

A study on the knowledge, beliefs and practices of patients diagnosed with tuberculosis in katutura, khomas region, Windhoek

Esther Kamenye ^{1*}, Ndemupavali Sumpi ², Agnes Van Dyk ³, Daniel Opotamutale Ashipala ⁴

¹ Clara Barton School of Nursing Welwitchia University

² Department of Public Health, School of Nursing and Public Health, University of Namibia Windhoek, Namibia

³ School of Nursing, International University of Management

⁴ Department of General Nursing Science, School of Nursing, University of Namibia (UNAM), Keetmanshoop, Namibia

*Corresponding author E-mail: kamenyene@gmail.com

Abstract

Tuberculosis is a preventable and curable disease. In spite of this, it is the main cause of human suffering and death through infection. A better understanding of TB patients' knowledge, beliefs and practices regarding tuberculosis is important for the improvement of public health education on tuberculosis. Therefore, a study was conducted to explore and describe the knowledge, beliefs and practices of patients diagnosed with TB, in order to provide helpful data for the improvement of public health education regarding tuberculosis. An explorative, descriptive, contextual, and qualitative study design was conducted, using individual in-depth interviews to gather data from 60 tuberculosis patients in Katutura of the Khomas region. A quota sampling technique by age was used to select the participants. Data analysis was done using Tesch's method for content analysis. The results showed a significantly poor depth of knowledge among patients diagnosed with tuberculosis about the disease itself. Patients possess erroneous beliefs about modes of transmission, and they practice unhealthy lifestyles while on treatment. Ineffective health education had contributed to the poor knowledge of patients. Recommendations based on this study's findings include: the revision of the current national guidelines for the management of tuberculosis, to include some important facts overlooked by the guidelines developers; the design of culturally-appropriate messages to be integrated with the existing beliefs and misconceptions and provided to the community in the form of leaflets.

Keywords: Knowledge; Tuberculosis; Beliefs; Practices; Pulmonary Tuberculosis; Extra Pulmonary Tuberculosis.

1. Introduction

The world is becoming ever smaller, and diseases whose geographical distribution had once been contained are in some cases spreading once more. A pertinent example is tuberculosis (TB). Tuberculosis is an infectious disease caused, in most instances, by the micro-organism *Mycobacterium tuberculosis*. The micro-organisms enter the body through inhalation. Tuberculosis is transmitted by airborne droplets produced by a person suffering from pulmonary tuberculosis, through expectoration. Although anyone can develop tuberculosis, the disease usually afflicts adults in economically-disadvantaged populations (WHO/CDS/TB, 2000). A report released by the World Health Organization (WHO) indicated that 75% of those suffering from tuberculosis worldwide are between the ages of 15 and 54 years (WHO/CDS/TB, 2003b). In Southeast Asia and Sub-Saharan Africa, tuberculosis occurs to a greater degree in the economically productive years between 15 and 49 years (Rieder, 1999). In Namibia, 90% of smear positive patients reported in 2004 were between the ages of 15 and 54 years (Ministry of Health and Social Services [MOHSS], 2004). Despite the fact that tuberculosis is a preventable and curable disease, globally it is the main cause of human suffering and death through infection, with two billion people infected with *Mycobacterium tuberculosis*. Nine million new cases are reported every year, and two million die every year from the disease (WHO/CDS/TB, 2003b).

