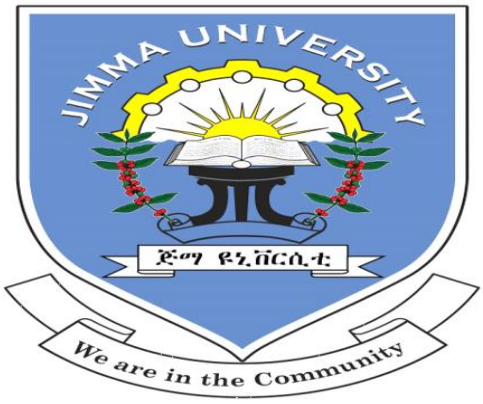

NUTIRITONAL RISK AND ASSOCIATED FACTORS AMONG ADULT ADIMITTED PATIENTS AT JIMMA UNIVERSITY MEDICAL CENTER SOUTH WEST, ETHIOPIA, 2017

BY: ABEBA ABEBE (BScN)

ARESEARSCH SUBMITTED TO JIMMA UNIVERSITY, INSTITUT OF HEALTH, FACULTY OF PUBLIC HEALTH, DEPARTMENT OF POPULATION AND FAMILY HEALTH IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR MASTERS OF DEGREE IN HUMAN NUTRITION.

JIMMA, ETHIOPIA

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ADVISORS:

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JIMMA, ETHIOPIA

JUNE 2017

ABSTRACT

Background: Worldwide, based on different measurement tools the prevalence of nutritional risk varies ranging from 15 to 60%. A large number of patients are at nutritional risk when admitted to hospital, and most of the patients develops under nutrition through hospital stay. The investigation of nutritional risk and factors associated with nutritional risk right after admission could contribute for better administration prevention strategies and also help to deliver nutrition therapy to be started as soon as possible for patient in need. Despite of this significant impact there is very limited study done in Ethiopia to assess the prevalence of nutritional risk and associated factors among admitted patients.

Objective: The objective of this study is to assess the prevalence of nutritional risk and associated factors among adult admitted patients at Jimma University Medical Center, South west Ethiopia.

Method: Institution based Cross-sectional study design were used to conduct this study. The study was conducted in Jimma University Medical Center from April 1 to May 7, 2017. Consecutive-sampling technique was used to select 220 admitted patients. Data was collected by using inter-viewer administered semi-structured questionnaires and the data was checked for completeness and consistency, entered into Epi-Data version 3.1 and exported to SPSS Statistics Version 20 for analysis. Descriptive statistics was conducted and the result were presented using Percentage table and figures. Binary logistic regression was carried out and variables having P-value ≤ 0.05 declared to be significant factor, finding were presented using Odds Ratio (OR) and with their 95% confi-dence intervals.

Result: The prevalence of nutritional risk was 58.2 %. According to this finding, factors signifi-cantly associated with nutritional risk were chronic illness (AOR=2.818, 95%, CI=1.384-5.737, Age **(**AOR=3.283, 95%CI=1.692-6.368, educational level (AOR=3.316, 95%CI=1.706-6.444) and presence gastric and intestinal problem during admission (OR=2.537, 95%=1.231-4.322) were sig-nificantly associated with nutritional risk.

Conclusions: The study found there is high Prevalence of nutritional risk at Jimma University Medical Center, age of patients, educational level, presence of chronic illness and presence of gas-tric and intestinal problem were independent predictors of nutritional risk. Strength adult learning, regular screening, prompt management of chronic diseases and early identification of gastric and intestinal problem were recommended.

Key words: nutritional risk, admitted patients, Malnutrition universal screening tool.

Acknowledgment

First, I would like to thank my almighty GOD for giving me healthy and great help during day and night time to make me at this position. Then I would like to extend my deep gratitude to my advisors Dr. Beyene Wendaferash (MD, M.SC) and Mr. Beakal Zinab (BSC, M.SC) for their patience, guidance, constructive, technical advice and valuable suggestions on advancing my proposal. Their smart comments and suggestions have added considerably to the clarity and organization of this work. Then, my appreciation goes to my colleagues who were with me during development of this proposal.

Finally, I would like to thank my family member for their financial support to conduct this research proposal.

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LLST ABBREVIATIONS

MUST: Malnutrition Universal Screening Tool

NRS: Nutrition Risk Screening

BMI: Body Mass Index

JUMC: Jimma University Medical Center

SPSS: Statistical Package of Social Science

CO R: Crude odd ratio

AOR: Adjusted odd ratio

CI: Confidence interval

CHAPTER ONE

1. INTRODUCTION

1.1. BACK GROND INFORMATION

Nutritional risk is the presence of factors that may cause or aggravate malnutrition in patients (1) and it includes both malnourished patients and patients at risk of developing malnutrition (2).Nutritional risk may because by a wide variety of underlying conditions. Hence, a reduction in nutritional status during illness can produce a range of different symptoms in the body.

Being at nutritional risk increases the risk of morbidity, hospital stay and premature death(3).The association between poor nutritional status during illnesses can impair the quality of life and increase the risk of mortality was first described 2400 years ago,(by the Greek physician and founder of western medicine, Hippocrates (460 - c. 370 BC) (4). Nutritional support is the part of medical treatment, improvement and maintenance of a patient's nutritional status and improve recovery (5). The evidence of increasing the use nutrition support in hospitals reduces morbidity, mortality, decreases the rate of complications, and shortens the hospital stay.

The investigation of risk factors associated with nutritional risk right after admission could contribute for better knowledge and identification of patients at risk with allowing better control of strategies for the primary prevention of malnutrition. and also improve the approach of identifying patients at risk of nutrition which may be essential for an individualized nutrition therapy to be started as soon as possible and use to recommend routine use of simple screening procedures for those who are nutritionally at risk(6).

In order to improve the approach to and identification of patients with nutritional risk, nutritional risk screening tools are essential (6). There are several validated screening tools which were so far developed for nutritional risk screening and appropriate for hospital patients, these includes, Malnutrition Screening Tool (MST) (7), Malnutrition Universal Screening Tool (MUST) (8), nutritional risk screening (NRS2002), Short Nutritional Assessment Questionnaire (SNAQ) (9), Mini Nutritional Assessment (MNA) (10) and (Global Subjective Evaluation) which can be used either as a screening tool or for assessing nutritional risk.

MUST was developed by the Malnutrition Advisory Group, a standing committee of the British Association for Parental and Enteral Nutrition (BAPEN) in 2003. It is a validated, evidence-based tool designed to identify adults who are malnourished or at risk of malnutrition (11, 12, and 13). In addition, the three criteria used by MUST to determine the overall risk of malnutrition such as body mass index (BMI), unplanned weight loss for the last 3-6 months, and acute illness or lack nutritional intake for >5days (13). In addition, it can be used even in patients without available height and weight, as a range of alternative measures and subjective criteria (knee height and demi-span (13).

1.2 Statement of the problem

Being at nutritional risk increase the risk of morbidity, hospital stay and premature death (3). Globally, malnutrition is the most important risk factor for illness and death among admitted patient (8).Based on several worldwide reports, 30% to 55% of patients entering acute hospitals were at risk of malnutrition (2) .Worldwide the prevalence of nutritional risk varies ranging from 15 to 60% depending on the tools used to identify its occurrence and which patient population is investigated (14). In developed countries, such as in England and Austria the prevalence of intra hospital rates of nutritional risk were (20%, 36%) (15, 16) respectively, and in developing countries, like Latin American, the prevalence of nutritional risk in hospitalized patients is about 50% (17, 18).

Majority of patients are at nutritional risk when admitted to hospital and most of them develop under nutrition negatively during hospital stay (19,20).The hazard of developing nutritional risk might be depends on a multi factorial combination, socio demographic factors, like economic status, religions, sex, age, family size, residence and marital status, Patho-physiological factors including chronic illness or difficulty of chewing and swallowing and physical factors, like low BMI, unplanned weight loss and current disease factors, nausea vomiting, poor appetite, constipation, diarrhea and dyspepsia and behavioral factories such as chat chewing alcohol drinking and cigarette smoking (21,22).

Assessment of the nutritional risk and associated factor is crucial for treatment of a patient at nutritional risk. Understanding of nutritional risk and nutrition support among many healthcare professionals is poor, and many difficulties relating to the need and best mode of nutrition support are compounded by a lack of knowledge about malnutrition and its treatment amongst many healthcare professional, and there has been little emphasis on nutrition education in undergraduate either medical or nursing courses. This has led to poor recognition of both nutritional risks and the dangers of

poorly managed nutrition support and along with the lack of agreed national guidelines and nutritional care standards for adult admitted patients (23).

Many studies was done regarding nutritional risk and associated factors in developed countries but in our country, nutritional risk and associated Factors among adult admitted patients were not far studies. Therefore, this health facility based study conducted to document and assess the nutritional risk and possible risk factors among adult admitted patients by using nutritional risk screening tools in JUMC.

CHAPTER TWO: LITERATURE REVIEW

2 .1 Prevalence of Nutritional risk

According to the evidences from different studies, the prevalence of nutritional risk among adult admitted patients varies depending on the tools used.

A Cross-sectional study done on how nutritional risk is assessed and managed in Israel hospitals, in 2007–2008 that involved a total of 21,007 patients from 325 hospitals, the prevalence of nutritional risk were 21-73% (24), and other cross-sectional multicenter study done on malnutrition in hospital patients and its risk factors, in 11 Austrian hospitals in13 October 2012 that include 2,283 patients and malnutrition were screened by universal malnutrition screening tool (MUST), the prevalence of malnutrition was 15.7% (high risk) and 8.3% (middle risk) (24).

