

## **THE IMPACT OF NUTRITION ON THE RECOVERY OF TUBERCULOSIS-INFECTED WOMEN IN ZIMBABWE**

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### **ABSTRACT**

The study focused on the impact of nutrition and the role of care-givers on the recovery of tuberculosis (TB) - infected women at a mission hospital in Zimbabwe and the relationship between nutrition and drug intake. The study focused on women, in particular, because they are the most marginalized in Zimbabwe. They are also the family care-givers and the high among the recorded deaths at the hospital as of today (women consisted sixty percent of the total). The study involved a qualitative approach. Open ended interviews and questionnaires were used in the case study to collect data. Twenty women patients out of a population of sixty women patients were purposefully sampled. Five nurses who were manning the tuberculosis section were all part of the sample. Data collected revealed that good nutrition and good caregivers play a pivotal role in the recovery of the women. Good nutrition also enhances the functioning of drugs in the body and reduces worsening of the conditions. There are many problems related to food intake that educating the tuberculosis-infected women on how to curb them is of great importance. It is recommended that the government, NGOs, and other stakeholders be informed through such studies about the plight of women infected by tuberculosis. Zimbabwean women are an endangered species and a vulnerable group, as far as tuberculosis concerned.

**Keywords:** tuberculosis, nutrition, caregiver, marginalized.

### **Introduction and Background of the Study**

Therapeutic diets have lately been regarded as playing a major role on the recovery of people from any ailment or disease. Good nutrition is pivotal in remedying the damage caused by any disease, including tuberculosis (TB) (Ndungi, 1982). When people are not in good health, they require support, especially in the provision, preparation, and serving of food. The attention given to women suffering from tuberculosis in the mission hospital, in relation to their nutritional intake, is a cause for concern.

Women in Zimbabwe are generally known as caregivers. According to The Cleveland Clinic Foundation (2009), women are socialized to be the caretakers of others. Haralambos and Holborn (1995) suggest that primary socialization begins at home, where parents socialize their children in social roles. Social roles are instilled from birth and these become part of life. Thus, the theory of gender role socialization forms the basis of this study. Women in Zimbabwe are born caregivers and are generally known to be responsible for all the cooking and cleaning of the home. The question of who will take care of the caregiver when she is not well within the family is yet another critical issue. The issue becomes more complicated when seen from an angle of who will prepare and serve the food to the sick women.

Mothers, in particular, are expected to take care of the family. Cooking and washing for the family by mothers is one other gender role stereotype which has brought contention. Arndt (2002) states that feminism is a world view which opposes the existing gender relationships. Planning and preparation of meals require caregivers who have the knowledge and are willing to prepare well-balanced diets and, in this case, Zimbabwean women are the common caregivers. Bryden (2009:2) says “We have spent our energy on HIV/AIDS and now we need to show the same commitment to tuberculosis, especially with tuberculosis in women”. The focus is on women because their problems are more as compared to those of their male counterparts, since most of them are among the disadvantaged. Ndungi (1982) states that all invalid diets should not lack any of the nutrients, except for medical reasons. The issue of who will source the food, plan the meals, and prepare and serve the food becomes pivotal in ensuring quick recovery. Thus, there is need to study the impact of nutrition on the recovery of women tuberculosis patients at the hospital, since most Zimbabwean women are a vulnerable group and research of this nature are of great importance.

### **The relationship between nutrition, the role of care-givers, and the recovery of tuberculosis patients**

The relationship between nutrition and the recovery of tuberculosis patients is intertwined with not only the provision of food, but also with the cooking and serving of food. Women, as caregivers, plan, prepare, and serve meals. World Health Organisation (1996) suggests that the importance of this relationship was unveiled a bit later after the discovery of tuberculosis Zimbabwe Pharmanews (1998:15) states that “tuberculosis has existed since 5000 BC but it now kills more people than ever.” Information of this kind prompted this research. The mortality rate in Zimbabwe is very high. It is next to HIV and AIDS and women are the most TB infected species (World Health Organisation, 1998).

Birch, Cameron, and Spencer (1986) propound that the human body is like a complex piece of machinery in that it is prone to faults and weaknesses if poorly maintained. The women’s body systems require higher maintenance when infected by tuberculosis. Barker (1999:79) states that “The relationship of nutrition and its therapeutic effects is important in aetiology of many of the infectious diseases, like tuberculosis, which is the major cause of death and ill health in the Southern African countries.” Nutrition plays a pivotal role in both the survival and healing of the nation. Good nutrition can be used to alleviate such a problem. Women have a key role in this regard. When in good health, women contribute a lot in both nurturing and feeding the nation.

