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Assessment of knowledge on recommended nutritional care and support for TB patients and dietary practice of tuberculosis patients during treatment, Addis Ababa

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Bahir Dar University

Bahir Dar Institute of Technology

Faculty of Chemical & Food Engineering

Department of Applied Human Nutrition

Assessment of knowledge on recommended nutritional care and support for TB patients and dietary practice of tuberculosis patients during treatment, Addis Ababa

By: Selamawit Admassu (BSc.)

*A Thesis Submitted in Partial fulfillment of the Requirements for the Degree of
Master of Science in Applied Human Nutrition*

Advisor: Demewez M.H (Asst.Professor)

July, 2017

Addis Ababa, Ethiopia

DECLARATION

I, the undersigned, declare that the thesis comprises my own work. In compliance with internationally accepted practices, I have dually acknowledged and refereed all materials used in this work. I understand that non- adherence to the principles of academic honesty and integrity, misrepresentation/ fabrication of any idea/data/fact/source will constitute sufficient ground for disciplinary action by the university and can also evoke penal from the sources which have not been properly cited or acknowledged.

Signature

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Date

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
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The following graduate faculty members certify that this student has successfully presented the necessary written final thesis and oral presentation for partial fulfillment of the thesis requirements for the Degree of Master of Science in Applied Human Nutrition.

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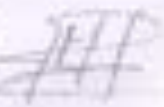
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LIST OF ABBREVIATIONS

BMI	Body mass index
DDS	Dietary diversity score
HIV	Human Immunodeficiency virus
MDR	multidrug resistant
NGO	Non-governmental organization
NNP	National Nutrition Program
PAR	Population attributable risk
SPSS	Statistical package for social science
TB	Tuberculosis
WHO	World health organization

ABSTRACT

Background: TB is one of the major causes of morbidity and mortality in the Horn of Africa with Ethiopia carrying a heavy burden. Malnutrition is a critical yet underestimated factor in susceptibility to infection. Infection saps the individual of energy, which reduces productivity at the community level and perpetuates an alarming spiral of infection, disease and poverty. Hence, it is essential to address the nutritional requirements of TB patients. Lack of knowledge about nutritional care and support as well as dietary practice among patients and health care providers aggravated the situation and most patients also reported loss of appetite during their illness.

Objective: To assess the knowledge of TB patients and determinants on recommended nutritional care, support and dietary practice during treatment in Addis Ababa, 2017.

Method: An institution based cross sectional study was conducted with the total sample size was 525. The study conducted on randomly selected 3 sub-cities and 12 health centers with high TB patient flow. Data were collected using pretested structured questioner. The data was entered and analyzed by SPSS version 21. Bivariate and multivariate logistic regression analyses were done to identify factors that associate with dependent variables.

Result: From all TB patient respondents 69.9% had poor knowledge on recommended nutritional care and support which significantly associated with their age (AOR=0.183 95% C.I 0.058,0.580)(p value 0.004)and DDS (AOR=0.027 95% C.I 1.151,9,902)(p value 0.027) and from all participants 71.8% have poor dietary practice which significantly associated with sex (AOR=2.091 95% C.I 1.140,3.836)(p value 0.017) and dietary counseling (AOR=0.055 95% C.0.023,0.135)(p value 0.001).

Conclusion: Knowledge on recommended nutritional care and support for TB patients and dietary practice is poor, regular nutritional assessment and dietary counseling of all TB patients should be the part of routine care for TB patients.

Keywords: *TB, Support, knowledge, dietary counseling*

INTRODUCTION

Background

Tuberculosis (TB) is a chronic bacterial infection caused by a group of bacteria, Mycobacteria, the most common of which is *Mycobacterium tuberculosis*. Less frequently, it can be caused by *Mycobacterium bovis* and *Mycobacterium africanum*. Worldwide, 9.6 million people are estimated to have fallen ill with TB in 2014: 5.4 million men, 3.2 million women and 1.0 million children. Of the 480 000 cases of multidrug-resistant TB (MDR-TB) estimated to have occurred in 2014, only about a quarter of these – 123 000 – were detected and reported (14).

Although lung is the most commonly affected organ, almost all parts of the body can be infected with this bacterium and in this case it is called extra-pulmonary TB. Common extra-pulmonary sites affected include the lymph nodes, pleura, spine, urinary tract, the brain, joints, bone and abdomen (14). Adequate nutrition is required for developing, growing, maintaining, replacing, and repairing cells and tissues, resisting and fighting infection and recovering from illness, producing energy, warmth, movement, and work (3, 4).

Under nutrition and TB are major public health challenges in most developing countries, and they are interrelated. Under nutrition is an important risk factor for, and consequence of, TB and Under- nutrition weakens the immune system, increasing the risk that latent TB infection will become active TB disease. Undernourished individuals are also more at risk of becoming infected with TB and TB also makes Under-nutrition worse. People with TB often lose their appetite, so they eat less. Diarrhea, vomiting, and altered metabolism also make people with TB lose the nutrients they are able to eat. In addition, when a person has active TB disease, his or her energy needs are increased. Thus, patients with active TB are more likely to suffer from wasting or have a lower body mass index than healthy individuals (4).

Statement of the problem

Almost one-third of the world population (about 2 billion) is infected with *M. tuberculosis* and during the past decade even industrialized countries have faced resurgence of tuberculosis. Currently, TB is the leading cause of mortality among infectious diseases worldwide but 95% of TB cases and 98% of deaths due to TB occur in developing countries (5).

TB is one of the major causes of morbidity and mortality in the Horn of Africa with Ethiopia carrying a heavy burden (6). Ethiopia ranks seventh among the world's 22 high burden countries, which have an incidence and prevalence rate of 300 and 470 cases per 100,000 populations, respectively (7). However, there is any substantive data on how many of these TB patients die of nutritional deficiency (3).

Recent systematic reviews have established the role of under-nutrition as an important risk factor for reactivation of latent TB infection to TB disease. While obesity has been found to be protective against under nutrition is the most widely prevalent risk factor, accounting for the highest population attributable risk (PAR) for TB in India. In India more than one third of women and men in the age group of 15-49 years are undernourished (BMI <18.5 kg/m²), and nearly half of children under the age of five years have moderate to severe under nutrition (as defined in WHO child growth standards) (8).

Under nutrition is common among women with TB-HIV in Tanzania and that it persists throughout anti-tuberculosis treatment. Reported energy intake is typically 33% below estimated needs and protein intake 45% below estimated needs (9).

Co-infected patients with malnutrition have an increased risk of morbidity and mortality and tuberculosis is the leading cause of death in co-infected patients in tuberculosis endemic countries, including those with free access to antiretroviral therapy (10).

TB patients were malnourished before treatment compared to healthy controls. The BMI of patients from all socio-economic groups improved at various points in time during treatment, but The vast majority remained malnourished (BMI < 18.5 kg/m²) attend of treatment (3).

The reactivation of latent or previously sub-clinical TB infection is also often related to deteriorating nutritional status and this explains the observed increase in the prevalence of TB in association with HIV infection (11).

Assessment of dietary nutrient intake is essential in nutritional management. Despite the high burden of malnutrition and the high burden of co-infection with associated body wasting, assessment of nutrition intake is often neglected in clinical practice and in national tuberculosis Programs (10).

Nutritional knowledge is essential, particularly for the improved management of patient nutrition (3). Studies show that TB patients who have received dietary counseling became more knowledgeable about the dietary issues and they might appropriately apply the advices to take adequate quantity and quality of variety of foods. Due to this reason those patients who received dietary counseling tends to be well nourished and better TB treatment outcome. (12)

Though nutrition is an important component of a healthy lifestyle and in the prevention and management of chronic communicable diseases such as TB it is a critical yet underestimated factor in susceptibility to infection. Infection saps the individual of energy, which reduces productivity at the community level and perpetuates an alarming spiral of infection, disease and poverty. Hence, it is essential to address the nutritional requirements of individuals with infections like TB. Lack of knowledge about nutritional care, dietary practice among patients and health care providers aggravated the situation and most patients also reported loss of appetite during their illness (1, 3).

Being cognizant of the fact Strategic objective 3 , result 3.1.B of NNP II (Government of Ethiopia national nutrition program, 2016-2020) give particular emphasis on review existing evidence on TB and nutrition to bridge knowledge gaps and identify operational research areas to fully integrate nutrition into TB treatment and control programs (1).

To the best of the investigator knowledge there is paucity of studies that investigate knowledge on recommended nutritional care, Support and dietary practice during treatment among tuberculosis patients in Addis Ababa.

LITERATURE REVIEW

Nutritional status is significantly lower in patients with active pulmonary tuberculosis compared with healthy controls in different studies in Indonesia, England, India, and Japan (13).

Poor nutrition is a strong risk factor for contracting TB and mortality. While there is not enough evidence that nutritional support can improve TB treatment response and outcomes, there is evidence to suggest that it can improve nutritional rehabilitation in persons with TB. Food supplementation has been found to improve body weight and quality of life of TB patients, and accelerate the beneficial therapeutic effect of chemotherapy. Demand for the integration of nutritional interventions into TB control programmes is increasing, particularly in countries with a high TB burden. The effective management of TB therefore requires a detailed evaluation of nutritional status, as this can help to prevent or modify many complications of the disease (3).

Factors such as infection with HIV, poor nutritional status, smoking, increased susceptibility of infants and the elderly and increased virulence and/or increased dose of bacilli have been identified as substantial contributors for the development of the disease and its epidemiological burden (6).

Poverty and lack of awareness about TB are also considered the most important factors that increase the risk of exposure to TB. In addition, poor access to health facilities, lack of financial source and lack of knowledge about the cause, mode of transmission, and symptoms, as well as appropriate treatment of TB within communities do not only affect the health seeking behavior of patients that favors the use of traditional healers over biomedical approaches, but also could contribute to poor adherence to TB treatment and/or long delay in diagnosis, which pose a formidable challenge to control the disease (6).

Circumstances become complicated when patients had to share food with family members. Social phenomena such as isolation from family and society, lack of family support for patients due to infection and poor conjugal relationships due to TB emotionally affected patients, leading to a significant decrease in food consumption (3).

A study involving TB patients (both male and female) showed their perception that community-based food supplement programmers run by non-governmental organizations could help patients and improve the overall nutritional situation (3).

Severe under-nutrition at diagnosis is associated with a 2 fold higher risk of death. Overall, a majority of patients have evidence of chronic severe under-nutrition a diagnosis, which persisted even after successful treatment in a significant proportion of them. These findings suggest the need for nutritional support during treatment of pulmonary TB in this rural population (8).