A metacentric cross-sectional study done on under nutrition and associated factors in six public hospitals of Portugal on February 4, 2010 that include 1144 patients, under nutrition risk was assessed using Nutritional Risk Screening 2002 and shows the prevalence of under nutrition risk 36% and undernourished 9.7% (25). Multicenter prospective and observational study conducted on Prevalence of malnutrition and its etiological factors in hospitalized population of Catalonia in Spain with 796 patients by the year 2012 and nutritional status was evaluated using the Nutritional Risk Screening (NRS 2002) method, the prevalence of malnourished or at nutritional risk were 28.9 % (26).The study done on prevalence of patients at nutritional risk in hospital of Denmark in 2 January 2004 include 590 patients, shows the prevalence nutritional risk 40 % (28).

A cross-sectional observational study done on identification of malnutrition and risk factors in hospital patients carried out in São Paulo a general hospital of brazil between January and December 2005.That include sample of 300 adult individuals, shows the prevalence of malnutrition were 60.7% (29). Other study conducted in Brazil on nutritional risk and associated factors in surgical patients of a teaching hospital patients of escolada Universidad Federal de Pelotas of Brazil, from April to October 2010 using the Malnutrition Screening Tool, the study included 565 adult patients, and the prevalence were 30% of the patients present with an average or high nutritional risk, and 7% of them were at high risk (24%) (30).

Investigation of nutritional risk factors using anthropometric indicators in hospitalized surgery patients in Brazil by the year 2012 and the nutritional status was assessed in 235 hospitalized patients (20%) of the patients were malnourished on admission to the hospital and 27.5% reported recent weight loss on admission (31).

A retrospective study done on malnutrition and risk factors in university hospital of Mexico between Joule2012 and December 2013 that include a total sample size 3200 patients by using nutritional risk screening (NRS 2002) and the prevalence were 54% (32).

A cross sectional study done on malnutrition and its associated factors in hospitalized patients in four Bussan general hospitals Republic of Korea from March to April, 2011, include 944patients and nutritional risk was assessed by Nutritional Risk Screening (NRS2002).The mean prevalence of malnutrition were17.2 %(33).

Study done on exploration of nutritional risk at hospital admission in Italy in 2009 that include the 1284 admitted patients showed the prevalence of nutritional risk 28.6%(34). Moreover, study done on nutritional risk in hospitalized patients and impact of nutritional risk on serum albumin in Turkey in the year 2002 indicates the prevalence of nutritional risk that is 57 %(35).

3.2 Factors associated with nutritional risk

A metacentric cross-sectional study done on under nutrition and associated factors in Portugal in 2010 shows that illiteracy (OR= 2.45, 95% CI= 1.52-3.96), increased age (one year increment) (OR= 1.03, 95% CI= 1.02-1.04), being male (OR=1.61, 95% CI = 1.1 -2.16), single / divorced /widowed (OR=1.83, 95% CI = 1.34-2.51) and smoker (OR = 1.55,95% CI=1.02-2.35 were a significant risk factor for nutritional risk (26)and other cross-sectional study done on nutritional risk and associated factors in Brazil in 2010 shows that the higher the age group of patients, has greater prevalence of high nutritional risk, reaching 54% in patients over 60 years of age (30).

A cross-sectional observational study done on identification of malnutrition and risk factors in hospitalized patients in Brazil in 2005 shows that recent and involuntary weight loss (OR, 58.03, 95% CI, 18.46-182.41), apparent bony structure (OR= 47.62, 95% CI=5.89-384.96), decreased appetite (OR= 10.31, 95 % CI= 2.23-49.55), diarrhea (OR= 8.45, 95 % CI, 1.32-55.38,) inadequate energy intake (OR= 3.68, 95% CI= 1.32-13.12) and male sex (OR =3.51,95% CI= 1.17-10.52) were variables those are significantly associated with nutritional risk (29).

The study done on prevalence and risk factors for malnutrition in hospitalized patients in Korea in 2011 the eating problems of the patients at risk for malnutrition were anorexia and vomiting (31.8% and 10%, respectively (33). Across-sectional multicenter study done on nutritional risk and its risk factors in hospital patients in Austria on 13 October, 2012 , that showed loss of appetite (56.6 % , 95% CI =51.3-61.9), acute disease (38.6% , 95% CI= 33.4 -43.8) , nausea (22.3% CI 17.8-26.8), reduced oral intake for >1 week (17.1%, 95% CI= 13.0 -21.2), pain (16.6%, 95% CI= 12.6-20.6), no oral intake for >3 days (10.8% , 95% CI=7.5-14.1) and swallowing problem (10.2% , 95% CI= 6.9-13.5) were the significant risk factors for nutritional risk (25). Study done on investigation of nutritional risk at hospital admission in Italy in 2009 showed that being medical patients was the strongest risk factor for under nutrition risk than surgical patients that showed 33.6 % vs. 22.8 % in medical and surgical patients, respectively.

In addition, multicenter prospective and observational study conducted on prevalence of malnutrition and its etiological factors in hospitalized population of Catalonia in Spain with 796 patients by the year 2012, showed that age (OR=1.031,95% CI=1.01-1.04),admission type (OR,1.39,95% CI =0.9-2) and diagnosis hematologic malignancy (OR=2.16,95% CI=1.47-3.1) (27).Study done on nutritional risk and in hospitalized patients and impact of nutritional risk on serum albumin in Turkey in the year 2002. Shows that age (OR =4.295, 95% CI, =1.01-18.802, types of chronic diseases (OR=1.896, 95%CI=0.429-8.333), weight loss (OR=7.042, 95% CI=2.325-20.00 and malignant diseases (OR=3.816, 95%CI=1.010-14.285) (35).

2.3 Significance of the study

The identification of adjustable risk factors of nutritional risks among hospitalized patients contribute to the development of integrated intervention and` control strategies for a timely primary prevention. Many studies were conducted on prevalence and factors associated with nutritional risk among adult admitted patients in many developed countries, but very limited study was done in Ethiopia to assess the prevalence nutritional risk and associated factors among hospitalized patients.

This study fill the research gap on prevalence and associated factors of nutritional risk among adult admitted patients at JUMC. Furthermore, the result of this study might be used as reference and baseline for those who are interested to do a further research on the same topic. It will also benefit FMOH, regional health Bureau, JUMC and other concerned bodies to draw the attention to policy makers in developing new policy on patient care regarding nutrition and provide basic information for development of integrated intervention and control strategies for a timely primary prevention and treatment.

Conceptual frame work

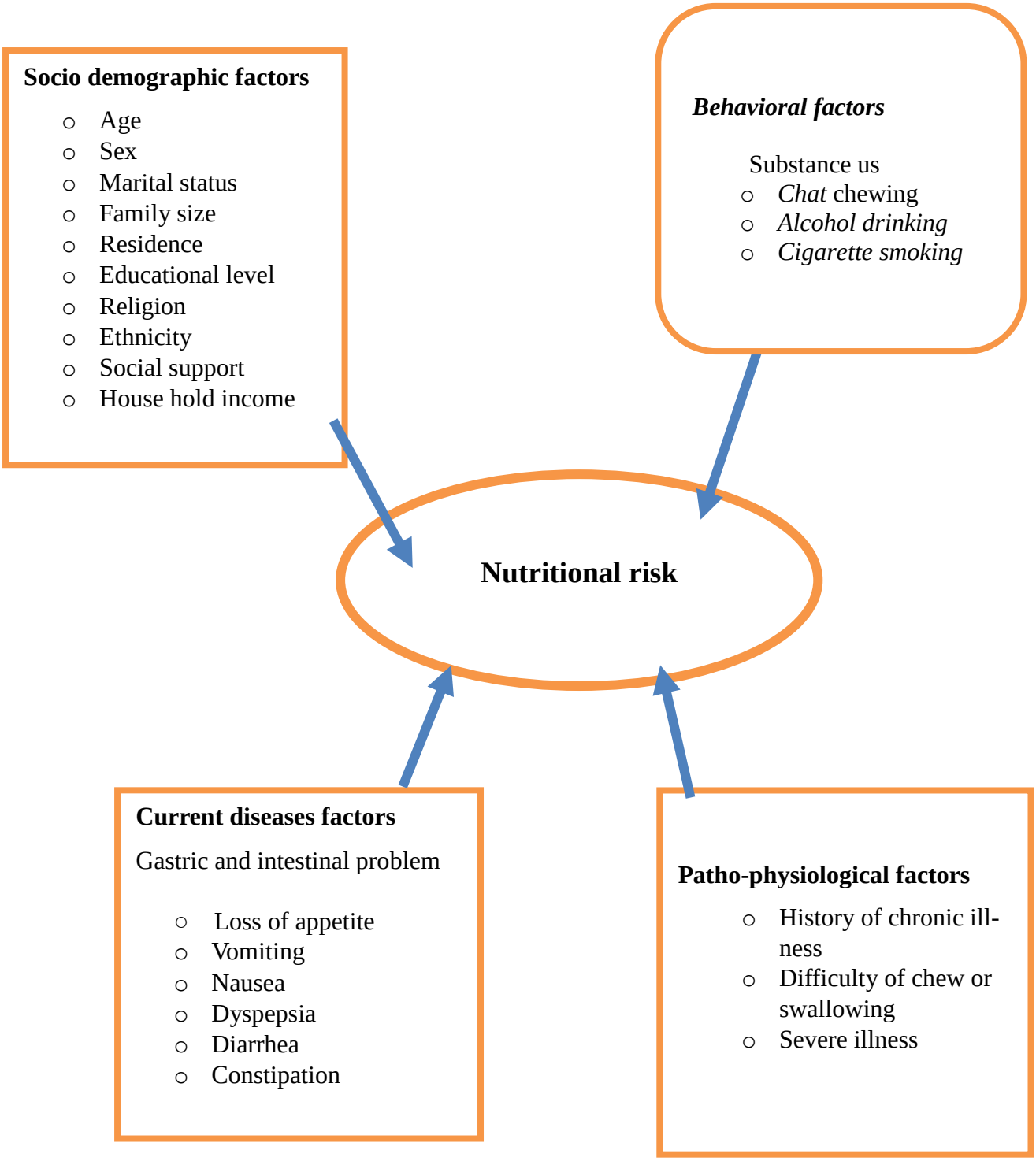


Figure 1: conceptual framework developed after reviewing of deferent literatures.