It has been estimated that Africa reports 2.4 million new tuberculosis cases every year, of which 540,000 are fatal. In 2000, Sub-Saharan Africa had the highest incidence, with 290 per 100,000 of the population per year. Deaths caused by tuberculosis comprise 25% of all avoidable deaths in developing countries (WHO/HTM/TB, 2004). In 2004, Namibia reported a tuberculosis notification rate of 822 persons per 100,000 of the population. This is the highest incidence ever reported in the world. Among Namibia's regions, the Khomas region ranked the highest in 2004, with 3,102 cases reported (MOHSS, 2006b). Globally, the incidence of tuberculosis has increased since the mid-1980s and continues to grow by one percent each year, despite the fact that it is treatable (WHO, 2006). In 1987 it was considered realistic to expect that tuberculosis would be eliminated by the year 2010. However, the rising incidence of the disease has produced renewed concern on the part of health care providers, consumers and policy makers (Singleton, 1999). In Namibia the tuberculosis case notification rate has steadily increased from 652 per 100,000 in 1996, to 822 per 100,000 in 2004 (MOHSS, 2004). One of the major contributing factors to the spread of the disease is the HIV/AIDS pandemic, which has spread dramatically throughout Africa in recent decades. Another contributing factor is poverty, with associated factors of overcrowding and poor ventilation, both of which enhance high transmission levels (MOHSS, 2006b). The growing number of tuberculosis patients adversely affects the economy, since the disease primarily afflicts those who are of

economically productive age. Lost income due to illness and discrimination, coupled with the relatively high cost of diagnosis and treatment in many parts of the world, only exacerbates poverty levels (WHO/CDS/TB, 2000). In Namibia, two factors compound the economic burden: heavy government spending on tuberculosis medication (which is not improving the overall situation) and the cost of caring for large numbers of children orphaned by the HIV/AIDS pandemic.

The magnitude and seriousness of the tuberculosis problem prompted the World Health Organization (WHO) to set targets for global TB control which were ratified by the World Health Assembly in 1991, namely a case detection rate of 70%, and a treatment success rate of 85% of the detected cases (WHO, 2002; Xu, 2006). The tuberculosis treatment success rate is accepted as one indicator in the health system to monitor the TB control performance of all health facilities (WHO, 2007). The weight of the world burden led the WHO to recommend the treatment strategy of Directly Observed Therapy, Short course (DOTS). Following this recommendation, Namibia adopted the strategy in 1993 (MOHSS, 2006b). Today, more than 180 countries have adopted the DOT strategy (WHO, 2005).

Even though the Namibian government has pursued a vigorous tuberculosis Programme, the country has failed to attain the global target for a treatment success rate of 85%, with the Khomas region only achieving 52%. Furthermore, the burden of tuberculosis has not been reduced in Namibia, as evidenced by a case notification rate in 2004 of 822 per 100, 000 populations, the highest ever reported in the world (MOHSS, 2006b).

1.1. Problem statement

The focus of the problem in the Khomas region is the low treatment success rate – only 52% - which is significantly below the global target of 85% (MOHSS, 2006b). The implication of such statistics is that some contributing factors are probably being overlooked in the management of patients. A possible explanation could be the lack of knowledge amongst patients diagnosed with TB about the disease per se. It could also mean that patients do not understand the means of prevention, causes and treatment measures associated with tuberculosis. Lacking such knowledge, patients may fail to seek appropriate treatment or access the diagnostic services available. Furthermore, patients might hold erroneous beliefs, such as that tuberculosis is caused by dust, by witchcraft or that it is hereditary (MOHSS, 2006b).

Other debilitating factors may be present which make patients more susceptible to the disease. Lifestyle factors such as alcohol consumption or smoking could also diminish the effectiveness of treatment. Such habits would further weaken patients already affected by the bacteria.

A study conducted by Angala (2000) concentrated on the knowledge and management of tuberculosis among health workers and patients in the Otjiwarongo district. The author revealed that the knowledge of participants about causes and treatment was poor. What is lacking in Angala's study and in previous research published by the World Health Organization (WHO, 2004) is qualitative information regarding the following three likely important areas: patients' understanding of causes, treatment and prevention; their beliefs regarding modes of transmission; and the effect of their lifestyle practices on treatment. There is a national guideline for the management of tuberculosis developed by the Ministry of Health and Social Services in 2006, but it is not clear whether all aspects concerning the management of tuberculosis are well covered.