From a research on TB patients, it is revealed that women are more likely to have severe nutritional deficit. More than half of women and one third of men continued to be moderately to severely underweight at the end of successful treatment. Under-nutrition was a highly prevalent co-morbidity associated with an increased risk of death in these patients. The under-nutrition in these patients was possibly a result of both active TB as well as pre-existing chronic under-nutrition (8).

In an Indian study, the nutritional status of patients with tuberculosis was worse than that of those with leprosy and tuberculosis patients were respectively 11 and 7 times more likely to have a BMI < 18.5 and mid-arm circumference < 24 cm. (13)

A study in Uganda demonstrated that poor nutritional status is common among adults with pulmonary tuberculosis. A study found that nutritional counseling to increase energy intake combined with provision of supplements, when started during the initial phase of tuberculosis treatment, produced a significant increase in body weight, total lean mass, and physical function after six weeks (13).

CONCEPTUAL FRAME WORK

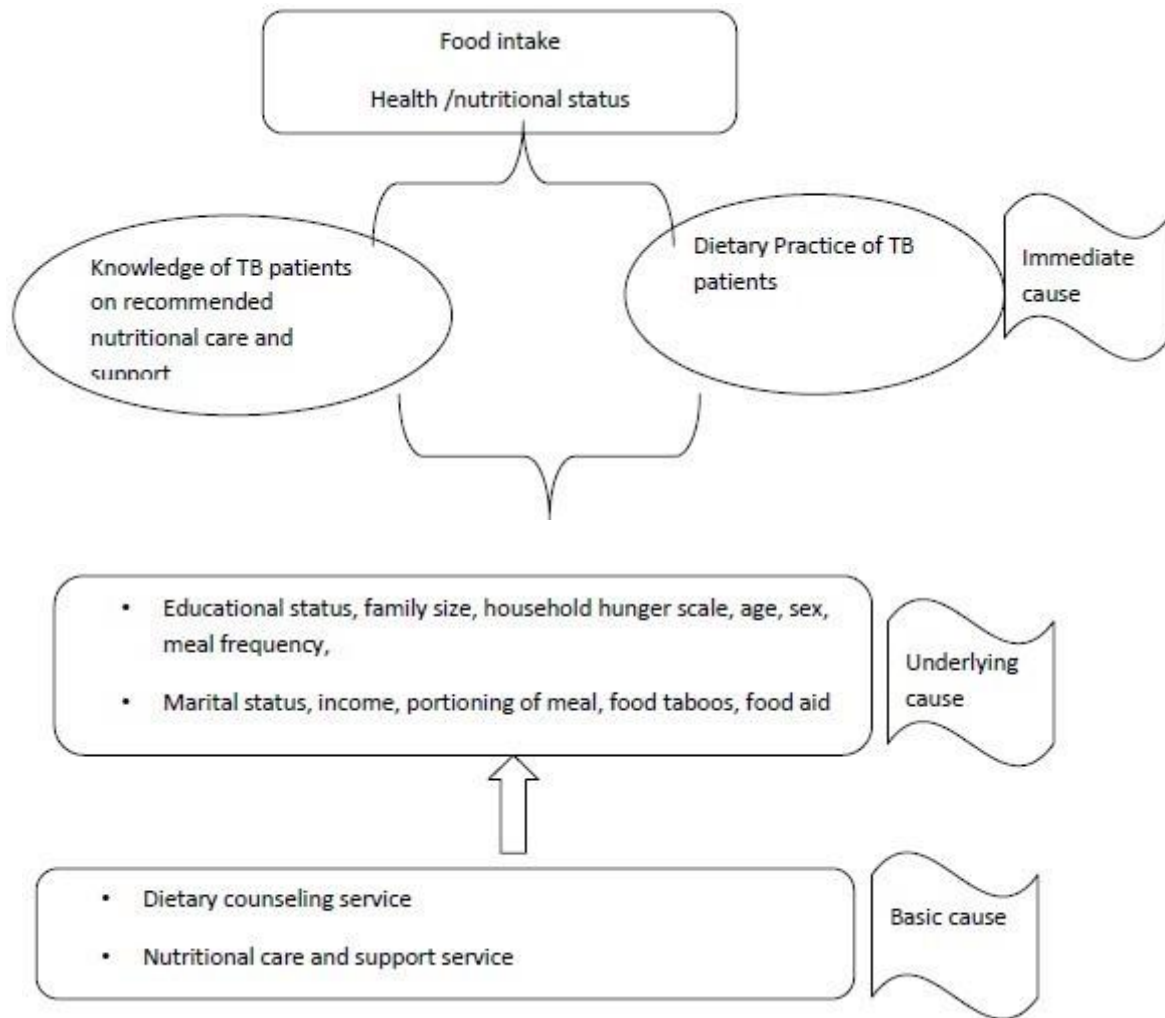


Figure 1: Conceptual frame work for Knowledge, practice and Associated factors of Tb patients on recommended nutritional care and support.

OBJECTIVES

General Objective

To assess knowledge and determinants on recommended nutritional care and support and dietary practice of TB patients during treatment of tuberculosis in Addis Ababa, Ethiopia from November 2016 to July 2017.

Specific Objectives

- To assess knowledge on recommended nutritional care and support and dietary practice of TB patients during treatment of tuberculosis in Addis Ababa, Ethiopia from November 2016 to July 2017.
- To identify determinants affecting TB patients knowledge on recommended nutritional care and support and dietary practice during treatment of tuberculosis in Addis Ababa, Ethiopia from November 2016 to July 2017.

MATERIALS AND METHODS

Description of the study area and Study Duration

The study was conducted in Addis Ababa, among the selected health centers found in Bole, Yeka, and Gulele sub city and from November 2016 to July 2017. According to the central statistical agency of Ethiopia, the city has an estimated total population of 3,103,999, out of which 1,479,000 were men and 1,624,999 women in 2012. In Addis Ababa there are ten sub-cities and 99 woredas (the lowest administrative unit in Ethiopia). In the city, there are 80 public health facilities, of which 14 are hospitals and their main 66 are health centers. Each health center has a catchment population of 40,000. There are also 35 private and 3 Non-Governmental Organizations (NGOs) hospitals in the city (12).

Study Design

Institution based quantitative cross-sectional study design was conducted among TB patients in selected health centers found in Bole, Yeka, Gulele sub-city, Addis Ababa, Ethiopia.

Source Population

The source populations was TB patients who had follow up in selected health centers found in Bole, Yeka, Gulele sub-city, Addis Ababa, Ethiopia.

Study Population

The study populations was all adult TB patients who had follow up at in selected health centers found in Bole, Yeka, Gulele sub city, Addis Ababa. All TB patients had come to attend their follow up for treatment and volunteers to participate were included in the study.

Inclusion Criteria

All TB patients in health centers found in selected health centers found in Bole, Yeka, Gulele sub city, Addis Ababa and volunteers to consent and had the ability to communicate during the interview was consider as inclusion criteria.

Exclusion Criteria

- Those who were seriously ill and have no ability to communicate Patients with known neuropsychiatric illness.
- Patients who are under 18 years old.

Sample size determination

The sample size was determined considering the following assumptions using the single population formula. Z score at 95 % CI = 1.96, prevalence 65 %, margin of error = 5%, design effect 1.5 assumed and 10 % non-response rate

The sample size determine by using single population proportion formula

$$n = (Z^2 pq / d^2) * \alpha$$

When:-

n= Required sample size

Z=Confidence interval=95 %

α = Design effect (assumed to be 1.5)

p= 65% (0.65)

q= 1-p = 1-0.65 = 0.35

d= Precision (margin of error)=5%

$$n = \frac{(1.96)^2 0.65 * 0.35}{(0.05)^2} = 349.6 * 1.5 = \underline{\underline{524}}$$

Adding 10 % non-respondent rate, total sample size of 576 TB patients

Sampling procedures

A multistage sampling technique was used in the selection of the study participants. From the ten sub cities 3 was randomly selected and from those three sub cities four health centers from each sub cities was selected purposely based on their patient flow. Among the selected health centers all volunteer patients was included.

In this study 525 patients were included to assess knowledge on recommended nutritional care and support and dietary practice of TB patients during treatment.

