



FACTORS THAT CONTRIBUTES TO POOR NUTRITIONAL STATUS TO TB CO-INFECTED PATIENTS WITH HIV IN KAPIRI-MPOSHI

NOVEMBER, 2017

(Conference ID: CFP/159/2017)

Given Silumbe

School of Humanities – Information Communication
University (ICU)
Kabwe, Zambia
silumbe.given@yahoo.com

Lucky Musonda

School of Humanities – Information Communication
University (ICU)
Lusaka, Zambia
Mwanasa1@yahoo.com

ABSTRACT

This study was conducted in order to find out factors that contribute to poor nutritional status of TB co-infected patients with HIV. A case study of three compounds in Kapiri-Mposhi District namely Soweto Tazara, Matilyo and Turn off.

According to the world health organization (WHO) poor nutritional status is 70% among TB co-infected patients with HIV.

This study involved semi-structured interviews with 40 TB co-infected patients with HIV in each of three compounds in Kapiri-Mposhi and the study also involved semi-structured interviews with 10 HBC/Health workers. Each TB co-infected patient participated in a semi-structured interview to assess their nutritional status, understandings and perception about TB/HIV. HBC/Health workers participated in a semi-structured interview to assess

contribution factors of poor nutritional status to TB co-infected patients with HIV.

50% of TB co-infected patients with HIV were tested for their nutritional status using Mid Upper Arm Circumference (MUAC) and were found with malnutrition and 10% of them correctly identified that TB is an air born disease.

40% of HBC/Health workers stated that the major contributing factor of poor nutritional status to TB co-infected patients with HIV was **firstly unemployment**. People do not work and these who work for Chinese or Indians when they discover that an employee has TB, the employees are chaste from work and employ another one. Also to those that are working for Tazara get paid late, they at times get paid after five months. And so due to all these challenges, TB co-infected patients with HIV are impended

from eating a variety of food stuffs and this has lead them into malnutrition.

Secondly, Tuberculosis. OIs (tuberculosis) was an independent risk factor for under nutrition. TB is associated with under nutrition. The HIV-induced immune impairment and heightened subsequent risk of OIs can worsen nutritional status.

Thirdly, some farmers when they are TB co-infected patients don't have power to grow enough food as a result they are poor and have no **food security**.

Fourthly, poverty in Kapiri 15 percent of people live below the poverty line and 8 percent were classified as extremely poor and **poverty rate** were highest for female headed co-infected patient households, with extremely poverty levels.

Within one week after the interview, in each compound gathered for a 2 –hour lecture educational intervention. After the educational intervention, 5% correctly identified that TB is an air born disease, and 3% demonstrated an understanding that by covering mouth when coughing and good ventilation can help prevent TB.

CONCLUSION

The data demonstrated a statistically significant improvement in knowledge about TB. Based on the data provided, it can be stated that the results suggest that educational intervention described in the abstract may raise awareness about TB and poor nutritional status. Recommendations oscillate around reducing diagnostic delay in government health services and the provision of a comprehensive nutritional programme and social protection for TB patients and people living with HIV (PLWH).

ACKNOWLEDGEMENT

The accomplishment of this Report would not have been possible without the active and dedicated efforts of a number of institutions and individuals. To begin with, I am particularly indebted to Kapiri Catholic Parish Priest Home Based Care Organization for granting me the much-needed study leave which enabled me to pursue this study, not forgetting community chairmen for the permission to use their communities as study compounds.

I am also sincerely thankful to Felistus Nalavwe moral, spiritual as well as financial support throughout the research process.

It would be futile to end my list of tribute without acknowledging Dr. Lucky Musonda (Supervisor), Dr. Oliver Silumbe (Co-supervisor) for their overwhelming academic guidance and supervision. Sincere gratitude is also extended to Mr. Winter Musonda and Mr. Mwizukanji Silungwe for their valuable comments, corrections and academic guidance throughout the process of my study.

INTRODUCTION/BACKGROUND

TB is an infectious disease caused by *Mycobacterium tuberculosis*. It typically affects the lungs (pulmonary TB) but can affect other parts as well (extra pulmonary TB). The disease is spread in the air when people who are sick with pulmonary TB expel bacteria, for example by coughing. Overall, a relatively small proportion of people infected with *M. tuberculosis* will develop TB disease. However, the probability of developing TB is much higher among people infected with HIV. TB is common among men than women, and it affects mainly adults in the most economically productive age groups.

