bacilli in 1882.

Once infected with M. tuberculosis, a person stays infected for many years. Any weakening of the immune system for example by malnutrition or HIV infection increases the chances for the disease to develop. Today HIV is the most powerful factor known to increase the risk of progression from TB infection to disease. Other conditions like pneumoconiosis, uncontrolled diabetes mellitus and post gastrectomy state may increase the risk of progression into established tuberculosis. Poverty and tuberculosis are also related, and it's thus noticeable that many poor developing countries have very high prevalence of Tuberculosis.

Left untreated or partially treated, a person with TB will infect an average of 10-15 persons in a year. Proper treatment makes them quickly non-infectious so that they can no longer spread TB to others. Because effective treatment breaks the cycle of transmission, cure is the best solution. This is even more important because of the emergence of drug-resistant TB. Drug – resistant TB is a human made phenomenon caused by inconsistent or partial treatment, when TB bacilli become resistant to the common anti-TB drugs.

Mummies evacuated from the pyramids in Egypt have shown evidence of tuberculosis, and there is thus little doubt that tuberculosis was widely prevalent in ancient times. Early public health data indicate that as many as one quarter of all deaths in Europe in the mid 19th century may have been due to tuberculosis.

1.1.1 Global burden of TB

About one-third of the world's population is infected with M.tuberculosis. Currently there are about 9 million new cases of TB and 2.5 million deaths worldwide. TB kills more youth and adults in the world today than any other single infectious disease. The developing world is the most infected. It has 90% of all TB cases and 95% of TB deaths. 75% of TB cases in developing countries are among those in their most economically productive years. (Khan J, 1997)

1.1.2 National burden of TB

Tuberculosis is still a big public health problem in Ghana. The national Estimated point prevalent is 0.2% ie 200/100,000. It's estimated that each year there are over 30,000 new cases and 15,000 deaths. In Ghana over half of the adult population is infected with the TB bacilli.

1.1.3

The DOTs (Directly Observed Treatment, short course)

This is the most effective strategy available for controlling the TB epidemic today. DOTs has five key elements. (Bonsu et al, 1999)

- Case finding through sputum-smear microscopy
- Standardized short course chemotherapy administered under direct observation
- Regular drug supply
- Rigorous supervision
- Political commitment to TB control

Among its key principles are the following :

- Passive case finding
- Directly observed therapy in the initial phase, for at least all smear-positive cases

- Accountability for all patients registered and the declaration of treatment outcomes.

Dots was officially launched in Ghana in 1994. Under this system drugs and laboratory services are free. Generally it aims at finding and curing as many TB patients as possible, reducing the incidence until it's no longer a major public health problem. Specifically it aims to achieve a case detection rate of 55%, cure rate of 85% and reduce the default rate to 10%.

(Bonsu et al,1999)

1.2 Study Area

The study area is the Yendi District. Its one of the 13 districts in the Northern Region of Ghana. It has six (6) sub districts, three hundred and fifty three (353) communities and a population of 133,415. The land area is 5,350sq.km with a population density of 26.4 persons per sq.km. It has an estimated growth rate of 4 percent. Yendi District is bounded by Gushiegn/Karaga district in the North, Bimbilla/Nanumba and East Gonja Districts in the south, Saboba/Chereponi District in the east and Tamale Municipality and Savelugu / Nanton District in the west.

The District capital is Yendi and it has a population of about 70%. The Yendi town qualifies as an urban center. The Yendi town and few of the villages are connected to the national electricity grid. The main ethnic groups are the Dagombas and the Kokombas.

Table 1.1 Sub-District Populations, Yendi District

Sub-district	Population	EPI Target (4%)	NID Target (20%)	WIFA (20%)
Adibo	16009	640	3202	3202
Bunbon	14675	587	2935	2935
Jimle	8005	320	1601	1601
Ngani	9339	374	1868	1868
Sang	20015	801	4003	4003
Yendi	65372	2615	13074	13074
Dist. Total	133415	5337	26683	26683

1.2.1 Economic Activities

The main economic activity is agriculture. The main crops grown are Yams, maize, guinea corn, millet, rice groundnuts and bambara beans. Some of the produce are used domestically as food while some are sold for income generation. Other important cash crops are shea nut and cotton. The main sources of livestock breeding are Cattle, sheep, goats and guinea fowls. There are also local industries like smog weaving, blacksmithing and shea butter preparation. Commercial activities are petty trading.

1.2.2 Transport and Communication

Transportation in the district is mainly by road, and with the exception of the Tamale-Yendi road (100km) which is about 46km tarred, all roads in the district and out of the district are not tarred. The types of transports are bicycles, motorbikes, cars and public (passenger) lorries.

During the wet season most communities become inaccessible by road. Motorbikes and 4 – wheel drives become the best option. Although occasionally some of these transports get stuck. There are no taxis available.

Types of roads in the districts :

Major roads	57km
Secondary roads	146km
Feeder roads	183km
Total	<u>386km</u>

There is a post office where phone calls can be made from pay-phone Booths or booked with the operator. There are three (3) communication centers in town and a few people in town as well as some of the government departments (including the District Health Administration and the hospital) now have their own direct telephone lines. Within the district, communication between sub districts is by hand, public address systems and messages sent verbally and through town criers (with the permission from the chiefs and opinion leaders).

1.2.3 Education

The population is predominantly illiterate with a district literacy rate of 15% for both sexes (Yendi District Assembly, 2000). Educational institution include twenty – four (24) pre-schools, ninety – three (93) primary, sixteen (16) Junior secondary and two (2) Senior secondary schools and one vocational/ Technical school (District Action Plan, 2000).

Out of a total of 588 teachers in the pre-school, primary and junior secondary schools, 271 are trained teachers and 317 are untrained.

Adult literacy classes are also organized.

1.2.4 Health Facilities and Staff Situation

Only a small proportion of the population is within easy reach of the few health institutions in the district. The district has a Government hospital. (District hospital) and two private clinics situated in the Yendi town, as well as five (5) health centers distributed in the district. There is also an MCH/FP clinic in Yendi town.

Table 1.2 Staffs per Sub-District as at June 2001

Sub Dist.	Yendi	Adibo	Sang	Ngani	Jimle	Bunbonayili	Yendi Hosp.	Dist. Admin.	Total
Number	12	4	4	4	2	3	150	12	191

1.2.5 Climate

There are two main seasons, wet and dry. The district experiences wet season between May – October and dry season between December – March, which is characterized by dusty harmattan winds and water shortages in most of the rural areas.

1.2.6 Development Plans

The district has drawn up a five-year health development plan. This covers the following areas :

- Human Resource Development
- Improvement in quality care
- Completion of health centers

- Community Participation
- Increased Service delivery
- Management information system improvement

1.2.7 Major Disease Problems

Diseases that are endemic in the district include Malaria, diarrhoea Diseases, Guinea worm disease and Tuberculosis.

1.3 Rationale of the Study

Tuberculosis kills more youth and adults than any other single Infectious agent in the world and it is estimated that globally there are about 9 million cases of TB with 2.3 million deaths. Tuberculosis accounts for more than a third of all deaths from AIDS related opportunistic infections.