Eating enough and a balance of different foods helps repair and build body tissue, maintain body weight, build body cells, and improve the performance of the immune system. A balanced diet is critical for the quick recovery of a tuberculosis patient. Bryden (2009) says the impact of tuberculosis on women is quite serious because they are at the bottom of everything, whether it comes to health services or economic empowerment and whether it has access to food and nutrition. Infected women are faced with a serious problem when they are not well, since they may fail to plan, prepare, and serve a meal which is balanced. Widows, in particular, suffer most since they would be both breadwinners and cooks as expected by the Zimbabwean culture. This is worsened by the macroeconomic factors, which are fundamentally wrong and have driven nearly everyone into poverty. Most people in Zimbabwe, especially women, are leaving below the poverty datum line, to the extent that having a meal at the table requires a miracle.

In the Sunday Mail (2005), one of the Zimbabwe weeklies, stated that millions of people in Zimbabwe are said to be suffering from different vitamins and mineral deficiencies and health specialists are saying the condition was accelerating the progression of tuberculosis, HIV, and AIDS. Tuberculosis, as one of the opportunistic infections of HIV and AIDS, is a cause for concern for the Zimbabwean people. The mortality rate of women, as recorded at the Mission Hospital in Gutu Central District during the past six months, is quite worrisome. Connolly and Nunn (2009) suggest that tuberculosis is the leading infectious cause of death in women worldwide. When one has been infected by Myco-bacteria bovis (Tuberculosis causing bacteria) then given proper nutritious meals, the infected person has the opportunity to quick recovery (Ndungi, 1982). According to Seear (2000), the most critical period in tuberculosis is the first two to six weeks (2-6), since the patient's body needs to kill or drive away the bacteria.

Ndungi (1982:1) asserts that "All invalid diets should not lack any of the nutrients, except for medical reasons." This means that tuberculosis-infected people's diet should also consist of all nutrients required for normal body functioning, thus, repair and growth as well as development and maintenance of the immune system. The diet should be suitable for the patient with regards to consistency and digestibility of the food. Chigumira (1999) suggests that it is necessary for tuberculosis-infected people to be given food sources of different necessary nutrients to help them recover from illness, although these should be supplied in small frequent amounts. Tuberculosis-infected people require carbohydrates, proteins, fats, vitamins, and minerals to regain the depleted nutrient level.

This may be evaluated as that, death-related infectious diseases and the levels at which people are infected could be drastically reduced if proper nutrition and knowledge about good nutrition is delivered to every individual in the society. The sources of food and the availability of locally available foods have an impact on therapeutic diets. Food provisions determine the nature of diet and how balanced it is. Tuberculosis patients at the hospital are in a geographical area, where fruits are not in abundance hence fruits are expensive and not readily available. Food sources are limited to carbohydrates, while other nutrients are in limited supplies.

According to King and Burgess (1992), tuberculosis patients need a high calorie intake because the bacteria will use a lot of energy. A good supply of well cooked carbohydrates enhances easy digestion and absorption. Women, as caregivers, have the skills of cooking carbohydrates thoroughly. The issue becomes complicated when they are unable to take care of themselves and then someone should do that for them. Carbohydrates should be supplied accompanied by any phosphorus food source for an easy breakdown of carbohydrates. Cameron (1978) points out that phosphorus helps in the metabolism of fats and carbohydrates. Therefore, the supply of phosphorus should be in the form of fish, eggs, and milk.

Consumption of proteins, from both plant and animal origins, is important to every person; however, a lot of questions have been raised about the intake of red meat (beef, goat, mutton, and game) by people living with HIV and AIDS. World Health Organisation (1996) suggests that the intake of protein, particularly of animal source, should be taken in moderation. Since high levels of fat and over consumption of red meat leads to elevated blood fat levels, which increases the chances of tuberculosis-patients of having heart diseases and suffering from diarrhoea. World Health Organisation (1998) and Chigumira (1999) added that red meat, when taken in moderation, is also a good source of protein and a natural way to acquire zinc. Iron and Vitamin B6 (Pynodixine) functions as enzymes, which are

concerned with the reconstitution of amino acids derived from the proteins of the body's own tissues, such as haemoglobin, hence the need for red meat to be taken in small amounts.