1.2. Aim of the study

The purpose of this study was to explore and describe the knowledge, beliefs and practices of tuberculosis patients in order to provide helpful data for the improvement of public health education for the Katutura, Khomas region community, regarding tuberculosis.

1.3. Research objectives

The objectives of the study were:

- To explore and describe the knowledge of tuberculosis patients regarding the causes, treatment and prevention of tuberculosis;
- To explore and describe the beliefs of tuberculosis patients regarding the mode of transmission of the disease;
- To explore and describe the lifestyle practices of tuberculosis patients during their period of treatment regarding alcohol consumption, smoking and nutrition;

1.4. Significance of the study

The significance of this study was to provide reliable data on parameters related to tuberculosis, which has heretofore been unavailable. Information about the knowledge, beliefs and practices of tuberculosis patients should assist policy makers, programme administrators and others in the development field to develop effective programmes of public health education to contain the spread of the disease.

The findings of this study may also contribute to interventions for improving patients' knowledge of the disease, and consequently improve the Khomas region's treatment success rate and eventually achieve global targets. Efforts to achieve those targets will be strengthened because the two ranks engaged in the battle against tuberculosis will be addressed simultaneously by the study: governmental agencies which direct resources from above, and the infected population which struggles with the disease at grassroots level.

2. Study design and methods

This study was a qualitative in its approach and has followed an explorative, descriptive, and contextual design. The population in this study, was patients diagnosed with tuberculosis (pulmonary tuberculosis and extra pulmonary tuberculosis), living in Katutura. Quota sampling technique was used to select participants from the population. Individual in-depth interview was chosen and used by the researcher as a method of collecting data in order that the TB patients could freely give their own experiences on TB regarding their knowledge, beliefs and practices, rather than being forced by pre-established lines of thinking developed by the researcher.

Data analysis data analysis was done following Tesch's guidelines for content analysis, which encompass the following: each interview was analyzed for unit of meaning, and all units of meaning were clustered together to form themes and sub themes. Each theme was discussed with relevant quotations from the participants and relevant literature as a control to the findings (as cited in Poggenpoel & Myburg, 2006).

3. Results and discussions

3.1. The themes and sub themes of the study

Two main themes and sub themes emerged following the process of data analysis. Each theme is discussed with relevant quotations from the participants. The relevant literature was also cited as a control to the findings of this study.

Table 1: The Two Main Themes and the Sub Themes of the Study

Themes	Sub-themes
3.1.1 Need for improved health education on tuberculosis (PTB and EPTB)	Specific aspects of knowledge and beliefs that need attention in tuberculosis (PTB and EPTB): <ul style="list-style-type: none"> • Causes • Modes of transmission • Treatment • Prevention Specific aspects of lifestyle practices that need attention:
3.1.2 Need for rectification of lifestyles	<ul style="list-style-type: none"> • Alcohol consumption and smoking • Nutrition

3.1.1. Need for improved health education on tuberculosis (PTB and EPTB)

• Causes of tuberculosis

It was evident from the results of this study that most participants do not know the causes of tuberculosis. Only very few participants said that TB is caused by bacteria. Most of the participants perceived alcohol and smoking to be the causes of tuberculosis. Some said TB is hereditary, and a few said it is caused by the following factors: dust, HIV/AIDS, cold, dirty places, paint, heavy work, drugs such as dagga (cannabis), dirty water, overcrowding, eating of the wrong foods, lack of vitamins, eating sweet things, a punishment from old people, dirty food, dirty eating utensils, injuries such as stabbing on the lung, and by the use of dirty blankets.

The following are responses from some of the participants:

"I was drinking lot of alcohol, like tombo, beer, and any drinks and I was also smoking, that's why I got TB" [22 years old male].

"TB is caused by drinking too much alcohol or too much smoking. Smoking put dust on the lungs and alcohol burns the lungs and that is TB" [35 years female].

"TB is caused by alcohol, because me myself I was drinking a lot, that's why I have TB now" [53 years male].