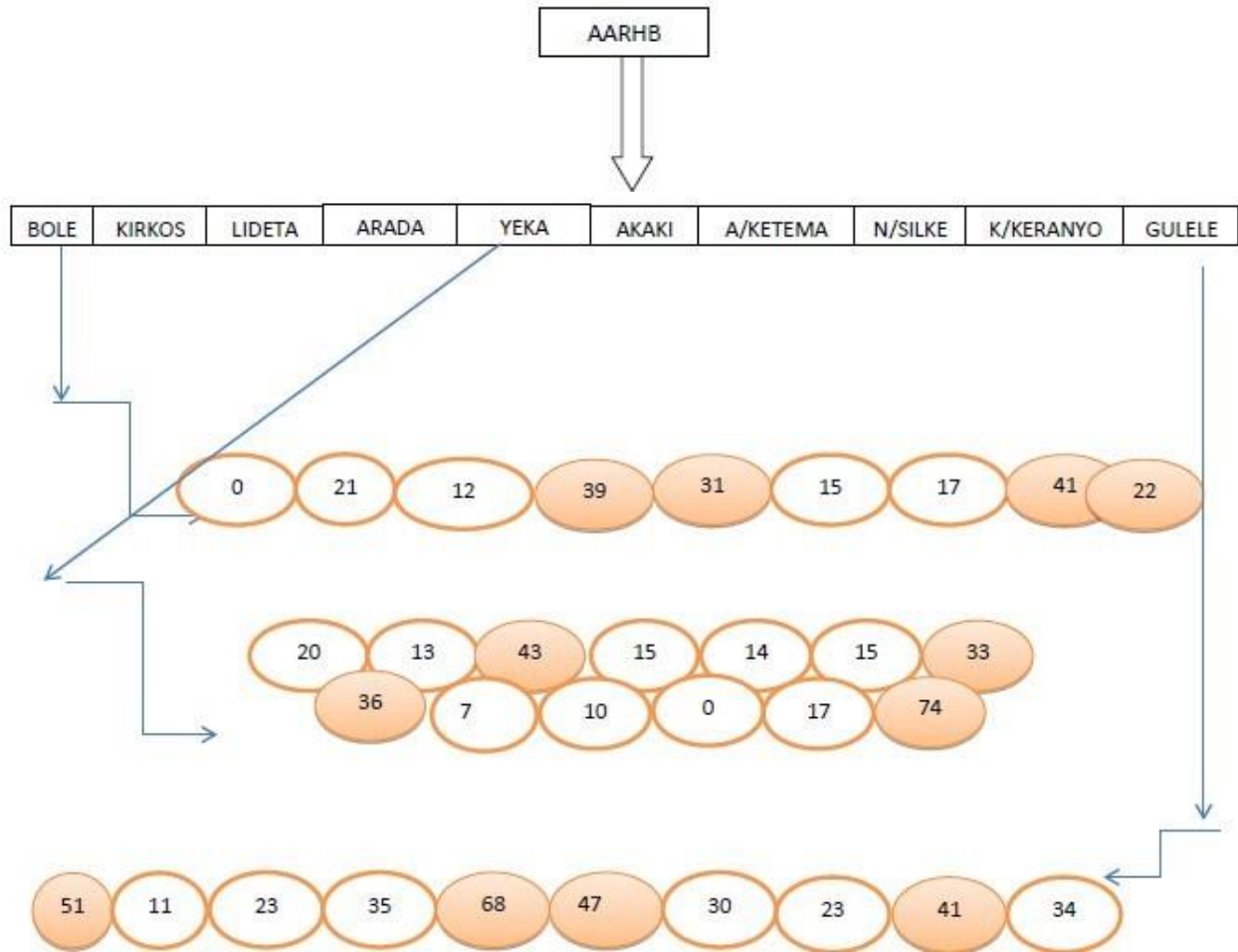


Figure 2: Sampling procedure, 10 sub cities and the selected health centers based on their patient flow.

Study variables

Dependent Variable

- Knowledge on recommended nutritional care and support for TB patients of TB patients during treatment of tuberculosis.
- Dietary practice of TB patients during treatment of tuberculosis.

These two outcome variables are composite scores as it is not possible to measure them directly. Each of the two outcomes was measured using responses given by study participants to 8 set of questions and will be summarized as Good knowledge, if a respondent answers above the 5 knowledge questions correctly and poor knowledge if a respondent answers below 5 and as good practice if a respondent summation of DDS is above 6 and poor practice if summation of DDS is below 6.

Independent variables

- Educational status
- Family size
- Marital status
- Age
- Sex
- income
- Dietary counseling
- Nutritional care and support
- Household hunger scale
- Eating frequency
- Portioning of meals

- Food taboos

- Food aid

Data collection tools and Procedure

The data collection were conducted using face-to-face interview with TB patients using structured questionnaire which was pretested by 8% of the sample at Bole sub-city woreda 10 health center. After pretesting, some unclear or vague questions was modified and wrong skip patterns was also corrected. The questionnaire was prepared first in English and translated to Amharic for patients then back translated to English so as to check for consistency. The data was collected by trained health professionals. Data collectors had one day training on the objective, methods, tool and ethics of the study. The data collection process was supervised by two health officers and the principal investigator on a daily basis.

Data Handling and Analysis

First, each questionnaire was cleaned and checked for Completeness and the data from the complete questionnaires was entered and analyzed through computer softer ware means of Statistical Package for Social Sciences (SPSS). Basic descriptive statistics (frequencies tables, means, standard deviations, ranges and cross tabulation) was calculated and use. Data for categorical variables was presented in terms of their frequency.To control for possible confounding factors and to identify factors that are independently associated with the dependent variable multivariate logistic regression analysis was performed for those variables with p value of less than 0.2 in the bivariate analysis.

Ethical considerations

The study protocol was approved by Institutional Review Board of the Bahir Dar University, Faculty of Food and Chemical Engineering. The study protocol was approved and ethical clearance was obtained from the Addis Ababa health bureau institutional review board. A request for formal letter of cooperation was written from Addis Ababa health bureau to the selected three sub cities following the selected health centers and after briefly explaining about the study based on the patient consent. Consent from study participant will be collected. Data collectors will give full information for the study subjects about the purpose of the study and will ask them to give their consent before participating in the study and participants have the right to be out the study anytime they want. Participation in the study will entirely voluntary and any involvement in the study will assure after obtaining complete Verbal informed consent. Confidentiality was strictly protected and identification numbers (using codes) was use during the data collection and analysis.

Operational definition

Knowledge : In the context of this study knowledge of a TB patients was based on 8 questions on the data collection tool which set for categorize the respondent knowledge on recommended nutritional care and support is poor or good, the answers for the question were label 1 if the answer is “yes” and 0 if the answer is “no” after the summation of the labels of the answers given if a respondent get greater than or equal to five the respondent assumed to have a good knowledge and if the sum less than 5 it reports that the respondent have poor knowledge.

Dietary Practice: In this study dietary practice is assessed by dietary diversity score recall of 24hr if a respondent practice based on the recommended interval if a respondent summation of dietary diversity score answers greater to 6 it assumed that the participant have good dietary practice and if DDS is less than 6 it assumed as poor dietary practice.

Nutritional care and support

Have many components such as nutrition education and counseling in health facilities, water, and hygiene or food safety interventions to prevent diarrhea as well as provision of adequate quality/quantity of food and food aid by any organization.

Household Hunger Scale (HHS)

Is a household food deprivation scale derived from the United States (U.S) household food security survey module for use in developing country contexts and to assess the validity of the Household Food Insecurity Access Scale (HFIAS) for cross-cultural use. HHS has three household hunger categories as follows: HHS of 0-1 (little or no hunger), HHS of 2-3 (moderate hunger), HHS of 4-6 (severe hunger) in the household. (Source: Food and Nutrition Technical Assistance III Project (FANTA), 2011).

Dietary counseling

Is a process by which a health professional with special training in nutrition helps people make healthy food choices and form healthy eating habits.

RESULT

Socio-demographic characteristics

Among a total of 525 adult TB patients involved in the study 246(46.9%) were males and 279(53.1%) were female. Among which 137 males and 191 females are in early adulthood and 86 males and 47 females are in late adulthood and the rest 23 males and 41 females are elders. From the respondents 242(46.1 %) are married, 258(49.1%) are single and 10(1.9%) and 15(2.9%) are divorced and widowed respectively.

Among the respondents majority 281(53.5%) of them finish high school and 186(35.4%) have diploma/degree and 30 (5.7%) of them can read and write and the remaining 28(5.3%) can't read and write. Majority of 309 of patients were employed and 463(88.2%) have monthly income with mean income 1148.6 and S.D 638.4 and the family size of the respondents stated that 301(57.3%) have more than six family living with (Table 1).

Knowledge of TB patients on recommended nutritional care and support

From all the participants 367 (69.9%) have poor knowledge on recommended nutritional care and support and the remaining 158 (30.1%) have good knowledge. Although 344(71.2%) of the participants reported they know the recommended nutritional care and support for TB patients but from those only 3 patients were try to explain the recommendation correctly. 300(57.1%) know the relationship b/n disease and nutrition, 210(40%) know the consequence of poor nutrition and living with TB , 327(62.3%) know the use of food diversity, 102(19.4%) know the use of eating fruits , and vegetables, 224(42.7%) know the use of increasing meal frequency during illness and 290(55.2%) know that special diet is necessary during illness (Table 3).

Decline of food intake

From all the respondents 426(81.1%) reported that their food intake decline during the past 3 months of the data collection and from this patients 209 patients state the reason of the decline of food intake is due to the drug reaction and 207 patients says its due to loss of appetite and the rest 10 patients reported chewing and swallowing problem as a reason for their food intake decline.



Consumption of fruits and vegetables

Among the participants 367(69.9%) of TB patients didn't take any kind of vegetables in the past 24hr recall and 158(30.1%) of patients take vegetables from this 158 patients only 2 patients were take vitamin A rich vegetables and the rest 21 and 120 patients take dark green vegetables and other vegetables respectively.

Regarding fruit consumption among the study participants only 28(5.3%) patients take fruit during the 24hr recall and from those patients who take fruit none of them take vitamin A rich fruits and 497(94.7%) of the participants did not take any fruit during the past 24hr recall before the data collection.

Consumption of milk and egg

From all the respondents 501(95.4%) of the TB patients did not eat an egg during the 24hr recall and 419(79.8%) take milk and milk products and from all respondents 501 (95.4%) of patients neither take milk nor egg during the 24hr recall before the data collection.

Household hunger scale

HHS has three categories as follows: HHS of 0-1 (little or no hunger), HHS of 2-3 (moderate hunger), HHS of 4-6 (severe hunger) in the house hold. Based on this the majority of respondents 366(69.7%) consumed three meals or more per day and 489(93%) and have little or no hunger based on their household hunger score and 32(6.1%) have moderate hunger and the rest 4(0.8%) sever hunger.

Nutritional status of TB patients

In this the study based on BMI classification the prevalence of under-nutrition was found to be 61% (320) .Whereas 38%(200) of participants have a normal weight and 5 (1%) of the respondents were overweight.

Portioning of meal

From all TB patients who were participated on study only 18(3.4%) of them portion their meal based on health status of the family members and 152(29%) portion their meal based age and the majority of 355(67.6%) participants portion their meal with in the family based on sex.

Nutritional intervention history

Among 525 respondents, 463 (88.2 %) did not get dietary counseling by their care giver clinicians and only 9(1.7 %) of respondents received nutritional support from any organization during the treatment of TB. Whereas 31 (5.9 %) of the participants supplemented their regular household meals with special diets or nutrition supplements to meet the increased nutrition and energy needs for TB patients and only 1.3 % of the participants reported not influenced by food taboos. Among the study participants only 87(16.6%) get food or related aid from any organization.

Dietary practices and meal frequency

Based on this study from all respondents only 30.3% of the participants consumed less than three meals per day, and based on dietary diversity score questions 28.2 % consumed six or more food-groups and 71.8% consume less than six food groups in the preceding 24 hours to the interview. Higher dependency on cereals 522(99.5%) was observed while foods of animal origin and fruits that play vital immunity and protective roles were poorly used.