Vitamin A (Retinol) is also important in the diet of the tuberculosis patients. Women's Action Group (2002) propounds that vitamin A has three essential functions, which are promoting good eyesight, growth and development of body muscles, and boosting the immune system. In support, World Health Organisation (1998) states that vitamin A is also needed by the tuberculosis patient for a sufficient barrier immune function, which is achieved by promoting the integrity of mucus membranes, and boosting both cellular and humoral response to infection and supports the proliferation of T-helper cells. The Sun Health (2008) support by saying "tuberculosis patients who have diarrhoea showed an improvement after being given pumpkins and sweet potatoes in their diet since they have an added advantage of low glycemic index and high fibre." Thus vitamin A is pivotal in the recovery of the tuberculosis patients.

Tuberculosis-infected people need to be supplied with both classes of iron, that is, heme iron (derived from blood and animal tissues) and non-heme iron, which is present in vegetables, fruits, and cereals. Iron is essential for the formation of hemoglobin of the red cells and clotting of blood. Seear (2000) points out that iron are a central component of oxygen-carrying molecules (hemoglobin and myoglobin). This means that the tuberculosis patients should eat iron food sources for their body cells to be supplied with oxygen, since iron has oxygen-carrying molecules.

Martin and Marias (1996) suggest that low socio-economic status contributes to food inadequacy. King and Burgess (1992) assert that increasing economic hardships will mean increasing pauperisation and financial instability in the home. Focusing on tuberculosis-infected women at the Mission Hospital, showed that they came from different socio-economic backgrounds and they got different food nutrient sources. They also prepared them differently, thereby enhancing or destroying their nutritive value, digestibility, function, and metabolism. Women in Zimbabwe are generally involved in planning, preparation, and serving of food. However, the methods they use are not always correct. Hammand (1987) suggests that the uses of cooking methods that conserve nutrients are of great importance since they increase food's digestibility, absorption, and metabolism.

### **The relationship between drug intake, nutrition, and the health status of the women patients**

Nutrition is based on and closely interpreted in relation to chemical, bio-chemical, and physiological processes, which take place in the body. Robinson and Lawler (1977) suggest that good nutrition is pivotal to the tuberculosis-infected patient's health because good nutrition reduces the chances of having the wasting syndrome and promotes the absorption of drugs in the body's cells. Thus, when drugs are taken solely in an empty stomach, they can damage the gut or may not be easily absorbed into the cells and, if absorbed, they will cause harm to body cells of the tuberculosis-infected person, thus worsening the situation.

Vitamin C (Ascorbic Acid) is yet another very important nutrient in an invalid's diet. Fambidzanai Permaculture Centre (2005) asserts that Vitamin C has several functions. It participates in synthesis of micro-molecules, including collagen and carmitine, which stimulates formation of bones, skin, and tendon formation and enhancing the neutrophil-functioning killer cell that is important for a sufficient barrier immune function. This indicates that Vitamin C is pivotal in enhancing the immunity system. The patient with a better immune system experiences less pain, which is caused by

the drugs. World Health Organisation (1998) comments that the tuberculosis patients who eat citrus fruits (grapefruits, oranges, naartjies, and lemons) showed noticeable wound healing improvement since Vitamin C boosts immunity and protects against infections. The Sun Health (2008:2) says “Vitamin C (citrus fruits and vegetables) helps in the absorption of iron”.

Robinson and Lawler (1977) argue that tuberculosis-infected patients who take drugs before eating food or after eating a light meal, like tea and bread, were noticed to experience nausea, vomiting, or even loss of appetite. Wrong selection of food and wrong eating habits can be the cause of many ailments in most tuberculosis-infected people. Education, in this respect, is pivotal. Tuberculosis-infected women and their caregivers who lack the knowledge of food choices are likely to face problems related to the link between nutrition and drug intake and tuberculosis. The problems which affect tuberculosis-infected women need to be studied since, in Zimbabwe, the voices of the suffering women are rarely heard.

### **Research Questions**

- a) What is the relationship between nutrition, the role of care-givers and recovery of tuberculosis-infected women?
- b) What is the link between nutrition, drug intake, and health status of the tuberculosis women patients?

### **Methodology**

The case study was the design used in this qualitative study. The qualitative approach was used in order to get insight into the impact of nutrition on the recovery of tuberculosis-infected and to describe the behavior of women infected with tuberculosis. Bogdan and Biklen (1992) define a case study as a detailed examination of one setting or a single subject. Marshall and Rossman (2008) also define a case study as being appropriate when describing an organization or setting. The study of tuberculosis women patients was done in the natural setting, focusing on everyday situations.