Some participants believe that TB is hereditary as expressed in the following statements:

"Tuberculosis is just in the blood of certain families. Like my TB, is a family TB, my mother has TB, now we are four in family, who have TB" [28 years male].

"If the parents have TB, definitely their children will also get TB" [46 years male].

Some believe it comes from dust as the following statements say:

"Children are getting TB from the dust, because they are playing in the dusty streets" [37 years female].

"I know that dust can cause TB especially for those who are sweeping. That too much dust will sit on their lungs and get sick of TB" [40 years male].

Some said that TB is caused by HIV, air, and cold.

"TB is caused by HIV, is true because I started with HIV, now I get also TB" [47 years male].

"There is old TB which is coming from air and strong TB which is coming from HIV. I have strong TB which is coming from HIV" [49 years male].

"Too much cold can cause TB, that cold go to your lungs and get TB" [41 years male].

"Too much cold cause disease of the lungs like Tuberculosis" [36 years male].

The findings in this study are similar to the following found in literature:

In Kenya, it was also found in a study conducted by Liefogh, Baliddawa, Kipruto, Vermeine, and Munyrick (1997) among tuberculosis patients that they do not know the causes of tuberculosis. Most participants perceived alcohol and smoking and some perceived hereditary factors to be the causes of tuberculosis.

In Limpopo province in South-Africa, a study conducted by Promtussananon and Peltzer (2005) found among the community that they possess poor knowledge about the causes of tuberculosis. The community perceived smoking and dust as the causes of tuberculosis.

A study in Mpwapwa district, central Tanzania conducted by Pan-gesho et al. (2007) among TB patients, had some concurring findings, and some that differ from the findings of this study. Findings that concur are smoking and hereditary factors, and findings that differ are witchcraft, the drinking of unboiled milk or milk contaminated with cows' hair.

• Modes of transmission for tuberculosis

It is evident from the findings of this study that the participants have little understanding of the modes of transmission of tuberculosis, and moreover that they hold erroneous beliefs regarding the modes of transmission. Most of the participants said that tuberculosis is transmitted by droplets (some view droplets as TB, not bacteria in droplets) from a TB patient who coughs without covering the mouth.

The following are statements from some of the participants:

"If I cough and not covering my mouth, I can give TB to you now, because that small water comes out from the mouth is TB" [23 years male].

"TB can spread from one person to another through sexual intercourse. When I use the same plate with those who does not have TB, they will also get TB. If I cough and not covering my mouth that small drops coming from my mouth have TB" [28 years female].

"Through sexual intercourse, you will get TB and HIV/AIDS and also through drinking in one cup or sharing the same plate and if you are kissing with someone having TB, you will get it also" [49 years male].

"If the TB person eats in the same plate or using the same cup with a healthy person, the other people will get TB." [31 years male].

"Saliva through kissing and also when sharing spoons and cups especially when you drink on the side where TB patient was also drinking you will get TB" [19 years male].

Sharing a cigarette or pipe is also a problem, that saliva on cigarette or pipe will be taken by another person and that person will get TB" [53 years female].

"Sexual intercourse with someone having tuberculosis, you will also get TB" [54 years male].

"People transmit TB through sexual intercourse, because my girlfriend gets TB from me" [35 years male].

"If you share the same blanket with a TB person, you will get TB of the bone, but if you share the same utensils you will get TB of the lungs" [27 years male].

"The other thing is when I spit on the floor and someone steps on it without shoes, that germs or bacteria will pass through the skin and that person will get TB" [40 years male].

The findings concur with those of Promtussananon and Peltzer (2005), who found that the community in the Limpopo province of South Africa also believed that tuberculosis could be transmitted through contact by using the same utensils of someone afflicted with TB.

The findings are similar to those of a study conducted among TB patients in Kenya, where the patients believed that tuberculosis could be transmitted through sharing eating utensils with TB patients (Liefogh et al., 1997).