Tuberculosis is responsible for 26 percent of all avoidable adult deaths in the developing world. It's a contagious disease and a TB patient not undergoing treatment may infect 10-15 persons in a year. It's one of the top 4 (four) priority diseases in Ghana and the point prevalence is 0.2% ie 200 per 100,000.

It's estimated that in Ghana annually there are 30,000 cases of TB with 15,000 deaths.

The DOTs programme in the Yendi district has witnessed a high default rate of above 60% (the national default rate must not be greater than 10%). High default rate leads to multiple drug resistance and therefore hampers the control of TB and thus increase the morbidity and mortality rates. The DHMT identified TB as a problem and wanted to determine the factors that contributed to high default and recommend the measures needed to reduce the default rate to 10% or less.

1.4 Statement of the Problem

By 1997, the anti – TB programme in the Yendi district was poorly defined. Staff were ill equipped to manage TB patients. The supply of anti-TB drugs was irregular and unreliable . Sometimes, patients had to buy their own drugs. There was poor monitoring of TB patients. Diagnostic procedures and treatment outcomes were ill defined. In 1997, In-service trainings were held at the Yendi hospital with the aim of equipping the district with the necessary manpower resources to foster the implementation of the DOTs. DOTs officially took off in the Yendi district in 1998. The National targets were set and the district was to comply with the targets. These were, cure rate of at least 85%, case finding of at least 55% and a default rate of 10% or less . A chest ward for TB patients was then created and a district TB co-ordinator in the person of Mr Naantomah was tasked to be in charge of the TB programme.

Despite the availability of free drugs and laboratory services under the DOTs, 3 (three) years after implementing DOTs, the default rate in the district is 60%. What could have gone wrong ? .

Hitherto, no formal research had been done in the district, as to eliciting the factors responsible for this rather high default.

The District health medical team was not enthused about this rather high default rate, hence the need to elicit the factors that contribute to the high default rate.

1.5 Study Objectives

1. General Objectives

To elicit the factors of default or compliance of the DOTs system

1.1 Specific Objectives

- a. To determine the patient related factors of default
- b. To determine the service related factors of default
- c. To elicit the knowledge, attitude and perceptions of TB in the District.



2. Literature Review

In Tanzania in the 1970's Dr Karel Styblo of the International Union against TB and Lung Disease pioneered the development of a model of TB control, based on a managerial approach to case finding, follow-up and treatment. That was the development of DOTs. An effective DOTs system was not only to increase the case detection rate and cure rates but to reduce the default rate and thus increase the compliance to the anti-TB treatment. This will ultimately reduce the burden of the disease, and thus significantly reduce its public health importance. The DOTs is a simple cost effective and reliable method. Under the DOTs system case finding and diagnosis are well defined and reliable. Outcome information is well defined.

(Rodriguez R,1996)

By this period it had become palpably clear that the use of TB control strategies like chemoprophylaxis, ventilation systems and ultraviolet lights could not significantly reduce the numbers of persons who get infected or died from TB. Earlier anti - TB regimes which lasted for 18 months and over had led to very high default rates with the attendant multiple drug resistance. Left untreated or partially treated a TB patient may infect 10-15 persons in a year. (Bonsu et al,1999)

In 1993, WHO's Global Tuberculosis programme took an unprecedented step and declared TB a Global emergency. After defining the nature and size of the Global TB problem through expanded monitoring and surveillance, the Global Tuberculosis programme began promoting Styblo's strategy in a technical and management package called directly observed treatment, Short course (DOTs).

Given the high managerial quality of DOTs strategy, high default rates with its attendant multiple drug resistance and hence low cure rate, have generated many questions in the scientific world.

A study of the knowledge, attitudes and perceptions of Blacks and Asians in Missouri and Kansas cities in the U.S.A between 1994 and 1995 found knowledge deficits in etiology, transmission and treatment of Tuberculosis. These deficits were shown in the study to have an effect not only on the health seeking behaviour of the subjects but also the default rate (Mariant et al, 1998).

A study was conducted in Botswana to elicit the health seeking behaviour of TB patients, their beliefs and attitudes with regards to TB in 1993/94. It was found out that some patients believed in the "traditional cause" of TB. Whilst other patients believed in the "modern theory" of TB ie. Tuberculosis spreads by inhalation of infectious droplets containing the TB bacilli. It was observed that about 80% of defaulters were patients who believed in the "traditional cause" of Tuberculosis, whilst 20% of defaulters were patients who believed in the modern theory of TB (Sten and Mazonde, 1998).

Another study in Cali, Columbia showed that the cultural based explanation patients attributed to the symptoms of TB, the stigma attached to TB and the poor quality of health care services were not only strong barriers to early diagnosis but accounted for the main reason for default (Jaramillo, 1998).

Nunn and Linkini (1999) also cite poor attitude of service providers to TB patients as an important cause of default. They also report that the long duration of treatment may discourage any patient from completion of the course regardless of education, income or gender. In other studies Nunn and Linkins found out that factors like stigma, cost associated with travelling, long distance were serious barriers to adherence and compliance. Van der Werf et al (1991) working with data from Agogo Hospital found out that male patients had significantly higher default rates than female patients.

They also found out that longer home to clinic distances were significantly associated with higher default rates though they did not state whether this was associated with financial difficulties. Van der Werf and others however found out that financial barriers were reported by almost all defaulting patients, however they did not state what percentage of non-defaulters had financial barriers.

In 1995, a survey of the evaluation of TB treatment in TB clinics in Japan by the Ryoken National TB Research Unit revealed that young patients below 40 years had a greater likelihood of defaulting than older patients above 40 years.

In a study conducted in Bombay – India, it was found out that about equal numbers of male and female respondents stated that TB was caused by Germs. Men worried about loss of wages, financial difficulties, poor job performance and consequences of long absence from work while women were concerned about rejection by husbands, harassment by in-laws, and the reduced chances of marriage (for single women). Married women tried unsuccessfully to hide their disease condition for fear of desertion and rejection. These reasons contributed to a reduction in case detection or increased rate of default. (Catalani E,1997)

Varkevisser et al (1995) grouped factors which contributed to high default rate into three categories :

- Socio – cultural factors
- Service related factors
- Disease – related factors

For socio-cultural factors, issues enumerated were poor community knowledge of causes, signs and consequences of contracting Tuberculosis, poor patient understanding of treatment requirements, low level of education, inadequate social support from relatives, inadequate understanding and support from employers and availability of other types of treatments for TB patients in the community.

For service related factors, issues that came into play were inappropriate guidelines, insufficient supervision, insufficient training, poor reception, unsuitable treatment regime, inconvenient opening hours, long waiting times, low accessibility of services, inadequate counseling, irregular supply of drugs.

For disease – related factors, conditions like the seriousness of the patient's condition at onset of treatment and physical response to the treatment were but some of the reasons for default.