CHAPTER THREE: OBJECTIVES

3.1. GENERAL OBJECTIVE

To assess the magnitude of nutritional risk and its associated factors among adult admitted patients at Jimma university medical center, south west, Ethiopia, 2017

3.2. SPECIFIC OBJECTIVES

To determine the magnitude of nutritional risk among adult admitted patients at Jimma university medical center.

To identify factors associated with nutritional risk among adult admitted patients at Jimma university medical center.

CHAPTER FOUR: METHODS AND MATERIALS

4.1 Study area and period

The study was conducted from April 1 to May 7, 2017 on patients admitted to adult medical and surgical ward at Jimma University Medical Center. JUMC is one of the oldest public hospitals in the country. The study area is located in Jimma town 352 km southwest of Addis Ababa. The Ethiopian Ministry of Health started to run it & give service to the people and as of 1984; it became a training center for health workers (Medical Doctors, Health officers, Nurses, Pharmacy Technicians, and Laboratory Technicians & Environmental Health Experts.)

Currently it is the only teaching and referral hospital in the southwestern part of the country, providing services for approximately 16,000 inpatient, 160,000 outpatient, and 12,000 emergency cases in the year 2016, the hospital is serving a total catchment population of about 15 million people of southwestern Ethiopia. Now days JUMC has about 25 units, and total of 636 beds, and Medical, Surgical, Gynecology , Maternity, psychiatric, ophthalmology, ICU and pediatrics wards are those provides inpatient service for the community around the area, and adult ward the one that include medical and surgical ward and that has around 177 beds & provides inpatient service for the community in JUMC.

4.2 Study Design

Institution based cross-sectional study design.

4.3 Source population

All adult admitted patient at Jimma University Medical Center.

3.4 Study population

All sampled adult admitted patients at Jimma University Medical Center during the study period.

Inclusion and Exclusion Criteria

Inclusion Criteria

All adult admitted patients within 24hrs during study period.

Exclusion criteria:

Those Patients, who were comatose, had edema, abscises, and surgical patients those with POP and who had internal or external fixation.

4.5 Sample size determination

Sample size was determined using single population proportion formula. Since as acknowledge of researchers no study was done in Ethiopia regarding nutritional risk and associated factors so by considering 50% for both prevalence and factors of nutritional risk.

$$ni = \frac{\left(z\propto_{/2}\right)^2 * p(1-p)}{d^2}$$

Where, ni =initial sample size

$Z\alpha/_2$= confidence interval (95%)

p= proportion of nutritional risk; 50%=0.5

d= is the margin of sampling error tolerated (5%) =0.05

$$ni = \frac{(1.96)^2 * 0.5(1-0.5)}{0.05^2} = \frac{3.8416 * 0.25}{0.0025}$$

$$ni \approx 384$$

By considering 5% non-response rate n=384*5%=19

n=19+384= 403

n= 403

The annual adult admitted patients from medical and surgical report at JUMC in 2016 during current data collection period (April) was 480 used as a source population. Since 480 is (<10,000), the correction formula was used and calculated as follow.

$$Nf = \left(\frac{n}{1+\frac{n}{N}}\right) = \left(\frac{403}{1+\frac{403}{480}}\right) = 220.2n = 220$$

Finally=220 adult patients who was admitted during study period were studied.

4.5.1. Sampling technique

Consecutive sampling technique was used to select 220 study participants from the adult surgical and medical admission patients in Jimma university medical center .To select patients among the wards, stratified technique was used to get comparative numbers from each ward. Data was collected from all adult medical and surgical admitted patients until required sample reached for 37days,(April1 to May7), 2017.

4.6 Data collection procedures

The data was collected within 24 hours of admission by face-to-face interview using semi-structured questionnaires. Interview was held just before anthropometric measurements of weight and height. Measurement of weight and height was done to determine body mass index. Weight was measured to the nearest 0.1kg on bare foot and with the minimum possible light clothes and Height was measured using standard procedure (bare foot, Frankfurt position, heels, buttock and shoulder touching the vertical board) in standing position to the nearest 0.1cm. In addition, in patients with deformity (kyphosis), fracture and patients who had difficulty of standing erect height was measured by using alternative methods like; knee height and demi-span were as a range of alternative.

4.7 Tools for data collection

Six personnel enrolled for data collection and supervision .five BSC nurses recruited for data collection and one BSC nurse for supervisor.

Data was collected using semi-structured questionnaires prepared in English language, which was adapted from different literatures done on similar and related titles of the study. The questionnaire had four parts .Part I- socio demographic factors, Part II Patho- physiological factors, Part III current diseases factors and Part IV behavioral factors.

Weight was measured by using electronic measuring scale (SECA GERM). In addition, height was measured by using height measuring board or Stadeometer to the nearest 0.1 cm.

4.9 Study variables

Dependent variables

Nutritional risk (presence and absence)

Independent variables

Socio demographic factors: Sex**,** Age, Family size, Educational level, marital status, Residence, Religion, social support and economic status,

Patho-Physiological factors: history of chronic illness, difficulty of to chew or swallowing.

Gastro intestinal problem: Gastric problem (nausea, vomiting and dyspepsia) Intestinal problem (diarrhea and constipation).

Behavioral factors: Substance Abuse **(**chat chewing, alcohol drinking and cigarette smoking**).** 4.10 Operational definition and definition of term

4.10.1 Definition of the terms

Screening: simple and rapid process to select subjects who are malnourished and at risk of malnutrition.

Nutritional screening: an important tool for rapid or simple evaluation of an individual nutritional status.

Nutritional risk: nutritional risk is the presence of factors that may cause or aggravate malnutrition.

Malnutrition: Malnutrition is a state of nutrition in which a deficiency or excess (or imbalance) of energy, protein, and other nutrients causes measurable adverse effects on tissue body form (body shape, size and composition) and function, and clinical outcome.

4.10. 2 Operational definition

Nutritional risk .if the patients were grouped into medium risk (1 point), and into high risk (2 or above points.

High nutritional risk: the patient has high nutritional risk if his /her BMI <18.5 kg/m^2, has unplanned weight loss >10% in the past 3-6 months and has history of acute illness or lack of nutritional intake for>5 days.

Medium nutritional risk: the patient has middle nutritional risk if his /her BMI 18.5-20 kg/m^2, has unplanned weight loss 5-10% in the past 3-6 months.

Low risk: the patient has low nutritional risk if his /her BMI >20 kg/m^2, has unplanned weight loss 5% in the past 3-6 months.

Associated factor: Any contributing factors for occurrence of nutritional risk it can be (socio demographic factors, Patho-physiological factors, current diseases factors and behavioral factors).

Unplanned Weight loss: if the patients has unintentional weight loss for the last 3-6 months.

No nutritional intake: if the patient does not take anything for>5 days.

Severely ill: we say the patient is severely ill if her or her illness is make him or her difficult to take food for >5 days.

Substance use: if the patient is, practice at least one from chat chewing, alcohol drinking and cigarette smoking.

Diarrhea: If the patients passes three or more loose or liquid stool per day for the last 7 days.

Nausea or vomiting: If patients have nausea and vomiting for the last 7 days.

Constipation: If the patient has no bowel movement or not pass, stool for last 7 days.

Chronic illness: if patients has health condition or diseases that persistent in its effects or diseases condition with time or lasts for 3_6 months.

Social support: if the patient get support from his/her family, relative or from others for the current diseases.

4.11 Data Quality Control

The questionnaire was translated to local language Afan Oromo and Amharic by expert and then retranslated to English by another person to check consistency.

Two days Training was given for data collectors and supervisors on the objectives of the study, meanings of each question, techniques of interview and Standard procedures of measuring weight and height.

Standard procedures of measuring weight and height was strictly followed and the weight scale were regularly calibrated between each measurement.

The questionnaire was checked by doing pretest on 5 % (0.05*220=11) of sample at Shanan Gibe Hospital. To check reliability the principal investigator repeated 10 % of the measurements and Co-efficient difference were checked and training was given for those individual above 3%.

The collected data were reviewed and checked for completeness by the data collectors, supervisors and principal investigator daily. To assure privacy, code numbers were placed on the completed questionnaires after they return to the investigator.

4.11. Data Processing and Analysis

Data were checked for completeness entered into Epi-Data version 3.1, and exported to SPSS Statistics Version 20 for analysis. Descriptive statistics such as Percentage, standard deviation, fre-

quency and mean were calculated. A sum score of MUST was calculated based on three parameters BMI ((>20kg/m2, 18.5kg/m2_20kg/m2 and <18.5kg/m2), unplanned weight loss (<5% , 5_10% and >10 % acute illness or no nutritional in take(2 points)), to group the patients in low risk (0 points), middle (1 point) and high nutritional risk (2 and above points).