Factors associated with dependent variables

In Bivariate analysis different variables were found to be related with knowledge of TB patients on recommended nutritional care support this include Age(COR = 1.648;95% C.I=1.082,2.514), marital status(COR = 0.469;95% C.I=0.318,0.691), occupational status (COR = 0.439;95% C.I=0.209,0.922), monthly income(COR = 3.803;95% C.I=1.691,8.549), consuming fruit(COR = 2,451;95% C.I=1.140,5.272), consuming milk (COR = 3.663;95% C.I=2.353,5.702), consuming spice and beverages (COR = 0.077;95% C.I=0.024,0.247), DDS (COR = 1.641;95% C.I=1.097,2.454), having enough energy for day to day life (COR = 0.135;95% C.I=0.033,0.559), having enough money for day to day life (COR = 0.407;95% C.I=0.191,0.869), BMI (COR = 1.48995% C.I=1.016,2.181), and portioning of meal (COR = 0.257;95% C.I=0.081,0.817) with p value of less than 0.05. Variables which found to be related

with their dietary practice includes sex(COR = 1.605;95% C.I=1.089,2.365), marital status (COR = 0,521;95% C.I=0.351,0.776), educational status (COR = 6.431;95% C.I=1.494,21.678), family size(COR = 0.076;95% C.I=0.041,0.139), decline of food intake(COR = 16.512;95% C.I=5.143,53.016), household hunger scale (COR = 0.075;95% C.I=0.010,0.555), BMI (COR = 3.076;95% C.I=2.074,4.562) , portioning of meal (COR = 0.489;95% C.I=0.325,0.735) and dietary counseling (COR = 19.879;95% C.I=9.743,40.559) with p value of less than 0.05. After controlling the other variables only age (AOR=0.183 95% C.I 0.058,0.580) (p value 0.004)and DDS (AOR=0.027 95% C.I 1.151,9,902)(p value 0.027), sex (AOR=2.091 95% C.I 1.140,3.836) (p value 0.017) and dietary counseling (AOR=0.055 95% C.I 0.023,0.135)(p value 0.001) were significantly associated with knowledge TB patients on recommended nutritional care and support.

Patients who were above the age of 60 were 0.2 times more likely to have poor knowledge compared to patients between the age of 18 to 45 (AOR=0.183 95% C.I 0.058,0.580)(p value 0.004).

Patients who ate less than 6 food group were 0.01 times more likely to have poor knowledge compared to those patients who ate more than 6 food groups(AOR=0.027 95% C.I 1.151,9,902)(p value 0.027).

Female patients were 2 times more likely to have poor DDS compared to males (AOR=2.091 95% C.I 1.140,3.836)(p value 0.017). Patients who had received dietary counseling were 0.1 times more likely to have poor DDS compared to those who had received dietary counseling (AOR=0.055 95% C.I 0.023,0.135)(p value 0.001) (Table 4 Table 5).

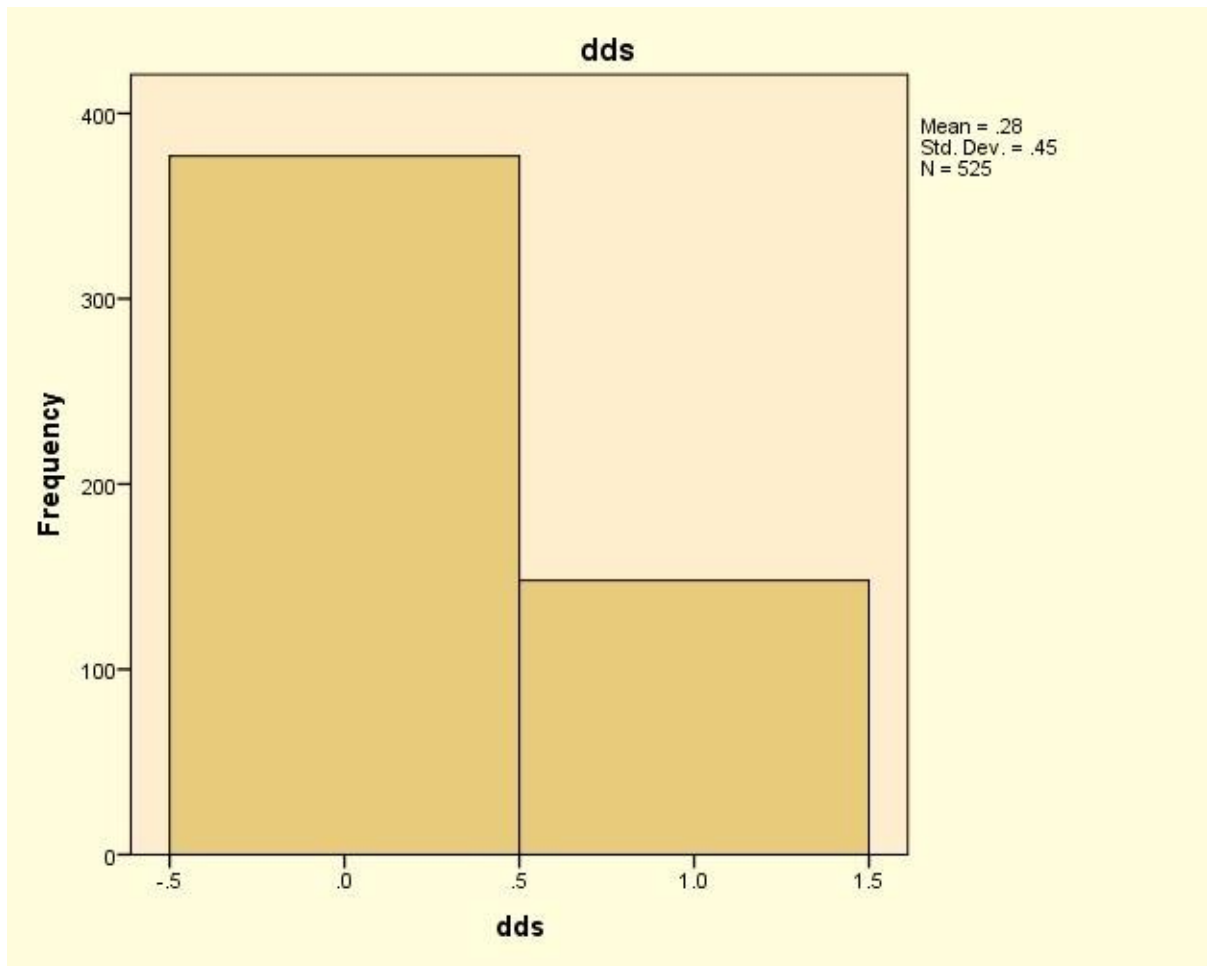


Figure3. The histogram distribution of dietary diversity score of the respondents

Table 1. Socio demographic characteristics of participants(n=525)

Variables	No	Percent
Age		
18-45	328	62.5%
45-60	133	25.3%
>60	64	12.2%
Sex		
Male	246	46.9%
Female	279	53.1%
Martial status		
Married	242	46.1%
Single	258	49.1%
Divorce	10	1.9%
Widowed	15	2.9%
Educational status		
can't read and write	28	5.3%
can read and write	30	5.7%
1-10	281	53.5%
Diploma/degree	186	35.4%
Occupation		
Employed	309	58.9%
Unemployed	86	16.4%
Private	8	1.5%
Other	122	23.2%
Monthly income		
Yes	463	88.2%
No	62	11.8%
Family size		
>6	301	57.3%
<6	224	42.7%

Table 2. Nutritional intervention history and household hunger scale of participants

Variables	No	Percent
Meal frequency		
>3	366	69.7%
<3	159	30.3%
Household hunger scale		
0-1(little to no hunger)	489	93.1%
2-3(moderate hunger)	32	6.1%
4-6(sever hunger)	4	0.8%
Take dietary counseling		
Yes	62	11.8%
No	463	88.2%
nutritional care and support		
Yes	9	1.7%
No	516	98.3%

Table 3. Responds for questions which assess knowledge of TB patients

Questions	Yes	No
Do you know the recommended nutritional care and support for TB patients?	344(71.2%)	181(28.8%)
Do you know the relationship b/n disease and nutrition?	300(57.1%)	225(42.9%)
Do you know the consequence of poor nutrition and living with TB?	210(40%)	315(60%)
Do you know the use of food diversity?	327(62.3%)	198(37.7%)
Do you know the use of eating fruits and vegetables?	102(19.4%)	423(80.6%)
Do you know the use of increasing meal frequency during illness?	224(42.7%)	301(57.3%)
Do you know that special diet is necessary during illness?	290(55.2%)	235(44.8%)

Table 4. Bivariate and multivariate analysis on factors associated with knowledge on recommended nutritional care and support for TB patients

Variable	Knowledge on recommended nutritional care		COR	p-value	AOR	p-value
	Poor	Good				
Age						
18-45	234	95	1	0.009	1	
45-60	80	53	1.648(1.082,2.514)	0.02	3.02(0.862,10.58)	0.084
>60	53	11	0.517(0.259,1.032)	0.061	3.175(0.951,10.596)	0.06
Martial status						
Married	147	95	1	0.002	1	
Single	198	60	0.469(0.318,0.691)	0.000	0.908(0.437,1.89)	0.797
Divorce	7	3	0.63(0.167,2.628)	0.559	1.501(0.211,10.657)	0.685
Widowed	15	0	0.607(0.259,1.032)	0.998	0.519(0.259,1.032)	0.998
Occupational status						
Employed	244	65	1	0.000	1	
Unemployed	77	9	0.439(0.209,0.922)	0.030	1.960(0.252,15.250)	0.520
Private	8	0	0.519(0.259,1.032)	0.999	1.501(0.211,10.654)	0.6851
Other	38	84	8.298(5.182,13.288)	0.000	145.4(3.674,5754.221)	0.008
Monthly income						
No	55	7	1		1	
Yes	312	151	3.803(1.691,8.459)	0.001	182.288	0.995
Take fruit in 24hr recall						
No	355	144	1		1	
Yes	14	14	2.451(1.140,5.272)	0.022	6.782(0.901,50.725)	0.062
Take milk and milk related product in 24hr recall						
No	318	101	1		1	

Yes	49	57	3.663(2.353,5.702)	0.000	0.013	0.998
Take spices or beverages in 24hr recall						
No	293	155	1		1	
Yes	74	3	0.077(0.024,0.247)	0.000	0.851(0.024,30.495)	0.929
DDS						
Poor	275	92	1		1	
Good	102	56	1.641(1,097,2.454)	0.016	3.290(1.047,10.343)	0.042
Have enough energy for everyday life						
Completely	3	6	1		1	
Mostly	203	55	0.135(0.033,0.559)	0.006	0.002	0.997
Moderately	160	97	0.303(0.074,1.240)	0.097	0.008	0.998
A little	1	0	0.663(0.353,3.702)	1.000		0.135
Have enough money for everyday life						
Always	103	55	1		1	
Mostly	218	93	0.799(0.532,1.201)	0.280	324.522	0.994
A little	46	10	0.407(0.191,0.8690)	0.020	0.003	0.997
BMI						
<18.5 underweight	235	85	1	0.049	1	
18.5-24.9 normal weight	130	70	1.489(1.016,2.181)	0.041	1.360(0.542,3.410)	0.512
>25 overweight	2	3	4.147(0.681,25.207)	0.123	4.082(0.119,140.37)	0.436
Portioning of meal						
Age	72	80	1		1	
Sex	281	74	0.237(0.158,0.357)	0.000	0.049(0.025,0.098)	0.000
Health status	14	4	0.257(0.081,0.817)	0.021	0.253(0.043,1.493)	0.129