The increasing morbidity and mortality associated with TB in developed and developing countries have been blamed on neglect of the human dimension of TB control. Poor utilization of available tuberculosis control programme has been attributed among other factors, to poor compliance, which is a behavioral parameter. This has led to the emergence of multiple drug resistant TB. Amongst the methods of promoting compliance is DOTs. Records of the socio-demographic characteristics, treatment categories, complications of TB, results of investigations, level of compliance and treatment outcome for all the patients were analyzed, and the only factor that influenced the rate of compliance was proximity to the clinic (Erhabor et al, 1996)

The study of the determinants of non-adherence to anti – TB treatment is quite complex and there is the need to use all available methods and its recommended that quantitative and qualitative methods be exploited to the optimum (Judy, 1998). In an analysis of TB default rate in South Korea, it was realized that the default rate was higher in the rural areas than in the urban areas. It was noticed that patient’s delay for the beginning of treatment was also longer in the rural areas. Mori and others (1998) suggested the establishment of more TB centers in the rural areas and also suggested the inclusion of the private health sectors in the management of TB.

The National Tuberculosis programme is implementing DOTs successfully in hard to reach population in Nepal. Three groups of factors characterize these populations : socio-cultural factors like migration, poverty and language, environmental factors like geography and climate; political factors like prisoners and refugees populations. These features pose particular problems for implementing DOTs, socio –cultural and environmental factors are particularly important in Nepal and several responses have been developed to overcome these difficulties. These include establishment of DOTs committees and incorporating representatives from the local community, NGOs, intellectuals, opinion leaders, and village health workers. The primary objective of TB control in hard to reach populations is unchanged , achieve and sustain a high cure rate of 85% in patients with infectious TB, low rate of default below 10%. This has been achieved (Bam et al ,1995)

In a cross – sectional survey of TB patients in Ho Chi Minn city, Vietnam , 50% of these patients opted for TB treatment at the private clinic. If private clinics are well equipped logistically and staffs well trained, then case finding will be increased whilst default rate will be significantly reduced (Lonnroth et al,1996)

However, a study of the compliance of TB patients to anti-TB regime in Bolivia revealed a higher default rate of TB patients undertaking treatment in Private Clinics than in Government Health centers. A survey of prescribing patterns for TB patients amongst private physicians in the city of Santa Cruz, Bolivia revealed that a significant number of physicians in Private practice, and specifically 70% of private physicians did not adhere to the standard norms for prescribing anti-TB drugs (Olle – Goig et al,1998)

In a survey in the Republic of Macedonia, it was noticed that the low level of knowledge of TB was due to the low level of education and absence of information in the mass media. Knowledge deficit in etiology, transmission, signs and symptoms of TB, contributes immensely to default (Trajceuska et al,1995)

In a remote part of East Kalimantan, one of the outlying islands of Indonesia, the deployment of DOTs is proving to be the main strength of the national TB control programme in the area. The DOTs programme is being implemented as a Joint effort by an NGO, the Government and WHO. In an area of scant resources, the programme utilizes a community outreach approach. Volunteer cadres from the villages are trained in case detection and as treatment supervisors. Before DOTs was introduced, medical staff at the health centers had virtually given up treatment of TB patients and follow up of TB patients, as majority of patients dropped out after 2 months of treatment. With DOTs, the previously experienced 85% default rate has dropped to an average of 5%. Besides creating awareness at the community level. DOTs is setting the inspiring example that TB control is even possible in remote areas. The programme also serves as practical illustration of how a private organization, the Government and an International AID Agency can successfully work together and through the combination of resources make what was thought to be an impossibility a living reality (Bua et al,1996)

The increasing numbers of clinical tuberculosis in Uganda, mainly due to the human Immune deficiency Virus(HIV) epidemic, means that its no longer possible to hospitalize all TB patients, and the feasibility of ambulatory TB treatment needs to be assessed. A successful ambulatory TB treatment programme has been implemented in the Rakai district, Uganda. An annual cohort analysis for the period 1992-1996 showed that high completion rates were achieved. Of a total of 1659 TB patients, 92% completed treatment. The data reported over the 5 year period showed that high completion rates could be achieved in routine programme conditions and in a rural setting of a poor country like Uganda. The completion rates are considerably higher than the neighboring district of Mbarara, which has facilities for the initial hospitalization of almost all TB patients. (Nuwaha F,1997)

The completion rates for Rakai district are comparable to those achieved in Zululand, South Africa, despite the superior resources and infrastructure. Several reasons may be advanced to explain these high completion rates in the Rakai district. First the use of a single health facility for both the intensive and continuation phases of treatment is instrumental. Patients are more likely to default, if they are compelled to change their treatment centers especially after the intensive phase. Establishing good rapport between patients and health providers, augurs well for compliance. In the Rakai district the good attitude of service providers is a contributing factor to the high compliance rate. Also providing treatment near the patient's home has a beneficial effect, and that is what prevails in the Rakai district. Hospitalization places a significant strain on family life, particularly if the patient is a bread winner, and that's why in the Rakai district unless the patient is seriously ill, ambulatory treatment of TB patients is more widely practiced. Frequent training of the staffs at the peripheral health units and with regular supervision by the Tuberculosis Unit has also contributed to the high compliance. Finally the introduction of short course chemotherapy could have been responsible for the progressive high compliance over the years.

A TB control programme was evaluated in rural Haiti. A retrospective analysis of the clinical records of adult patients with TB at the Albert Schweitzer Hospital in Haiti from 1994-1995. There were 143 patients in the Non-DOTS group and 138 patients in the DOTS group.

The outcomes of treatment were significantly different : in the Non-Dots group 29% defaulted, 12% died and 58% had a successful outcome, in the DOTs group 7% defaulted, 4% died and 87% had a successful outcome. The conclusion drawn was that DOTs if well implemented can achieve good results, even in the area of extreme poverty (Olle-Goig et al,1998)

In a study carried out in 1996 in four districts representing South and North as well as rural and urban areas of Vietnam with the aim of exploring gender differences in knowledge, beliefs and attitudes towards TB and its treatment, it was found out that insufficient knowledge and individual cost during treatment were reported as main obstacles to compliance among men while sensitivity to interaction with health staff and stigma and society were reported as main obstacles among women (Johannson et al, 1995)

Non-adherence to treatment among persons will result in increased transmission rates of mycobacterium tuberculosis, multiple drug resistance, increased morbidity and increased costs to TB control programmes. Public health programmes thus have a responsibility to ensure adherence in their potentially infectious patients. In the last decade DOTs has been shown to increase patient adherence and decrease drug resistance and transmission of TB in the community. DOTs may not be sufficient however to ensure adherence in some patients with substance abuse, housing, legal or other social problems which are common among TB patients. In 2000 a study was done in Atlanta, Georgia – USA and the objective was to determine whether incentives increase adherence to DOTs or not. In this study the TB program gave a five-dollar grocery coupon for each DOTs appointment. Treatment completion rates were compared with a control group of TB patients who were also eligible for incentives but did not receive them.

55 patients were enrolled in the incentive group whilst 52 patients were enrolled in the control group. Patients who received incentives were more likely to have completed therapy within 32 weeks (OR 5,73, 95% C.I 2,25 – 14,84) and within 52 weeks (OR 7,29, 95% C.I 2,45 – 22,73) than the control group. A strong association was thus established between patient incentives and increased adherence (Bock et al, 2000).