According to Cohen and Manion (1985), a case study gathers data at a particular point in time with the intention of describing the nature of existing conditions and determining the relationship that exist between specific events. Furthermore, Leedy (1985) points out that the primary task of a case study is to uncover and explain the ways in which people, in particular settings, come to understand and manage the situation. Zimbabwe women infected with tuberculosis are in a setting and situation which requires good management skills. They are in a situation which needs proper management in order to obtain good results. Hence, the case study was best for the study.

The case study employed two techniques, the interviews and questionnaires, in order to gather data about the tuberculosis-patients. Bell (1998) suggests that when the two techniques are used, they enable the researcher to study the interconnected factors that affect human behavior. The researcher plays a key part during the research process in an interpretive inquiry. The in-depth interviews were used because they allowed respondents to give all data, since there was no rigid format imposed on the interviewees. Interviews were done with the patients since the problem of literacy was to be taken into account, as reading and writing was not necessary on their part. According to Marshall and Rossman (2008) questionnaires, when combined with the interviews, are done in order to have some checks and balances so as to improve on the validity and reliability of the study. The questionnaires, which had open ended questions, were administered to the nurses since they were able to read and understand the questions. The researcher

was there to further clarify any facts required. They answered and returned the questionnaires to the researcher to ensure a hundred percent return.

The Mission Hospital is a peri-urban centre which has a medium density population. The population of tuberculosis-infected patients is around one hundred people, while women contributed sixty percent of the population. Five nurses who man the tuberculosis wards were all selected as part of the sample. Twenty Tuberculosis patients were selected using the systematic random sampling technique. This gave all women patients the chances of being selected. According to Nichimias and Nichimias (1996), these techniques give each participant of the population an equal non-zero probability of being selected. The sampling techniques gave every individual member an equal and independent chance of being selected. Hence the technique was the best for the study.

### **Findings and Discussion**

The discussion of the findings covers the two research questions, which are a) what is the relationship between nutrition and the recovery of tuberculosis-infected patients? and b) what is the link between drug intake, nutrition, and the health status of the tuberculosis patients? Data were presented in narrative forms. Best and Kahn (1993) asserted that the data presentation of a qualitative study can be in the form of a detailed description using narrative forms or descriptive narrations.

#### **The relationship between nutrition, the role of care-givers and the recovery of tuberculosis patients**

The findings indicated that forty percent of the tuberculosis-infected women who took their meals well, showed remarkable recovery in their illness. The remaining sixty percent of respondents who failed to eat proper meals had problems with their rate of recovery and appeared to be more sickly and exhausted (wasted).

Participants within the forty percent (eight women) category, who were managing well, were a group of women who had good caregivers, such as their husbands, and were affording the required foods and the special diet. Gender and Health Group (2009) stated that women of reproductive age are more susceptible to develop active tuberculosis disease once infected with tuberculosis than are men of the same age. Hence, most of them will be staying with their husbands, except for some who had caring relatives. This may be because of the fact that out of forty women, thirty were supported by their husbands and they were a working class and the rest were working class widows who managed to have good support. Doyle (1994) stated that the importance of the relationship between the immune system and nutrition is lately being increasingly recognized, not only in African countries, but also in developed countries. Thus, there is need of having caregivers who can provide the correct diets and are responsible and caring.

The study revealed that majority of the women, sixty percent (twelve women), were widows from a poor background. They failed to secure balanced diets. This was due to the fact that women from poor backgrounds and who were widows were breadwinners and caregivers of the family. Connolly and Nunn (2009) suggest that tuberculosis in women has an adverse effect on child survival and family welfare. The situation became heartbreaking when the women patients failed to secure caregivers who could prepare and serve the meal using the available food. Marginalized women cannot afford to pay the hired caregivers. Wasted bodies were common among this group of women. In some cases, they were almost like moving skeletons. This was the most challenging problem among those from the poor

background. Cheap sources of fruits were not readily available to them since there are limited supplies of locally available fruits.

Ten women showed a lack of knowledge on the importance of therapeutic diets. They failed to understand the relationship between nutrition and their recovery. Their choice of dishes reflected that they were not aware of the importance of a balanced diet. Their diet consisted of mainly carbohydrates and lacked a variety. King (1973) states that a good balanced diet given to invalids to help to boost the immune system and promote quick recovery. However, nurses in charge were trying to educate them on the importance of nutrition. Efforts were made by sisters in charge to educate both patients and their caregivers by teaching them lessons on good meal planning techniques.