Another study conducted by Kaona, Tuba, Sizia, and Sikaona (2004) among TB patients in Ndola, Zambia, revealed that the participants believed that TB could be transmitted through sharing cups and having sexual intercourse with TB patients.

A study conducted in Kwa-Zulu Natal, South Africa among traditional healers revealed somewhat different results. The traditional healers believed that tuberculosis could be spread through smoking, mosquitoes and insect bites (Peltzer, Mngqudaniso, & Petros, 2006).

• Treatment of tuberculosis

It is evident from the results of this study that most participants possess poor knowledge about the treatment of tuberculosis. Although the participants generally preferred medical treatment from the hospitals or clinics, there were some who first had been to traditional healers, and a few who tried home (self) treatment before going to health facilities.

Following are statements from some of the participants:

"Treatment of tuberculosis is only from the hospital or clinics. Me I was treated first by the traditional healer there at the farm. He gave me soup from the goat and sheep dung to drink and also alwyn soup from the field. I drink it for two to three months. I become very weak and he told me to come and see the doctor at the hospital" [47 years male].

"Tuberculosis is only treated in the hospitals or clinics. Like my case, my parents took me first to the sangoma for treatment and the sangoma gave me the roots and the leaves of the tree to boil and drink. I used it, but I become sicker and thin. Later my parents takes me to the clinic, is where I was told that I have TB" [33 years male].

"My mother gave me roots of the tree, boiled it and drink that water..., but it does not work until I come to the hospital" [19 years female].

The findings concur with those of Protussananon and Peltzer (2005) who also found that the majority of participants in the study conducted among the community in Limpopo province South Africa preferred medical treatment. A study conducted by Pangesho et al. (2007) among tuberculosis patients in Central Tanzania revealed on the contrary that self-treatment and traditional healers were given priority among the study participants.

The following are statements from some of the participants:

I don't know the type of TB I'm having, I was not told, but I think may be is alcohol TB" [35 years male].

"I think I have TB of the liver, because the first time I was having the TB of the lung" [22 years male].

"I'm not sure if I have TB of the bones because I was drinking a lot or I have TB of the lung because I was smoking. I know I have one of the two or all two TB" [23 years male].

Nguyen, Johansson, Diwan, and Winkinstan (2006) also found in their study among TB and non-TB patients in Vietnam, that the participants have poor knowledge about the types of tuberculosis. They perceived the types of TB as hereditary TB, physical TB, and mental TB.

In contrast, a study conducted by Angala (2000) among tuberculosis patients in the Otjiwarongo hospital revealed that very few participants did not know their diagnosis.

Prevention of Tuberculosis

The best way of preventing tuberculosis is early identification of people with pulmonary tuberculosis, and providing them with tuberculosis treatment. This is extremely important because it breaks the chain of transmission at once. There are three major areas of preventing tuberculosis in the community, namely prevention of tuberculosis infection, prevention of tuberculosis disease and prevention of morbidity and mortality (MOHSS, 2006b). The results of this study show that most participants have inadequate knowledge about the prevention of tuberculosis. Suggested means of prevention of tuberculosis given by participants included the following: to stop drinking alcohol, followed by stopping smoking, or limiting alcohol or smoking; for TB patients to have their own eating utensils; the cleaning of living places; that TB is hereditary and cannot be prevented because it is already in the blood; and for those who have TB to be isolated.

Following are comments from some participants:

"People must stop drinking too much alcohol" [24 years female].

"We need to stop drinking alcohol and also to stop smoking" [23 years female].

"Those who have TB must stay far from those who do not have TB. Like me I have my own cups and eating utensils and I sleep alone in my bed" [30 years male].

"If a person has TB, she has to use her own utensils like spoon, cup and plate. If per accident uses the other people's plate or cup, it must be putted in a jik to kill the germs" [46 years female].

"Family TB is not preventable. If it is in your family, it is just in the family and the family members will definitely get it" [34 years male].