TB-HIV co-infected cases are treated with first line anti-TB medication however, most of the patients who are on both anti-TB medication and ART's tend to have poor outcomes compared to those who are not (**Harries, Zachariah and Lawn, 2009**)

BACKGROUND OF TB

TB is a major public health problem in Zambia, TB at the same time is one of the diseases causing ill health and deaths. Case notifications from 1964 to 1984 were stable 100 new cases/100,000 population. From 1985 to 2000 increased five times to 512 new cases/100,000.

In Zambia, a country with a population of thirteen million people, TB continues to be among the big public health problems (Mulenga et al. 2010). In 2010, TB notification rates were reported at 365

per 100,000 populations for all ages (MOH, 2013).

The disease varies among provinces, with the highest notifications being reported from Lusaka followed by Copper belt and Southern Provinces (Anonymous, 2012). The country has 158 diagnostic facilities and 1800 treatment facilities and TB diagnosis in Zambia is mainly through microscopy (Kapata et al., 2011). Some people develop active TB disease soon after they become infected, before the immune system can fight the TB bacteria. Other people don't develop the disease but have active TB disease years later when their immune system becomes weak for one or another reason such as an infection with HIV.

STATEMENT OF PROBLEM

TB co-infection is one of the serious public health problems in Kapiri-Mposhi .TB co-infected patients with HIV in Kapiri-Mposhi district were having poor nutritional status and poor households.

PURPOSE OF THE STUDY

The purpose of the study was to investigate the contributing factors of poor nutritional status of TB co-infected patients with HIV. And to create awareness on the importance of preventing poor nutritional status to co-infected patients.

RESEARCH OBJECTIVES

GENERAL OBJECTIVES

* To find out contributing factors of poor nutritional status to TB co-infected patients with HIV.

*To assess awareness about TB.

*To assess how many co-infected patients' household's members, have test TB.

*To establish if opportunities are available from the state to assist to improve the nutritional status of people living with HIV who are infected with TB.

SPECIFIC OBJECTIVES

*To make recommendations on the way forward.

1.4 RESEARCH QUESTIONS

1. What is TB?
2. How many times do you eat per day?
3. How much do you spend per month?
4. Where do you work?
5. How many have tested TB in this household?
6. What are the contributing factors of poor nutritional status to co-infected patients?

RESEARCH VARIABLES

Dependent variable

* Measuring nutritional deficit time.

Independent variable

* Measuring the nutritional status of people living with HIV who are infected with TB.

* Measuring the weight.

SIGNIFICANCE OF THE STUDY

The researcher anticipates that the study will contribute to the knowledge available and the findings will create awareness among Zambians especially to co-infected patients on how to improve their nutritional status if they are infected with HIV. This will help the Zambian government to seriously look in to the problem and find progressive solutions to them.

CONCEPTUAL FRAMEWORK FOR ASSESSING NUTRITIONAL STATUS

40 TB co-infected patients with HIV



Figure 2.1: Conceptual model illustrating the ideal procedure for Assessing nutritional status in the context of co-infected patients.

Whereas; (MUAC) means Mid Upper Arm Circumference.

Prevention, treatment and control of poor Nutritional status

According to WHO (2007) Preventions, TB patients requires good diet with adequate amount of food within all the 3 food groups and the food should be protected from contamination. HEPs (high protein supplement) is one of treatment which should be given to co-infected patients about 180 grams of HEPs per day, which is

equivalent to six tablespoon and the same amount of HEPs in divided portion of 60grams 3 times a day.

OPERATIONAL DEFINITIONS

TB: is a disease caused by a germ called mycobacterium tuberculosis, which affects the lung and other parts of the body.

SYMPTOM: It is what a patient is complaining of.

SIGN: It is what you find on the patient or what you observe.

HIV: Is a virus that attacks cells of the human body that defend the body against diseases (immunity system).

NUTRITION: It's the study of food and how the body uses it and consists of groups; namely **Body building, Energy giving and protective foods.**

ANTIRETROVIRAL THERAPY: This is a therapy which is given to the people living with HIV.

POVERTY: The state of being extremely poor. The state of having little or no mutual possession.

PULMONARY TUBERCULOSIS (PTB): This is TB that affects the lungs of a person.

EXTRA PULMONARY TUBERCULOSIS

(EPTB): This is TB that is found outside the lungs of a person.