According to Dr Jude Dick, in 1995 the National Research Programme in South Africa developed a health education booklet with the objective of enhancing adherence to TB treatment. Hitherto, two community-based surveys were conducted in the Western Cape Region of South Africa to elicit the knowledge, attitude and perceptions about TB. One survey was implemented among unemployed colored women in Ravensmead, Cape Town. The women interviewed showed a very good knowledge of TB. 97% knew it was a disease that affected the chest. 85% considered it infectious and 88% knew that the local clinic provided treatment.

The knowledge regarding the symptoms associated with the disease was good, and 16% of the sample indicated a reluctance to associate with people suffering from TB owing to a fear of infection.

A similar study was conducted among women attendants of a black TB clinic in Cape Town. The research findings indicated that they were less knowledgeable about the disease and its treatment, than the Ravensmead respondents. Both studies verified that misconceptions regarding transmission may lead to the social ostracism of TB patients. Despite the fact that the respondents in the first study exhibited a good knowledge of the disease, this knowledge did not necessarily result in appropriate health behaviour. In the event of developing symptoms of the disease, individuals either did not seek medical care or failed to adhere to treatment.

In another survey, by Dr Jude Dick in 1997 focus group discussions held with TB patients, revealed that most TB patients expressed concern about the reaction of their peers to the diagnosis of TB. Participants appeared to associate TB with poverty, overcrowding and malnutrition. Substance abuse was considered a contributory factor to the pathogenesis of the disease. Patients appeared to be ashamed of their condition. This level of stigma was compounded by the perceived blasé manner in which health professionals informed TB patients of their condition. The long duration of TB treatment seemed to have had a great toll on patients. Participants illustrated that the duration of treatment impacted negatively on their duties to care for children and provide income for the family.

These feelings contributed to the temptation to cease therapy once their symptoms had abated. Supervised treatment was even interpreted by some patients as lack of trust. Many patients described feelings of depression, anger and apathy associated with the disease process. The participants identified the need to find a support system, in terms of someone to talk to, to whom they could relate the practical and emotional concern. Many verbalized feelings of rejection by family and members of the society. If these attitudes and perceptions about TB are not well addressed, then adherence to the TB regime will be compromised. Previous research on TB and health education has focused on the level of knowledge about the diseases and little work has been conducted on the beliefs and lay explanations associated with TB. Behavior towards treatment is embedded in an intricate web of both social and psychological factors. These factors may need to be addressed in patients requiring long-term treatment. For better adherence to anti – TB regime health education programmes must also focus on patients' feeling about their condition.

In a study carried out in the district of Quang Ninh province in North Vietnam to elicit the attitudes of staffs and patients to TB and compliance with treatment, it was found out that compliance was a complex issue, which was influenced not only by socio-cultural and economic factors but also by the attitudes of staff and patients to TB and the overall quality of TB care, necessitating therefore an understanding of these factors in order to plan successful TB control strategies. Non-compliance with TB treatment has many negative strategies, not only for the individual patients and their families, but also for society, in the form of drug resistance. The factors that encourage non-compliance are the fear of injections, detention at the hospital for months, financial constraints and the need to support the family, long distance to the hospital, lack of free food for in-patients resulting in difficulties in remaining hospitalized, fatigue from taking medicines, poor family support, social stigma, lack of drugs, adverse effects of some of the anti - TB drugs. Another important factor worth evaluating is the discrepancy between national recommendations and the reality of TB control in the district which can be explained by non-observance of programme guidelines by local staff, insufficient training of staff, ineffective supervision and monitoring from the provincial level and lack of collaboration between provincial, district and commune levels (Johansson et al,1996).

A randomised educational counselling trail in Pakistan was set up to test the hypothesis that intensive counselling by social and health workers, increased patient's awareness about the disease and increased adherence. Patients assigned to the intervention group received counselling each time they came to the OPD for a control visit or weekly in the TB ward, while patients assigned to the control group received standard care. Overall, counselled patients had a lower risk of defaulting and the conclusion was that social counselling was an effective approach to enhance treatment adherence (Liefoghe et al, 1998).

3.0 Methods / Design

Collection of relevant data was done with the help of structured Questionnaires, in-depth interviews and focus group discussions. It entailed qualitative and quantitative methods.

3.1 Design of the Study

The study was Case-Control. Alongside focus group discussions (FGD) and in-depth interviews were done to support the findings from the case control.

3.2 Sample Sum total of TB patients who registered for the DOTs in the Yendi District in 1998, 1999 and 2000 (TB register) = 165.

3.3 Variables

a. Dependant variable

Default of the DOTs

b. Independent Variables

Family support

Educational level of patient

Social perceptions of TB

Knowledge of patients about TB

Duration of treatment

Financial status of patient

Attitude of service providers

Adverse effects from anti-TB drugs

Geographical accessibility

Complacency, especially after the intensive phase of the DOTs

3.4 Data Collection Tools

Structured questionnaires

In-depth interviews

Focus group discussions

3.5 Data Collection Techniques

Structured questionnaires were administered to all TB patients who registered from DOTs in the Yendi district in 1998, 1999 and 2000.

Defaulters were defined as cases.

Non – defaulters were defined as controls

Total number of patients who registered for the DOTs = 165. (NTP Register-Yendi district)

Number of male patients = 85, Number of female patients = 80

Number of defaulters (cases) = 99 = 60%

Number of non-defaulters (controls) = 66 = 40%

Number of patients located during the field visit = 140.

Number of patients who were not located or traced = 25, out of which 10 had died and 15 had traveled outside the district.

% of non – respondents = 15, 6%

For the 10 dead patients – all were defaulters

For the 15 patients who had traveled outside the district, 11 were defaulters and 4 were non-defaulters.

In Summary :

21 defaulters – Not located

4 non-defaulters – Not located

Therefore :

$99 - 21 = 78$ defaulters were located and administered with the questionnaires.

$66 - 4 = 62$ non – defaulters were located and administered with the questionnaires.

6 of the patients had primary level of education, whilst the rest had no formal education.

Gender distribution of patients administered with the questionnaires were 74 males and 66 females.

For the In-depth interviews, to facilitate the easy collection of data an interview guide was used. The key informants were service providers like the District Director of Health Services (DDHS), District TB coordinator, Medical Superintendent, Nurses at the Chest Wards, Pharmacist, Laboratory Technician, SMO/PH – Regional Health Administration (RHA), Regional TB Coordinator.

Alongside data was collected from opinion leaders like the assemblyman, headmaster, chief linguist, traditional healers, and from the chemists.

By way of simple random sampling, FGD participants were chosen from 2 of the 6 subdistricts – Yendi and Bunbon subdistricts.

For the focus group discussions, a guide was also used to collect the data. At the Yendi sub district, discussions were held with ten (10) males which included 8 farmers and 2 traditional healers. 8 of the participants had no formal education whilst 2 (two) had secondary level of education. The ages of the participants were between 32 – 70 years.

At the Bunbon subdistrict, a guide was also used. There were 10 participants and they were all women. There was 1 traditional healer and soothsayer, 2 housewives, 6 farmers and 1 trader, 8 of them had no formal education whilst 2 had primary level of education. The ages of the participants were between 30 – 65 years. In all cases, a tape recorder was used to record the interview and a note taker wrote the notes.