Binary logistic regression analysis was done for nutritional risk (presence or absence) by merging medium risk and high risk (as presence) and low risk as absence and all independent variables, which had association with the dependent variable at p - value of less than 0.25 were considered for adjustment in the multivariable logistic regression . Multivariable logistic regression was done to identify independent factors associated with nutritional risk at P- value < 0.05. Factors with p-value <0.05 were considered as statistically significant association with dependent variables. The result were reported using Odds Ratio (OR) with respective 95% confidence intervals.

4.12. Ethical Consideration

Ethical clearance obtained from Institution review board of Jimma University Institute of Health. Permission letter were sought from hospital management body. Finally, oral consent was obtained from each study participants before making measurements and taking interview and the confidentiality of the also data insured.

In addition, the respondents' right to refuse or withdraw from filling out the questionnaire were fully realized and the information provided by each respondent were kept strictly confidential. During data, collection patients with high nutritional risk were linked to the prescription of a nutrition plan and monitoring for follow up.

4.13. Dissemination of result

The findings of this study will be disseminated to JUSH, Jimma University library, Federal and Regional Health Bureau. The findings also will be presented in different seminars, meetings and workshops. After the end of the study, all effort will be made to publish the thesis in a reputable journal.

CHAPTER FIVE: RESULT

5.1. Socio demographic characteristics of the study

During the study period, 220 participants were selected consecutively and response rate was 100%.

Among the 220 respondents 118(53.2%) were females. The mean age of the respondents were 38.81(SD+13.857). Majority of respondents 142(64.5%) were Muslim and a higher proportion of respondents were 154 (70%) were married. 128 (58.2) of the respondents attend informal education. The mean family size of respondents was 4.78(Table1).

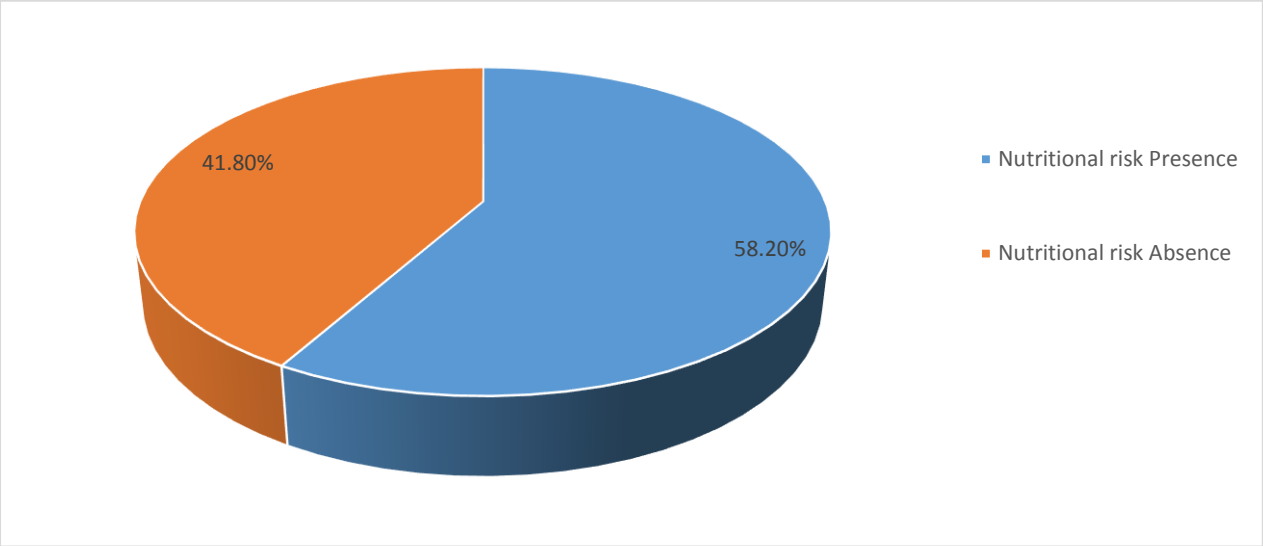
Table 1: Socio demographic of characteristics prevalence of nutritional risk among adult admitted patients .at JUMC, from April to May 2007.

		Count	Percent
Sex	Female	118	53.6
	Male	102	46.4
Educational level	Informal education	128	58.2
	Formal education	92	41.8
	Married	143	65
Marital status	Single	44	20
	Divorced	21	9.5
	Widowed	12	5.5
	Muslim	140	63.6
Religion	Orthodox	49	22.3
	Protestant	27	12.3
	Catholic	2	0.9
Family size	≤5	73	33.2
	>5	147	66.8
Residence	Urban	73	33.6
	Rural	147	66.8
House hold income	Low rank	70	31.8
	Medium Rank	77	35
	High rank	73	33.2
Social support	Yes	180	81.8
	No	40	18.2
Types of admission	Medical patient	100	45.5
	surgical patient	120	54.5

5.2 Prevalence of nutritional risk

Among the total of 220 of adult adimitted patients participants in this study 158(58.2%) of paients were nutritionally at risk (Figure 2).

Figure 2. Prevalence of nutritional risk among adult hospitalized patients at JUMC, from April 1 to May7, 20017.



5.3 Data related to anthropometric measurement

The study shows that 123 (55.9) of respondents has history of weight loss in the past 3-6 month, from this, 50 (22.7%) of respondents has history > 5 % weight loss, 41(18.6%) of respondents has history of >10% weight loss and 32(14.5%) of patients has history of 5-10% weight loss in the past 3-6 months.

107 (48.6%) of respondents has > 20 kg/m2 BMI, 67(30.5 %) of respondents has < 18 kg/m2 BMI and 46(20.9%) of respondents has 18.5-20kg/m2 BMI.

Tables 2. Anthropometric measurement among adult admitted patients

Variables		frequency	percent
Weight loss in the past 3-6 month	Yes	123	55.9
	No	97	44.1
% of weight loss in the past 3-6 month	> 5 %	50	22.7
	5 -10 %	32	14.5
	>10 %	41	18.6
BMI	> 20 kg/m2	107	48.6
	18.5-20kg/m2	46	20.9
	<18 kg/m2	67	30.5

5.4 Patho-physiological factors

Regarding Patho-physiological factors 77 (35%) of patients have history of chronic illness from this hypertension, diabetes, HIV cardiac problem and another chronic illness accounts 11(14.3%), 13(16.9), 5(6.5%), 20 (26%) and 28(36.3%), respectively. 34(15.5%) of patients has history of swallowing problem.

Majority 134 (60.9%) of respondent has history of gastric and intestinal problem during for the last seven days. From this percent, 50 (22.7%) of respondents has history of diarrhea, 42 (22.7%) of patients has history of nausea and vomiting, 21(9.5%) of patient has history of constipation and 20 (9.1%) of patients has history dysphasia.

Table 4: distribution of Patho-physical factors with nutritional risk at JUMC from April 1 to May 7.2017.

Variables		Nutritional risk		Total	
		presence	Absence	Count	Percent
Chronic illness	Yes	58(26.4%)	19(8.6)	77	35
	No	70(31.8%)	73(33.2%)	143	65
Types of chronic illness	Hypertension	8(10.4%)	3(3.9%)	11	14.3
	Diabetes	11(14.3%)	2(2.6%)	13	16.9
	HIV	4(5.2%)	1(1.3%)	5	6.5
	Cardiac problem	16(20.8%)	4(5.2%)	20	26
	Others	17(22.1%)	11(14.3%)	28	26.4
Difficulty of swallowing	Yes	19(8.6%)	15(6.8%)	34	15.4
	No	109(49.5%)	77(35%)	186	84.6

5.5 Behavioral factors

In this study, 118 (53.6%) of the respondents has a history of substance use. From this percent large numbers of patients 74(62 .7%) has history of chat chewing, 26(23.6%) of patients practice alcohol drinking and 18(16.2) of patients practice cigarette smoking.

Table 5. Distribution of behavioral factors with nutritional risk among admitted patients at JUMC from April 1 to May 7, 2017.

Variables		Nutritional risk		Total	
		Presence	absence	Count	Percent
substance use	Yes	79(35%)	39(17%)	118	53.6
	No	49(22.3%)	53(24.1%)	102	46.4
types of substance use	chat chewing	51(43.2%)	23(19.5)	74	62.7
	Alcohol dirking	17(14.4%)	9(9.2%)	26	23.6
	Cigarette smoking	11(9.3%)	7(6.9%)	18	16.2

5.6 Current diseases factors and data related to food consumption

Study shows that 104 (46.4%) of respondents had history of poor appetite for the last 5 days.

66 (30%) of respondents has history of no nutritional intake for the last 5 days

134 (60.9%) of respondents has gastric and intestinal problems from this percent, 50(32%) of respondents has history diarrhea, 42(31.8%) of respondents has history nausea and vomiting, 22(17%) of respondents has history of dyspepsia and 20(15.2%) of respondents had history of constipation.

Table 6. Distribution of current diseases factors and data related to food consumption with nutritional risk among adult admitted patients at Jimma University Medical Center.

Variables		Nutritional risk			
		Presence	absence	Total	
				count	percent
Gastric and intestinal problem	Yes	88	46	134	60.9
	No	40	46	86	39.1
Types of gastric problems	diarrhea	33	17	50	32
	nausea &vomiting	30	12	42	31.8
	dyspepsia	13	7	20	17.8
	constipation	11	9	22	19
Loss of appetite	Yes	77	25	102	46.4
	No	51	67	118	53.6
No nutritional intake	Yes	47	19	66	30
	No	81	73	134	70

5.7. Factors associated to nutritional risk

Bivariate and multivariable logistic regression analysis was done using backward method to analyze factors associated with nutritional risk. On the Bivariate analysis, age, sex, educational level, ward category, substance use, chronic illness, Gastric, and intestinal problem become a candidate for multivariable analysis.