TB RELAPSE: This is the previously treated TB and declared cured but returns with active TB infection.

2.0 LITERATURE REVIEW

According to the World Health Organization, the Global burden of Tuberculosis remains high. In 2011, an estimated 8.7 million new cases of TB were reported of which 13% were co-infected with HIV. In addition, 1.4 million people died from TB in 2011, with 400,000 deaths occurring in HIV positive individuals. **Managing Tuberculosis in the HIV setting Zambia (July 2014) P (3).**

According to **Mekonnen et al .2015** .In his study, TB/HIV co-infection was significantly associated with age group of 25–45 years and PTB+, $P < 0.05$. It was well known that TB and HIV affect reproductive age groups of the population. Additionally, **Ehlers et al.** reported that only 2 of the 76 PTB– patients had been diagnosed correctly. Moreover, a study by **Iwnetu et al.** concluding that up to 15 % of all EPTB cases could be wrongly diagnosed. The last possible reason might be due to zoonotic transmission of TB and genetic features of the pathogen and/or the host population.

According to Swami Nathan Volume 46, Issue 6 Pp. 946-949. He Compared the nutritional

status of individuals with human immunodeficiency virus (HIV) infection alone, individuals with HIV infection and tuberculosis (after completion of Anti Tuberculosis treatment), and HIV-negative individuals and found that malnutrition, and anemia, were most pronounced among HIV-positive patients with tuberculosis.

[HIV Med. 2006] Regarding CD4 count, they found that PLHIV with more than 350 cells/mm³ were more well-nourished than PLHIV with less than or equal to 350 cells/mm³. Since this is a cross-sectional study, some longitudinal study can better explain the relationship between CD4 count and nutritional status. The same is true for understanding the relationship between OIs and under nutrition.

According to **Bernard J Ngowi BMC Public Health 2008**. A study was done in Dar es Salaam, Malnutrition was found in 70% of the co-infected patients. Malnutrition and tuberculosis increases morbidity and mortality in HIV patients. Most of the HIV patients, irrespective of their tuberculosis status, were in WHO stage III and IV. Overall, females were more affected with HIV (71.1%) than males, may be due to the fact that females are more vulnerable to HIV than males because of their biological make up, and social and cultural factors.

TUBERCULOSIS SITUATION IN ZAMBIA

Zambia is one of the countries in the world most affected by the dual TB and HIV epidemics. In Zambia the number of cases has steadily increased from 4,572 cases in 1964 to 58,070 by 2004 representing a more than ten-fold increment in TB cases. Factors contributing to rapid increase in TB cases since 1985 are HIV epidemic, population growth, urban overcrowding? **The national Tuberculosis and leprosy control program (fourth edition-2015)** In 2008, Zambia reported 47,333 notifications which increased to 48, 591 in 2009 and a further increase to 48, 616 in 2010 (MOH, 2010). The majority of cases reported were in young adult population groups aged 15-45 years, the same age group affected by HIV/AIDS (Mwaba, 2013). In addition, (Kapata et al., 2011) reported that the rapid increase of tuberculosis in Zambia from 1985 onwards was mainly attributed to the HIV epidemic, though other factors like population growth, urban overcrowding and improved case detection have also contributed.

MATERIALS AND METHODS

Study Area

The study was undertaken in Kapiri Mposhi District, under Catholic Home Based Care which is situated in the central Province, it stands on the great north road and is significant for the railway connection between Zambia Railway line from Kitwe to Lusaka and Livingstone and western

terminal (New Kapiri Mposhi) of the Tanzania-Zambia Railway Authority from Dar es Salaam since 1976, as of 2010 census Kapiri Mposhi District had population of 240,638 people.