Table 5. Bivariate and multivariate analysis on factors associated with DDS

Variables	DDS		COR	p-value	AOR	p-value
	Poor	Good				
Sex						
Male	189	57	1		1	
Female	188	91	1.605(1.089,2.365)	0.017	2.091(1.140,3.836)	0.017
Marital status						
Married	158	84	1		1	
Single	202	56	0.521(0.351,0.776)	0.001	0.577(0.321,1.037)	0.066
Divorce	4	6	2.821(0.775,10.276)	0.116	1.158(0.205,6.5601)	0.868
widowed	13	2	0.289(0.064,1.313)	0.108	0.104(0.013,0.800)	0.030
Educational status						
Can't read and write	26	2	1		1	
Can read and write	28	2	0.929(0.128,7.080)	0.943	0.411(0.019,8.729)	0.569
1-10 grade	188	93	6.431(1.494,27.678)	0.012	7.692(1.206,49.065)	0.031
Diploma/degree	135	51	4.911(1.125,21.442)	0.034	8.014(1.217,52.768)	0.030
Family size						
>6	166	135	1		1	
<6	211	13	0.076(0.041,0.139)	0.000	0.019(0.007,0.054)	0.000
Decline of food intake in the past 3months						
No	96	3	1		1	
Yes	281	145	16.5129(5.143,53.016)	0.000	0.264(0.046,1.513)	0.135
HHS						
Little to no hunger	342	147	1		1	
Moderate hunger	31	1	0.075(0.010,0.555)	0.011	7.656(0.763,76.822)	0.084
Severe hunger	4	0	0.000	0.999	0.000	0.999
BMI						
<18.5 underweight	258	62	1		1	
18.5-24.6 normal weight	115	85	3.076(2.074,4.562)	0.000	1.730(0.908,3.296)	0.096
>5 over weight	4	1	1.040(0.114,9.472)	0.972	0.391(0.016,9.653)	0.560
Portioning of meal						
Based on age	93	59	1		1	
Based on sex	271	84	0.489(0.325,0.735)	0.001	0.048(0.020,0.115)	0.000
Based on health status	13	5	0.606(0.206,1.788)	0.305	0.147(0.030,0.718)	0.018
Take dietary counseling						
No	367	96	1		1	
Yes	10	52	19.879(9.743,40.559)	0.000	0.055(0.023,0.135)	0.000

Discussion

This study demonstrate that 69.9% of all TB patient participants had poor knowledge on recommended nutritional care and support for TB patients and this affect their consumption of diversified food.

In this study 69.9% of the participants had poor knowledge which is higher than a study conducted Uganda (61%) the difference in result between the two studies may be due to the different type of data collection. Lack of knowledge on recommended nutritional care and support aggravate the under-nutrition

The prevalence of under-nutrition among adult TB patients was 61% which is very higher than the study conducted in UK (15%) the difference between this studies result may be due to the socio demographic difference between the two countries. The study conducted in India revealed higher prevalence under-nutrition (85%) this is due to that the TB patients were co-infected with HIV/AIDS. In other African countries the prevalence of under-nutrition among adult TB patients is also high, for instance the study conducted in Ghana, Malawi, and Uganda revealed 51%, 57%, and 62% respectively are under-nutrition TB patients (12). Other Ethiopian based studies have also shown a high prevalence, a study conducted in Gondar 65.4% and Siddama 77.9% [12] revealed high prevalence of under-nutrition among adult tuberculosis patients compared to this study this may attribute to the difference in the study content(urban dwellers TB patients) and in socio-economic status of the society in their areas. Besides, those studies were conducted a long time ago when the economic status of the country was relatively low which had an impact on the nutritional status of the society in general and TB patients in particular.

Another study which conducted in Addis Ababa revealed 46.3% of adult TB patients were under-nutrition relatively to this study the prevalence is lower this might be due to the difference of the sample sizes. Similarly with this study in Bangladesh the nutritional status of TB patients was significantly associated with the knowledge of nutrition the study states the prevalence of under-nutrition decline from 67% to 50% after giving nutrition related education and supplementation this shows that if patients get nutritional care and support during their treatment period their food intake frequency variety was also increase and result normal nutritional and improved status in order to prevent relapse and co-infection.

Tuberculosis is mainly associated with feeding problem which directly affects the amount of food intake by the patients. Some studies that eating problem mainly loss of appetite, nausea and vomiting had significant association with food intake. However, the finding of this study was inconsistent with the above studies revealed dietary practice of TB patients significantly associated with taking dietary counseling during treatment.

A high proportion 71.8% of the participants reported consumption of less than six food groups which implying a poor or an inadequate dietary quality. Lack of diversity in diet is, therefore a likely major contributing factor to inadequate intake of essential micronutrients.

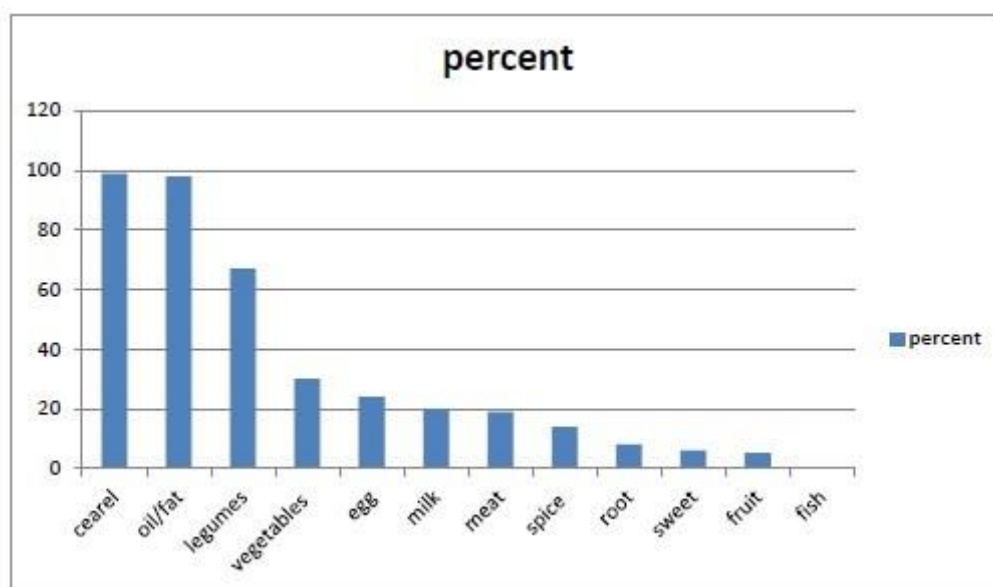


Figure 3. Consumption pattern of food groups.

The study conducted in Uganda also reported 60.2% of TB patients consume less than six food groups in 24hr recall but it associates access to food aid which different from this study.

Given the fact that poor nutritional practice are linked to deterioration in immunity and subsequent nutritional status of TB patients, intervention geared at improving the practice are essential in prevention of rapid progression and relapse of TB.

Food and nutrition counseling's are fundamentally important for prevention, care, treatment of TB. The WHO guideline for nutritional care support for patients with TB recommended nutritional assessment and counseling, management of acute severe malnutrition, management of

moderate under-nutrition, micronutrient supplementation and contact investigation to improve the nutritional status of those affected by TB.

The nutrition knowledge gained by TB patients should be followed dietary counseling up to ensure that they are transformed into good dietary practice.

Conclusion

More than half of adult TB patients in the studied area had poor knowledge on recommended nutritional care and support for TB patients which significantly associate with their DDS and age and majority of adult TB patients had poor dietary practice which independently associated with receiving dietary counseling and sex.

Recommendation

- Regular nutritional assessment and dietary counseling of all TB patients should be the part of routine care for TB patients.
- Interventions by different stakeholders should be targeted based on the patient nutritional status.
- TB care provider should receive training focus on dietary counseling for TB patients.

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Annex

English version Questionnaires

Informed consent and confidentiality of interviews

Good morning/afternoon, Mr/Mrs _____. I am data collector working on a project concerned with nutrition and TB in which You could participate.

This study will be conducted for Partial fulfillment of the Requirements for the Degree of Master of Science in Applied Human Nutrition in Bahirdar University and The objective of this study is to assess knowledge and practice of TB treatment followers on recommended nutritional care and support. All the information we obtain will remain strictly confidential and your answers and name will never be revealed and you have the right to out from this study anytime you want and Also, you are not obliged to answer any question you do not want to. This is not to evaluate or criticize you, so please do not feel pressured to give a specific response and do not feel shy if you do not know the answer to a question. I am not expecting you give a specific answer I would like you to answer questions honestly, telling me about what you know, how you feel, the way you live and how you eat and prepare food. Feel free to answer questions.

Now, the project is just starting and we are completing a survey among participants

The interview will take about 15 – 20 minutes.

Do you agree to participate in this interview?

Yes___No___If yes, continue to the next question; if no, stop the interview.

Do you have any question before we start? (Answer questions).

May I start now?