Table. 7. Binary logistic regression result predicting the probability of Nutritional risk of among adult admitted patients at JUMC from April 1 to May 7,2017.

Variables		Nutritional risk			
		Presence	Absence	Crude OR	p- value
Age	41_64	74	25	3.673 (2.060_4.643)	. 000
	18_40	54	67	1	
Educational level	Informal education	86	42	2.438 (1.404_4.232	.002
	Formal education	42	50	1	
Sex	Male	64	38	1.540 (1.284_2.643)	.117
	Female	64	34	1	
ward category	Medical patients	68	32	2.125 (1.224_4.490)	.007
	Surgical patients	60	60	1	
substance use	Yes	79	38	2.191 (1.269_3.782)	.005
	No	49	53	1	
Gastric and intestinal problem	Yes	88	46	2.200 (2.264_3.828)	.005
	No	40	46	1	
Chronic illness	Yes	58	19	3.183(1.724_5.877)	0.00
	No	70	73	1	

5.8 Multivariable analysis

Multivariable Logistic regression analysis was done to identify the effect of independent variables on nutritional risk. The study revealed that educational level has significant association with nutritional risk, the patient who attend informal education were 3.3 more likely to have nutritional risk than who attend formal education[(OR=3.316, CI=1.706-6.444)].

The study showed that age had significant association with nutritional risk. Respondents whose age were between (41-64years) were 3.2 times more likely to be at nutritional risk than between (18-40years) [(AOR=3.283, 95% CI=1.692-6.368)].

The study showed that the patients who had history of chronic illness were 2.8 times more likely to be at nutritional risk than those has no history of chronic illness [(AOR= 2.818, 95%CI=1.384-5.737)].

The study also revealed that the patients who had gastric and intestinal were 2.5 times more likely to have nutritional risk than those had no gastric problem and intestinal problems [AOR 2.537, 95% (CI=1.231-4.322)].

Table 8. Multivariable logistic regression model predicting the probability of Nutritional risk among adult admitted patients at JUMC April 1 to May 7, 2017.

Variables		Nutritional risk		COR	AOR	p-value
		Presence	Absence			
Age	41-64	74	25	3.673 (2.060_6.540)	3.283 (1.692-6.368)	.001
	18-40	54	67	1	1	
Educational level	Informal education	86	42	2.438 91.438_4.232	3.316(1.706_6.444)	.001
	Formal education	42	50	1	1	
Chronic illness	Yes	58	19	3.183 (1.724-5.877)	2.818 (1.384-5.737)	.003
	No	70	73	1	1	
Gastric and Intestinal problem	Yes	88	46	2.200 (1.264-3.818)	2.537 (1.231-4.322)	.002
	No	40	46	1	1	

CHAPTER SIX: DISCUSSION AND RECOMMENDATION

This study showed that the prevalence of nutritional risk was 58.2%.This finding is comparatively higher than the study finding from Korea, Brazil, Denmark, Portugal, Austria and Italy (29, 27, 26, 24, 22, 21, 30) that showed (17.2%, 20%, 30%, 40%, 36% 26%, 28.6%), respectively. The difference might be attributable by different in socio economic status, sample size of the study, presence or absence of nutritional support in hospital and types of nutritional risk screening tools, and similar with the finding from Israel, Brazil, Mexico and Turkey that revealed 21-73 %(20), 60 %(25), 54% (28) and 57 %(31), respectively. Since the study area have no common socio demographic characteristics, this similarity may be due to chance.

In this particular investigation, from socio demographic variables, patient's age showed significant association with nutritional risk. Participants with age of between (41-64years) were 3.2 times more likely to be at nutritional risk than Patients with age (18-40years).This finding is in line with the study conducted in Portugal, Brazil, Italy, Spain and Turkey (26, 30, 34, 27, 35), respectively. The possible explanation could be. This age group may increases, many physical changes to the body function of the people, increases vulnerability to ill health, infection, and precipitates general deterioration. In addition, may increases the, disturbance in articulation of upper and lower esophageal peristalsis, decreased gastric secretions and reduced intrinsic factor than the participants with the age between (18-40 years). This fact may leads to taking of insufficient nutrition and insufficient nutrition in people, might causes nutritional risk to the degree that their potential for recovery is impaired.

Educational level has significant association with nutritional risk. Patients who did not attend formal educational were 3.3 times more likely to be at nutritional risk than who attend formal educational. This finding is similar with the study carried out in Portugal (26) and Rwanda (36). This might be because patients attending formal education had chance of getting information about nutrition and related issues.

The study also found the presence of chronic illness showed significant association with nutritional risk. Patient with chronic illness were 2.8 more likely to be at nutritional risk that their counter parts. This finding is similar with findings of researchers from Turkey (35) and Austria (25).

The possible explanation for this finding could be chronic illness might cause neurological, respiratory and musculoskeletal disorders. This condition may leads to difficulty with eating, loss of appetite and swallowing disorders.

The study showed that Gastric and intestinal problem has significant association with nutritional risk .Patients with gastric and intestinal problem were 2.5 times more likely to develop nutritional risk than those has no history of gastric and intestinal problem. This is consistent with the findings of researchers from Brazil, Austria and Korea (29, 25, 33), respectively. This might be because of Gastric and intestinal problem such as Nausea, vomiting, diarrhea, constipation, dyspepsia may cause fluid and electrolyte imbalance and decreases in the nutritional intake of individuals, and this may leads to nutritional risk.

Limitation of the study

Since some of the admitted patients were uneducated, they did not know their weight in past 3-6 months this leads to difficulty in quantifying their weight loss accurately.

Limitation of literatures in the subject, which are conducted in developing countries.

CHAPTER SEVEN: CONCLUSSION AND RECOMMENDATION

7.1. CONCLISION

The prevalence of nutritional risk was too high as compared to profound figures that were reported by previous studies conducted in different countries. Educational level, age, presence of chronic illness and gastric and intestinal problems were found to be significantly associated with nutritional risk.

7.2. RECOMMENDATION

For FMOH

Should have nutrition steering committee to set and implement nutritional risk screening guideline for adult patient with nutritional risk in all hospitals.

For JUMC

Should Strength adult learning, regular screening and prompt management of chronic diseases and early identification of gastric and intestinal problem**.**

Should implement a nutritional screening program to identify patients at risk of malnutrition and facilitate appropriate follow-up assessment and treatment for patients.

Should have a multidisciplinary nutrition support team, to ensure optimal ward-based training of nurses, and adherence to nutrition support.

The nutritional status of patients should be assessed on admission and at regular intervals throughout their hospital stay, using a recognized and effective risk assessment tool protocols to give nutritional support, since nutritional support is one of medical treatment.

For Researchers

Researchers should conduct further studies at regional level of hospitals and validate nutritional risk screening tool in our country.

REFERANCES

1. J Am. American Dietetic Association (ADA 1994). ADA's definitions for nutrition screening and nutrition assessment. Diet Association, 1994; 94:838-9.

2. Tangvik, R. J., Tell, G. S., Guttormsen, A. B., Eisman, J. A., Henriksen, A., Nilsen, R. M., & Ranhoff, A. H. (2014). Nutritional risk profile in a university hospital population. *Clinical Nutrition*, (January 2015), 3–10.

3. Randi Julie taguik. Nutritional risk in university hospital: challenges and consequences in clinical practice. Clinical nutrition, 2014.

4. Doehner W, Anker SD. Cardiac cachexia in early literature: a review of research prior to Medline. International journal of cardiology. 2002; 85.

5. Kondrup J, Johansen N, Plum LM, Bak L, Larsen IH, Martinsen A, et al. nutritional care in hospitals, and Incidence of nutritional risk and causes of inadequate nutritional care in hospitals. Clinical Nutrition, 2002; 21(6):461.

6. Elia M, Zellipour L, Stratton RJ. To screen or not to screen for adult malnutrition? Clinical Nutrition. American Dietetic Association (ADA 1994), 2005; 24 (6):867-84. 12. 12.

7. Ferguson M, Capra S, Bauer J, Banks M. Development of a valid and reliable malnutrition screening tool for adult acute hospital patients. Nutrition.1999; 15(6):458-64.

8. Stratton, R. J., Hackston, A., Longmore, D., Dixon, R., Price, S., Stroud, M., … Elia, M. (2017). Malnutrition in hospital outpatients and inpatients : prevalence , concurrent validity and ease of use of the " malnutrition universal screening tool " (" MUST ") for adults †, (2004), 799–808.

9. Kruizenga HM, Seidell JC, de Vet HC, Wierdsma NJ, van Bokhort-de van der Schueren MA. Development and validation of a hospital screening tool for malnutrition: the short nutritional assessment questionnaire (SNAQ). Clinical Nutrition.2005; 24(1):75-82.

10. Guigoz Y, Vellas BJ. Malnutrition in the elderly: the Mini Nutritional Assessment (MNA). Ther Umsch.1997; 54(6):345-50.

11 .Malnutrition Advisory Group (MAG). MAG-guidelines for Detection and Management of Malnutrition. British Association for Parenteral and Enteral Nutrition, Red ditch, UK 2000.

12. Elia M (Chairman and Editor). Screening for Malnutrition: A Multidisciplinary Responsibility. Development and Use of the" Malnutrition Universal Screening Tool" ("MUST") for Adults. Malnutrition Advisory Group (MAG) 2003, a Standing Committee of BAPEN.