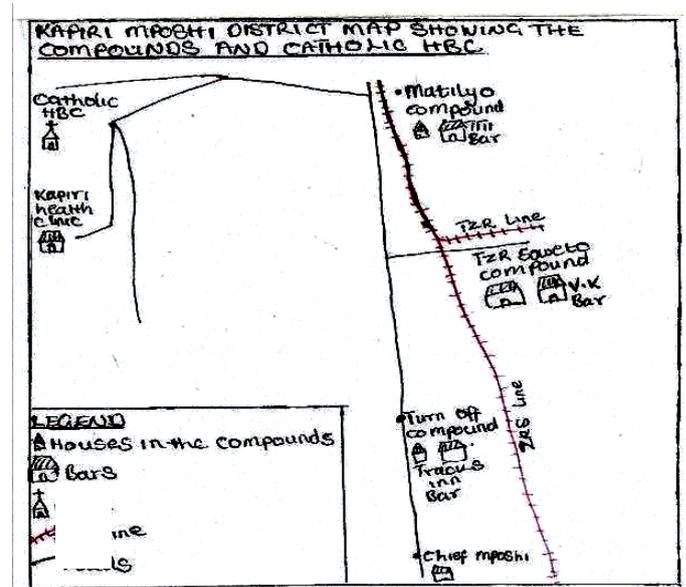


ZAMBIA RAILWAY LINE & TAZARA RAILWAY LINE
TAZARA STATION

Soweto Tazara, Turn off and Matilyo compounds are fast developing settlement areas which began as shanty compounds and are slowly progressing. These locations encompass mainly a population

of unemployed and self-employed people. It is a mixed population with all notable tribes but speaking the local Language which is Bemba. The name Kapiri Mposhi comes from the mountain, which is situated near chief Mposhi. When visitors were going there for a visit they would say, we are going to see the mountain of Mposhi (**Akapiri kakwa Mposhi** in Zambian Swaka language).

Figure 3.2: Map of Kapiri Mposhi district showing compounds and Catholic HBC boundaries



Study design setting and population

Study was conducted under Catholic Home Based Care in Kapiri-Mposhi. The catholic Home Based Care serves a population of about 100 people from the surrounding three compounds, Soweto-Tazara, Matilyo and turn off

were they monitoring the co-infected patients. Limitation of study was community based and co-infected patients.

Study subjects

Subjects were recruited from the TB co-infected patients with HIV. Eligible subjects were those aged 28 years and above and agreed to participate in the study. Monitoring was given free of charge according to catholic home-based care policy for tuberculosis and HIV Management.

Sample size

A total number of 40 TB co-infected patients with HIV who were enrolled between 2016-2017 and 10 CHBC/Health workers and TB treatment supporters were also included in the study.

Data collection and tools

Data was collected from catholic home-based care register and also questionnaires were being used to co-infected patients and to catholic home-based care who were dealing with co-infected patients.

Procedure for nutritional status assessment

Patients were interviewed using questionnaires. Physical examination, including nutritional status assessments (MUAC and Weight) were being used for assessments, and were recorded.

Data analysis

All the data was entered, cleared, analyzed and completed questionnaires were coded by numbers and double entered in electronic format excel. This makes the fact that data collected was quantitative in nature. As such, data analysis and interpretation was done manually, using simple tabulations and percentages.

ETHICAL CONSIDERATION

The study appropriates ethical approval from relevant authorities', written permission was obtained from Catholic Parish Priest HBC and subsequent permissions from the community chairman. Oral informed consent was obtained from the patients to interview them.

SIGNIFICANCE/IMPLICATIONS

The research on the factors that contributes to poor nutritional status to TB co-infected patients with HIV is innovative because it brings together analysis of national discourses about Zambia with a study of the practices and choices of the individual Zambian TB patient who has HIV and whose nutritional status is at issue.

The research will be helpful to the nation, and Organization of Catholic Home Based Care who are dealing with TB and HIV. The results of analysis were being shared with the Kapiri-Mposhi Catholic Home Based Care people and the nation at large and work wasn't just an extraction of truths, but to give them information

with which they can better their lives and resources.

PRESENTATION OF FINDINGS AND ANALYSIS OF DATA

The data collected through the use of interviews as well as questionnaires which the researcher distributed among randomly selected individuals. The data has been represented in such a way that the respondents were symbiotically related. The table below represents a summary of other views given by respondents indicating the percentages of response to particular questions.

| CATEGORY | DISTRIBU TED | RECEIVE D | PERCENTA GE |
|--|-----------------|--------------|----------------|
| CHBC/health workers dealing with co-infected cases | 10 | 10 | 20% |
| Co-infected patients | 40 | 40 | 80% |
| TOTAL | 50 | 50 | 100% |

The above table shows that 20% of the respondents was made of CHBC/Health workers who deals with co-infected patients, 80% from the co-infected patients. From the researcher's point of view, the response was not bad as the questionnaires. The researcher on this part observed that the respondents were willing to participate in the study as they indicated that it was very concerning issue which has compacted the society negatively.