3.6 Training and Pre - Testing

A two-day training programme was conducted for four persons with previous experience in data collection. The training entailed formal talks on quantitative and qualitative research. Formal talks on the administration of questionnaire were emphasized. At the training the questionnaire was translated into dagbani and kokomba. The author and data collectors thoroughly went through this, so as to ensure that the questions that were asked in dagbani and kokomba carried the same interpretation as in English.

Pre-testing was done the first day at the chest ward – Yendi Government Hospital

3.7 Quality Control

The author verified 10% of the interviews by going back to administer the questionnaires.

3.8 Field Auditing

The author edited transcripts of the FGD and In-depth interviews.

3.9 Ethical Clearance

Permission was sought from the Regional Director of Health Services (RDHS), District Chief Executive and the District Co-coordinating Director. Respondent were told about the purpose of the interview and their consent was sought before the interview was conducted.

3.10 Data Processing and Analysis

Quantitative data was processed and analyzed using EPI 6 software and minitab statistical software.

3.11 Limitations

Yendi district has a very large surface area and coupled with the heavy rains during the data collection period, accessibility of TB patients was difficult. Also the addresses of some of the patients didn't correspond with their places of abode, making the location of patients difficult.

In some of the communities dialects other than dagbani or kokomba are spoken and this was a constraint. 15.6% of the TB patients could not be located which may introduce some bias. The sample size was also small.

4. **Study Results (Findings)**

4.1 Structured questionnaires were administered to the TB patients.

Case control studies were done, and stratified analysis matching by age for less than 40 years and for more than 40 years, was done making use of the variables to establish the association.

Defaulters (cases) – 78

Non – defaulters (controls) – 62

For TB patients less than 40 (< 40)

Defaulters (cases) = 38

Non – defaulters (controls) = 32

For TB patients more than 40 years (> 40)

Defaulters (cases) = 40

Non – defaulters (controls) = 30

Data processing and analysis of quantitative data was done using EPI 6 software and minitab statistical software.

Table 4 . 1.1 Geographical accessibility

Long distance – more than 8km from the Yendi Govt. Hospital

Short distance – less than 8km from the Yendi Govt. Hospital

a) For all TB patients

	Cases/defaulters)	Controls (Non-defaulters)	
Long Distance	57	19	Crude O.R =6.143
Short Distance	21	43	P Value =0.001 Chi -square=11.741

The odds of defaulting is 6.143 times higher among TB patients whose homes are far away from the hospital (>8km) than those whose homes are less than 8km from the hospital.

The association is statistically significant.

b. TB Patients <40years

	Cases / defaulters	Controls (Non-defaulters)	
Long Distance	28	11	O.R = 5.345
Short Distance	10	20	P Value =0.001 Chi - square=10.879

The odds of defaulting is 5.345 times higher among TB patients whose homes are more than 8km from the hospital.

c) TB Patients >40years

	Case (defaulters)	Controls(non-defaulters)	
Long Distance	29	8	O.R =7.250
Short Distance	11	22	P Value =0.000 Chi-square =14.452

The odds of defaulting is 7.25 times higher among TB patients whose homes are more than 8km from the hospital, than those whose homes are less than 8km from the hospital.

The association is statistically significant.

Table 4.1.2 Finance

a. For all TB patients

	Cases (defaulters)	Controls (Non-defaulters)	
Lack of Finance	53	21	Crude OR=4.139 P Value=0.000 Chi-square =16.098
Adequate Finance	25	41	

The odds of defaulting is 4.139 times higher among TB patients who lack finance than among TB patients who have adequate finance. The association is statistically significant

b. TB Patients < 40years

	Cases (defaulters)	Controls (Non-defaulters)	
Lack of Finance	28	12	OR =4.667 P Value =0.002 Chi-square=9.287
Adequate Finance	10	20	

The odds of defaulting is 4.667 times higher among TB patients who lack finance than among TB patients who have adequate finance.

The association is statistically significant.

c) TB Patients > 40 years

	Cases (defaulters)	Control (non-defaulters)	
Lack of Finance	25	9	OR =3.889
Adequate Finance	15	21	P Value =0.007 Chi-square=7.249

The odds of defaulting is 3.899 times higher among TB patients who lack finance than among TB patients who have adequate finance. The association is statistically significant.

Table 4.1.3 Knowledge of TB Based on patient's knowledge of the etiology, signs and symptoms of TB .

a. For all TB patients

	Cases (defaulters)	Controls (Non-defaulters)	
Lack of knowledge	61	21	Crude O.R=8.714 P Value=0.000
Adequate knowledge	17	51	Chi-square=36,370

The odds of defaulting is 8.714 times higher among TB patients who lack knowledge of TB than among those who have adequate knowledge. The association is statistically significant.

b. TB Patients < 40 years

	Cases (defaulters)	Controls (Non-defaulters)	
Lack of knowledge	30	12	OR =6.250
Adequate knowledge	8	20	P Value =0.000 Chi-square=12,434

The odds of defaulting is 6.25 times higher among TB patients who lack knowledge of TB than among those who have adequate knowledge. The association is statistically significant.

c) TB Patients > 40 years

	Cases(defaulters)	Control (non-defaulters)	
Lack of knowledge	31	9	OR =8.037 P Value=0.000 Chi-square =24.200
Adequate knowledge	9	21	

The odds of defaulting is 8.037 times higher among TB patients who lack knowledge of TB than among those who have adequate knowledge. The association is statistically significant.

Table 4.1.4 Family Support – Based on the care and attention given by the family to the TB patient.

a. For all TB patients

	Cases (defaulters)	Control (Non-defaulters)	
Poor Family Support	51	22	Crude OR=3.434 P value=0.000 Chi-square=12.376
Good Family Support	27	40	

The odds of defaulting is 3.434 times higher among TB patients who have poor family support than those who have good family support. The association is statistically significant.

b) TB Patients < 40 years

	Cases (defaulters)	Control (Non-defaulters)	
Poor Family Support	26	12	OR=3.611 P value=0.010 Chi-square =6.693
Good Family Support	12	20	

The odds of defaulting is 3.611 times higher among TB patients who have poor family support than those who have good family support. The association is statistically significant.

c) TB Patients > 40years

	Cases (defaulters)	Controls (non-defaulters)	
Poor Family support	25	10	OR =3.333 P value=0.016 Chi-square=5.837
Good Family support	15	20	

The odds of defaulting is 3.333 times higher among TB patients who have poor family support than those who have good family support. The association is statistically significant.

Table 4.15 - Adverse effects of Anti – TB drugs

a. For all TB patients

	Cases (defaulters)	Control (Non-defaulters)	
Adverse effects of anti-TB drugs	43	18	Crude OR=3.003 P value=0.002 Chi-square=9.568
No adverse effects of anti-TB drugs	35	44	

The odds of defaulting is 3.003 times higher among TB patients who have adverse effects of anti-TB drugs than those who do not have adverse effects. The association is statistically significant.

b. TB Patients <40years

	Cases (defaulters)	Control (Non-defaulters)	
Adverse effects of anti-TB drugs	19	9	OR=2.556 P value=0.063 Chi-square=3.464
No adverse effects of anti-TB drugs	19	23	

The odds of defaulting is 2.556 times higher among TB patients who have adverse effects of anti-TB drugs than those who do not have adverse effects. The association is Not statistically significant

c) TB Patients >40years

	Cases (defaulters)	Controls (non-defaulters)	
Adverse effect of anti-TB drugs	24	9	OR =3.500 P value=0.013 Chi-square=6.192
No adverse effects of anti-TB drugs	16	21	

The odds of defaulting is 3.5 times higher among TB patients who have adverse effects of anti-TB drugs than those who do not have adverse effects. The association is statistically significant.