"Family TB, that one, we cannot avoid it, it is already in the blood" [28 years male].

"We the big people, we must tell our children not to play in the dust, so that they will not get TB" [37 years female].

"Government needs also to make all the roads tarred" [24 years female].

"We need to wear strong clothes especially this cold time to prevent TB" [41 years male].

The findings are again similar with the study conducted in Malaysia. The participants suggested that people infected with TB should not mix with uninfected people (Koay, 2004).

3.1.2. Need for rectification of lifestyle

Lifestyle is the consciously chosen, personal behavior of individuals as it may relate to health (Green & Kreuter, 2000). People need a healthy lifestyle to remain in good physical condition. A healthy lifestyle encompasses many things, for instance eating healthy food, avoiding excessive fats, sugar and alcohol, no nicotine, drinking plenty of water, getting plenty of exercise, and having regular health check-ups (Davis, 1998-2007). The importance of a healthy lifestyle is in the prevention of chronic diseases (Stoppler & Hecht, 2006).

Unhealthy lifestyle practices, especially among tuberculosis patients, need rectification in order to enhance recovery, prevent transmission and to promote treatment success rates, because for instance if a TB patient drinks alcohol, he may forget his pills. Behaviors/practices and beliefs are difficult to change and take time; therefore health workers need skills in order to provide effective health education (Haaland & Molyneux, 2006).

3.1.2.1. Specific aspects of lifestyle practices that need attention

3.1.2.2. Alcohol consumption and smoking

Tuberculosis patients on treatment who drink alcohol may easily forget to take their pills regularly, since alcohol blocks some messages trying to get to brain. Alcohol can also increase side effects and toxicity, because both alcohol and tuberculosis drugs affect the liver (American Academic of Family Physicians, 1996-2007). Smoking reduces local immunity within the lungs (Van Rooyen, 2004).

It was evident from the results of this study that many participants practice unhealthy lifestyles, even though they are on tuberculosis treatment. Some participants said that they still drink alcohol and smoke whilst on tuberculosis treatment. Moreover, some plan to resume alcohol consumption and smoking after they complete their tuberculosis treatment. Other participants are using snuff whilst on treatment.

Following are statements from some of the participants:

"I'm still drinking alcohol and I smoke also, but not too much. I don't have TB of the chest, I do not have chest pain or coughing, that's why I continue with smoke and drink" [22 years male].

"I'm still drinking and smoking but not always. I don't know why, but I just like drinking" [27 years male].

"I can not stop totally honest. I am still drinking, but not too much" [37 years male].

"I stop smoking, because I'm now sick, but I will smoke when the TB is gone. I cannot stay without smoking or drinking; my friends will laugh at me" [22 years male].

"If I become ok I will drink and smoke, but not so much. I cannot stay without it" [38 years male].

"The cold beer is nice, I hope I will drink one day" [46 years female].

"I'm snuffing. I cannot stay without snuffing... It reduces lots of thoughts" [49 years male].

This finding are similar to those of a study conducted in a rural district of South Africa among TB patients, which revealed that some patients were also drinking alcohol while on TB treatment (Edginton et al., 2002).

A study conducted by Stoppler and Hecht (2006) conducted in America about healthy lifestyles revealed that despite the best intentions of health care providers and public health agencies,

relatively few people practice the four aspects of healthy lifestyles, which are not smoking, eating healthily, exercising and maintaining a fit body.

3.1.2.3. Nutrition

A well-balanced diet is very important during tuberculosis treatment for the recovery of the patient (MOHSS, 2006b). The results of this study show that participants possess poor knowledge regarding nutrition. Most participants said that they had not been advised by their health workers on the types of food they should eat whilst on tuberculosis treatment. Some do not eat well-balanced meals, for a variety of reasons, and may possess various misconceptions regarding certain foods, such as milk, for instance. Following are responses from some of the participants:

"I eat all food, I was never told what to eat from the nurses. I just eat all. I drink milk I heard milk clean the lungs from the germs" [24 years male].