13. *Todorovic V, Russell C, Elia M. The ‚MUST' explanatory booklet. A guide to the 'Malnutrition Universal Screening Tool' (‚MUST) for adults. 2003.*

14. Mueller C, Compher C, Ellen D.M., ASPEN. A.S.P.E.N. Clinical Guidelines. Nutrition Screening, Assessment, and Intervention in Adults. Journal of Parenteral and Enteral Nutrition, 2011; 35(1):16-2420.

15. Edington J, Boorman J, Durrant ER, Perkins A, Giffin CV, James R, et al. Prevalence of malnutrition on admission to four hospitals in England. The Malnutrition Prevalence Group. Clinical Nutrition. 2000; 19 (3):191-5

16. Middleton MH, Nazarenko G, Nivison-Smith I, Smerdely P. Prevalence of malnutrition and 12-onth incidence of mortality in two Sydney teaching hospitals. Int Med J. 2001; 31(8):455-61.

17. Correia, M. I. T. D., Campos, A. C. L., & Rica, C. (2003). Prevalence of Hospital Malnutrition in Latin America : The Multicenter ELAN Study, *9007*(3), 823–825.

18. Wyszynski DF, per man M, Crivelli A. Prevalence of hospital malnutrition in Argentina: preliminary results of a population-based study. Nutrition. 2003; 19(2):115-9.

19. Fessies AT Malnutrition: Aserious concern for Hospitalize patients. Today's Dietitian, (2008) 10: 44.

20. Keller HH, Ostbye T. Nutritional risk and time to death; predictive validity of SCREEN (seniors in the Community Risk Evaluation for Eating and Nutrition). J Nutritional Health Aging.2003; 7 (4):274–279.

21. A.S.P.EN. (American Society for Parenteral and Enteral Nutrition) Board of Directors and Standards Committee. Definition of terms, style, and conventions used in ASPEN Guidelines and standards. Nutritional Clinic Pract. 2005; 20:281-5.

22. Charney P. Nutrition screening vs. nutrition assessment: how do they differ? Nutritional Clinic Pract, 2008; 23:366-72.

23. Beaten C& Hoefnagels J. Feeding via nasogastric tube or percutaneous endoscopic gastrostomy. A comparison. Scandinavian Journal of Gastroenterology Supplement 1992, 194:95-8.

24. K.schindler et al. how nutritional risk assed and managed in Europe hospital. Clinical nutrition, 31, 2010; 552_559.

25. Tannen a. & Lohrmann c. (2 0 1 3). Malnutrition in Austrian hospital patients. Prevalence, risk factors, nursing interventions, and quality indicators: a descriptive multicenter study. Journal of Advanced Nursing, 69(8), 1840–1849. Dui: 10.1111/jan.12051.

26. Amaral, T. F., Matos, L. C., Teixeira, M. A., Tavares, M. M., Álvares, L., & Antunes, A. (2010). Undernutrition and associated factors among hospitalized patients. *Clinical Nutrition*, *29*(5), 580–585. http://doi.org/10.1016/j.clnu.2010.02.004.

27. Burgos, R., Sarto, B., Elío, I., Planas, M., Forga, M., Cantón, A., … Pérez, D. (2012). Prevalence of malnutrition and its etiological factors in hospitals, *27*(2), 469–476.

28. Højgaard, H., Kondrup, J., Staun, M., Ladefoged, K., Kristensen, H., & Wengler, A. (2004). Prevalence of patients at nutritional risk in Danish hospitals, 1009–1015. http://doi.org/10.1016/j.clnu.2004.01.001

29. Rita de Cassia De Aquino e al. identification of malnutrition risk factors in hospital patients' .clinical nutrition, 2011:57(6):23-629.

30. Garcia, R. S., & Pastore, C. A. (2013). Nutritional screening in surgical patients of a teaching hospital from Southern Brazil : the impact of nutritional risk in clinical outcomes do sul do Brasil : o impacto do risco nutricional em desfechos clínicos, *11*(55 53), 147–152

31. Leandro-merhi, A., & Braga, L. (2012). artigo original / original article risk factors using anthropometric indicators in, (1), 28–34

32. Patrica.Ancer .Rodriguet et al .Nutritional screening and prevalence of hospital malnutrition risk. Medicinauniversitaria, 2014; 14(65):165-170

33. Lee, H., Choi, H., Son, E., & Lyu, E. (2013). Analysis of the Prevalence and Risk Factors of Malnutrition among Hospitalized Patients in Busan, *18*(2), 117–12

34. Lucchin, L., Amicis, A. D., Gabriella, M., Carlo, N., Antonia, M., Palmo, A., … Cereda, E. (2009). e-SPEN , the European e-Journal of Clinical Nutrition and Metabolism An Italian investigation on nutritional risk at hospital admission : The PIMAI (Project : Iatrogenic MAlnutrition in Italy) study, 1–4.

35. Bulent, S., GENC, Sema, G. B. O. S. U. N. E., & KAYSI, M. A. K. C. T. A. (2011). Nutritional risk in hospitalized patients : impact of nutritional status on serum prealbumin Risco nutricional em pacientes hospitalizados : impacto da albumina no acompanhamento do estado nutricional, *24*(1), 89–98.

36.Sirotin, N., Mutimura, E., Anastos, K., Sirotin, N., Hoover, D., Shi, Q., … Anastos, K. (2012). Structural determinants of food insufficiency , low dietary diversity and BMI : A cross-sectional study of HIV-infected and ... Structural determinants of food insuf fi ciency , low dietary diversity and BMI : a cross-sectional study of HIV- infected and HIV-negative Rwandan women, (March

ANNEX I: ENGLISH VERSION QUESTIONNAIRE

Jimma University, Institute of health, school of graduate studies; Department of population and family health; Human nutrition unit.

Consent and information sheet.

My name is_____, I am here on behalf of Jimma University, Institute of Health, and school of human nutrition. I am doing this study for the partial fulfillment of the requirements for a master's of science (MSc.) in human nutrition. The objective of this study is to assess Nutritional risk and associated factors among adults admitted patients in Jimma university medical center, south west Ethiopia, 2017. Your cooperation and honestly participation in responding to the questionnaire will provide us valid result, show us our real status, and help to make intervention; hence, we request to participate honestly. Again, every aspect of the study is voluntary. Your name will not be written in this form and all information that you give us will be kept confidential. You may skip any question that you prefer not to answer, but we would appreciate your cooperation. You may also ask us to clarify questions if you do not understand them or can stop the interview at any time. Only number identifies your responses to our questions, never by name. Do you agree to participate in this study?

Yes … ……. 2. No……. Thank you for help

Questionnaire code _____

Name of data collector_____ sign_____

Name of supervisor_____ Sign _____

THANK YOU!

Part A: Questions related to socio-demographic and economic characteristics of study participants

No	Questions	Coding categories	Skip to
	Code	…….	
101	What is your Age?	---------- years	
	What is your sex?	1.female 2.male	
102	What is your current marital status?	1. Single 2. Married 3. Divorced 4. Widowed 5. Other.....	
103	Family size	……	
104	What is your educational level	1.Can't read and write 2.Read and write only 3. Primary 4.Secondary 5.College and above	
105	What is your ethnicity	1.Oromo 2.Amhara 3.Tigre 4.Others	
106	What is your religion?	1.Muslim 2.Orthodox 3.Protestant 4.Catholic 5. Others specify…	
107	Residence	1.Urban 2.Rural	
108	Do you get social support for the current illness	1 Yes 2. No	
109	If yes to Q 107 From whom?	……	
110	Monthly house hold Income in Birr/year	----------	
111	Patient dx	…….	

Part B: Data related to anthropometric measurement

	anthropometric measurement		
201	The current weight of patient in Kg	.....kg	
202	What is height of the patient in cm	-------cm	
203	Did you weighed in the last 3-6 month	1.yes 2.No	Skip to Q 205
204	If Yes to Q 204 what is your weight in the past 3-6 month	-------kg	
205	Do you have unplanned weight loss in the past 3-6 your weight	1.Yes 2.No 3.Do not know	
206	If Yes to Q 205, how much do loss in the past 3-6 month of your weight.	1. < 5% 2. 5-10 %Kg 3. >10%	
207	If Do not know to Q 205, Did your clothes or jewelry have become loose fitting (weight loss) in the last 3-6 month?	1.yes 2.No	
208	If Yes to 208 What is the underline reason for your clothes or jewelry have become loose fitting (weight loss).	1.Reduced appetite 2. illness 3.swallowing problems 4.Vomiting and nausea 5.Despesa 6. Another specify… 7. don't know	

Part C: Question related to Patho- physiological factors.

	Question related food consumption		
301	Do you think your nutritional intake changed from the usual intake in the past 5 days	1.Yes 2.No	If no Skip to Q 303
302	If yes to Q301 what the reason of your intake is changed	. 1 Los of appetite . 2.Illness . 3.Difficulty of swallow . 4.Nausea and vomiting	

		. 5. Another specify----- . 6. Don't know	
303	Did you have history of no nutritional in take	1.Yes 2. No	If no Skip to Q 305
304	If yes to Q303 for how many days do you have no nutritional in take	…….	
305	Did you have swallowing problem	. Yes . No	
306	If yes for how long	----------	
307	Did you have history of severely ill		
308	If Yes to Q 310 for how long you severely ill	----------	
309	If Yes Q 311 Dose your illness make you difficult to take nutrition	. Yes . No	
310	If yes to 312 for how long you have difficulty of nutritional taking	1.for <5 days 2.for 5-10 days 3.for >10 days	
311	Do you history of chronic illness	. Yes . No	
312	What type of chronic illness	----------	
	Part D current diseases factors		
401	Did you have Loss of appetites?	1.Yes 2. No	If no Skip to Q 307
402	If Yes to Q305 for how long you have loss of appetites?	……	
403	Did you have nausea or vomiting?	1. Yes 2. No	If no Skip to Q 309
404	If yes to Q 307 for how long	……..	
405	Did you have dyspepsia	1.Yes 2. No	Skip to Q 310
406	If yes to Q 309 for how long	……	
407	Did you have constipation	. Yes . No	
408	If yes to Q 311 for how long	----------	
409	Did you have diarrhea	. YES . No	
410	If yes to Q 312 for how long		

Part E: Question related to Behavioral factors

501	Do you have history substance use	1.Yes 2. No	Skip to Q 402
502	If yes to 401 what type of substance you use	1.Chat chewing 2.Alcohol drinking 3. Cigarette smoking 4. Another specify…	
503	If your answer 1 to question 402 how many times you practice chat chewing	. once weekly . twice weekly . three times weekly . every day . Another specify…….	
504	If your answer 2 to question 402 how many times do, you drink alcohol.	1.Once /weekly 2.twice /weekly 3.three times/weekly 4.every day 5. another specify	
505	If your answer 3 to question 402 how times do you smoke cigarette	. 1.Once /weekly . 2.Twice/weekly . 3.Three/weekly . 4.Every day . 5. Another specify ….	