Date----/----/2009Ec

Time Begin ----:---

1Sociodemographic status

<i>S. No.</i>	<i>Characteristics</i>	<i>Responses</i>	<i>Code</i>	<i>Skip to</i>
PART ONE: - SOCIO - DEMOGRAPHIC DATA				
1.1	code			
1.2	Age of participant	_____		
1.3	Sex of participant	15. Male 16. Female		
1.4	Marital status	17. Married 18. Widowed 19. divorced 20. Single		
1.5	Educational status	21. Illiterate 22. Read and write only 23. 1-12 grade 24. Graduated from college/ university		
1.6	Occupation	25. Employee 26. Merchant 27. Skilled technician 28. Daily labourer 29. House wife 30. Farmer 31. No job 32. Others_____		

1.7	Household family size number	_____		
1.8	Have you source of income	33. Yes 34. No		Skip to Q1.9
1.9	How much money you gain in birr per month	_____		

Part 2. Knowledge questions

2.1	correct definition of good nutrition			
2.2	Do you know the recommended nutritional care and support for Tb patientes?	35y 36N		Skip to Q. 2.3
2.3	List the four recommended nutritional care and support for Tb patientes?	37----- 38----- 39-----		
2.4	do you know the relationships between diet and disease, including	40 y 41 No		
2.5	do you know the consequences of poor nutrition when living with TB.	42Y 43N		Skip to Q. 2.6
2.6	Do you belive that eating diversity of food is important?	44y 45n		

2.7	Do you know the importance and usefulness of consumption of fruits and vegetables?	46 yes 47 No		
2.8	do you know the importance and usefulness of increasing meal frequency?	48 yes 49 No		
2.9	do you know the importance and usefulness of consumption of special diets?	50 yes 51 No		
2.10	What is special diet?	52 es 53 No		

3. Practice questions

Five aspects of dietary consumption patterns

number of meals consumed in the

Preceding 24 hours to the survey-----

number of food-groups consumed, the foods reportedly

Consumed in the preceding 24-hour recall were

Grouped in 12 food-groups: cereals, roots/tubers,

Legumes, milk/milk products, fish, poultry, meat,

Eggs, fruits, vegetables, oils/fats, and sugar/honey

PART THREE DIETARY DIVERSITY SCORE				
3.1	Was the previous day special in normal diet	35. Yes 36. No		Skip to Q3.3
3.2	If yes, what was the special	37. Fasting day 38. A celebration day 39. Other		
3.3	Had you decline in food intake over the past three month?	40. Yes 41. No		Skip to Q3.4
3.4	If yes, the degree of the food intake declined	42. severe decline 43. moderate decline 44. Mild decline		
3.5	What was the cause to decline food intake?	45. loss of appetite 46. digestive problems 47. chewing or swallowing difficulties 48. Other		
3.6	Number of meals eaten within 24-hour			
3.7	Please describe the foods (meals and snacks) that you ate or drank yesterday during the day and night, whether at home or outside the home. Start	Breakfast		
		Snack		
		Lunch		
		Snack		

	with the first food or drink eaten in the morning. (Write down all food and drinks mentioned. When composite dishes are mentioned, ask for the list of ingredients. When the respondent has finished, probe for meals and snacks not mentioned.)	Dinner			
		Snack			
3.8	If any food groups not mentioned, ask the respondent, if a food item from this group was consumed.				
3.8a	Cereals Yes= 1 No= 0	corn/maize, rice, wheat, sorghum, millet or any other grains or foods made from these (e.g. bread, noodles, porridge or other grain products) + insert local foods e.g. porridge or paste			
3.8.b	White roots and tubers Yes= 1 No= 0	white potatoes, white yam, white cassava, or other foods made from roots			
3.28.c	Vitamin a rich vegetables and tubers Yes= 1 No= 0	pumpkin, carrot, squash, or sweet potato that are orange inside + other locally available vitamin A rich vegetables (e.g. red sweet pepper)			
3.8.d	Dark green leafy vegetables Yes= 1	dark green leafy vegetables, including wild forms + locally available vitamin A			

	No= 0	richleaves such as amaranth, cassava leaves, kale, spinach		
3.8.e	Other vegetables Yes= 1 No= 0	other vegetables (e.g. tomato, onion, eggplant) + other locally available vegetables		
3.8.f	Vitamin A rich fruits Yes= 1 No= 0	ripe mango, cantaloupe, apricot (fresh or dried), ripe papaya, dried peach, and 100% fruit juice made from these + other locallyavailable vitamin A rich fruits		
3.8.g	Other fruits Yes= 1 No= 0	other fruits, including wild fruits and 100% fruit juice made from these		
3.8.h	Organ meat Yes= 1 No= 0	liver, kidney, heart or other organ meats or blood-based foods		
3.8.i	Flesh meats Yes= 1 No= 0	beef, pork, lamb, goat, rabbit, game, chicken, duck, other birds		
3.8.j	Eggs Yes= 1 No= 0	eggs from chicken, duck, guinea fowl or any other egg		
3.8.k	Fish and seafood Yes= 1 No= 0	fresh or dried fish or shellfish		
3.8.l	Legumes, nuts and seeds Yes= 1 No= 0	dried beans, dried peas, lentils, nuts, seeds or foods made from these (eg. hummus, peanut butter)		

3.8.m	Milk and milk Products Yes= 1 No= 0	milk, cheese, yogurt or other milk products		
3.8.n	Oils and fats Yes= 1 No= 0	oil, fats or butter added to food or used for cooking		
3.8.o	Sweets Yes= 1 No= 0	sugar, honey, sweetened soda or sweetened juice drinks, sugary foods such as chocolates, candies, cookies and cakes		
3.8.p	Spices, condiments, beverages Yes= 1 No= 0	spices (black pepper, salt), condiments (soy sauce, hot sauce), coffee, tea, alcoholic beverages		
3.9	Did you eat anything (meal or snack) OUTSIDE the home yesterday? List all			
PART FOUR HUNGER SCALE				
4.1	In the past [4 weeks/30 days], was there ever no food to eat of any kind in your house because of lack of resources to get food?	0 = No 1 = Yes		Skip to Q4.2
4.11	How often did this happen in the past [4 weeks/30 days]?	1 = Rarely (1–2 times) 2 = Sometimes (3–10 times) 3 = Often (more than 10 times)		
4.2	In the past [4 weeks/30 days], did you or any household member go	0 = No		Skip to Q4.3

	to sleep at night hungry because there was not enough food?	1 = Yes		
4.21	How often did this happen in the past [4 weeks/30 days]?	1 = Rarely (1–2 times) 2 = Sometimes (3–10 times) 3 = Often (more than 10 times)		
4.3	In the past [4 weeks/30 days], did you or any household member go a whole day and night without eating anything at all because there was not enough food?	0 = No 1 = Yes		Skip to Q5.1
4.31	How often did this happen in the past [4 weeks/30 days]?	1 = Rarely (1–2 times) 2 = Sometimes (3–10 times) 3 = Often (more than 10 times)		

PART FIVE WELL BIENG AND QUAITY OF LIFE				
5.1	Do you have enough energy for everyday life?	49. Completely 50. Mostly 51. Moderately 52. A little 53. None at all		
5.2	Do you have enough money to meet your needs?	54. Completely 55. Mostly 56. Moderately 57. A little 58. None at all		

5.3	How satisfied are you with your personal relationships?	59. Very satisfied 60. Satisfied 61. Neither satisfied nor dissatisfied 62. Dissatisfied 63. Very dissatisfied		
5.4	How satisfied are you with the conditions of your living place?	64. Very satisfied 65. Satisfied 66. Neither satisfied nor dissatisfied 67. Dissatisfied 68. Very dissatisfied		
5.5	Taking all things together, how satisfied are you with your life as a whole these days?	69. Very satisfied 70. Satisfied 71. Neither satisfied nor dissatisfied 72. Dissatisfied 73. Very dissatisfied		
5.6	Have you got any food/ nutrition based aid/ support?	74. Yes 75. No		Skip to Q6.1
5.7	If yes Q5.6, who is supporting you?	76. Government institution 77. NGO 78. Association 79. Contribution from the community 80. Other _____		
5.8	What type of aid you get?	81. Food support 82. Money support 83. Other _____		
		84.		

PART SIX LIFESTYLE				
6.1	Do you habitually smoke cigarette now days?	85. YES 86. NO		Skip to Q6.3
6.2	If Yes Q6.1, how much in a day?	_____		
6.3	If No Q6.1, did you smoke before?	87. YES 88. NO		Skip to Q6.4
6.4	Do you consume alcohol now days?	89. Yes 90. No		Skip to Q6.7
6.5	If yes Q6.4, what type of alcohol mostly you take?	91. Beer 92. Tella 93. Local areqie 94. Tej 95. Others (list all) _____		
6.6	If noQ6.4, Did you consume alcohol before?	96. Yes 97. No		Skip to Q6.7
6.7	Did you chew a chat?	98. Yes 99. No		
6.8	Have you taking any caffeine continuously?	100. Yes 101. No		Skip to Q6.10
6.9	If yes Q6.8, What caffeine you take continuously?	102. Coffee 103. Coca cola and other soft drinks 104. Tea 105. Other caffeine containing drugs 106. Others (list all)		

6.10	Do you have a regular physical exercise?	107. Yes 108. No		Skip to Q 7
6.11	If yes Q6.10, what type of physical exercise?	109. Walk 110. Running 111. In gymnasium/ Fitness center 112. Others (list all)_____		
6.12	If yes Q6.10, how much you regularly exercise?(list amount done per day or per week)	_____		

PART SEVEN ANTHROPOMETRIC MEASUREMENTS				
7.1	Height in the nearest 0.1cm	_____		
7.2	Weight in the nearest 0.1kg	_____		
7.3	MUAC to the nearest 0.1 cm	_____		
7.4	Does any Oedema exist? (Checked by the data collector)	113. Yes 114. No		

115. Have you started special diet because of the disease?

116. Yes

117. No

9. portioning of meals within the household based on

118. Age- group

119. Sex

120. Health status

10.. Do you influenced by food taboos in the community when you choose your food

121. Yes

122. No

THANK YOU FOR YOUR COLABORATION

Amharic Version Questionnaire

የጥናቱ ዓላማ እና ሚስጥር ጠባቂነት

እንደ ምን ዓይነት አቶ/ወ/ሮ/ወ/ሪት -----እባላለሁ መረጃ ሰብሳቢ ነኝ በቲቢ እና በስነ -

ምግብ ዕለት ጥናት እያደረጉት ወቅት ያደረግኩት የተወሰኑ ጥያቄዎችን አጠይቃለሁ፤ ለ 30

ደቂቃ ይህ ልዩ ጥናት ለምን ያህል ጊዜ ይደረጋል? ፡ ስሞትን እና ሌላ መረጃ ወይም እርስዎ መሆኑን የሚገልጽ አድራሻ ስለማንወስድ በሚሰጡት መረጃዎች ላይ ጥንቃቄ ያሳይኑ። ስሞትን እና ሌላ መረጃ መስጠት ለምን ያህል ጊዜ ይደረጋል? ፡ በጥናቱ ላይ ጥንቃቄ ያሳይኑ። ስሞትን እና ሌላ መረጃ መስጠት ለምን ያህል ጊዜ ይደረጋል? ፡ በዚህ ጊዜ ጥያቄ ሊኖራቸው ስለሚችል ስሜታቸውን ለማወቅ እንዘህን ጥያቄዎች ጠይቅ ፡ ስለጥናቱ የሚጠይቁኝ ጥያቄ ካለ ጠይቁኝ ፡ ስለመጠይቁን መጀመር እችላለሁ?