Response Rate of Respondents

The questionnaires were distributed among CHBC/Health workers dealing with co-infected

cases and co-infected patients. The table below shows the statistics range.

| QUESTIONS ASKED | CHBC/Health workers | Co-infected patients |
|--|--|---|
| How many households' members who have tested for TB? | 1 said.....2 3 said.....No ne | All 40 said.....None |
| Do you know any NGOs that are concerned with TB cases? | All the 10 said.....Yes | 30 said.....No 10 said.....Yes |
| Do you think the services offered at the clinic are enough to deal and prevent TB cases? | 3 said.....Yes 7 said.....No | 15 said.....Yes 25 said.....No |
| Do the co-infected patients receive appropriate Treatment? | 1 saidYes 9 said.....No | 30 said.....No 10 said.....Yes |
| Is there any relationship between TB and HIV? | All the 10 said.....Yes | All the 40 said.....Yes |
| How many times do you eat per day? | All the 10 said3 times | 30 said.....once 10 said.....2 times |

NUTRITIONAL STATUS ASSESSMENTS

40 co-infected patients measurement were analyzed and the findings shows that poorer nutritional status. TB co-infected patients with HIV were being tested for their nutritional status using (MUAC) Mid Upper Arm Circumference and malnutrition was being found.

Significantly more HIV tuberculosis co-infected patients were found malnourished 14/20, 70%, $\chi^2 = 7.2$, $p = 0.007$.

DISCUSSION AND INTERPRETATION OF FINDINGS

High prevalence of malnutrition among co-infected patients was found. In addition, according to Swami Nathan Volume 46, Issue 6 Pp. 946-949. He Compared the nutritional status of individuals with human immunodeficiency virus (HIV) infection alone, individuals with HIV infection and tuberculosis (after completion of Anti Tuberculosis treatment), and HIV-negative individuals and found that malnutrition, and anemia, were most pronounced among HIV-positive patients with tuberculosis.

[HIV Med. 2006] Regarding CD4 count, they found that PLHIV with more than 350 cells/mm³ were more well-nourished than PLHIV with less than or equal to 350 cells/mm³. Since this is a cross-sectional study, some longitudinal study can better explain the relationship between CD4 count and nutritional status. The same is true for understanding the relationship between OIs and under nutrition.

Nutritional Deficiency

It was also found that **nutritional deficiency** in co-infected patients starts occurring when their bodies' starts not absorb or not getting from food

the necessary amount of a nutrient. And deficiencies can also lead to a variety of health problem. It was also found that **Thiamine or vitamin B-1 deficiency** can help their bodies to turn carbohydrates into energy as part of their metabolism and lack of thiamine can result in **weight loss** and **fatigue**. And eggs, legumes, nuts, seeds, wheat germ and pork was recommended that us the good sources of the vitamin



PIG



WHEAT GERM



LEGUMES



EGGS



SEEDS



NUTS

NGOs and Churches

None of the NGOs supports co-infected patients in terms of food except from the catholic home based care, when they receive the food aid. And no co-infected patient household in Kapiri was able to consistently provide the food required and requested by the co-infected patients, and used various strategies to cope with the shortage and

no co-infected patients households received food aid or any form of state welfare. Households were often charged 50% interest on money borrowed—this type of informal borrowing is known as **Kaloba** and is widespread in Kapiri.

Five of the forty co-infected patient's households sold off assets and livestock, partly to buy food and partly to pay for other costs related to TB. One very poor household sold all its livestock; at recruitment, they had one chicken and two pigeons and during the course of the study, the chicken and the pigeons were sold off.

According to the catholic home-based caregiver in Kapiri, TB co-infected patients just like poor people are resented and treated more like dogs.... Some are actually called dead people. One of catholic home-based caregivers explained that they offer spiritual help and practical assistance to co-infected they visit, but “when you reach the household, they will ask you what type of food you have brought for them”. The Catholic HBC organization did occasionally get food aid (maize, beans, cowpeas, and sun hemp) donated by Church Health Association of Zambia, but this was sporadic and when they last received it, it was only enough for 45 co-infected patients households—they had over 96 on their register. And my observations was that both visits and food aid only reached a few households. I also noted that approaching the Catholic priest

directly was a more effective approach before going through the CHBC organization.