Table 4.1.6 – Attitude of Service Providers

a. For All TB patients

	Cases (defaulters)	Controls (Non-defaulters)	
Poor attitude of service providers	44	20	Crude OR=2.718 P value=0.004 Chi-square=8.120
Good attitude of service providers	34	42	

The odds of defaulting is 2.718 times higher among TB patients who are exposed to poor attitude of service providers than TB patients who are exposed to good attitude of service providers.

The association is statistically significant.

b. TB Patients < 40 years

	Cases (defaulters)	Controls (Non-defaulters)	
Poor attitude of service providers	20	8	OR =3.333 P value =0.019 Chi-square =5.526
Good attitude of service providers	18	24	

The odds of defaulting is 3.333 times higher among TB patients who are exposed to poor attitude of service providers than TB patients who are exposed to good attitude of service providers.

The association is statistically significant.

c) TB Patients > 40 years

	Cases (defaulters)	Control (non-defaulters)	
Poor attitude of service providers	24	12	OR =2.250 P value=0.098 Chi-square=2.745
Good attitude of service providers	16	18	

The odds of defaulting is 2.25 times higher among TB patients who are exposed to poor attitude of service providers than those who are exposed to good attitude of service providers.

The association is not statistically significant.

Table 4.1.7 Duration of Treatment

a. For all TB patients

	Cases (defaulters)	Control (Non-defaulters)	
Duration of treatment too long for patient	50	24	Crude OR =2.827 P value=0.003 Chi-square =8.938
Duration of treatment normal	28	38	

The odds of defaulting is 2.827 times higher among TB patients who consider the TB regime as too long, than those who consider the TB regime as long. The association is significant.

b) TB Patients < 40 years

	Cases (defaulters)	Controls (Non defaulters)	
Duration of treatment too long for patient	26	12	OR=3.939
Duration of treatment normal	12	20	P value=0.010 Chi-square =6.693

The odds of defaulting is 3.939 times higher among TB patients who consider the TB regime as too long, than those who consider the duration of TB regime as normal. The association is statistically significant.

c) TB Patients > 40 years

	Cases (defaulters)	Controls (non-defaulters)	
Duration of treatment too long for patient	24	12	OR=2.250
Duration of treatment normal	16	18	P value=0.098 Chi-square=2.745

The odds of defaulting is 2.25 times higher among TB patients who consider the TB regime as too long, than those who consider the duration of TB regime as Normal. The association is Not statistically significant.

Alongside Focus Group Discussions and In-depth Interviews were conducted to augment the findings from the case control studies.

4.2 Focus Group Discussions

FGD were used to elicit the knowledge, attitude and perception of TB in the community. The findings were instructive.

At the Yendi sub district, 80% of the participants attributed TB to the violation of a taboo which forbids coughing during sexual intercourse. The neglect of traditional beliefs has led to the spread of tuberculosis. Generally the communities believe that before one marries or engages in sexual activities the elders must be consulted who will in turn direct them to herbalists who have herbs to protect the couple against TB. Modernization of the society has led to the neglect of these "norms".

Also it is expected that when one coughs during sex, that person must quickly see the elders who will direct them to herbalists who have herbs to protect them against TB.

Tuberculosis is thus seen as curse. The Dagbani name for TB is “kwampielo” which is translated as a disease transmitted through cough during sexual intercourse.

Tuberculosis is regarded as a disease with high fatality and many participants claimed that TB is related to HIV/AIDS. However the claim was that, long standing TB leads to HIV/AIDS.

The fear of stigmatization also ranked high during the discussions as a reason for not only seeking diagnosis and treatment but also default.

About half($\frac{1}{2}$) of the participants feared staying or living together with the TB patients in the same household as the curse could spread to them also, and eventually they’ll also contract TB.

The signs and symptoms of TB were cough sometimes productive of bloody sputum, dizziness, headache, loss of weight and diarrhoea.

It was also said that once a TB patient dies, the properties of the dead person must not go to the family members but to the “special people” in the community who have been chosen by elders and soothsayers to bury the dead.

About a third (1/3) of the participants knew that anti – TB treatment was available in the hospital, and that the treatment was free.

A third (1/3) of the participants claimed that TB treatment in the hospital was not free, whilst another third (1/3) did not know.

About 20% of the participants will advise TB patients to go for treatment at the hospital or to continue treatment at the hospital, whilst 80% of the participants will rather advise TB patients to see the elders for the performance of rituals and after that to be treated by the herbalists or other non-orthodox centers.

50% of the participants said that the general attitude of service providers to patients was bad, and participants felt that this poor attitude may sometimes hamper case finding or lead to default.

At the Bunbon sub-district, 60% of the participants attributed TB to the violation of the taboo which forbids coughing during sexual intercourse. 10% claimed that TB was transmitted when one walks over somebody's urine. 20% said that transmission of TB was an act from God or from our ancestors, and the transmission of TB depends upon one's luck. If you are not lucky, then you 'll acquire TB from God or the ancestors. 10% said that TB was a curse from the ancestors. Another 10% said that TB was transmitted through air droplets by Germs from TB patients.

90% of the participants enumerated the signs and symptoms of TB as dry skin, persistent cough, anemia, fever, loss of appetite and diarrhoea. The soothsayer however said that one could easily misdiagnose TB, and thus advised that TB be diagnosed spiritually. 50% of the participants were not aware of treatment of TB patients at the hospital. 20% said that TB treatment at the hospital was free. They also said that TB is curable. Another 30% said that TB could be treated at the hospital, but emphasized that TB treatment was not free.

50% of the participants said that TB patients could be cured only after performing some rituals and asking God or the ancestors for forgiveness with regards to the violation of the taboo which forbids cough during sexual intercourse.

80% said that they were aware of the traditional method of treating TB patients in the communities. This is what the author refers to as the "4 ingredient mixture", The TB patient goes to the garbage site and picks anything from the garbage, then goes behind any bathroom and picks anything. The patient then goes to the center of the town and picks anything that he or she will see.

Fourthly, the TB patient then scrapes part of the bark of the tree called kukuma and grinds all these 4 ingredients into one homogenous mixture, allows the mixture to dry and then hangs it on his door. This is said to protect the TB patient from further deterioration of health and by leaking the mixture daily, the TB patient will be cured.

30% of the participants said that long standing TB may lead to HIV/AIDS. 40% of the participants said that service providers are not friendly, and this in their opinion may lead to low case finding and high default.

4.3 In- depth Interviews

At the Regional level after through discussion with the SMO/PH and the Regional TB Coordinator, the main causes of default were enumerated

as :

1. Poor counselling
2. Lack of finance
3. Long distance from home to hospital
4. Lack of trained personnel at the sub-district centres

At the district level, discussions with the DDHS, Medical superintendent, District TB coordinator and nurses at the chest ward revealed the following causes of default :

1. Irregular drug supply
2. Stigma
3. Strong traditional beliefs of patients
4. Long distances from home to hospital
5. Lack of finance

6. Poor defaulter tracing
7. Complacency of patients especially after the intensive phase.

Interviews with the chemist reveal that people may default primarily because of stigma and the strong traditional beliefs that the TB patient has been cursed.