የፍቃድ ማስገባት ስምምነትና የመረጃ ሰጭኩድ/ልዩ ምልክት

v የተጠያቂ ኩድ/ልዩ ምልክት _____ ፣ ክ/ክተማ --- ፣ ጤና ጣቢያ -----

Ø የመረጃ ሰጪን በጥናቱ ላይ መሳተፍ ያላቸውን የስምምነት እና የቃል ሁኔታ ለማሳየት የ“X”

ምልክት ከሳጥኑ ውስጥ ስቀምጡ ፡

1.

የጥናቱ ዓላማ የምስጢር መረጃ ምስጢራዊነት እንደሚጠበቅ ተረድቻለሁ ፡ ስለሆነ ምክንያት በስነ ጥናት ላይ መሳተፍ ያደረግኩኝ ፡ []

2.

የጥናቱ ዓላማ እና የምስጢር መረጃ ምስጢራዊነት እንደሚጠበቅ ተረድቻለሁ ፡ ስለሆነ ግን ለመሳተፍ ያደረግኩኝ ይደለሁም ፡ []

ü ፊርማ _____

(የዳታ ሰብሳቢ ፊርማ መረጃ ሰጪው አዛውንት ስምምነቱን በቃል እንዳይቀይር ለማረጋገጥ ጣል ፡ ፡)

መጠይቅ (የአማርኛ ትርጉም)

ቀን : - ----/----/2009 ዓ.ም የተጀመረበት ሰዓት : ----: ----

ተ. ቁ.	ጥያቄ	መልስ
<p>ክፍል አንድ: - ሰፊ ዲሞካራሲያዊ መረጃ (Socio - Demographic data)</p>		
1.1	ከድ	
1.2	አድሜ	
1.3	በጥናቱ ተሳታፊ የሆኑት ምድቶች	123. ንድ
1.4	የጋብቻ ሁኔታ	124. ት 125. ገባ/ቸ 126. ላገባ/ቸ 127. ፈታ/ቸ
1.5	የትምህርት ደረጃ	128. ስት / ባል የሞተ ባቸው 129. ልተማረ/ቸ 130. ንበብና መጻፍ ብቻ የሚችል

		131. 1- 12 የተማሪ 132. ኮሌጅ/የኒቨርሲቲ ምሩቅ
1.7	ስራ	133. ቀጣሪ 134. ጋዴ 135. ክኒሻን 136. ቀንስራተኛ 137. ቤት እመቤት 138. በሬ 139. ራዩሌለው 140. ግል 141. ላካለይገለፅ
1.8	የቤተሰብ አባላት ብዛት	_____
1.9	የገቢ ምንጭ አለዎት?	142. ዎ 143. ለም
1.10	የወር ገቢ ገንዘብ ብዛት ስንት ብር ነው?	_____ ብር
ክፍል ሁለት :- የዕውቀት መመዘኛ ጥያቄዎች		
2.1	የጤና ማስከትል ምንጭ ስንት ብር ጉምሩኑ ነው?	

2.2	ለ ቲቢ ህመምን የሚመከሩትን 4ቱን የአመጋገብ ስርዓት ያውቃሉ?	144. ዎ 145. ላውቅም
2.3	ለ ቲቢ ህመምን የሚመከሩትን 4ቱን የአመጋገብ ስርዓት ይዘርዝሩ	146. ----- 147. ----- 148. ----- 149. -----
2.4	የአመጋገብ ስርዓት እና የበሽታ ቁርኝትን ያውቃሉ?	150. ዎ 151. ላውቅም
2.5	የጤናማ የአመጋገብ ስርዓት ለ ቲቢ በሽታ የሚያመጣውን ተጽዕኖ ያውቃሉ?	1. አዎ 2. አላውቅም
2.6	የተለያዩ የምግብ አይነቶችን መመገብ ጥቅም አለውብላው ያምናሉ?	<u>1.አዎ</u> <u>2 አላምንም</u>
2.7	የተለያዩ አይነት አትክልት ራፍሬ ፍሬ መመገብ ጥቅም አለውብላው ያምናሉ?	1.አዎ 2 አላምንም
2.8	በህመምዎ ቅትብዙ ጊዜ መመገብ ጥቅም አለውብላው ያምናሉ?	1.አዎ 2 አላምንም
2.9	በህመምዎ ቅት ልዩ ጠቃሚ ማምገቦችን መመገብ ጥቅም አለውብላው ያምናሉ?	1.አዎ 2 አላምንም
ክፍል ሦስት :- የአመጋገብ ብብዛትን መጠን (Dietary Diversity Score)		
3.1	የትላንቱ ቀን በአመጋገብ ብብዛት ላይ ተጽዕኖ የላቀው ነው?	152. ዎ

		153. ይ
3.2	አዎ ከሆነ ምን ድንገት ውል ይያይረገው?	154. ምነበር 155. ተለየ ድግስ ነበር 156. ለ _____
3.3	ባለፉት ሶስት ወራት የአመጋገብ መቀነስ ነበረዎት?	157. ዎ 158. ይ
3.4	አዎ ከሆነ የምግብ መቀነሱ መጠን እንዴት ነበር?	159. ጣምከፍ ተኛ መቀነስ 160. ከከለኛ መቀነስ 161. ተወሰነ / ዝቅተኛ መቀነስ
3.5	ለምግብ መውሰድ መቀነሱ ስምዖን ያት ምን ነበር?	162. ምግብ ለጎት መቀነስ 163. ስርዓተ ምግብ እንሸርሽሪት 164. ግብን ለማለ መጥና ለመዋጥ 165. ለ (ሁሉንም ጥቀሱ) _____
3.6	በ24 ሰዓት ውስጥ ጥስን ትጊዜ ተመገቡ?	_____
3.7	እባክዎ ትላንት ቀን እንዲሁም ማታከቤት ውስጥ ስምዖን ትውጫዎ በሉት ንና የጠጡትን ምግብ ሳይረሱይ ንገሩኝ :: በመጀመርያ ጠዋት ከተመገቡት ወይም ስምዖን ትውጫዎ በሉት ንና የጠጡትን ምግብ ሳይረሱይ ንገሩኝ ::	

የሚጠቅሱትን ሁሉን ምግብና መጠጠሪያ ጽሑፍ ቢይ መዘግብ፡፡ ከብዙ የምግብ ይነ ቶች የተዘጋጀ ምግብ ሲጠቅ ዱን በታና መከሰ ስያል ጠቀሱት ካለ በተደጋጋሚ ማጠቃለያ፡፡

3.8 ከላይከተሉት ለጸጉት ያልተገለጹ የምግብና ትካለ የሚከተሉትን የምግብ ይነ ቶች በየዘርፋቸው ማጠቃለያ

3.8.1	<p>አህል አዎ=1 አይ=0</p>	<p>በቆሎ፣ ሩዝ፣ መሽላ ወይም ሌሎች የአህል ዘር ወይም ከ (ለምሳሌ ዳቦ፣ አምባሻ፣ ገንፎ ወይም ካሉ)</p>
3.8.2	<p>ነጭ ስርጅት እና ከመሬት ስር የሚጠቅሱ ከብስር ያላቸው ለምግብ ነት የሚያገለግሉ አዎ=1 አይ=0</p>	<p>ድንች፣ የስርተክ ሎች (ቦይና፣ ጎደሬ፣ ወይም ሌሎች ከስርጅት የተዘጋጁ ምግብ</p>
3.8.3	<p>በቫይታሚን የበለጠ ጉዳት ከልቶች እና ከመሬት ስር የሚጠቅሱ ከብስር ያላቸው ለምግብ የሚያገለግሉ አዎ=1 አይ=0</p>	<p>A ውስጣቸው ስር ቱካና ማየሆኑ እንደ ዳባቢ ወይ ተለመዱ በቫይታሚን A የበለጠ</p>
3.8.4	<p>ደማቅ አረንጓዴ ቅጠል ያላቸው አትክልቶች አዎ=1 አይ=0</p>	<p>ደማቅ አረንጓዴ ቅጠል ያላቸው አትክልት ማዳየ ሚጠቅሱትን ጨምሮ እና በአካባቢ የበለጠ ቅጠል ቅጠሎች ለምሳሌ ጎመን</p>
3.8.5	<p>ሌሎች አትክልቶች አዎ=1 አይ=0</p>	<p>ሌሎች አትክልቶች (እና ሌሎች በአካባቢ ወይ ተለመዱ)</p>
3.8.6	<p>በቫይታሚን A የበለጠ ጉፍ ራፍሬዎች አዎ=1 አይ=0</p>	<p>የበለጠ ማንጎ፣ የበለጠ ፓፓያ፣ ኮከእ</p>

		እና ከነዚህ የተዘጋጁ ፍሬ ፍሬ ጭማቂዎችን ለ በለፀጉ ፍሬ ፍሬዎች
3.8.7	ሌሎች ፍሬ ፍሬዎች አዎ=1 አይ=0	ሌሎች ፍሬ ፍሬዎች ከጫካ የሚባሉትን ከነዚህ የተዘጋጁ ፍሬ ፍሬ ጭማቂዎች
3.8.8	የአካል ስጋ (Organ meat) አዎ=1 አይ=0	ጉበት፣ ኩላሊት፣ ልብና ሌሎች የአካ meats or blood-based foods) ምግቦች
H \	የምግብ ስጋ (Flesh meat) አዎ=1 አይ=0	የበሬ ስጋ፣ የዓሳ ማ፣ የበግ ጠቦት፣ የ
3.8.10	እንቁላል አዎ=1 አይ=0	የደሮ፣ የዳክዬ፣ የጅግራ፣ የቆቅ እና
3.8.11	ዓሳ እና የባህር ምግቦች አዎ=1 አይ=0	ደረቅ ወይን ምት ኩስ ዓሳና የዓሳ ዝርያ
3.8.12	ባቄላ፣ ለውዝ እና ሌሎች ጥራ ጥሬዎች አዎ=1 አይ=0	ባቄላ፣ አተር፣ ምስር፣ ለውዝ እና ከነ (ምሳሌ፡ የለውዝ ቅቤ)
3.8.13	ወተትና የወተት ተዋፅኦ አዎ=1 አይ=0	ወተት፣ አይብ፣ እርጎ፣ እና ሌሎች የወ
3.8.14	ዘይት እና ቅባት (ስብ) አዎ=1 አይ=0	ዘይት፣ ጮማ፣ ቅቤ የተጨመረበት ምግብ
3.8.15	ጣፋ ጭምግቦች አዎ=1 አይ=0	ስኳር፣ ማር፣ ጣፋ ጭንጥረ - ነገር እና ጣፋ ጭንጥ ጭንጥ ማጠጠጥ፣ ስኳር ኬኮች እና ኩሊሶች)
3.8.16	ቅመጥቅመጥቅ እና መጠጦች አዎ=1 አይ=0	ቅመጥቅ (ቃርያ / ሚጥሚጣ፣ ጨው፣ ስጎ
3.9	ትላንት ከቤት ውጭ የተመጡት ወይም የጠጡት ነገር አለ? ሁሉንም ዝርዝሩ	