"The nurses never told me what to eat and my mother said that I just need to eat" [23 years female].

"I am not eating the pork and meat according to my religious" [31 years male].

"I am not eaten chicken and liver; I just don't like it" [40 years female].

4. Conclusions

Globally, tuberculosis remains the main cause of human suffering and death, despite the fact that it is caused by a well-identified germ, is preventable, and is fully treatable with efficient and affordable drugs. Despite concerted efforts, progress seems to be elusive, because Namibia is still counted as one of the highest burdens of TB in the world (MOHSS, 2006b).

The current study indicates that knowledge, beliefs and practices of TB patients in Katutura, Khomas region is poor. Furthermore, it provides reliable and valuable information about the knowledge, beliefs and practices of patients diagnosed with TB in Katutura. Constraints that prevent the Programme from achieving the global target were identified. Recommendations were proposed for improvement.

5. Recommendations

The following recommendations can be made based on the findings of this study:

- The current National Guidelines for the Management of Tuberculosis (MOHSS, 2006b) need to be revised in order for some significant omissions to be included.
- A multi-sectoral approach involving all health care workers (nurse managers), community leaders, religious leaders, and counsellors is recommended to ensure a greater impact, continuity and wide acceptance of the intended health messages.
- The researcher recommends that more former TB patients be trained to disseminate TB information, as TB patients are likely to be encouraged if advised by people with first-hand experience who are also living in the same communities.
- Design culturally-appropriate messages and provide them to the community in leaflet form with information developed and translated into local languages, in order to be easily understood by everyone.
- The feasibility and acceptability of involving traditional healers should be explored to encourage lay referrals.

6. Limitations of the study

Apart from English, other languages used to collect the data were Afrikaans, Oshiwambo and Otjiherero, and these were translated thereafter into English. There is always a possibility of losing

some of original ideas of the participants during the process of translation.

Acknowledgements

We thank all the respondents who completed the questionnaires for this study, without their participation this study would not have been even a success or even possible. We also thank the Ministry of Health and Social Services for having granted us the permission to conduct research on its health facilities.

Competing Interests

The authors declare that they have no financial or personal relationship(s) which may have inappropriately influenced them in writing this article.