Interviews with the opinion leaders reveal that the strong traditional beliefs in the communities that TB is transmitted when there is violation of the taboo which forbids cough during sexual intercourse, is the main factor for default. Other factors are stigma, poor family support and geographical inaccessibility.

5.0 Discussions

The case – control studies used variables like geographical accessibility, financial status of patients, adverse effects of anti-TB drugs, family support, knowledge of TB, attitude of service providers and duration of treatment.

As illustrated in chapter 4, the crude odds ratio with their levels of statistical significances depict associations that are statistically significant.

For geographical accessibility, the crude odds ratio is 6.143 (pvalue=0,001, $x^2 = 11.741$). It implies that long home to hospital distances exposes a TB patient to 6.143 times risk to default and that this association is statistically significant. Yendi district has a large surface area – 5,350sq.km and the homes of many TB patients are very far away from the hospital, sometimes at the periphery and others are staying outside the district. Apart from the long distances, many of the roads in the Yendi district are inaccessible especially during the rainy season and this also inhibits compliance.

TB patients below 40years (<40years) have a slightly higher level of P value than those above 40 years (>40years). It implies that the risk to default is higher in the over 40years age group. It may mean that with age as the TB patients are more frail, then long distances coupled with unfavourable terrain due to rains exposes the older TB patient to a greater risk to default.

For finance, the crude odds ratio is 4.139 (pvalue = 0.000, $x^2 = 16.098$). It means that lack of finance predisposes a TB patient to 4.139 times risk to default and this association is statistically significant. Compared to TB patients >40years, TB patients <40years are more likely to default since they have smaller level of P value and hence the association is more statistically significant.

It may mean that older patients are financially more secured than the younger patients.

For knowledge of TB, the crude odds ratio is 8.714 (P value = 0.000, $\chi^2 = 36.370$). The inference is that lack of knowledge exposes a TB patient to 8.714 times risk to default, and this association is statistically significant. Compared to TB patients < 40 years, TB patients > 40 years are more likely to default. The reason may be attributed to the stronger traditional beliefs in the older TB patients.

For family support, the crude odds ratio is 3.434 (P value = 0.000, $\chi^2 = 12.376$). Lack of family support exposes a TB patient to 3.434 times risk to default and the association is statistically significant. Compared to TB patients > 40 years, TB patients < 40years are slightly more likely to default.

Adverse effects of anti – TB drugs like dizziness from Inj.streptomycin, Jaundice from most anti-TB drugs, visual impairment from ethambutol, anorexia and abdominal pains from Rifampicin, itching and skin rashes from thiacetazone, orange coloured urine from Rifampicin, burning sensation in the feet from isoniazid, general exposes a TB patient to 3.003 times risk to default (Pvalue 0.002, $\chi^2 = 9.568$). This association is however statistically significant. For the TB patients <40years, the association is not statistically significant. The association is however statistically significant for TB patients >40years. Older TB patients >40 years may find these adverse effects more intolerable and hence greater risk to default.

Poor attitude of service providers generally exposes a TB patient to 2.718 times risk to default (P value = 0.001 $\chi^2 = 8.120$). This association is statistically significant For younger patient <40years, the association is statistically significant whilst for older patients >40years the association is not statistically significant. Younger patients may be less tolerable to poor attitude of service providers hence higher risk to default.

Long duration of treatment generally exposes the TB patient to 2.827 times risk to default. (P value 0.003, $\chi^2 = 8.938$), and hence statistically significant association.

However, the association is not statistically significant for TB patients >40years, but statistically significant for TB patients <40years. Younger patients probably find the long period of DOTS more intolerable and hence the higher tendency to default.

Having said this, its important to compare or contrast the findings at Yendi with the findings as per literature review.

In a survey of the evaluation of TB treatment in Japan by the Ryoken National TB Research unit in 1994. It was established that generally young patients below 40 years had a greater likelihood of defaulting than older patients above 40 years. But the study at Yendi District revealed that younger patients below 40years had a greater likelihood of defaulting only for variables like finance, family support, attitude of service providers and the duration of treatment.

In the literature review, lack of finance exposes TB patients to default and this is confirmed by the findings at the Yendi district.

Van der Werf and others in 1991 also established that longer home to clinic distances were significantly associated with higher default rates. This is confirmed by the findings at the Yendi district.

The findings in the literature review reveal that knowledge deficit of TB exposes TB patients to default and this is confirmed by the findings at the Yendi district.

Also the findings in the literature review reveal that poor family support exposes TB patients to default and this is confirmed by the findings at the Yendi district.

Johansson and others in 1996 established that poor attitude of service provider and the adverse effects of TB drugs expose TB patients to default. However depending upon the age group, these findings contrast with some

of the findings at the Yendi district. For instance at the Yendi district, poor attitude of service providers doesn't seem to significantly affect the default rate of TB patients above 40years. This association is rather statistically significant for TB patients below 40 years. Also at the Yendi district, the adverse effects of anti-TB drugs do not expose TB patients above 40years to default. The association is rather statistically significant for TB patients below 40 years. These factors must be taken into cognition when TB patients are being counseled or when drawing up TB educational programmes.

Focus group discussions (FGD) revealed a wide gap between the causes, transmission and treatment of TB based on modern scientific concept and traditional beliefs.

The strong traditional beliefs about TB has permeated into the very fabric of the communities and appear to be stronger in the older generation, but seems to be equal in both sexes.

Despite free drugs and laboratory services rendered under the DOTs, there are still so many people in the communities who do not know about this. There are still some people who do not know that TB patients can be treated and even cured at the hospital.

TB patients are still stigmatized and this has led to low case finding and high default rate of the DOTs. Likewise poor attitude of service providers to patients has led to low case finding and high default of the DOTs.

In depth interviews with the SMO-PH and the regional TB coordinator reveal the main factors for default as :

1. Poor counselling
2. Poor financial status of TB patients
3. Long distances from home to hospital
4. Lack of trained personnel at the sub-district centers.

At the district level, discussions with the DDHS, medical superintendent, District TB coordinator and nurses at the chest ward enumerated the following as factors for default :

1. Irregular drug supply
2. Stigma
3. Strong traditional beliefs
4. Poor financial status of patients
5. Long distance from home to hospital
6. Poor defaulter tracing
7. Complacency of patient especially after the intensive phase.

Poor defaulter tracing has been attributed to lack of finance or lack of motivation of staffs to undertake tracing. There is irregular drug supply and this is due to poor management of drugs supply. Anti-TB drugs supplied to the Yendi hospital are sometimes less than the number of TB patients on admission and this creates a situation where TB patients have to buy their own drugs and this is a recipe to default.

Also anti-TB drugs are not pre-packaged for the TB patients and this has led to disruption of treatment or default.