Government Health Services

Poor health care coupled with disease and hunger have led to life expectancy in Kapiri-Mposhi. Treatment supports were doing contact tracing to the TB co-infected households members and to provide sustained counselling to TB co-infected patients and their households including uptake of screening in all forty of TB co-infected households none of their household's members have tested for TB. Synergy of co-infected with TB and HIV plays out for affected individuals and their households in the context of poverty and overstretched public services ,from the study it is clear that patient were experienced a protracted

diagnostic search an indication of how slow the clinic is to suspect and test TB. TB patient were ill for between two and six months before being diagnosed, during that time patient first treated themselves with herbs and painkillers before going to traditional healers or the clinic.

Although not always quick to diagnose TB, the government health system provided consistent support to TB co-infected patients in the study, providing them with medical care and free treatment. The TB co-infected patients complained about the health staff once diagnosed. And this was due to poor staffing levels which one of the co-infected complained. "The ART clinic is a long process. You go early in the morning and get back late at night". She had experienced having to queue and not managing to get seen at all "There were many problems. When I first went to the ARV clinic, I was told to give blood so that tests would be done. When I went back for my results, I was told that the results were lost. Before I left, I gave them more blood. When I went back the second time, I was told that my blood was destroyed because there was a power failure, so my results were not ready. I gave blood the third time and it finally went well. I was not given the medicine the same day. I had to go back. On my fourth trip, I was given aspirins for two weeks and an appointment was made for me to visit the clinic after two weeks. I went and then some tests were done. I

made about five trips to the clinic before I finally started my ARV drugs” (45 year old co-infected man) complained of repeated visits to the ART Clinic

Within one week after the interview, in each compound gathered for a 2 –hour lecture educational intervention. After the educational intervention, 5% correctly identified that TB is an air born disease, and 3% demonstrated an understanding that by covering mouth when coughing and good ventilation can help prevent TB.

Struggling to Provide TB Patients with Special Foods

“I have a child who has TB. He cannot ask for special foods because he is not working. He must accept what I am offering him, because he is not even getting the grant. If he was...he would buy himself those morvite (wheat meal), carrots, and all the special foods...he does not ask (for special foods) but I sometimes feel for him and buy him fruits, cabbages, but we don't have them at the moment. I do buy those things when I have the money” [50-year-old woman, group discussion]



A strength of the study was that the data came from Catholic Home-Based Care that takes care of the co-infected patients daily and to co-infected patients themselves, so the results reflect the real situation in CHBC co-infected patients as where as to the co-infected patients' households.

CONTRIBUTIONS FACTORS OF POOR NUTRITIONAL STATUS TO TB CO-INFECTED PATIENTS WITH HIV IN KAPIRI-MPOSHI

The major contribution factors of poor nutritional status to TB co-infected patients with HIV were found to be, **Firstly unemployment**. People were not working and those who were working for Chinese or Indians when they discover that an employee has TB, the employees were chased from work and employ another one. Also to those that were working for Tazara they were getting paid late, they at times get paid after five months. And so due to all these challenges, TB co-infected patients with HIV are impended from

eating a variety of food stuffs and this has lead them into malnutrition.



POOR SALARY TAZARA HOUSEHOLD

I am the breadwinner, everyone looks up to me but now things are tough I used to sell tomatoes at Tazara market. My husband works at Tazara and it is now four months he hasn't get paid. And this time I don't have power to go and sell tomatoes at the market and I don't have any food to feed my family. Sometimes we can even eat once per day. [31-year-old female TB co-infected patient].

Secondly, Tuberculosis OIs (tuberculosis) was an independent risk factor for under nutrition. TB is associated with under nutrition. The HIV-induced immune impairment and heightened subsequent risk of OIs can worsen nutritional status.

Thirdly, Food insecurity was high, people were not having access to a regular food supply. TB co-infected patients farmers were not having power to grow enough food as a result they became poor and no **food security**.

Loss of Livelihood and Productivity

All of the co-infected patients who were contributing to household living before they fell sick, and with the exception of three TB co-infected patients, had to stop their normal livelihoods when they fell ill. One man was not able to engage in farming.

Unable to Farm

“My biggest problem is that I have no money to use. The rains are about to start but I cannot farm and this means that my children will starve next year. If I had money, I would have paid other people to farm for me so that by the time I get well my children will have something to eat. I feel very bad because my family is now affected”

[30-year- male TB co-infected patient].