References

- [1] American Academy of Family Physicians. (1996-2007). *Tuberculosis: Treatment of Tuberculosis Infection*. Retrieved November 18, 2007 from <http://familydoctor.org/online/famdocen/home/common/infections/common/bacterial/120.html>.
- [2] Angala, S.P. (2000). *The Knowledge and Management of TB among Patients and Health Workers at Otjiwarongo Hospital, Otjozondjupa region*. Unpublished Masters thesis, Windhoek: University of Namibia.
- [3] Davis, R. (1998 – 2007). *A Health Lifestyle Encompasses Many Things*. Retrieved November 18, 2007 from <http://www.esl-lab.com/health/healrd1.htm>.
- [4] Green, L.W., & Kreuter, M.W. (2000). *Health Promotion Planning: An Educational and Environmental Approach*. London: Mayfield Publishing Company.
- [5] Halaand, A., & Molyneux, S. (2006). *Quality Information in Field Research: Training Manual on Practical Communication Skills for Field Researchers and Project Personnel*. Geneva: WHO.
- [6] Kaona, F.A.D., Tuba, M., Sizia, S., & Sikaona, L. (2004). An Assessment of Factors Contributing to Treatment Adherence and Knowledge of Transmission among Patients on Tuberculosis Treatment. *Medical Central Public Health*, 4 (68). Retrieved August 23, 2007 from <http://www.pubmedcentral.nih.gov/article.fcgi?artid=545081>.
- [7] Koay, T .K. (2004). Knowledge and attitudes towards TB among People Living in Kudat Sabah Malaysia: *Medical Journal of Malaysia*, 59 (4), 502 - 511. Retrieved August 23, 2007 from <http://www.cabastractspul.org/googl/abstract.asp?>.
- [8] Liefoghe, R., Baliddawa, J.B., Kiprito, E.M., Vermeine, C., & De Munynck, A.O. (1997). A Kenyan Community's perception of Tuberculosis: *Tropical Medicine & International Health*, 2 (8) 809-821. Retrieved August 20, 2007 from <http://dx.doi.org/10.1046/j.1365-3156.1997.d01-380.x>.
- [9] Ministry of Health and Social Services. (2004). *Annual Report: The National Tuberculosis and Leprosy Control Program*. Windhoek: MOHSS.
- [10] Ministry of Health and Social Services. (2006b). *National Guidelines for the Management of Tuberculosis* (2nd ed.). Windhoek: MOHSS.
- [11] Nguyen, H.L., Johansson, E., Diwan, V.K., & Winkinstan, A. (2006). *Different Tuberculosis in men and women: Beliefs from focus groups in Vietnam*. Retrieved August 19, 2007 from <http://fr/?amodele=affiche&cpeid=1880705>.
- [12] Pangesho, P.E., Shayo, E., Makunde, W.H., Keto, G.B.S., Mandara, M.L., Kamungisha, M.L., et al. (2007). Community Knowledge, Attitudes and Practices towards TB and its Treatment in Mpwapa District Central Tanzania. *Tanzania Health Research Bulletin* ISSN 0856-6496, 9 (1), 38-43. Retrieved August 13, 2007 from <http://www.bioline.org.br/request?th07006>
- [13] Peltzer, K., Mngqundaniso, N., & Petros, G. (2006). HIV/AIDS/STI/TB Knowledge, Beliefs and Practices of Traditional Healers in KwaZulu-Natal, South Africa. *AIDS Care*, 18, (6). Retrieved August 18, 2007 from <http://www.secureth>.
- [14] Poggenpoel, M., & Myburg, C. (2006). Mental Health Challenges of Educators concerning the Experience of Violence in the Second-

- ary School Settings. *International Journal on Violence and Schools*, 2. University of Johannesburg: Johannesburg.
- [15] Promtussananon, S., & Peltzer, K. (2005). Perception of Tuberculosis: Attributions of Cause, Suggested Means of Risk Reduction, and Preferred Treatment in the Limpopo Province, South Africa. *Journal of Health, Population and Nutrition*, 23, (1) 74-81. Retrieved August 22, 2007 from <http://www.org.br/request?hn05009>.
- [16] Rieder, H.L. (1999). *Epidemiologic Basis of Tuberculosis Control* (1st Ed.). Frans: Boulevard Saint-Michael.
- [17] Singleton, J. K. (1999). *Primary Care*. New York: Courier Westford.
- [18] Stopler, M., & Hecht, B. K. (2006, July 20). *Are You Living a "Healthy Lifestyle?"* Retrieved November 18, 2007 from <http://www.medicinnet.com/script/main/art.asp?arti-clekey=46947>
- [19] WHO. (2004). *WHO Report: Global Tuberculosis Control: Surveillance, Planning, Financing*. Geneva: WHO.
- [20] WHO. (2005). *Global Tuberculosis Control: Surveillance, Planning, Financing*. Geneva: WHO.
- [21] WHO. (2006). *the Global Plan to Stop TB. 2005-2010*. Geneva: WHO.
- [22] WHO. (2007). *Global Tuberculosis Control: Surveillance, Planning, Financing*. Geneva: WHO.
- [23] WHO. 2002. *Stop TB Communicable Diseases*. Geneva: WHO.
- [24] WHO/CDS/TB. (2000). *Tuberculosis Control in Prisons: A Manual for Programme Manager*. Geneva: WHO.
- [25] WHO/CDS/TB. (2003b). *Treatment of Tuberculosis: Guidelines for National Programme* (3rd ed.). Geneva: WHO.