### **The link between drug intake, nutrition, and the health status of the TB women patients**

Results revealed that seventy five percent (fifteen women) of the patients and one hundred percent (five nurses) of the nurses indicated that there is a link between nutrition drug intake, tuberculosis, and the health status of the patients. The high figures were probably due to the fact that all tuberculosis drugs are taken after a meal and not just a light meal. Nutrition is the pillar of the tuberculosis patients' health status because it helps them to recover from the wasting syndrome and promote the absorption of drugs in the body cells (Robinson & Lawler, 1977). This may indicate that when this is not considered, physical pain is experienced. The nurses also indicated that when drugs are taken on an empty stomach, they can damage the gut, and when they are absorbed in the body, they cause harm to body cells of the tuberculosis-infected person, thereby worsening the situation.

The study revealed that adequate nutritious diet given to tuberculosis patients contributes a great deal towards ensuring quick continued healing. While the wrong selection of food by the caregivers and wrong eating habits can be the cause of many ailments in the tuberculosis patients (Robinson & Lawler, 1977). The patients who had a habit of taking drugs before eating food or after eating light liquid foods, like tea and bread, were noticed to be experiencing nausea, vomiting, or even loss of appetite. When this happened, the patient had a weakened body and the drugs will be wasted when vomited, resulting in the patient not recovering.

The nurses revealed that patients who took balanced meals before taking their drugs experienced minimum problems after taking their drugs so they showed marked improvements. McGrath (1992) points out that sometimes the doctor or dietician prescribes a particular diet for the patient. The nurses indicated that patients who were managing to have supplementary foods were experiencing minimum problems and showed remarkable recovery. Nurses confirmed that patients who were vomiting, having diarrhoea, and wasting had their conditions improved after eating nutritious meals and taking their drugs well.

### **Conclusion and Recommendations**

The findings revealed that only forty percent (eight women) of the women were managing to eat a balanced diet, although some were failing to have caregivers who were well informed about their needs. Some patients complained that even if they can afford the meals, their caregivers were failing to prepare tasty dishes. The research findings also established that sixty percent (twelve women) of tuberculosis women patients were failing to secure good caregivers and adequate food supply. Widows were the most vulnerable among the other women. They were struggling to secure

good nutritious meals. Sourcing and preparation of the meals were done by their young children, who needed the care of the sick mother.

The study also established that all the nurses and seventy five percent of the tuberculosis patients knew that there was a link between nutrition, drug intake, and tuberculosis patients' health status. Patients who took their drugs after the recommended diet showed noticeable recovery. Nurses confirmed that patients who were taking heed of the advice were recovering fast. Some patients confirmed that good diets help them a lot, although they are difficult to secure.

Therapeutic diets were noted to be pivotal in the recovery of tuberculosis patients. However, the majority of the women (sixty percent) had problems of getting well balanced diets. The other remaining forty percent were managing to get the required diet. There is a relationship between nutrition and drug intake and the recovery of tuberculosis patients. The relationship between food intake and drugs is very critical for the patient to recover. Patients who had fewer problems when they took drugs ate high balanced diets rich in proteins. Those who failed to secure the rich diets experienced greater food intake problems.

The community and caregivers of women tuberculosis patients should be made aware that although women in Zimbabwe are known to be the major caregivers, they also need care. The stereotype that only women can take care of the family should be changed through women organizations, which advocate for women's rights. People are supposed to be sensitized through education that all people, regardless of gender, can be caregivers. The government and NGOs should also look into the plight of women who are infected with tuberculosis. More funds should be channelled to care centres so that women are given the care they deserve. Supplementary feeding for women who are in such a difficult situation should be taken seriously. The government should also empower women in advance so that they are able to manage through the times of testing. Projects manned by women should receive greater attention by both the government and non-governmental organizations.

There is also need for further research on how caregivers are handling their patients, especially women tuberculosis patients. The levels at which the knowledge of nutrition is being imparted to the general populace is also a cause for concern. Most people do not know what a balanced diet is and how to prepare it. Lectures on methods of cooking, in relation to food types, are desperately needed at hospitals where caregivers can be easily given the lectures. Ways of empowering women, especially widows, should be introduced in order to reduce the misery caused by the illness.

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