On the issue of drugs supply there appears to be lack of communication between the Regional and District level. Also, because of the high default rate in the district, standard treatment for 12 months is given to all TB patients, but its hoped that in the near future, smear (+ve) TB patients who can be trusted to comply with the DOTs will be put on short course therapy. This may enhance higher cure rate and higher compliance.

6.0 Conclusions and Recommendations

6.1 Conclusion

The Yendi district has a high default rate of 60%. There was thus the need to elicit the factors that contributed to the high default rate, prioritize them, and thus find lasting solutions to the problem. In doing so, the objectives of the study were met.

From the analysis of the responses, the odds ratio, P values and chi-squares were evaluated. Based on the measures of association and statistical significances. It can be deduced that the highest contributing factors to default are lack of knowledge of TB, Long distances from home to hospital, lack of finance and poor family support. These are crucial factors and in drawing up action plans the DHMT has to attach the highest priority to these 4 factors. The associations are all statically significant for both age groups. Out of these 4 crucial factors the highest contributing factor to the high default rate is lack of knowledge of TB. In drawing up strategies, the DHMT has to take into account the lack of knowledge of TB, and come up with more pragmatic counseling and educational programmes.

The least contributing factors to default are in the order of adverse effects of anti-TB drugs, long duration of treatment and poor attitude of service providers. These are the less crucial factors that contribute to the high default rate. The statistically significances vary immensely for the different age groups.

For TB patients below 40 years the associations between attitude of service providers and default, duration of treatment and default are statistically significant and the DHMT has to take this into account when drawing up strategies to reduce the default rate.

With regards to the adverse effects of anti-TB drugs the association is statistically significant for TB patients who are above 40 years and the DHMT needs to take this into account, when drawing up strategies to reduce the default rate.

6.2 Recommendations

From the results and discussions the following recommendations are made .

- There is the need for the DHMT to undertake major IEC campaigns in order to reduce the myths and misconceptions about TB in the communities.
- Education of people in schools, churches, mosques and at public forum must be encouraged.
- The need for program managers to emphasis on inter-personal communication since the educational level of most people in the district is low.
- People should be made aware that anti-TB treatment and laboratory services are free
- The need to establish TB centers in all the sub districts with well trained staff to manage TB patients
- There is the need to equip all the surrounding districts with TB centers. These TB centers must have diagnostic and treatment centers with well-trained staff to manage TB patients.
- There is the need for in-service training for staffs annually
- Effective counseling of TB patients must be intensified
- Families of TB patients must be encouraged to fully support TB patients

- To enhance regular supply of anti-TB drugs in the district, communication between the district and regional level must be encouraged.
- The need to motivate staff especially in the area of defaulter tracing.
- TB patients at the chest ward may be given special incentives like very nutritious diet.
- To consider special incentives for staffs at the chest ward and district TB coordinator
- To train Community Volunteers in the clinical diagnosis of TB, defaulter tracing and to refer such patients immediately to the hospital. These volunteers must be motivated.
- Persistent monitoring and supervision

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QUESTIONNAIRE

Factors contributing to the high default rate of the DOTS system in the Yendi district.

A. Socio-demographic characteristics

1. Name:
2. Age: 15-24
 25-34
 35-44
 45-54
 55-64
 65-64
 65-74
3. Sex: Male Female
4. Occupation: Self-employed
 Civil/public servant
 Farmer
 Other (specify)
5. Educational background:
 None
 Primary
 Middle
 JSS
 SSS
 Vocational
 Tertiary
 Other (specify)

6. Religion: Christian.....
 Traditional.....
 Moslem.....
 Others (specify).....
7. Ethnicity: Dagomba.....
 Nanumba.....
 Kokomba.....
 Others (specify).....

B. Knowledge, Attitude, Perceptions of TB

8. A person who looks thin, sometimes coughs blood and complains of chest pains

may be suffering from a disease called.....

- Diarrhea disease..... 1
 Malaria..... 2
 Measles..... 3
 Guinea worm disease..... 4
 TB..... 5
 Others..... 6

9. Can TB spread from one person to another?

Yes.....

No.....

(If answer is No, proceed to question 11)

10. How is TB transmitted?

- Through cough, spitting, sneezing from TB patients.....
 -Through exposed food.....
 -Through shaking of hands.....
 -Others.....

11. Is TB curable? Yes..... No.....

12. Is TB treatment available in the health centre here?

Yes No Don't know

13. What treatment is given free at the health centre?

Cholera TB Measles Malaria

Others

14. How do people get TB?

It is an act of God

It is caused by witchcraft

It is spread by droplets from sufferers

Don't know

C. Barriers to compliance or default

15. Were you complacent during treatment, which could have led to default?

Yes No

16. Was the distance from home to Clinic a problem to you?

Yes No

17. Did you receive adequate family support during treatment?

Yes No

18. Was finance a barrier to you during treatment?

Yes No

19. Was the duration of treatment a barrier to treatment?

Yes No

20. In this community are people prevented from mixing with others if they have TB?

Yes No

21. Were you ever told of the diagnosis of your condition?

Yes No Don't know

22. If No, proceed to question 23, if yes what were you told ?
MalariaMeasles Cancer.....
TB Others
23. Were you given instructions after your discharge ?
Yes No..... Can't remember
24. If yes, what instructions were you given?
To take all the remaining drugs at home, and not to come back
for review
- To keep drugs and come back after 1 month for review.....
- To take all the remaining drugs and come in a month's time
for review. Also informed that the duration of TB treatment
will be 8 months
25. What was the attitude of service providers towards you ?
Good
Bad
26. Did you have any adverse effect from the anti-TB drugs ?
Yes No.....
27. If no, proceed to question 29. If you had reaction with anti-TB drugs,
specify which drug.
Red Tab
Ethambutol
Streptomycin
HR
Pyrazinamid
28. Briefly state the side effect
Abdominal pains when the drug is taken.....
Urine colour changes
Itching or skin irritation
Headache
Jaundice
Others
29. Did you receive care from any other sources ?
YesNo
30. If yes, what was the other source of care ?
Traditional healer
Spiritual healer
Others

APPENDIX 2

FOCUS GROUP DISCUSSION

INTERVIEW GUIDE

1. What diseases are familiar to you ?
2. What causes TB
3. How is TB transmitted from one person to another ?
4. What are the signs and symptoms of TB ?
5. Is Tuberculosis a severe disease ?
6. Is TB Curable ?
7. Is TB treatment available in this health center or hospital ?
8. If Yes, TB treatment free or not ?
9. In this Community, do people avoid TB patients ?
10. What advise will you give to a neighbour or somebody that you suspect to have TB ?
11. If you know a TB patient, who was on anti-TB regime at the hospital, but then defaults, what advise will you give to such a patient ?
12. What is the general attitude of service providers towards patients ?

APPENDIX 3**IN-DEPTH INTERVIEWS****INTERVIEW GUIDE**

1. What diseases are familiar to you ?
2. What is the local name for TB ?
3. What does this local name mean ?
4. What are the signs and symptoms of TB ?
5. Is TB Curable ?
6. Is treatment available at the hospital ?
7. If Yes, is treatment free or not ?
8. What is the community's attitude or perception of TB
9. In this community, are TB patients prevented from mixing with others ?
10. What are the underlying factors that contribute to default of the DOTs ?