ANNEX 2:AFAN OROMO VERSION OF THE STRUCTURED QUESTION-NAIRE

Gucha odeeffannoo hirmaattootaaf

Yuuniivarsiitii Jimmaatti dhaabbeta saayinsii fayyaa muummee barnoota Hawaasa Fayyaa Maatiif Nyaata Nammafi saaynisii.

Unka oddeeffaannoo

Heloo ani maqaan koo _____jedhama. Ani garee qorattoota yuunivarsitii Jimmaatiin hojjataa jira. Yoo fedhii keessan ta'e gaaffilee isin gaafatamuuf jirtan waa'ee. The objective of this study is to assess nutritional risk and associated factors among adult admitted patients at Jimma University Medical center. fedhaniin keessan gaaffii isin gaaffannuuf nuuf kennitan rakkoo kayyoo qoranichaa kanaa midhan adda baasuuf nu gargaara.Gaaffii fi deebiin Kun daqiiqaa 15 isiinitti fudhata. Waa'ee icciitii keesanii ilaalchisee, maqaan keessan gucha kana irratti hin barreeffamu. Oddeeffaannoon isiin nuuf keennitan kamiyyuu iciitiin isaa haalan eega-maadha.Hirmaannaan keessan fedhii irratti kan hundaa'e yoo ta'u gaaffii deebisuu hin barbaanne kamiyyuu dhiisuuf mirga guutuu qabdu.gaaffii fi deebicha erga eegaltanii booda yeroo itti isiinitti hin tolle kamittuu qoranicha addaaan kutuu yookiin dhabbuuf mirga guutuu qabdu.

Qorannicha ilaalchisee gaaffii yookiin wanti isiniif hin galle jiraa?

Unkaa g

Amma qorannoo kana keessatti hirmachuuf fedhii qabdaa?

Eyyee _____ Lakki _____,Yoo lakki ta'e waliigalticha kabajiitii isa yookiin ishee galateefachuun asitti dhabi

Yoo Eyyee ta'e qorannicha itti fufi.

Maqaa nama gaaffii gafatuu _____Mallattoo _____ Guyyaa_____

Maqaa to'ataa_____ Mallattoo _____ Guyyaa_____

Afan Oromo version

Gaaffilee

Kutaa 1 ffaa: Gaaffiiwwan armaan gaditti dhiyaatan odeeffannoo walii galaa ilaallata

No	**Questions**	**Coding categories**	**Darbi**
101	kooddii	…….	
102	Umriin kee meeqa?	---------- waggaa	
103	Haalli fuudhaaf heerumaa	1. Hin heerumne 2. Heerumeera 3. Walhiikneerra	
104	Saalan kee maali?	1.dhala 2. dhira	
104	Sadarkaan barumsaa hammami?	1. Hin baranne 2.Barumsa idilee hin qabu,garuu bar-reessuufi dubbisuu nan danda'a 3.sad 1 ffa	
105	Baayina maati	----------	
106	Amantaan kee maali?	1.Musiliima 2.Ortodoksii 3.Pirootestant 4.Kaatoolikii 5.Kanbiraa, 6. adda baasi…	
107	Gargaarsa hawaasaa hinargattaa yeroo dhukubde	1. Eyyen 2. lakki	
1	Eenyurraa ?	--------	
108	Bakki jireenyaa kee eessa?	1.Magaalaa 2.Baadiyyaa	
109	Galiin kee waggaatti hammami?	---------- qarshii	
110	Rakko Maalin ciisete	_____	

Kutaa 2 ffaa: Gaaffiiwwan safara anthropomerrin walqabaten

201	Ulfatina dukkabsetaa yeroosantti kilogramin	----------kg
202	Dherinni dhukkubsataa sentimeetiraan	…….cm
203	Jiea 3-6 drban keesstti madalamtee beektae	. Eyeen . Lakki
204	Yoo gaeffi 203, eyyen jette ulifaatinnikee meeqa?	----------kg
205	Otuu hin barbaadin ulifaatinnkee jia3-6 darban kessatii hirahateer ?	1.Eyyen 2.Lakkii 3 hin beeku
206	Yoo gaaffii 205 eyyen jette hammam hirahiste jia 3-6 kes-sati	1.<5% 2. 5%-10% 3.> 10%
207	Yoo gaaffi 205 hin b wayyaan eeku jette wayyaan kee jia 3-6 tti sitibalateraa	1.Eyeen 2.Lakki
208	Yoo gaaffi 207 eyeen jette sebabamali qabatamaa wayyan kke sitti balatef maali?	1.Feedhin nyataa gadbu'ue 2.likimsu dhadabu 3. rakkoo oldeebisa 4.halanagubu 5.kanbiroo adda baasi 6. hinbeeku

Kutaa 3 ffaa: Gaaffiile addae addae dhibee dhukkuda waliin walqabtan

301	Rakkoo likimsuu qabdae?	. 1. Eyyen . 2 .lakki .	If 1 → 302
302	Yoo deebiin kee gaaffii 301, eyyen jette hammamif?	----------	
303	Dhukkubn cimman siik kabee beeka?	1. Eeyyen 2. Lakki	
304	Yoo deebiin kee gaffii 303, eyyen jette dhuk-kunine kee nyata fudhuchuu sidhorkera?	. Eyeen . lakki	
305	Yoo deebin kee gaffi 304, eyyen jette hammamif Nyata fudhuchu sidhorke?	. < guyyaa shanniraa . Gayyaa shaanii hangaa gayyaa kudhantii . gayya kkudhanira hinchaala	
306	Dhukkuba jia 3-6 sirratune qabdae	. Eyeen . Lakki	
307	Yoo deebin kee gaffi 306-eyyen jette gosni dhukkubicha mali?	---------	

Kutaa 4 ffaa: Gaaffiilee dhukkuba amma sidhubuni wolikaabatee

	Gaeaffile nyaatan woliqabate		
401	Fedhiin nyaata kee kan Kanaan duraarra guyyoto 5 darbekeessa jijjirmera?	. Eeyyen . Lakki	
402	Yoo deebin kee gaaffif401 ,eyeen jette sab-abni Jiijiiramuuisaa maali?	1.Feedhin nyataa gadbu'ue 2.likimsu dhadabu 3. rakkoo oldeebisa 4.halanagubu 5.kanbiroo adda baasi 6. hinbeeku	
403	Osoon waaniin hin fudhatin turteettae	. Eyeen . Lakki	
404	Yoo deebin kee gaaffi 403 eyeen jette guy-yaa meeqaef osoo hin fudhatin turteettae?	----------	
405	Hirahini fedhii nyata qabdae?	1. Eyeen 2.Lakki	
406	Yoo deebin kee gaaffi 405, eyyen jette hammamif?	----------	
407	Dhibee olisi deebisun qabdaa?	1.Eyeen 2. Lakki	
408	Yoo deebin kee gaaffi 407, eyyen jette hammamif?	----------	
409	Dhibee teessisuu qabdaa?	. 1. Eyeen . 2. Lakki	
410	Yoo deebin kee gaaffi 409, eyyen jette hammamif?	. ----------	
411	Dhibbee gogiinsa garaa qabda turtee	. 1. Eyyen . 2. Lakki	
412	Yoo deebin kee gaaffi 411 , eyeen jette hammamif	. ----------	

413	Halanagubuu qabdae?	. 1. Eyeen . 2. Lakki	
414	Yoo deebin kee gaffi 413, eyeen jette hammamif?	----------	

Kutta 5 ffa gaaffileearaada wal qabate

501	Amala waa fayyadammu qabdaa	1. Eyeen 2. lakki	
502	Yoo deebin kee gaaffi 501, eyyen jette gosni araada kee maali?	. Jimaa qaamuu . Dhugati dhuguu . Sigaaraa xuuxuu . Kan biro addan basi	
503	Yoo deebin kee gaaffi 502, jimaa qaamuu ta'e hammamif qaamte	. Torbanitti yeroo tokoo . Torbanitti yeroo lama . Torbanitti yeroo sadhi . Guyyaa guyyaan . Kan biraa adha basi	
504	Yoo deebin kee gaaffi 503 dhugati dhu-guu ta'e hammamif dhugaati dhugde?	1.Torbanitti yeroo tokoo 2.Torbanitti yeroo lama 3.Torbanitti yeroo sadhi 4.Guyyaa guyyaan 5 .Kan biraa adha basi	
505	Yoo deebin kee gaaffi 504, sigaaraa xuuxuuta'e hammamif tuuxxe?	1.Torbanitti yeroo tokoo 2.Torbanitti yeroo lama 3.Torbanitti yeroo sadhi 4.Guyyaa guyyaan 5 .Kan biraa adha basi	