All the co-infected patients' households had **food insecurity**. For twenty of them, this meant sometimes not having any food. Ten of these households had no maize in their **butala** a sign of being very poor. All co-infected patient's households in Kapiri relied on produce from subsistence farming, livestock, foraging, and wild foods to feed the household.

Food Insecure Households

"I also lack a lot because even the food aid (maize, beans, cowpeas, and sun hemp) which donated by catholic home-based care was not enough. Look now the small one was looking for porridge! There's no sugar, no maize-meal, there's nothing – we only have maize...sometimes we cook sump and they eat it

when going to school and that becomes their meal for the day.... I am not right. I always think of what are my children going to eat, due to all these challenges I have resorted to send my children to go and pick some bottles and start selling them in my quest for survival. Now that makes me sicker it causes me a lot of stress" [39-year-old female TB co-infected patient].



Fourthly, poverty in Kapiri 15 percent of people live below the poverty line and 8 percent were classified as extremely poor and **poverty rate** were highest for female headed co-infected patient households, with extremely poverty levels. The effects of poverty were seen in co-infected patients around 15 percent of co-infected patients were **under weight**, due to high food prices coupled with extreme poverty, families spend 64 percent of their income on basic food needs.

CONCLUSION AND INTERPRETATION OF FINDINGS

High prevalence of malnutrition among co-infected patients was found. The data demonstrated a statistically significant improvement in knowledge about TB. Based on the data provided, it can be stated that the results suggest that educational intervention described in the study may raise awareness about TB and poor nutritional status.

The study demonstrated that all co-infected patients' households are adversely impacted by the event of TB in an adult member in short term especially if the TB co-infected patients has pivotal role in the household and if the household is anyway poor or very poor and factors were more long term and the majority of co-infected patients fallen deeper into poverty and in debt and short on food. Also, co-infected patients and their families, the issues of livelihood and food requirements stretch indefinitely.

The study has established that poor nutritional status among co-infected patients were high in Kapiri-Mposhi district. And high rates of play a role in exacerbating poverty in Kapiri which is approximately 10 percent of adults in Kapiri-Mposhi have HIV and 3 percent children were orphaned as a result of the disease.

RECOMMENDATIONS

1. Social Protection for TB Co-infected patients in Kapiri:

Given the extent of rural poverty in Kapiri, the implicit link between food and treatment, the loss of patient and household livelihood during TB illness and the converging impact of TB, HIV, and food insecurity, access to effective social protection from the state and/or NGOs during the period of TB treatment (6 or 8 months) is critical to allow poor households to recover from the impact of TB.

2. More efficient ART services in Kapiri:

The roll-out of ART in Kapiri entails that the Zambian government needs to address current inefficiencies in the ART services in the areas. It is recommended that steps are taken:

- To reduce the distance, the number of visits needed to start ART, congestion, and lengthy administrative procedures.
- To improve management of samples, and the maintenance and availability of equipment.
- To increase staff and resources.

3. Promotion of TB co-infected patient's empowerment:

Distribution of fertilizers to farmers, and to those that are not working, small loans should be given to them for self-sustenance.

4. Nutritional Support for TB co-infected patients:

Nutritional support for TB co-infected patients could go beyond porridge and milkshakes and ad hoc food parcels to households identified to be in

need, and in Zambia, beyond the ad hoc provision of soya in a limited number of government health facilities to a more comprehensive nutritional programme that is more integrated into existing TB and HIV programmes as recommended in the recent U.S. Agency for International Development (USAID) review of TB and nutrition (USAID 2008).

5. Access to TB screening to the household members:

TB treatment supporters should make sure that **contact tracing** is done to the TB co-infected households members and to provide sustained counselling to TB co-infected patients and their households including uptake of screening.

6. Integration of TB into HIV initiatives at the community level, including CHBC /TBTS.

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PLAN OF WORK SCHEDULE

| DATE | TIME | ACTIVES(USING QUESTIONNAIRES)/GROUPS DISCUSSIONS |
|----------|----------|--|
| 13/01/17 | 07:00HRS | 24 co-infected patients and 2 CHBC workers. |
| 14/01/17 | 08:00HRS | 4 co-infected patients. |
| 16/01/17 | 07:00HRS | 10 co-infected patients. |
| 17/01/17 | 08:00HRS | 8 CHBC/health workers. |
| 2 /02/17 | 14:00HRS | Group discussion Soweto Tazara |
| 3/02/17 | 14:00HRS | Group discussion Matilyo |