ክፍል አራት፡ - የረሃ ብመጠነ ልኬት (Hunger Scale)

4.1	በባለፉት 4 ሳምንታት (30 ቀናት) ከቤታችሁ ምን ምዕራብ ነት የሚባለ ምግብ ጠጠፍ ቶና ለመግዛት ምን ዘብአ ጥታ ችሁ ተገባራት ሁነባት፡፡	0= አይ
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					1= አዎ
4.1 A	ይህችግርበባለፉት 4 ሳምንታት (በ 30 ቀናት) ውስጥ ለምን ያህል ጊዜ ተከስቷል?				1= ውስን ጊዜ ያት (1-2 ጊዜ) 2 = አልፎ አልፎ (3-10 ጊዜ) 3 = ብዙ ጊዜ (ከ 10 ጊዜ በላይ)
4.2	በባለፉት 4 ሳምንታት (30 ቀናት) እርስዎ ወይም ከቤተሰብዎ አባላት መካከል አንድሰው የሚመገበው አጥቶ (በቁምግብ ሰላም ምርቀቅ) ሳይበላ እየራበው ተኝቶ አድሯል?				0= አይ 1= አዎ
4.2 A	ይህችግርበባለፉት 4 ሳምንታት (በ 30 ቀናት) ውስጥ ለምን ያህል ጊዜ ተከስቷል?				1= ውስን ጊዜ ያት (1-2 ጊዜ) 2 = አልፎ አልፎ (3-10 ጊዜ) 3 = ብዙ ጊዜ (ከ 10 ጊዜ በላይ)
4.3	በባለፉት 4 ሳምንታት (30 ቀናት) እርስዎ ወይም ከቤተሰብዎ አባላት መካከል አንድሰው የሚመገበው አጥቶ (በቁምግብ ሰላም ምርቀቅ) ምንም ሳይመገብ ሙሉ ቀን እና ሌሊት አሳልፏል?				0= አይ 1= አዎ
4.3 A	ይህችግርበባለፉት 4 ሳምንታት (በ 30 ቀናት) ውስጥ ለምን ያህል ጊዜ ተከስቷል?				1= ውስን ጊዜ ያት (1-2 ጊዜ) 2 = አልፎ አልፎ (3-10 ጊዜ) 3 = ብዙ ጊዜ (ከ 10 ጊዜ በላይ)

ክፍል አምስት :- የኑሮጥራትና ደህንነት (Wellbeing and Quality of Life)

5.1	የዕለት ተዕለት ህይወትዎን ለመምራት በቂ ኃይል/ጉልበት አለኝ ይላሉ?	166. መለአ ቅም አለኝ 167. በቂ አለኝ 168. መካከለኛ 169. የተወሰነ/ጥቂት አለኝ 170. ምንም የለኝም
5.2	ፍላጎትዎን ለማሟላት በቂ ገንዘብ አለዎት?	171. ሉ አለኝ

		<p>172. ለኝ</p> <p>173. ካከለኝ</p> <p>174. ተወሰነ/ጥቂት</p> <p>175. ንምየለኝም</p>
5.3	ከሌሎች ሰዎች ጋር ባለዎት ግንኙነት ምን ያህል ደስተኛ ነዎት?	<p>176. በጣም ደስተኛ</p> <p>177. ደስተኛ</p> <p>178. አልደስትም ምልክት ላይ</p> <p>179. ይከፋኛል</p> <p>180. በጣም ይከፋኛል</p>
5.4	በሚኖሩበት ቦታ ላይ አካባቢ ሁኔታ ምን ያህል ደስተኛ ነዎት?	<p>181. በጣም ደስተኛ</p> <p>182. ደስተኛ</p> <p>183. አልደስትም ምልክት ላይ</p> <p>184. ይከፋኛል</p> <p>185. በጣም ይከፋኛል</p>
5.5	ባሁኑ ወቅት በአጠቃላይ በህይወት ምን ያህል ደስተኛ ነዎት?	<p>186. በጣም ደስተኛ</p> <p>187. ደስተኛ</p> <p>188. አልደስትም ምልክት ላይ</p> <p>189. ይከፋኛል</p> <p>190. በጣም ይከፋኛል</p>
5.6	ማንኛውም አይነት የምግብና መሰል አርዳታ አግኝተው ያውቃሉ?	<p>191. ዎ</p> <p>192. ይ</p>
5.7	ለጥያቄ 5.5 አዎ ከሆነ ማንነው ረዳዎት?	<p>193. ከመንግስት ወይንም ተቋም</p>

		194. መንግስታዊ ያልሆነ ተቋም 195. ከማህበር 196. ከማህበረሰብ መዋጮ 197. ሌላ (ይጥቀሱ)
5.8	ምን አይነት እርዳታ አገኙ?	198. የምግብ ብዳቄት 199. ገንዘብ 200. ዘይት 201. እንስሳት 202. ሌላ ቁሳ ቁስ (ልብስ) 203. ሌላ ካለ _____

ክፍል ስድስት :- የኑሮዘይቤ (Life Style)

6.1	ሲጋራ የማጨስ ስነ አለበዎት?	204. አዎ 205. አይ
6.2	ለጥያቄ 6.1 አዎ ከሆነ በቀን ምን ያህል?	_____
6.3	ለጥያቄ 6.1 አይ ከሆነ ካሁን በፊት ስያጨሱ ነበር?	206. አዎ 207. አይ
6.4	አልኮል ይጠጣሉ?	208. አዎ 209. አይ
6.5	ለጠያቂ 6.5 አዎ ከሆነ የትኛውን አልኮል ነው የሚጠጡት?	210. ቢራ 211. ጠላ 212. አረቄ 213. ጠጅ 214. ሌላ (ይጥቀሱ) _____
6.6	ለጥያቄ 6.5 አይ ከሆነ ካሁን በፊት ይጠጡ ነበር?	215. አዎ 216. አይ
6.7	ጫት ይቅማሉ?	217. አዎ

		218. አይ
6.8	ማንኛውም አይነት አነቃቂ ነገር (caffeine) ይወስዳሉ?	219. አዎ 220. አይ
6.9	ለጥያቄ 6.8 አዎ ከሆነ ምን አይነት ይወስዳሉ?	221. ቡና 222. ኮካኮላ ና ሌሎች ለስላሳ መጠጦች 223. ሻይ 224. ሌሎች አነቃቂ የያዙ መድሃኒቶች 225. ሌላ (ይጥቡ) _____
6.10	መደበኛ የሆነ የሰውነት እንቅስቃሴ ያደርጋሉ?	226. አዎ 227. አይ
6.11	ለጥያቄ 6.10 አዎ ከሆነ ምን አይነት እንቅስቃሴ?	_____
ክፍል ሰባት - የሰውነት መጠነ ልኬት (Anthropometric Measurements)		
7.1	ቁመት ወደ ሚቀርብ 0.1 ሴ.ሜ ተነቦ	_____
7.2	ክብደት ወደ ሚቀርብ 0.1 ኪ.ግ ተነቦ	_____
7.3	MUAC ወደ ሚቀርብ 0.1 ሴ.ሜ ተነቦ	_____
7.5	ከስነምግብ ግርግር የሚመጣ የሰውነት እብጠት (Oedema) አለ? (በዳታ ስብሰባ ቢረጋገጥ)	1. አዎ 2. አይ

8. በህመም ምክንያት የተለየ አመጋገብ ስራ ምረቃዎ ልዩ?

1. አዎ

2. አይ

9. የቤት ውስጥ የምግብ አዘገጃጀት በምን ወሰናል?

228.

በዕድሜ

229.

በጾታ

230.

በጤና ሁኔታ

10. የሚመጡትን ምግብ ለመርጠብ ህብረተሰብ የምግብ ማድተፊ እና የደርግ ጥቅም ታላቅ?

1. አይ

2. አይ

የተጨማሪ ስጦታ ስጦታ ---:

አመሰግናለሁ



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የባህር ዳር ቴክኖሎጂ ኢንስቲትዩት- ባህር ዳር ዩኒቨርሲቲ

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No:- BiT/FCFE/S23 /2009

Date :- 22/06/2009 ዓ.ም

**ለአደስ አበባ ከተማ አስተዳደር ጤና ቢሮ
አዲስ አበባ**

ጉዳይ:- ኢትዮጵያ ክሊራንስን ይመለከታል

በባህር ዳር ዩኒቨርሲቲ ቴክኖሎጂ ተቋም በአፕላይድ ሂዩማን ኒዩትሪሽን ት/ክፍል የማስትርስ ተማሪ የሆነችው ሰላማዊት አድማሱ “Assessment of knowledge and practice of tuberculosis patients on recommended nutritional care and support during treatment, Addis Ababa ” በሚል ርዕስ የምርምር ንድፈ-ሀሳብ አቅርባ በባለ ሙያ ተገምግሞ እና አስፈላጊነቱ ታምኖበት ምርምሩን እንድትሰራ ስለተፈቀደላት ስራውን በተዘጋጀው መንገድ መስራት ትችላዋል ዘንድ በእናንተ በኩል አስፈላጊው ትብብር እንዲደረግላት እየጠየቅን ለሚደረግላት ትብብር በቅድሚያ እናመሰግናለን፡፡



<< ከሰላምታ ጋር >>

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ዶ/ር ሐይቅ ለሳዩ ቸሪ
የሰርዓተ ምግብ ቸር
Drut Assaye Cherie (D/r)
Clinical Human Nutrition Chair

ገልጻለሁ

- ለኬሚስትሪና ምግብ ም/ፋኩልቲ
- ለሰላማዊት አድማሱ
- ባህር ዳር ቴክኖሎጂ ተቋም



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