ANNNEX 3: AMHARIC VERSION QUESTIONNAINRE

ስሜ……ነው በጅማ ዩኒቨርሲቲ በጤና ሳይንስ ኮሌጅ በሂውማን ኒውትሪሽን የድህ ረምረቃ ተማሪ ለሆነችው ለአበባ አበበ መረጃ ሰብሳብ ነኝ፡፡ Nutiritional risk and associated factores among adalt adimited patients at JUMC. በሚለው ርዕስ ላይ ምርመራ የሚካሄድ ይሆናል

የስምምነት ቅፅ

ከዚህ ጥናት የምሰበስበው መረጃ በምስጥራዊነት የምያዝና የእርሶዎን ስምና መረጃ የማይጠቅስ ይሆናል፡፡ ከዚህምጥ በተጨማሪ የተሰበሰበው ጥናታዊ መረጃ ለአጥኝው አይኖች ብቻ የሚሆን ነው፡፡ከጥናቱ በፈለጉት ጊዜ የመልቀቅ ሙሉ መብትዋ የተጠበቀ ነው፡፡

ይህ መጠየቅ ለጥናቱ የሚሆን መረጃን የመሰብሰብያ መንገድ ነው፡፡ ከጥናቱጋ ርየተያያዙ ማንኛውም አይነት ጥያቄ ካለዎት የጥናቱን ባለበት በሚቀጥለው አድራሻ ማግኘት ይችላሉ፡፡

አበባ አበበ

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አስቀድመን ለሚሰጡን መረጃ ልናመሰግኖት እንወዳለን፡፡

በዚህ ጥናት ላይ ለመሳተፍ ቃደኛኖትን

ሀ/ አዎኝ ☐

ለ/ አይደለሁም ☐

ፊርማ …….. ቀን ……

ክፍል ሀ ፡የእርሶን አጠቃላይ ሁኔታ በተመለከተ የሚጠየቁ ጥያቄዎች

ጥያቀ ምርጫዎች

የምስጥ ርቁጥር ……

101	እደሜዎ ስንትነ	…….
102	ጾታ	1. ሴት 2. ወንድ
103	የትዳር ሁኔታዎ ምንድን ነዉ	1. ያላገባ 2. ያገባ 3. የተፋታ 4. የትዳር አጋር በህይወት የለም 5. ሌላ……..
104	የቤተሰብ ቁጥር	……
105	የትምህርት ደረጃ	1. ማንበብና መጻህፍ የማይችል 2. ማንበብና መጻህፍየምችል 3. አንደኛ ደረጃ የጨረሰ 4. ሁለተኛ ደረጃ የጨረሰ 5. ኮለጅና ከዛ በላይ
106	ሃይማኖት	1. ኦርቶዶክስ 2. ሙስልም 3.ፕሮተስታንት 4. ካቶልክ 5. ለላ……
107	የኑሮቦታ	. 1. ከተማ 2. ገጠር
108	ታመዉ ሳሉ የህብረተሰቡን አርዳታ እያገኙ ነዉ፡፡	. 1. አዎ . 2. አይደለም
109	ለጥያቀ 108 መልሰዎ ‘‘አዎ’’ ከሆነ ከማን	----------
110	የበተሰብ ወራሃዊ ገቢ(ብር/አመት	……

111	የታመሙትበሽታ	----------	

ክፍል ለ .የታማምዉን የክብደት ሁኔታን በተመለከተ የሚጠየቁ ጥያቄዎች

201	የህመምተኛዉ የሰዉነት ክብደት በኪሎግራም	……	
202	የህመምተኛዉ ቁመት በሰንት መትር	……	
203	ክብደዎት ባለፈዉ 3-6 ወር ዉስጥ ተለክተዋል	1. አዎተለክቻለዎ 2. አልተለካዉም	
204	ለጥያቀ 203 መልሶአዎ ከነበረ ባለፈዎ 3-6 ወር ዉስጥ የሰዉነቶት ክብደት ስንት ነበረ	……	
205	ደትዎት በባለፈዉ 3-6 ወር ወስጥ አጋጥሞታል	1. አዎ 2. አላጋጠመኝም 3. አላዉቅም	መልሰዎ 3 ከሆነ ወደ ጥያቀ 207 ህለፊ
206	ለጥያቀ 206 መልስዎ “ አዎ”ከሆነ ባለፈዉ 3-6 ወር ምን ያህል ክሎ ቀነሱ	1. 5% 2. 5-10% 3. >10%	
207	ለጥያቀ 206 መልስዎ ‘‘አላዉቀዉም’’ከሆነበ ባለፈዉ 3-6 ወር ዉስጥ ልብስዎ ወይም ጌጦዎ ሰፍቶታል ወይ	1. አዎ 2. አልስፋኝም	
208	ለጥያቀ 208 መልስዎ ‘‘አዎ‘‘ ከሆነ ልብስዎ ወይም ጌጦዎ የስፋዎት ምክንያት ምንድን ነዉ?	1. የምግብ ፈላጎት ማጣት 2. የመዋጥ ችግር 3. ማቅለሽለሽና ማስታወክ 4. የጨጋራ በሽታ 5. ሌላ……. 6. አላወቀዉም	

ክፍልሐ፡የታማምዉን የአመጋገብ ሁኔታን በተመለከተ የሚጠየቁ ጥያቀዎች

301	የአበላል ዊሁኔ ታባለፉት 5 ቀናት የተቀየረ ይመስልዎታል	1. አዎ 2. አልተለወጠም	መልሰዎ 2 ከሆነ ወደ ጥያቀ 303

			ህለፊ
302	ለጥያቀ 301 መልስዎ አዎ ከሆነ ምክንያቱ ምንድን ነዉ?	1. የምግብ ፍላጎት ማጣት 2. በሽታ 3. የመዋጥ ችግር 4.ማቅለሽለሽና ማስተወክ 5. ልላ……. 6. አላዉቀዉም	
303	ምንም ሳይበሉ የዋሉበት ቀን አለ?	1. አዎ 2. የለም	
304	ለጥያቄ 303 መልስዎ ‘‘አዎ’’ከሆነ ለምን ያህል ቀናት	……	
305	የምግብ ፍላጎት ማጣት አለዎት?	1. አዎ 2. የለኝም	መልሰዎ 2 ከሆነ ወደ ጥያቀ 307 ህለፊ
306	ለጥያቄ 305 መልስዎ ‘‘አዎ’’ከሆነ ለምን ያህልጊዜ	……	
307	ማቅለሽለ ወይም ማስታወክ አለዎትን	1. አዎ 2. የለኝም	መልስዎ 2 ከሆነወደ ጥያቀ 309 ህለፊ
308	ለጥያቄ 307 መልስዎ ‘‘አዎ’’ ከሆነ ለምን ያህል ጊዜ	……	
309	የመዋጥ ችግር አለዎት ወይ	1. አዎ 2. የለኝም	
310	ለጥያቄ 309 መልስዎ ‘‘አዎ’’ከሆነለ ምን ያህል ጊዜ	…….	
311	በጠና ታመዉ ወይ	1. አዎ 2. አላቅም	መልሰዉ 2 ከሆነ ወደ ጥያቀ 314 ህለፊ
312	ለጥያቄ 310 መልስዎት አዎ ከሆነ ለምንያህል ጊዜ	……	
313	ለጥያቄ 310 መልስዎት ኦከሆ ነበሽታዎ ከመመገብ .ይቆጥቦታል ወይ	. 1. አዎ . 2. አይቆጥብኘም	
314	ለጥያቄ 312 መልስዎት አዎ ከሆነ ለምን ያህል ጊዜ	. 1. ከ5 ቀናት በታች . 2. ከ5-10 ቀናት . 3 .ከ10 ቀናት በላየ	
315	.ጸኑ በሽታ (ከ36ወር) በላይ ይዞት ያዉቃል	1. አዎ	

		2. አልያዘኝም	
316	ለጥያቄ 314 መልስዎ ‘‘አዎ ‘‘ከሆነምን በሽታ	……..	

ከፍል መ .የምጠቀሙት መጠጥ ወይም ዕአ በተመለከተ

401	የምጠቀሙት መጠጥ ወይም ዕአ አለበዎትወ ይ	1. አዎ 2. የለም	መልሰዎት አዎ ከሆነ ወደ ጥያቀ 402 ሀለፊ
402	ለጥያቄ 401 መልስወዎት ‘‘አዎ’’ከሆነ መንድን	1. ጫት 2. አልኮልመጠጥ 3. ስጋራ 4. ልላ…	
403	ለጥያቄ 402 መልስዎት ‘‘ጫት’’ከሆነ ምን ያህል ጊዜ	1. በሳምንት አንዴ 2. በሳምንት ሁለቴ 3. በሳመንት ሦስቴ 4. በየቀኑ 5. ሌላ……	
404	ለጥያቄ 402 መልስዎት አልኮል መጠጥ ከሆነ ምን ያህል ጊዜ	1. በሳምንት አንዴ 2. በሳምንት ሁለቴ 3. በሳምንት ሦስቴ 4. በየቀኑ 5. ሌላ…	
405	ለጥያቄ 402 መልስዎት ስጋራ ማጨስ ከሆነ ምን ያህል ጊዜ	1. በሳምንት አንዴ 2. በሳምንት ሁለቴ 3. በሳምንት ሦስቴ 4 በየቀኑ 5. በሁለት ሳምንት አንዴ 6. በወር አንዴ 7. ሌላ……..	